DECEMBER 2022

Determination of Effects Report

Norfolk Southern Railway Company/ Pennsylvania Department of Transportation Pittsburgh Vertical Clearance Projects

Borough of Swissvale and the City of Pittsburgh
Allegheny County, Pennsylvania
ER#: 2018-1595-003

NORFOLK SOUTHERN

Prepared for
Norfolk Southern Railway Company
Atlanta, Georgia

Authors:
Timothy G. Zinn, Architectural Historian
Jesse Belfast, Architectural Historian

Prepared by
Michael Baker INTERNATIONAL
Michael Baker International, Inc.
Moon Township, Pennsylvania

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Norfolk Southern Railway Company, Pittsburgh Vertical Clearance Projects

Washington Avenue Bridge Project; Amtrak Station Project;
W. North Avenue Bridge Project; Pennsylvania Avenue Bridge Project;
Columbus Avenue Bridge Project

Borough of Swissvale and City of Pittsburgh, Allegheny County, Pennsylvania

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Prepared For:
Norfolk Southern Railway Company
Atlanta, Georgia

Prepared By:
Michael Baker International, Inc.
100 Airside Drive Moon Township
Pennsylvania 15108

Authors:
Timothy G. Zinn, Architectural Historian
Jesse Belfast, Architectural Historian

Michael Baker
INTERNATIONAL

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Abstract

Norfolk Southern Railway Company (Norfolk Southern), in cooperation with the Pennsylvania Department of Transportation (PennDOT), proposes to address five obstructions limiting vertical clearance for double-stack rail traffic in Allegheny County, Pennsylvania. The purpose of the Pittsburgh Vertical Clearance Projects is to enhance the existing rail infrastructure on the main line through Pittsburgh and in southwest Pennsylvania in order to provide more efficient movement of freight from New York/New Jersey to Chicago and specifically through Pennsylvania. The undertakings are located along Norfolk Southern's Pittsburgh and Fort Wayne Rail Lines, which are owned and operated by Norfolk Southern. The projects will be partially funded with state funds with Norfolk Southern funding the remainder.

This report is submitted for the purpose of consultation and compliance with the Commonwealth of Pennsylvania Act No. 1978-273 (as amended as Act No. 1988-72), as codified at Title 37 of the Pennsylvania Code, 37 Pa.C.S. § 101 et seq. (Pennsylvania History Code), as applicable.

The projects' areas of potential effects (APEs) were defined in consultation with the Pennsylvania State Historic Preservation Office (PA SHPO) and other consulting parties. A total of eleven historic properties were identified within the APEs of the five undertakings.

This report assesses the potential effects of the Pittsburgh Vertical Clearance Projects upon historic properties identified within the APEs of the five proposed undertakings. The application of the Definition of Effect and Criteria of Adverse Effect indicates that the proposed project will result in a **FINDING OF ADVERSE EFFECT**. The proposed undertaking will result in an adverse effect on the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District, because of the proposed demolition a contributing element, the W. North Avenue Bridge.

Coordination with the PA SHPO and consulting parties has occurred throughout the course of the project. Measures to mitigate the adverse effects of this project will be identified in consultation with the PA SHPO and the consulting parties. The agreed upon mitigation measures for the undertaking will be included in a memorandum of understanding (MOU) between PennDOT, PA SHPO, and Norfolk Southern.

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1.0 Introduction

Norfolk Southern Railway Company (Norfolk Southern), in cooperation with the Pennsylvania Department of Transportation (PennDOT), proposes to undertake five[1] transportation projects along the Pittsburgh and Fort Wayne rail lines.[2] This report assesses the potential effects of the Norfolk Southern Pittsburgh Vertical Clearance Projects upon historic properties identified within the five areas of potential effects (APEs) of the proposed projects (Figure 1-1).

This report is submitted for the purpose of consultation and compliance with the Commonwealth of Pennsylvania Act No. 1978-273 (as amended as Act No. 1988-72), as codified at Title 37 of the Pennsylvania Code, 37 Pa.C.S. § 101 et seq. (Pennsylvania History Code), as applicable.[3]

Cultural resources investigations for this report were completed in accordance with 36 C.F.R. §800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, which is being followed to comply with the Pennsylvania History Code. The results of this report will be considered a part of the environmental evaluation of the project in accordance with Section 2002 of Pennsylvania Act 120 to minimize harm to any historic property relating to a transportation project by or for PennDOT.

All work associated with this report was performed in accordance with Section 2002 of Pennsylvania Act 120 of P.L. 356 (Act 120), amended Section 2002, as codified at Title 71 of the Pennsylvania Code, 71 Pa.C.S. § 512. Federal and state laws and guidelines pertaining to cultural resources, regardless of applicability, were considered including the Pennsylvania History Code, Section 106 of the National Historic Preservation Act of 1966 (NHPA; 54 U.S.C. Subtitle 3, Sec. 300101 et seq., formerly 16 U.S.C.A. 470 et seq.), as amended; the National Environmental Policy Act of 1969; Presidential Executive Order 11593 "Protection and Enhancement of the Cultural Environment" (1971); the regulations of the Advisory Council on Historic Preservation (ACHP) at 36 C.F.R. § 800; the Secretary of the Interior's Standards and Guidelines (48 C.F.R. § 44716-44742); the Archaeological and Historic Preservation Act of 1974; and the Commonwealth of Pennsylvania Act No. 1978-273 (as amended as Act No. 1988-72). The assessment is based on 36 C.F.R. § 800 and the guidance regarding these regulations made available by the ACHP (see www.achp.gov).

1 When the Norfolk Southern Pittsburgh Vertical Clearance Projects PA SHPO Project Review Form and Determination of Area of Potential Effects and Identification of Previously Recorded Historic Resources (Michael Baker International, Inc. 2018) was submitted in May 2018, the project contained nine project locations. Since that time, the Frazier Street Pedestrian Bridge, the Overland Street Bridge in the Boroughs of Braddock and North Braddock, and the Ohio Connecting Bridge Flyovers in the City of Pittsburgh have been removed from the scope of the projects to be reviewed. Norfolk Southern is proceeding with those projects without state or federal funding and in the normal course of its operations. Merchant Street Bridge was also removed from the Pittsburgh Vertical Clearance Projects and was advanced as a separate project.

2 The Pittsburgh Rail Line and Fort Wayne Rail Line are descriptors for that portion of Norfolk Southern's main line owned and operated by Norfolk Southern, a Class I Freight Rail Company in interstate commerce. From Harrisburg/Enola, the line travels west following the path of the Susquehanna River. On its west end, the Pittsburgh Line becomes the Fort Wayne Line after crossing the Allegheny River Bridge.

3 Certain state and local approvals and conflicting requirements are preempted as applied to rail facilities operating in interstate commerce under the Interstate Commerce Commission Termination Act of 1995 ("ICCTA"), 49 U.S.C. § 10501 et seq., and Federal Railway Safety Act of 1970 (FRSA) 49 U.S.C. §§ 20101 et seq. Norfolk Southern does not waive and expressly preserves any claims or defenses related to such ICCTA or FRSA preemption related to the subject matter of this report.

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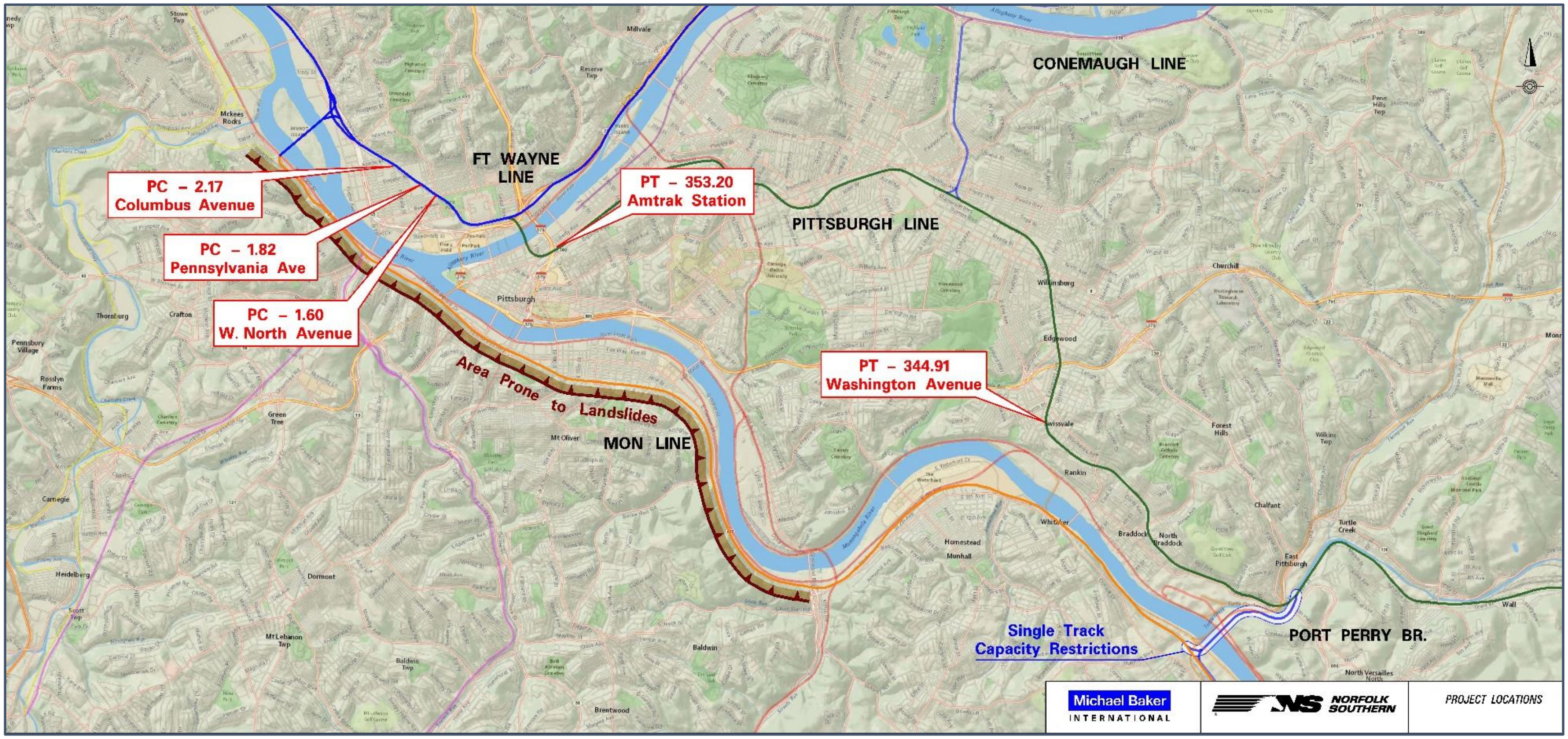

Figure 1-1: Project Location Map, showing the five project locations for vertical clearance improvements.

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All work was performed by professionals meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (formerly Professional Qualification Standards for Architectural Historian Professionals (see 62 Fed. Reg. 33,708 [June 20, 1997]; 36 C.F.R. § 61 [Appendix A] for Architectural Historian).

1.1 Project Description

Norfolk Southern, with funding through PennDOT, proposes to address five obstructions (the undertakings) that currently limit vertical clearance for double-stack rail traffic along the Pittsburgh and Fort Wayne Lines in Allegheny County, Pennsylvania. The undertakings involve track and railbed maintenance and improvement projects and/or bridge rehabilitation, reconstruction, or replacement largely within existing railroad right-of-way with only minimal right-of-way acquisition as possible. The obstructions addressed by the projects and assessed in this study are all located in the City of Pittsburgh and the Borough of Swissvale (Figure 1-1). Individual project locations consist of the Washington Avenue Bridge in Swissvale; the Amtrak Station in downtown Pittsburgh; and the W. North Avenue Bridge, Pennsylvania Avenue Bridge, and Columbus Avenue Bridge, all located in the North Side of the City of Pittsburgh. No work is being done in the intervening track area between the five individual project locations. The projects will be partially funded with state funds with Norfolk Southern funding the remainder.

1.2 Statement of Purpose and Need

1.2.1 Purpose:

The purpose of the Pittsburgh Vertical Clearance Projects is to promote the efficient transportation of goods between Chicago and the New York/New Jersey commercial markets and to improve mobility and safety for freight traffic through Pittsburgh. The projects will remove the final remaining vertical clearance restrictions creating chokepoints and other hindrances to efficient flow of intermodal rail traffic and will support truck/rail intermodal facilities along this important rail corridor by allowing for double-stack intermodal traffic, which is a PennDOT goal under the Commonwealth's State Rail Plan, developed in compliance with Federal Railroad Administration requirement and with the Rail Freight Preservation and Improvement Act of 1984, as amended, Public Law 587-119. See US DOT, The Strategic Multimodal Analysis, Task 3: Chicago-New York City Corridor Analysis, Final Report (Apr. 2006) (https://www.fhwa.dot.gov/policy/otps/sma/index.cfm).

The Pittsburgh and Fort Wayne Lines comprise one of two Norfolk Southern mainline routes through Pittsburgh. The second mainline on the south side of the city is referred to as the Mon Line. The Mon Line is not being considered as a viable railway improvement project due to several major physical constraints and engineering factors. These factors include the fact that the Mon Line is prone to unpredictable landslides from adjacent properties, which cause hazardous conditions and substantial transportation interruption and reliability concerns for freight movement. In addition, although the Mon Line is cleared for double-stack freight movement, it has substantial capacity constraints due to a single-track line through a tunnel and a major river crossing, thus causing further delay and capacity issues for freight transit between Chicago and the East Coast on that line.

Because of the constraints of the Mon Line, the Pittsburgh and Fort Wayne Lines currently are the primary route through the City of Pittsburgh for sensitive freight such as hazardous materials and would be the preferred route for time-dependent freight such as intermodal traffic, in large part because it avoids the hazardous conditions and delay experienced on the Mon Line. Furthermore, the Pittsburgh and Fort Wayne Lines are a shorter route between Chicago and the East Coast and use of that route increases network fluidity while reducing transit time.

Although the double-track Pittsburgh and Fort Wayne Lines are the preferred freight route through the City of Pittsburgh, several bridges on that line limit the clearance for rail freight such that double-stack intermodal and automobile multilevel freight cannot move on that line. Rail capacity exists on the double-track Pittsburgh and Fort Wayne Lines and these proposed projects will allow the line to accommodate anticipated freight growth and double-stack intermodal traffic. In addition, the condition of the bridge over the railroad at W. North Avenue, Pittsburgh, has safety deficiencies that pose risks to current rail traffic and forecasted rail traffic increases throughout the United States and within Pennsylvania in particular.

1.2.2 Need

The project need for the railway improvement projects along the Pittsburgh and Fort Wayne Lines is to address:

A. Forecasted traffic demands;
B. Vertical clearance constraints;
C. Operational safety and reliability;
D. Public safety; and
E. Facility deficiencies.

A. Forecasted Traffic Demands:

Anticipated increases in freight capacity projections, especially in the intermodal market, indicate that double-stack utilization will increase over the next 30 years. Pennsylvania state and national rail plans have identified clearances restricting freight rail transportation as a major impediment to freight capacity, recommending reducing choke points restricting double-stack intermodal traffic (PennDOT 2016); (USDOT 2006); (PennDOT 2010); (PennDOT 2003). Intermodal shipment is a method of moving freight from origin to final destination using two or more transportation modes, without handling the freight itself when changing modes. This method improves efficiency by allowing for use of the most efficient transportation mode for each segment of a shipment of goods in a trailer or container (Congressional Research Service 2003). In an intermodal transportation network, trains, trucks, ships, and aircraft are connected seamlessly to provide an efficient and flexible transportation system meeting the needs of the nation's consumers, carriers, and shippers (FHWA 2009).

The intermodal business is one way to achieve a long-term sustainable balance between business needs and the impact of railroad operations on the environment. In intermodal operations, containers often are loaded two high, called "double-stack," to allow twice as many shipments to be moved on one intermodal train. Double-stack intermodal traffic increases capacity using the existing infrastructure, with appropriate clearance and without requiring new rail lines for additional trains. Double-stack rail traffic also reduces shipping costs and improves service, while at the same time providing new competitive rail alternatives and new economic development opportunities for customers and communities.

The need for improving freight transportation throughout the United States is driven by factors such as:

- Growing congestion on U.S. highways used for long-haul freight movement;
- Volatile or high fuel prices and the quest for energy-efficiency;
- The strain on the truck driver labor pool;
- Need for improvements in shipping services;
- The national policy toward the reduction of greenhouse gas (GHG) emissions.

The Federal Highway Administration (FHWA) Freight Analysis Framework (FAF) forecasts that the tons of freight transported within the U.S. by rail will increase by more than 20% between 2015 and 2045, with a more than 80% increase in value of freight by rail over that same time frame. (https://www.bts.gov/newsroom/dot-releases-30-year-freight-projections ; https://www.bts.gov/sites/bts.dot.gov/files/docs/FFF_2017_Full_June2018revision.pdf). FHWA's FAF, which compares relevant statistics from 2012 to 2045, also predicts that, with current infrastructure, highway congestion would increase dramatically because of the increase in freight and intermodal demand. It is infeasible to accommodate these anticipated increases in freight requirements by merely maintaining the current national rail infrastructure, and commensurate congestion would result. Projects are needed to address the national need to enhance rail infrastructure as evidenced by the forecasted increase in demand and congestion.

Pennsylvania ranks first in the country in the number of operating railroads (approximately 65) and ranks near the top in total track mileage (more than 5,600 miles). Each year, around 200 million tons of freight originate in, terminate in, or pass through Pennsylvania by rail, including more than 50 million tons of coal, steel, food, and other products mined or grown throughout the Commonwealth. The Commonwealth of Pennsylvania is expected to face substantial highway-truck traffic congestion as a result of the increase in demand and freight transportation. PennDOT predicts that within the Commonwealth of Pennsylvania, intermodal freight rail traffic will increase by 86.4%. The primary east-west Class I freight rail corridor in Pennsylvania is through Pittsburgh. The Pittsburgh-Allegheny County region in particular is expected to be highly congested in the absence of additional freight transportation planning.

To accommodate the expected increases in rail demand, as well as to support national goals relating to greenhouse gas emissions and fuel efficiency, the national freight rail system has been substantially modernized over the past decades to raise clearances, upgrade tunnels, and modify rail lines throughout much of America's 140,000-mile freight rail network to accommodate double-stack intermodal trains. (See https://www.aar.org/article/6-milestones-intermodal-growth/) Limitations for double-stack intermodal trains still impact freight transportation through Pennsylvania, however. The clearance projects represent the final obstacles for double-stack and automobile multilevel traffic along the Pittsburgh and Fort Wayne Lines and complement the clearance of 163 previously existing obstructions to double-stack container traffic in the 1990s through a Conrail/PennDOT partnership.

B. Vertical Clearance Constraints:

The Pittsburgh and Fort Wayne Lines serve as an alternate route for the Mon Line but currently have limited vertical clearance at various locations that prevents the passage of double-stack trains or automobile multilevel traffic. These structures limit the height of freight railroad cars travelling along the Pittsburgh and Fort Wayne Lines. The structures do not provide sufficient vertical clearance between the bridge and the tracks, and Amtrak Station's shed canopy over the freight line is not tall enough, to allow double-stack intermodal trains to travel underneath.

The current vertical clearance at the project locations varies along the corridor from 18'-3" to 20'-6". The PUC requirement for vertical clearance in Pennsylvania is 22'-0", absent a waiver (Figure 1-2).

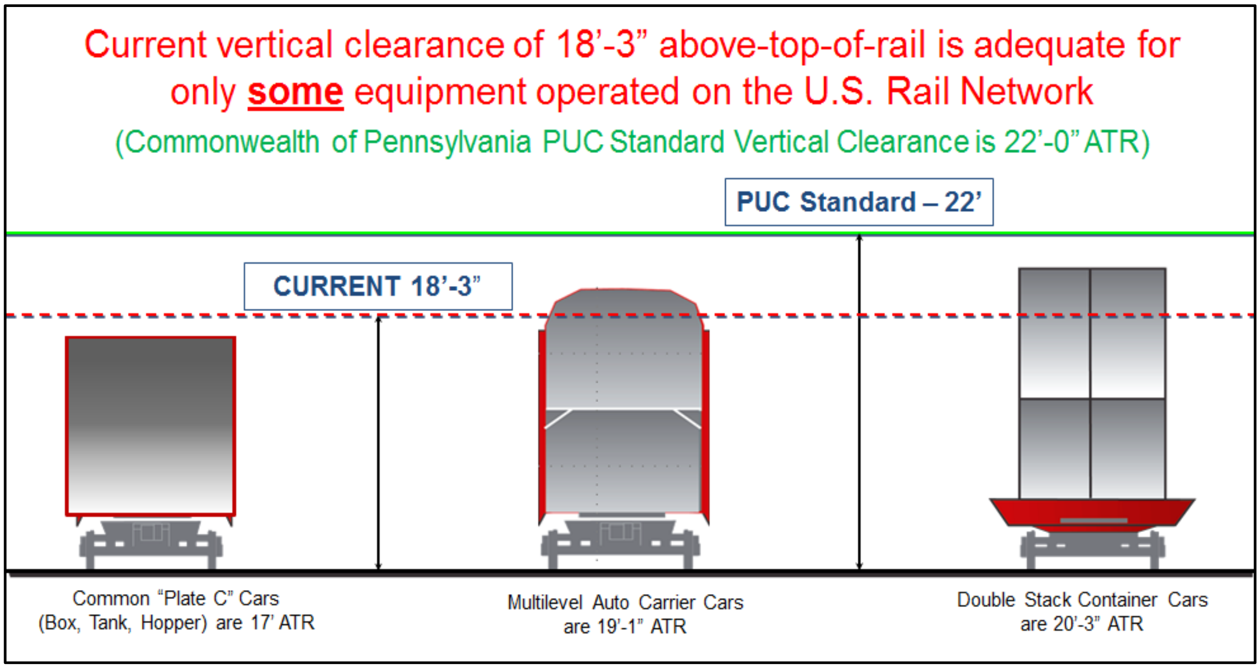

Figure 1-2: Vertical Clearance Standards.

C. Operational Safety and Reliability:

The Norfolk Southern line between Chicago and metropolitan New York City via Cleveland, Pittsburgh and Harrisburg is referred to as the Premier Corridor and is the most critical freight artery on Norfolk Southern's 22-state network. Norfolk Southern has two east-west freight routes through Pittsburgh, one of which is cleared for double-stacked intermodal trains and automobile multilevel trains. However, that double-stack route, known as the Port Perry Branch and the Mon Line (together, the Mon Line) is currently at or near capacity and, as a result, frequently faces congestion issues and service delays. In addition, the infrastructure and geography of the Mon Line create challenges for timely delivery of the service-sensitive intermodal freight that uses it today. The Mon Line has a 3-mile single-tracked segment that includes a tunnel and an adjacent bridge over the Monongahela River. This 3-mile segment is the largest chokepoint on Norfolk Southern's route between Chicago and the New York metropolitan area. In addition to the choke point, and more importantly, the topography adjacent to the railroad right of way is susceptible to landslides from the adjacent Mount Washington. The slope of Mount Washington continues to shift, and each time it does, the potential exists for soil and rock to be deposited on the railroad tracks, making them unable to be traversed until the debris is removed and the slide area stabilized. Besides the substantial costs incurred for cleanup, the unpredictable slides create hazardous conditions and cause hours of delay annually. These landslides range from moderate to severe in nature and the timing and severity of the incidents are unpredictable. Further, the landslides originate on property not owned or controlled by Norfolk Southern, and as such Norfolk Southern can merely react to landslides as they may occur. Each year, delay times resulting from these events, averaging approximately 32.9 hours, create substantial cost for the railroad, customers, and businesses. Delays on the Mon Line relating to landslides are projected to cause almost 4.3 million hours of closures over the next 30 years. Service-sensitive freight on this line and the additional capacity through southwest Pennsylvania anticipated in the future will need to be accommodated.

Norfolk Southern's second mainline through Pittsburgh is the Pittsburgh and Fort Wayne Lines, which has double track throughout for more efficient operations. However, the current vertical clearance on this line is inadequate for double-stack trains in several locations, and consequently the line constrains the capability to accommodate the projected increases in freight tons, and the anticipated increase in intermodal capacity, expected to be moving on the nation's transportation network. These limitations result in freight rail congestion and lead to less efficient intermodal transportation. An increase in intermodal traffic in order to keep trucks off highways needs to be accommodated for this major east-west artery. Under the current circumstances, adding more traffic to the Mon Line route to accommodate the forecasted increases in intermodal and other freight over the next many years would result in additional delays to train schedules and worsened congestion. In addition, Norfolk Southern's dependence on the capacity- and geography-constrained Mon Line through Pittsburgh for its double-stack intermodal traffic, most of which has interstate commerce related time sensitivities, affects its ability to deliver quality service to customers and, ultimately, to compete with trucks. The structural risks adjacent to the current Mon Line route pose a threat to its long-term vitality, especially for this service-sensitive traffic. Considering that intermodal traffic through this part of Pennsylvania is expected to substantially increase in the coming years, it is crucial that investment be made in infrastructure improvement on the Pittsburgh and Fort Wayne Lines in the near-term for operational safety and reliability.

D. Public Safety:

Public safety is the primary operational focus of Norfolk Southern, PennDOT, the City of Pittsburgh, Allegheny County, and Amtrak. The safety of citizens, employees, and operations are central to the goals of the Pittsburgh Vertical Clearance Projects. Additional rail capacity is beneficial to the safety of the motoring public by removing long-haul trucks from the highways of multiple states.

The Pittsburgh and Fort Wayne Lines (in the project area) have only three at-grade crossings, of which just one is a public at-grade crossing. Adding freight to the Pittsburgh and Fort Wayne Lines presents less risk of automobile/rail conflict for high-volume freight transportation. While at-grade crossing accidents have been greatly reduced through public education initiatives nationwide, projects like the Pittsburgh Vertical Clearance Projects boost these efforts by routing trains on heavily gated lines with pedestrian and motor vehicle crossing options.

E. Facility Deficiencies:

Structurally deficient structures become less effective and more expensive to maintain or repair as their conditions worsen. Facility deficiencies must be addressed for this key component of the rail network in order to help to minimize future maintenance and address existing structural deficiencies and traffic demands (e.g., rail, vehicular, pedestrian and bicycle). The W. North Avenue Bridge, at the intersection of W. North Avenue and Brighton Road in Pittsburgh, is in poor condition. The current poor condition of the W. North Avenue Bridge has led to increased maintenance actions, with additional substantial maintenance necessary if the structure remains active and in service. These maintenance activities eventually will require more frequent interruptions on the Pittsburgh and Fort Wayne Lines to allow for more extensive maintenance repairs, thus causing significant disruption to interstate commerce on the busiest corridor between the Midwest and the East Coast. If the structural conditions are not addressed, the poor condition of this bridge may pose a threat to public transportation connectivity. In accordance with maintenance obligations, modification or replacement of this bridge will ensure the continued safe and efficient transportation of goods by rail. The condition of this bridge would need to be addressed to ensure the continued safe and efficient transportation of goods by rail in accordance with maintenance obligations to address facility deficiencies.

1.3 Methodology for Determining the Areas of Potential Effects

According to 36 C.F.R. § 800.16(d), the area of potential effects (APE) 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. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" [36 C.F.R. § 800.16; Protection of Historic Properties; Final Rule, 65 Fed. Reg. 77,698 (Tuesday, December 12, 2000/Rules and Regulations)]. Because the projects involve five separate project locations, historians delineated five APEs, which were described and justified in the report entitled: *Norfolk Southern Pittsburgh Vertical Clearance Projects PA SHPO Project Review Form and Determination of Area of Potential Effects and Identification of Previously Recorded Historic Resources* (Michael Baker International, Inc. 2018).

In general, the APE for each project location first took into consideration the constraints within the railroad corridor at those locations. Corridor constraints include buried utilities, retaining walls, and depressed or elevated sections of track. Where track lowering is possible based on the absence of corridor constraints, that alternative was used as the basis of determining the limits of the APE, as track lowering was identified as the least-harm alternative to surrounding historic properties, if present. Where corridor constraints are present that could limit or prevent track lowering at a given location, the APE was based on bridge raising to achieve full vertical clearance per PUC requirements at that location as a worst-case scenario.

The Pennsylvania State Historic Preservation Office (PA SHPO) concurred with the projects' APEs in a letter dated June 5, 2018. The letter is provided in Appendix A, Agency Coordination.

1.4 Methodology for Assessment of Effects

Since historic properties exist within the project APE, it is necessary to assess potential project effects on those properties. Potential project effects were assessed based upon the guidelines specified in the Section 106 Regulations (amended August 5, 2004), as published in the Federal Register and on the ACHP's website.

1.4.1 Methodology

Definition of Effect

According to 36 C.F.R. § 800.16(i), an Effect is defined as an alteration to the characteristics of a historic property that qualify it for inclusion in, or eligibility for, the NRHP. The two possible results of identification and evaluation are as follows:

No Historic Properties Affected

If the Agency Official finds that either there are no historic properties present or there are historic properties present but the undertaking would have no effect upon them as defined in 36 CFR 800.16(i), the Agency Official shall provide documentation of this finding, as set forth in 36 CFR 800.11(d), to the State Historic Preservation Office (SHPO). The Agency Official shall notify all consulting parties and make the documentation available for public inspection prior to approving the undertaking. If the SHPO does not object within 30 days of receipt of an adequately documented finding, the Agency Official's responsibilities under Section 106 are fulfilled.

Historic Properties Affected

If the Agency Official finds that there are historic properties that may be affected by the undertaking, the Agency Official shall notify all consulting parties and invite their views on the effects and assess adverse effects, if any, in accordance with

36 CFR 800.5. If the SHPO objects within 30 days of receipt of an adequately documented finding, the Agency Official shall consult to resolve the disagreement in accordance with 36 C.F.R. § 800.5(c).

Criteria of Adverse Effect

An adverse effect is found when an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for inclusion in the NRHP. Adverse effects may include reasonably foreseeable impacts that could be caused by the undertaking and that may be cumulative, may occur later in time, or may occur farther removed in distance. As per 36 C.F.R. § 800.5(a)(2), examples of adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; and

(vi) Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Results of Assessment of Adverse Effect

No Adverse Effect

The Agency Official shall maintain a record of the finding and provide information on the finding to the public on request, consistent with the confidentiality provisions of 36 CFR 800.11(c). Implementation of the undertaking in accordance with the finding, as documented, fulfills the Agency Official's responsibilities under Section 106 and 36 CFR 800.11. If the Agency Official will not conduct the undertaking as proposed in the finding, the Agency Official shall reopen consultation under Section 800.5(a).

Adverse Effect

If an adverse effect is found, the Agency Official shall consult further to resolve the adverse effect pursuant to 36 C.F.R. § 800.6, which describes the resolution of adverse effect. The procedures for resolution include continuing consultation with the agency and the SHPO, resolving Adverse Effects, and preparing a memorandum of agreement (MOA).

1.5 Assessment of Corridor-Wide Effects for Emissions, Noise, and Vibration

Because project effects related to changes in emissions, noise, and vibration are similar for all project locations along each line, potential effects are discussed in the following sections on a corridor-wide basis rather than in the individual chapters for each of the five project locations.

1.5.1 Air Quality

Pittsburgh Line

The Pittsburgh Line includes the Amtrak Station Project in Pittsburgh. Norfolk Southern conducted a corridor-wide air quality analysis to evaluate secondary or indirect effects related to emissions[4]. Air quality is directly tied to the number of locomotives per day utilizing the Pittsburgh Line, and the air quality analysis assumed that each freight or passenger train consists of two locomotives. In 2019, there were 22 trains per day on the Pittsburgh Line. Because the Mon Line is currently at capacity, any future increase in rail traffic through Pittsburgh under the No Build Alternative would need to be accommodated by single-stack trains on the Pittsburgh Line. Under the Preferred Build Alternative, double-stack trains with greater freight capacity would operate on the Pittsburgh Line, resulting in fewer total trains per day. Therefore, predicted train numbers for the design year (2045) are slightly higher under the No Build Alternative (50 trains per day) than under the Preferred Build Alternative (48 trains per day). In 2019, total emissions along the segment of the Pittsburgh Line in the project corridor were 26.2 tons per year (T/yr). Under the No Build Alternative, emissions are predicted to be 44.4 T/yr in 2045, while under the Preferred Build Alternative they would be 42.6 T/yr in 2045. This study shows that total emissions will increase between 2019 and design year 2045, but this increase is not due to the Pittsburgh Vertical Clearance Projects. Rather, the increase is correlated with a general increase in rail traffic across the region and nation. Implementation of the project under the Preferred Build Alternative would slightly decrease emissions along the Pittsburgh Line through the use of more efficient double-stack trains.

Fort Wayne Line

In 2019, there were 36 trains per day on the Fort Wayne Line. Because the Mon Line is currently at capacity, any future increase in rail traffic through Pittsburgh under the No Build Alternative would need to be accommodated by single-stack trains on the Fort Wayne Line. Under the Preferred Build Alternative, double-stack trains with greater freight capacity would operate on the Fort Wayne Line, resulting in fewer total trains per day. Therefore, predicted train numbers for the design year (2045) are slightly higher under the No Build Alternative (62 trains per day) than under the Preferred Build Alternative (58 trains per day). In 2019, total emissions along the segment of the Pittsburgh Line in the project corridor were 14.1 T/yr. Under the No Build Alternative, emissions are predicted to be 18.1 T/yr in 2045, while under the Preferred Build Alternative they would be 15.5 T/yr in 2045. This analysis shows that total emissions will increase between 2019 and design year 2045, but this increase is not due to the Pittsburgh Vertical Clearance Projects. Rather, the increase is correlated with a general increase in rail traffic across the region and nation. Implementation of the undertaking under the Preferred Build Alternative would slightly decrease emissions along the Fort Wayne Line through the use of more efficient double-stack trains.

Pittsburgh Region

Total emissions among all three Norfolk Southern lines through Pittsburgh (the Pittsburgh, Fort Wayne, and Mon Lines) totaled 89.4 T/yr in 2019. Under the No Build Alternative, total emissions are predicted to be 98.9 T/yr in design year 2045. Under the Preferred Build Alternative, total emissions are predicted to be 71.0 T/yr in design year 2045. Thus,

4 The complete text of the air quality memorandum can be found in Appendix B.

when considered holistically for the Pittsburgh region, implementation of the project would reduce emissions below both current levels and predicted levels in year 2045 under the Preferred Build Alternative.

1.5.2 Noise

Like emissions, noise levels are correlated with the number of trains operating along the Pittsburgh and Fort Wayne Lines. Direct effects for noise for all five project locations would be limited to temporary construction-related effects, and these are not anticipated to be adverse. Norfolk Southern conducted corridor-wide noise and vibration analyses to evaluate secondary or indirect effects related to noise[5]. This study utilized Surface Transportation Board (STB) noise assessment guidelines. According to these guidelines, an adverse effect occurs when *both* of the following conditions occur: 1) increases of 3 decibels (dB) or greater occur at noise-sensitive receptors as a result of the project, and 2) sound levels increase to levels of 65 dBA L_{dn} or greater as a result of the project[6]. A change in 3dB is generally the minimum perceptible change in sound outside the laboratory. Under both the No Build and Preferred Build Alternatives, future sound levels along the Pittsburgh and Fort Wayne Lines would increase by an average of about 1db, with a slightly higher increase occurring under the No Build Alternative due to slightly greater numbers of single-stack trains. Noise modeling predicts that 320 sites would meet or exceed the STB's assessment guidelines (i.e. increase above 3dB or change to a level above 65dB) under the No Build Alternative while 262 sites would be impacted under the Preferred Build Alternative.[7] In addition, all impacted land uses under the Preferred Build Alternative would also be impacted under the No Build Alternative. Therefore, implementation of the Pittsburgh Vertical Clearance Projects would result in a reduction of 58 noise sensitive land uses when compared with the No Build Alternative. This is because future noise levels are correlated with future freight demand (traffic), which is unrelated to the implementation of the Pittsburgh Vertical Clearance Projects. Project implementation would result in no adverse direct or indirect effects related to noise.

1.5.3 Vibration

Vibration from train trips is event based and is not additive like that of noise. Locomotives are the heaviest component of a train consist (the locomotives and cars in a train) and are the most intense source of vibration from passing trains. The Pittsburgh Vertical Clearance Projects will have no direct or indirect effect on vibration along the Pittsburgh and Fort Wayne Lines because they will not change the intensity of the vibration source. Minor changes in vertical alignment of tracks (track lowering) at select project locations would provide negligible reductions in vibration that would not be appreciably different from the No Build scenario[8]. Therefore, no adverse effects from vibration are predicted to occur as a result of the implementation of the Pittsburgh Vertical Clearance Projects.

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[5] The complete text of the noise and vibration analysis can be found in Appendix C.

[6] Because human sensitivity to sound varies with frequency, the A-weighting system (expressed as dBA) is used when describing environmental noise in order to provide a single descriptor that best correlates with human subjective experience. The L_{dn} is the average equivalent sound level over a 24-hour period, with a 10dB penalty added for noise during the nighttime hours of 22:00 to 07:00.

[7] The noise analysis adopted the Federal Transit Administration's (FTA's) noise sensitive land use categories, which require analysis at Category 1, 2, and 3 land use sites. Category 1 includes tracts of land where quiet is an essential element of its intended purpose; no Category 1 land uses were identified in the Pittsburgh Vertical Clearance Projects study area. Category 2 uses include residential land use and buildings where people normally sleep, such as hotels and hospitals. Category 3 uses include institutional land uses with primarily daytime and evening use, such as schools, libraries, theaters, churches, as well as places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities.

[8] The complete text of the noise and vibration analysis can be found in Appendix C.

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2.0 Summary of Public Involvement and Consulting Party Coordination

Norfolk Southern and PennDOT held a public open house at the Children's Museum of Pittsburgh between the hours of 5:00 PM and 8:00 PM on June 26, 2018. A Public Officials' preview of the meeting materials was held from 5:00 PM to 5:30 PM and the doors were open for public participation from 6:00 pm to 8:00 PM. The format followed PennDOT Publication 295 guidance and was approved by PennDOT and the City of Pittsburgh. The format of the meeting was an open house plans display. It is estimated that 300-400 people attended the meeting. Over 90 comment forms were received at the meeting, with additional comments received subsequently via USPS or email. (See Appendix D—Documentation of Public Involvement).

On August 16, 2019, Norfolk Southern and PennDOT invited organizations and individuals to participate as consulting parties and to participate in the Section 106 process, as per 36 C.F.R. §800.2, "Participants in the Section 106 process." A list of consulting parties for this project is attached in Appendix E—Documentation of Consulting Parties Involvement.

On November 5, 2019, the project team emailed consulting parties regarding the scheduling of the first consulting parties meeting to be held on November 20, 2019, at 7:00 PM, and that the *Identification of Historic Properties Report* (Michael Baker International, Inc. 2019) and the draft *Historic Bridge Rehabilitation Analysis (HBRA) Report* for the W. North Avenue Bridge were uploaded to the Norfolk Southern project website for review prior to the meeting. The November 20 meeting was held at Calvary United Methodist Church, 971 Beech Avenue, Pittsburgh, Pennsylvania. Topics discussed at the meeting included a general description of the project, the role of consulting parties, the projects' area of potential effects (APE) for historic properties, the results of a historic resources survey and determination of NRHP eligibility study, and a preliminary review of a draft HBRA Report prepared for the W. North Avenue Bridge.

On November 27, 2019, the project team emailed consulting parties as a reminder to submit comments on the *Identification of Historic Properties Report* and the draft HBRA Report for the W. North Avenue Bridge by December 11, 2019. In response to consulting parties' requests for additional project information during the November 20 meeting, attachments to the email included meeting minutes, a list of consulting parties to date, and a copy of the November 20 PowerPoint presentation. An updated version of the HBRA report was also uploaded to the Norfolk Southern project website.

In a letter dated December 10, 2019, Cheryl Nagle of the PA SHPO provided comments on the draft HBRA report (See Appendix A—Agency Coordination).

On December 2, 2019, RP3 emailed its comments on the Pittsburgh Vertical Clearance Projects.

On February 19, 2020, the project team emailed consulting parties regarding the posting of RP3's comments and project team's responses to the Norfolk Southern project website. On March 10, the revised HBRA Report for the W. North Avenue Bridge (Michael Baker International, Inc. 2020) was posted to the Norfolk Southern project website.

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3.0 Washington Avenue Bridge Project

3.1 Results of Identification of Historic Properties

3.1.1 Area of Potential Effects

APE Justification
Consistent with the methodology for establishing project APEs presented in Chapter 1 for projects lacking corridor constraints, the Washington Avenue APE was based on the track lowering alternative. The APE takes into account the nature of the undertaking and its potential for direct and indirect effects (including cumulative effects) on historic properties.

At the northern end of the APE, the railroad parcel includes a vacant lot owned by Norfolk Southern that would be used as a construction staging area. This area was included due to its potential for effects, though impacts to aboveground resources would be temporary. Other visual effects would be insignificant or absent because the existing track area would be subject to minor lowering and the character of the existing track infrastructure would be maintained. The APE is illustrated in Figure 3-1.

APE Description
The APE lies within the Borough of Swissvale. The APE extends approximately 905′ to the north and approximately 4,150′ to the south of the Washington Avenue Bridge (35 feet wide), and encompasses the entirety of the railroad right-of-way width, including a vacant lot at the southwest corner of the intersection of Church Street and S. Braddock Avenue.[9] The APE contains 6.10 acres.

3.1.2 Historic Properties Identified within the APE

An Identification of Historic Properties Report was submitted to the PA SHPO in September 2019 (Michael Baker International, Inc. 2019), which identified one historic property in the APE.

Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

Description of Historic Property
The Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) was previously determined eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district for its "state-wide significance in transportation, economy and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958.

The portion of railroad corridor surveyed for this project includes approximately 5,090 linear feet of right-of-way between the railroad's intersections with Church Street to the north and S. Braddock Avenue/Kenmawr Avenue to the south. The track milepost at Washington Street is PT-344.91.

[9] The approximate measurements of the Washington Avenue APE were ordinally reported as extending 865′ north of the Washington Avenue Bridge. Upon closer inspection, that measurement has been revised to 905.′ (Michael Baker International, Inc., *Norfolk Southern Pittsburgh Vertical Clearance Projects PA SHPO Project Review Form and Determination of Area of Potential Effects and Identification of Previously Recorded Historic Resources*, submitted to Norfolk Southern Railway Corporation, 2018).

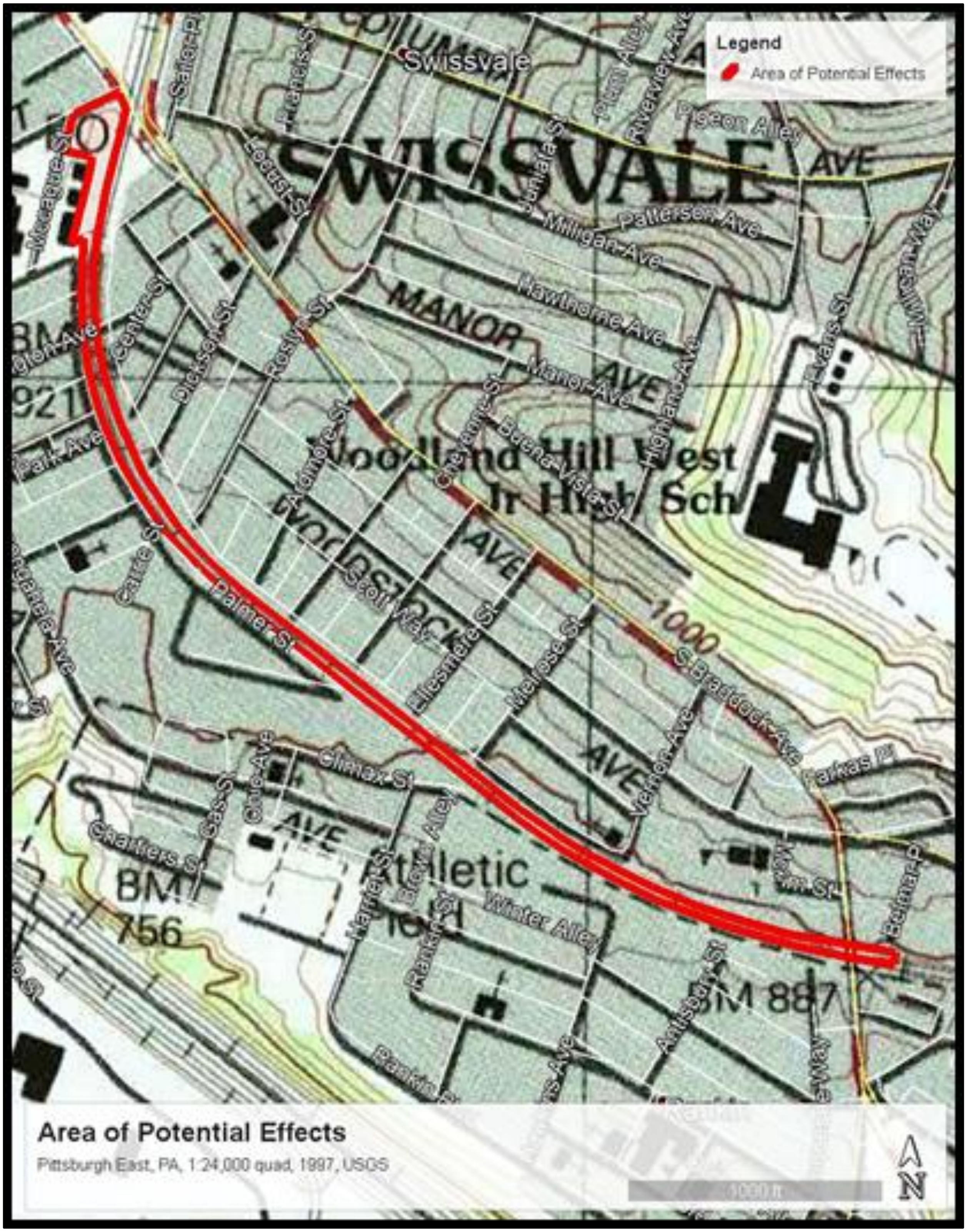

Figure 3-1: Washington Avenue Bridge Project APE shown on topographic mapping (USGS 1997).

The portion of the corridor included in the historic resources survey is approximately 50′ wide and is double tracked. Of the five historic-age component features of the railroad corridor historic district identified within the APE, one feature is not eligible either individually or as a contributing element of the railroad corridor historic district according to a previous SHPO opinion: the bridge carrying S. Braddock/Kenmawr Avenue over the railroad corridor [Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh): S. Braddock/Kenmawr Avenue Bridge (Swissvale), Key No. 129934)]. The remaining three features have been found to be NRHP eligible as contributing elements, being functional and/or decorative components that were constructed during the corridor's period of significance and that retain historic integrity. These include: the bridge carrying Washington Avenue over the railroad corridor [Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh): Washington Avenue Bridge (Swissvale), Key No. 129935], which was determined not individually eligible for the NRHP by the PA SHPO on March 5, 2007, but was determined eligible as a contributing element of the railroad corridor historic district (Lichtenstein & Associates 1997) (Figure 3-2); the stone retaining walls along the Palmer Street approaches to Washington Avenue; and the decorative wrought iron railings atop the Palmer Street retaining walls (Figure 3-3, Figure 3-4, and Figure 3-5).

Significance of Historic Property

The Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District was previously determined eligible for listing in the NRHP under Criteria A and C for its "state-wide significance in transportation, economy, and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958.

Boundary of Historic Property

The historic property boundary includes the entirety of the surveyed segment of railroad as described above (Figure 3-6). The 5,090-foot segment of right-of-way encompasses approximately six acres.

3.2 Efforts to Avoid or Minimize Adverse Effects

An Alternatives Analysis Report was prepared for the Washington Avenue Bridge Project (Michael Baker International, Inc. 2020) that identified four alternatives and a design modification option, as follows:

- Alternative 1 – No Build Alternative;
- Alternative 2 – Repair and raise bridge to achieve 22′ vertical clearance;
- Alternative 3 – Repair substructure and lower tracks to achieve 22′ vertical clearance;
- Alternative 4 – Combination repair and raise bridge and lower tracks to achieve 22′ vertical clearance; and
- Design Modification – Lower tracks to achieve 21′-9″ vertical clearance.

In an effort to avoid and minimize impacts to historic properties, Alternative 3 with the design modification of lowering the tracks to 21′-9″ as opposed to 22′ was selected as the Preferred Alternative based in part upon the assessment of potential effects on historic properties. That alternative and design modification would require only minor modifications to the substructure of the Washington Avenue Bridge, a contributing element of the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District. To aid in the assessment of visual effects of the Preferred Alternative, plan and profile views (Figure 3-7 and Figure 3-8) and a comparison of the existing conditions and renderings of the completed track lowering (Figure 3-9, Figure 3-10, Figure 3-11, and Figure 3-12) are provided on the following pages.

Figure 3-2: Washington Avenue Bridge showing southeast profile, southwest stone abutment, and steel center bent, facing northwest

Figure 3-3: Washington Avenue Bridge showing northwest profile, southwest stone abutment and curvilinear retaining wall of the Palmer Street approach ramps, and wrought-iron fencing atop retaining wall, facing south.

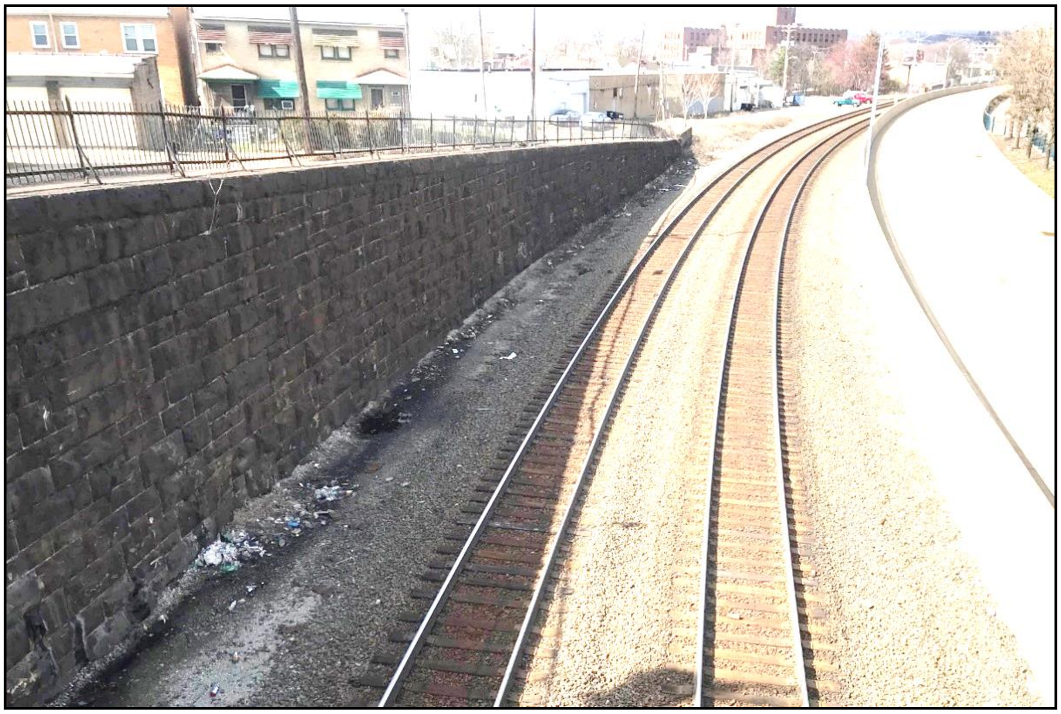

Figure 3-4: Detail of stone retaining wall and wrought-iron fencing of the Palmer Street north approach ramp from Washington Avenue Bridge, facing north.

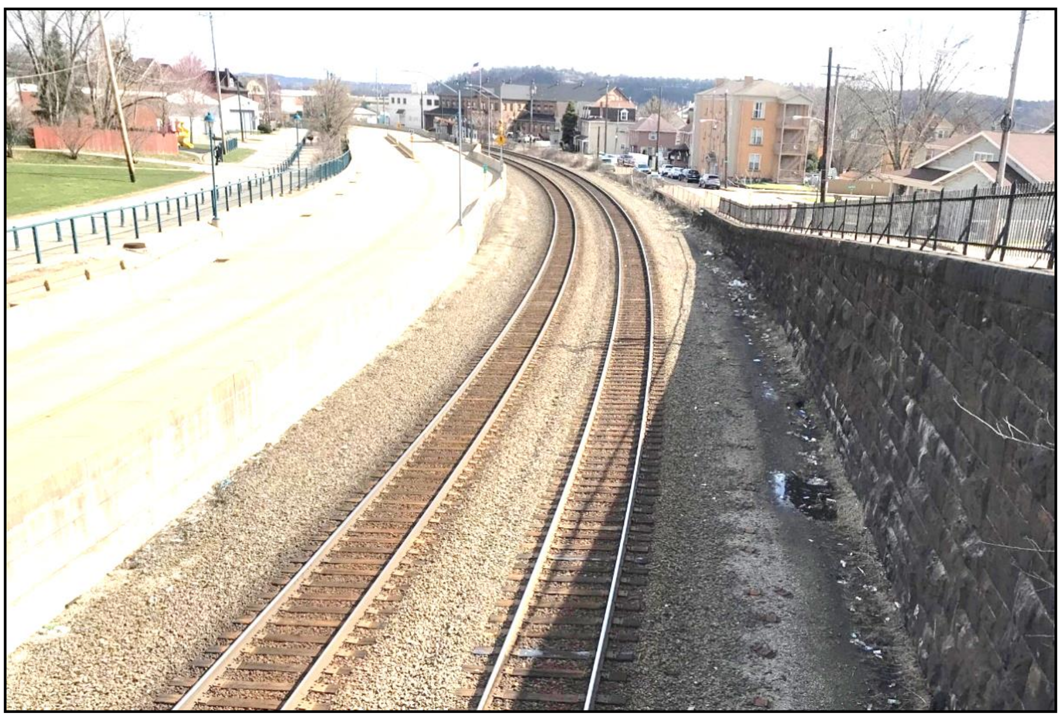

Figure 3-5: Detail of stone retaining wall and wrought-iron fencing of the Palmer Street south approach ramp, facing southeast.

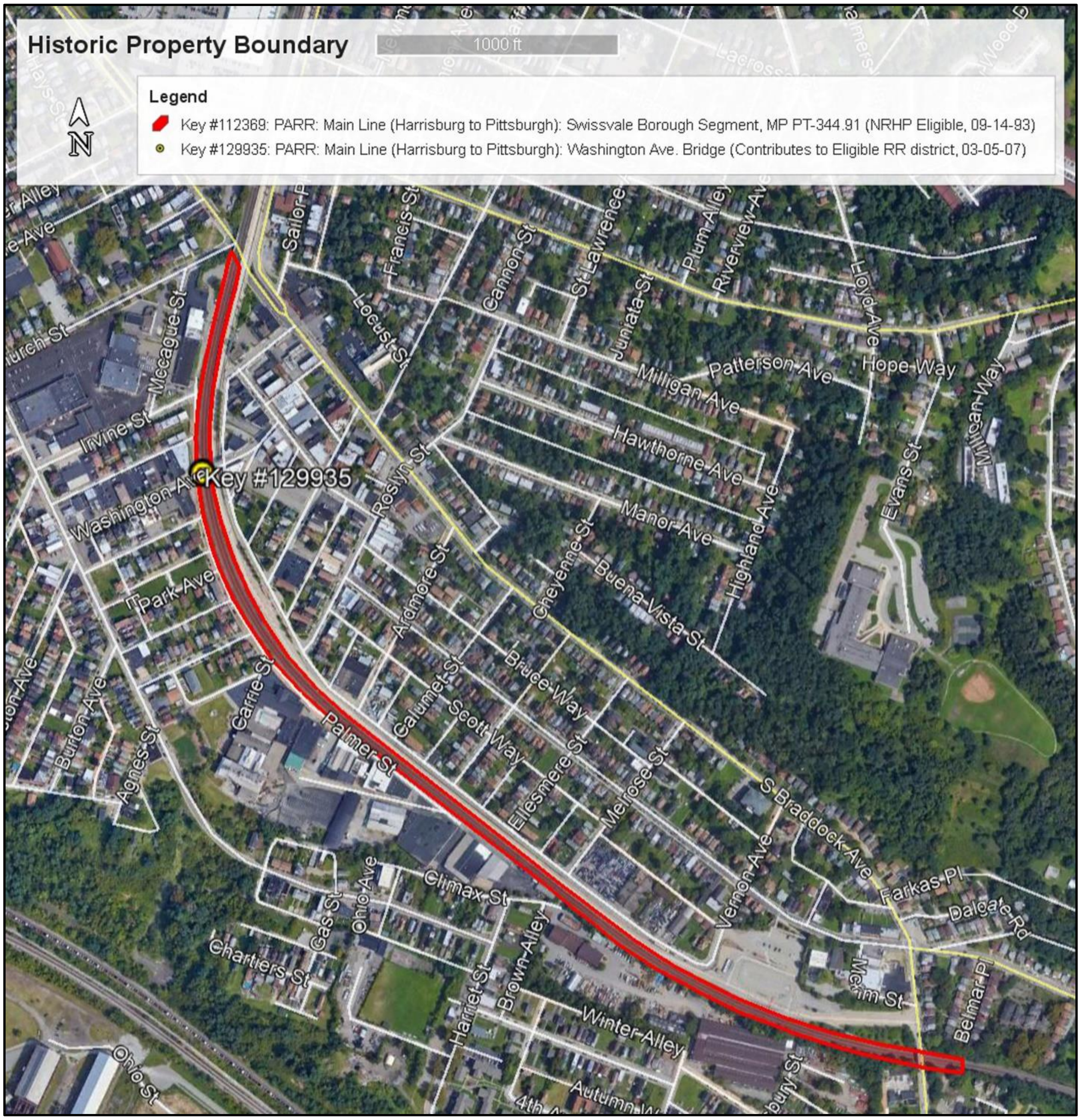

Figure 3-6: Historic property boundary for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District and the location of the contributing Washington Avenue Bridge.

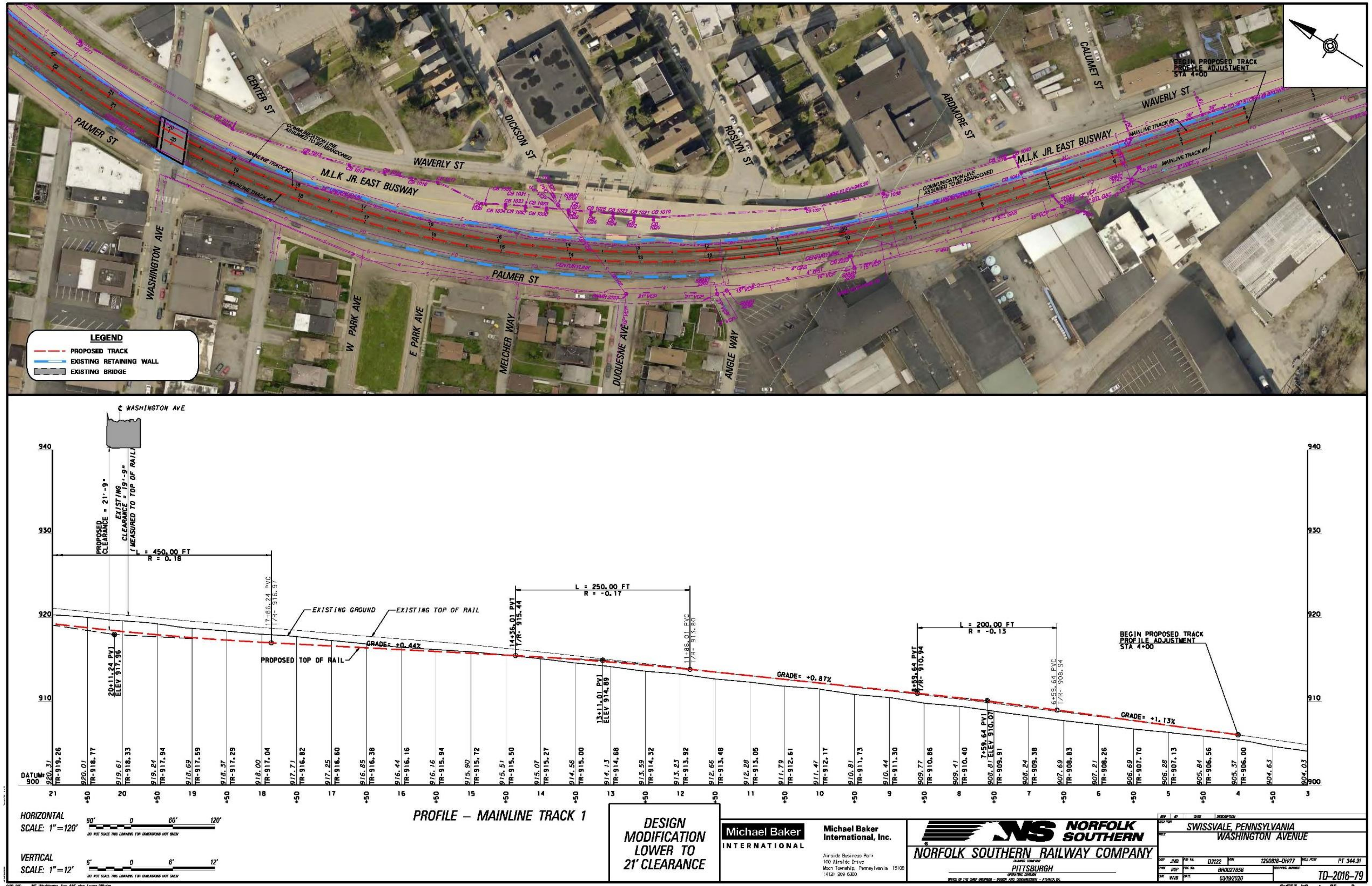

Figure 3-7: Plan and profile views of the track lowering under the Washington Avenue Bridge.

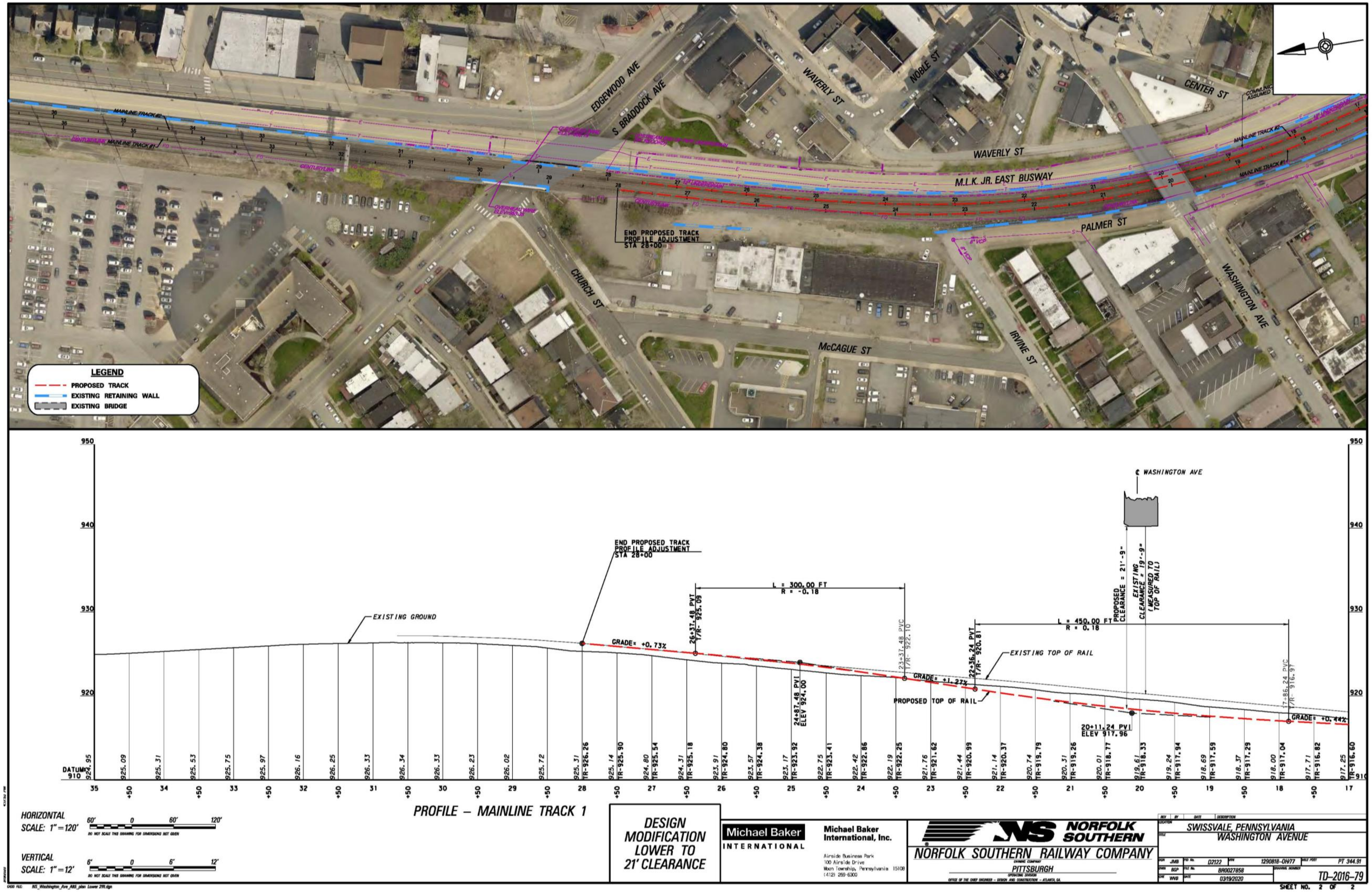

Figure 3-8: Plan and profile views of the track lowering under the Washington Avenue Bridge.

Figure 3-9: Photo of existing tracks under the Washington Avenue Bridge, facing south.

Figure 3-10: Rendering of lowered tracks under the Washington Avenue Bridge, facing south.

Figure 3-11: Photo of existing tracks under the Washington Avenue Bridge, facing north.

Figure 3-12: Rendering of lowered tracks under the Washington Avenue Bridge, facing north.

3.3 Application of Definition of Effect and Criteria of Adverse Effect

The following section describes how the proposed Washington Avenue Bridge Project would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 et seq.) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to assessment of effects on historic and cultural resources.

Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The proposed Preferred Alternative for the Washington Avenue Bridge Project would lower the railroad tracks to achieve 21'-9" vertical clearance. This alternative would lower the railroad tracks approximately 1'-11" (note: vertical clearance at mainline track 1 (west) would be increased by 1'-11" for 21'-9" clearance, and vertical clearance at mainline track 2 (east) would be increased by 1'-8" to 21'-10"). Work along the railroad corridor would extend approximately 1,600' to the south of the bridge and approximately 800' to the north of the bridge in order to lower the railroad tracks to the required elevation based on the necessary track design requirements. The work limits to the north of the bridge would end before the bridge carrying the tracks over S. Braddock Avenue. Required substructure repairs to the Washington Avenue Bridge would include minor spall repairs and masonry repointing. No work would be required along Washington Avenue, Palmer Street, Waverly Street, or the adjacent busway. The potential to affect Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District is summarized in Table 3-1

Table 3-1: Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

DEFINITION OF EFFECT	EVALUATION (Preferred Alternative)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Preferred Alternative would affect the historic property through spall repairs and masonry repointing of the southwest abutment of the character-defining Washington Avenue Bridge and through the lowering of approximately 2400' of track within the rail corridor.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh)

As the proposed undertaking would affect the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) as indicated above, Table 3-2 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 3-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would result in minimal track lowering for approximately 2,400'. This activity would not result in a substantial visual change in the relationship between the track bed and the surrounding landscape or built environment. The removal of up to 1'11"of ballast, which has built up over time, will likely not expose the foundations of the southwest abutment of the Washington Avenue Bridge or of the adjacent Palmer Street retaining walls; the appearance of these elements will be similar to that which is existing.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the railroad corridor historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use; the project would allow for the continued use of the historic property. The project would change physical features of the property, but those changes (the removal of approximately 1'-11" of ballast[10]) would be insignificant.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the railroad corridor historic district's significant historic

[10] Ballast replacement is a routine maintenance item required for Class I Freight Railroads.

Table 3-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

	features. The visual effects of track lowering by removing approximately 1'-11" of ballast would be negligible. As detailed in Chapter 1.4.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Washington Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District under the **Preferred Alternative**.	

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4.0 Amtrak Station Project

4.1 Results of Identification of Historic Properties

4.1.1 Area of Potential Effects

APE Justification

Consistent with methodology for establishing project APEs presented in Chapter 1, the Amtrak Station APE was based on the adjusted trainshed roof beams to achieve 21'-0" vertical clearance alternative. The APE takes into account the nature of the undertaking and its potential for direct and indirect effects (including cumulative effects) on historic properties.

Because the proposed work would take place within the boundary of a NRHP-listed historic property, the APE was drawn to encompass the boundaries of the Pennsylvania Railroad Station (Pittsburgh) and the separately listed Rotunda of the Pennsylvania Railroad Station. The NRHP boundary shown on PA-SHARE encompasses the station, rotunda, and the trainshed and switchyard area. The APE is illustrated in Figure 4-1.

APE Description

The APE begins at the northeast corner of the M.L.K., Jr., East Busway, and Liberty Avenue. The APE extends approximately 2,080' along the southeast side of Liberty Avenue to a point just past the northeast end of the Pennsylvania Railroad trainshed. The APE then extends southeast approximately 200' across the switchyard to a point along the M.L.K., Jr., East Busway. The APE extends southwest along the busway approximately 1,325' to a point at the southwest end of the trainshed. The APE extends approximately 80' southeast to the corner of the Amtrak station building. The APE follows the curve of the M.L.K., Jr., East Busway along the southeast side of the train station approximately 920' to the point of the beginning. The APE contains 11.9 acres.

4.1.2 Historic Properties Identified within the APE

An *Identification of Historic Properties Report* was submitted to the PA SHPO in September 2019 (Michael Baker International, Inc. 2019), which identified three historic properties: the Pennsylvania Railroad Station (Resource No. 1976RE00296), which was listed in the NRHP on April 22,1976; the Rotunda of the Pennsylvania Railroad Station (Resource No. 1973RE00016), which was listed in the NRHP on April 11, 1973; and the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District (Resource No. 1993RE00391), which was determined eligible for the NRHP on September 14, 1993.

Figure 4-1: Amtrak Station APE shown on topographic mapping (USGS 1997).

Pennsylvania Railroad Station

Description of Historic Property

The Pennsylvania Railroad Station is a rectangular building with 12 stories and a basement. It was designed by noted architect D.H. Burnham and was constructed between 1898 and 1903 (*Pittsburgh Commercial Gazette* 1898:6, 1901:6; Burgess 1949:497). The attached trainshed was designed by the New York architectural firm of McKim, Mead, and White, replacing the original barrel-vaulted, D.H. Burnham & Company-designed trainshed of 1900-03 (Pennsylvania Railroad 1950). The trainshed is a one-story structure with several subterranean features. Construction formally began in 1953 (*Pittsburgh Press* 1953:182) and was completed in 1958. The structure consists of the shed canopy, passenger platforms, a railyard, a subterranean passenger concourse, a subterranean passenger tunnel exiting to Liberty Avenue, and an undergrade bridge at Liberty Avenue, which supports two platforms. Also contained within the site are sundry utility and service tunnels. The trainshed is of steel, concrete, masonry, and glass construction.

Significance of Historic Property

The Pennsylvania Railroad Station (Pittsburgh), also known as Union Station (Figure 4-2), was listed in the NRHP on April 22, 1976, under Criterion A for its association with rail transportation and under Criterion C for its architectural merit as an excellent example of the Beaux Arts architectural style and for its association with architect D.H. Burnham (Schmidlapp 1975). The attached trainshed (Figure 4-4, Figure 4-5, Figure 4-6, and Figure 4-7) was replaced in the 1950s and had not been previously categorized as eligible or contributing, because of its relatively recent age at the time of the 1976 NRHP listing. As part of this study, an HRSF update form was completed to provide additional information regarding the McKim, Mead, and White trainshed appended to the building in 1953-1958. As a result, it was determined that the trainshed is a contributing element of the Pennsylvania Railroad Station and should be included in the property's NRHP boundary, as well as the rotunda (Figure 4-2) and the plaza area leading to Liberty Avenue (Figure 4-3), the undergrade bridge at Liberty Avenue (Figure 4-4), and the full length of the train platform (Figure 4-7). It was also determined that the property's period of significance should be amended to 1898-1958 as the station's significance extends beyond its construction date (McLearen 2019). The boundary encompasses approximately 11.9 acres.

Boundary of Historic Property

The property's NRHP boundary is not indicated in the nomination form, nor is a verbal boundary given. The property boundary shown by PA SHPO in the CRGIS database includes the rotunda and the majority of the extant portions of the trainshed and platforms (about one-quarter of the northeast end of the platforms is excluded); it excludes the plaza and parking areas adjacent to the southwest side of the rotunda. As part of this study and in consultation with the PA SHPO, it was agreed that the NRHP boundary of the property be expanded to include the full extent of the trainshed, plaza area southwest of the rotunda, and the full length of the train platforms (McLearen 2019) (Figure 4-8).

Figure 4-2: Overview, Pennsylvania Station (1900-03) showing station building and contributing rotunda. View from service drive and Martin Luther King, Jr. East Busway, facing north.

Figure 4-3: Pennsylvania Railroad Station showing contributing plaza and rotunda. View from station service drive near Liberty Avenue, facing northeast.

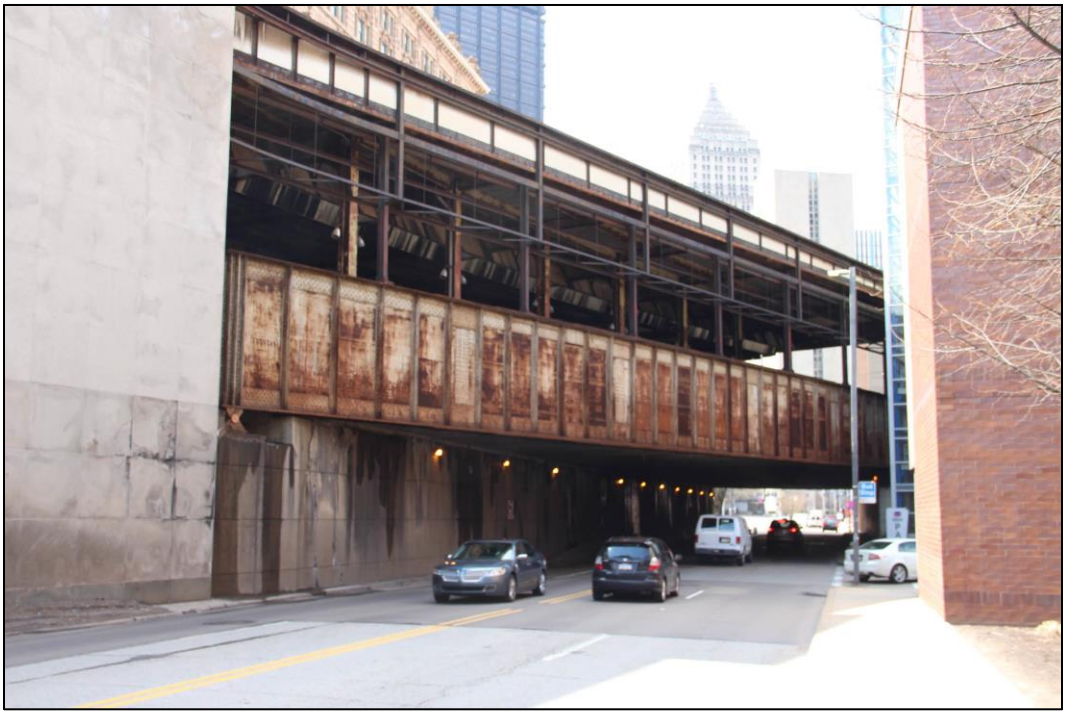

Figure 4-4: Contributing undergrade plate girder bridge at Liberty Avenue in relation to Pennsylvania Station. Section of trainshed (1953-59) built atop bridge. View from Liberty Avenue at the intersection with Twelfth Street, facing southwest.

Figure 4-5: Northwest and northeast façades of contributing trainshed (1953-59) showing northeast limestone-clad pylon with terra cotta PRR insignia. View from Liberty Avenue, facing south.

Figure 4-6: Northeast and southeast façades of contributing trainshed's northeast pavilion. At far right, an umbrella shed covers platform 3. View from Martin Luther King, Jr. East Busway, facing west.

Figure 4-7: View of contributing portion of railyard showing northeast façade of trainshed (1953-59) with umbrella sheds covering Platforms 2 and 3, assistant rail master office, and observation towers (visible in the foreground and background). View from Martin Luther King, Jr. East Busway, facing west.

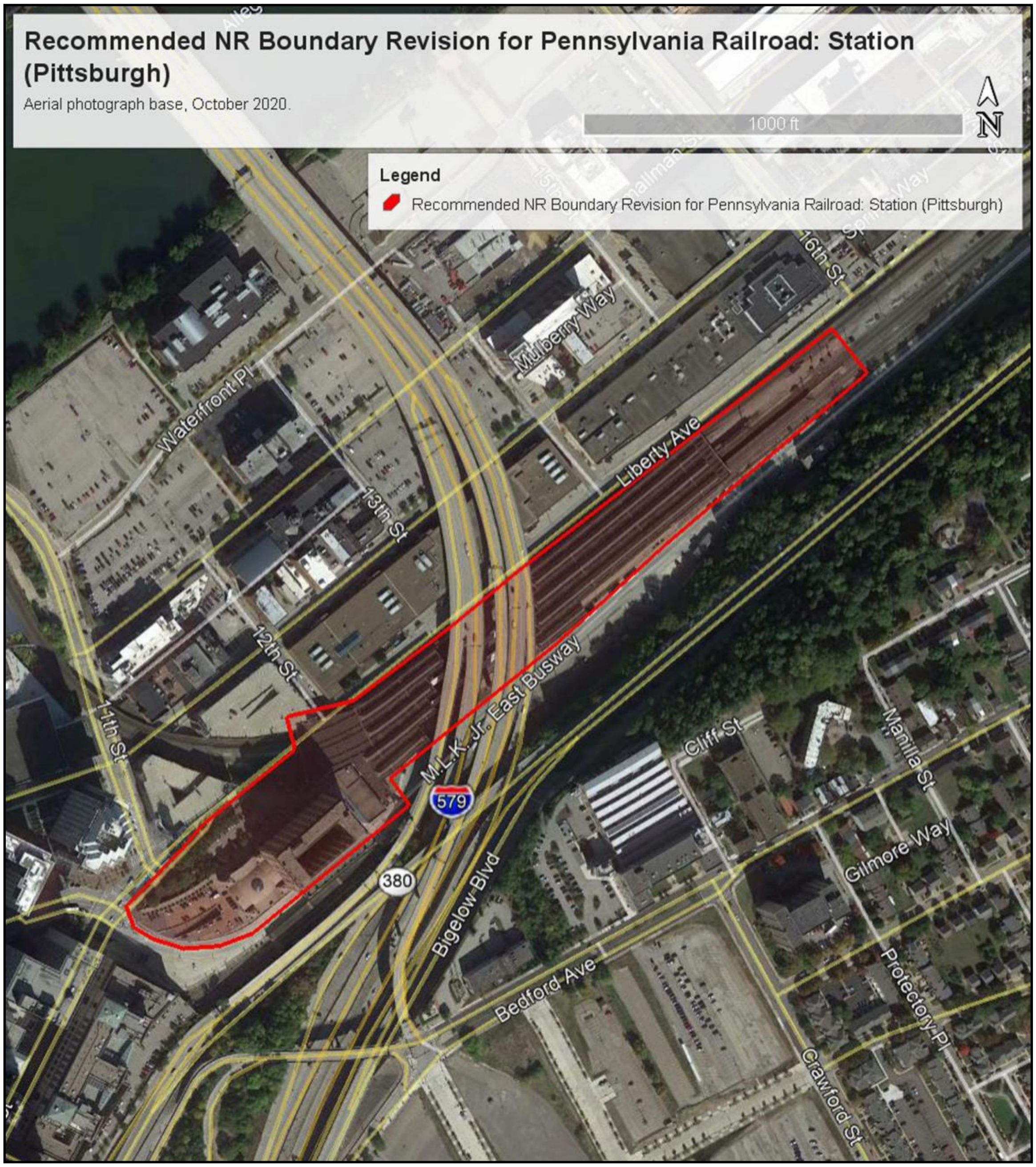

Figure 4-8: Expanded NRHP boundary of the Pennsylvania Railroad Station as shown on an aerial image.

The Rotunda of the Pennsylvania Railroad Station

Description of Historic Property

The rotunda was designed by noted architect D.H. Burnham and was constructed from 1901 to 1902. The rotunda, or cab stand, is constructed in the Beaux Arts style of ornamental brown terra cotta over a steel framework. Four centered arches are anchored by arched corner turrets, which support the low domed roof with a round center skylight or oculus (PHMC 1971).

Significance of Historic Property

The Rotunda of the Pennsylvania Railroad Station (Figure 4-9 and Figure 4-10) was listed in the NRHP on April 11, 1973, under Criterion A for its association with rail transportation and under Criterion C for its architectural merit as an excellent example of the Beaux Arts architectural style (PHMC 1971).

Boundary of Historic Property

The property's NRHP boundary is indicated in the nomination form by a square drawn on a USGS topographic quadrangle map; no verbal boundary is provided. It measures approximately 130' along each side and encompasses approximately 0.39 acre (Figure 4-11). The boundary does not encompass any surrounding features.

Figure 4-9: Pennsylvania Station (1900-03) showing rotunda. View from service drive and adjacent pedestrian walkway, facing northeast.

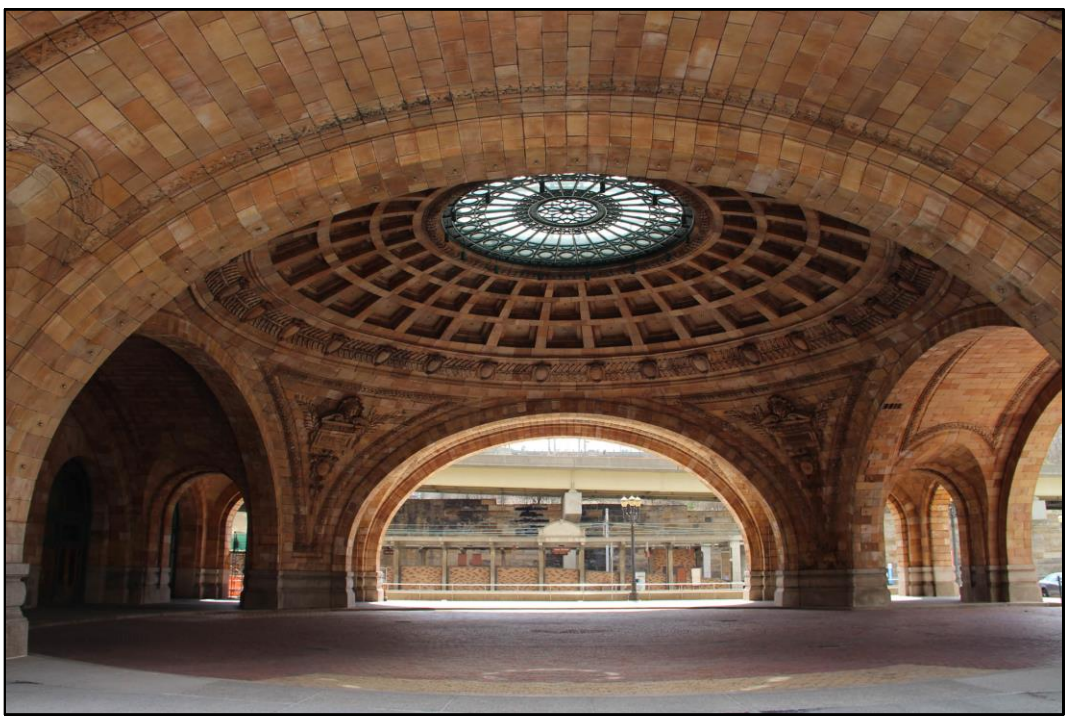

Figure 4-10: Pennsylvania Station showing underside of rotunda dome and oculus (1901-02). View from adjacent pedestrian walkway, facing southeast.

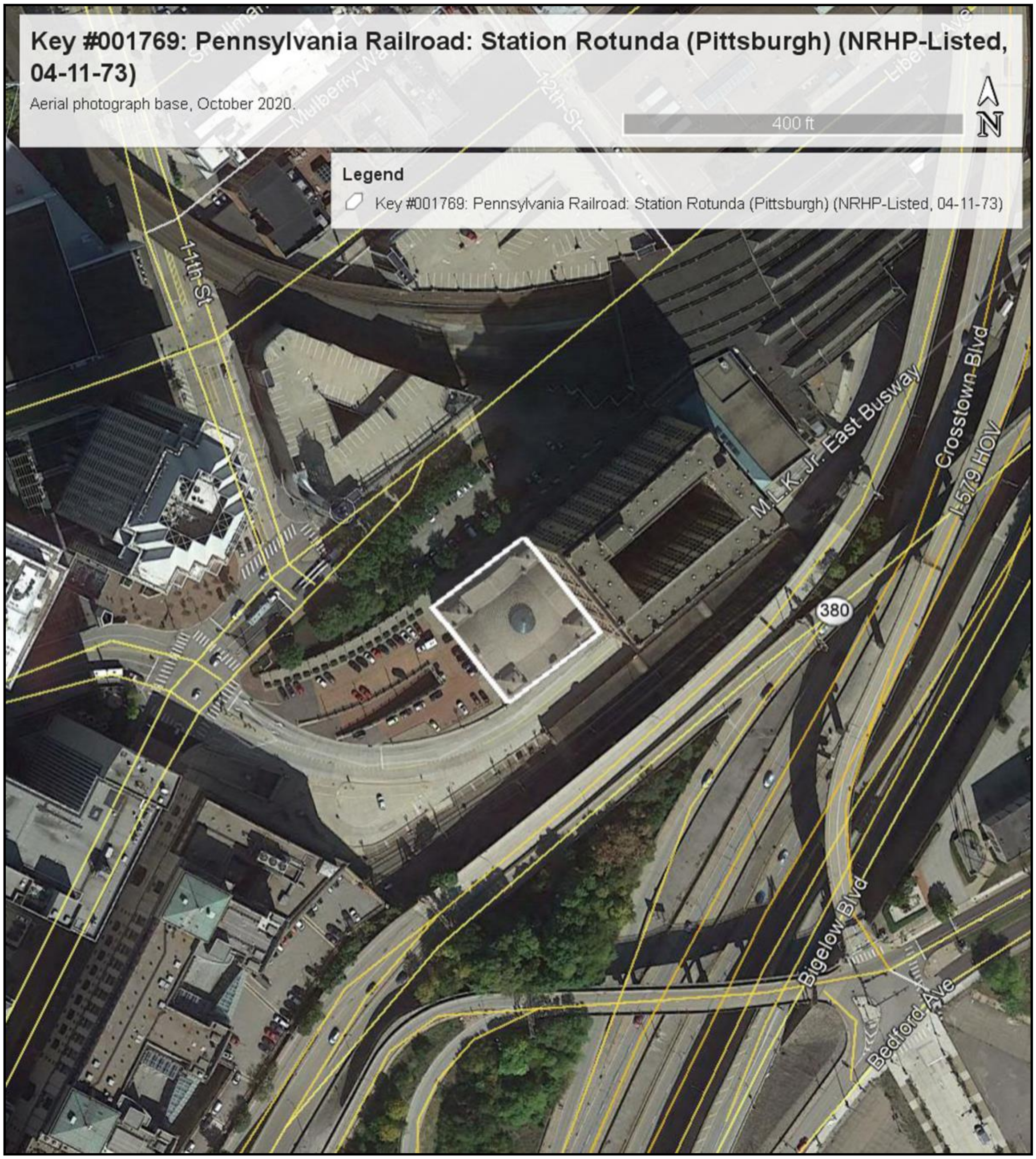

Figure 4-11: NRHP boundary of the Rotunda of the Pennsylvania Railroad Station as shown on an aerial image.

Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

Description of Historic Property

The portion of railroad corridor surveyed for this project area includes approximately 1,800 linear feet of right-of-way at the line's terminus, the Pennsylvania Station in Pittsburgh. The track milepost at the station concourse is PT-353. The surveyed portion of track, including the right-of-way, varies from approximately 150-to-220 feet wide, and contains five tracks (Figure 4-12). Two historic-age features were identified in the survey area: the NRHP-listed 1898-1903 Daniel H. Burnham Pennsylvania Railroad Station (Figure 4-2) and the station's Rotunda (Figure 4-9), which is also individually listed in NRHP.

Significance of Historic Property

The former Pennsylvania Railroad Main Line from Harrisburg to Pittsburgh was previously determined eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district for its "state-wide significance in transportation, economy and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958. As part of this study, an HRSF update form was completed to provide additional information regarding contributing features within the 1,800' surveyed segment of the railroad corridor historic district. The surveyed area contains two contributing elements: the 1898-1903 Pennsylvania Railroad Station and the Rotunda of the Pennsylvania Railroad Station; both properties are individually listed in NRHP. The update to the HRSF for the Pennsylvania Railroad Station, also undertaken as part of this study, resulted in the determination that the 1953-1958 McKim, Mead, and White trainshed is a contributing element of the Pennsylvania Railroad Station and should be included in the property's NRHP boundary, as well as the rotunda, the plaza area leading to Liberty Avenue, and the full length of the train platform, which is, in part, supported by an undergrade bridge at Liberty Avenue (McLearen 2019). All of the Pennsylvania Railroad Station's contributing elements are also recognized as contributing elements of the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District.

Boundary of Historic Property

The historic property includes the entirety of the surveyed segment of railroad within the APE as described above and shown in Figure 4-12. The 1,800-foot segment of right-of-way and the surrounding contributing elements encompasses approximately 11.9 acres.

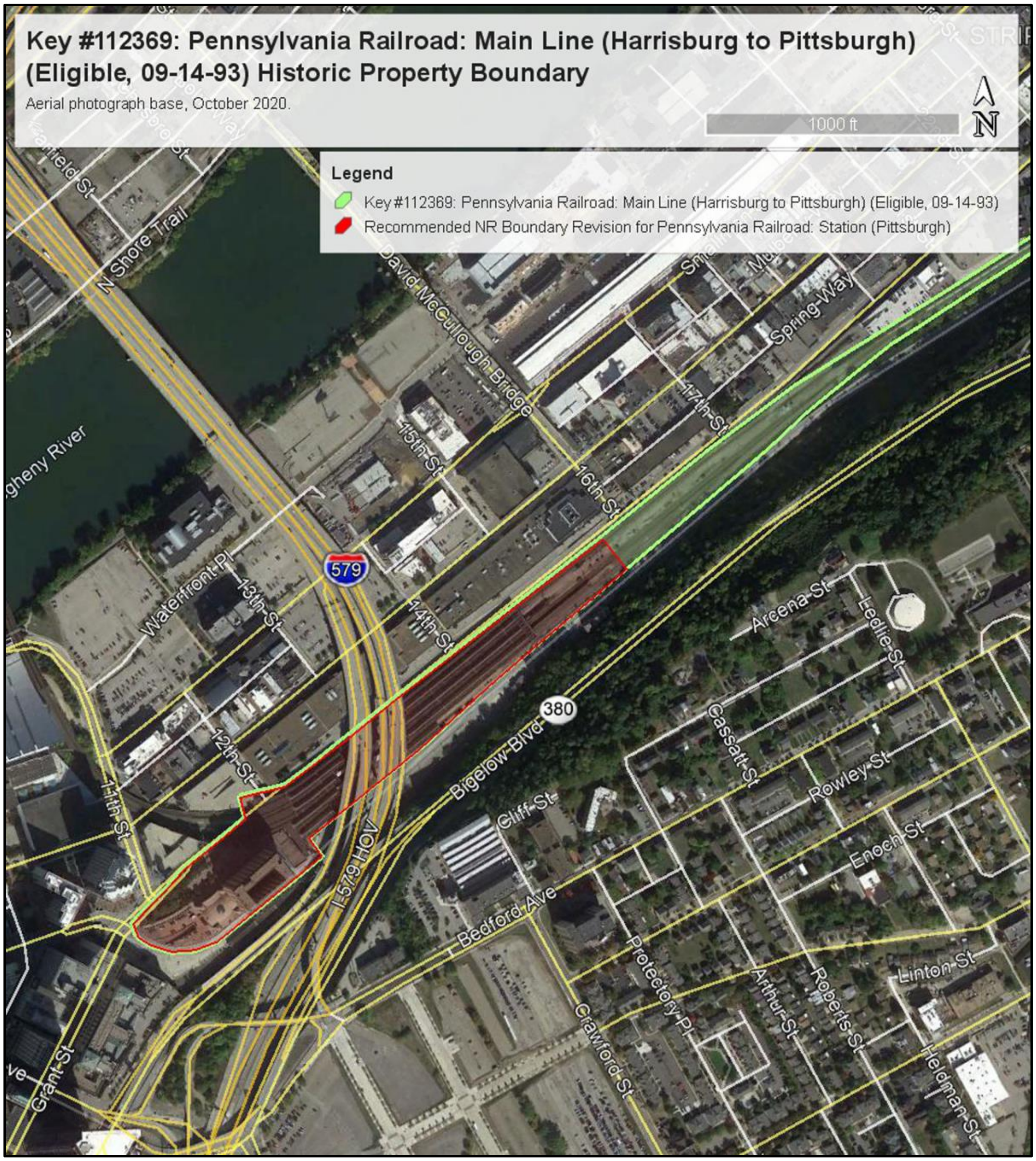

Figure 4-12: Historic property boundary for the segment of the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District within the APE.

4.2 Efforts to Avoid or Minimize Adverse Effects

An *Alternatives Analysis Report* was prepared for the Amtrak Station Project (Michael Baker International, Inc. 2022), which identified three alternatives:

- Alternative 1–No build alternative;
- Alternative 2–Remove portion of train shed;
- Alternative 3–Adjust trainshed roof beams to achieve 21'-0" vertical clearance;

In an effort to avoid and minimize effects on historic properties, Alternative 3 was chosen as the Preferred Alternative. This alternative will not demolish any portion of the trainshed; instead, the roof girders over Track 1 and Track 2 will be altered by removing the bottom flange and a portion of the web, and angles and plates will be added to maintain the girder's structural capacity. This alternative results in no exterior changes and only minor interior visual changes.

To aid in the assessment of visual effects of the Preferred Alternative, plan sheets showing cross section views and details (Figure 4-13, Figure 4-14, Figure 4-15, Figure 4-16, Figure 4-17, and Figure 4-18) and a comparison of the existing conditions and renderings of the completed girder alterations (Figure 4-19, Figure 4-20, Figure 4-21, and Figure 4-22) are provided on the following pages.

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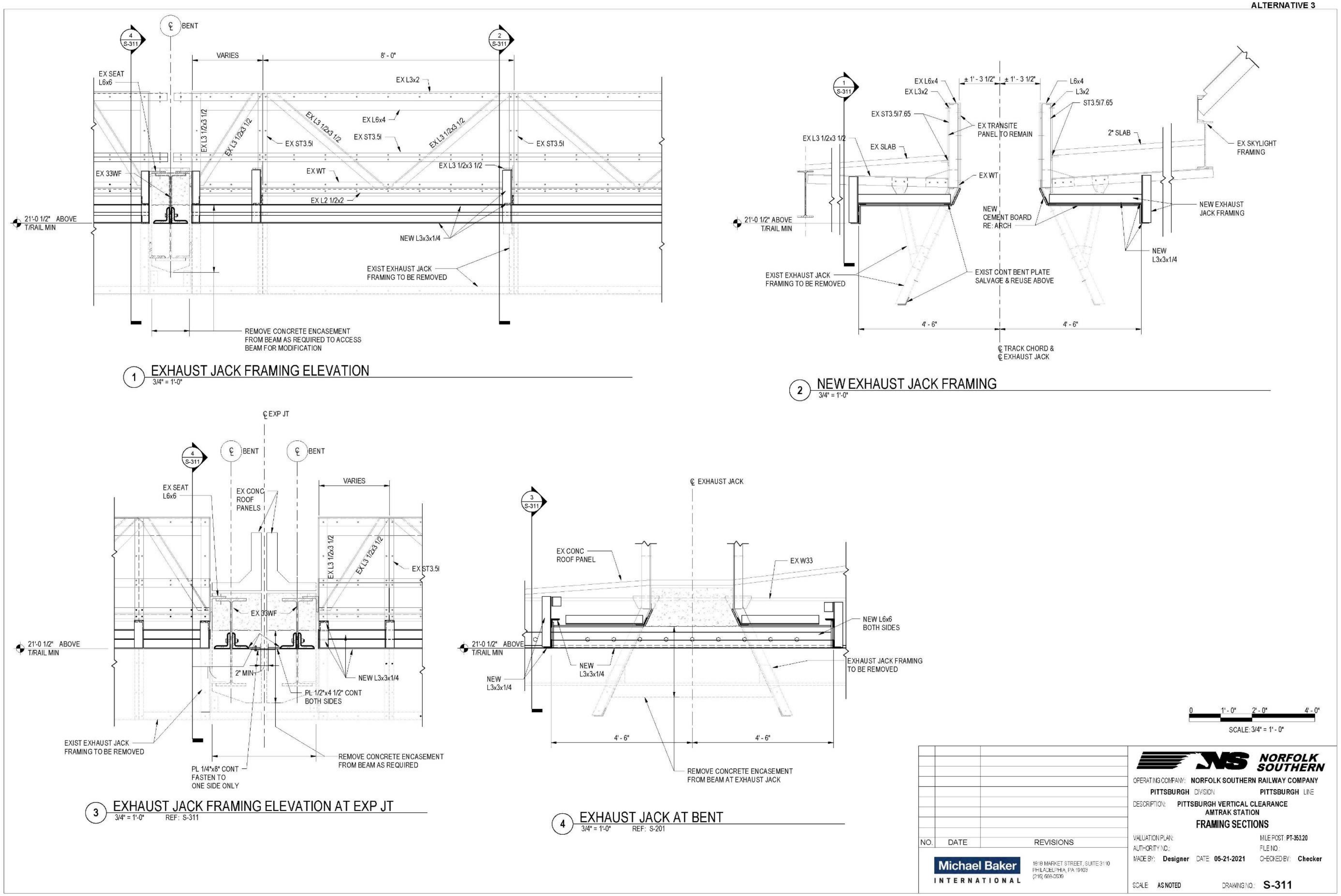

Figure 4-13: Plan sheet showing alterations to exhaust jacks in trainshed.

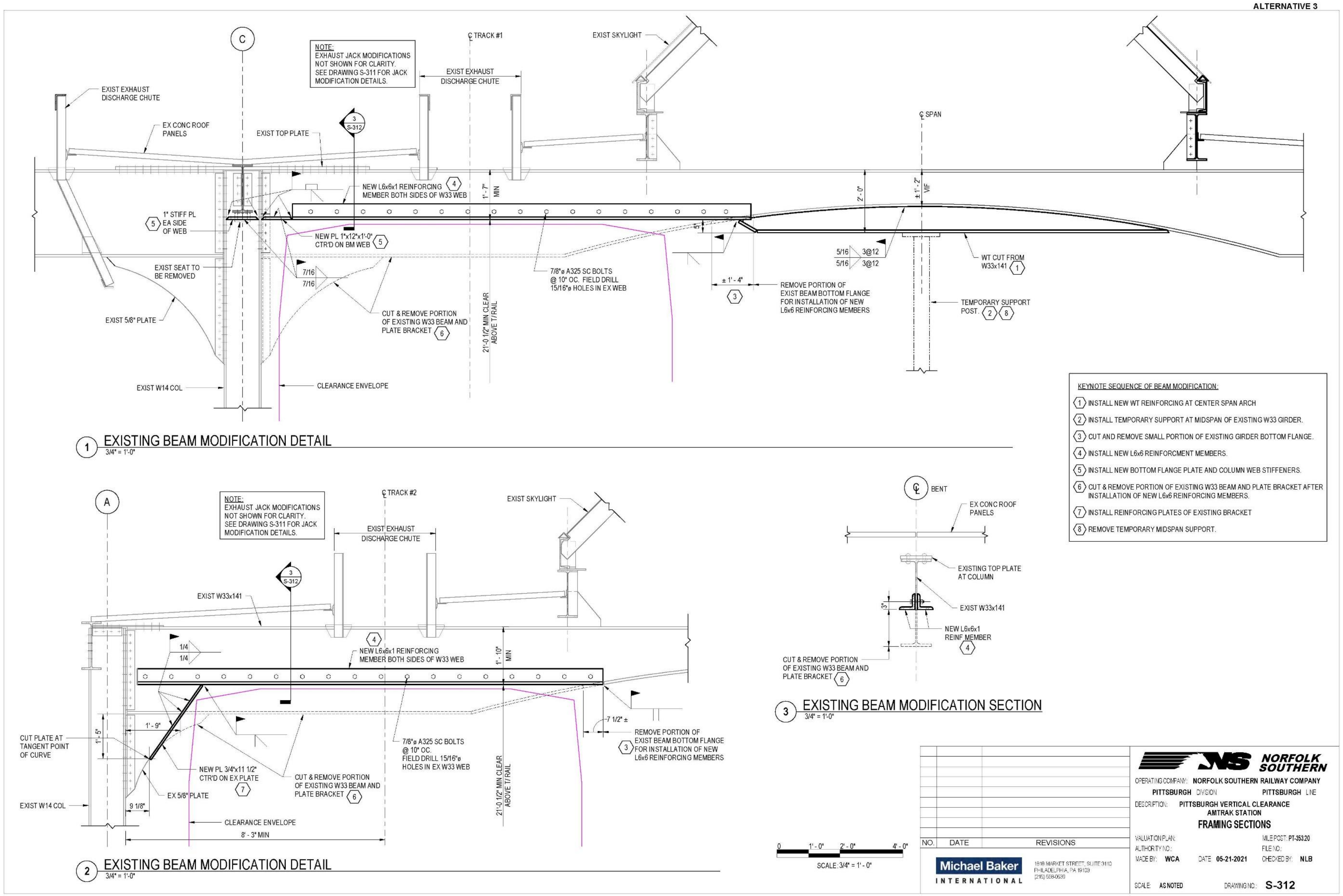

Figure 4-14: Plan sheet showing modifications to beams over tracks 1 and 2.

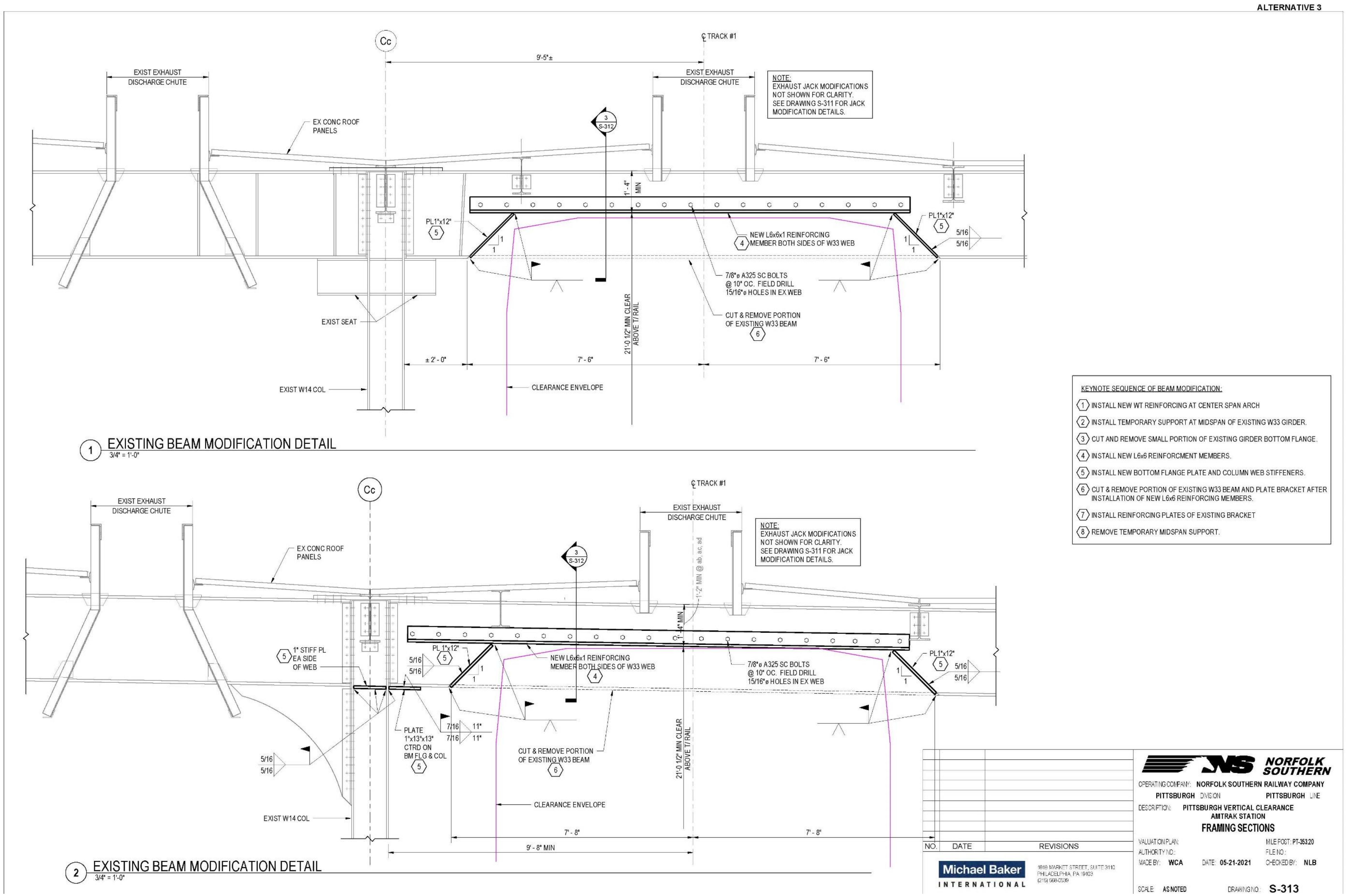

Figure 4-15: Plan sheet showing modifications to beams over track 1.

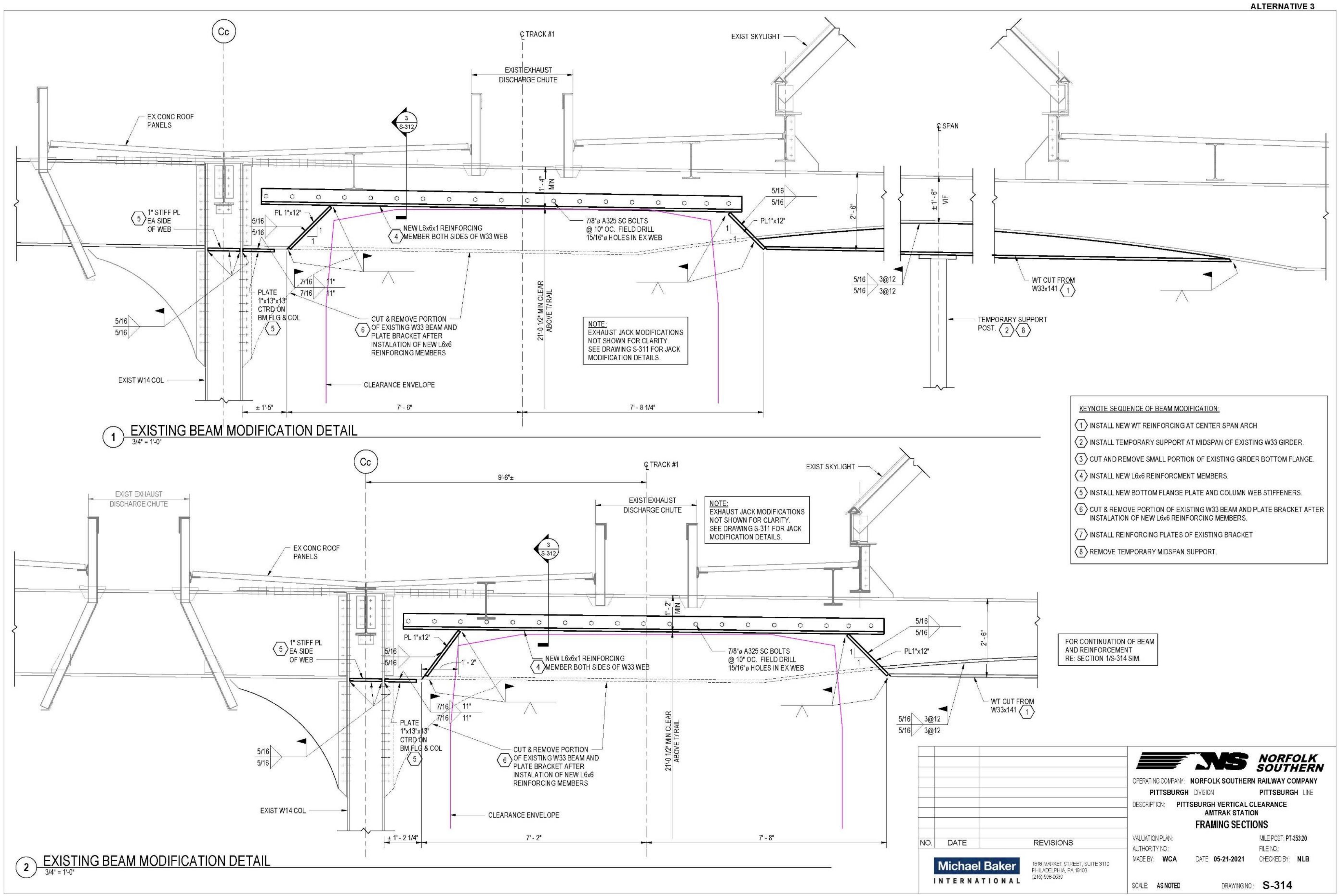

Figure 4-16: Plan sheet showing modifications to beams over track 1.

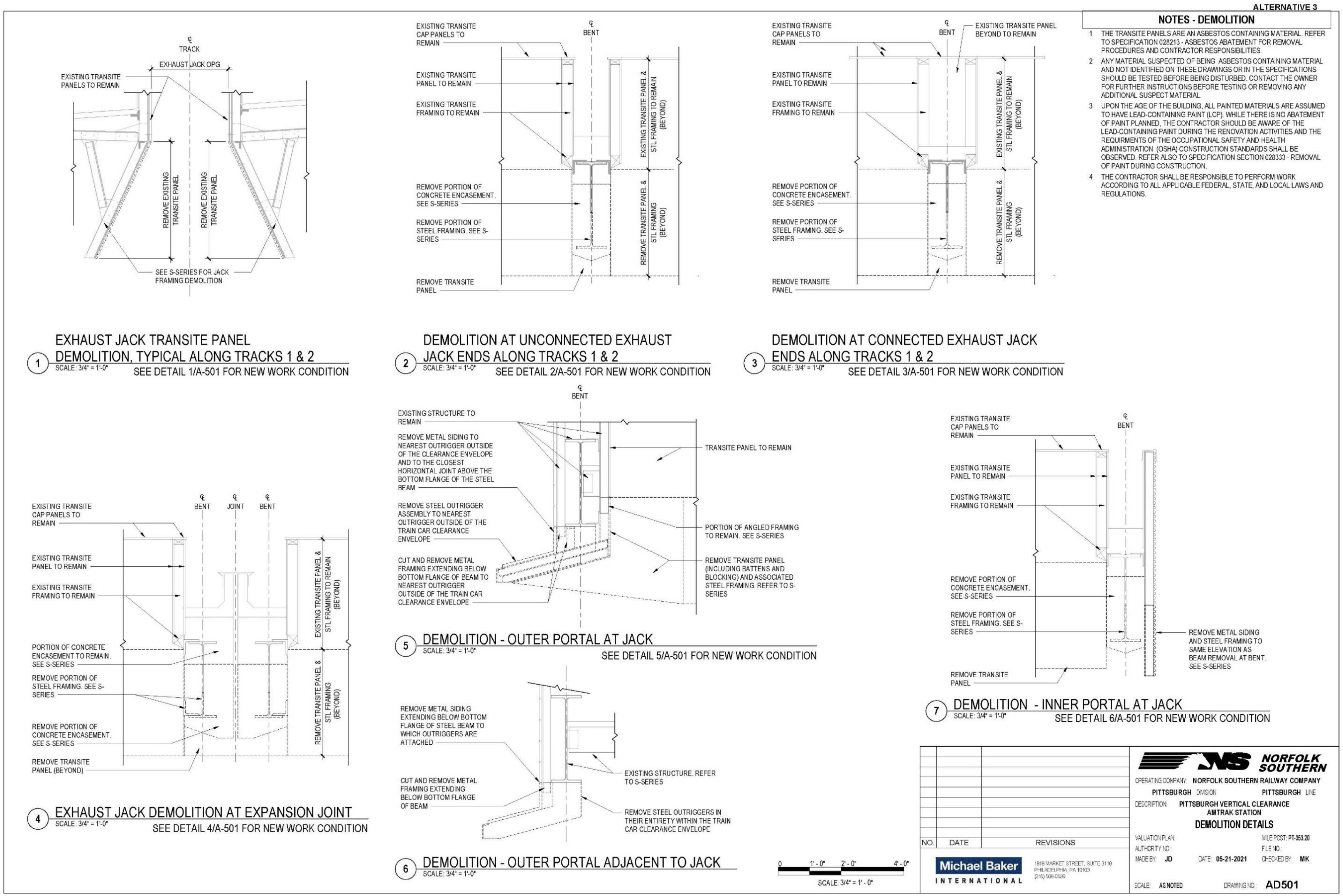

Figure 4-17: Plan sheet showing modifications to exhaust jack.

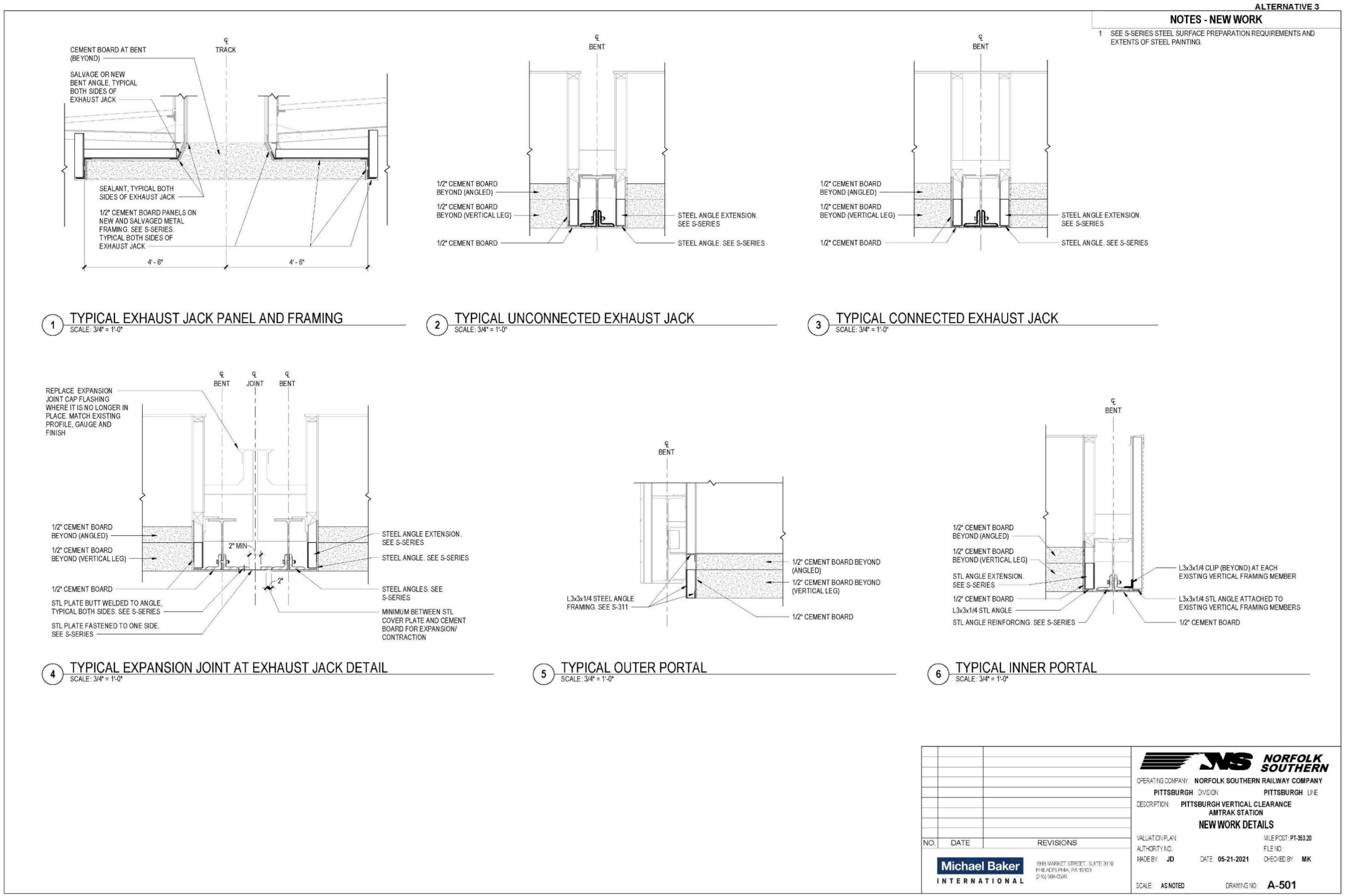

Figure 4-18: Plan sheet showing modifications to exhaust jack.

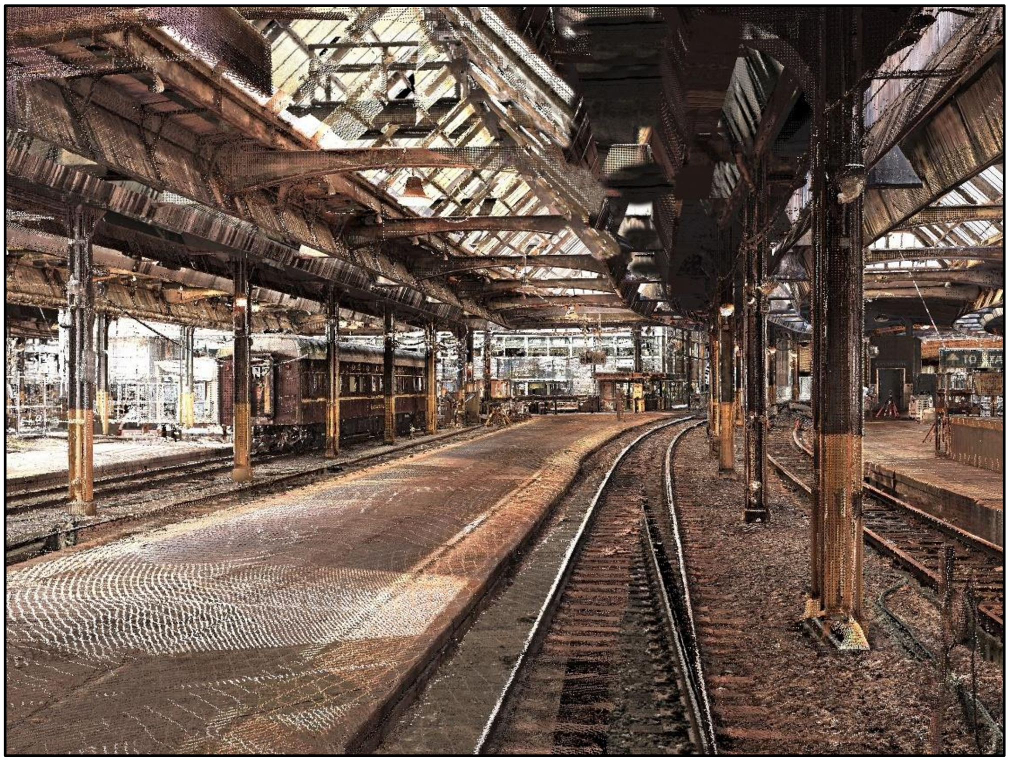

Figure 4-19: Photo of existing girders and exhaust chutes over Track 1 through trainshed, facing southwest.

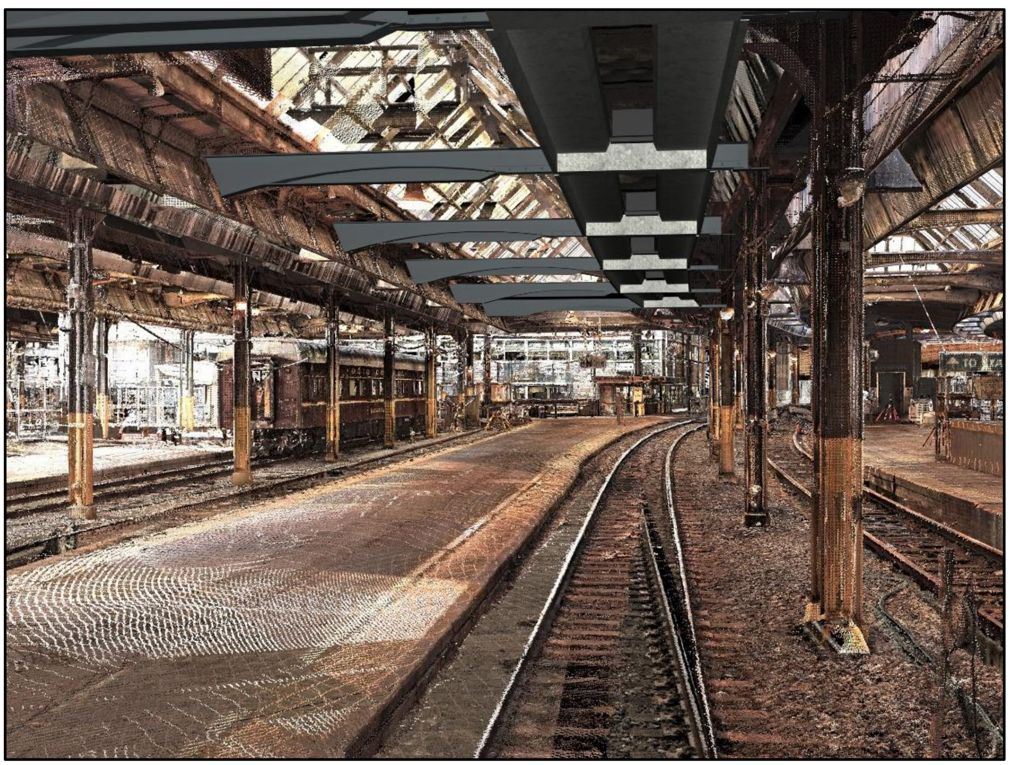

Figure 4-20: Rendering of retrofitted girders and exhaust chutes over Track 1 through trainshed, facing southwest.

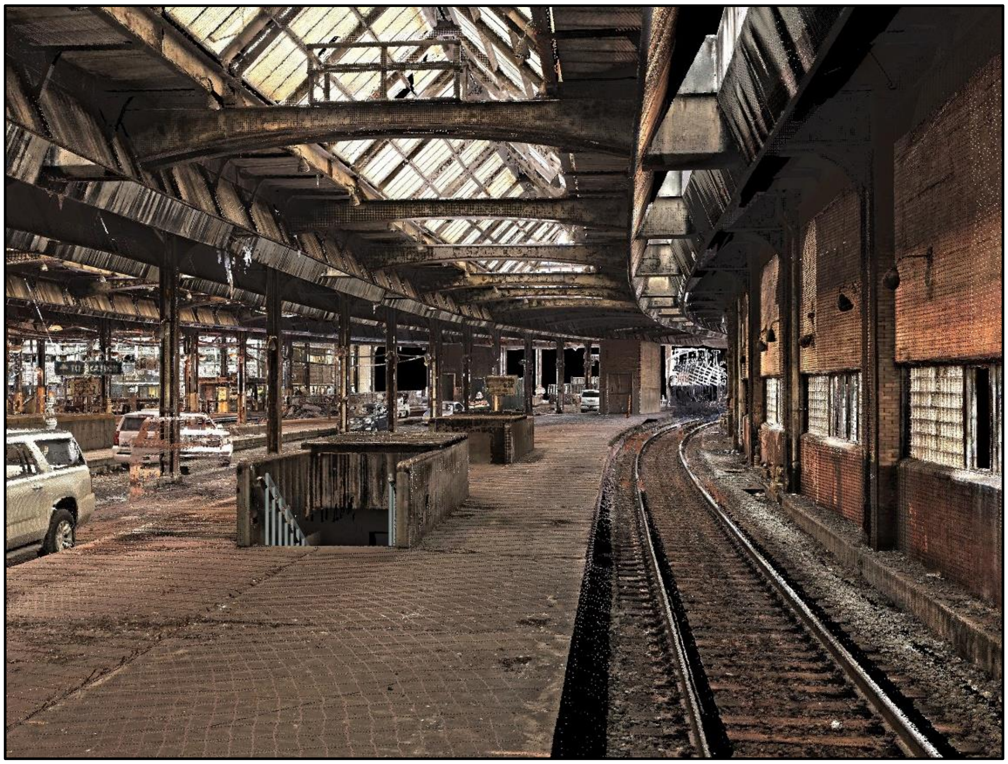

Figure 4-21: Photo of existing girders and exhaust chutes over Track 2 through trainshed, facing west.

Figure 4-22: Rendering of retrofitted girders and exhaust chutes over Track 2 through trainshed, facing west.

4.3 Application of Definition of Effect and Criteria of Adverse Effect

The following section describes how the proposed Amtrak Station Project would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 *et seq.*) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to assessment of effects on historic and cultural resources.

Pennsylvania Railroad Station

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The proposed Preferred Alternative for the Amtrak Station Project would modify the existing trainshed, a contributing element of the Pennsylvania Railroad Station, by supplementing the bottom portion of the girders at designated areas to increase the elevation of the bottom of the canopy structure. The bottom flange and a portion of the web of the existing girder would be removed over Tracks 1 and 2. To maintain the structural capacity, angles and plates would be added to the bottom of the existing girder to create a built-up shape. With the addition of the new structural members on bottom and top of the existing girders, modifications to the exhaust chutes would be required. The existing asbestos exhaust chutes would be modified to address potential emissions effects. This work would be performed over Track 1 and Track 2 and would involve the removal of designated sections of the exhaust chute along with the steel members that carry it. Required work would include the removal of concrete from the designated beams over both tracks and roof sections as indicated on the drawings; trimming the identified girders over both tracks per the plans to obtain a minimum clearance of 21′-0″; the reinstallation of the exhaust chute framing and panels; and the application of protective coatings to the girders and exposed steel over both tracks. This work would also involve the installation of foundations and new columns for two locations along both tracks. The potential to affect the Pennsylvania Railroad Station is summarized in Table 4-1.

Table 4-1: Results of Effect Evaluation for the Pennsylvania Railroad Station	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The **Pennsylvania Railroad Station** is listed in the NRHP under Criterion A for its association with rail transportation and under Criterion C for its architectural merit as an excellent example of the Beaux Arts architectural style by Daniel Burnham. The Preferred Alternative has the potential to affect the historic property by altering the trainshed girders and exhaust chutes over Track 1 and Track 2.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad Station

As the proposed undertaking would affect the Pennsylvania Railroad Station as indicated above, Table 4-2 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 4-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad Station

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would retrofit the existing girders over Track 1 and Track 2 by removing the bottom flange and a portion of the web of the existing girders over Tracks 1 and 2 and adding angles and plates to the bottom of the existing girder to create a built-up shape. The asbestos exhaust chutes would also need to be modified. The modification of select girders and exhaust chutes would not result in a substantial change to the structural configuration of the trainshed.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would result in the rehabilitation of minor structural elements and the modification of the asbestos chutes over Tracks 1 and 2. These modifications comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and would not result in substantial visual changes to the trainshed, a contributing element of the Pennsylvania Railroad Station.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the property from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use; the project would allow for the continued use of the historic property. The project would not affect features in the property's setting that contribute to the property's significance.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative's proposed changes to the building's girders over two tracks would not cause a substantial visual change to the property's significant historic features. It would not introduce atmospheric or audible elements that diminish the integrity of the property's significant historic features. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative

Table 4-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad Station	
	effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the property.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Amtrak Station Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad Station under the **Preferred Alternative**.	

The Rotunda of the Pennsylvania Railroad Station

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The proposed Preferred Alternative would modify interior components of the trainshed, which is over 175' northeast of the rotunda. No portion of the existing work will be visible from the rotunda. The potential to affect the Rotunda of the Pennsylvania Railroad Station is summarized in Table 4-3.

Table 4-3: Results of Effect Evaluation for the Rotunda of the Pennsylvania Railroad Station	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Rotunda of the Pennsylvania Railroad Station is listed in the NRHP under Criterion A for its association with rail transportation and under Criterion C for its architectural merit as an excellent example of the Beaux Arts architectural style by architect Daniel Burnham. The Preferred Alternative does not have the potential to affect the historic property either directly or indirectly as all work will occur under the trainshed roof and will not be visible from the rotunda.
FINDING:	***No Historic Properties Affected***

Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The proposed Preferred Alternative for the Amtrak Station Project would modify the existing trainshed, a contributing element of the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District, by supplementing the bottom portion of the girders at designated areas to increase the elevation of the bottom of the canopy structure. The bottom flange and a portion of the web of the existing girders would be removed over Tracks 1 and 2. To maintain the structural capacity, angles and plates would be added to the bottom of the existing girders to create a built-up shape. With the addition of the new structural members on bottom and top of the existing girders, modifications to the exhaust chutes would be required. The existing asbestos exhaust chutes would be modified to address potential emissions effects as discussed in the environmental documentation. This work would be performed over Track 1 and Track 2 and would involve the removal of designated sections of the exhaust chute along with the steel members that carry it. Required work would include the removal of concrete from the designated beams over both tracks and roof sections as indicated on the drawings; trimming the identified girders over both tracks per the plans to obtain a minimum clearance of 21′-0″; the reinstallation of the exhaust chute framing and panels; and the application of protective coatings to the girders and exposed steel over both tracks. This work would also involve the installation of foundations and new columns for two locations along both tracks. The potential to affect the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District is summarized in Table 4-4.

Table 4-4: Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

DEFINITION OF EFFECT	EVALUATION (Preferred Alternative)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District is eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district. The Preferred Alternative has the potential to affect the historic property by altering the trainshed girders and exhaust chutes over Track 1 and Track 2.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

As the proposed undertaking would affect the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District as indicated above, Table 4-5 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 4-5: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would retrofit the existing girders over Track 1 and Track 2 by removing the bottom flange and a portion of the web of the existing girders over Tracks 1 and 2 and adding angles and plates to the bottom of the existing girder to create a built-up shape. The asbestos exhaust chutes would also need to be modified. The modification of select girders and exhaust chutes would not result in substantial change to the structural configuration of the trainshed.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would result in the rehabilitation of minor structural elements and the modification of the asbestos chutes over Tracks 1 and 2. These modifications comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and would not result in substantial visual changes to the trainshed, a contributing element of the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the property from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use; the project would allow for the continued use of the historic property. The project would not affect features in the property's setting that contribute to the property's significance.

Table 4-5: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District	
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative's proposed changes to the building's girders over two tracks would not cause a substantial visual change to the property's significant historic features. It would not introduce atmospheric or audible elements that diminish the integrity of the property's significant historic features. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Amtrak Station Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District under the **Preferred Alternative**.	

5.0 W. North Avenue Bridge Project

5.1 Results of the Identification of Historic Properties

5.1.1 Area of Potential Effects

APE Justification

Consistent with the methodology for establishing project APEs presented in Chapter 1 for projects where corridor constraints are present that could limit or prevent track lowering, the W. North Avenue APE was based on the bridge raising to achieve full vertical clearance per PUC requirements at this location as a worst-case scenario. The APE takes into account the nature of the undertaking and its potential for direct and indirect effects (including cumulative effects) on historic properties.

Because the proposed replacement of the bridge includes alternatives at a greater height to obtain the appropriate vertical clearance, the APE was drawn to encompass the bridge and roughly a one-parcel buffer around the greater project construction limits including all potentially affected streets that would experience grade changes. These grade changes would potentially affect properties along a portion of the 600, 700, and 800 blocks of W. North Avenue and the 900, 1000, 1100, and 1200 blocks of Brighton Road including intersecting streets and driveways. The APE is illustrated in Figure 5-1.

APE Description

Beginning at the northeast corner of Brighton Road and Western Avenue, the APE extends approximately 675′ diagonally across Allegheny Commons to W. North Avenue. The APE extends northwest along tax parcel 23-N-94 approximately 200′ to Eloise Street. The APE extends southwest approximately 275′ to Drovers Way. The APE extends northwest along Drovers Way 190′. The APE then extends approximately 150′ southwest along the northwest property line of tax parcel 23-N-27 to the southwest side of Brighton Road. The APE extends approximately 115′ northwest along Brighton Road to the southeast side of Riversea Road. The APE extends southwest approximately 300′ to the northwest façade of a building known as 1201 Brighton Road. The APE extends southwest along the façade wall approximately 100′ to the northeast side of the railroad right-of-way. The APE extends southeast along the railroad right-of-way approximately 150′ to the southeast façade wall of 1201 Brighton Road. The APE then extends southwest approximately 75′ across the railroad right-of-way to Jabok Way. The APE extends southwest along Jabok Way approximately 225′ to the southwest façade wall of a building known as 836 W. North Avenue. The APE then extends approximately 150′ southeast along the façade wall to the southeast side of W. North Avenue. The APE extends southwest along W. North Avenue approximately 30′ to the southwest property line of tax parcel 22-N-144. The APE extends 100′ along the property line to Buttercup Way. The APE extends northeast approximately 225′ along Buttercup Way to the northeast side of Rope Way. The APE extends southeast along Rope Way approximately 350′ to the southeast property line of tax parcel 8-A-9. It follows the property line to the southeast for approximately 30′ before turning back to the northeast for an additional 50′. There, the APE turns to the southeast along the southwest property line of tax parcel 8-A-15 for 50′. Finally, the APE extends northeast approximately 165′ to the point of the beginning. The APE contains 12.80 acres.

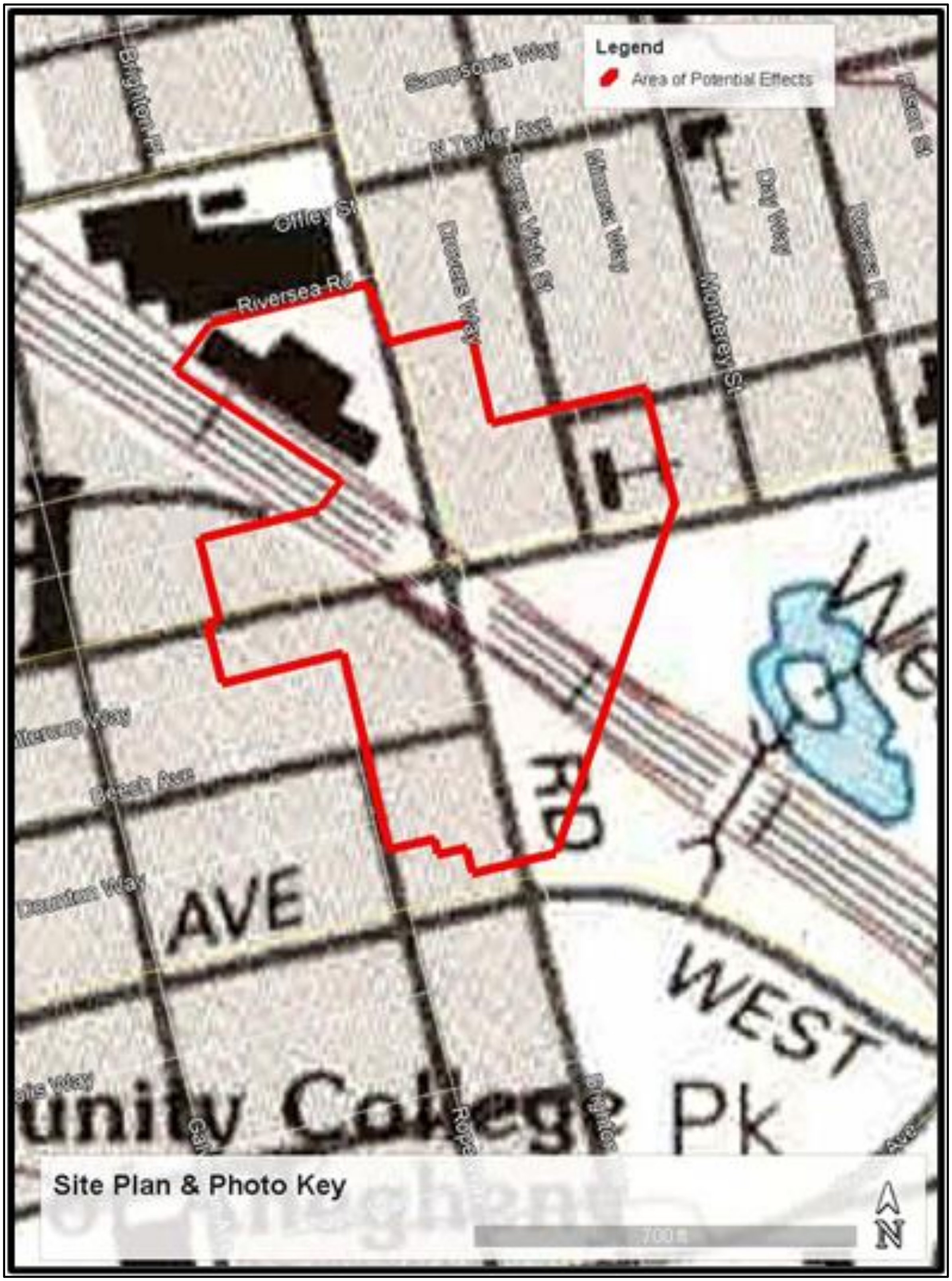

Figure 5-1: W. North Avenue Bridge APE shown on topographic mapping (USGS 1997).

5.1.2 Historic Properties Identified within the APE

An *Identification of Historic Properties Report* was submitted to the PA SHPO in September 2019 (Michael Baker International, Inc. 2019), which identified five NRHP-listed or -eligible historic districts within the W. North Avenue APE: the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District (Resource No. 1993RE01080), the Allegheny West Historic District (Resource No. 1978RE00013), the Mexican War Streets Historic District (Resource No. 1975RE00037), the Allegheny Commons Historic District (Resource No. 1999RE00182), and the Allegheny Second Ward Industrial Historic District (Resource No. 2019RE06933), and two individually NRHP-listed or -eligible properties: the International Harvester Company of America: Pittsburgh Branch House (International Harvester Building) (Resource No. 2020RE00935) and the Allegheny City Stables Building (Resource No. 2006RE00765).

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Description of Historic Property

The portion of railroad corridor surveyed for this project area includes an approximately 566 linear foot segment centered at the W. North Avenue/Brighton Road railroad overpass bridge on Pittsburgh's North Side at milepost PC-1.60 (Figure 5-2 and Figure 5-3). The surveyed segment's depressed railroad corridor measures 58' wide between retaining walls and contains four tracks. Six historic-age features were identified in the survey area: the 1929 bridge carrying W. North Avenue and Brighton Road over the railroad corridor [Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line): W. North Avenue Bridge (Pittsburgh) (Figure 5-4, Figure 5-5, Figure 5-6, and Figure 5-7), a signal bridge (Figure 5-8), decorative wrought-iron fencing (Figure 5-9), standard three-rail railroad safety fencing (Figure 5-10), an elevated out-of-service siding (Figure 5-11), and concrete retaining walls with stone coping (see Figure 5-2, Figure 5-3, Figure 5-5, Figure 5-8, Figure 5-9, and Figure 5-11).

Of the six historic-age features identified within the APE, one feature, the W. North Avenue Bridge, was previously determined to be a contributing element of the railroad corridor historic district; the remaining five elements were found to be NRHP eligible as contributing elements as part of this study, being functional and/or decorative components that were constructed during the district's period of significance and that retain historic integrity. Since the initial survey, the signal bridge has been demolished.

Significance of Historic Property

The Pennsylvania Railroad Main Line from Pittsburgh to the Ohio state line was previously determined eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district for its "state-wide significance in transportation, economy and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958. Requirements for rail safety and rail operation require periodic replacement of rail infrastructure including ballast, rail ties, rails, and associated structures since the time of the period of significance. The main line will continue to be used for rail operations as part of the proposed project.

Boundary of Historic Property

The historic property includes the entirety of the surveyed segment of railroad within the APE as described above and shown in Figure 5-12. The 566-foot segment of right-of-way is approximately 100 feet wide and encompasses approximately 1.1 acres.

Figure 5-2: View of surveyed segment of rail corridor from Allegheny Commons Historic District showing the southeast side of the W. North Avenue Bridge, the southwest concrete retaining walls with stone coping, and decorative wrought iron fencing, facing west.

Figure 5-3: View of surveyed segment of rail corridor from the northeast retaining wall showing northwest side of the W. North Avenue Bridge, the southwest concrete and stone retaining walls, and standard railroad safety fencing, facing southeast.

Figure 5-4: Detail of southeast girder of the 1929 W. North Avenue Bridge with a segment of 1929 iron fencing along the northeast side of the corridor, facing southwest.

Figure 5-5: Detail of northwest girder of the 1929 W. North Avenue Bridge and view of the northeast concrete and stone retaining wall and standard railroad safety fencing, facing east.

Figure 5-6: Detail of northwest girder of W. North Avenue Bridge from deck showing gunite finish and concrete end posts, facing west.

Figure 5-7: Detail of southeast girder of W. North Avenue Bridge from deck showing gunite finish and concrete end posts, facing north.

Figure 5-8: Railroad signal bridge (now removed) spanning depressed railroad corridor through Allegheny Commons Park, facing northwest.

Figure 5-9: Decorative wrought iron fencing atop the stone and concrete retaining walls of the depressed railroad corridor through Allegheny Commons Historic District, facing west.

Figure 5-10: Detail of standard railroad safety fencing (left) atop edge of former elevated siding along the northeast side of the corridor north of the W. North Avenue Bridge, facing southeast.

Figure 5-11: View of out-of-service elevated rail siding for the former International Harvester Building along the southwest side of the rail corridor north of the W. North Avenue Bridge, facing southeast.

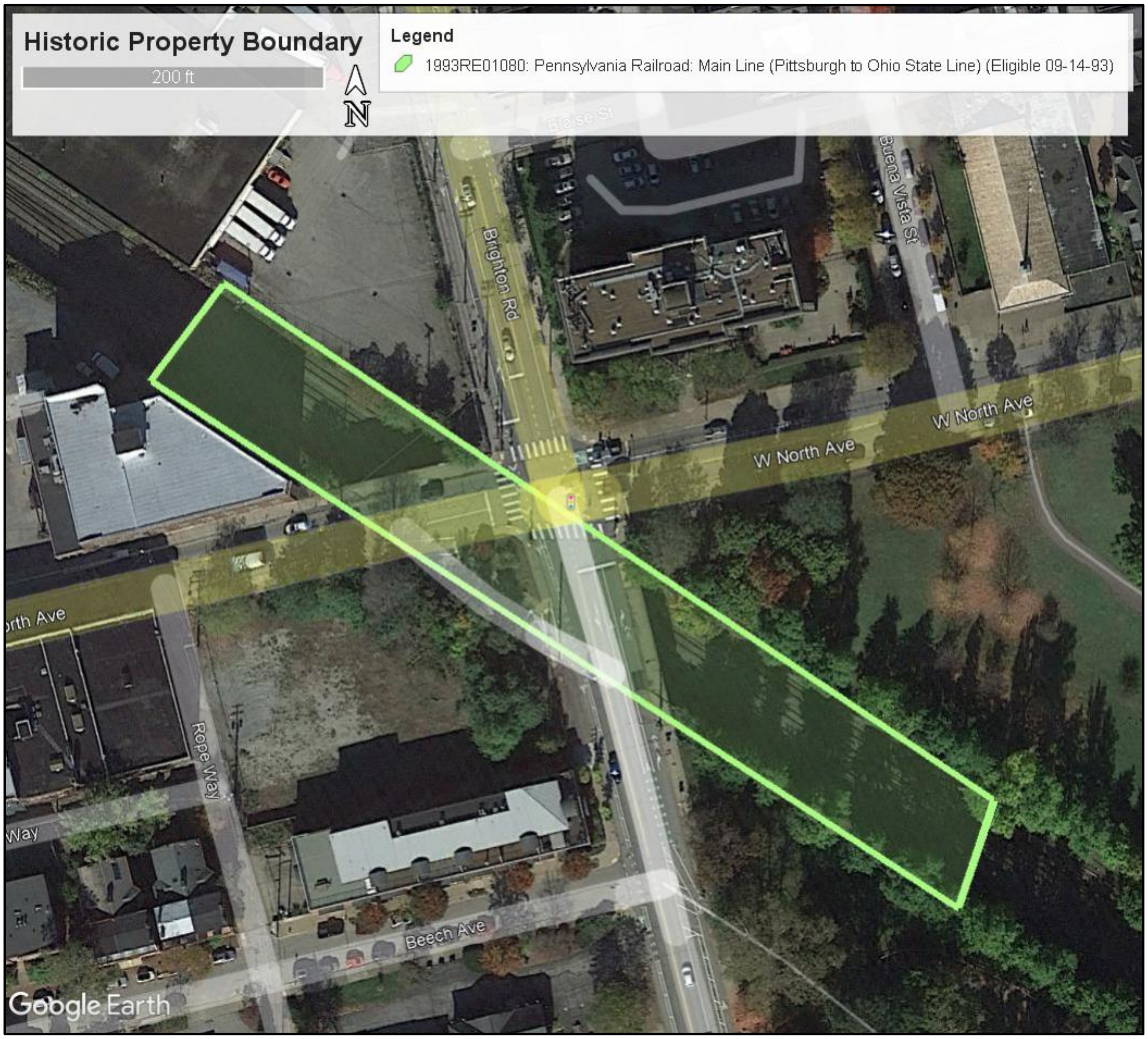

Figure 5-12: Historic property boundary for the segment of the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District within the W. North Avenue Bridge Project APE.

Allegheny West Historic District

Description of Historic Property

The Allegheny West Historic District was listed in the NRHP on November 2, 1978. The historic district consists of primarily residential properties and contains 197 buildings, 93% of which contribute to the district's significance (Figure 5-13). The Allegheny West Historic District was designated a City of Pittsburgh Historic District on November 26, 1990. Two contributing buildings, located at 907 Brighton Road (Figure 5-14) and 913 Brighton Road (Figure 5-15), are within the W. North Avenue Bridge Project APE.

Significance of Historic Property

The Allegheny West Historic District is significant under NRHP Criterion A in the area of social history and under NRHP Criterion C in the area of architecture (Van Trump 1976). The historic district's period of significance spans from the nineteenth to the mid-twentieth centuries.

Boundary of Historic Property

The district is roughly bound by Brighton Road, Ridge Avenue, Allegheny Avenue, and W. North Avenue and encompasses approximately 43 acres (Figure 5-16).

Figure 5-13: The 900 block of Beech Avenue in the Allegheny West Historic District, facing east.

Figure 5-14: East (front) and north (side) façades of 907 Brighton Road, a contributing element of the Allegheny West Historic District, facing southwest.

Figure 5-15: South (side) and east (front) façades of 913 Brighton Road, a contributing element of the Allegheny West Historic District, facing west.

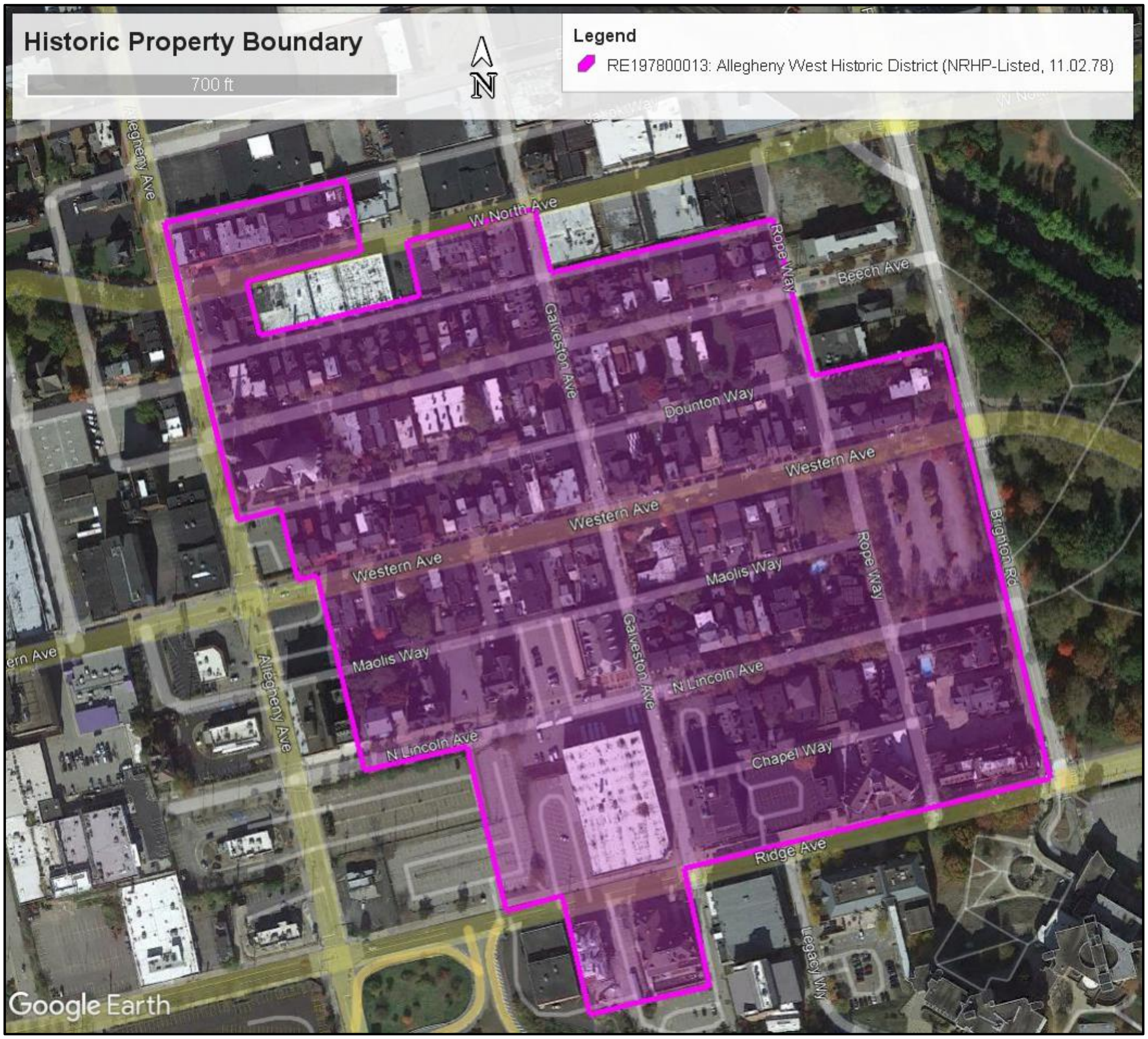

Figure 5-16: Historic property boundary of the Allegheny West Historic District.

Mexican War Streets Historic District

Description of Historic Property

The Mexican War Streets Historic District was listed in the NRHP on May 28, 1975, and the district boundary was expanded on September 4, 2008. The initial NRHP district contained 119 buildings and encompassed 27 acres (Van Trump 1973). The 2008 historic district expansion area lies outside of the APE. This area contains an additional 288 contributing buildings and 29 non-contributing buildings (Figure 5-17). The W. North Avenue Bridge Project APE contains one non-contributing building, Trinity Lutheran Church, located at 622 W. North Avenue (Figure 5-18), and no contributing buildings within the Mexican War Streets Historic District.

Significance of Historic Property

The Mexican War Streets Historic District was initially listed in the NRHP for its significance under Criterion A (social/humanitarianism, and urban planning) and under Criterion C (architecture) with a period of significance that stretched from the mid-nineteenth to the mid-twentieth centuries (1848 to ca. 1975). The historic district expansion is significant under NRHP Criterion C (architecture) and has a period of significance of 1848 to ca. 1930.

Boundary of Historic Property

The district is roughly bound by W. North Avenue; Drovers Way; Armandale and Carrington Streets; and Charlick Way, Reddour Street, and Federal Street. The boundary encompasses approximately 52.7 acres (Figure 5-19).

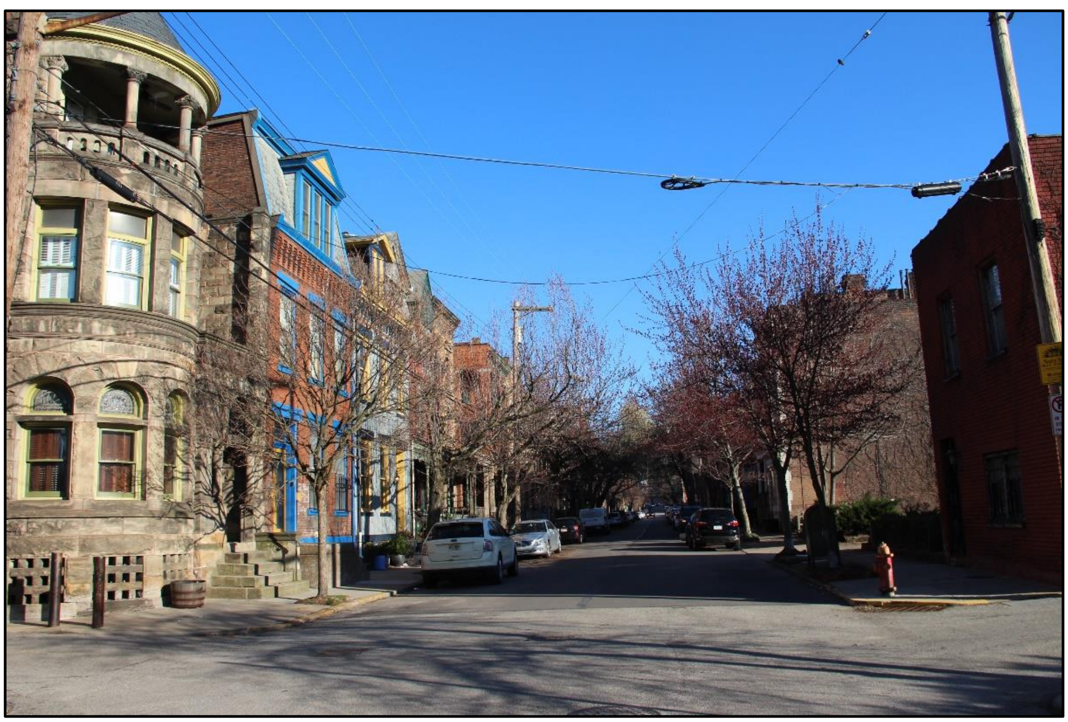

Figure 5-17: The 1200 block of Buena Vista Street in the Mexican War Streets Historic District, facing north.

Figure 5-18: West (side) and south (front) façades of 622 W. North Avenue, a non-contributing element of the Mexican War Streets Historic District, facing northeast.

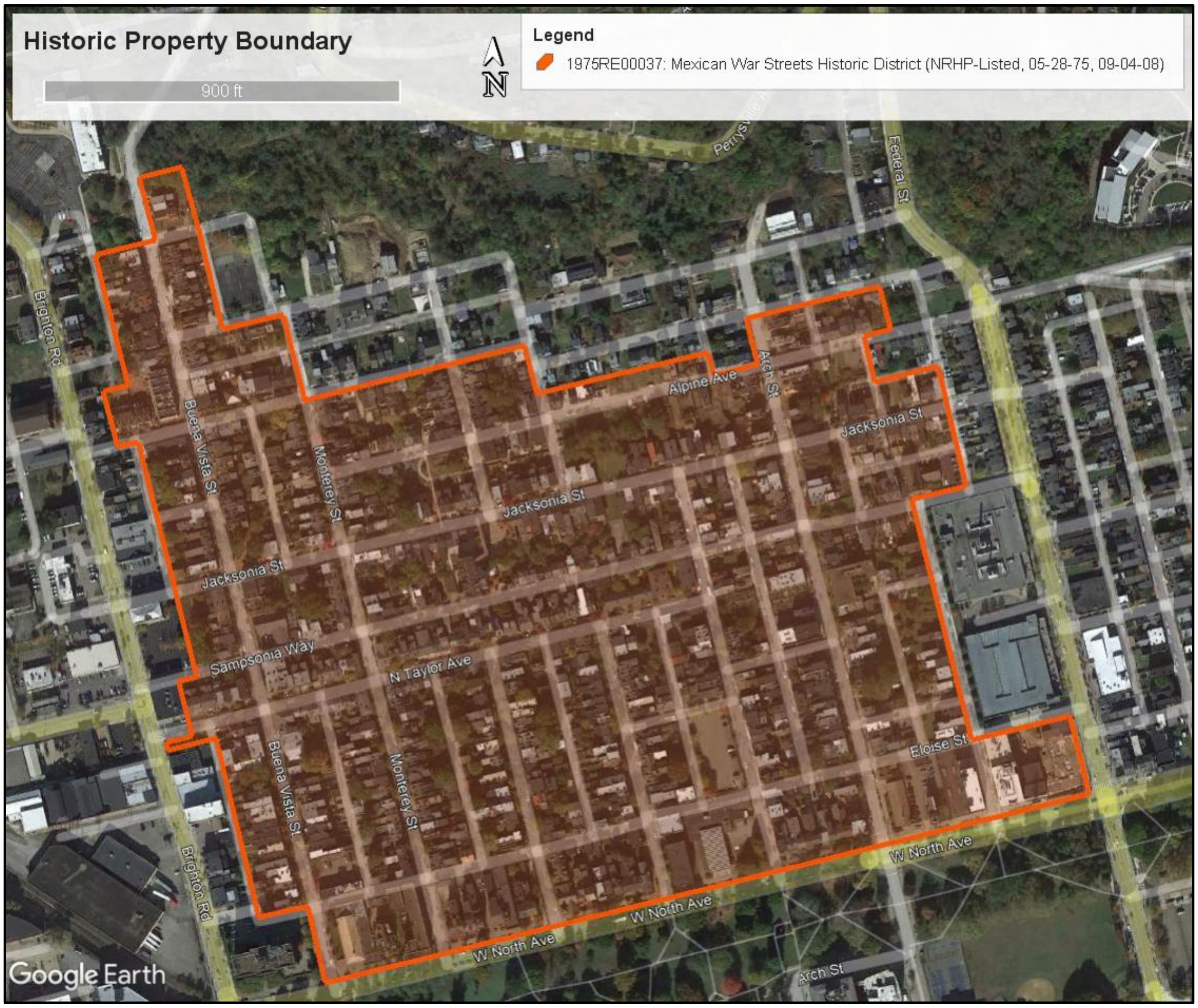

Figure 5-19: Historic property boundary of the Mexican War Streets Historic District.

Allegheny Commons Historic District

Description of Historic Property

The Allegheny Commons Historic District was listed in the NRHP on September 17, 2013 (Bamberg 2013). The park was initially constructed between 1868 and 1876, with major alterations ca. 1935 and 1967; the landscape architecture firm of Mitchell and Grant was responsible for the park's initial design, and the firm Simonds and Simonds designed the mid-1960s alterations. Allegheny Commons is the oldest public park in Pittsburgh, the city's only formal urban park, and one of the first public parks developed west of the Allegheny Mountains (Figure 5-20). Allegheny Commons was designated a City of Pittsburgh Historic Site on November 26, 1990. One contributing element, the decorative wrought iron fencing lining the railroad corridor, is within the W. North Avenue Bridge Project APE (Figure 5-21).

Significance of Historic Property

The park is significant under NRHP Criterion A in the area of Community Planning and Development and under Criterion C in the area of Landscape Architecture.

Boundary of Historic Property

The district is roughly bounded by W. North Avenue, Cedar Avenue, Stockton Street, the railroad tracks, Ridge Avenue, and Brighton Road. The interior, non-park section of the polygon is not included in the district. The boundary encompasses approximately 62 acres (Figure 5-22).

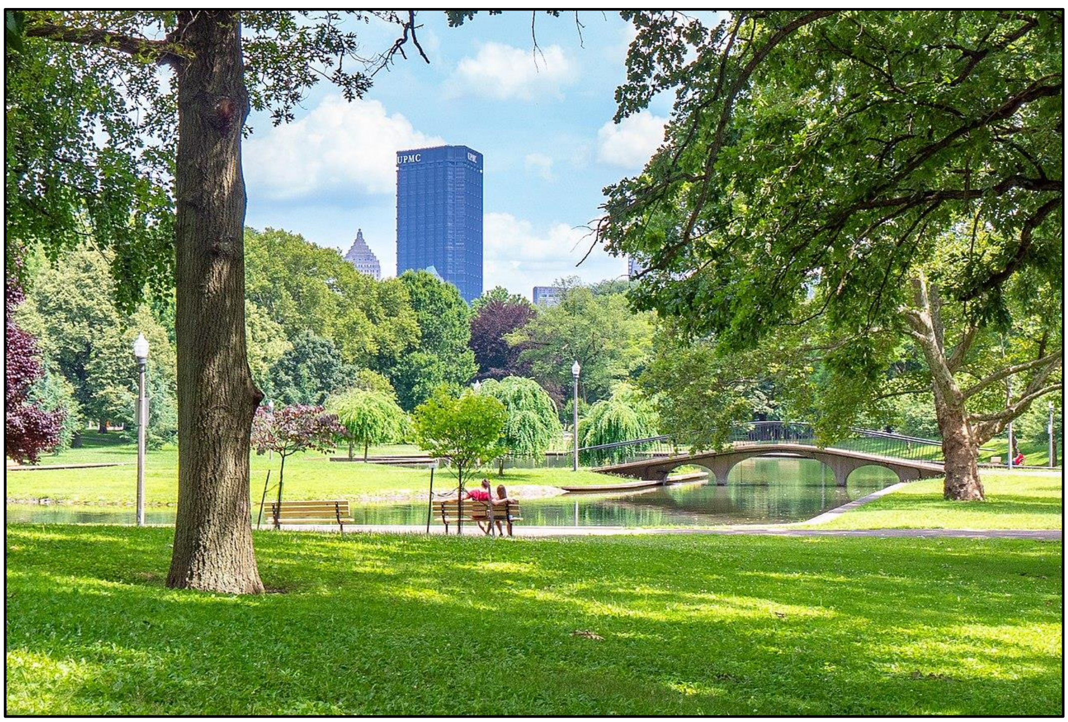

Figure 5-20: Allegheny Commons Historic District showing Lake Elizabeth, facing southeast.

Figure 5-21: Decorative wrought iron fencing along the northeast retaining wall and a line of Gingko trees in the Allegheny Commons Historic District, facing northwest.

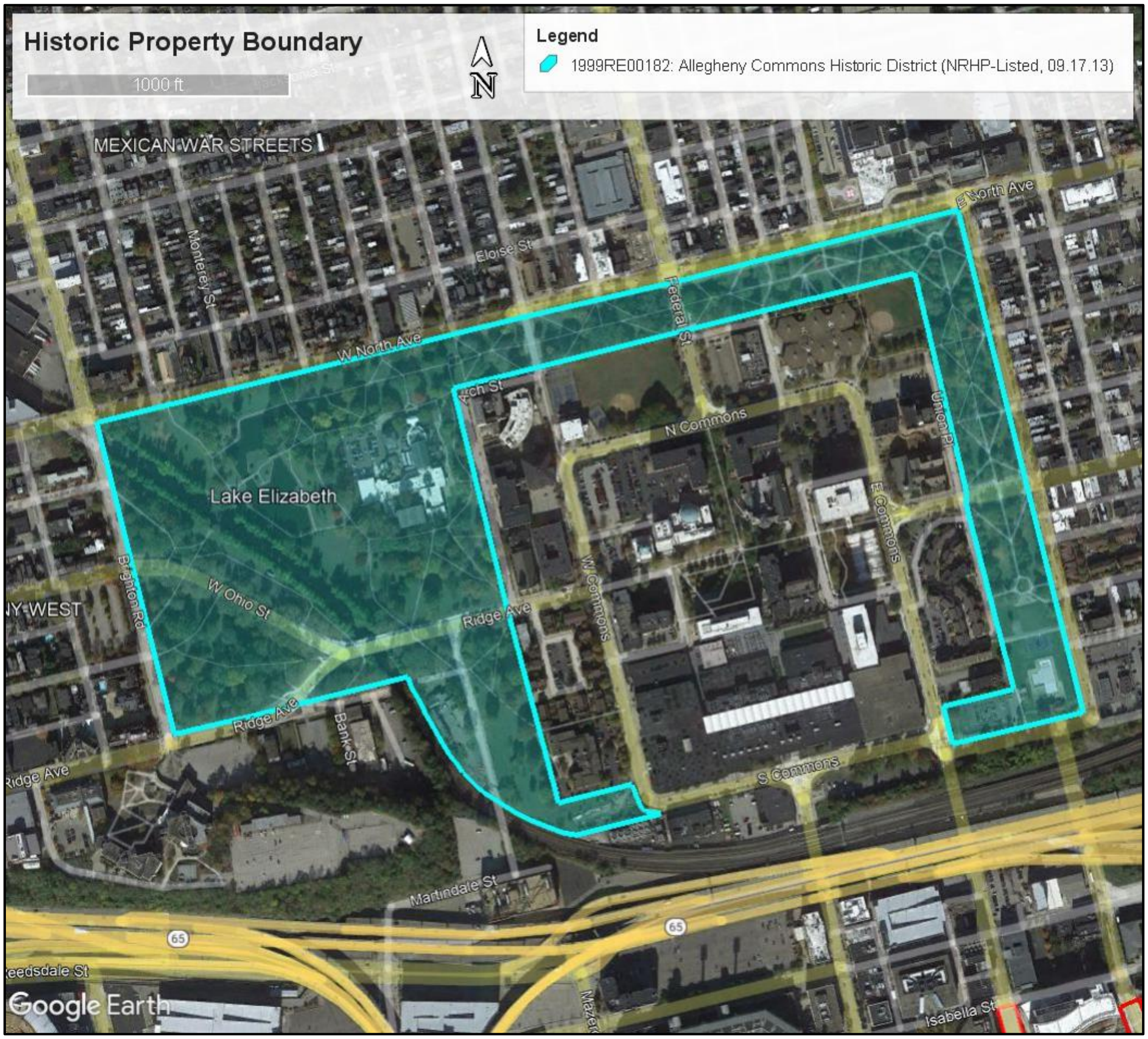

Figure 5-22: Historic property boundary of the Allegheny Commons Historic District.

Allegheny Second Ward Industrial Historic District

Description of Historic Property

The Allegheny Second Ward Industrial Historic District (Figure 5-23) is located in the former Second Ward of Allegheny City (currently the Twenty-Second Ward of the City of Pittsburgh). The district contains 30 resources (30 parcels), 26 of which contribute to the district. Of the 30 resources, six were constructed between 1850-1894; 11 were constructed between 1894-1910; six were constructed between 1910-1926; and the remaining seven were constructed prior to 1968. Nearly all of the buildings within the district are brick masonry. Four contributing elements of the historic district are within the W. North Avenue Bridge Project APE: the Hipwell Manufacturing Company Complex (five buildings located at 825-839 W. North Avenue, Figure 5-24), the International Harvester Building (810-822 W. North Avenue; Figure 5-25), the Katsafanas Coffee Company Building (828 W. North Avenue; Figure 5-26), and the Allegheny City Stables Building (840 W. North Avenue; Figure 5-27).

Significance of Historic Property

The Allegheny Second Ward Industrial Historic District is eligible for the NRHP under Criterion A in the areas of Industry and Commerce for its role in metallurgy in the twentieth century and Criterion C in the area of Architecture. Its period of significance is from circa 1849, the year construction began, to 1951, the date of construction of several of the latest buildings in the district.

Boundary of Historic Property

The boundary of the historic district encompasses the north and south sides of the 800 block and portions of the north and south sides of the 900 block of W. North Avenue, the north and south sides of the 800 and 900 blocks of Behan Street, the south side of the 900 block of Pennsylvania Avenue, 850 Pennsylvania Avenue, and the north side of Riversea Road. The irregular-shaped boundary encompasses approximately 21.5 acres (Figure 5-28).

Figure 5-23: South side of the 800 block of W. North Avenue in the Allegheny Second Ward Industrial Historic District from W. North Avenue Bridge, facing southwest.

Figure 5-24: North (front) façades of the Hipwell Manufacturing Company Complex, 825-839 W. North Avenue, a contributing element of the Allegheny Second Ward Industrial Historic District, facing southwest.

Figure 5-25: South (front) and east (side) façades of the International Harvester Building, 810-822 W. North Avenue, a contributing element of the Allegheny Second Ward Industrial Historic District, facing west.

Figure 5-26: West (side) and south (front) façades of the Katsafanas Coffee Company Building, 828 W. North Avenue, a contributing element of the Allegheny Second Ward Industrial Historic District, facing northeast.

Figure 5-27: South (front) and east (side) façades of the Allegheny City Stables Building, 840 W. North Avenue, a contributing element of the Allegheny Second Ward Industrial Historic District, facing northwest.

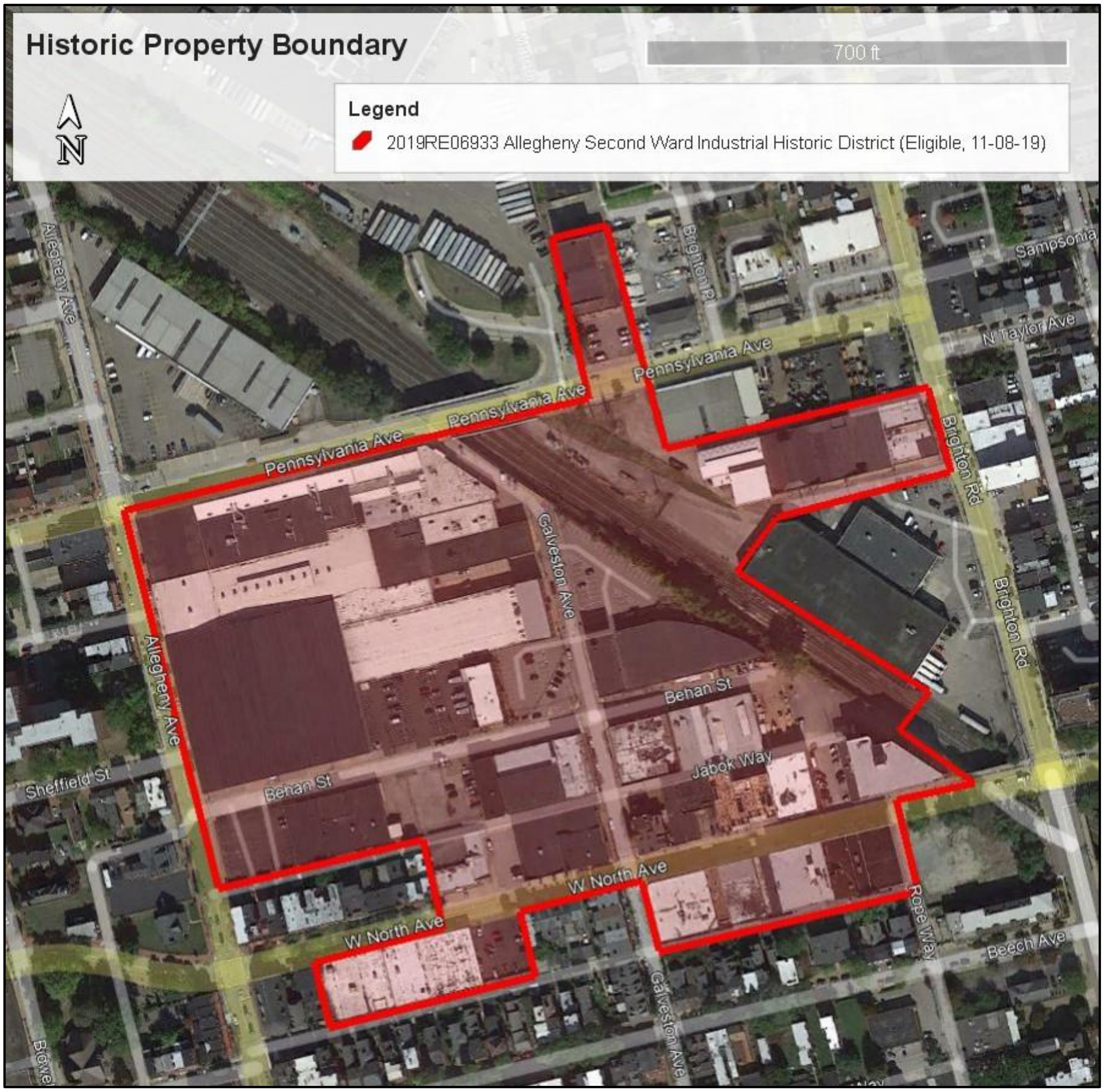

Figure 5-28: Historic property boundary for the Allegheny Second Ward Industrial Historic District.

International Harvester Company of America: Pittsburgh Branch House

Description of Historic Property

The International Harvester Building was listed in the NRHP on April 12, 2021. The building, located at 810-822 W. North Avenue (Figure 5-29), is a 1902, four-story, brick, commercial building with Classical Revival stylistic details. The building was originally three stories tall and six bays wide with a "flatiron" configuration that conformed to the wedge-shaped lot demarcated by what was then the Pittsburgh, Fort Wayne & Chicago Railway. From 1912 to 1913, International Harvester Company enlarged the building, constructing a three-bay wide, four-story addition on the west side and adding a fourth story atop the existing building (Slack 2020).

Significance of Historic Property

The International Harvester Company Building is significant under NRHP Criterion A in the area of Commerce, under NRHP Criterion B for its association with Branch Manager Emil Louis Mayer, and under NRHP Criterion C in the area of Architecture. The building's period of significance is from 1902 to 1933.

Boundary of Historic Property

The historic property boundary conforms to Allegheny County Tax Parcel 0023-N-00130-0000-00 and encompasses approximately 0.32 acre (Figure 5-30).

Figure 5-29: South (front) façade of the International Harvester Building at 810-822 W. North Avenue, facing northwest.

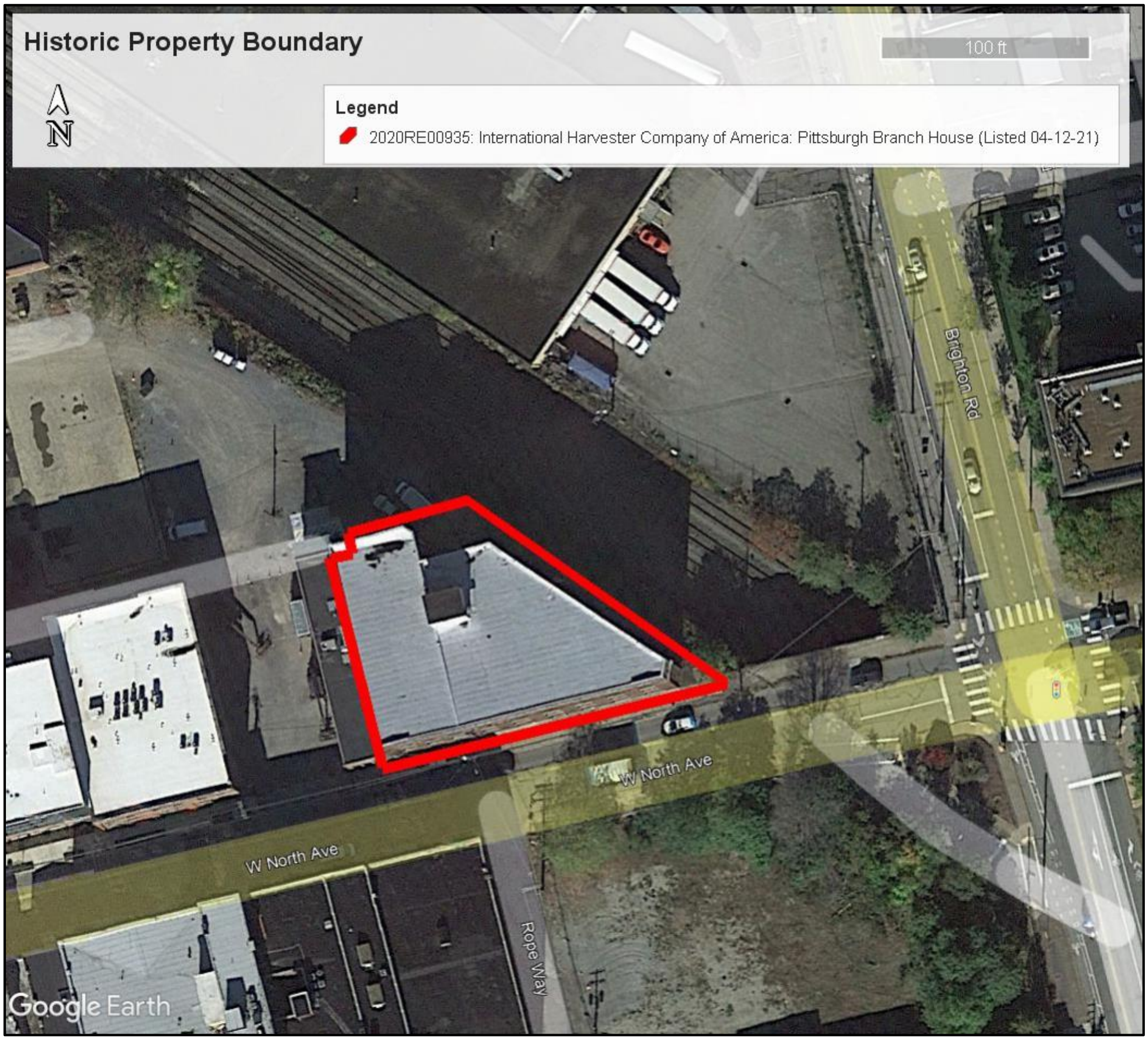

Figure 5-30: Historic property boundary for the International Harvester Building.

Allegheny City Stables Building

Description of Historic Property

840 W. North Avenue (Allegheny City Stables Building; Figure 5-31) is a three-story, Romanesque Revival influenced building originally occupied by the Allegheny City (later Pittsburgh) Department of Public Works as a horse stable and equipment storage building. The building was determined eligible for the NRHP on September 23, 2016. It is significant under Criterion A in the area of Politics/Government for its association with the bygone municipal government of the City of Allegheny, in particular its Public Works Department. It is one of a very small number of remaining municipal buildings constructed by and for Allegheny City. It is also associated with the government of the City of Pittsburgh, in particular its early-twentieth-century Division of Highways and Sewers and Bureau of Horses. Of the city-owned stable facilities known from the Bureau's records, a preliminary survey indicates that the former Allegheny City Stables is the only such building remaining. The Allegheny City Stables Building was designated a City of Pittsburgh Historic Site on July 7, 2007.

Significance of Historic Property

The Allegheny City Stables Building is eligible for listing in the NRHP under Criterion A in the area of Politics/Government, with a period of significance extending from 1895 to 1928.

Boundary of Historic Property

The historic property boundary conforms to Allegheny County Tax Parcel 0022-S-00172-0000-00 and encompasses approximately 0.39 acre (Figure 5-32). Since the building was recorded in PA SHARE, a large addition was constructed on the building's west façade. The resource's former tax parcel, 0023-N-00135-0000-00, was abolished and combined with the parcel to the immediate west (0022-S-00172-0000-00). The historic address of the Allegheny Stables Building (836) is no longer used. A new address, 840 W. North Avenue, is now used for the entire complex.

Figure 5-31: South (front) façade of the Allegheny City Stables Building at 840 W. North Avenue, facing northwest.

Figure 5-32: Historic property boundary for the Allegheny City Stables Building.

5.2 Efforts to Avoid or Minimize Adverse Effects

An *Alternatives Analysis Report* was prepared for the W. North Avenue Bridge Project (Michael Baker International, Inc. 2022), which identified four alternatives and a design modification option, as follows:

- Alternative 1 – No Build Alternative;
- Alternative 2 – Replace and raise bridge height to achieve 22′ vertical clearance;
- Alternative 3 – Replace bridge and lower railroad tracks to achieve 22′vertical clearance;
- Alternative 4 – Combination replace and raise bridge and lower railroad tracks to achieve 22′ vertical clearance; and
- Design Modification – Replace and raise bridge to achieve 21′-4″ vertical clearance.

In an effort to avoid and minimize effects on historic properties, Alternative 2 with the design modification of raising the bridge height to achieve 21′-4″ vertical clearance was chosen as the Preferred Alternative. The 21′-4″ design modification has benefits in reducing potential effects on historic properties compared to Alternative 2 at 22′-0″ vertical clearance. To aid in the assessment of visual effects of the Preferred Alternative, plan and profile views (Figure 5-33 and Figure 5-34) and a comparison of the existing conditions and renderings of the completed elevated street grades (Figure 5-35, Figure 5-36, Figure 5-37, Figure 5-38, Figure 5-39, Figure 5-40, Figure 5-41, Figure 5-42, Figure 5-43, Figure 5-44, Figure 5-45, Figure 5-46, Figure 5-47, and Figure 5-48) are provided on the following pages.

The Preferred Alternative activities that could affect historic properties include the replacement of the W. North Avenue Bridge superstructure; repairs to the substructure necessary to raise the bridge, increasing the vertical grade of the bridge approaches and sidewalks; side street adjustments to accommodate the roadway profile change; temporary construction impacts due to sidewalk replacement, driveway adjustments, and retaining wall and toe wall construction along several of the adjacent properties; permanent property acquisitions for embankment slopes in all four quadrants; and permanent property takes and temporary construction easements required for fill slopes in Allegheny Commons Park due to the bridge raising and construction.

The Preferred Alternative would require the removal of the entire existing superstructure and require the existing abutments to be modified in height and width to facilitate the new superstructure. The proposed superstructure would be a single-span prestressed concrete spread box beam bridge. The reinforced concrete deck would be 8″ thick and would be supported by 33 concrete box beams measuring 48″ wide and 30″ deep. The box beams are flared, ranging in spacing from 6′-0″ center to center at Abutment 2 to 7′-9 7/8″ center to center at Abutment 1, with three beams along the centerline of bridge at 7′-9 7/8″, as required by the configuration of roadway lanes on the bridge. Abutment 2 would be lengthened to correspond with the new superstructure plan-view configuration.

Roadway approach work along W. North Avenue would extend approximately 155′ to the west and 240' to the east of the bridge. Roadway approach work along Brighton Road would extend approximately 210′ to the south and 340′ to the north of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant and toe walls with pedestrian railings along Brighton Road. Due to the profile change, side street adjustments are required along Beech Avenue, Eloise Street, and the Buncher property driveway at 1201 Brighton Road. The W. North Avenue profile has a maximum 8.0% grade on the west approach to the intersection and 7.15% grade on the east approach, with points of reverse vertical curvature on either side tying into flatter slopes from the intersection. The Brighton Road profile has a maximum 6.8% grade on the south approach and a 6.0% grade on the north approach to the intersection, with each of these grades tying into points of reverse vertical curvature on the south and north ends further from the intersection with flatter grades. The Preferred Alternative would maintain the existing lane configuration and bike lanes; however, construction limits of the design modification would be reduced 25′ on North Avenue and 15′ on Brighton Road due to the lower vertical clearance over the railroad.

Property impacts under the design modification would include temporary construction impacts due to sidewalk replacement, driveway adjustments, and retaining wall and toe wall construction along several of the adjacent properties, along with permanent property acquisitions for embankment slopes in all four quadrants. Fill slopes in Allegheny Commons Park due to the bridge raise and the bridge construction phase would require both permanent property takes and temporary construction easements. The permanent property impact in the park would be approximately 0.09 acre and the temporary impact would be 0.04 acre.

Sidewalk grades would follow the roadway profile except for the sidewalk segment fronting the International Harvester Building (810-822 W. North Avenue), which would have a sidewalk length of 90′ consisting of 30′ ramp runs of 8.3% with two 5′ level landings. The ramp runs would be separated from the roadway with a proposed landscape area in order to maintain access to the building's existing main entrance.

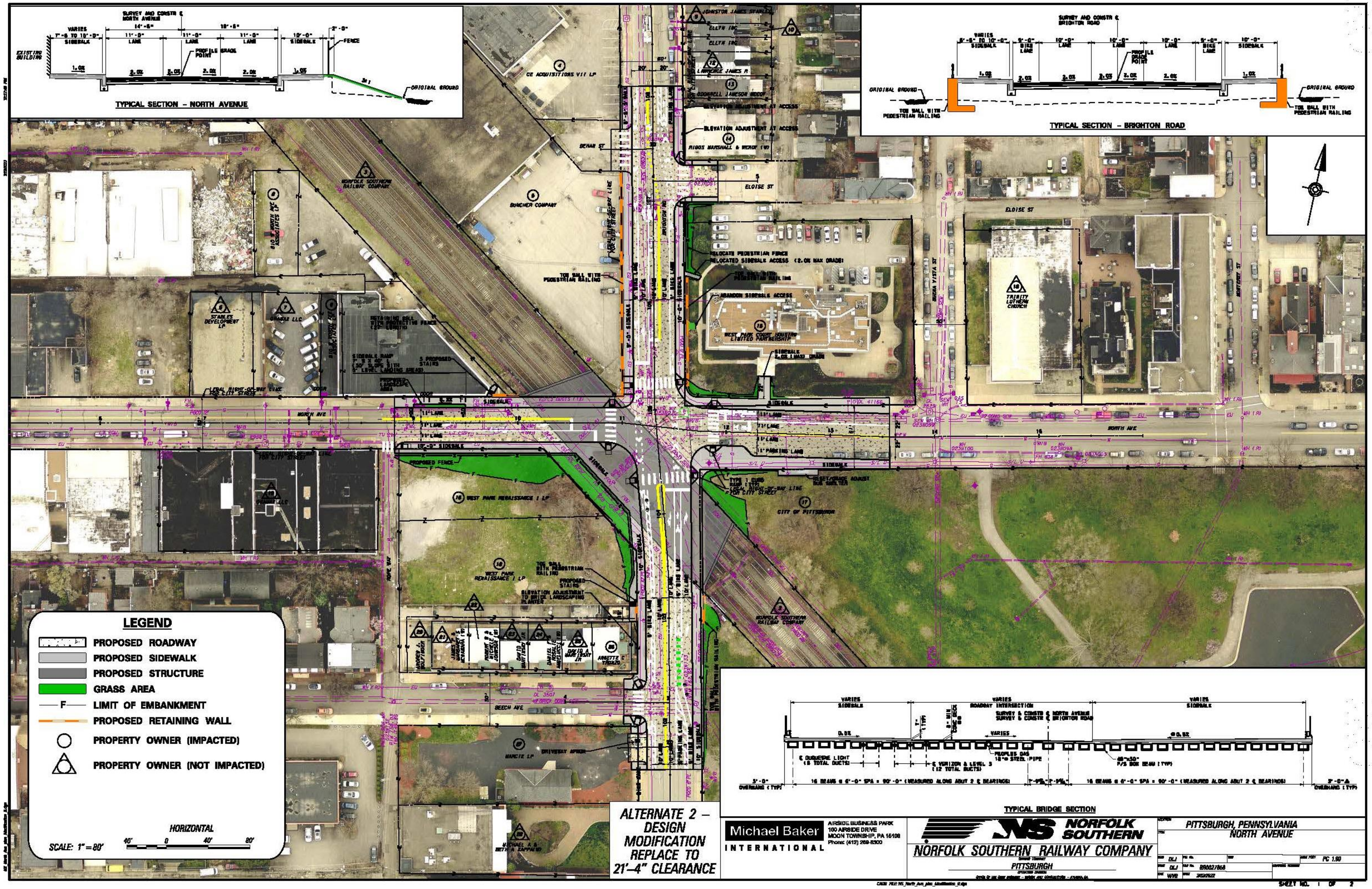

Figure 5-33: Plan and profile views showing the proposed bridge structure and changes to the roadway, and sidewalks.

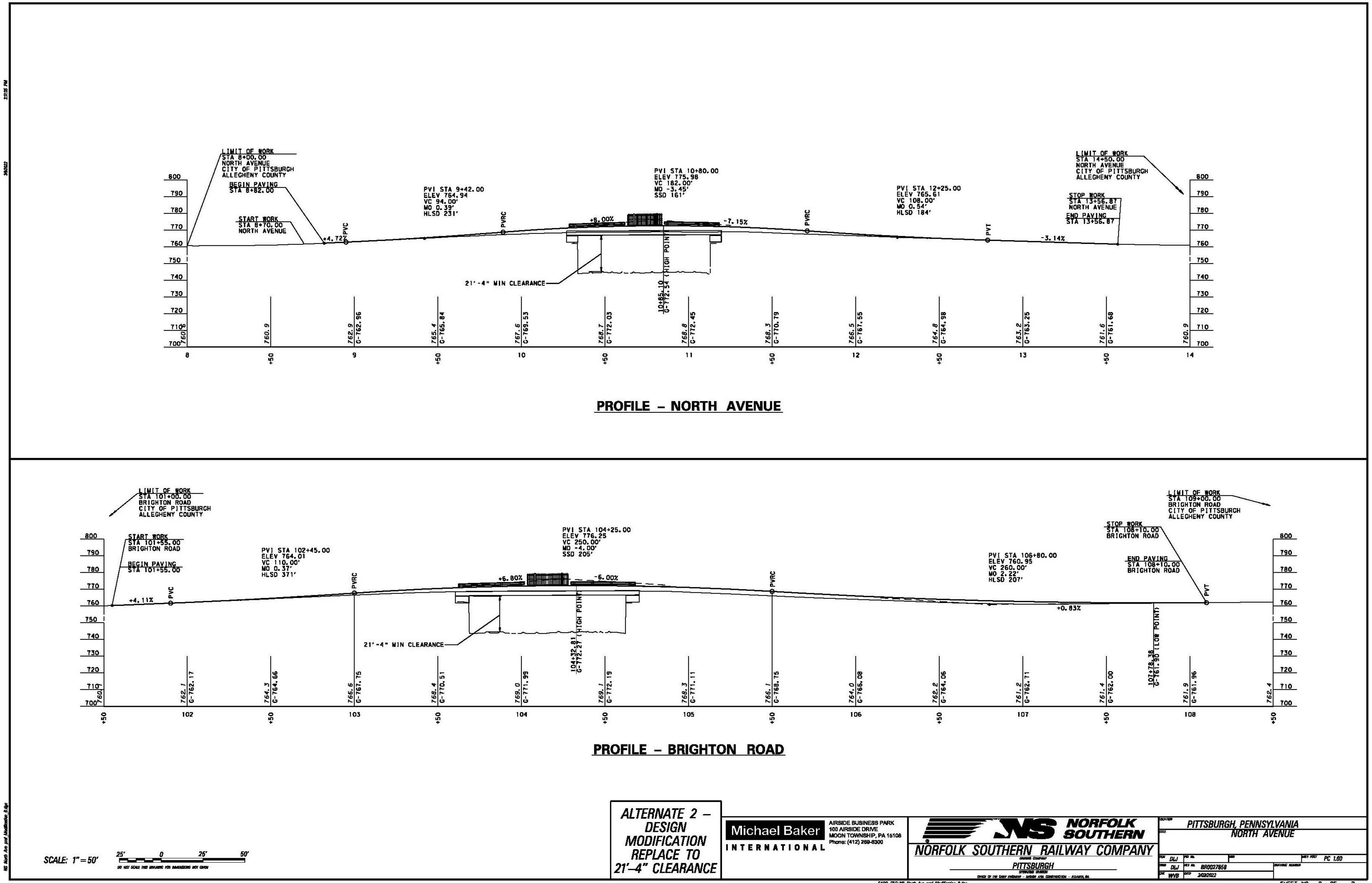

Figure 5-34: Profile view showing the proposed bridge structure and changes to the roadway, and sidewalks.

Figure 5-35: Photo of existing W. North Avenue Bridge from track edge, facing northwest.

Figure 5-36: Rendering of proposed W. North Avenue Bridge from track edge, facing northwest.

Figure 5-37: Photo of existing W. North Avenue Bridge from track edge, facing east.

Figure 5-38: Rendering of proposed W. North Avenue Bridge from track edge, facing east.

Figure 5-39: Photo of existing W. North Avenue Bridge from street level at the northeast corner of W. North Avenue and Brighton Road street level, facing southeast.

Figure 5-40: Rendering of proposed W. North Avenue Bridge from street level at the northeast corner of W. North Avenue and Brighton Road street level, facing southeast.

Figure 5-41: Photo of existing W. North Avenue Bridge from the southwest corner of Brighton Road and Beech Avenue, facing north.

Figure 5-42: Rendering of proposed W. North Avenue Bridge from the southwest corner of Brighton Road and Beech Avenue, facing north.

Figure 5-43: Photo of existing W. North Avenue Bridge from Brighton Road, facing southeast.

Figure 5-44: Rendering of proposed W. North Avenue Bridge from Brighton Road, facing southeast.

Figure 5-45: Photo of existing W. North Avenue Bridge from W. North Avenue Road, facing northeast.

Figure 5-46: Rendering of proposed W. North Avenue Bridge from W. North Avenue, facing northeast.

Figure 5-47: Photo of existing W. North Avenue Bridge from Allegheny Commons Historic District, facing northeast.

Figure 5-48 Rendering of proposed W. North Avenue Bridge from Allegheny Commons Historic District, facing northeast.

5.3 Application of Definition of Effect and Criteria of Adverse Effect

The following section describes how the proposed W. North Avenue Bridge Project would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 et seq.) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to the assessment of effects on historic and cultural resources.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The Preferred Alternative and design modification for the W. North Avenue Bridge Project would require the replacement of the bridge superstructure and repairs to its substructure to raise the bridge. The bridge is a contributing element of the NRHP-eligible Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District. The Preferred Alternative would also alter or remove portions of the concrete retaining walls with stone coping, decorative wrought-iron fencing, and standard railroad safety railing, which are contributing elements in this portion of the railroad corridor historic district. The potential to affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District is summarized in Table 5-1.

Table 5-1: Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

DEFINITION OF EFFECT	EVALUATION (Preferred Alternative)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) is eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district. The Preferred Alternative has the potential to affect the historic property by removing the W. North Avenue Bridge, a contributing element of the historic district and replacing it with a modern bridge, as well as altering or removing other contributing elements of the historic district.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District.

The Preferred Alternative would adversely affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District. The alternative would require the replacement of the W. North Avenue Bridge superstructure and repairs to the substructure necessary to raise the bridge. The W. North Avenue Bridge is a contributing element of the NRHP-eligible railroad corridor historic district, and its removal would adversely affect the characteristics of the historic district that qualify it for NRHP eligibility. The existing through-girder superstructure would be replaced with a single-span prestressed concrete spread box beam bridge and would result in a substantial visual change within the railroad corridor historic district. The expanded footprint of the bridge to the southeast and northwest would alter and obscure the concrete retaining walls with stone coping, remove portions of the standard railroad safety railings north of the bridge, and remove portions of the decorative wrought-iron fencing south of the bridge in this grade depressed section of the corridor. All of these elements contribute to the railroad corridor historic district and their removal would affect the characteristics of the historic district that qualify it for NRHP eligibility. To further address the effect on the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District, Table 5-2 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative will result in the physical destruction or damage to the historic property by demolishing and replacing the W. North Avenue Bridge and requiring alterations/removal of other contributing elements such as the concrete and stone retaining walls, decorative wrought iron fencing, and standard railroad safety fencing.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would require alterations that are not in keeping with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the railroad corridor historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use; the project would allow for the continued use of the historic property. The project would, however, affect features that contribute to the property's significance; the W. North Avenue Bridge is a contributing element of the historic district, as are the concrete and stone retaining walls, the

Table 5-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	
	decorative wrought iron fencing, and the standard railroad safety fencing.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the railroad corridor historic district's character-defining features. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district. The replacement of the W. North Avenue Bridge will, however, result in a substantial visual change within the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under the **Preferred Alternative**.	

Allegheny West Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155' to the west and 240' to the east of the bridge. Roadway approach work along Brighton Road would extend approximately 210' to the south and 340' to the north of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant and toe walls with pedestrian railings along Brighton Road. Due to the profile change, side street adjustments are required along Beech Avenue, Eloise Street, and the Buncher property driveway at 1201 Brighton Road.

No project activities would occur within the boundary of the historic district. The proposed vertical alignment adjustment in the 800 block of Beech Avenue would terminate approximately 225′ east of the historic district's eastern boundary and nearest contributing property at 824 Beech Avenue (Figure 5-49). The vertical alignment adjustment in the 900 block of Brighton Road would terminate approximately 90′ north of the historic district's northeast boundary and nearest contributing property at 913 Brighton Road (Figure 5-50). The proposed vertical alignment of adjustment in the 800 block of W. North Avenue would terminate approximately 120′ north of the historic district's north boundary along Buttercup Way and nearest contributing property at 824 Beech Avenue (Figure 5-51).

The Preferred Alternative would introduce new visual elements within the viewshed of the Allegheny West Historic District including a new W. North Avenue Bridge and increased vertical alignments of the bridge approaches sidewalks. The potential to affect the Allegheny West Historic District is summarized in Table 5-3.

Figure 5-49: View from east boundary of the Allegheny West Historic District at the intersection of Beech Avenue and Rope Way, facing east. The vertical alignment adjustment in the 800 block of Beech Avenue would begin approximately 225′ to the east.

Figure 5-50: View from northeast corner of the Allegheny West Historic District boundary and nearest contributing property at 913 Brighton Road, facing north. The vertical alignment adjustment in the 900 block of Brighton Road would begin approximately 90' to the north.

Figure 5-51: View from northeast corner of the Allegheny West Historic District boundary at the corner of Rope Way and Buttercup Way and nearest contributing property at 824 Beech Avenue, facing north. The vertical alignment adjustment in the 800 block of W. North Avenue would begin approximately 120' to the north.

Table 5-3: Results of Effect Evaluation for the Allegheny West Historic District	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Allegheny West Historic District is listed in the NRHP under Criteria A and C. The Preferred Alternative has the potential to affect the historic property by introducing new visual elements, such as the new W. North Avenue Bridge and elevated street and sidewalk grades along Brighton Road and W. North Avenue.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Allegheny West Historic District

The Preferred Alternative would introduce a new visual element within the viewshed of the district by replacing the existing W. North Avenue Bridge with a new superstructure and elevated street and sidewalk grades along Brighton Road and W. North Avenue to increase vertical clearance. The new superstructure would not result in a substantial visual change within the viewshed of the historic district. To further address the potential effects on the Allegheny West Historic District as indicated above, Table 5-4 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-4: Application of the Criteria of Adverse Effect for the Allegheny West Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property. No project activities would occur within the boundary of the historic district.

Table 5-4: Application of the Criteria of Adverse Effect for the Allegheny West Historic District	
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative requires no alterations to buildings, streets, or sidewalks within the historic district.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the district's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic district's character-defining features. The visual effects of the project on the historic district will be minor. The new W. North Avenue Bridge would not result in a substantial visual change within the viewshed of the historic district. The raising of the street and sidewalk grade would not result in a substantial visual change within the viewshed of the historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Allegheny West Historic District under the **Preferred Alternative**.	

Mexican War Streets Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155′ to the west and 240' to the east of the bridge. Roadway approach work along Brighton Road would extend approximately 210′ to the south and 340′ to the north of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant and toe walls with pedestrian railings along Brighton Road. Due to the profile change, side street adjustments are required along Beech Avenue, Eloise Street, and the Buncher property driveway at 1201 Brighton Road.

No project activities would occur within the boundary of the historic district. The proposed vertical alignment adjustment in the 700 block of W. North Avenue would terminate approximately 35′ west of the historic district's southeast boundary at the corner of W. North Avenue and Buena Vista Street and approximately 185′ south of its nearest contributing property at 1201 Buena Vista Street (Figure 5-52). The proposed vertical alignment adjustment in the 700 block of Eloise Street would terminate approximately 60′ west of the historic district's western boundary along Drovers Way and approximately 60′ west of its nearest contributing property at 1201 Buena Vista Street (Figure 5-53).

The Preferred Alternative would introduce new visual elements within the viewshed of the Mexican War Streets Historic District including a new W. North Avenue Bridge and increased vertical alignments of the bridge approaches sidewalks. The potential to affect the Mexican War Streets Historic District is summarized in Table 5-5.

Figure 5-52: View from southwest corner of the Mexican War Streets Historic District boundary at the corner of W. North Avenue and Buena Vista Street, facing west. The vertical alignment adjustment in the 700 block of W. North Avenue would begin approximately 35′ to the north.

Figure 5-53: View from southwest corner of the Mexican War Streets Historic District boundary at the corner of Eloise Steet and Drovers Way, facing west. The vertical alignment adjustment in the 700 block of Eloise Street would begin approximately 60' to the west.

Table 5-5: Results of Effect Evaluation for the Mexican War Streets Historic District	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Mexican War Streets Historic District is eligible for listing in the NRHP under Criteria A and C. The Preferred Alternative has the potential to affect the historic property by introducing new visual elements, such as the new W. North Avenue Bridge and elevated street and sidewalk grades along Brighton Road and W. North Avenue.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Mexican War Streets Historic District

The Preferred Alternative would introduce a new visual element within the viewshed of the district by replacing the existing W. North Avenue Bridge with a new superstructure and elevated street and sidewalk grades along Brighton Road and W. North Avenue to increase vertical clearance. The new superstructure would not result in a substantial visual change within the viewshed of the historic district. To further address the potential effects on the Mexican War Streets Historic District as indicated above, Table 5-6 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-6: Application of the Criteria of Adverse Effect for the Mexican War Streets Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property. No project activities would occur within the boundary of the historic district.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative requires no alterations to buildings, streets, or sidewalks within the historic district.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the district's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic district's character-defining features. The visual effects of the project on the historic district will be minor. The new W. North Avenue Bridge would not result in a substantial visual change within the viewshed of the historic district. The raising of the street and sidewalk

Table 5-6: Application of the Criteria of Adverse Effect for the Mexican War Streets Historic District	
	grade would not result in a substantial visual change within the viewshed of the historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Mexican War Streets Historic District under the **Preferred Alternative**.	

Allegheny Commons Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155' to the west and 240' to the east of the bridge. Roadway approach work along Brighton Road would extend approximately 210' to the south and 340' to the north of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant and toe walls with pedestrian railings along Brighton Road. Due to the profile change, side street adjustments are required along Beech Avenue, Eloise Street, and the Buncher property driveway at 1201 Brighton Road.

The Preferred Alternative has the potential to affect the NRHP-listed Allegheny Commons Historic District. The proposed vertical alignment adjustment in the 700 block of W. North Avenue and in the 900 and 1000 blocks of Brighton Road would require temporary construction impacts due to sidewalk replacement and toe wall construction, and permanent property acquisitions for fill slopes along a small portion of the historic district's north and west boundaries. The permanent property impact in the park would be approximately 0.09 acre and the temporary impact in the park would be 0.04 acre. The replacement W. North Avenue Bridge would incorporate a triangular concrete covering over the railroad corridor extending approximately 35' east of the current outside edge of the present bridge and within the historic district. The existing bus shelter in the 700 block of W. North Avenue would be grade adjusted, and the existing retaining wall and low fence along south side of W. North Avenue would be removed, and adjacent fill slopes would be regraded. The existing retaining wall and low fence along the east side of Brighton Road would be replaced with a new retaining wall and low fence. The potential to affect the Allegheny Commons Historic District is summarized in Table 5-7.

Table 5-7: Results of Effect Evaluation for the Allegheny Commons Historic District	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Allegheny Commons Historic District is eligible for listing in the NRHP under Criteria A and C. The Preferred Alternative has the potential to affect the historic property by requiring minimal temporary and permanent right-of-way and by introducing new visual elements, such as the new W. North Avenue Bridge, elevated street and sidewalk grades along W. North Avenue and Brighton Road, the removal of a low fence and wall along the north side of the historic district and the replacement of a low fence along the west side of the historic district.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Allegheny Commons Historic District

To further address the potential effects on the Allegheny Commons Historic District as indicated above, Table 5-8 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-8: Application of the Criteria of Adverse Effect for the Allegheny Commons Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property. Temporary construction impacts due to sidewalk replacement and toe wall construction, and permanent property acquisitions for fill slopes will be required along a small portion of the historic district's north and west boundaries. The permanent property impact in

Table 5-8: Application of the Criteria of Adverse Effect for the Allegheny Commons Historic District	
	the park would be approximately 0.09 acre and the temporary impact in the park would be 0.04 acre.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would raise the street and sidewalk along the northwest corner of the historic district. All sidewalks and fences/handrails would meet applicable ADA design standards and will be executed in accordance with the SOI Standards.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The new W. North Avenue Bridge would not affect features that contribute to the district's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The replacement W. North Avenue Bridge would incorporate a triangular concrete covering over the railroad corridor extending approximately 35' east of the current outside edge of the present bridge and within the historic district. The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic district's character-defining features. The new W. North Avenue Bridge and the raising of the street and sidewalk grade would not result in a substantial visual change within the viewshed of the historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Allegheny Commons Historic District under the **Preferred Alternative**.	

Allegheny Second Ward Industrial Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155′ to the west and 240' to the east of the bridge. Roadway approach work along Brighton Road would extend approximately 210′ to the south and 340′ to the north of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant and toe walls with pedestrian railings along Brighton Road. Due to the profile change, side street adjustments are required along Beech Avenue, Eloise Street, and the Buncher property driveway at 1201 Brighton Road.

The Preferred Alternative has the potential to affect the NRHP-eligible Allegheny Second Ward Industrial Historic District. Activities within the district would include approximately 155′ of roadway approach work within the 800 block of W. North Avenue, a vertical alignment adjustment to Rope Way to accommodate the raised profile adjustment to W. North Avenue, roadway pavement and sidewalk reconstruction, and the construction of a fill slope and a retaining wall, both with pedestrian railings. The proposed vertical alignment adjustment in the 800 block of W. North Avenue would increase the profile grade to a maximum of 8.0%. Sidewalk grades would follow the roadway profile except for the sidewalk segment fronting the International Harvester Building, a contributing element of the historic district, which would have a sidewalk length of 90′ consisting of 30′ ramp runs of 8.3% with two 5′ level landings. The ramp runs would be separated from the roadway with a proposed landscape area in order to maintain access to the building’s existing main entrance. While the doorway would not require alteration, the partially infilled first-floor display windows east of the doorway would need to be shortened by raising the limestone water table and sills to accommodate the increased vertical alignment of the sidewalk or window wells would need to be constructed to preserve the existing window dimensions and stone water table. The three display windows east of the doorway were shortened, and the limestone water table was raised when the vertical alignment of W. North Avenue raised ca. 1929 and again in the 1940s, resulting in the stepped limestone water table seen on the building today (Figure 5-54, Figure 5-55, and Figure 5-56). Concrete stairs would be constructed to access the existing walkway along the building’s northeast façade, and a 27′ retaining wall with a protective fence would be constructed along W. North Avenue between the stairs and the new bridge. The former Hipwell Manufacturing Company complex consists of five separate buildings, all of which contribute to the historic district. The proposed vertical alignment adjustment in the 800 block of W. North Avenue would only affect the easternmost Hipwell building (825-829 W. North Avenue) where the profile of an approximately 25′ segment of sidewalk would be raised to accommodate the new profile of W. North Avenue. The two remaining contributing buildings of the historic district located in the APE, the Katsafanas Coffee Company Building (828 W. North Avenue) and the Allegheny City Stables Building (840 W. North Avenue), would not be directly affected by project activities. The potential to affect the Allegheny Second Ward Industrial Historic District is summarized in Table 5-9.

Figure 5-54: View of the International Harvester Building in 1904 showing the limestone foundation/water table and first floor windowsills prior to the grade separation of W. North Avenue and the rail corridor that occurred ca. 1906.

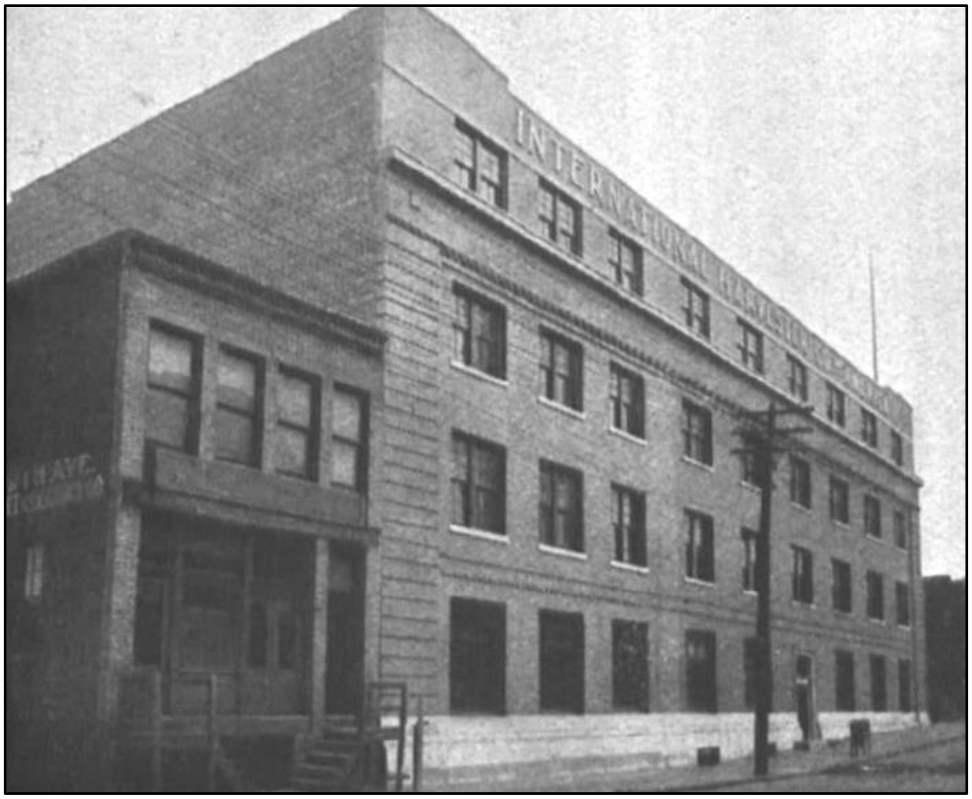

Figure 5-55: View of the International Harvester Building in 1913 showing the limestone foundation/water table and first floor windowsills prior to alterations from street grade changes ca. 1929 and again in the 1940s.

Figure 5-56: Current view of the International Harvester Building showing the stepped limestone foundation/water table and first floor windowsills of the three easternmost first-floor display windows after alterations from street grade changes ca. 1929 and again in the 1940s.

Table 5-9: Results of Effect Evaluation for the Allegheny Second Ward Industrial Historic District	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Allegheny Second Ward Industrial Historic District is eligible for listing in the NRHP under Criteria A and C. The Preferred Alternative has the potential to affect the historic property by introducing new visual elements, such as the new W. North Avenue Bridge, elevated street and sidewalk grades along W. North Avenue, and a sidewalk ramp along one of the district's contributing buildings, the International Harvester Building, at 810-822 W. North Avenue. The proposed sidewalk would require alterations to the building's front façade or the construction of window wells.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District

To further address the potential effects on the Allegheny Second Ward Industrial Historic District as indicated above, Table 5-10 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-10: Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	While the Preferred Alternative would require the construction of window wells or modifications to three infilled first-floor display windows, which have been modified in the past, alternatives have been developed that would minimize damage to the historic property.

Table 5-10: Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District	
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would raise the street and sidewalk along the International Harvester Building, a contributing element of the historic district, for a distance of approximately 90′ consisting of 30′ ramp runs of 8.3% with two 5′ level landings. The ramp runs would be separated from the roadway with a proposed landscape area in order to maintain ADA-compliant access at the building's existing entrance. No physical changes on the interior are required. Required exterior changes to the three display windows noted above will be executed in accordance with the SOI Standards.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the property from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the property's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic property's character-defining features. The visual effects of the project on the historic property will be minor. The new W. North Avenue Bridge, the raising of the street and sidewalk grade, the bifurcation of a modern sidewalk, and the alteration of recent landscape elements would not result in a substantial visual change within the viewshed of the historic property.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Allegheny Second Ward Industrial Historic District under the **Preferred Alternative**.	

International Harvester Company of America: Pittsburgh Branch House

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155′ to the west and 240' to the east of the bridge. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of a retaining wall in the northwest quadrant.

The Preferred Alternative has the potential to affect the NRHP-listed International Harvester Building as noted in the above assessment of the Allegheny Second Ward Industrial Historic District. The building would be directly affected by the construction of window wells or the shortening of three first-floor display windows, the potential raising of the limestone water table and windowsills, and the construction of a concrete stair to access an existing walkway along the building's northeast facade. The potential to affect the International Harvester Building is summarized in Table 5-11.

Table 5-11: Results of Effect Evaluation for the International Harvester Building

DEFINITION OF EFFECT	EVALUATION (Preferred Alternative)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The International Harvester Building is eligible for listing in the NRHP under Criteria A, B, and C. The Preferred Alternative has the potential to affect the historic property by requiring alterations to the building's front façade and by introducing new visual elements, such as the new W. North Avenue Bridge and elevated street and sidewalk grades along W. North Avenue.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the International Harvester Building

The Preferred Alternative would require a vertical alignment adjustment in the 800 block of W. North Avenue that would increase the profile grade to a maximum of 8.0%. Sidewalk grades would follow the roadway profile except for the sidewalk segment fronting the International Harvester Building, which would have a sidewalk length of 90′ consisting of 30′ ramp runs of 8.3% with two 5′ level landings. The ramp runs would be separated from the roadway with a proposed landscape area in order to maintain access to the building's existing main entrance. While the doorway would not require alteration, three partially infilled first-floor display windows east of the doorway would need to be protected by window wells or shortened by raising the limestone water table and sills to accommodate the increased vertical alignment of the sidewalk. The windows were shortened, and the limestone water table was raised when the vertical alignment of W. North Avenue raised ca. 1929 and again in the 1940s, resulting in the stepped water table seen on the building today. Both window treatment alternatives will be explored with the property owner prior to final design. Concrete stairs would be constructed to access the existing walkway along the building's northeast façade, and a 27′ retaining wall with a protective fence would be constructed along W. North Avenue between the stairs and the new bridge.

To further address the potential effects on the International Harvester Building as indicated above, Table 5-12 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-12: Application of the Criteria of Adverse Effect for the International Harvester Building

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	While the Preferred Alternative would require the construction of window wells or shortening of three infilled first-floor display windows, which have been modified in the past, alternatives have been developed that would minimize damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would raise the street and sidewalk along the International Harvester Building for a distance of approximately 90' consisting of 30' ramp runs of 8.3% with two 5' level landings. The ramp runs would be separated from the roadway with a proposed landscape area in order to maintain ADA-compliant access at the building's existing entrance. No physical changes on the interior are required. Required exterior changes to the three display windows noted above will be executed in accordance with the SOI Standards.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the property from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the property's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.

Table 5-12: Application of the Criteria of Adverse Effect for the International Harvester Building	
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic property's character-defining features. The visual effects of the project on the historic property will be minor. The new W. North Avenue Bridge, the raising of the street and sidewalk grade, the bifurcation of a modern sidewalk, and the alteration of recent landscape elements would not result in a substantial visual change within the viewshed of the historic property.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the International Harvester Building under the **Preferred Alternative**.	

Allegheny City Stables Building

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the W. North Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work along W. North Avenue would extend approximately 155' to the west and 240' to the east of the bridge. Approach work would include roadway pavement and sidewalk reconstruction.

No project activities would occur within the property boundary. The proposed vertical alignment adjustment in the 800 block of W. North Avenue would terminate approximately 100' east of the property boundary (Figure 5-57). The potential to affect the Allegheny City Stables Building is summarized in Table 5-13.

Figure 5-57: View from southeast corner of the Allegheny City Stables boundary along W. North Avenue, facing east. The vertical alignment adjustment in the 800 block of W. North Avenue would begin approximately 100' to the east.

Table 5-13: Results of Effect Evaluation for the Allegheny City Stables Building	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Allegheny City Stables Building is eligible for listing in the NRHP under Criterion A. The Preferred Alternative has the potential to affect the historic property by introducing new visual elements, such as the new W. North Avenue Bridge and elevated street and sidewalk grades along W. North Avenue.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Allegheny City Stables Building

The Preferred Alternative would introduce a new visual element within the viewshed of the Allegheny City Stables Building by replacing the existing W. North Avenue Bridge with a new superstructure and elevated street and sidewalk grades along W. North Avenue to increase vertical clearance. The new superstructure would not result in a substantial visual change within the viewshed of the historic property. To further address the potential effects on the Allegheny City Stables

Building as indicated above, Table 5-14 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 5-14: Application of the Criteria of Adverse Effect for the Allegheny City Stables Building

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property. No project activities would occur within the boundary of the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative requires no alterations to the building or to the adjacent sidewalk and street. The proposed vertical alignment adjustment in the 800 block of W. North Avenue would terminate approximately 100' east of the property boundary.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the historic property from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the property's significance; the W. North Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic property's character-defining features. The new W. North Avenue Bridge and the raising of the street and sidewalk grade would not result in a substantial visual change within the viewshed of the property.

Table 5-14: Application of the Criteria of Adverse Effect for the Allegheny City Stables Building	
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The W. North Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Allegheny City Stables Building under the **Preferred Alternative**.	

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6.0 Pennsylvania Avenue Bridge Project

6.1 Results of the Identification of Historic Properties

6.1.1 Area of Potential Effects

APE Justification

Consistent with the methodology for establishing project APEs presented in Chapter 1 for projects where corridor constraints are present that could limit or prevent track lowering, the Pennsylvania Avenue APE was based on the bridge raising to achieve full vertical clearance per PUC requirements at this location as a worst-case scenario. The APE takes into account the nature of the undertaking and its potential for direct and indirect effects (including cumulative effects) on historic properties.

Because the proposed replacement of the bridge includes alternatives at a greater height to obtain the appropriate vertical clearance, the APE was drawn to encompass the bridge and roughly a one-parcel buffer around the greater project construction limits including all potentially affected streets that would experience grade changes. These grade changes would potentially affect properties along Pennsylvania Avenue between Allegheny Avenue and Brighton Road including intersecting streets and driveways. The APE is illustrated in Figure 6-1.

APE Description

Beginning at the southwest corner of tax parcel 22-S-324 at the northeast corner of Allegheny Avenue and Behan Street, the APE extends northwest along the northeast side of Allegheny Avenue approximately 1,120′ to its intersection with the southwest side of the railroad right-of-way. The APE then extends southeast along said right-of-way approximately 750′ to the northwest side of the Pennsylvania Avenue Bridge. The APE extends northeast approximately 300′ along the bridge to the southwest corner of tax parcel 22-M-97. The APE follows the southwest property line of said tax parcel approximately 200′ to the southeast side of Jacksonia Street. The APE follows Jacksonia Street approximately 90′ to the northeast property line of tax parcel 22-M-97 turning southeast and extending approximately 140′ to the northwest property line of tax parcel 22-M-110. The APE extends northeast to the northeast side of Brighton Place. The APE follows the northwest property boundaries of tax parcels 22-M-122 and 23-J-160 to the southwest side of Brighton Road. The APE extends southeast along Brighton Road approximately 300′ to Offley Street. The APE extends southwest approximately 670′ along Offley Street to the southwest side of the railroad right-of-way. The APE extends southeast approximately 375′ along the southwest side of Galveston Avenue to its intersection with Behan Street. The APE extends southwest approximately 700′ along the northwest side of Behan Street to the point of the beginning. The APE contains approximately 16.2 acres.

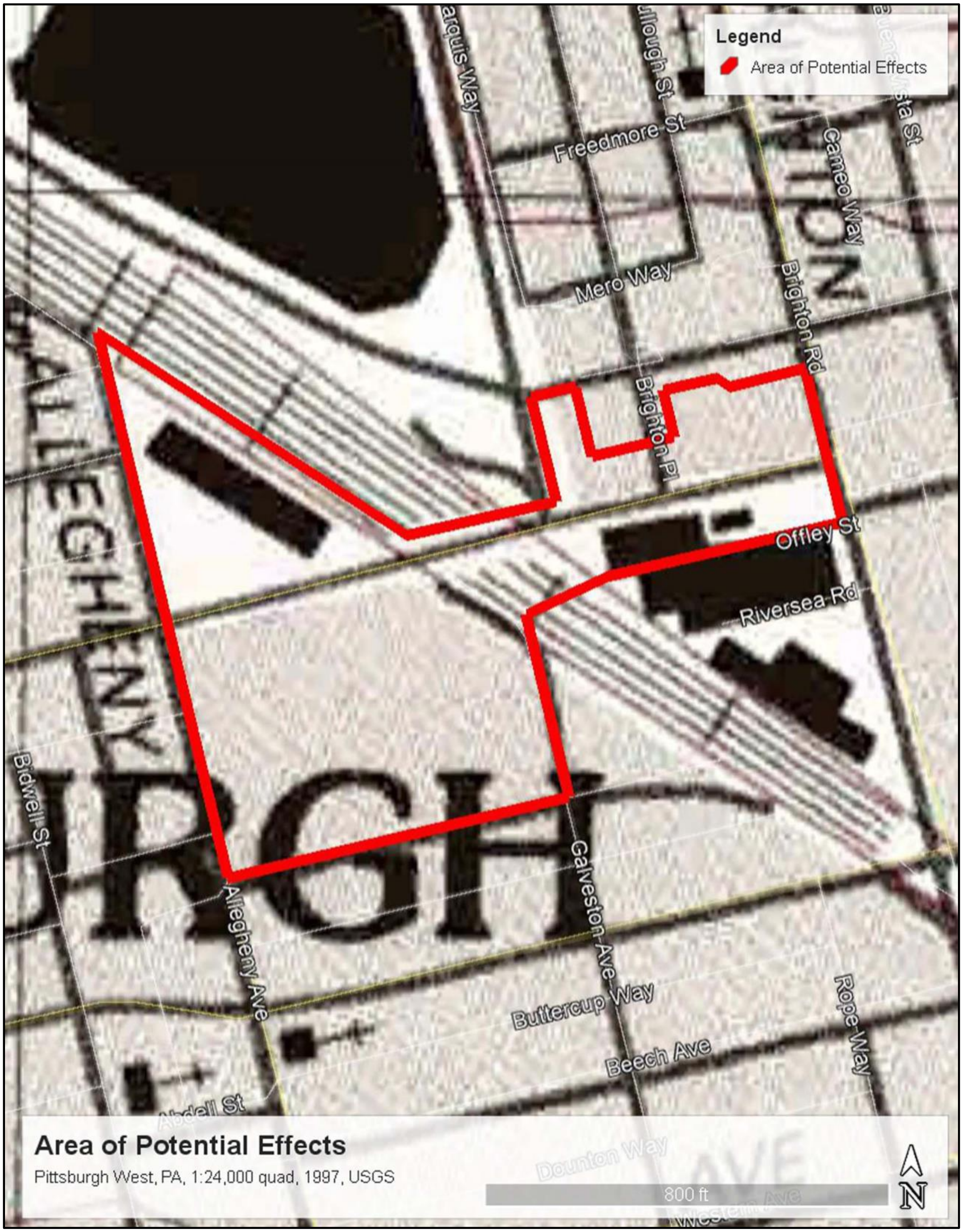

Figure 6-1: Pennsylvania Avenue Bridge APE shown on topographic mapping (USGS 1997).

6.1.2 Historic Properties Identified within the APE

An *Identification of Historic Properties Report* was submitted to the PA SHPO in September 2019 (Michael Baker International, Inc. 2019), which identified two historic properties in the APE, the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line, Resource No. 1993RE01080) and the Allegheny Second Ward Industrial Historic District, for the Pennsylvania Avenue Bridge Project (Resource No. 2019RE06933).

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Description of Historic Property

The portion of railroad corridor surveyed for this project area includes approximately 265 linear feet of right-of-way at the intersection of Pennsylvania Avenue and Galveston Avenue on Pittsburgh's North Side (Figure 6-2 and Figure 6-3). The track milepost is PC-1.82. The surveyed portion of track, including the right-of-way, is approximately 110 feet wide and contains four tracks. Three features dating to the district's 1848-1958 period of significance were identified in the survey area: concrete retaining walls along the southwest and northeast edges of the depressed section of the corridor (Figure 6-2, Figure 6-3, Figure 6-4, and Figure 6-5), wrought-iron fencing (see Figure 6-2 and Figure 6-6), and standard railroad safety railings (see Figure 6-2 and Figure 6-7). The Pennsylvania Avenue Bridge was constructed ca. 1985-1986 (after the district's period of significance) and is therefore not a contributing element of the historic district (Figure 6-8 and Figure 6-9).

Figure 6-2: View of surveyed segment of rail corridor from western terminus of Riversea Road showing the southeast side of the Pennsylvania Avenue Bridge, the southwest concrete retaining walls with stone coping (left), decorative wrought iron fencing (left), and standard railroad safety fencing (center-right), facing northwest. Ramps for former elevated sidings are visible on both sides of the corridor.

Figure 6-3: View of surveyed segment of rail corridor from northern terminus of Galveston Avenue showing the southeast side of the Pennsylvania Avenue Bridge and the northeast concrete and stone retaining walls (beyond the bridge), facing northwest.

Figure 6-4: Concrete retaining walls with stone coping and decorative wrought iron fencing along the southwest side of the corridor and southeast of the Pennsylvania Avenue Bridge, facing southwest.

Figure 6-5: Rail corridor from Pennsylvania Avenue Bridge showing northeast concrete retaining wall with stone coping along USPS facility, facing north.

Figure 6-6: Detail of wrought-iron fencing atop the southwest concrete and stone retaining wall along northeast side of Galveston Avenue, facing northwest.

Figure 6-7: Detail of standard railroad safety fencing (left) along edge of ramp to former elevated siding along the northeast side of the corridor, facing southeast.

Figure 6-8: Southeast side of the Pennsylvania Avenue Bridge showing the modern substructure and superstructure, facing northwest.

Figure 6-9: Pennsylvania Avenue Bridge showing the deck and southeast girder, facing southwest.

Of the three historic-age features identified within the APE, all have been found to be NRHP eligible as contributing elements, being functional and/or decorative components that were constructed during the district's period of significance and that retain historic integrity.

Significance of Historic Property

The Pennsylvania Railroad Main Line from Pittsburgh to the Ohio state line was previously determined eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district for its "state-wide significance in transportation, economy and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958.

Requirements for rail safety and rail operation require periodic replacement of rail infrastructure including ballast, rail ties, rails, and associated structures since the time of the period of significance. The main line will continue to be used for rail operations as part of the proposed project.

Boundary of Historic Property

The historic property includes the entirety of the surveyed segment of railroad within the APE as described above (Figure 6-10). The 265-foot segment of right-of-way is approximately 100 feet wide and encompasses approximately 0.67 acre.

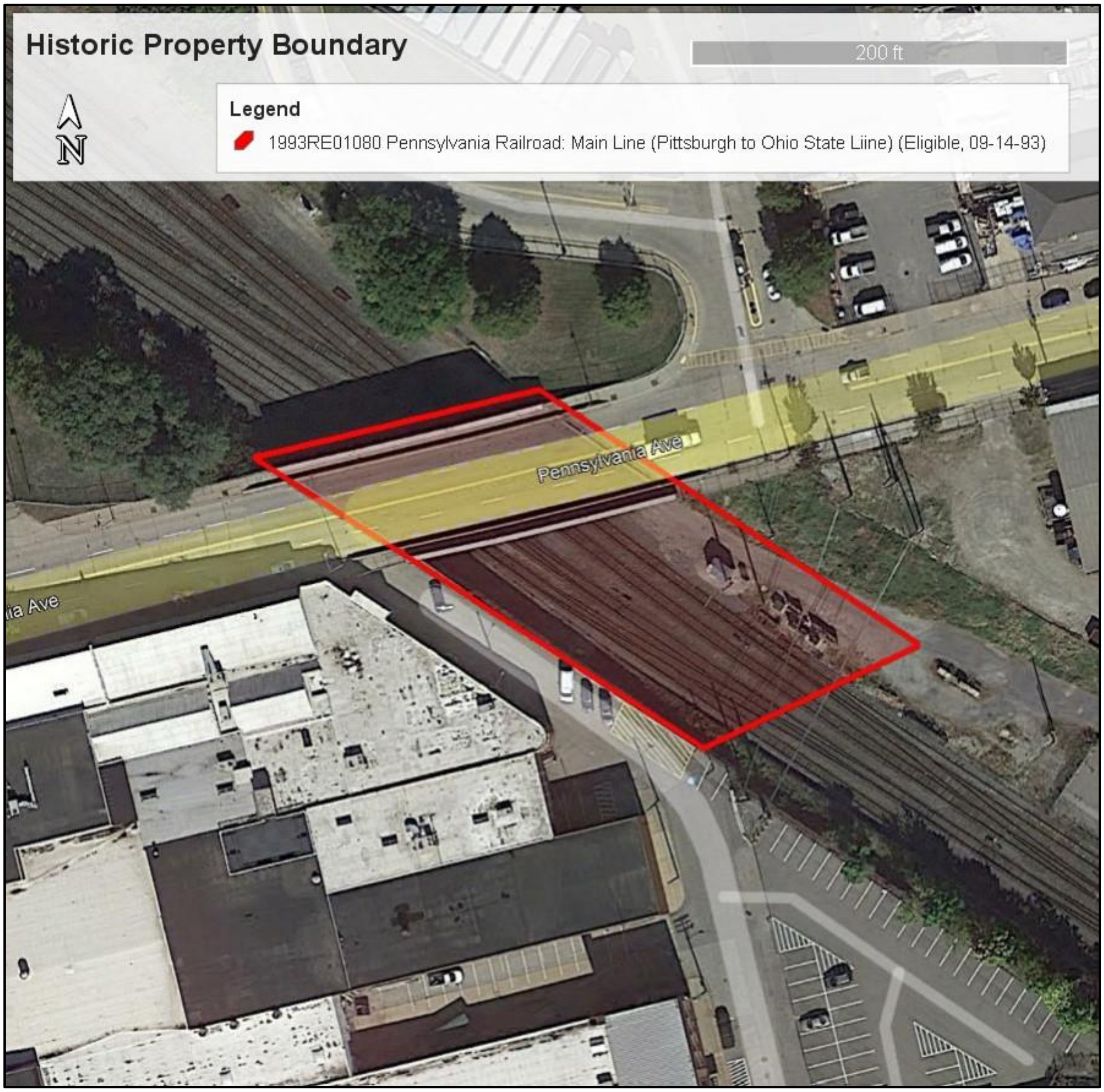

Figure 6-10: Historic property boundary for the segment of the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District within the Pennsylvania Avenue Bridge APE.

Allegheny Second Ward Industrial Historic District

Description of Historic Property

The Allegheny Second Ward Industrial Historic District (Figure 6-11 and Figure 6-12) is located in the former Second Ward of Allegheny City (currently the Twenty-Second Ward of the City of Pittsburgh). The district contains 30 resources (30 parcels), 26 of which contribute to the district. Of the 30 resources, six were constructed between 1850-1894; 11 were constructed between 1894-1910; six were constructed between 1910-1926; and the remaining seven were constructed prior to 1968. Nearly all of the buildings within the district are brick masonry. One contributing building, located at 901 Pennsylvania Avenue, is within the Pennsylvania Avenue Bridge Project APE (Figure 6-13 and Figure 6-14).

Significance of Historic Property

The Allegheny Second Ward Industrial Historic District is eligible under Criterion A in the areas of Industry and Commerce for its role in metallurgy in the twentieth century and Criterion C in the area of Architecture. Its period of significance is from circa 1849, the year construction began, to 1951, the date of construction of several of the latest buildings in the district.

Boundary of Historic Property

The boundary of the historic district encompasses the north and south sides of the 800 block and portions of the north and south sides of the 900 block of W. North Avenue, the north and south sides of the 800 and 900 blocks of Behan Street, the south side of the 900 block of Pennsylvania Avenue, 850 Pennsylvania Avenue, and the north side of Riversea Road. The irregular-shaped boundary encompasses approximately 21.5 acres (Figure 6-15).

Figure 6-11: A portion of the Allegheny Second Ward Industrial Historic District from the intersection of Galveston Avenue and W. North Avenue, facing north.

Figure 6-12: 825-839 W. North Avenue, Hipwell Buildings showing the east (side) and north (front) façades, facing southwest.

Figure 6-13: 901 Pennsylvania Avenue from the deck of the Pennsylvania Avenue Bridge, facing southwest.

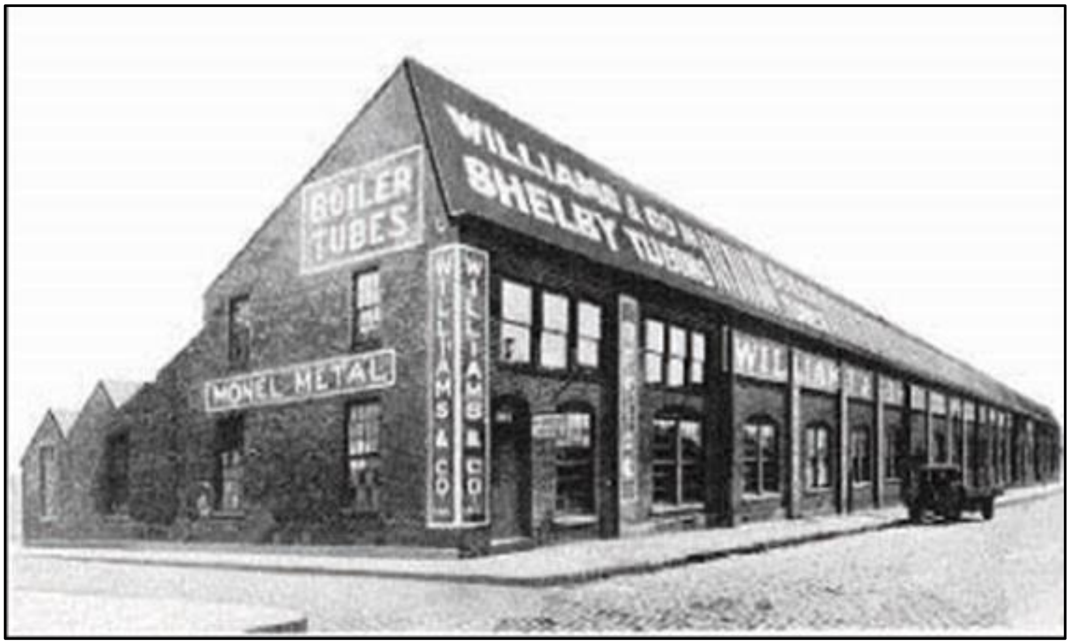

Figure 6-14: Early-twentieth-century photograph of 901 Pennsylvania Avenue from the intersection of Pennsylvania and Galveston avenue bridges, facing southwest.

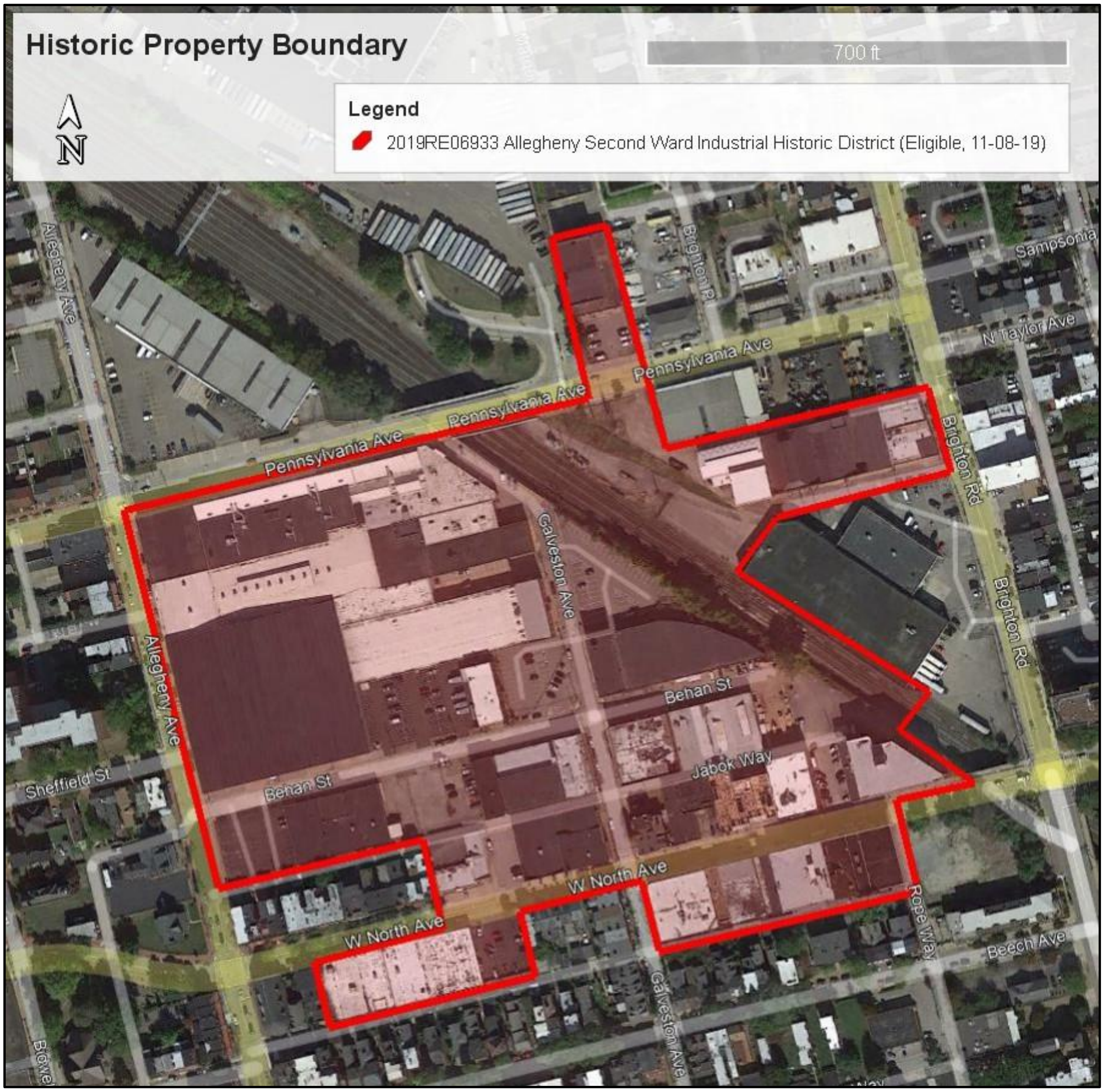

Figure 6-15: Historic property boundary for the Allegheny Second Ward Industrial Historic District.

6.2 Efforts to Avoid or Minimize Adverse Effects

An *Alternatives Analysis Report* was prepared for the Pennsylvania Avenue Bridge Project (Michael Baker International, Inc. 2022), which identified four alternatives and a design modification option, as follows:

- Alternative 1 – No Build Alternative;
- Alternative 2 – Replace and raise bridge height to achieve 22′ vertical clearance;
- Alternative 3 – Repair substructure and lower tracks to achieve 22′ vertical clearance;
- Alternative 4 – Combination replace and raise bridge and lower railroad tracks to achieve 22′ vertical clearance; and
- Design Modification – Replace and raise bridge to achieve 21′-2″ vertical clearance.

In an effort to avoid and minimize effects on historic properties, Alternative 2 with the design modification of raising the bridge height to achieve 21′-2″ vertical clearance was chosen as the Preferred Alternative. The 21′-2″ alternative has benefits in reducing potential effects on historic resources as compared to Alternative 2 at 22′ vertical clearance. To aid in the assessment of visual effects of the Preferred Alternative, plan and profile views (Figure 6-16) and a comparison of the existing conditions and renderings of the completed elevated street grades (Figure 6-17, Figure 6-18, Figure 6-19, Figure 6-20, Figure 6-21, Figure 6-22, Figure 6-23, Figure 6-24, Figure 6-25, and Figure 6-26) are provided on the following pages.

The Preferred Alternative activities that could affect historic properties include the replacement of the Pennsylvania Bridge superstructure and the modification of the existing abutments. The existing abutments and wingwalls would be retained, but the top portions of the substructure would be reconstructed to facilitate the raised superstructure. The existing through-girder bridge would be replaced with a new single-span, steel structure supported by two pony trusses, one at each fascia. The proposed span length of the new superstructure would be 145′-0″ measured from centerline of bearings at Abutment 1 to centerline of bearings at Abutment 2. Steel floorbeams would span between the pony trusses at intervals of approximately 7′-3″. The pony trusses would have a 15-foot preliminary truss height, and the floorbeams would be approximately 28″ deep.

Roadway approach work along Pennsylvania Avenue would extend approximately 160′ to the west and 140' to the east of the bridge. The proposed vertical alignment would increase the profile grade to a maximum of 7.5% on the western approach and 7.0% on the eastern approach. Due to the profile change, a minimal driveway adjustment is needed for the eastern USPS entrance at 206+80 LT. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of sidewalk moment slab in all quadrants. Sidewalk grades would follow the roadway profile, with the exception of the sidewalk in the southwest quadrant. Under the Preferred Alternative, a bifurcated sidewalk in the southwest quadrant near Station 204+30 RT is required to maintain ADA-compliant access to the existing pedestrian entry door at 901 Pennsylvania Avenue. The bifurcated section of sidewalk which is proposed to have a 35′-long and 4′-wide sidewalk ramp that is separated from the 4′-5″ sidewalk along the roadway with a pedestrian rail barrier.

The profile adjustment and bifurcated sidewalk will affect four tree planter boxes along the southwest quadrant in front of 901 Pennsylvania Avenue. Three of the tree planter boxes would be replaced; however, one tree box closest to the bridge and entrance door would not be replaced due to the sidewalk width required for the bifurcated sidewalk ramp.

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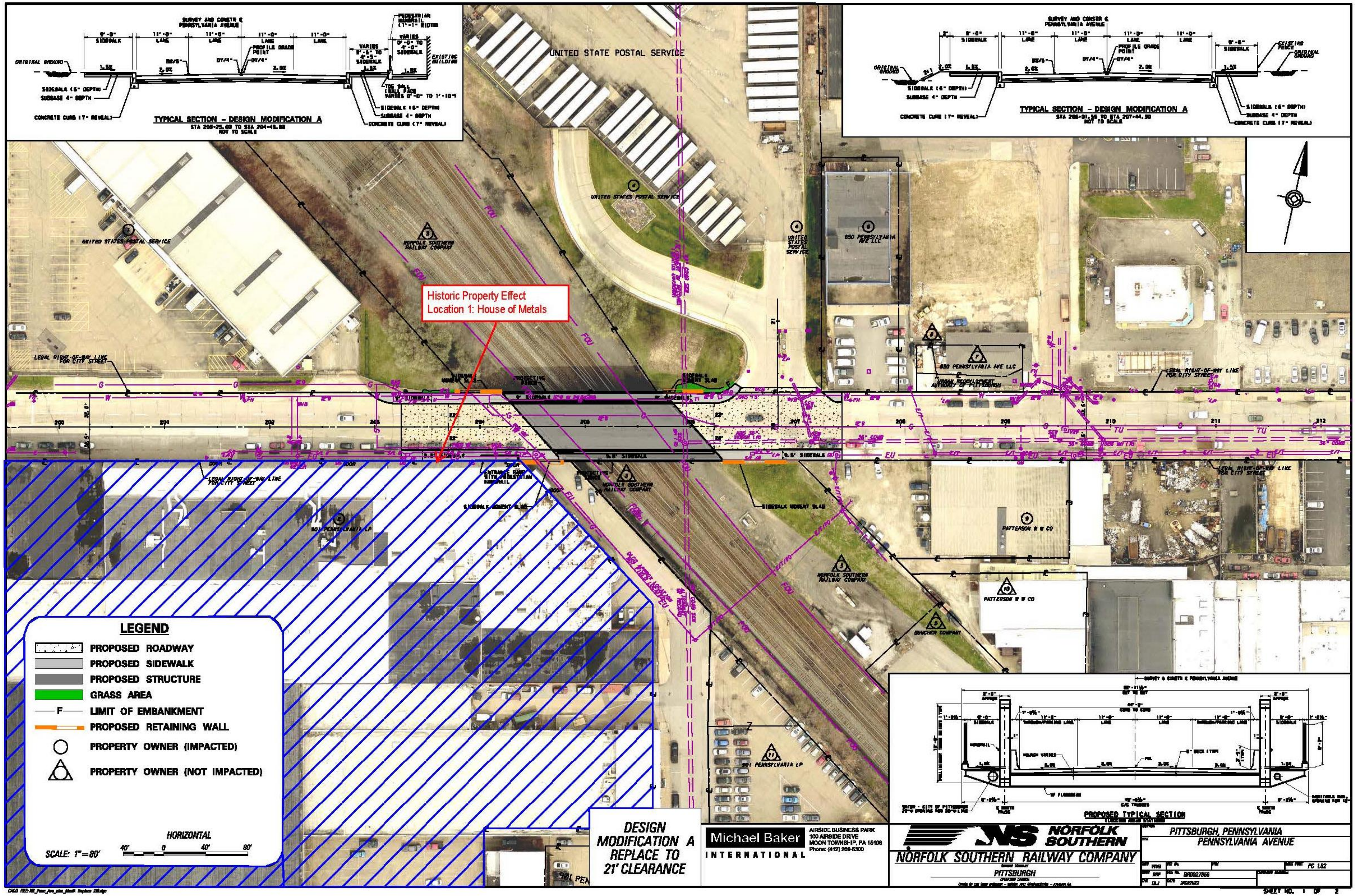

Figure 6-16: Plan sheet and profile views showing the proposed bridge structure and changes to the roadway, and sidewalks.

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Figure 6-17: Photo of existing Pennsylvania Avenue Bridge from track level, facing northwest.

Figure 6-18: Rendering of proposed Pennsylvania Avenue Bridge from track level, facing northwest.

Figure 6-19: Photo of existing Pennsylvania Avenue Bridge from track level, facing southeast.

Figure 6-20: Rendering of proposed Pennsylvania Avenue Bridge from track level, facing southeast.

Figure 6-21: Photo of existing Pennsylvania Avenue Bridge from street level, showing 901 Pennsylvania Avenue in background, facing southwest.

Figure 6-22: Rendering of proposed Pennsylvania Avenue Bridge from street level showing 901 Pennsylvania Avenue in background, facing southwest.

Figure 6-23: Photo of existing Pennsylvania Avenue Bridge from bridge deck showing 901 Pennsylvania Avenue, facing southwest.

Figure 6-24: Rendering of proposed Pennsylvania Avenue Bridge from bridge deck showing 901 Pennsylvania Avenue, facing southwest.

Figure 6-25: Photo of existing sidewalk and entrance to 901 Pennsylvania Avenue, facing northeast.

Figure 6-26: Rendering of proposed sidewalk modifications showing bifurcated sidewalk with ramp to 901 Pennsylvania Avenue, facing northeast.

6.3 Application of Definition of Effect and Criteria of Adverse Effect

The following section describes how the proposed Pennsylvania Avenue Bridge Project would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 et seq.) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to assessment of effects on historic and cultural resources.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The Preferred Alternative and design modification for the Pennsylvania Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. The bridge's substructure and superstructure do not contribute to the NRHP-eligible Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District. The Preferred Alternative would not require any work on the concrete retaining walls with stone coping, the decorative wrought-iron fencing, or the standard railroad safety railing, which are contributing elements in this portion of the railroad corridor historic district. The potential to affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District is summarized in Table 6-1.

Table 6-1 Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

DEFINITION OF EFFECT	EVALUATION (Preferred Alternative)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) is eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district. The Preferred Alternative has the potential to affect the historic property by adding a new visual element over the railroad corridor with the construction of a new Pennsylvania Avenue Bridge.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District.

The Preferred Alternative would not adversely affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District. The bridge's substructure and superstructure do not contribute to the NRHP-eligible Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District. The existing through-girder superstructure would be replaced with a steel pony truss similar in scale and configuration to the original, ca. 1905 pony truss Pennsylvania Avenue Bridge (Figure 6-27) and would not result in a substantial visual change within the railroad corridor historic district. The superstructure replacement and the minor required repairs to the substructure have a low potential to visually affect the district's character-defining features. To further address the potential visual effect on the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District, Table 6-2 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Figure 6-27: Historical photograph dated March 29, 1910, showing the original Warren pony truss bridge carrying Pennsylvania Avenue over the rail corridor, facing northwest.

Table 6-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would replace the Pennsylvania Avenue Bridge superstructure and require repairs to its substructure to raise the bridge. The bridge's substructure and superstructure do not contribute to the railroad corridor historic district.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the railroad corridor historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use; the project would allow for the continued use of the historic property. The project would not affect features that contribute to the property's significance; the Pennsylvania Avenue Bridge is a non-contributing element of the historic district.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the railroad corridor historic district's character-defining features. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district. The visual change resulting from the replacement of the Pennsylvania

Table 6-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	
	Avenue Bridge will be minor. The bridge's new superstructure would be similar in scale and configuration to the original, ca. 1905 pony truss Pennsylvania Avenue Bridge and would not result in a substantial visual change within the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Pennsylvania Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under the **Preferred Alternative**.	

Allegheny Second Ward Industrial Historic District

Relationship of Proposed Action to Historic Property and Assessment of Project Effects

The Preferred Alternative for the Pennsylvania Avenue Bridge Project would require replacement of the bridge superstructure and repairs to its substructure to raise the bridge. To accommodate the raised bridge elevation, roadway approach work would be required along Pennsylvania Avenue for approximately 160' to the west and 140' to the east of the bridge. The proposed vertical alignment would increase the profile grade to a maximum of 7.5% on the western approach and 7.0% on the eastern approach. Approach work would include roadway pavement and sidewalk reconstruction, including the construction of sidewalk moment slab in all quadrants. Sidewalk grades would follow the roadway profile, with the exception of the sidewalk in the southwest quadrant. A bifurcated sidewalk in the southwest quadrant near Station 204+30 RT is required to maintain ADA-compliant access to the existing pedestrian entry door at 901 Pennsylvania Avenue, which contributes to Allegheny Second Ward Industrial Historic District. The bifurcated section of sidewalk would have a 35'-long and 4'-wide sidewalk ramp that is separated from the 4'-5" sidewalk along the roadway with a pedestrian rail barrier.

The Preferred Alternative would introduce new visual elements within the viewshed of the Allegheny Second Ward Industrial Historic District including a new pony truss bridge, increased vertical alignments of the bridge approaches and a bifurcated sidewalk along the façade of 901 Pennsylvania Avenue, a contributing element of the historic district. No physical changes to the interior or exterior of 901 Pennsylvania Avenue are required, but the sidewalk profile along the building façade would be raised from 0″ to 11″. The potential to affect the Allegheny Second Ward Industrial Historic District is summarized in Table 6-3.

Table 6-3: Results of Effect Evaluation for the Allegheny Second Ward Industrial Historic District	
DEFINITION OF EFFECT	**EVALUATION (Preferred Alternative)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Allegheny Second Ward Industrial Historic District is eligible for listing in the NRHP under Criteria A and C. The Preferred Alternative has the potential to affect the historic property by introducing new visual elements, such as the new Pennsylvania Avenue Bridge, elevated street and sidewalk grades along Pennsylvania Avenue, and a sidewalk ramp along one of the district's contributing buildings, 901 Pennsylvania Avenue. The sidewalk surface would be elevated from 0″ to 11″ along 901 Pennsylvania Avenue.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District

The Preferred Alternative would introduce a new visual element within the viewshed of the district by replacing the existing Pennsylvania Avenue Bridge with a new superstructure and require repairs to its substructure to increase vertical clearance. The new superstructure would be a steel pony truss similar in scale and configuration to the original, ca. 1905 pony truss Pennsylvania Avenue Bridge (see Figure 6-27) and would not result in a substantial visual change within the viewshed of the historic district. The alternative would also require the modification of the Pennsylvania Avenue Bridge approaches from a current maximum of 5% vertical grade to a maximum of 7.5% on the western approach and 7.0% on the eastern approach. an 8% vertical grade for approximately 160′ to the west and 140' to the east of the bridge. Sidewalk grades would also be steepened to follow the roadway profile, resulting in a variable increase in surface elevation from 0″ to 11″. To avoid modifications of building entrances and to maintain ADA-compliant access to the existing entry door at 901 Pennsylvania Avenue, a bifurcated sidewalk in the southwest quadrant is proposed, with a 35′-long and 4′-0″-wide sidewalk ramp that would be separated from the adjacent 4′-5″-wide sidewalk by a pedestrian handrail. The 4′-5″ sidewalk would be raised a total of 70′ along the façade of 901 Pennsylvania Avenue. All basement-level window openings on the Pennsylvania Avenue façade of the House of Metals Building (901 Pennsylvania Avenue) are infilled with brick, so the raising of the sidewalk along the building would not affect character-defining features of the building, which contributes to the Allegheny Second Ward Industrial Historic District. It is not expected that the raising of the street and sidewalk grade by up to 11″ and the bifurcation of modern sidewalks and alteration of recent landscape elements, including the removal of one young tree, would result in a substantial visual change within the historic district.

To further address the potential effects on the Allegheny Second Ward Industrial Historic District as indicated above, Table 6-4 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 6-4: Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	The Preferred Alternative would not result in the physical destruction or damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	The Preferred Alternative would raise the street and sidewalk along 901 Pennsylvania Avenue, a contributing element of the historic district, for a distance of approximately 70 feet. A portion of the sidewalk would be bifurcated to accommodate a 35′-long and 4′-0″-wide sidewalk ramp to avoid modifications to and to maintain ADA-compliant access at the building's existing entrance. No physical changes to the interior or exterior of 901 Pennsylvania Avenue are required.
(iii) Removal of the property from its historic location;	The Preferred Alternative would not result in the removal of the historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	The Preferred Alternative would not change the historic property's use. The project would not affect features that contribute to the district's significance; the Pennsylvania Avenue Bridge and the existing modern streetscape elements do not contribute to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	The Preferred Alternative would not introduce atmospheric or audible elements that diminish the integrity of the historic district's character-defining features. The visual effects of the project on the historic district will be minor. The new Pennsylvania Avenue Bridge would be a steel pony truss similar in scale and configuration to the original, ca. 1905 pony truss Pennsylvania Avenue Bridge and would not result in a substantial visual change within the viewshed of the historic district. The raising of the

Table 6-4: Application of the Criteria of Adverse Effect for the Allegheny Second Ward Industrial Historic District	
	street and sidewalk grade by up to 11" and the bifurcation of modern sidewalks and alteration of recent landscape elements would not result in a substantial visual change within the historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	The Preferred Alternative would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Pennsylvania Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Allegheny Second Ward Industrial Historic District under the **Preferred Alternative**.	

7.0 Columbus Avenue Bridge Project

7.1 Results of Identification of Historic Properties

7.1.1 Area of Potential Effects

APE Justification

Consistent with the methodology for establishing project APEs presented in Chapter 1 for projects lacking corridor constraints, the Columbus Avenue APE was based on the track-lowering alternative. The APE takes into account the nature of the undertaking and its potential for direct and indirect effects (including cumulative effects) on historic properties.

Because the proposed work is limited to the rail corridor itself and includes minor lowering of the tracks, the APE was drawn to encompass only the potentially affected portion of the rail corridor and does not include adjacent parcels. Indirect and visual effects will be insignificant or absent because the existing track area will be lowered and of the same character and configuration as the existing track infrastructure. The APE is illustrated in Figure 7-1.

APE Description

The APE lies within the City of Pittsburgh. Beginning along the southwest side of the railroad right-of-way 250′ northwest of the intersection of N. Franklin Street and Allegheny Avenue in the City of Pittsburgh, the APE extends northwest along the right-of-way a distance of approximately 1,750′ to a point in the right-of-way near the intersection of Beldale and Fulton streets. The APE extends northeast across the right-of-way approximately 475′ to the northeast side of the right-of-way paralleling California Avenue. The APE follows the northeast side of the right-of-way approximately 1,225′ to a point at the U.S. Post Office property. The APE follows the southwest boundary of the post office property about 500′ to a point. The APE extends southwest across the railroad right-of-way approximately 170′ to the point of the beginning. The APE contains approximately 8.93 acres.[11]

7.1.2 Historic Properties Identified within the APE

An *Identification of Historic Properties Report* was submitted to the PA SHPO in September 2019 (Michael Baker International, Inc. 2019), which identified one historic property in the APE the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line, Resource No. 1993RE01080) for the Columbus Avenue Bridge Project. The NRHP-listed Manchester Historic District (Resource No. 1975RE00230) is not within the APE and will not be affected by the proposed undertaking.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District.

Description of Historic Property

The portion of railroad corridor included in the APE includes approximately 1,750 linear feet of right-of-way, extending roughly 600′ southeast and 1,100′ northwest of where Columbus Avenue crosses over the railroad corridor on Pittsburgh's North Side (Figure 7-2 and Figure 7-3). The track milepost is PC-2.17. The surveyed portion of railroad, including the

[11] The approximate measurements of the Columbus Avenue APE were originally reported as starting near the intersection of N. Franklin and Allegheny Avenue and extending 1775′ northwest to a point near the intersection of Beldale and Fulton streets, northeast approximately 300′ to the right-of-way paralleling California Avenue, 1800′ to a point along the U.S. Post Office property, and 175′ to the beginning, containing 8.67 acres (Michael Baker International, Inc. 2018). Upon closer inspection and due in part to perspective distortion inherent in satellite imagery, those measurements have been revised.

right-of-way, varies from approximately 170' to 475' wide, and contains 8 to 11 tracks (due to the widening corridor and diverging tracks).

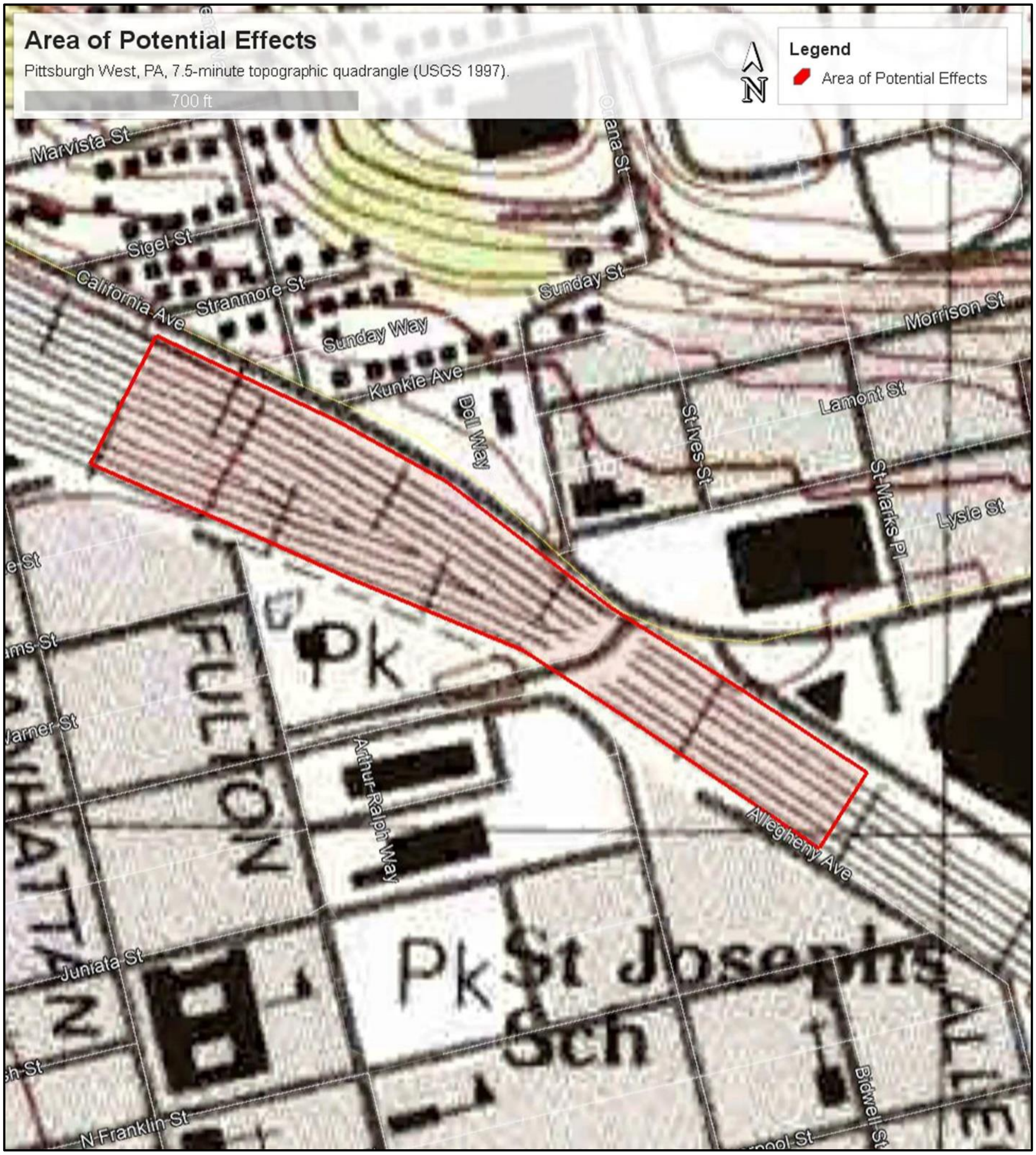

Figure 7-1: Columbus Avenue Bridge APE shown on topographic mapping (USGS 1997).

Figure 7-2: View of surveyed segment of rail corridor from center of Columbus Avenue Bridge, facing northwest.

Figure 7-3: View of surveyed segment of rail corridor from center of Columbus Avenue Bridge, facing southeast.

Of the three historic-age features identified within the APE, one feature, the Columbus Avenue Bridge (Resource No. 2004RE06197; BMS No. 02730100003022), is not eligible either individually or as a contributing element of the railroad corridor historic district because of loss of integrity according to a previous SHPO opinion dated March 5, 2007 (Figure 7-4). The 1907 bridge's loss of integrity of design and workmanship was due to 1990 alterations including the addition of steel members welded or bolted to built-up members, replacement of riveted connections with bolted connections at many lower panel points, and the replacement of original decorative iron railings with chain link fencing. The 2019 Report determined that because of these changes, the bridge has lost integrity of design and workmanship and is not eligible for listing in the NRHP. PHMC concurred with the determination. The remaining two features have been found to be NRHP eligible as contributing elements, being functional and/or decorative components that were constructed during the district's period of significance and that retain historic integrity. These include the concrete retaining walls with cut stone coping along the northeast and southwest edges of this depressed section of the corridor (Figure 7-5) and decorative iron fencing along Allegheny Avenue (Figure 7-6). In addition, the 1907 concrete Columbus Avenue approach ramp contains concrete walls with a gunite finish (this finish is original), and a brick sidewalk with sandstone curbing on the south side of the ramp (the north sidewalk was replaced with concrete). Because this ramp was built as part of a significant grade separation project, it also contributes to the railroad corridor historic district.

Significance of Historic Property

The Pennsylvania Railroad Main Line from Pittsburgh to the Ohio state line was previously determined eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district for its "state-wide significance in transportation, economy and the development of Pennsylvania's industries and communities" (Barrett 1993). The period of significance of the railroad corridor historic district is 1848-1958.

Figure 7-4: Columbus Avenue Bridge showing southeast profile, facing north.

Figure 7-5: Detail of rail corridor showing northeast reinforced concrete retaining wall with stone coping along California Avenue, facing north.

Figure 7-6: Detail of stone-capped retaining wall with wrought-iron fencing along northeast side of Allegheny Avenue, facing northwest.

Requirements for rail safety and rail operation require periodic replacement of rail infrastructure including ballast, rail ties, rails, and associated structures since the time of the period of significance. The main line will continue to be used for rail operations as part of the proposed project.

Boundary of Historic Property

The historic property includes the entirety of the surveyed segment of railroad within the APE as described above (Figure 7-7). The 1,700-foot segment of right-of-way encompasses approximately 8.93 acres.

7.2 Efforts to Avoid or Minimize Adverse Effects

An *Alternatives Analysis Report* was prepared for the Columbus Avenue Bridge Project (Michael Baker International, Inc. 2021), which identified four alternatives and a design modification option, as follows:

- Alternative 1 – No Build Alternative;
- Alternative 2 – Repair and raise bridge to achieve 22′ vertical clearance;
- Alternative 3A – Repair substructure and lower eastern tracks to achieve 22′ vertical clearance;
- Alternative 3B – Repair substructure and lower western tracks to achieve 22′ vertical clearance;
- Alternative 4 – Combination repair and raise bridge and lower tracks to achieve 22′ vertical clearance; and
- Design Modification 3A – Lower eastern tracks to achieve 21′-1″ vertical clearance.
- Design Modification 3B – Lower western tracks to achieve 21′-6″

In an effort to avoid and minimize effects on historic properties, Alternative 3A with the design modification of lowering the tracks to 21′-1″ or Alternative 3B with the design modification of lowering the tracks to 21′-6″ will be chosen as the Preferred Alternative. This design modification would not require any significant work to the Columbus Avenue Bridge substructure; however, minor spall repairs and concrete repairs are anticipated. Work along Columbus Avenue or California Avenue would not be required. To aid in the assessment of visual effects of the Preferred Alternatives, plan and profile views under Alternative 3A (Figure 7-12 and Figure 7-13) and under Alternative 3B (Figure 7-14 and Figure 7-15) and a comparison of the existing conditions and renderings of the completed track lowering under Alternatives 3A (Figure 7-12, Figure 7-13, Figure 7-14, and Figure 7-15) and 3B (Figure 7-16, Figure 7-17, Figure 7-18, and Figure 7-19) are provided on the following pages.

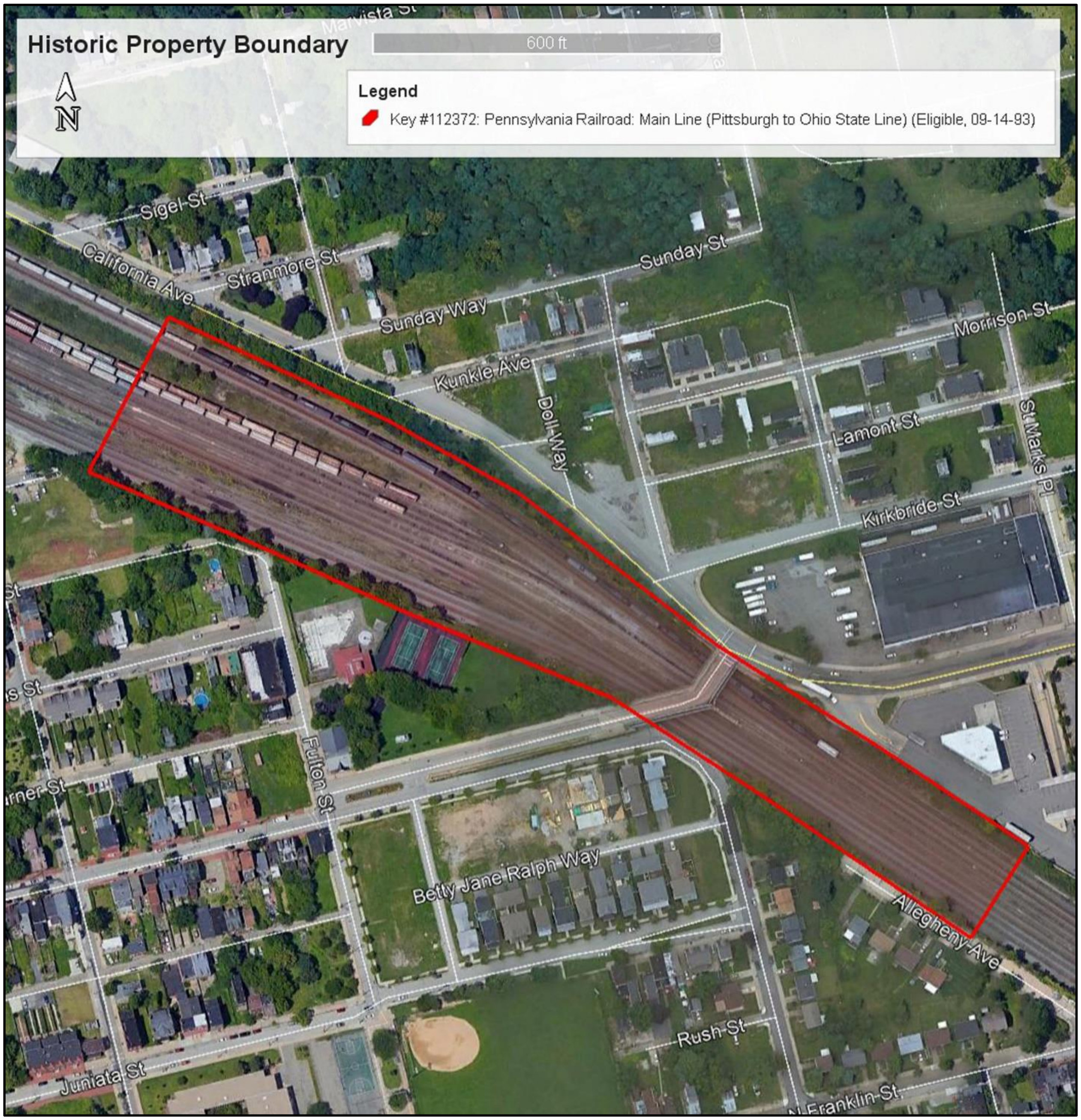

Figure 7-7: Historic property boundary for the segment of the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District within the APE.

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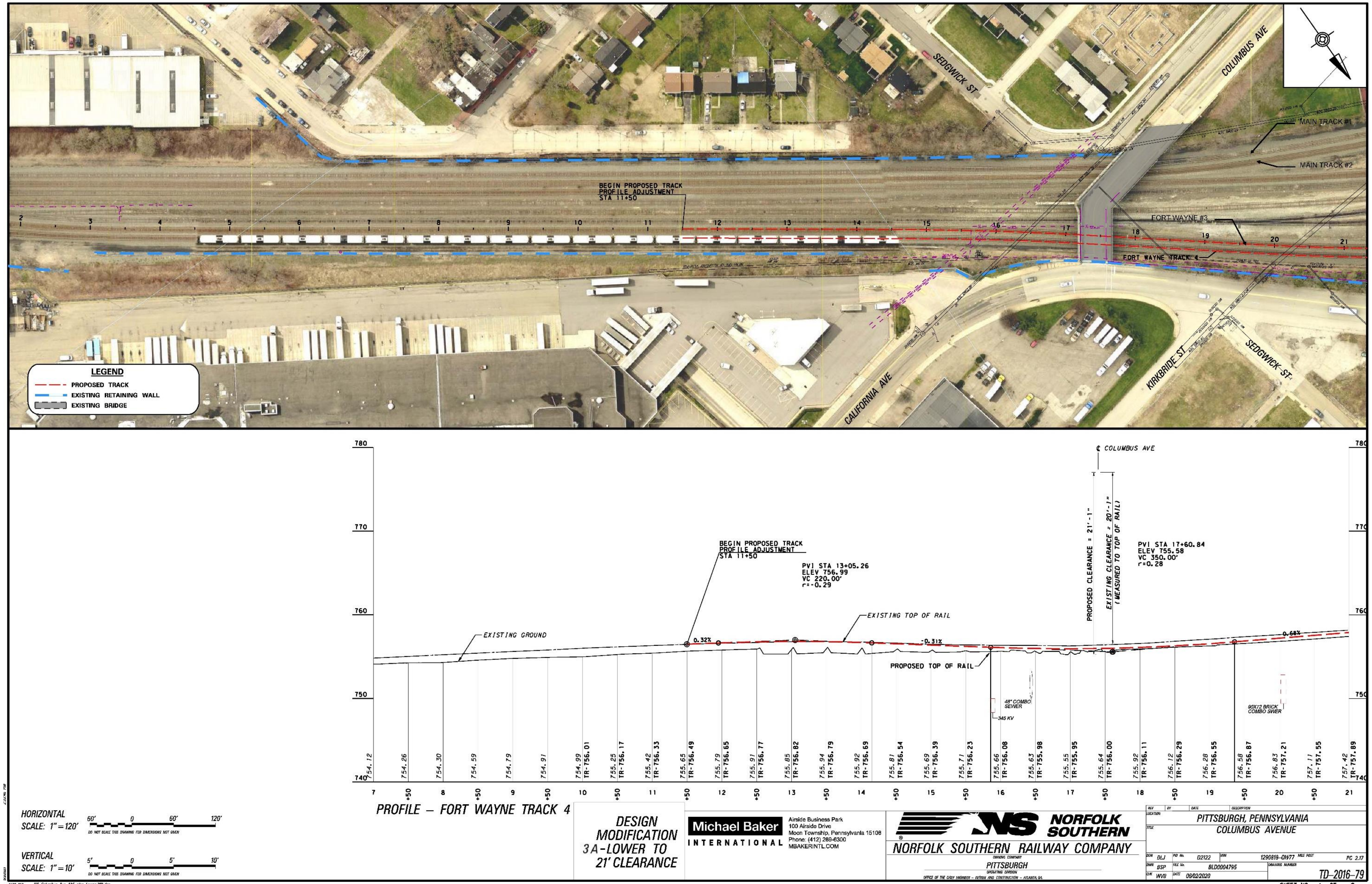

Figure 7-8: Plan and profile views of Alternative 3A showing area north of the bridge.

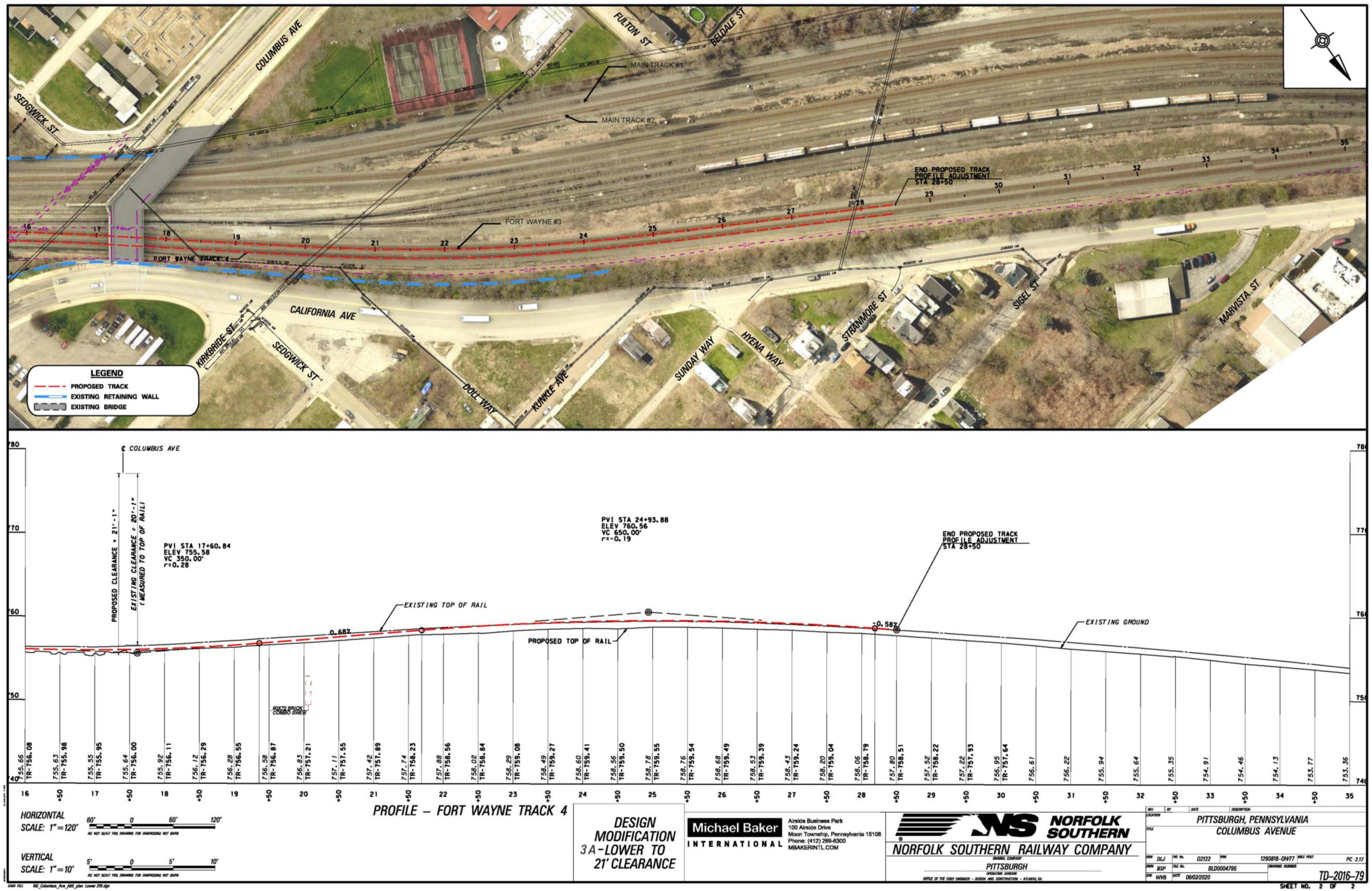

Figure 7-9: Plan and profile views of Alternative 3A showing area south of the bridge.

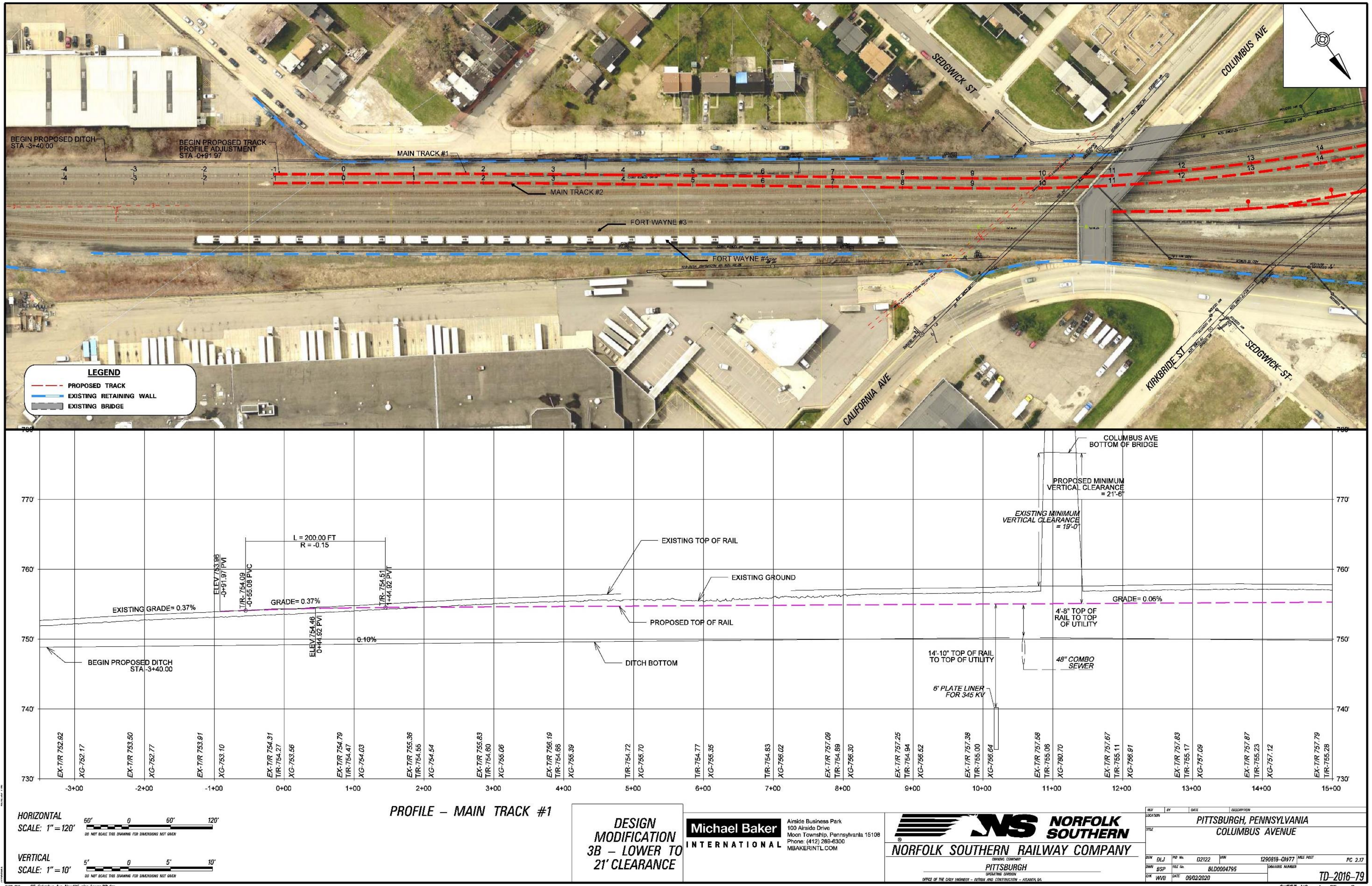

Figure 7-10: Plan and profile views of Alternative 3B showing area north of the bridge.

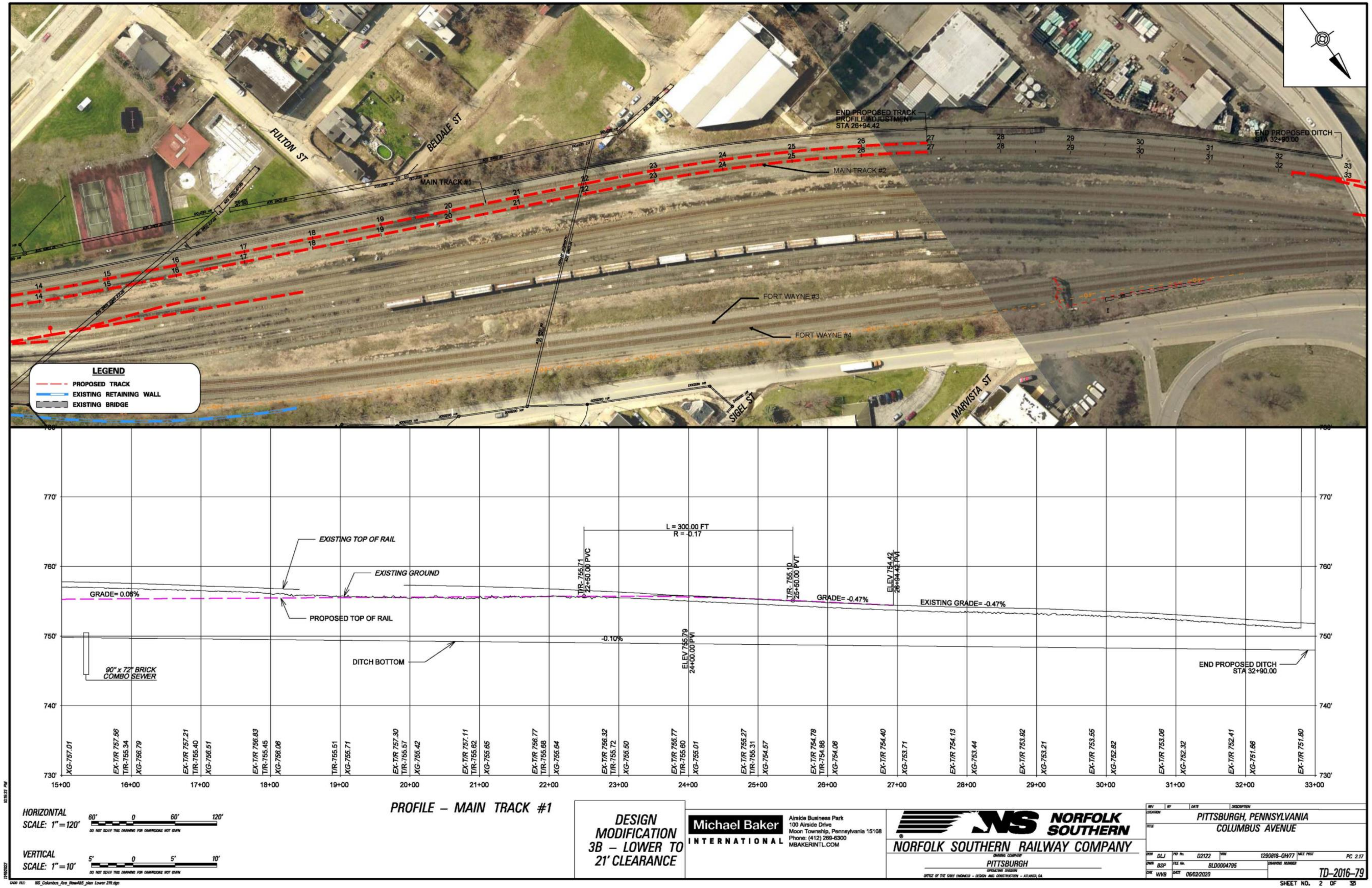

Figure 7-11: Plan and profile views of Alternative 3B showing area south of the bridge.

Figure 7-12: Photo of existing eastern-most main line tracks under the Columbus Avenue Bridge, facing northwest.

Figure 7-13: Rendering of lowered eastern-most main line tracks (Alternative 3A) under the Columbus Avenue Bridge, facing northwest.

Figure 7-14: Photo of existing eastern-most main line tracks under the Columbus Avenue Bridge, facing southeast.

Figure 7-15: Rendering of lowered eastern-most main line tracks (Alternative 3A) under the Columbus Avenue Bridge, facing southeast.

Figure 7-16: Photo of existing western-most main line tracks under the Columbus Avenue Bridge, facing northwest.

Figure 7-17: Rendering of lowered western-most main line tracks (Alternative 3B) under the Columbus Avenue Bridge, facing northwest.

Figure 7-18: Photo of existing western-most main line tracks under the Columbus Avenue Bridge, facing southeast.

Figure 7-19: Rendering of lowered western-most main line tracks (Alternative 3B) under the Columbus Avenue Bridge, facing southeast.

7.3 Application of Definition of Effect and Criteria of Adverse Effect for Alternative 3A

The following section describes how the proposed Columbus Avenue Bridge Project under Alternative 3A would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 et seq.) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to assessment of effects on historic and cultural resources.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Alternative 3A and the design modification for the Columbus Avenue Bridge Project would lower the two eastern-most main line railroad tracks to achieve a minimum of 21'-1" vertical clearance. Applying a design modification to Alternative 3A would lower the railroad tracks approximately 1'-0" in order to achieve 21'-1" of vertical clearance. (Note: vertical clearance at Fort Wayne #4 [east] would be increased by 1'-0" for 21'-1" clearance, and vertical clearance at Fort Wayne #3 [west] would be increased by approximately 6" to 21'-1".) Work along the railroad corridor would extend approximately 600' to the south of the bridge and approximately 1,100' to the north of the bridge in order to lower the railroad tracks to the required elevation based on the necessary track design requirements. The work limits of the track lowering would not affect any of the adjacent railyard tracks. This design modification would not require any significant work to the Columbus Avenue Bridge substructure; however, minor spall repairs and concrete repairs are anticipated. Work along Columbus Avenue or California Avenue would not be required.

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The east abutment of the non-contributing Columbus Avenue Bridge is integral with the retaining walls that contribute to the NRHP-eligible Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District. Under Alternative 3A, any required repairs to the abutment or adjacent retaining walls would consist of minor concrete repairs, but these repairs would be made in-kind and would not alter character-defining features of the railroad corridor historic district. The associated track lowering would entail the removal of ballast and would potentially expose more of the contributing retaining walls. Any required repairs to the wall would be made in-kind and would not affect the characteristics of the railroad corridor historic district that qualify it for NRHP eligibility. The potential to affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under Alternative 3A is summarized in Table 7-1.

Table 7-1: Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under Alternative 3A

DEFINITION OF EFFECT	EVALUATION (Alternative 3A)
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) is eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district. Alternative 3A has the potential to affect the historic property by lowering the two eastern-most main line tracks for approximately 1,700' under and on either side of the Columbus Avenue Bridge.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line)

As the proposed undertaking would affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) as indicated above, Table 7-2 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 7-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	Evaluation
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	Alternative 3A would not result in the physical destruction or damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the	Alternative 3A would result in minor track lowering (~1') for approximately 1,700'. This activity would not result in a substantial visual change in the relationship between the track bed and the surrounding landscape or built environment. The removal of up to 1' of ballast, which has

Table 7-2: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	
Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	built up over time[12], will not expose the foundations of the center pier of the Columbus Avenue Bridge or of the adjacent retaining walls; the appearance of these elements will be similar to that which currently exists.
(iii) Removal of the property from its historic location;	Alternative 3A would not result in the removal of the railroad corridor historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	Alternative 3A would not change the historic property's use; the project would allow for the continued use of the historic property. The project would not affect features that contribute to the property's significance, and the proposed changes to the track elevation would not cause a significant change to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	Alternative 3A would not introduce atmospheric or audible elements that diminish the integrity of the railroad corridor historic district's significant historic features. The visual effects of track lowering by removing approximately 1' of ballast would be negligible. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	Alternative 3A would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Columbus Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) under **Alternative 3A**.	

[12] Ballast replacement is a routine maintenance item required for Class I Freight Railroads.

7.4 Application of Definition of Effect and Criteria of Adverse Effect for Alternative 3B

The following section describes how the proposed Columbus Avenue Bridge Project under Alternative 3B would affect historic properties identified within the project's APE in accordance with 36 C.F.R. § 800.5, "Assessment of Adverse Effects," which outlines the procedures for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 54 U.S.C. Subtitle 3, Sec. 300101 et seq., (formerly 16 U.S.C.A. 470 et seq.) 54 U.S.C. § 306108. The Pennsylvania History Code and PennDOT guidance apply NHPA criteria to assessment of effects on historic and cultural resources.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Alternative 3B and the design modification for the Columbus Avenue Bridge Project would lower the two western-most main line railroad tracks to achieve a minimum of 21'-6" vertical clearance. Applying a design modification to Alternative 3B would lower the railroad tracks on the southwest side of the corridor approximately 2'-8" in order to achieve 21'-6" of vertical clearance. (Note: vertical clearance would be increased by 2'-6" for 21'-6" clearance.) Work along the railroad corridor would extend approximately 1,200' to the southeast of the bridge and approximately 1,600' to the northwest of the bridge in order to lower the railroad tracks to the required elevation based on the necessary track design requirements. Track reconfiguration will be required for the adjacent yard tracks due to their proximity to the mainline tracks and would include existing turnouts. Four tracks currently run under the western span of the Columbus Avenue Bridge; with this alternative, only two tracks will run under the span. This design modification would not require any significant work to the Columbus Avenue Bridge substructure; however, minor spall repairs and concrete repairs are anticipated. Work along Columbus Avenue or California Avenue would not be required.

Relationship of Proposed Action to Historic Property and Assessment of Project Effect

The bridge's west pier rests atop the retaining walls that contribute to the NRHP-eligible Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District. Alternative 3B would require minor repairs to the bridge's substructure, but these repairs would be made in-kind and would not alter character-defining features of the railroad corridor historic district. The associated track lowering would entail the removal of ballast and the construction of a drainage ditch that would run parallel to the retaining wall. The existing wall would not be impacted, but the lowering could potentially expose more of the wall surface. Any required repairs to the wall would be made in-kind and would not affect the characteristics of the railroad corridor historic district that qualify it for NRHP eligibility. The potential to affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under Alternative 3B is summarized in Table 7-3.

Table 7-3: Results of Effect Evaluation for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District under Alternative 3B	
DEFINITION OF EFFECT	**EVALUATION (Alternative 3B)**
An effect may occur when there is alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP as defined in Section 800.16(i).	The Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) is eligible for listing in the NRHP under Criteria A and C as a railroad corridor historic district. Alternative 3B has the potential to affect the historic property by lowering the two southwestern-most main line tracks for approximately 2,800′ under and on either side of the Columbus Avenue Bridge.
FINDING:	***Historic Properties Affected***

Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line)

To aid in the assessment of visual effects of the Preferred Alternative, a comparison of the existing conditions and renderings of the completed track lowering are provided in Figure 7-12, Figure 7-17, Figure 7-18, and Figure 7-19. As the proposed undertaking would affect the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) as indicated above, Table 7-4 applies the Criteria of Adverse Effect to the historic property in accordance with 36 CFR 800.5(a)(1).

Table 7-4: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	
Criteria of Adverse Effect: An adverse effect is found when an undertaking may alter, directly or indirectly, any characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.	
Examples of Adverse Effects, pursuant to Section 800.5(a)(2)	**Evaluation**
Adverse effects on historic properties include, but are not limited to:	
(i) Physical destruction of or damage to all or part of the property;	Alternative 3B would not result in the physical destruction or damage to the historic property.
(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the	Alternative 3B would result in minor track lowering (~2′-8″) for approximately 2,800′. This activity would not result in a substantial visual change in the relationship between the track bed and the surrounding landscape or built environment. The removal of up to 1′of ballast, which has

Table 7-4: Application of the Criteria of Adverse Effect for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District

Secretary's Standards for the Treatment of Historic Properties (36 CFR§68) and applicable guidelines;	has built up over time[13], will not expose the foundations of the center pier of the Columbus Avenue Bridge or of the adjacent retaining walls; the appearance of these elements will be similar to that which currently exists.
(iii) Removal of the property from its historic location;	Alternative 3B would not result in the removal of the railroad corridor historic district from its historic location.
(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;	Alternative 3B would not change the historic property's use; the project would allow for the continued use of the historic property. The project would not affect features that contribute to the property's significance, and the proposed changes to the track elevation would not cause a significant change to the property's setting.
(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;	Alternative 3B would not introduce atmospheric or audible elements that diminish the integrity of the railroad corridor historic district's significant historic features. The visual effects of track lowering by removing approximately 2'-8"' of ballast would be negligible. As detailed in Chapter 1.5.1, the project would have no indirect or cumulative effects on the railroad, as it would slightly decrease train traffic for the 2045 design year when compared with the No Build condition for 2045. Thus, the undertaking would cause no foreseeable degradation of character-defining features of the railroad corridor historic district.
(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and	Alternative 3B would not cause neglect of the property resulting in its deterioration.
(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.	The property is not under Federal ownership or control.
OTHER:	
FINDING: The Columbus Avenue Bridge Project results in a finding of ***No Historic Properties Adversely Affected*** for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) under **Alternative 3B**.	

[13] Ballast replacement is a routine maintenance item required for Class I Freight Railroads.

8.0 Conclusion

This Determination of Effects Report describes the evaluation of potential effects of the proposed Pittsburgh Vertical Clearance Projects, located in the City of Pittsburgh, Allegheny County, on historic properties located within the project APE.

Application of the Definition of Effect and Criteria of Adverse Effect resulted in the overall finding that the proposed undertakings will have an **ADVERSE EFFECT** on historic properties because of the direct physical effects to the Pennsylvania Railroad Main Line (Pittsburgh to Ohio State Line) by removing a contributing element, the W. North Avenue Bridge (Table 8-1). Measures to mitigate the adverse effects of this project will be identified in consultation with the PA SHPO and the consulting parties. The agreed upon mitigation measures for the undertaking will be included in a memorandum of understanding between PennDOT, PA SHPO, and Norfolk Southern.

Table 8-1: Summary of Project Effects

HISTORIC PROPERTY NAME	EFFECT FINDING
Washington Avenue Bridge Project	
Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District	**No Adverse Effect**
Amtrak Station Project	
Pennsylvania Railroad Station	**No Adverse Effect**
The Rotunda of the Pennsylvania Railroad Station	**No Historic Properties Affected**
Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh) Railroad Corridor Historic District	**No Adverse Effect**
W. North Avenue Project	
Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	**Adverse Effect**
Allegheny West Historic District	**No Adverse Effect**
Mexican War Streets Historic District	**No Adverse Effect**
Allegheny Commons Historic District	**No Adverse Effect**
Allegheny Second Ward Industrial Historic District	**No Adverse Effect**
International Harvester Building	**No Adverse Effect**
Allegheny City Stables Building	**No Adverse Effect**

Table 8-1: Summary of Project Effects	
HISTORIC PROPERTY NAME	**EFFECT FINDING**
Pennsylvania Avenue Project	
Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	**No Adverse Effect**
Allegheny Second Ward Industrial Historic District	**No Adverse Effect**
Columbus Avenue Project	
Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Railroad Corridor Historic District	**No Adverse Effect**
FINDING: The Pittsburgh Vertical Clearance Projects result in a finding of **Historic Properties Adversely Affected** for the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) under the **Preferred Alternatives.**	

9.0 References

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Michael Baker International, Inc.

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2020 *Historic Bridge Rehabilitation Analysis, Pittsburgh Vertical Clearance Projects, W. North Avenue Bridge*. Prepared for Norfolk Southern Railway Company.

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McLearen, Douglas C.

2019 Letter to Timothy Zinn, Michael Baker International, from Douglas C. McLearen, Chief, Division of Environmental Review, Pennsylvania State Historic Preservation Office (PA SHPO), Pennsylvania Historical and Museum Commission, regarding Pittsburgh Vertical Clearance Projects, ER# 2018-1595-003-A93-4041-042. Letter on file at PA SHPO, Harrisburg, Pennsylvania.

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Slack, Jeff

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Van Trump, James D.

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1997 *Pittsburgh East, PA,* 7.5-minute topographic quadrangle. USGS, Reston, Virginia.

1997 *Pittsburgh West, PA,* 7.5-minute topographic quadrangle. USGS, Reston, Virginia.

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Appendix A
Agency Coordination

Determination of Effects Report

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Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

June 5, 2018

Timothy Zinn
Michael Baker International
100 Airside Drive
Moon Township PA 15108

ER 2018-1595-003-A: PennDOT Multimodal Transportation, Norfolk Southern Railway company, Pittsburgh Vertical Clearance Project, Braddock, North Braddock, and Swissvale, Allegheny County, Determination of Area of Potential Effects, and proposed levels of recordation for previously recorded and newly identified historic resources

Dear Mr. Zinn,

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution, and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Archaeological Resources
There is a high probability that archaeological resources are located in this project area. In our opinion, the activity described in your proposal should have no effect on such resources. Should the scope of the project be amended to include additional ground disturbing activity this office should be contacted immediately, and a Phase I Archaeological Survey may be necessary to locate all potentially significant archaeological resources.

Above Ground Resources
We concur with the Area of Potential Effect and the proposed documentation/survey as indicated in Table 1 (pages 115-121).

If you need further information regarding archaeological resources, please consult Mark Shaffer at mshaffer@pa.gov or (717) 783-9900. If you need further information on above ground resources, please consult Cheryl Nagle at chnagle@pa.gov or (717) 772-4519.

Sincerely,

Douglas C. McLearen, Chief
Division of Environmental Review

Commonwealth Keystone Building | 400 North Street | 2nd Floor | Harrisburg, PA 17120 | 717.783.8947

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Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

November 8, 2019

Timothy Zinn
Michael Baker International
100 Airside Drive, Airside Business park
Moon Township PA 15108

ER 2018-1595-003-E: PennDOT Multimodal, Norfolk Southern Railway Company Pittsburgh Vertical Clearance Projects, Swissvale and City of Pittsburgh, Allegheny County, Identification of Historic Properties Reports

Dear Mr. Zinn,

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution, and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Above Ground Resources
Identification of Historic Properties
We have received Norfolk Southern's objection to the inclusion of its property on state or federal historic registers. We would note that Norfolk Southern's objection is not relevant to and does not affect the duties of state or federal agencies under Section 106 or the State History Code. The SHPO will perform all of its required consultation with regards to eligibility for the federal and state historic registers.

Prior National Register of Historic Places (NRHP) Eligibility for Railroad Resources

The following railroad resources within the APE have been previously evaluated for National Register eligibility or listed in the National Register of Historic Places:

- *Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line), Key # 112372* (Determined Eligible 9/14/1993).
- *Pennsylvania Railroad: Station Rotunda (Pittsburgh), Key # 001769* (Listed 04/11/1973)
- *Pennsylvania Railroad Station, Key # 001762* (Listed 04/22/1976)
- *Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line): Columbus Avenue Bridge (Pittsburgh), Key # 129787* (Not Individually Eligible 3/5/2007 and 4/01/2018; Does Not Contribute to PRR Fort Wayne Division 2007)
- *Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh): S. Braddock/Kenmawr Avenue Bridge, Key # 129934* (Not Individually Eligible 03/05/2007; Does Not Contribute to the Eligible Pennsylvania Main Line (Swissvale to Rankin), Key # 201322 03/05/2015)
- *Pennsylvania Railroad Main Line (Harrisburg to Pittsburgh) Key # 112369* (Determined Eligible 9/14/1993)

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November 8, 2019 Page 2

SHPO Concurs: Eligible
Based on the information received and available in our files, we concur with the findings of the agency that the following properties are eligible for listing in the National Register of Historic Places:

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line): Bridge (Merchant Street) and APE corridor (and associated resources dating to the Period of Significance of the Main Line of 1848-1958 and that retain integrity) contributes to the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line), Key # 112372

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line): W. North Avenue Bridge (Pittsburgh), Key # 129729 and APE corridor (and associated resources dating to the Period of Significance of the Main Line of 1848-1958 and that retain integrity) contributes to the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line), Key # 112372 and Fort Wayne Division/Western Pennsylvania Railroad (Pittsburgh to Freeport), Key 097496)

Ohio Connecting Railway: Brunot's Island Bridge (Ohio River), Key # 007764 and Ohio Connecting Bridge flyover ramps, the Eckert Street undergrade bridge (consisting of four steel plate girder bridges, and corridor (and associated resources dating to the Period of Significance of the Main Line of 1848-1958 and that retain integrity) contributes to the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line), Key 112372. Note: The Ohio Connecting Railway Bridge may also be individually eligible. More information would be needed to establish individual eligibility. Contributing status is sufficient for identification of historic properties within the APE.

Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line) Pittsburgh City Segment corridor (and associated resources dating to the Period of Significance of the Main Line of 1848-1958 and that retain integrity) contributes to the Pennsylvania Railroad: Main Line (Pittsburgh to Ohio State Line), Key 112372. Note: The Washington Avenue Bridge does not contribute to the Main Line as it was built circa 1980.

Pennsylvania Railroad: Station (Pittsburgh) – The Pennsylvania Trainshed contributes to the Pennsylvania Railroad Station Key # 001762. *The Pennsylvania Trainshed* also contributes to the Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh), Key #112369. The Period of Significance for the station should be amended to 1898-1958 as the station's significance extends beyond its construction date. This new Period of Significance will be consistent with the POS for the PRR Main Line Harrisburg to Pittsburgh. Also, the boundary should include the plaza area southwest of the rotunda and the full length of the train platform as shown on the site plan within the HRSF. The trainshed is individually Not Eligible under Criterion A, B or C.

Allegheny Second Ward Industrial Historic District, Key # TBD, is eligible under Criterion A in the areas of Industry and Commerce for its role in metallurgy in the twentieth century and Criterion C in the area of Architecture, with a Period of Significance of circa 1849, the year construction began, to 1951, the date of construction of several of the latest buildings in the district. We concur with the proposed boundary as demarcated on Figure 2 (Location Map) in the HRSF and the list of non-contributing and contributing buildings. Note: The Hipwell Row, Key # 003883, may be individually eligible. More information would be needed to establish individual eligibility. Contributing status is sufficient for identification of historic properties within the APE.

The Pennsylvania Railroad: Main Line (Harrisburg to Pittsburgh): Washington Avenue Bridge, Key # 129935, and the corridor (and associated resources dating to the Period of Significance of the Main Line of 1847-1958 and that retain integrity) contribute to the Pennsylvania Railroad: Main Line. Note: The Washington Avenue Bridge is not individually eligible (it was incorrectly data entered in CRGIS as individually eligible and that will be revised).

SHPO Concurs: Not Eligible
We concur with the findings of the agency that the following properties are not eligible for listing in the National Register of Historic Places due to a lack of integrity and/or significance:

- *Renkin Pattern Works/Paul Warhola Scrap Metal, Key # TBD, 817 Pennsylvania Avenue*
- *Frank and Ida Mandel Building/Paul Warhola Scrap Metal, Key # TBD, 825 Pennsylvania Avenue*
- *Buncher Building, Key # TBD, 1201 Brighton Road*
- *Keystone Plumbing, Key # TBD, 1215 Brighton Road*
- *Trinity Lutheran Church, Key # 077607*

SHPO Does Not Concur
Based on the information received and available in our files, we disagree with the finding of the agency; it is the opinion of the Pennsylvania State Historic Preservation Officer that the proposed *Mexican War Streets Western Boundary Increase, Key # TBD* is *not eligible* for listing in the National Register of Historic Places due to a lack of integrity and/or significance. The former Union Hotel has suffered significant loss of historic material and the character of the block is different from the nearby residential neighborhood of the listed Mexican War Historic District.

The above listed resources have not been evaluated for archaeological potential. We concur the scope and level of effort utilized to identify historic properties for this project is appropriate. Our evaluation is based upon the information provided and available in our files for review. If National Register listing for this property is sought in the future, additional documentation of the property's significance and integrity may be required to both verify this evaluation and satisfy the requirements of the National Park Service (36 CFR Part 60). Thus, the outcome of the National Register listing process cannot be assured by this evaluation.

If you need further information in this matter, please contact Cheryl L. Nagle at chnagle@pa.gov or (717) 772-4519.

Sincerely,

Douglas C. McLearen, Chief
Division of Environmental Review

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Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

December 10, 2019

Timothy Zinn
Michael Baker International
100 Airside Drive, Airside Business Park
Moon Township PA 15108

ER 2018-1595-003-G: PennDOT Multimodal, Norfolk Southern Railway Company Pittsburgh vertical Clearance Projects, Swissvale and Pittsburgh, Allegheny County, Draft Historic Bridge Rehabilitation Analysis Reports

Dear Mr. Zinn,

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution, and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Draft Historic Bridge Rehabilitation Analysis Reports (HBRA)

General Comments

- The consulting parties will be given 30 days to review submissions.
- Please do not submit multiple types of reports (eligibility, rehabilitation analysis, effects, etc.) as one submission for review. Please take into consideration the time and effort needed to review and comment on the various types of reports.
- The consulting parties were asked to review and comment on the Draft HBRA reports. The comments provided below are not to be construed as the PA SHPO's official comments on any finding, rather they are items that should be addressed in the revised report that the consulting parties will then have 30 days to review and comment on.
- All consulting party comments on the draft HBRA need to be provided with the revised report.

W. North Avenue Bridge

- Since the PA SHPO provided comments on the Determination of Eligibility (DOE) after the draft HBRA report was completed, has there been any additional historic resources that should now be included in the HBRA (see Figure 3 – Constraints; and E. Other Historic Properties in the Area of Potential Effects).
- Please include the comments from the other consulting parties regarding the DOEs.
- Please provide more information regarding the conclusion of the draft HBRA regarding:

    - Both Options A and B state that the loss of 85 percent of the historic material does not comply with the SOI Standards. However, the SOI Standards are very specific regarding replacement in-kind. In addition, the draft HBRA states that as a contributing bridge to a larger historic resource, while "retention of the overall appearance of the bridge, including material and physical features, contributes to the character of the district and should be considered…those portions of the bridge not visible from the street or public access are generally not called out as character defining features in a historic district."

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December 10, 2019 Page 2

- If the two concrete-encased through girders are the most visible character defining feature, and they are repaired and rehabilitated (including reapplying concrete gunite finish in the same design/pattern), why would the rehabilitation not meet the Standards?
- If the floorbeams are to be considered secondary character-defining members, and the SOI allows for replacement in-kind, then why would the replacement of the floorbeams not meet the SOI Standards?

- The draft HBRA states that the bridge is currently posted for a 10-ton single vehicle and 19-ton combination vehicle weight restriction. The report only discusses the forecasted issues for the railroad (traffic demands, vertical clearance, etc.), what is the forecasted need for the vehicular traffic that crosses this bridge? Does the current and forecasted needs conclude that the current posting is adequate?
- The draft HBRA states that to rehabilitate the structure in Option A, the superstructure would require significant jacking and falsework to support the superstructure and floorbeam rehabilitation was examined but ultimately dismissed. Why would the floorbeam modification only be 25 years compared with 40-50 years? What else could be done to extend the bridge's service life?

Merchant Street Bridge

- Since the PA SHPO provided comments on the Determination of Eligibility (DOE) after the draft HBRA report was completed, has there been any additional historic resources that should now be included in the HBRA (see Figure 3 – Constraints; and E. Other Historic Properties in the Area of Potential Effects).
- Please include the comments from the other consulting parties regarding the DOEs.
- Please provide more information regarding the conclusion of the draft HBRA regarding:
  - The draft HBRA states that web strengthening plates would need to be placed over the existing web on the outside of the north girder and thus would create a visual adverse effect. Can the web strengthening plates be placed on the inside – track side - and still provide the needed repair, as this would meet the Standards?
  - Does a railroad bridge have load postings like roadway bridges - what is the current posting of this bridge and what is the anticipated increasement needed for the proposed project? Can the structural capacity of this bridge type be increased?
  - As this is a contributing bridge to a larger historic resource, why would the replacement of rivets and additional need for bolts be an adverse effect?

If you need further information in this matter, please contact Cheryl L. Nagle at chnagle@pa.gov or (717) 772-4519.

Sincerely,

Douglas C. McLearen, Chief
Division of Environmental Review

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

April 9, 2020

Timothy Zinn
Michael Baker International, Inc.
100 Airside Drive
Moon Township PA 15108

ER 2018-1595-003-I: PennDOT Multimodal, Norfolk Southern Railway Company, Pittsburgh Vertical Clearance Projects, Pittsburgh, Allegheny County, W. North Avenue Bridge HBRA

Dear Mr. Zinn,

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Above Ground Resources
The PA SHPO has the following questions/comments regarding the W. North Avenue Bridge HBRA.

- If the Vertical Clearance project was not a proposed project, would the W. North Avenue Bridge be a rehabilitation/replacement project by PennDOT? In other words, is the bridge's current posted 10 ton load and existing structural deficiencies only an issue due to the proposed Vertical Clearance project?
- Would the facility deficiencies be an issue if the railroad line was lowered, instead of the proposed increase for vertical clearance?

If you need further information on above ground resources please consult Cheryl Nagle at chnagle@pa.gov or (717) 772-4519.

Sincerely,

Douglas C. McLearen, Chief
Division of Environmental Review

cc: David Anthony, PennDOT

Commonwealth Keystone Building | 400 North Street | 2nd Floor | Harrisburg, PA 17120 | 717.783.8947

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Michael Baker
INTERNATIONAL

Appendix B
Air Quality Memorandum

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Norfolk Southern Railway Company

Pittsburgh Vertical Clearance Projects

Air Quality Technical Memorandum

HMMH Report No. 310190
November 11, 2022

Prepared for:

Michael Baker International
100 Airside Drive
Moon Township, PA 15108

Prepared by:
Scott Noel
Phil DeVita

HMMH
700 District Ave Suite 800
Burlington, MA 01803
T 781.229.0707
F 781.229.7939

Contents

Figures

Tables

1 Introduction

The Pittsburgh Vertical Clearance Projects are comprised of four (4) railway improvement projects on the Pittsburgh and Fort Wayne Rail Lines (together referred to as the Pittsburgh Line), owned and operated by Norfolk Southern Railway Company (Norfolk Southern). The proposed projects address freight capacity and delay constraints through the City of Pittsburgh, Allegheny County, Pennsylvania. Norfolk Southern is a common carrier and the Pittsburgh Line forms a critical component of its route through Pittsburgh between Chicago and the New York/New Jersey commercial markets. These five overhead clearance projects [North Avenue Bridge (PC-1.60); Pennsylvania Avenue Bridge (PC-1.82); Columbus Avenue Bridge (PC-2.17); Washington Avenue Bridge, Swissvale (PT 344.91); and Amtrak Station Canopy (PT-353.20)] have vertical clearance obstructions along the Pittsburgh Line and prevent efficient movement of freight, especially time-sensitive intermodal freight, by rail between Chicago and New York/New Jersey, and specifically through Pennsylvania.

Unused capacity exists on the Pittsburgh Line and these clearance projects will allow the line to accommodate anticipated freight growth while allowing for double-stack intermodal freight to use the Pittsburgh Line in lieu of Norfolk Southern's Monongahela line (Mon Line) south of the rivers. The ability to move this double-stack traffic on the Pittsburgh Line will eliminate exposure to hazardous conditions and delay to time-sensitive freight relating to the unpredictable landslides from adjacent property that occur along the Mon Line.

The air quality assessment was conducted to evaluate the effects of the Pittsburgh Vertical Clearance Projects. Because air analysis is regional in nature, and while the Pittsburgh Vertical Clearance Projects are comprised of five individual projects, a regional air analysis was undertaken along a study corridor encompassing all five of the projects. Merchant Street Bridge is part of the Norfolk Southern Pittsburgh Line. The Merchant Street Bridge Project is to replace the bridge that carries the Pittsburgh Line over Merchant Street. As a separate, standalone replacement along the corridor, the air quality analysis performed for the Vertical Clearance Projects would cover this location and therefore a separate quality assessment is not necessary for the separate Merchant Street Bridge Project. Figure 1 shows the study corridor, which includes an approximately 13-mile portion of the Pittsburgh Line north of the Allegheny and Ohio Rivers from just west of the Ohio Connecting (OC) Flyover Bridge Flyover to a point east of the Point Perry Bridge. While an air quality analysis may not be needed for the review of these projects, this analysis was developed in accordance with Pennsylvania Act 120 of 1970 and is consistent with the Pennsylvania Department of Transportation (PennDOT) Publication 321. See https://www.dot.state.pa.us/public/PubsForms/Publications/PUB%20321.pdf.

This memorandum addresses the affected environment and environmental consequences of the projects currently under consideration, including an overview of regulations, general conformity and attainment status, methodology, and estimates of pollutant emissions for the existing conditions ("Existing" scenario) and for the design year conditions without the projects ("No Build" scenario) and with the projects (or "Build" scenario). Because diesel locomotive emissions are the primary emissions relating to railroad operations along railroad line, this assessment studied the potential change in diesel locomotive emissions associated with rail traffic in each of these scenarios, accommodating for forecasted growth in freight volumes as well as rerouting of double-stack traffic from the Mon Line to the Pittsburgh Line in the Build scenarios.

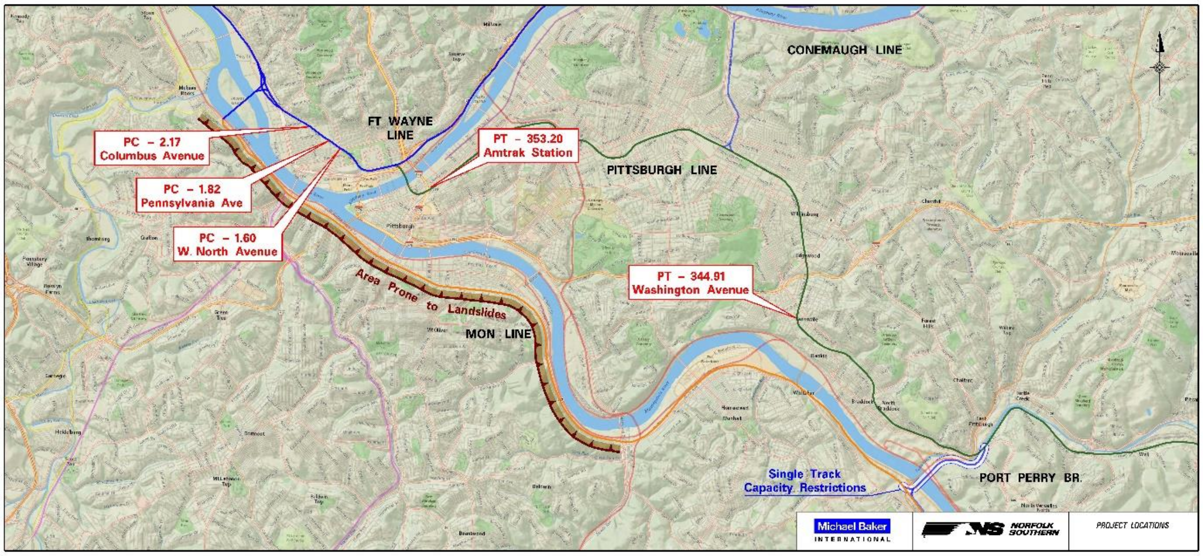


Figure 1. Location Map

2 Background and Regulatory Context

PennDOT has awarded state funding for the projects, which triggers a review under Pennsylvania's Act 120. As set forth in Publication 321, PennDOT's policy is to assess the air quality impacts of transportation improvement projects and to give consideration to the incorporation of appropriate avoidance and/or relief strategies into preliminary engineering designs and construction for those projects that have potential air quality impacts. PennDOT's guidelines are in compliance with 23 CFR Part 771, and also reflect recent procedures regarding conformity as promulgated by the United States Environmental Protection Agency (EPA) as of April 2012 (Final Conformity Rule 40 CFR Parts 51 and 93). PennDOT's policy is to follow regulations issued by EPA, the Federal Highway Administration (FHWA), and the Pennsylvania Department of Environmental Protection (DEP). To the extent Act 120 reviews would require analysis of air impacts, such analysis would be completed consistent with these guidelines. This air quality (qualitative) analysis was conducted for the projects based on the Clean Air Act, 42 U.S.C. § 7401 et seq., and the most recent EPA and DEP air quality classifications.

2.1 Criteria Pollutants and National and State Ambient Air Quality Standards

Table 1 presents the national ambient air quality standards (NAAQS), see 40 C.F.R. Part 50, established by the EPA for criteria air pollutants, namely: carbon monoxide (CO), sulfur dioxide (SO_2), ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), and lead (Pb). There are two types of NAAQS—primary and secondary: "*Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public* *welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.*"[1]

Table 1. Criteria Pollutant NAAQS

Pollutant	Primary/Secondary	Ave.Time	Level	Form
Carbon Monoxide (CO)	Primary	8 Hour	9 ppm	Not to be exceeded more than once per year
		1 Hour	35 ppm	
Lead (Pb)	Primary and Secondary	Rolling 3-month average	0.15 $\mu g/m$,[1]	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 Hour	100 ppb	98th percentile of 1 hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	Annual	53 ppb, [2]	Annual Mean
Ozone	Primary and Secondary	8 hours	0.070 ppm, [3]	Annual fourth highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter PM_{10}	Primary and secondary	24 hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Particulate Matter $PM_{2.5}$	Primary	Annual	12.0 $\mu g/m^3$	Annual mean averaged over 3 years
	Secondary	Annual	15.0 $\mu g/m^3$	Annual mean averaged over 3 years
	Primary and Secondary	24 hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
Sulfur Dioxide (SO_2)	Primary	1 hour	75 ppb, [4]	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

(as of February 2019: Source: http://www3.epa.gov/ttn/naaqs/criteria.html)
µg/m3 = Micrograms per cubic meter
ppm = Parts per million
primary standards = provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
Secondary standards = provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.
Form = denotes the form of the standard and how the standard is met.. Each standard has its own criteria for how many times it may be exceeded.

1. In areas designated non-attainment for the Pb standards prior to the promulgation of the current 2008 standards, and for which implementation plans to attain or maintain the current 2008 standards have not been submitted and approved, the previous standards (1.5 ug/m^3 as a calendar quarter average) also remain in effect.
2. The annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard.
3. Final rule signed October 1, 2015 and effected December 28, 2015.
4. The previous SO_2 standards 0.14 ppm 24-hour and 0.03 ppm annual will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current 2010 standards, and (2) any area for which an implementation plan providing for attainment of the current 2010 standard has not been submitted and approved and that is designated non-attainment under the previous SO_2

1 From the EPA preamble to the NAAQS table: https://www.epa.gov/criteria-air-pollutants/naaqs-table

standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

2.2 Pollutants of Concern

As discussed above, the EPA established NAAQS for commonly found air pollutants, called criteria pollutants, in the CAA and 1990 Clean Air Act Amendments (CAAA). The seven criteria pollutants are CO, ozone, $PM_{2.5}$, PM_{10}, NO_2, SO_2, and lead. A number of these pollutants, such as CO, PM, ozone, and NO_2 commonly result from transportation-related sources. In particular[2]:

- CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of combustion engine exhaust, which contributes approximately 56 percent of all carbon emissions nationally. CO is affected by variations in temperature and vehicle speeds.
- PM is a term used to describe particles in the air including dust, dirt, soot, smoke, and liquid droplets. Sources that directly emit PM include on-road motor vehicles, construction activities, locomotives, and unpaved roads. Sources of particles that form in the air from chemical processes involving sunlight and water vapor include fuel combustion in combustion engines, at power plants and from industrial processes. PM_{10} is used as a measure of coarse particulate, in which the particles are 10 microns or less in size. Coarse particles of this size are typically formed by earth-based materials such as construction and re-entrained road dust and brake and tire wear. $PM_{2.5}$ is used as a measure of fine particulate, in which the particles are 2.5 microns or less in size. Fine particles of this size are typically, but not exclusively, formed as a product of combustion.
- Ozone (i.e., ground-level photochemical smog) is different from CO and PM in that it results from a chemical reaction between volatile organic compounds and oxides of nitrogen in the presence of sunlight. Also, the concentration and dispersion of ozone are significantly affected by an area's meteorology and topography. Because it is primarily an area wide pollutant, it is typically assessed in system-level planning as part of the air quality State Implementation Plan (SIP) development and conformity process. Through the Transportation Improvements Program (TIP)/SIP evaluation process, this pollutant is evaluated on a regional level.
- NO_2, along with particles in the air, is often seen as a reddish-brown layer over urban areas. The primary sources of NO_2 emissions are combustion engines, electric utilities, and industrial, commercial, and residential sources that burn fuel. NO_2 is considered an ozone precursor and are evaluated as part of the regional conformity requirements during the project planning phases.
- SO_2 is a product of fuel combustion at power plants, businesses, and residential locations using coal or oil containing sulfur. It forms acidic aerosols harmful to the respiratory tract and can aggravate symptoms associated with lung disease like asthma and bronchitis. SO_2 is a primary contributor to acid deposition which leads to acidification of lakes and streams and damage to vegetation and materials, along with diminution of visibility.
- Lead (Pb) is an elemental heavy metal found naturally in the environment as well as in manufactured products and industrially in the production of gasoline. Lead can be released directly into the air, as suspended particles. Low lead exposure can have adverse effects on the nervous system of fetuses and young children. Historic major sources of lead air emissions were motor vehicles and industrial sources. After lead was phased out of vehicle fuels in 1995, emissions of lead from the automotive

[2] Pennsylvania Department of Transportation, Project-Level Air Quality Handbook: https://www.dot.state.pa.us/public/PubsForms/Publications/PUB%20321.pdf

section have declined. Today, most lead emissions in the U.S. are from leaded aviation fuel in piston engine aircraft and industrial operations such as smelters.

2.3 NAAQS Attainment Status

Areas that have never been designated by EPA as nonattainment for one or more of the NAAQS are classified as attainment areas, while areas that do not meet one or more of the NAAQS may be designated by EPA as nonattainment areas for that or those criteria pollutants. Areas that have failed to meet the NAAQS in the past but have since re-attained them may be re-designated as attainment (maintenance) areas, which are commonly referred to as maintenance areas.

The EPA Green Book[3] and the DEP[4] lists non-attainment, maintenance, and attainment areas across the nation. The current designations for the Pittsburgh area (located in Allegheny County), within which the projects lie, are as follows:

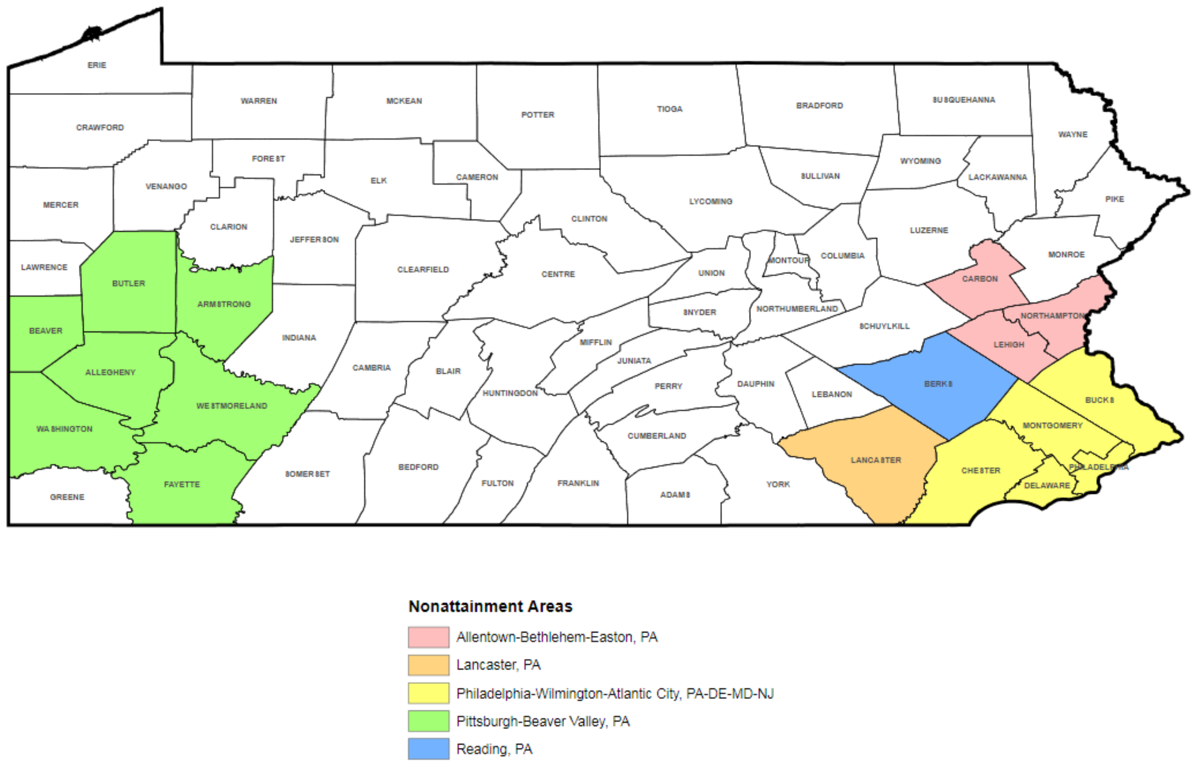
- Marginal nonattainment for the 2008 ozone standard;
- Maintenance for the 1971 carbon monoxide standard;
- Maintenance for the 2006 $PM_{2.5}$ standard;
- Moderate nonattainment for the 2012 $PM_{2.5}$ standard; and
- Nonattainment for the 2010 SO_2 standard.

Figure 2 to Figure 4 show graphically the nonattainment region for each pollutant per DEP[5]. The remaining pollutants lead and NO_2 are designated as being in attainment for the NAAQS.

[3] EPA Green Book: https://www.epa.gov/green-book.

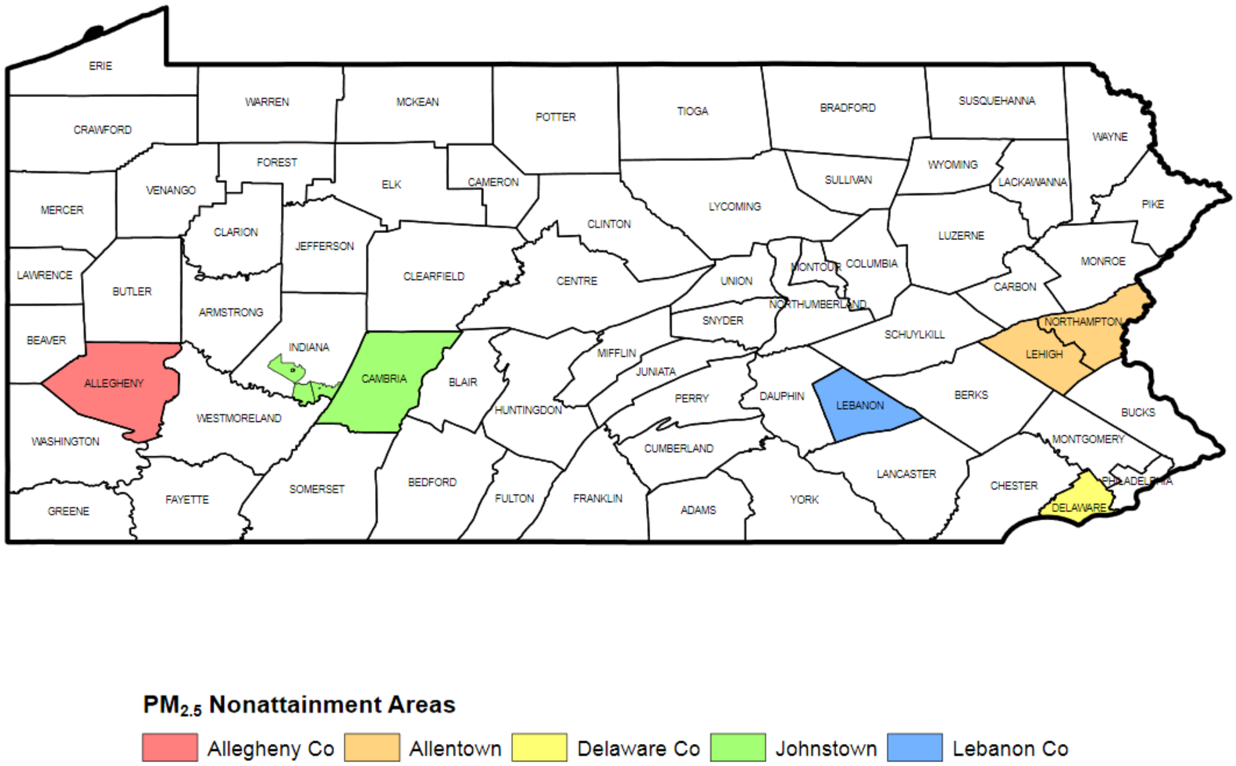
[4] Pennsylvania Department of Environmental Protection: https://www.dep.pa.gov/business/air/baq/regulations/pages/attainment-status.aspx

[5] https://www.dep.pa.gov/business/air/baq/regulations/pages/attainment-status.aspx



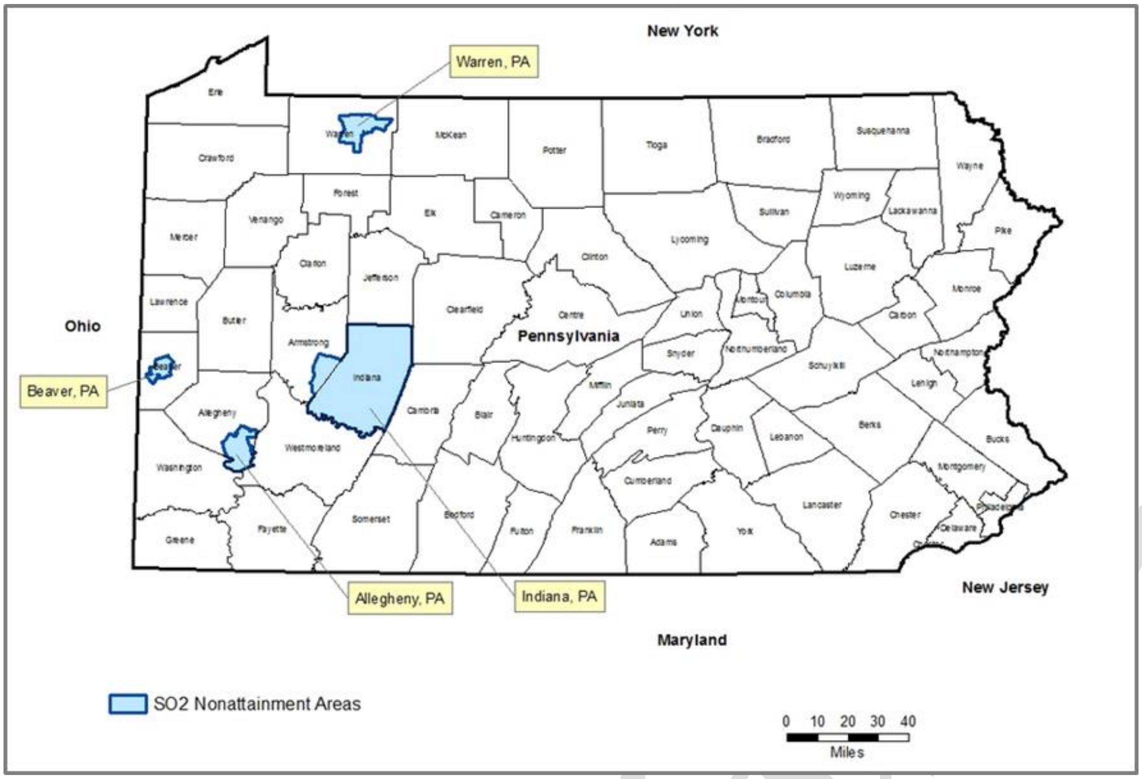
Source: https://www.dep.pa.gov/business/air/baq/regulations/pages/attainment-status.aspx
Note: Current Nonattainment: (All are classified Marginal) Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland.

Figure 2. Pennsylvania Ozone Nonattainment Area (2008 Standard)



Source: https://www.dep.pa.gov/business/air/baq/regulations/pages/attainment-status.aspx
Notes: current attainment status for PM2.5 is Allegheny, Delaware, and Lebanon are currently classified as moderate non attainment

Figure 3. Pennsylvania PM2.5 Nonattainment Area (2012 Standard)



Source: https://www.dep.pa.gov/business/air/baq/regulations/pages/attainment-status.aspx
Notes: current attainment status for PM2.5 is Allegheny, Delaware, and Lebanon are currently classified as moderate non attainment

Figure 4. Pennsylvania SO2 Nonattainment Area (2010 Standard)

2.4 General Conformity

Pursuant to 40 CFR Parts 51 and 93, the general conformity rule (GCR) applies to federal actions for non-FHWA components of a transportation project requiring actions by federal agencies in nonattainment or maintenance areas for any of the applicable criteria pollutants. The GCR specifies *de minimis* emission levels by pollutant to determine the applicability of a conformity requirement for a project. A conformity applicability analysis under GCR is the first step of a conformity evaluation and determines whether a conformity determination would be undertaken for a federal action.

The Pittsburgh Vertical Clearance Projects are not federal actions and require no action, approvals, or funding from any US Department of Transportation agency, including the Federal Railroad Administration (FRA), FHWA, or Federal Transit Authority (FTA). Rather, PennDOT has awarded state funding for these projects, which triggers a review under Pennsylvania's Act 120. To the extent Act 120 reviews would require analysis of air impacts, such analysis would be completed consistent with the GCR. If the analysis results indicate that the total projected emissions under both the construction and operational activities would not exceed the *de minimis* levels, then the conformity evaluation is the final step. If, however, the *de minimis* levels would be exceeded by the proposed action, under the federal GCR process, a general conformity determination would be undertaken for the applicable nonattainment/maintenance pollutants.

While the GCR analysis is not necessary for the vertical clearance projects, the applicability analysis was conducted to identify if *de minimis* levels have the potential to be exceeded by the projects.

3 Existing Air Quality

Existing air quality conditions in Allegheny County can be reflected through the current status of the NAAQS attainment and the recent ambient air monitoring data collected by DEP and published by EPA.

As shown above, the project area has EPA designations as follows:

- Marginal nonattainment for the 2008 ozone standard;
- Maintenance for the 1971 carbon monoxide standard;
- Maintenance for the 2006 $PM_{2.5}$ standard;
- Moderate nonattainment for the 2012 $PM_{2.5}$ standard;
- Nonattainment for the 2010 SO_2 standard.

The DEP operates the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) air monitoring sites, including ambient (i.e., outdoor) air monitoring sites, to continuously monitor pollutant levels throughout the state. This data is used to monitor compliance with federal and state ambient air quality standards and is provided to the public in annual reports. According to its website, the DEP does not generally monitor air quality in Allegheny County and relies on the independent Allegheny County Health Department Air Quality Program to monitor air quality monitoring in the county.

The Allegheny County Health Department Air Quality Program's Annual Reports for 2016, 2017, and 2018 include both published data for each year as well as analysis concerning 1997-2018 air quality trends. Data provided for the most recent three years at the monitoring stations nearest the project area are used to describe the representative ambient air quality in the project area and are presented in Table 2. The measured ambient air concentrations closest to the project area were all well below the corresponding NAAQS, except for the exceedance of the 8-hour ozone standard recorded in Lawrenceville in 2016, 2017, and 2018. However, the annual fourth highest daily maximum 8-hour concentration averaged over 3 years, which is how EPA measures the compliance standard, are below the standard.

Table 2. Representative Monitored Ambient Air Quality Data

Pollutant	Averaging Time	Year			Primary Standard	Monitoring Site Location
		2021	2020	2019		
Carbon Monoxide (CO)	1-hour Maximum (ppm)	2.3	1.9	2.2	35	Lawrenceville
	8-hour Maximum (ppm)	1.1	1.4	1.4	9	
Ozone (O_3)	8-hour Maximum (ppm)	0.068	0.071	0.067	0.070	Lawrenceville
		2019 to 2021 3-Year Average of 4th Maximum 0.064				
Nitrogen Dioxide (NO_2)	1-hour Maximum (ppb)	46	51	40	100	Parkway East
	Annual (ppb)	10	9.0	10.0	53	
Particulate Matter (PM_{10})[1]	24-hour Maximum(ug/m^3)	24	31	26	150	Clairton
Particulate Matter ($PM_{2.5}$)[1]	24-hour (98th Percentile) (ug/m^3)	23.1	18.9	21.7	35	Lawrenceville
	Annual	8.8	7.7	9.0	12	
Sulfur Dioxide (SO_2)	1-hour Maximum (ppb)	15	7	21	75	Lawrenceville

Note: [1]Filter based monitor results presented.

Source: Allegheny County Air Quality Reports, 2019[6], 2020[7], 2021[8]

4 Methodology

The Pittsburgh Vertical Clearance Projects are designed to improve mobility and efficiency along the east-west rail corridor by allowing double stack intermodal train traffic to be rerouted from the Mon Line to the Pittsburgh Line, each of which are located within the Pittsburgh, PA metropolitan area. Currently, double stack intermodal traffic crosses the OC Bridge Flyover over the Ohio River and follows the Mon Line on the west side of the Ohio and Monongahela Rivers down to the single tracked Port Perry Bridge, where it crosses back over and connects to the Pittsburgh Line. Train emissions result primarily from the diesel fuel used in locomotives. Locomotives and locomotive engines, as well as the fuel allowed to be used in locomotives, are subject to federal EPA emissions standards. The air quality assessment is focused on the regional annual net changes in locomotive emissions that would result from the proposed projects. The GCR applicability analysis was completed for the net change in annual CO, $PM_{2.5}$, NO_2 and volatile organic compounds (VOCs) from locomotives to evaluate air quality impacts. Ultra-low sulfur diesel oil (ULSD) was fully phased in for locomotives by 2014, resulting in low SO_2 emissions. Therefore, emissions of SO_2 were not included and are expected to be well below the EPA *de minimis* levels. Emissions were estimated for the Existing (2019), the No Build (2045), and Build (2045)

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[6] Allegheny County, 2019 Air Quality Annual Report: 2019-Air-Quality-Annual-Report.pdf (alleghenycounty.us)
[7] Allegheny County, 2020 Air Quality Annual Report: 2020-Air-Quality-Annual-Report.pdf (alleghenycounty.us)
[8] Allegheny County, 2021 Air Quality Annual Report: 2021-data-summary.pdf (alleghenycounty.us)

scenarios. The design year analysis is an anticipated future scenario informed by United States Department of Transportation (DOT) and PennDOT rail traffic forecasts.

Locomotive emissions were estimated using a weighted average of the fleet distribution of the current and expected fleet mix, assuming the EPA-established line haul locomotive exhaust emission standards (Tier 0, Tier 1, Tier 2, Tier 3, and Tier 4)[9]. For purposes of this analysis, Tier 0 and some of the Tier 0+ and Tier 1+ locomotives assumed for the existing condition will be phased out over time, with higher proportions of Tier 2, Tier 3, and Tier 4 locomotive engines comprising the fleet mix in the design year. The emission factors for the anticipated Norfolk Southern locomotive fleet mix for each condition is presented in Table 3.

Table 3. Norfolk Southern Fleet Mix Emission Factors

Operating Condition	N-S Systemwide Locomotive Emission Factors (g/bhp-hr)			
	NO_2	PM	CO	HC
2019 Existing Conditions	6.76	0.22	2.04	0.81
2045 Design Conditions	4.82	0.12	1.87	0.36

Note: PM represents $PM_{2.5}$ and PM_{10} emissions.

Figure 5 presents the air quality analysis segments. The study corridor along which the projects lie was divided into three segments: Segment 1 – Pittsburgh Line, Braddock/East Pittsburgh to Downtown Pittsburgh (distance of 11.8 miles); Segment 2 – Pittsburgh Line, Northside Segment, Mile Post 0.0 to PC 3.17 (distance of 3.9 miles); and Segment 3 – Mon Line from where it crosses the OC Bridge Flyover over the Ohio River and follows the Mon Line on the west side of the Ohio and Monongahela Rivers down to the single tracked Port Perry Bridge, where it crosses back over and connects to the Pittsburgh Line (distance of 15.9 miles). These segments encompass the entire study area. Daily locomotive movements were estimated for both the freight line and the passenger traffic over the two Amtrak routes along each segment. The Existing and No Build scenarios do not include the rerouting of any intermodal trains with double stacked cars from the Mon Line to the Pittsburgh Line because the Pittsburgh Line would not accommodate double stack in those scenarios, but the No Build scenario does include forecasted traffic projections for a low-growth scenario and a high-growth scenario. The low-growth scenario is based on the Pennsylvania Department of Transportation (PennDOT) 2020 Rail Plan[10] and the high-growth scenario is based on the PennDOT 2015 Rail Plan[11].

The high growth scenario is a result of the freight flow projections developed as part of the 2015 PA Freight Plan where PennDOT is projecting an 80+% growth in intermodal container traffic. The (low growth) projections for 2045 in the 2020 PA Freight Plan were modified significantly to reflect changes in global freight changes. The low growth reflects minor (1-2%) growth in intermodal over the next 20+

[9] See 40 CFR 1033.101

[10] Pennsylvania Department of Transportation 20202 Rail Plan: (PennDOT 2021 https://www.penndot.pa.gov/Doing-Business/RailFreightAndPorts/Planning/Documents/2020%20Pennsylvania%20State%20Rail%20Plan/2020%20Pennsylvania%20State%20Rail%20Plan.pdf)

[11] Pennsylvania Department of Transportation 2015 Rail Plan: (PennDOT 2016 https://www.penndot.pa.gov/Doing-Business/Transit/InformationandReports/Documents/2015%20Pennsylvania%20State%20Rail%20Plan%20(low).pdf)

years. Thus, the only changes between low and high growth for this analysis are the number of intermodal trains.

The Build scenarios assume the rerouting of intermodal trains with double stacked traffic to the Pittsburgh Line from the Mon Line as well as forecasted traffic projections. The Mon Line is currently operating at or near capacity. Therefore, the study presumes that under all future scenarios, to accommodate growth in intermodal train movements through the Pittsburgh area, additional trains operating with double stacked rail cars (in the Build scenario) or trains operating with single stacked rail cars (in the No Build scenario) would operate on the Pittsburgh Line. In general, this would mean that under the No Build condition, the Mon Line would continue to operate at capacity with double stack traffic and the study presumes growth in intermodal rail traffic would be routed in a larger number of single stack trains on the Pittsburgh Line. For the Build condition, growth in intermodal rail traffic is presumed to shift from the Mon Line to the Pittsburgh Line and all intermodal growth is presumed to also occur on the Pittsburgh Line. Remaining traffic on the Mon Line with the Build condition would include existing freight movements of any non-double stack intermodal trains.

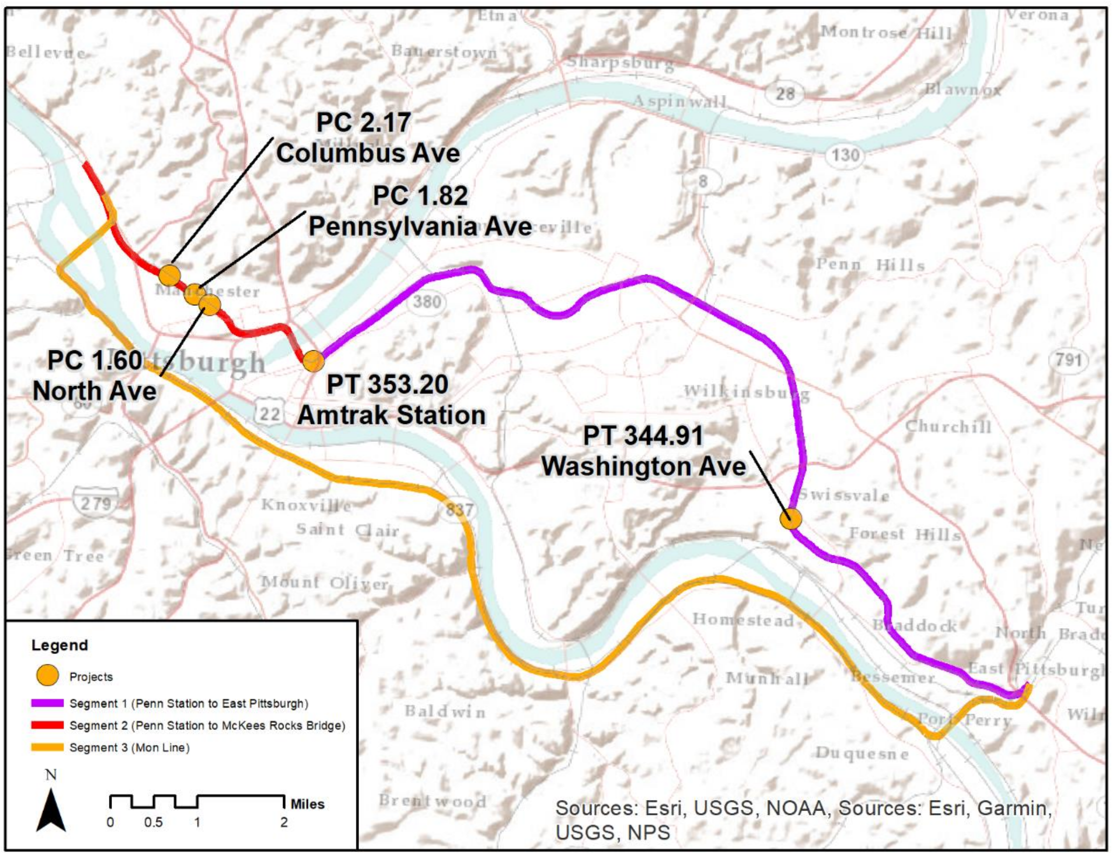

Figure 5. Air Quality Analysis Segments

There is variability in how locomotives operate throughout the study corridor, and generally in railroad operations, due to a number of factors, including maximum track speeds, slowing down or idling due to speed changes, increasing speed and use of higher throttle settings, and specific train consists (i.e., the number of locomotives, cars and their contents on a train). For these reasons, average locomotive speeds, weighted emission factors, average engine horsepower rating, and average load factors were included in the emission calculation. In lieu of project-specific values, a load factor of 0.28 was assumed for Existing and No Build and Build scenarios based on typical locomotives at these speeds. The load factor corresponds to the percentage of full power applied in a given notch setting on the locomotive. Notch settings include engine braking, idle, and numeric values ranging from 1 to 8. A load factor of 0.28 means that the locomotive is using about 28% of full power, which corresponds to a notch setting of 3 or 4. Emissions were estimated for each of the segments for the Existing and 2045 No Build and Build scenarios, with a low-growth and high-growth scenario included for all future conditions. Table 4 and Table 5 summarizes the pollutant emissions in tons per year for each condition and segment with future low-growth in intermodal traffic and high-growth conditions, respectively.

Table 4. Locomotive Emissions Summary for Each Scenario under Low Growth in Intermodal Traffic

									NS Systemwide Locomotive Emission Factors (g/bhp-hr)[4]				Emissions Tons per Year (TPY)			
N-S Rail Line Operational Condition	**Rail Segment Description**	**Train Type**	**Distance (miles)**	**Number of Locomotives per Day[1]**	**Annual VMT[2]**	**Ave. Speed (mph)**	**Load Factor[3]**	**Horsepower**	**NO_2**	**PM[5]**	**CO**	**HC[6]**	**NO_2**	**PM[5]**	**CO**	**HC[6]**
2019 Existing Conditions	Pittsburgh Line - Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	38	164,338.6	26.67	0.28	1226.1	6.76	0.22	2.04	0.81	15.7695	0.5171	4.7687	1.8933
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1226.1	6.76	0.22	2.04	0.81	0.7378	0.0242	0.2231	0.0886
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1226.1	6.76	0.22	2.04	0.81	1.4757	0.0484	0.4463	0.1772
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	68	96,386.7	26.67	0.28	1226.1	6.76	0.22	2.04	0.81	9.2490	0.3033	2.7969	1.1104
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1226.1	6.76	0.22	2.04	0.81	0.4705	0.0154	0.1423	0.0565
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	68	395,370.3	30	0.28	1226.1	6.76	0.22	2.04	0.81	33.7275	1.1059	10.1993	4.0494
												Total	**61.43**	**2.01**	**18.58**	**7.38**
2045 No Build	Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	82	354,624.7	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	24.6814	0.6097	9.5627	1.8198
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1248.4	4.82	0.12	1.87	0.36	0.5352	0.0132	0.2073	0.0395
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1248.4	4.82	0.12	1.87	0.36	1.0703	0.0264	0.4147	0.0789
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	118	167,258.9	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	11.6410	0.2876	4.5102	0.8583
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1248.4	4.82	0.12	1.87	0.36	0.3413	0.0084	0.1322	0.0252
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	22	127,913.9	30	0.28	1248.4	4.82	0.12	1.87	0.36	7.9145	0.1955	3.0664	0.5836
												Total	**46.18**	**1.14**	**17.89**	**3.41**
2045 Build	Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	58	250,832.1	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	17.4576	0.4313	6.7638	1.2872
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1248.4	4.82	0.12	1.87	0.36	0.5352	0.0132	0.2073	0.0395
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1248.4	4.82	0.12	1.87	0.36	1.0703	0.0264	0.4147	0.0789
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	90	127,570.3	29.17	0.28	1248.4	4.82	0.12	1.87	0.36	8.1178	0.2005	3.1452	0.5986
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1248.4	4.82	0.12	1.87	0.36	0.3413	0.0084	0.1322	0.0252
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	0	0.0	30	0.28	1248.4	4.82	0.12	1.87	0.36	0.0000	0.0000	0.0000	0.0000
												Total	**27.52**	**0.68**	**10.66**	**2.03**

Notes:

1. Number of locomotives per day assumptions are based on existing train movements with forecasted increases from the 2020 Pennsylvania Rail Plan (PennDOT 2021).
2. Vehicle Miles Traveled (VMT) assumes number of locomotives a day occur every day for 365 days per year.
3. Load factor of 0.28 based on typical engine at 20 to 25 mph.
4. Existing line haul emission factors use weighted average for 2019 Norfolk Southern fleet. Design line haul emission factors use weighted average of expected NS fleet mix for 2045 design year.
5. PM includes both PM_{10} and $PM_{2.5}$ emissions
6. Hydrocarbons (HC) are synonymous with volatile organic compounds (VOC)

Definitions:

VMT - Vehicle miles traveled is the total number of miles traveled by trains on each of the rail segments.

Load Factor - the load factor is the based on the notch setting (or throttle setting) of the locomotives operating along the segments and is based on an average setting provided by Norfolk Southern's operations staff.

Table 5. Locomotive Emissions Summary for Each Scenario under High Growth in Intermodal Traffic

N-S Rail Line Operational Condition	Rail Segment Description	Train Type	Distance (miles)	Number of Locomotives per Day[1]	Annual VMT[2]	Ave. Speed (mph)	Load Factor[3]	Horsepower	NS Systemwide Locomotive Emission Factors (g/bhp-hr)[4]				Emissions Tons per Year (TPY)			
									NO_2	PM[5]	CO	HC[6]	NO_2	PM[5]	CO	HC[6]
2019 Existing Conditions	Pittsburgh Line - Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	38	164,338.6	26.67	0.28	1226.1	6.76	0.22	2.04	0.81	15.7695	0.5171	4.7687	1.8933
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1226.1	6.76	0.22	2.04	0.81	0.7378	0.0242	0.2231	0.0886
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1226.1	6.76	0.22	2.04	0.81	1.4757	0.0484	0.4463	0.1772
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	68	96,386.7	26.67	0.28	1226.1	6.76	0.22	2.04	0.81	9.2490	0.3033	2.7969	1.1104
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1226.1	6.76	0.22	2.04	0.81	0.4705	0.0154	0.1423	0.0565
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	68	395,370.3	30	0.28	1226.1	6.76	0.22	2.04	0.81	33.7275	1.1059	10.1993	4.0494
												Total	**61.43**	**2.01**	**18.58**	**7.38**
2045 No Build	Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	94	406,521.0	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	28.2934	0.6989	10.9621	2.0862
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1248.4	4.82	0.12	1.87	0.36	0.5352	0.0132	0.2073	0.0395
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1248.4	4.82	0.12	1.87	0.36	1.0703	0.0264	0.4147	0.0789
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	120	170,093.8	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	11.8383	0.2924	4.5867	0.8729
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1248.4	4.82	0.12	1.87	0.36	0.3413	0.0084	0.1322	0.0252
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	68	395,370.3	30	0.28	1248.4	4.82	0.12	1.87	0.36	24.4629	0.6043	9.4780	1.8037
												Total	**66.54**	**1.64**	**25.78**	**4.91**
2045 Build	Braddock to Downtown Pittsburgh Segment - Milepost PT-341.00 to PT-353.35 (Pittsburgh Line from MP 341.0 to Start of Fort Wayne Line)	Freight	11.8	90	389,222.2	26.67	0.28	1248.4	4.82	0.12	1.87	0.36	27.0894	0.6692	10.4956	1.9974
		Passenger (Amtrak Pennsylvania Line)	11.8	2	8,649.4	30	0.28	1248.4	4.82	0.12	1.87	0.36	0.5352	0.0132	0.2073	0.0395
		Passenger (Amtrak Capitol Limited Line)	11.8	4	17,298.8	30	0.28	1248.4	4.82	0.12	1.87	0.36	1.0703	0.0264	0.4147	0.0789
	Pittsburgh Line - Northside Segment - Milepost PC-0.00 to PC-3.17 (From convergence of Fort Wayne and Conemaugh Lines westward to convergence of Ft. Wayne and Mon Lines west of OC Bridge)	Freight	3.9	112	158,754.2	29.17	0.28	1248.4	4.82	0.12	1.87	0.36	10.1021	0.2496	3.9140	0.7449
		Passenger (Amtrak Capitol Limited Line)	3.9	4	5,669.8	30.84	0.28	1248.4	4.82	0.12	1.87	0.36	0.3413	0.0084	0.1322	0.0252
	Mon Line (OC Bridge Flyover across the Ohio River south to the Port Perry Bridge and connectiont to the Pittsburgh Line)	Freight	15.9	24	139,542.5	30	0.28	1248.4	4.82	0.12	1.87	0.36	8.6340	0.2133	3.3452	0.6366
												Total	**47.77**	**1.18**	**18.51**	**3.52**

Notes:

1. Number of locomotives per day assumptions are based on existing train movements with forecasted increases from the 2015 Pennsylvania Rail Plan (PennDOT 2016).
2. Vehicle Miles Traveled (VMT) assumes number of locomotives a day occur every day for 365 days per year.
3. Load factor of 0.28 based on typical engine at 20 to 25 mph.
4. Existing line haul emission factors use weighted average for 2019 Norfolk Southern fleet. Design line haul emission factors use weighted average of expected NS fleet mix for 2045 design year.
5. PM includes both PM_{10} and $PM_{2.5}$ emissions
6. Hydrocarbons (HC) are synonymous with volatile organic compounds (VOC)

Definitions:

VMT - Vehicle miles traveled is the total number of miles traveled by trains on each of the rail segments.

Load Factor - the load factor is the based on the notch setting (or throttle setting) of the locomotives operating along the segments and is based on an average setting provided by Norfolk Southern's operations staff.

5 General Conformity Rule Applicability

The GCR applicability analysis was performed for the proposed action to determine whether a formal conformity analysis would be undertaken. Table 6 and Table 7 summarizes the regional locomotive emissions estimates for the Existing, No Build, and Build conditions for NO_2, VOC, CO, and $PM_{2.5}$ for intermodal low growth and high growth projections, respectively. As noted earlier, locomotives use ultra-low-sulfur diesel fuel consistent with EPA fuel standards and corresponding SO_2 emissions are expected to be very low and well below applicable *de minimis* levels.

As shown in Table 6 and Table 7 , the predicted annual net change in operational emissions is expected to decrease for all pollutants in the subarea region for the low growth and high growth projections for the2045 Build conditions as compared to the 2045 No Build conditions. This expected reduction is primarily due to more efficient utilization of locomotives (double stacking leading to fewer locomotives for the same amount of freight) under the Build scenario. Furthermore, the net change in emissions would also be below established EPA *de minimis* thresholds for NO2, $PM_{2.5}$, and CO for both growth projections and would not result in a significant air quality impact. Therefore, a general conformity determination is not required for the Build scenarios and no adverse air quality impacts would be expected to result from the Build scenario for the low growth and high growth projections.

Table 6. Pittsburgh Regional Annual Net Change in Emissions from Build Scenario Compared to EPA *de minimis* Thresholds for the Intermodal Low-Growth Future Conditions

	Emissions (TPY)[1,2]			
Scenarios	**NO_2**	**$PM_{2.5}$**	**CO**	**VOC**
2019 Existing	61.43	2.01	18.58	7.38
2045 No Build	46.18	1.14	17.89	3.41
2045 Build	27.52	0.68	10.66	2.03
Difference in No Build and Build scenarios	**-18.66**	**-0.46**	**-7.23**	**-1.38**
EPA *de minimis* thresholds	**100**	**100**	**100**	**50**
Below the *de minimis* thresholds	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

1. As a conservative assumption, all PM in Table 6 is assumed to be $PM_{2.5}$ when comparing to the $PM_{2.5}$ de minimis levels.
2. For this analysis, VOC emissions are the same as the HC emissions as presented in Table 6 above.

Table 7. Pittsburgh Regional Annual Net Change in Emissions from Build Scenario Compared to EPA *de minimis* Thresholds for the Intermodal High-Growth Future Conditions

	Emissions (TPY)[1,2]			
Scenarios	**NO_2**	**$PM_{2.5}$**	**CO**	**VOC**
2019 Existing	61.43	2.01	18.58	7.38
2045 No Build	66.54	1.64	25.78	4.91
2045 Build	47.77	1.18	18.51	3.52
Difference in No Build and Build scenarios	**-18.77**	**-0.46**	**-7.27**	**-1.38**
EPA *de minimis* thresholds	**100**	**100**	**100**	**50**
Below the *de minimis* thresholds	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

3. As a conservative assumption, all PM in Table 7 is assumed to be $PM_{2.5}$ when comparing to the $PM_{2.5}$ de minimis levels.
4. For this analysis, VOC emissions are the same as the HC emissions as presented in Table 7 above.

5.1 Mobile Source Air Toxics

Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority of mobile source air toxic (MSAT) from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level MSAT as well as the possibility of even minor MSAT emissions from these projects. As shown in the GCR analysis above, these projects have been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and have not been linked with any special MSAT concerns. As such, the projects would not cause a significant increase in MSAT impacts over that of the No Build condition. Moreover, EPA regulations for locomotive engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades.

6 Construction Emissions

As indicated in PennDOT guidance, air quality impacts resulting from construction activities are typically not a concern when contractors utilize appropriate control measures. In Pennsylvania, contractors shall perform all construction activities / operations in accordance with 25 Pa. Code Article III (Chapters 121-145, Air Resources) to ensure adequate control measures are in place. PennDOT, Pub. 321, at 1.6. For that reason, the emissions results in this study only include operational emissions and do not include construction emissions, which would be temporary in nature.

7 Conclusions

Regional locomotive emissions were estimated for the Existing, 2045 Build and No Build conditions for the Proposed Action under low-growth and high-growth intermodal freight trains scenarios. Emissions of NO_2, CO, $PM_{2.5}$ (i.e. PM), and VOCs (i.e. HC) were estimated and compared to the EPA *de minimis* levels for operational emissions only to determine significant air quality impacts. Construction emissions are short-term and typically not a concern and were not included as part of this analysis. With the Proposed Action under the low growth and high growth scenario, it is estimated there would be a net reduction in annual regional locomotive operational emissions, and therefore no significant impacts would result with implementation of the projects and a general conformity determination would not be required.

This analysis does not include the indirect beneficial effects of additional freight modal shifts from highway to rail that may result after these projects are completed. One freight train can carry the freight of several hundred trucks. Emissions of particulate matter and nitrogen oxides are significantly lower for railroads than for trucks. On average railroads are four times more fuel efficient than trucks. Because greenhouse gas emissions are directly related to fuel consumption, moving freight by rail instead of truck reduces greenhouse gas emissions by 75 percent[12].

[12] See https://www.aar.org/wp-content/uploads/2018/07/AAR-Rail-Intermodal.pdf.

Michael Baker
INTERNATIONAL

Appendix C

Noise and Vibration Analysis

Determination of Effects Report

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Norfolk Southern Railway Company

Pittsburgh Vertical Clearance Projects

Noise and Vibration Technical Report

HMMH Report No. 310190
November 11, 2022

Prepared for:

Michael Baker International
100 Airside Drive
Moon Township, PA 15108

Prepared by:
Scott Noel
John Weston
Julia Nagy

HMMH
700 District Ave Suite 800
Burlington, MA 01803
T 781.229.0707
F 781.229.7939

Executive Summary

The Pittsburgh Vertical Clearance Projects comprise five railway improvement projects on the Pittsburgh and Fort Wayne Rail Lines (together referred to as the Pittsburgh Line), owned and operated by Norfolk Southern Railway Company (Norfolk Southern). The proposed projects will address freight capacity and delay constraints through the City of Pittsburgh, Allegheny County, Pennsylvania. Norfolk Southern is a common carrier and the Pittsburgh Line forms a critical component of its route through Pittsburgh between Chicago and the New York/New Jersey commercial markets. These five overhead clearance projects [W. North Avenue Bridge (PC-1.60); Pennsylvania Avenue Bridge (PC-1.82); Columbus Avenue Bridge (PC-2.17); Washington Avenue Bridge, Swissvale (PT 344.91); and Amtrak Station Canopy (PT-353.20)] have vertical clearance obstructions along the Pittsburgh Line and prevent efficient movement of freight, especially time-sensitive intermodal freight, by rail between Chicago and New York/New Jersey, and specifically through Pennsylvania.

Unused capacity exists on the Pittsburgh Line and these clearance projects will allow the line to accommodate anticipated freight growth while allowing for double-stack intermodal freight to use the Pittsburgh Line in lieu of Norfolk Southern's Monongahela line (Mon Line) south of the rivers. The ability to move this double-stack traffic on the Pittsburgh Line will eliminate exposure to hazardous conditions and delay to time-sensitive freight relating to the unpredictable landslides from adjacent property that occur along the Mon Line.

A community meeting was held in June 2018 to obtain feedback from the community related to the scope of the projects. The community identified noise as a primary concern related to the projects. To address that concern, although noise and vibration analyses may not be needed for the environmental review of these projects, Norfolk Southern elected to conduct this noise and vibration impact assessment to evaluate the potential impacts associated with the projects. This analysis was developed in accordance with Pennsylvania Act 120 of 1970 and is consistent with the Pennsylvania Department of Transportation (PennDOT) Publication 24 "*Project Level Highway Traffic Noise Handbook*", see https://www.dot.state.pa.us/public/pubsforms/Publications/PUB%2024.pdf. Although Publication 24 relates to highway projects, the principles of that guidance have been applied to the analysis of these projects. The United States Environmental Protection Agency (EPA) regulations at 40 C.F.R. Part 201 establish noise emission standards for transportation equipment for interstate rail carriers, and Federal Railroad Administration (FRA) regulations at 49 C.F.R. Parts 210, 222, and 227 establish noise standards for rail equipment and operations. These standards apply to Norfolk Southern's rail operations as a general matter. For environmental analysis of noise for the purpose of Act 120 analysis, PennDOT incorporates Federal Highway Administration (FWHA) processes applicable to highway projects. FHWA processes do not address freight rail. As explained below, for this analysis HMMH has applied Surface Transportation Board (STB) regulations and Federal Transit Administration (FTA) noise and vibration guidance applicable to transit rail projects and/or high-speed rail projects consistent with previous FRA analyses.

Existing noise and vibration levels were measured along the study corridor to establish existing conditions and for use in determining potential impacts applying STB noise assessment guidelines and vibration thresholds per FTA/FRA guidance, specifically the FTA's "Transit Noise and Vibration Impact Assessment Manual" (FTA 2018). Existing sound levels along the corridor are typical of an urban environment with sounds from urban sources, roadways, industrial sources, the existing Norfolk Southern line, and natural sounds.

Existing sound levels are variable depending on distance from sound sources, such as the rail line, but on average are approximately 65 day-night (L_{dn}) [1] A-weighted decibels (dBA). Under the “Build” (with projects) or “No Build” (without projects) future conditions sound levels would increase by an average of approximately 1 decibel (dB) throughout the analysis area, with slightly higher increases occurring under the No Build future conditions due to higher train traffic relative to the future Build conditions. The STB assessment guidelines are being used as a framework only and not because the projects are subject to review under the STB regulations and guidance. In accordance with 49 C.F.R. § 1105.7, STB impact thresholds are based on changes in noise exposure relative to the existing conditions, with an impact occurring if either of these two conditions occur:

1. STB regulations require identifying sensitive receptors where noise levels are increased by 3 decibels (dB) or more as a result of the Project;

2. Or, where sound levels are increased to 65 dBA L_{dn} or greater as a result of the Project.

Noise and vibration impacts were predicted for the train traffic that would result as an indirect effect of the clearance projects in the future under both the Build and No Build under low-growth and high-growth scenarios. The low-growth scenario is based on the 2020 State of Pennsylvania Rail Plan projections for freight trains and the high-growth scenario is based on the 2015 State of Pennsylvania Rail Plan projections for freight traffic. Noise levels would be slightly higher along the Pittsburgh Line under either growth scenario for the No Build scenario than the Build scenario, due to the greater number of single-stack trains that would be required to accommodate future rail traffic demand, as compared to the fewer double-stack trains capable of carrying the same amount of rail freight. Specifically, acoustic modeling identified that 58 less noise sensitive land uses would be impacted under the future Build conditions than under the future No Build conditions under both the low-growth and high-growth scenarios. In addition, all impacted land uses under the future Build conditions would also be impacted under the future No Build conditions.

Vibration from train trips is event based and for this reason is not additive like that of noise. Locomotives are the heaviest component of a train consist (the locomotives and cars in a train) and as such the most intense source of vibration from train pass-by events. The clearance projects will have no direct effect on vibration. Because the vibration source is not changing in intensity no potential indirect effects are predicted throughout the corridor. Additionally, small reductions in the vertical alignment of the Norfolk Southern line under the Build scenario provide negligible reductions in vibration, which would not be appreciably different than the No Build scenario. For these reasons no vibration impacts are predicted.

[1] The Ldn is the average equivalent sound level over a 24 hour period, with a penalty added for noise during the nighttime hours of 22:00 to 07:00. during the nighttime period 10 dB is added.

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1 Introduction

The Pittsburgh Vertical Clearance Projects, also referred to as the "Build" conditions or scenario, are comprised of five (5) railway improvement projects on the Pittsburgh and Fort Wayne Rail Lines (together referred to as the Pittsburgh Line), owned and operated by Norfolk Southern Railway Company (Norfolk Southern). The proposed projects address freight capacity and delay constraints through the City of Pittsburgh, Allegheny County, Pennsylvania. Norfolk Southern is a common carrier and the Pittsburgh Line forms a critical component of its route through Pittsburgh between Chicago and the New York/New Jersey commercial markets. These five overhead clearance projects [W. North Avenue Bridge (PC-1.60); Pennsylvania Avenue Bridge (PC-1.82); Columbus Avenue Bridge (PC-2.17); Washington Avenue Bridge, Swissvale (PT 344.91); and Amtrak Station Canopy (PT-353.20)] have vertical clearance obstructions along the Pittsburgh Line and prevent efficient movement of freight, especially time-sensitive intermodal freight, by rail between Chicago and New York/New Jersey, and specifically through Pennsylvania. Unused capacity exists on the Pittsburgh Line and these clearance projects will allow the line to accommodate anticipated freight growth while allowing for double-stack intermodal freight to use the Pittsburgh Line in lieu of Norfolk Southern's Monongahela line (Mon Line) south of the rivers. The ability to move this double-stack traffic on the Pittsburgh Line will eliminate exposure to hazardous conditions and delay to time-sensitive freight relating to the unpredictable landslides from adjacent property that occur along the Mon Line.

The bridge improvements will not have a direct effect on noise and vibration, but due to community feedback and identification of noise and vibration as an issue of interest and potential indirect effect, Norfolk Southern engaged HMMH to conduct and elected to complete a noise and vibration impact assessment for the length of the rail corridor that encompasses all five of the projects, which is approximately 13 miles in length. This document presents the measured noise and vibration levels for the existing conditions and the predicted noise and vibration impact conditions associated with the projects through this study corridor.

2 Noise and Vibration Basics

2.1 Noise Fundamentals and Descriptors

Noise is typically defined as unwanted or undesirable sound, whereas sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human subjective response are (1) intensity or level, (2) frequency content and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates above and below the atmospheric pressure and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 decibels. On a relative basis, a 3-decibel change in sound level generally represents a barely noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) in the loudness of a sound. A 5-decibel change is readily noticeable by people with average hearing.

The frequency content of noise is related to the tone or pitch of the sound and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound levels and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise. To indicate what various noise levels represent, Figure 1 shows typical A-weighted sound levels for both rail and non-rail sources. As indicated on this figure, most commonly encountered outdoor noise sources generate sound levels within the range of 60 dBA to 90 dBA at a distance of 50 feet.

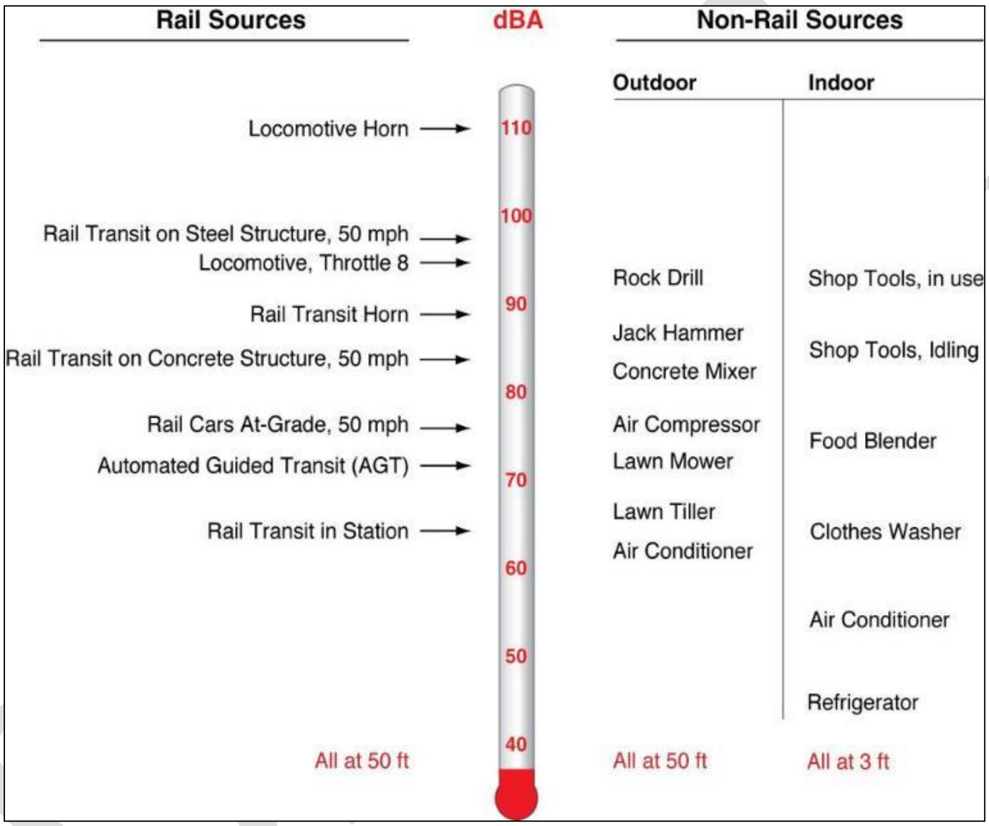


Figure 1. Weighted Sound Levels

Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (L_{eq}). L_{eq} can be thought of as the steady sound level that represents the same sound energy as the varying sound levels over a specified time period (typically 1 hour or 24 hours). Often, the L_{eq} values over a 24-hour period are used to calculate cumulative noise exposure in terms of the Day-Night Sound Level (L_{dn}). L_{dn} is the A-weighed L_{eq} over a 24-hour period with an adjustment factor for noise during the nighttime hours (between 10:00 PM and 7:00 AM) to account for the greater sensitivity of most people to noise during the night. The effect of nighttime adjustment is that one nighttime event, such as a train passing by between 10:00 P.M. and 7:00 A.M., is equivalent to 10 similar events during the daytime. Figure 2 provides examples of typical noise environments and criteria in terms of L_{dn}. While the extremes of L_{dn} are shown to range from 35 dBA in a wilderness environment to 85 dBA in noisy urban environments, L_{dn} is generally found to range between 55 dBA and 75 dBA in most communities.

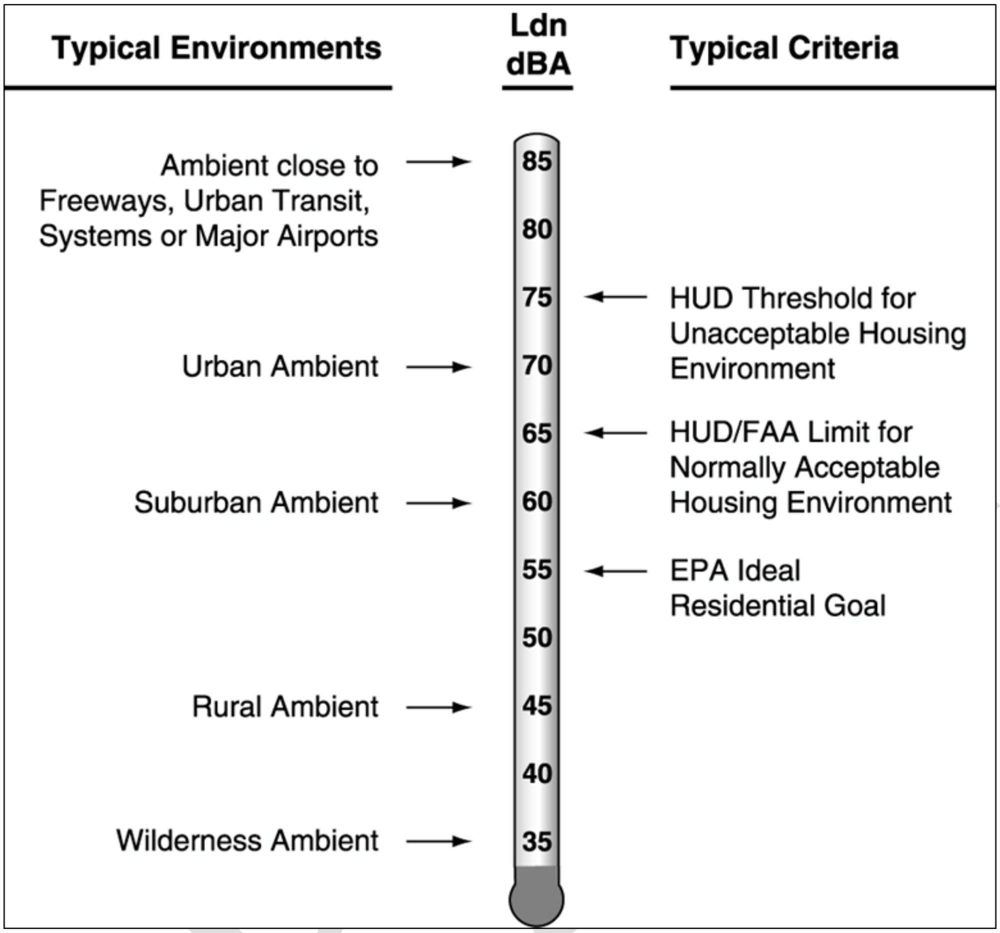


Figure 2. Examples of Typical Outdoor Noise Exposure

2.2 Ground-Borne Vibration Fundamentals and Descriptors

Ground-borne vibration is the oscillatory motion of the ground about some equilibrium position that can be described in terms of displacement, velocity or acceleration. Because sensitivity to vibration typically corresponds to the amplitude of vibration velocity within the low-frequency range of most concern for environmental vibration (roughly 5-100 Hz), velocity is the preferred measure for evaluating ground-borne vibration from transit projects.

The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibratory motion. PPV is typically used in monitoring blasting and other types of construction-generated vibration, since it is related to the stresses experienced by building components. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response, which is better related to the average vibration amplitude. Thus, ground-borne vibration from transit systems is usually characterized in terms of the "smoothed" root mean square (rms) vibration velocity level, in decibels (VdB), with a reference quantity of one micro-inch per second. VdB is used in place of dB to avoid confusing vibration decibels with sound decibels.

Figure 3 illustrates typical ground-borne vibration levels for common sources as well as criteria for human and structural response to ground-borne vibration. As shown, the range of interest is from approximately 50 to 100 VdB, from imperceptible background vibration to the threshold of damage. Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

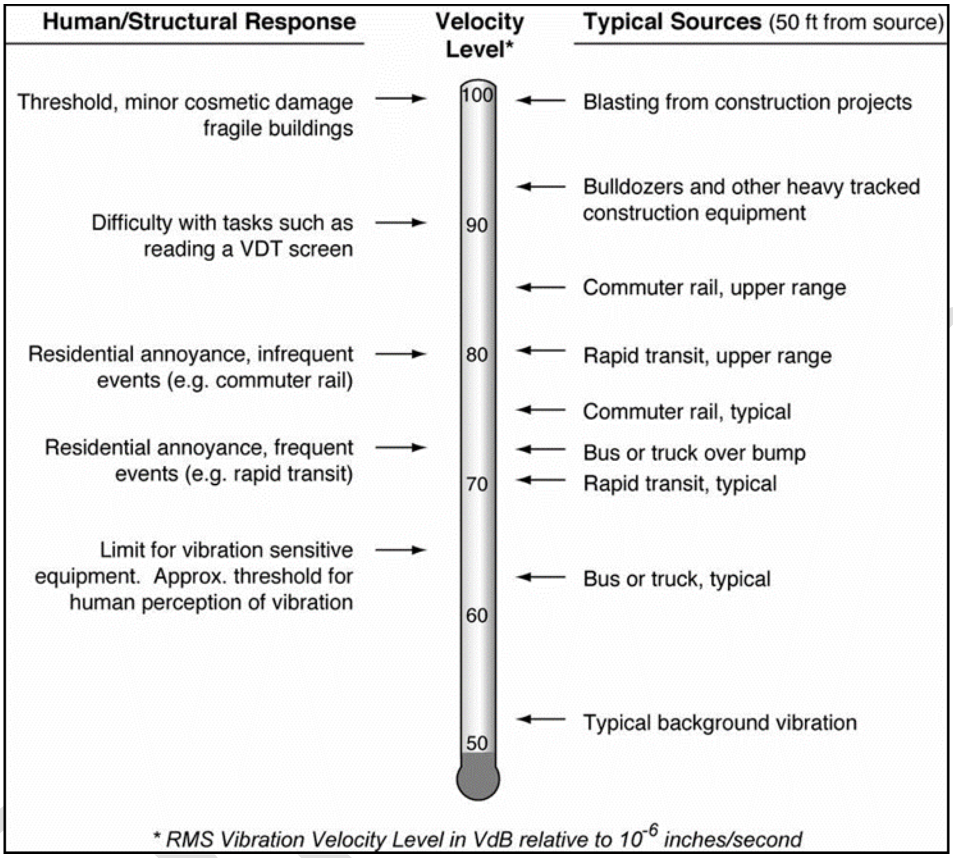


Figure 3. Typical Ground Borne Vibration Levels and Criteria

3 Noise and Vibration Impact Criteria

The following sections are included for informational purposes, to provide context for the noise and vibration levels discussed in this document. The noise assessments for these projects are based on U.S. Surface Transportation Board (STB) provisions for Procedures for Implementation of Environmental Laws in 49 C.F.R. 1105.7 and the noise and vibration impact criteria defined in the U.S. Federal Transit Administration (FTA) guidance manual, *Transit Noise and Vibration Impact Assessment* (FTA 2018) (“FTA Manual”). The Federal Railroad Administration (FRA) has applied methodology used in the FTA Manual for use on freight rail projects for environmental analysis. The FTA Manual sets forth methodologies for analyzing noise and vibration from commuter and intercity rail operations and as such are the standard methodology for assessing potential impacts of new rail bridges and transit systems. Consequently, these impact criteria were utilized in the project's noise and vibration analysis.

3.1 Rail Noise Criteria

STB noise assessment guidelines are provided in 49 C.F.R. 1105.7(e) and are based on changes in noise exposure as compared to conditions that would exist without a proposed project. STB regulations involve noise assessment guidelines in cases where STB authorization is required for certain changes in freight rail operations. The STB regulations serve as a framework for analysis because they relate specifically to impacts from changes in rail operations; the Pittsburgh Vertical Clearance Projects are not subject to STB review and do not require any federal authorizations.

The STB criteria have two conditions to determine potential impacts:

1. STB regulations require identifying sensitive receptors where noise levels are increased by 3 decibels (dB) or more as a result of the Project;
2. Or, where sound levels are increased to 65 dBA L_{dn} or greater as a result of the Project.

49 C.F.R. § 1105.7.

Where a noise increase is below 3 dB, analysis is not specified by STB regulations due to the low potential for impact. However, both components together resulting in a 3 dB increase or greater and an overall 65 dBA L_{dn} or greater level must be met in order to consider an increase to be a potentially adverse noise impact (STB 1998). Both of these components (3 dB increase or 65 dBA L_{dn}) are employed to determine whether a potential noise impact should be included in environmental reports.

The FTA Manual provides procedures for predicting and assessing noise and vibration impacts of proposed transit projects for different stages of project development and different levels of analysis. As noted above, freight rail noise regulations are met by the Norfolk Southern fleet and are found at EPA regulations at 40 C.F.R. Part 201, and FRA regulations at 49 C.F.R. Parts 210, 222, and 227. The FTA Manual is intended for use in transit projects funded by FTA which include buses, trolleys, commuter and light rail, but not freight rail. STB regulations address procedures for environmental analysis of potential freight rail noise. (See 49 C.F.R. § 1105.7.) Similar to the STB regulations, the FTA Manual is not applicable here because the FTA has no jurisdiction over the projects, but the guidelines provide a framework for noise and vibration analyses for these projects.

Generally, the FTA Manual provides methods for determining potential effects, conducting screening and noise and vibration analyses, and determining noise and vibration impacts. A first step in determining potential effect includes an evaluation of land use categories. The FTA Manual provides procedures for predicting and assessing noise and vibration impacts of proposed transit projects for different stages of project development and different levels of analysis (FTA 2018).

FTA provides a screening level noise analysis that provides distances from freight rail lines where impacts may occur. If no noise-sensitive land uses or receivers are present in the area, then no further noise assessment is needed. If noise sensitive land uses are identified within the screening distance, FTA projects can select to conduct either a "General Assessment" or a "Detailed Assessment" of noise impacts. To identify noise impacts the FTA Manual provides a sliding scale of potential impact based on existing noise exposure that are measured and/or estimated at each of the noise sensitive land uses. Unlike the STB procedures, the FTA analysis is variable depending on existing noise exposure. Predicted sound levels that are modeled to potentially result from a given project are compared to existing noise levels at sensitive land uses to identify the potential net increase in noise that would result from the project and without the project.

For noise analyses from freight railroads for the type of modeling assessment such as in the case of the projects, the most applicable regulations are the STB freight rail noise assessment procedures. This analysis has applied the STB regulations while adapting FTA's noise sensitive land use categories as defined in the FTA Manual which are provided Table 1. For example, the STB regulations require analysis at the following noise sensitive land uses which correspond to either FTA Land Use Category 2 or 3 as follows:

- Hospitals, residences, retirement communities, and nursing homes (FTA 2)
- Schools, parks (passive), and libraries (FTA 3)

FTA Land Use Category 1 includes land uses where quiet is an essential element of their intended purpose. These land uses are somewhat uncommon and would include things like the Tomb of the Unknown Soldier; whereas parks, such as the Allegheny Commons, would fall into FTA Category 3. There are no FTA Land Use Category 1 properties in the analysis area for this study.

Table 1. FTA Land Use Categories

Land Use Category	Description of Land Use Category
1	Tracts of land where quiet is an essential element in of its their intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and as well as National Historic Landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
2	This category is applicable to all residential land use and buildings where people normally sleep, such as hotels and hospitals.
3	This category is applicable to Institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds and recreational facilities are included in this category.

Source: Transit Noise and Vibration Impact Assessment Manual, FTA, September 2018, Table 4-3 at p. 23

In addition to the STB thresholds for railroad projects, locomotive noise is governed by U.S. Environmental Protection Agency regulations Part 201, Subpart B Interstate Rail Carrier Operations Standards. EPA's criteria establish standards for interstate rail carriers promulgated under Federal law, 42 U.S.C. § 7641, Noise Abatement, as follows:

- Locomotives produce A-weighted sound levels at 96 dB or lower when moving at any time or under any condition of grade, load, acceleration, or deceleration, when measured in accordance with the criteria specified in Subpart C of this regulation with fast meter response at 30 meters (100 feet) from the centerline of any section of track having less than a two (2) degree curve (or a radius of curvature greater than 873 meters (2865 feet)).
- Locomotives or locomotive combinations produce A-weighted sound levels at 90 dB or lower when moving at any time or under any condition of grade, load, acceleration, or deceleration, when measured in accordance with the criteria specified in Subpart C of this part with fast meter

response at 30 meters (100 feet) from the centerline of any section of track having less than a two (2) degree curve (or a radius of curvature greater than 873 meters (2,865 feet)).

• Switcher locomotives produce A-weighted sound levels at 90 dB or below when moving at any time or under any condition of grade, load, acceleration or deceleration, and when measured in accordance with the criteria in Subpart C of this part with fast meter response at 30 meters (100 feet) from the centerline of any section of track having less than a two (2) degree curve (or a radius of curvature greater than 873 meters (2,865 feet)).

These Federal requirements are not changed or altered by an individual project assessment such as this noise assessment which is developed to assess potential for impacts of a project subject to review under Pennsylvania Act 120 of 1970.

3.2 Rail Ground-Borne Vibration Criteria

The FTA ground-borne vibration impact criteria are based on land use and operational frequency, as shown in Table 2 and are given in terms of the maximum RMS vibration level for an event. The ground-borne vibration criteria are based on levels that may cause human annoyance. The FTA criteria were developed for transit rail use, not freight rail, and are therefore applied here as a guideline as opposed to the federally required criteria.

FTA guidance provides that when the project will cause vibration more than 5 VdB above the existing vibration, “the existing source can be ignored” and the standard vibration criteria are appropriate. When the project will cause vibration less than 5 VdB above the existing vibration level, FTA guidance provides assessment methodology accounting for existing vibration (FTA Manual, at 127). For a project or project segment with “frequent events” (defined as more than 70 events per day), the FTA Manual states that for rail in heavily used areas (greater than 12 trains/day), an approximate doubling of the events is required for determination that there is a significant increase. Otherwise, the thresholds in Table 2 should be applied to determine potential for impact. Again, these FTA criteria apply to transit, not freight rail operations, but are being applied in this modeling analysis as a conservative approach.

Table 2. FTA Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Vibration Assessment

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch /sec)			Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibrations would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

(1) "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most freight rail projects fall into this category.

(2) "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

(3) "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

(4) This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

(5) Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Source: FTA Manual, September 2018, Table 6-3, p. 126

Unlike noise analysis, the FTA vibration assessment is per event, and there is not a methodology to average daily events such as with the noise L_{dn}. Thus, the FTA analytical approach is intended to assess vibration for specific events.

4 Existing Conditions

4.1 Noise Environment

The existing noise environment along the study corridor varies depending on proximity to, and occurrence of, sound sources. The dominant sound sources are rail traffic and roadway traffic, with local community noise and air traffic as secondary sources. Land use along the corridor principally falls within Category 2, which includes residential land uses, hotels, hospitals and other land uses with nighttime sensitivity. There are scattered Category 3 land uses, which are primarily churches and passive parks. The Martin Luther King Jr. East Busway is a transit use adjacent to much of the corridor under analysis and provides public bus transportation services for the City. The projects are limited to the bridges being improved to address vertical obstructions. The bridge improvements do not have direct effects on noise with the exception of temporary construction related potential effects. This analysis is being performed to assess the potential for indirect effects relating to changes in rail traffic and consequent potential vibration effects of those changes. Due to the greater capacity of double-stack intermodal trains and associated increases in freight rail efficiency, the analysis shows a long-term decrease in train trips and associated decrease in noise. The analysis included identification of changes in noise in accordance with STB assessment guidelines and potential sensitive receptors.

A baseline sound level survey was conducted throughout the study corridor to establish the existing sound levels and to determine applicable thresholds (see Section 3) for the projects. HMMH established plans for pre-project noise monitoring to establish baseline noise levels at sensitive locations. Sound was measured at these locations, which are depicted in Figures 6-41, Noise Assessment Maps. The sound measurement locations were selected to be representative of the noise sensitive areas of Category 2 and 3 land uses along the study corridor (and not necessarily near one of the project locations), and at locations most likely to be exposed to higher levels of train noise such as those near the railroad. At each site, the measurement microphone was positioned to characterize the exposure of the site to the dominant noise sources in the area. Brüel & Kjær noise monitors (models 2245, 2250 and 2270) were used for gathering noise data. The noise measurement locations are shown in Figure 4.

The results of the existing ambient noise measurements are summarized in Table 3 below. Narrative descriptions are provided in the paragraphs that follow. Appendix A and B provide additional detail on the monitoring locations and results.

Figure 4. Overview of Project Area and Measurement Locations

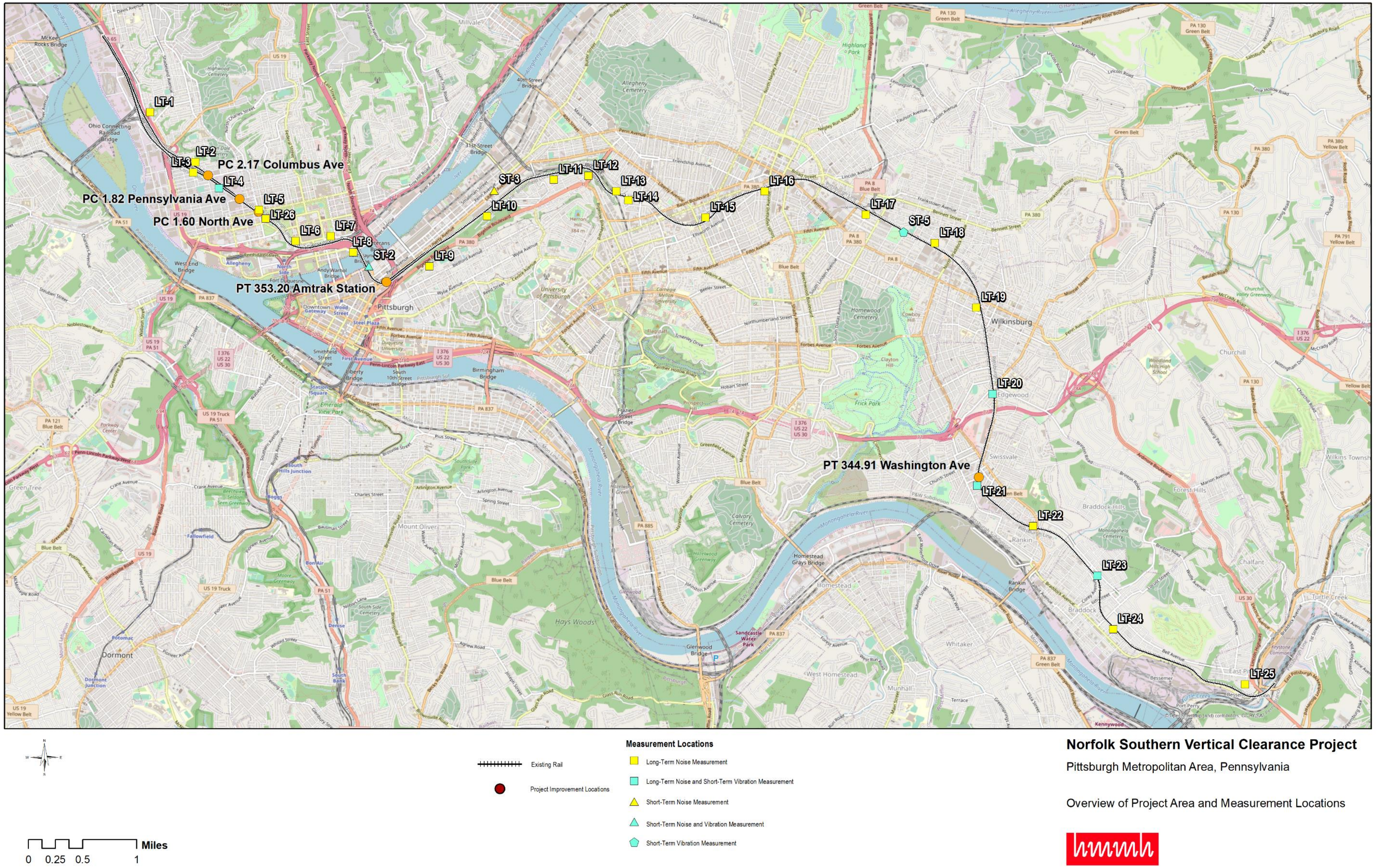


Table 3. Summary of Existing Ambient Noise Measurement Results

Site No.	Measurement Location	Start of Measurement		Meas. Duration (hrs)	Existing Sound Exposure (dBA)						
		Date	Time		L_{dn}	Peak Hour L_{eq}	$L_{eq\ (day)}$	$L_{eq\ (night)}$	L_{10}	L_{50}	L_{90}
LT-1	2462 California Avenue	12/6/2018	10:11	24	70.6	68.6	62.1	64.3	68.3	64.1	54.4
LT-2	1234 Sunday Street	12/6/2018	10:27	24	65.9	63.5	56.5	58.7	65.0	58.2	47.9
LT-3*	1907 Fulton Street	12/11/2018	12:34	24	62.9	72.4	58.5	58.5	57.8	55.0	52.8
LT-4	1016 N. Franklin Street	12/6/2018	9:35	3	64.3	62.1	54.4	56.6	60.6	52.4	48.1
LT-5	710 W. North Avenue	12/12/2018	10:32	24	71.2	71.0	62.4	64.6	68.5	62.4	54.7
LT-6	410 W. Commons	12/12/2018	11:03	24	68.9	68.2	60.5	62.7	65.0	57.9	53.7
LT-7*	301 Cedar Avenue	12/12/2018	13.38	3	63.5	62.8	59.2	59.4	59.3	55.9	54.0
LT-8	100 Anderson Street	12/12/2018	10:00	24	67.1	65.0	58.1	60.3	64.9	58.2	53.0
LT-9	1846 Arcena Street	12/11/2018	11:00	24	59.5	58.4	48.9	51.1	57.1	53.6	47.8
LT-10	2630 Brereton Street	12/11/2018	9:42	24	59.4	64.7	48.7	50.9	55.3	51.6	46.2
LT-11	3415 Flavian Street	12/6/2018	8:38	24	61.2	60.0	51.6	53.8	56.5	47.8	42.2
LT-12	3811 Fleetwood Street	12/3/2018	11:26	24	59.3	59.9	49.1	51.3	59.1	49.9	43.1
LT-13	4732 Juniper Street	12/6/2018	9:01	24	65.1	66.4	56.2	58.4	58.9	49.7	42.4
LT-14	15 Hemingway Street	12/11/2018	11:00	24	66.3	69.9	55.9	58.1	61.3	46.8	38.8
LT-15	5445 Potter Street	12/11/2018	9:08	24	58.8	57.5	48.9	51.1	51.7	46.4	44.0
LT-16	205 Lehigh Avenue	12/11/2018	9:00	24	59.0	59.3	49.5	51.7	53.4	50.1	47.6
LT-17	6736 Simonton Street	12/3/2018	11:56	24	62.1	60.8	52.7	55.0	56.5	48.2	40.8
LT-18	7357 Finance Street	12/3/2018	12:21	24	61.4	61.1	52.2	54.4	60.8	45.9	35.2
LT-19	444 Ross Avenue	12/4/2018	14:03	24	60.8	65.3	51.3	53.5	52.7	43.4	36.5
LT-20	1 Pennwood Avenue	12/3/2018	12:52	24	72.1	71.4	61.9	64.1	60.9	51.8	40.1
LT-21	Park Avenue	12/4/2018	14:37	24	67.3	70.7	58.4	60.6	54.4	44.2	33.8
LT-22	McKim Street	12/3/2018	10:26	24	74.9	76.2	64.0	66.2	60.8	53.7	41.6
LT-23	504 Hawkins Avenue	12/4/2018	15:34	24	71.5	75.7	60.4	62.6	51.4	42.6	35.2
LT-24	431 Verona Street	12/4/2018	15:52	24	68.2	68.5	59.4	61.6	56.1	52.7	49.3
LT-25	300 Main Street	12/4/2018	16:33	24	64.7	67.0	53.6	55.9	60.4	52.9	45.0
LT-26	Allegheny Commons Park West (Iron Deer Playground)	4/13/2022	21:53	24	74.2	72.3	64.8	68.1	59.2	50.8	47.2
ST-2	1000 Ft. Duquesne Blvd.	12/12/2018	14:55	0.5	N/A	70.6	N/A	N/A	74.8	65.9	59.8
ST-3	2901 Liberty Avenue	12/12/2018	15:44	0.5	N/A	60.5	N/A	N/A	63.2	59.8	54.7

Note: *Estimated using 1-hour samples during peak hour, midday, and nighttime.
Source: Harris Miller Miller & Hanson Inc., 2018

Site LT-1: 2462 California Avenue. The L_{dn} measured over a 24-hour period in the front yard of this single-family residence was 70.6 dBA. Marine traffic on the Ohio River, local roadway traffic on California Avenue and Highway 65, and rail traffic on the Norfolk Southern rail line contribute to the noise environment at this location. The peak hour L_{eq} sound level at this location was 68.6 dBA.

Site LT-2: 1234 Sunday Street. The L_{dn} measured over a 24-hour period in the side yard of this single-family residence was 65.9 dBA. Local roadway traffic on California Avenue and rail traffic on the Norfolk

Southern rail line contribute to the noise environment at this location. The peak hour L_{eq} sound level at this location was 63.5 dBA.

Site LT-3: 1907 Fulton Street. The L_{dn} estimated for a period of 24 hours, using 1-hour samples on the public rights of way (sidewalk), was 62.9 dBA. Local roadway traffic on Fulton and Adams Streets and rail traffic on the Norfolk Southern line contribute to the noise environment at this location. The peak hour L_{eq} at this location was 72.4 dBA.

Site LT-4: 1016 North Franklin Street. The L_{dn} measured over a 24-hour period in the side yard of this single-family residence was 64.3 dBA. Local roadway traffic on North Franklin Street and Allegheny Avenue and rail traffic on the Norfolk Southern line contribute to the noise environment at this location. The peak hour L_{eq} at this location was 62.1 dBA.

Site LT-5: 710 W. North Avenue. The L_{dn} measured over a 24-hour period from a southwest-facing balcony on the 8th floor of this apartment building was 71.2 dBA. Local roadway traffic on W. North Avenue and Brighton Road and rail traffic on the Norfolk Southern line contribute to the noise environment at this location. The peak hour L_{eq} at this location was 71.0 dBA.

Site LT-6: 401 West Commons. The L_{dn} measured over a 24-hour period in the front yard area of this retirement community was 68.9 dBA. The Norfolk Southern line and local roadway traffic on South Commons and Interstate 279 contribute to the noise environment at this location. The peak hour L_{eq} at this location was 68.2 dBA.

Site LT-7: 301 Cedar Avenue. The L_{dn} 63.5 dBA at this site was estimated using 1-hour samples from the sidewalk adjacent to an unoccupied public swimming pool complex. Local roadway traffic on Cedar and Stockton Avenues, as well as Canal Street, Anderson Street and East Commons contribute to the noise environment at this location, in addition to rail traffic on the Norfolk Southern line. The peak hour L_{eq} at this location was 62.8 dBA.

Site LT-8: 100 Anderson Street. The L_{dn} measured over a 24-hour period on the property of this riverfront apartment complex was 67.1 dBA. Freight trains on the Norfolk Southern rail line and local roadway traffic on River Avenue and Interstate 279 contribute to the noise environment at this location. Marine traffic on the Ohio River also contributed to the noise level. The peak hour L_{eq} at this location was 65.0 dBA.

Site LT-9: 1846 Arcena Street. The L_{dn} measured over a 24-hour period in the front yard of this single-family residence was 59.5 dBA. Rail traffic on the Norfolk Southern line and roadway traffic on Bigelow Boulevard and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 58.4 dBA.

Site LT-10: 2630 Brereton Street. The L_{dn} measured over a 24-hour period in the side yard of this single-family residence was 59.4 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Brereton Street and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 64.7 dBA.

Site LT-11: 3415 Flavian Street. The L_{dn} measured over a 24-hour period in the side yard of this single-family residence was 61.2 dBA. Rail traffic on the Norfolk Southern line, bus transit on the East Busway and roadway traffic on local roads contribute to the noise environment at this location. The peak hour L_{eq} at this location was 60.0 dBA.

Site LT-12: 3811 Melwood Avenue. The L_{dn} measured over a 24-hour period in this undeveloped tax lot adjacent to single family residences was 59.3 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Melwood Avenue and the Bloomfield Bridge contribute to the noise environment at this location. The peak hour L_{eq} at this location was 59.9 dBA.

Site LT-13: 4732 Juniper Street. The L_{dn} measured over a 24-hour period in the back yard of this single-family residence was 65.1 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Juniper Street and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 66.4 dBA.

Site LT-14: 15 Hemingway Street. The L_{dn} measured over a 24-hour period in the rear yard of this multi-family townhome was 66.3 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 69.9 dBA.

Site LT-15: 5445 Potter Street. The L_{dn} measured over a 24-hour period in the back yard, behind the row of buildings, at this multi-family residence was 58.8 dBA. Rail traffic on the Norfolk Southern line and roadway traffic on the East Busway and Porter Street contribute to the noise environment at this location. The peak hour L_{eq} at this location was 57.5 dBA.

Site LT-16: 205 Lehigh Avenue. The L_{dn} measured over a 24-hour period in the back yard, behind the first row of residential structures, of this multi-family residence was 59.0 dBA. Rail traffic on the Norfolk Southern line and roadway traffic on the East Busway, Lehigh Way, Greenbriar Way, and Ellsworth Avenue contribute to the noise environment at this location. The peak hour L_{eq} at this location was 59.3 dBA.

Site LT-17: 6736 Simonton Street. The L_{dn} measured over a 24-hour period in this vacant, residentially zoned lot was 62.1 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Simonton Street and North Linden Avenue contribute to the noise environment at this location. The peak hour L_{eq} at this location was 60.8 dBA.

Site LT-18: 7357 Finance Street. The L_{dn} measured over a 24-hour period in the front yard of this single-family residence was 61.4 dBA. Rail traffic on the Norfolk Southern line and roadway traffic on Finance Street and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 61.1 dBA.

Site LT-19: 444 Ross Avenue. The L_{dn} measured over a 24-hour period in the back yard of this single-family residence was 60.8 dBA. Rail traffic on the Norfolk Southern line and roadway traffic on Ross and Pennwood Avenues contribute to the noise environment at this location. The peak hour L_{eq} at this location was 65.3 dBA.

Site LT-20: 1 Pennwood Avenue. The L_{dn} measured over a 24-hour period in the rear outdoor storage area of the C.C. Mellor Memorial Library was 72.1 dBA. Rail traffic on the Norfolk Southern line in addition to local roadway traffic on Pennwood Avenue, Edgewood Avenue and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 71.4 dBA.

Site LT-21: 7499 Park Avenue. The L_{dn} measured over a 24-hour period in this public-use park area was 67.3 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Park Avenue, Palmer Street and the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 70.7 dBA.

Site LT-22: 2501 McKim Street. The L_{dn} measured over a 24-hour period in this road-facing wooded area was 74.9 dBA. Rail traffic on the Norfolk Southern line and bus transit on the East Busway contribute to the noise environment at this location. The peak hour L_{eq} at this location was 76.2 dBA.

Site LT-23: 504 Hawkins Avenue. The L_{dn} measured over a 24-hour period in the back yard of this single-family residence was 71.5 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Hawkins Avenue contribute to the noise environment at this location. The peak hour L_{eq} at this location was 75.7 dBA.

Site LT-24: 431 Verona Street. The L_{dn} measured over a 24-hour period in the back yard of this single-family residence was 68.2 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Ash Street contribute to the noise environment at this location. The peak L_{eq} at this location was 68.5 dBA.

Site LT-25: 300 Main Street. The L_{dn} measured over a 24-hour period in this wooded area abutting a public park was 64.7 dBA. Rail traffic on the Norfolk Southern line, which includes the use of locomotive warning horns at a nearby public grade crossing, and local roadway traffic on Bluff Street contribute to the noise environment at this location. The peak hour L_{eq} at this location was 67.0 dBA.

Site LT-26: Iron Deer Playground (a.k.a., Deer Pit Playground) at Allegheny Commons Park West. The L_{dn} measured over a 24-hour period in the park near the playground adjacent to the railroad was 74.2 dBA. Rail traffic on the Norfolk Southern line and local roadway traffic on Brighton Road and Ohio Street contribute to the noise environment at this location. The peak hour L_{eq} at this location was 72.3 dBA.

Site ST-2: The L_{eq} measured over a 30-minute period was 70.6 dBA. This site was located in a public park area northwest of the intersection of Fort Duquesne Boulevard and Fort Wayne Bridge. A short-term 30-minute long noise measurement was completed at this public open space site during peak-hour conditions. Two train events crossing the Fort Wayne Bridge and relatively heavy roadway traffic on Fort Duquesne Boulevard were the dominant sound sources during the measurement.

Site ST-3: Denny Park. A short-term 30-minute-long noise measurement was completed at this public park during peak-hour conditions and measured 60.5 dBA L_{eq}. One train event crossing, in addition to relatively heavy roadway traffic on Liberty Avenue were the dominant sound sources during the measurement.

4.2 Existing Vibration Environment

The existing vibration environment in the vicinity of the Norfolk Southern railway in Pittsburgh varies with proximity to rail lines. To characterize existing vibration levels, measurements were obtained at the same locations where noise measurements were completed at LT-4, LT-20, LT-21, LT-23, and ST-2, and only vibrations were measured at ST-5, each of which are vibration sensitive uses or are representative of vibration sensitive uses. Vibration measurements were obtained from train pass-by events to determine if ground propagation characteristics are typical for the study corridor. Measurements were completed using a PCB 393A and 393C accelerometers and Brüel & Kjær noise and vibration monitors (model 2270). Two vibration accelerometers were deployed at each measurement site to obtain samples of vibration attenuation rates as a function of distance. Typically, the sensor situated nearest to the Norfolk Southern train tracks (“near sensor”) was located approximately 25 feet closer to the tracks than the sensor placed further away (“far sensor”). The vibration measurement locations are shown in Figure 4. Overview of Project Area and Measurement Locations, and the distances from the train tracks for each sensor are provided in Table 4. Summary of Existing Vibration Measurements, along with the maximum measured vibration levels (VdB).

Table 4. Summary of Existing Vibration Measurements

Site No.	Measurement Location Description	Date/Time	Near Sensor Distance (feet)[1]	Far Sensor Distance (feet)[1]	Max VdB (near)	Max VdB (far)
LT-4	1016 N. Franklin Street	12/13/2018 10:16	75	94	80.8	79.7
LT-20	1 Pennwood Avenue	12/3/2018 15:53	60	85	85.2	83.5
LT-21	Park Avenue	12/5/2018 13:26	70	95	80.1	83.3
LT-23	504 Hawkins Avenue	12/5/2018 15:00	75	100	82.3	78.6
ST-2	1000 Ft. Duquesne Blvd. Fort Wayne Bridge	12/12/2018 14:33	11.0	30	80.9	80.6
ST-2	1000 Ft. Duquesne Blvd. Fort Wayne Bridge	12/12/2018 14:50	11.0	30	80.9	76.8
ST-5	7051 Thomas Blvd.	12/5/2018 10:59	60	85	83.7	80.5

1. As measured from nearest rail.
Source: Harris Miller Miller & Hanson Inc., 2018

Site LT-4: 1016 North Franklin Street. Vibration sensors were deployed at locations 75 feet and 94 feet from the nearest track. One train pass-by event with a speed 30 mph was observed. The train was comprised of three locomotives and 115 rail cars.

Site LT-20: 1 Pennwood Avenue. Vibration sensors were placed at locations 60 feet and 85 feet from the nearest track. One train pass-by event with a speed of 20 mph was monitored. The train included two locomotives and no rail cars.

Site LT-21: Park Avenue. Vibration sensors were deployed at locations 70 feet and 95 feet from the nearest track. One train pass-by event with a speed of 35 mph was observed in which the train was comprised of four locomotives and 143 rail cars.

Site LT-23: 504 Hawkins Avenue. Vibration sensors were deployed at locations 75 feet and 100 feet from the nearest track. One train pass-by event with a speed of 20 mph was monitored. The train included 2 locomotives and 100 rail cars.

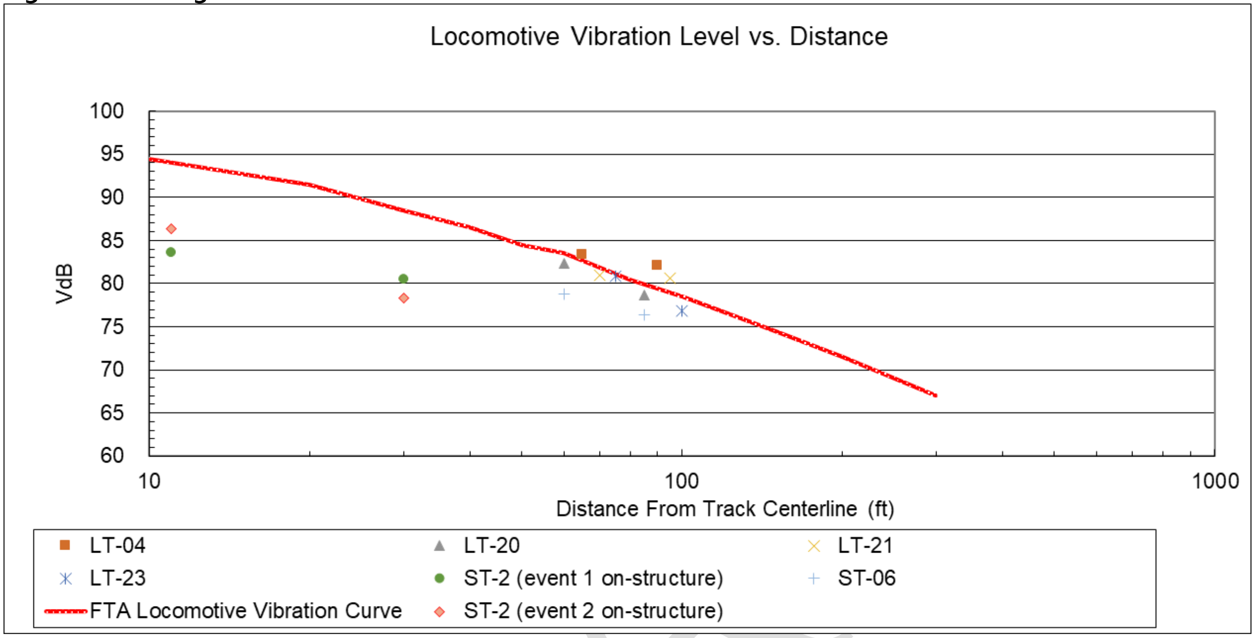
Site ST-2: One vibration sensor was located at the base of the concrete footing of the Fort Wayne Bridge and the second sensor was placed 19 feet away from the structure. Two train pass-by events were monitored. The first event included a train consisted of two locomotives and no rail cars and the second event included a train that was comprised of 2 locomotives and 150 rail cars. The speed of the first event was 11 mph and the speed of the second event was 20 mph.

Site ST-5 : This vibration-only measurement was completed at Westinghouse Park. Vibration sensors were located at locations 60 feet and 85 feet from the nearest track. One train pass-by event with a speed of 25 mph was monitored of a train with two locomotives and 54 rail cars.

Measurement data were normalized by adjusting vibration levels to match the reference speed of 50 mph for a diesel electric locomotive which is the heaviest component of each train and generally results in the highest vibration levels. The normalized vibration levels were plotted on a graph (Figure 5) and compared to the general vibration curve for diesel locomotives obtained from the FTA Manual. As Figure 5 demonstrates, all of the vibration measurements of trains operating on the ground show good agreement with the general locomotive vibration curve except for the vibration measurements near the

Fort Wayne Bridge (Site ST-2). These measurements are approximately 8 to 10 VdB lower than the general vibration curve for locomotives. The FTA Manual indicates that trains operating on structure typically result in vibration levels 10 VdB lower than those operating on the ground; therefore, these measurements show that the FTA adjustment factor of -10 VdB for on structure vibration sources is accurate for these projects.

Figure 5. Existing Vibration Levels



5 Methodology for Assessment of Noise and Vibration

Consistent with STB regulations for noise and FTA/FRA guidelines for vibration, a noise and vibration impact assessment was conducted for a study area covering the proposed projects. This section presents the information used in conducting the noise and vibration assessment. Section 6 presents the results of the assessments.

The following summarizes the primary alternatives being considered for each of the projects. These alternatives are for purposes of this analysis and a more detailed analysis for each project is being developed separately for the Act 120 analysis and other applicable provisions. For the purpose of this modeling analysis the alternative list below adequately covers the range of potential for direct, indirect, and cumulative effects vis a vis the noise and vibration analysis assessment.

Amtrak Station

- No Build Alternative
- Remove portion of train shed to achieve appropriate vertical clearance
- Adjust train shed roof beams to achieve appropriate vertical clearance

W. North Avenue Bridge Project

- No Build Alternative
- Rehabilitate and raise bridge to achieve appropriate vertical clearance
- Rehabilitate bridge and lower tracks to achieve appropriate vertical clearance
- Combination rehabilitate and raise bridge and lower tracks to achieve appropriate vertical clearance
- Replace and raise bridge to achieve appropriate vertical clearance
- Replace bridge and lower tracks to achieve appropriate vertical clearance
- Combination replace and raise bridge and lower railroad tracks to achieve appropriate vertical clearance

Pennsylvania Avenue Bridge Project

- No Build Alternative
- Replace and raise bridge to achieve appropriate vertical clearance
- Repair substructure and lower tracks to achieve appropriate vertical clearance
- Combination replace and raise bridge and lower tracks to achieve appropriate vertical clearance

Columbus Avenue Bridge Project

- No Build Alternative
- Repair and raise bridge to achieve appropriate vertical clearance
- Repair substructure and lower tracks to achieve appropriate vertical clearance
- Combination repair and raise bridge and lower tracks to achieve appropriate vertical clearance

5.1 Noise Projections

The primary components of wayside noise from train operations are engine/exhaust noise for diesel locomotives and wheel/rail noise from the steel wheels rolling on steel rails for freight railcars. Projections of train operation noise were completed for two operational conditions, the post-project timeframe with the projects complete (the “Build” condition or scenario) and post-project timeframe without the projects completed (the “No Build” condition or scenario). The projection of wayside noise was carried out using models specified in the FTA Manual as they are implemented in three-dimensional acoustic modeling software package SoundPLAN Gmbh version 8.0 with the following assumptions:

- Noise measurements were completed throughout the areas in proximity to the study corridor as documented in Section 4. These measurements were used to determine the impact conditions for the projects.

- Increased rail traffic that would result with or without the projects is included in the prediction and was logarithmically added to the existing measured sound levels throughout the project area to identify the cumulative noise increases that would occur. Two rail traffic scenarios were evaluated:
    - Low-Growth: these projections are based on the Pennsylvania Department of Transportation (PennDOT) 2020 Pennsylvania Rail Plan (PennDOT 2021).
    - High-Growth: these projections are based on the PennDOT 2015 Pennsylvania Rail Plan (PennDOT 2016).
- Increased rail traffic would all consist of intermodal trains with two diesel electric locomotives and 125 single-stack intermodal rail cars or 125 double-stack intermodal rail cars for the No Build and Build future conditions, respectively.
- Sound exposure level (SEL) for the intermodal trains is based on measurements of intermodal train pass-by events on the Mon Line.
    - Measurements were normalized using FTA's methodology which results in an SEL of 100 dBA.
- Special track work locations, such as crossovers and turnouts, include a 5 dB increase adjustment consistent with FTA Manual, page 42.
- Locomotive noise would comply with 40 CFR 201.12.
- In accordance with the FRA train horn rule (49 CFR; Part 222; Part 229), horn use was included in the predictions for trains approaching within 20-seconds of the one public grade crossing where Norfolk Southern trains currently sound their horn as required, located at the southeastern end of the study corridor, with the assumption that they operate at 35 miles per hour (mph).
- Where trains operate on structure, the modeling includes a 4 dB increase adjustment consistent with the FTA Manual.
- Train speeds throughout the study corridor are assumed to operate at the maximum allowable speeds to be conservative.
    - Note that changes in operational speed from higher speeds to lower speeds can reduce noise levels; however, this reduction is offset somewhat because this also would result in a longer time period where the noise source is present.
- Predictions assume a track type of continuously welded rail on ballast and tie.

5.2 Vibration Projections

The potential vibration impact from trains operating along the study corridor was assessed using the FTA criteria. The following factors were used in determining potential vibration impacts along the proposed rail alignment:

- Existing ground-borne vibration measurements were conducted at 6 sites in the study area. These measurement results were compared with the typical locomotive maximum vibration level versus distance curve in the FTA Manual, as shown in Section 4. This curve was used to model vibration levels at sensitive receptor locations along the study corridor.

- The existing vibration conditions in the study area were assumed to be in the category of a "Heavily Used Rail Corridor," as defined in the FTA Manual.
- In locations where the existing train vibration exceeds the impact criteria, the projects will cause additional impact only if the project vibration is 3 VdB or more than existing vibration levels.
- For projects, in locations where the existing train vibration does not exceed the impact criteria, impact is assessed based on an exceedance of the vibration criteria.
- Due to the length of freight trains and the duration of the vibration events, freight operations were assessed using the "Frequent Events" category in the vibration impact criteria, as defined by the FTA Manual.
- Vibration predictions assume the same operational speeds as the noise predictions.
- Predictions of vibration from trains operating on aerial structures are reduced by 10 VdB consistent with FTA Manual.
- Predictions of vibration at locations where wheel impacts occur at special track areas such as crossovers or turnouts are increased by 10 VdB consistent with FTA guidance.

6 Noise and Vibration Impact Assessment

Two scenarios were evaluated, the low-growth scenario based on the 2020 Pennsylvania State Rail Plan (PennDOT 2021) and the high-growth scenario based on the 2015 Pennsylvania State Rail Plan (PennDOT 2015). Sections 6.1 and 6.2 summarize these two noise impact scenarios, respectively. The vibration impact assessment is summarized in Section 6.3 and would be the same for either the low-growth or high-growth scenarios since impacts are based on individual train pass-by events.

6.1 Noise Impact Assessment Low-Growth Scenario

Table 5 summarizes the results of the noise impact assessment for the project under the low-growth scenario compared to the No Build conditions at places where people sleep (Category 2) and institutional (Category 3) locations. The table provides information by noise sensitive receptor group, each of which is represented by a noise measurement location. Also provided in the table are the distances to the nearest rail line, train speeds, existing and predicted noise levels, impact criteria, and the numbers of both moderate and severe noise impacts predicted for each land use category.

Increases in Build and No build noise are predominantly a result of the increase in rail traffic during daytime and nighttime hours. The variation in vertical alignments of either the track or the roadways crossing the track that is associated with the alternatives for projects at W. North Avenue/Brighton Road, Pennsylvania Avenue, and Columbus Avenue are small, anticipated to be less than five feet. Changes in vertical track or vertical bridge alignment associated with these alternatives would result in generally imperceptible differences that are within tenths of dB of one another. The dominant consideration for noise in these circumstances is the number of train operations, and that would not be different for any of the alternatives for these projects. Therefore, from a noise perspective, any of the approaches to achieving the needed vertical clearance at these locations are considered the same. Nighttime train movements are more impactful than daytime train movements from a noise impact assessment perspective since the L_{dn} noise metric applies a 10 dB penalty to sounds that occur at night to account for heightened sensitivity during this time period. Rail traffic would increase in the study corridor in the Build (low-growth scenario) and No Build conditions as follows:

Milepost PT-341 to PT-353.35

- Daytime (7:00 a.m. to 10:00 p.m.) – existing 11 train movements, future Build 15 train movements, and future No Build 26 train movements
- Nighttime (10:00 p.m. to 7:00 a.m.) – existing 10 train movements, future Build 17 train movements, and future No Build 16 train movements

Milepost PC-0.00 to PC-3.17

- Daytime (7:00 a.m. to 10:00 p.m.) – existing 17 train movements, future Build 22 train movements, and future No Build 31 train movements
- Nighttime (10:00 p.m. to 7:00 a.m.) – existing 17 train movements, future Build 23 train movements, and future No Build 25 train movements

As Table 5 shows, the future Build low-growth scenario would result in 181 sites exceeding the STB assessment guidelines (e.g., increase above 3 dB or change to a level above 65 dB) and under the future No Build low-growth scenario 239 sites exceeding STB assessment guidelines would potentially result. Additionally, all of the Build scenario impacts would be impacted under the No Build scenario. This is due to future freight demand under the low-growth scenario which is constant with or without the projects, and the projects' clearance features allowing movement of more freight with fewer trains.

Table 5. Low-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
LT-1	2	184 - 470	40	66.3 - 77.5	65.0	3.0	48.3 - 60.6	66.4 - 77.6	0 - 0.4	46.7 - 59	66.3 - 77.6	0 - 0.3	0	0
	3	212 - 388		65.4 - 73.5	65.0	3.0	44 - 54.5	65.4 - 73.5	0 - 0.1	39.6 - 50.2	65.4 - 73.5	0 - 0	0	0
LT-2	2	80 - 439	40	62.2 - 71.5	65.0	3.0	47.3 - 67.6	62.3 - 73	0.1 - 1.5	45.6 - 66	62.3 - 72.6	0.1 - 1.1	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-3	2	157 - 473	40	63 - 74.3	65.0	3.0	51.6 - 61.4	63.5 - 74.3	0.1 - 1.6	50 - 59.8	63.3 - 74.3	0 - 1.2	0	0
	3	270 - 270		58.3 - 60.3	65.0	3.0	51.5 - 54.3	59.1 - 61.2	0.8 - 1	45.9 - 49.4	58.5 - 60.6	0.2 - 0.3	0	0
LT-4	2	69 - 503	40	57.6 - 68.2	65.0	3.0	47 - 67.8	58 - 71	0.3 - 3.8	45.6 - 66	57.9 - 70.3	0.2 - 2	13	13
	3	392 - 392		58.7 - 60.6	65.0	3.0	43.5 - 47.2	58.8 - 60.8	0.1 - 0.2	39.1 - 42.8	58.7 - 60.7	0 - 0.1	0	0
LT-5	2	94 - 504	40	64.5 - 72.1	65.0	3.0	45.3 - 61.8	64.6 - 72.2	0 - 0.4	43.7 - 60.3	64.6 - 72.2	0 - 0.3	0	0
	3	262 - 262		67.3 - 69.3	65.0	3.0	47 - 49.6	67.4 - 69.4	0 - 0	42.6 - 45.2	67.3 - 69.3	0 - 0	0	0
LT-6	2	194 - 654	20	63.7 - 75.6	65.0	3.0	42.1 - 60.5	63.7 - 75.7	0 - 0.3	40.5 - 58.9	63.7 - 75.6	0 - 0.2	0	0
	3	69 - 437		65.4 - 73.4	65.0	3.0	37 - 50.9	65.4 - 73.5	0 - 0	32.6 - 46.6	65.4 - 73.5	0 - 0	0	0
LT-7	2	252 - 471	20	60.5 - 69.6	65.0	3.0	48.8 - 61.9	60.8 - 69.7	0.1 - 1.1	47.2 - 60.3	60.7 - 69.7	0.1 - 0.8	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-8	2	53 - 488	20	67.9 - 75.8	65.0	3.0	#N/A	#N/A	#N/A	46.8 - 66.2	68.2 - 76.1	0 - 0.8	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-9	2	441 - 575	20	60 - 63.8	65.0	3.0	39.5 - 48.1	60.1 - 63.9	0 - 0.1	38.1 - 46.6	60.1 - 63.9	0 - 0.1	0	0
	3	96 - 96		57.9 - 59.9	65.0	3.0	51.3 - 53.4	58.7 - 60.7	0.8 - 0.9	45.7 - 47.8	58.1 - 60.1	0.2 - 0.3	0	0
LT-10	2	156 - 464	30	56.5 - 63.2	65.0	3.0	48.3 - 63	57.3 - 65.7	0.5 - 3.5	47 - 61.8	57.1 - 65.2	0.4 - 2.8	2	2
	3	213 - 478		57.6 - 64.9	65.0	3.0	39.4 - 57.1	57.7 - 65.1	0 - 1.5	33.8 - 51.3	57.6 - 64.9	0 - 0.5	0	0
LT-11	2	93 - 473	30	58.8 - 67.9	65.0	3.0	46.2 - 65.9	59.1 - 70	0.2 - 2.9	44.9 - 64.6	59 - 69.5	0.1 - 2.3	2	2
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-12	2	149 - 215	30	60.5 - 64.1	65.0	3.0	52.3 - 63.6	61.2 - 66.9	0.6 - 2.8	51 - 62.4	61.1 - 66.3	0.4 - 2.3	2	2

Table 5. Low-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-13	2	60 - 497	30	59.1 - 70.3	65.0	3.0	45.1 - 66.3	59.3 - 71.7	0.1 - 3.9	43.8 - 65	59.2 - 71.4	0.1 - 3.1	7	7
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-14	2	117 - 475	30	61.4 - 69.4	65.0	3.0	42.5 - 64.2	61.4 - 70.6	0.1 - 1.2	41.2 - 62.9	61.4 - 70.3	0 - 0.9	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-15	2	27 - 463	30	52.7 - 72	65.0	3.0	46.9 - 71.9	53.9 - 74.9	0.2 - 6.4	45.6 - 70.7	53.6 - 74.4	0.1 - 5.4	50	33
	3	412 - 412		58.2 - 60.2	65.0	3.0	42.1 - 43.5	58.3 - 60.3	0.1 - 0.1	36.3 - 37.8	58.2 - 60.2	0 - 0	0	0
LT-16	2	24 - 459	30	54.2 - 74	65.0	3.0	47.7 - 70.2	55.5 - 75.5	0.2 - 4	46.5 - 69	55.2 - 75.2	0.1 - 3.3	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-17	2	158 - 454	40	58.4 - 69.7	65.0	3.0	49.9 - 63	59.3 - 70.1	0.2 - 3	48.7 - 61.8	59.1 - 70	0.1 - 2.4	2	0
	3	139 - 139		63.3 - 63.3	65.0	3.0	56.8 - 56.8	64.2 - 64.2	0.9 - 0.9	51 - 51	63.6 - 63.6	0.2 - 0.2	0	0
LT-18	2	58 - 464	40	57 - 68	65.0	3.0	46.8 - 69.9	57.8 - 72.1	0.3 - 5.3	45.5 - 68.7	57.7 - 71.4	0.2 - 4.5	22	14
	3	432 - 432		57.3 - 59.3	65.0	3.0	51.7 - 54	58.4 - 60.4	0.9 - 1.1	46 - 48.2	57.7 - 59.7	0.3 - 0.3	0	0
LT-19	2	59 - 463	40	56.8 - 67.8	65.0	3.0	50.6 - 68.7	57.9 - 71.3	0.3 - 5.6	49.4 - 67.5	57.7 - 70.6	0.2 - 4.8	87	69
	3	332 - 406		57.4 - 60.3	65.0	3.0	50.9 - 55.1	58.3 - 61.4	0.8 - 1.2	45.1 - 49.4	57.7 - 60.6	0.2 - 0.3	0	0
LT-20	2	18 - 464	40	62.2 - 81.6	65.0	3.0	49.1 - 75	62.4 - 81.8	0 - 2.4	47.9 - 73.7	62.3 - 81.7	0 - 1.9	0	0
	3	47 - 47		72.1 - 74.1	65.0	3.0	66.2 - 66.3	73.1 - 74.8	0.7 - 1	60.4 - 60.5	72.4 - 74.3	0.2 - 0.3	0	0
LT-21	2	67 - 487	40	61 - 71.6	65.0	3.0	47.8 - 68.7	61.6 - 73.2	0.1 - 2.3	46.6 - 67.5	61.4 - 72.9	0.1 - 1.8	0	0
	3	388 - 388		62 - 64	65.0	3.0	50.8 - 53.8	62.3 - 64.4	0.3 - 0.4	45.1 - 48.1	62.1 - 64.1	0.1 - 0.1	0	0
LT-22	2	44 - 437	40	65.5 - 77.5	65.0	3.0	48.4 - 70.3	65.7 - 78.2	0.1 - 1.1	47.2 - 69.1	65.6 - 78.1	0.1 - 0.9	0	0
	3	226 - 263		67.7 - 70.4	65.0	3.0	50.6 - 54	67.8 - 70.5	0.1 - 0.1	44.9 - 48.3	67.8 - 70.4	0 - 0	0	0
LT-23	2	51 - 449	40	62.6 - 74	65.0	3.0	52.4 - 69.8	63.3 - 75.3	0.2 - 3.3	51.1 - 68.5	63.2 - 75.1	0.1 - 2.6	1	1
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-24	2	27 - 436	40	59.9 - 74	65.0	3.0	47.2 - 73.8	60.2 - 76.9	0.2 - 4	46 - 72.6	60.1 - 76.3	0.1 - 3.3	27	14

Table 5. Low-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
	3	177 - 326		61.1 - 65.8	65.0	3.0	46.8 - 57.1	61.3 - 65.9	0.1 - 0.7	41.1 - 51.4	61.2 - 65.8	0 - 0.2	0	0
LT-25	2	211 - 493	40	63.9 - 69.5	65.0	3.0	54.9 - 73.1	65.6 - 74	0.2 - 7.5	53.6 - 71.8	65.3 - 73	0.1 - 6.5	24	24
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-26	2	0 - 0	20	0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
	3	47 - 47		72.4 - 72.4	65.0	3.0	54.7 - 54.7	72.4 - 72.4	0.1 - 0.1	50.3 - 50.3	72.4 - 72.4	0 - 0	0	0
ST-2	2	0 - 0	20	0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
	3	105 - 290		66.2 - 70.6	65.0	3.0	51.9 - 54.2	66.3 - 70.7	0.1 - 0.2	47.5 - 49.7	66.2 - 70.6	0 - 0.1	0	0
												Total	**239**	**181**

6.2 Noise Impact Assessment High-Growth Scenario

Table 6 summarizes the results of the noise impact assessment for the project high-growth scenario compared to the No Build conditions at places where people sleep (Category 2) and institutional (Category 3) locations. The table provides information by noise sensitive receptor group, each of which is represented by a noise measurement location. Also provided in the table are the distances to the nearest rail line, train speeds, existing and project high-growth scenario noise levels, impact criteria, and the numbers of both moderate and severe noise impacts predicted for each land use category.

Increases in Build and No build noise under the high-growth scenario are predominantly a result of the increase in rail traffic during daytime and nighttime hours. The variation in vertical alignments of either the track or the roadways crossing the track that is associated with the alternatives for projects at Washington Avenue, W. North Avenue/Brighton Road, Pennsylvania Avenue, and Columbus Avenue are small, anticipated to be less than five feet. Changes in vertical track or vertical bridge alignment associated with these alternatives would result in generally imperceptible differences that are within tenths of dB of one another. The dominant consideration for noise in these circumstances is the number of train operations, and that would not be different for any of the alternatives for these projects. Therefore, from a noise perspective, any of the approaches to achieving the needed vertical clearance at these locations are considered the same. Nighttime train movements are more impactful than daytime train movements from a noise impact assessment perspective since the L_{dn} noise metric applies a 10 dB penalty to sounds that occur at night to account for heightened sensitivity during this time period. Rail traffic would increase in the study corridor in the Build and No Build conditions as follows:

Milepost PT-341 to PT-353.35

- Daytime (7:00 a.m. to 10:00 p.m.) – existing 11 train movements, future Build 29 train movements, and future No Build 29 train movements
- Nighttime (10:00 p.m. to 7:00 a.m.) – existing 10 train movements, future Build 20 train movements, and future No Build 21 train movements

Milepost PC-0.00 to PC-3.17

- Daytime (7:00 a.m. to 10:00 p.m.) – existing 17 train movements, future Build 31 train movements, and future No Build 34 train movements
- Nighttime (10:00 p.m. to 7:00 a.m.) – existing 17 train movements, future Build 27 train movements, and future No Build 28 train movements

As Table 6 shows, the future Build scenario would result in 263 sites exceeding the STB assessment guidelines (e.g., increase above 3 dB or change to a level above 65 dB) and under the future No Build scenario 321 sites exceeding STB assessment guidelines would potentially result. Additionally, all of the Build scenario impacts would also be impacted under the No Build scenario. This is due to future freight demand which is constant with or without the projects, and the projects' clearance features allowing movement of more freight with fewer trains.

6.3 Vibration Impact Assessment

No vibration impacts are predicted for the low-growth or high-growth Build scenarios. Currently the study corridor is defined as "heavily-used" (more than 12 freight trains per day). Under future conditions there is no change to the train speeds or track locations, other than small changes in vertical alignment in areas that would result in a negligible change in vibration; therefore, both the Build scenario and No Build scenarios would only result in an increase in the number of trains per day. However, because the number of trains is not predicted to result in an increase of 3 VdB or greater at any vibration sensitive land uses, there would be no vibration impacts under either the Build or No Build scenarios.

Additionally, the variation in vertical alignments of either the track or the roadways crossing the track that is associated with the alternatives for projects at Washington Avenue, W. North Avenue/Brighton Road, Pennsylvania Avenue, and Columbus Avenue are small, anticipated to be less than five feet. Additionally, none of these vertical alignment adjustments would result in the train tracks being closer to sensitive properties, which means that under any of the alternatives where the vertical alignment of the track is changed there would be a small reduction in vibration relative to the No Build conditions. Imperceptible differences in vibration from train operations would occur because the differences proposed for each of these projects' alternatives are small.

Table 6. High-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
LT-1	2	184 - 470	40	66.3 - 77.5	65.0	3.0	49.7 - 62	66.4 - 77.6	0 - 0.6	49.1 - 61.5	66.4 - 77.6	0 - 0.5	0	0
	3	212 - 388		65.4 - 73.5	65.0	3.0	44.8 - 55.3	65.4 - 73.5	0 - 0.1	44 - 54.5	65.4 - 73.5	0 - 0.1	0	0
LT-2	2	80 - 439	40	62.2 - 71.5	65.0	3.0	48.7 - 69	62.4 - 73.5	0.2 - 1.9	48 - 68.5	62.3 - 73.3	0.2 - 1.8	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-3	2	157 - 473	40	63 - 74.3	65.0	3.0	52.9 - 62.7	63.7 - 74.4	0.1 - 2.1	52.4 - 62.2	63.6 - 74.3	0.1 - 1.9	0	0
	3	270 - 270		58.3 - 60.3	65.0	3.0	52.4 - 55.2	59.3 - 61.4	0.9 - 1.2	50.4 - 53.9	58.9 - 61.2	0.7 - 0.9	0	0
LT-4	2	69 - 503	40	57.6 - 68.2	65.0	3.0	48.4 - 69.4	58.1 - 71.9	0.4 - 4.8	48 - 68.6	58.1 - 71.4	0.4 - 3.2	13	13
	3	392 - 392		58.7 - 60.6	65.0	3.0	44.3 - 48	58.8 - 60.9	0.1 - 0.2	43.5 - 47.2	58.8 - 60.8	0.1 - 0.2	0	0
LT-5	2	94 - 504	40	64.5 - 72.1	65.0	3.0	46.7 - 63.1	64.6 - 72.3	0 - 0.6	46.2 - 62.6	64.6 - 72.3	0 - 0.5	0	0
	3	262 - 262		67.3 - 69.3	65.0	3.0	47.8 - 50.6	67.4 - 69.4	0 - 0.1	46.9 - 49.8	67.4 - 69.4	0 - 0	0	0
LT-6	2	194 - 654	20	63.7 - 75.6	65.0	3.0	43.5 - 61.8	63.7 - 75.7	0 - 0.4	42.9 - 61.3	63.7 - 75.7	0 - 0.4	0	0
	3	69 - 437		65.4 - 73.4	65.0	3.0	37.8 - 51.8	65.4 - 73.5	0 - 0	37 - 51	65.4 - 73.5	0 - 0	0	0
LT-7	2	252 - 471	20	60.5 - 69.6	65.0	3.0	50.1 - 63.2	60.9 - 69.7	0.1 - 1.5	49.7 - 62.8	60.9 - 69.7	0.1 - 1.4	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-8	2	53 - 488	20	67.9 - 75.8	65.0	3.0	49.6 - 69.1	68.5 - 76.3	0 - 1.4	49.1 - 68.6	68.4 - 76.3	0 - 1.3	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-9	2	441 - 575	20	61.2 - 63.8	65.0	3.0	41.2 - 49.4	61.2 - 63.9	0 - 0.2	40.7 - 48.9	61.2 - 63.9	0 - 0.1	0	0
	3	96 - 96		57.9 - 59.9	65.0	3.0	52.4 - 54.5	59 - 61	1 - 1.1	52.1 - 54.2	58.9 - 60.9	0.9 - 1	0	0
LT-10	2	156 - 464	30	56.5 - 63.2	65.0	3.0	49 - 63.7	57.4 - 66.1	0.6 - 3.9	48.5 - 63.1	57.3 - 65.8	0.5 - 3.6	2	2
	3	213 - 478		57.6 - 64.9	65.0	3.0	40.4 - 58.1	57.7 - 65.2	0.1 - 1.9	40.1 - 57.8	57.7 - 65.1	0.1 - 1.8	0	0
LT-11	2	93 - 473	30	58.8 - 67.9	65.0	3.0	46.8 - 66.5	59.1 - 70.2	0.2 - 3.2	46.3 - 66	59.1 - 70	0.2 - 3	2	2
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-12	2	149 - 215	30	60.5 - 64.1	65.0	3.0	52.9 - 64.3	61.3 - 67.2	0.7 - 3.1	52.4 - 63.8	61.2 - 67	0.6 - 2.9	2	2

Table 6. High-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-13	2	60 - 497	30	59.1 - 70.3	65.0	3.0	45.7 - 66.9	59.3 - 71.9	0.1 - 4.2	45.2 - 66.4	59.3 - 71.8	0.1 - 3.9	7	7
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-14	2	117 - 475	30	61.4 - 69.4	65.0	3.0	43.1 - 64.9	61.4 - 70.7	0.1 - 1.3	42.6 - 64.3	61.4 - 70.6	0.1 - 1.2	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-15	2	27 - 463	30	52.7 - 72	65.0	3.0	47.6 - 72.6	54 - 75.3	0.2 - 6.8	47 - 72.1	53.9 - 75	0.2 - 6.4	92	56
	3	412 - 412		58.2 - 60.2	65.0	3.0	42.9 - 44.5	58.3 - 60.3	0.1 - 0.1	42.7 - 44.2	58.3 - 60.3	0.1 - 0.1	0	0
LT-16	2	24 - 459	30	54.2 - 74	65.0	3.0	48.4 - 70.9	55.6 - 75.8	0.2 - 4.4	47.9 - 70.4	55.5 - 75.6	0.2 - 4.1	0	0
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-17	2	158 - 454	40	58.4 - 69.7	65.0	3.0	50.6 - 63.7	59.4 - 70.2	0.2 - 3.3	50.1 - 63.2	59.3 - 70.1	0.2 - 3.1	2	2
	3	139 - 139		63.3 - 63.3	65.0	3.0	57.8 - 57.8	64.4 - 64.4	1.1 - 1.1	57.6 - 57.6	64.3 - 64.3	1 - 1	0	0
LT-18	2	58 - 464	40	57 - 68	65.0	3.0	47.4 - 70.6	57.9 - 72.5	0.4 - 5.8	46.9 - 70.1	57.9 - 72.2	0.3 - 5.4	27	23
	3	432 - 432		57.3 - 59.3	65.0	3.0	52.8 - 55	58.7 - 60.7	1.2 - 1.4	52.5 - 54.8	58.6 - 60.6	1.1 - 1.3	0	0
LT-19	2	59 - 463	40	56.8 - 67.8	65.0	3.0	51.3 - 69.4	58 - 71.7	0.3 - 6.1	50.8 - 68.9	57.9 - 71.4	0.3 - 5.7	95	88
	3	332 - 406		57.4 - 60.3	65.0	3.0	51.9 - 56.1	58.5 - 61.7	1 - 1.4	51.7 - 55.9	58.4 - 61.6	0.9 - 1.4	0	0
LT-20	2	18 - 464	40	62.2 - 81.6	65.0	3.0	49.8 - 75.6	62.4 - 81.8	0 - 2.7	49.3 - 75.1	62.4 - 81.8	0 - 2.4	0	0
	3	47 - 47		72.1 - 74.1	65.0	3.0	67.2 - 67.3	73.3 - 74.9	0.8 - 1.2	67 - 67.1	73.3 - 74.9	0.8 - 1.2	0	0
LT-21	2	67 - 487	40	61 - 71.6	65.0	3.0	48.5 - 69.4	61.7 - 73.4	0.1 - 2.6	48 - 68.9	61.6 - 73.3	0.1 - 2.3	0	0
	3	388 - 388		62 - 64	65.0	3.0	51.9 - 54.8	62.4 - 64.5	0.4 - 0.5	51.6 - 54.6	62.4 - 64.4	0.4 - 0.5	0	0
LT-22	2	44 - 437	40	65.5 - 77.5	65.0	3.0	49.1 - 71	65.7 - 78.4	0.1 - 1.3	48.6 - 70.5	65.7 - 78.3	0.1 - 1.2	0	0
	3	226 - 263		67.7 - 70.4	65.0	3.0	51.7 - 55.1	67.8 - 70.5	0.1 - 0.1	51.4 - 54.8	67.8 - 70.5	0.1 - 0.1	0	0
LT-23	2	51 - 449	40	62.6 - 74	65.0	3.0	53 - 70.4	63.4 - 75.5	0.2 - 3.6	52.5 - 69.9	63.3 - 75.4	0.2 - 3.3	3	1
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-24	2	27 - 436	40	59.9 - 74	65.0	3.0	47.9 - 74.5	60.2 - 77.2	0.2 - 4.4	47.3 - 74	60.2 - 76.9	0.2 - 4.1	39	33

Table 6. High-Growth Scenario Noise Impact Projections

NSA Group	Land Use Cat.	Distance to Near Track / Lane (ft)	Maximum Speed (mph)	Existing Noise Level (dBA L_{dn})	STB Assessment Guideline		No Build Sound Levels (dBA L_{dn})			Build Sound Levels (dBA L_{dn})			Number of Noise Sensitive Land Use Sites Above Threshold	
					W/ Project Limit if Existing <65 dBA L_{dn}	Increase over Existing (dB)	Predicted Noise Only	Predicted plus Existing	Increase over Existing	Predicted Noise Only	Predicted plus Existing	Increase over Existing	W/O Project Scenario	W/ Project Scenario
	3	177 - 326		61.1 - 65.8	65.0	3.0	47.8 - 58.1	61.3 - 65.9	0.1 - 0.8	47.6 - 57.9	61.3 - 65.9	0.1 - 0.8	0	0
LT-25	2	211 - 493	40	63.9 - 69.5	65.0	3.0	55.5 - 73.7	65.7 - 74.5	0.2 - 8.1	55 - 73.2	65.6 - 74.1	0.2 - 7.7	37	34
	3	0 - 0		0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
LT-26	2	0 - 0	20	0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
	3	47 - 47		72.4 - 72.4	65.0	3.0	55.5 - 55.5	72.4 - 72.4	0.1 - 0.1	54.7 - 54.7	72.4 - 72.4	0.1 - 0.1	0	0
ST-2	2	0 - 0	20	0 - 0	65.0	3.0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0	0
	3	105 - 290		66.2 - 70.6	65.0	3.0	52.8 - 55	66.4 - 70.7	0.1 - 0.2	51.9 - 54.2	66.3 - 70.7	0.1 - 0.2	0	0
												Total	**321**	**263**

7 References

FTA. 2018. Transit Noise and Vibration Impact Assessment (September 2018) ("FTA Manual").

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Pennsylvania Department of Transportation (PennDOT): 2021. 2020 Pennsylvania State Rail Plan.

STB. 1998. Final Environmental Impact Statement No. 980194, Conrail Acquisition (Finance Docket No. 33388) https://www.stb.gov/stb/docs/conrail_summary.pdf

8 Maps

This section provides detailed mapping for potential noise and vibration receptors within the 13-mile corridor assessed in this analysis. Figure 6 through Figure 41 are maps of the low-growth scenario impact conditions and Figure 42 through Figure 77 are maps of the high-growth scenario.

Figure 6. Low-Growth Scenario Noise and Vibration Assessment Map 1

Figure 7. Low-Growth Scenario Noise and Vibration Assessment Map 2

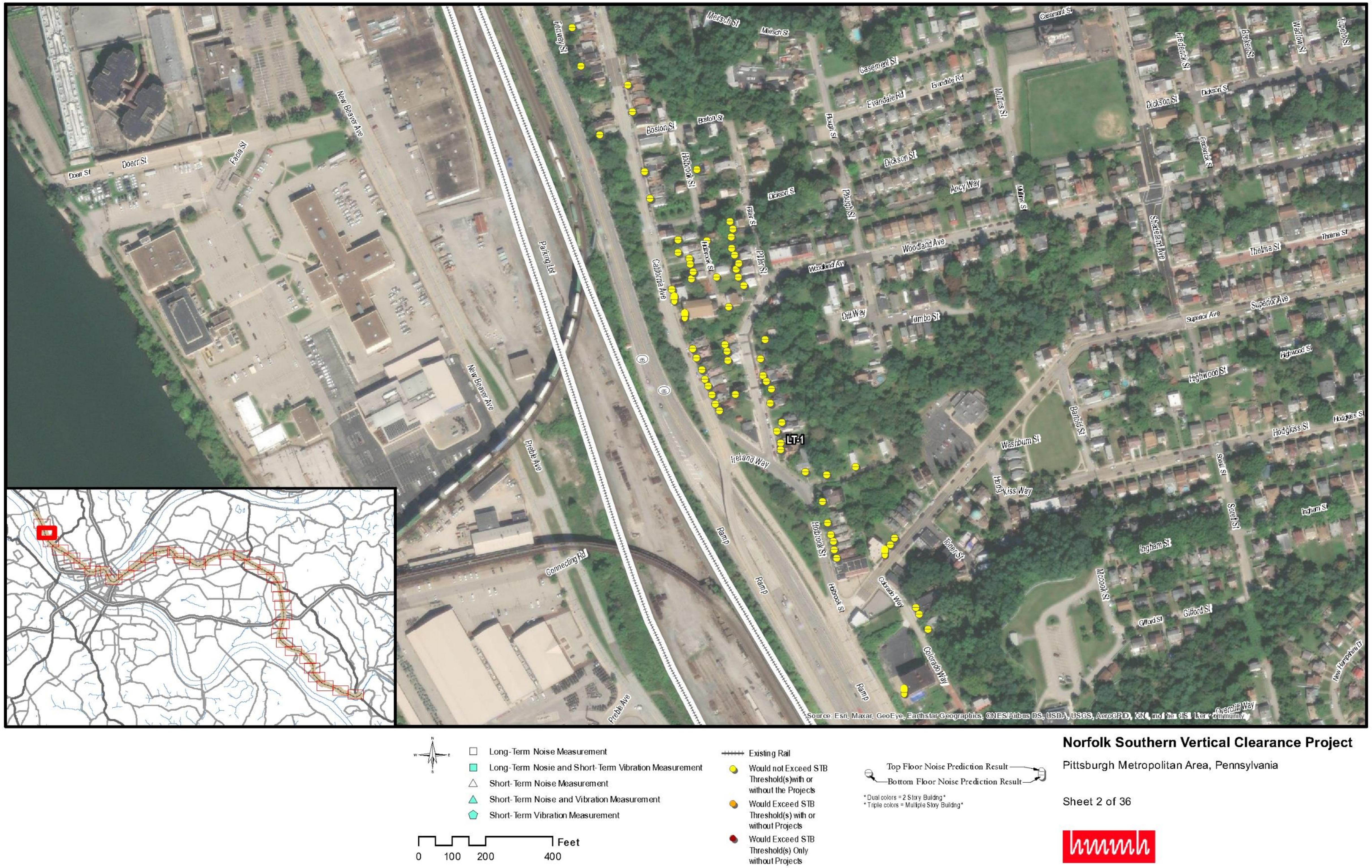

Figure 8. Low-Growth Scenario Noise and Vibration Assessment Map 3

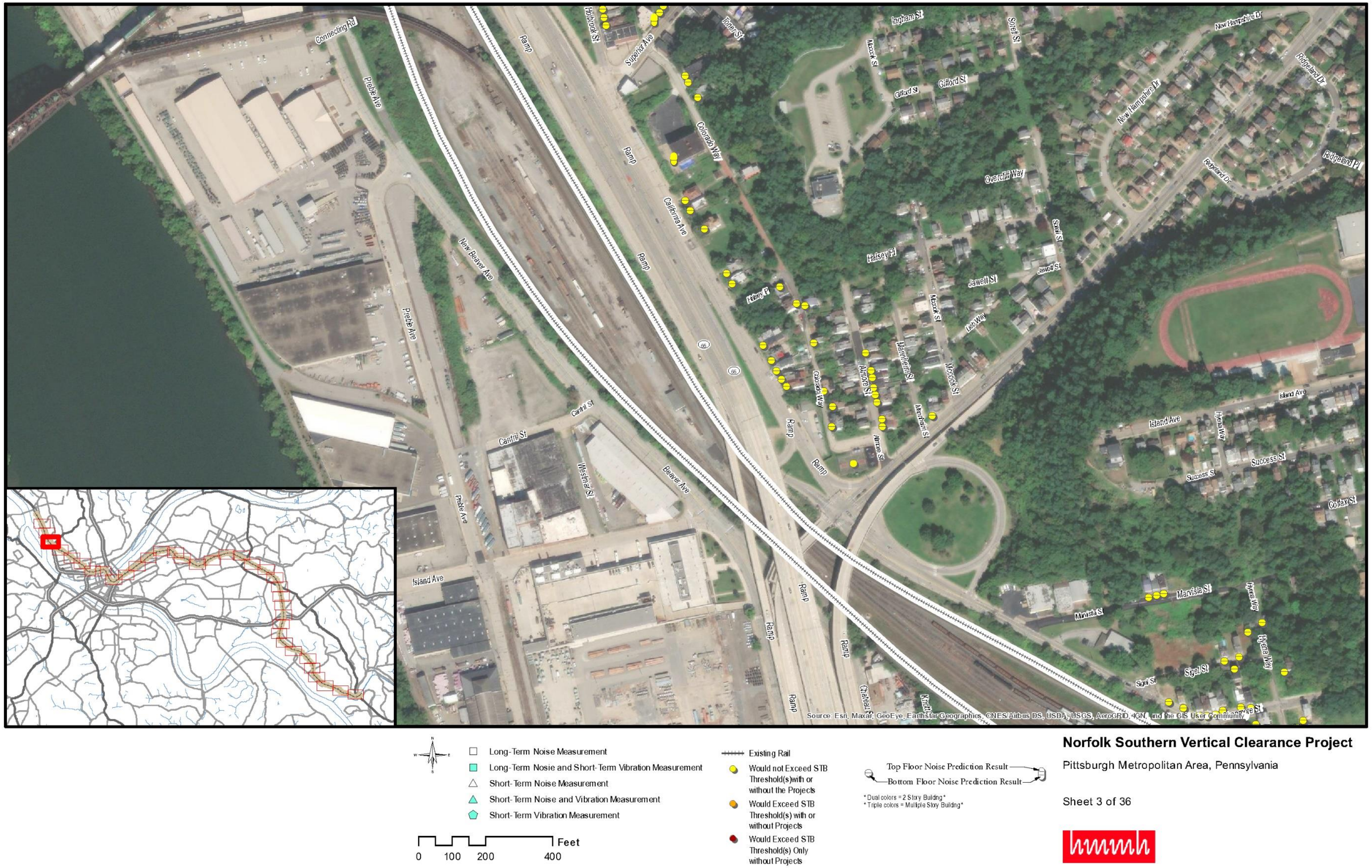

Figure 9. Low-Growth Scenario Noise and Vibration Assessment Map 4

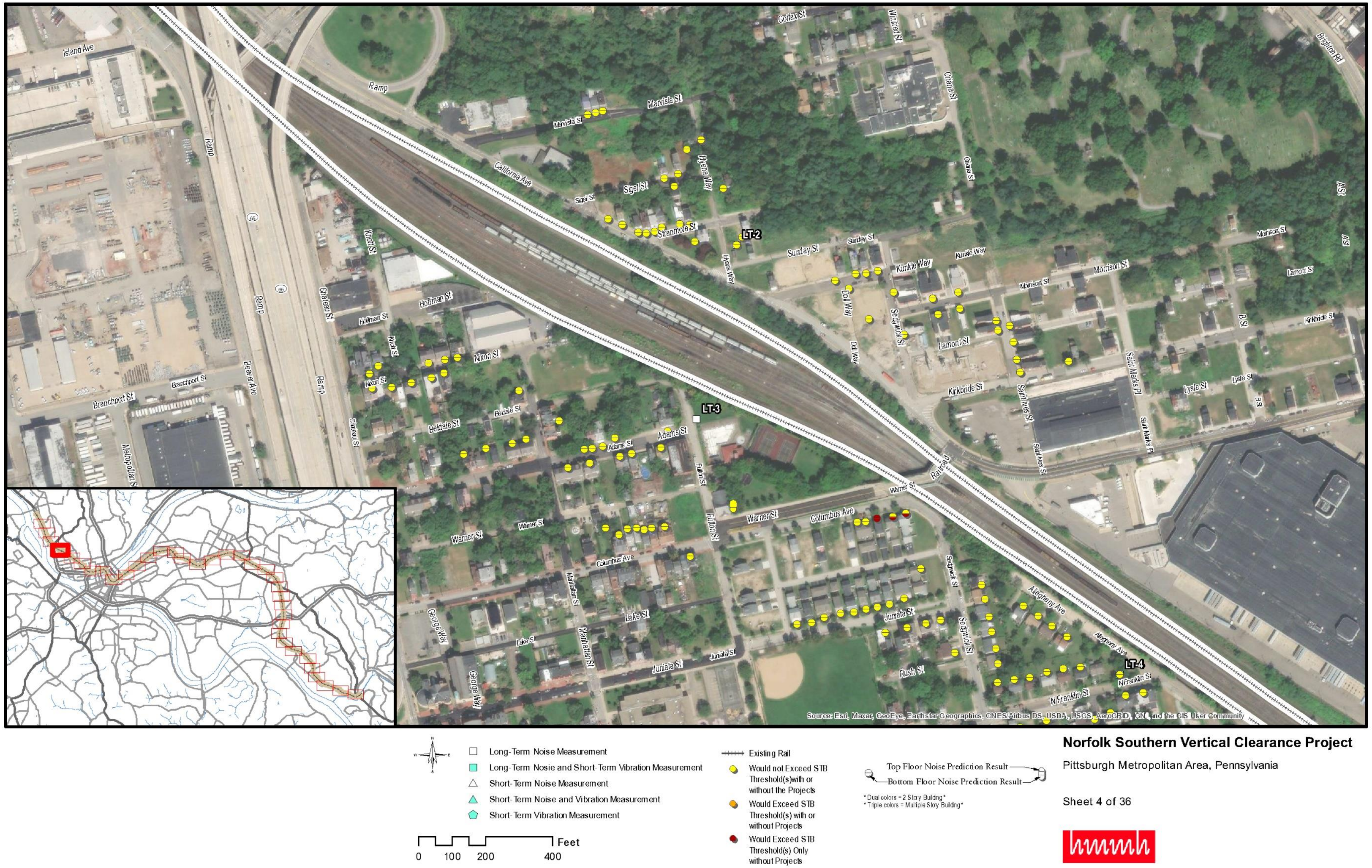

Figure 10. Low-Growth Scenario Noise and Vibration Assessment Map 5

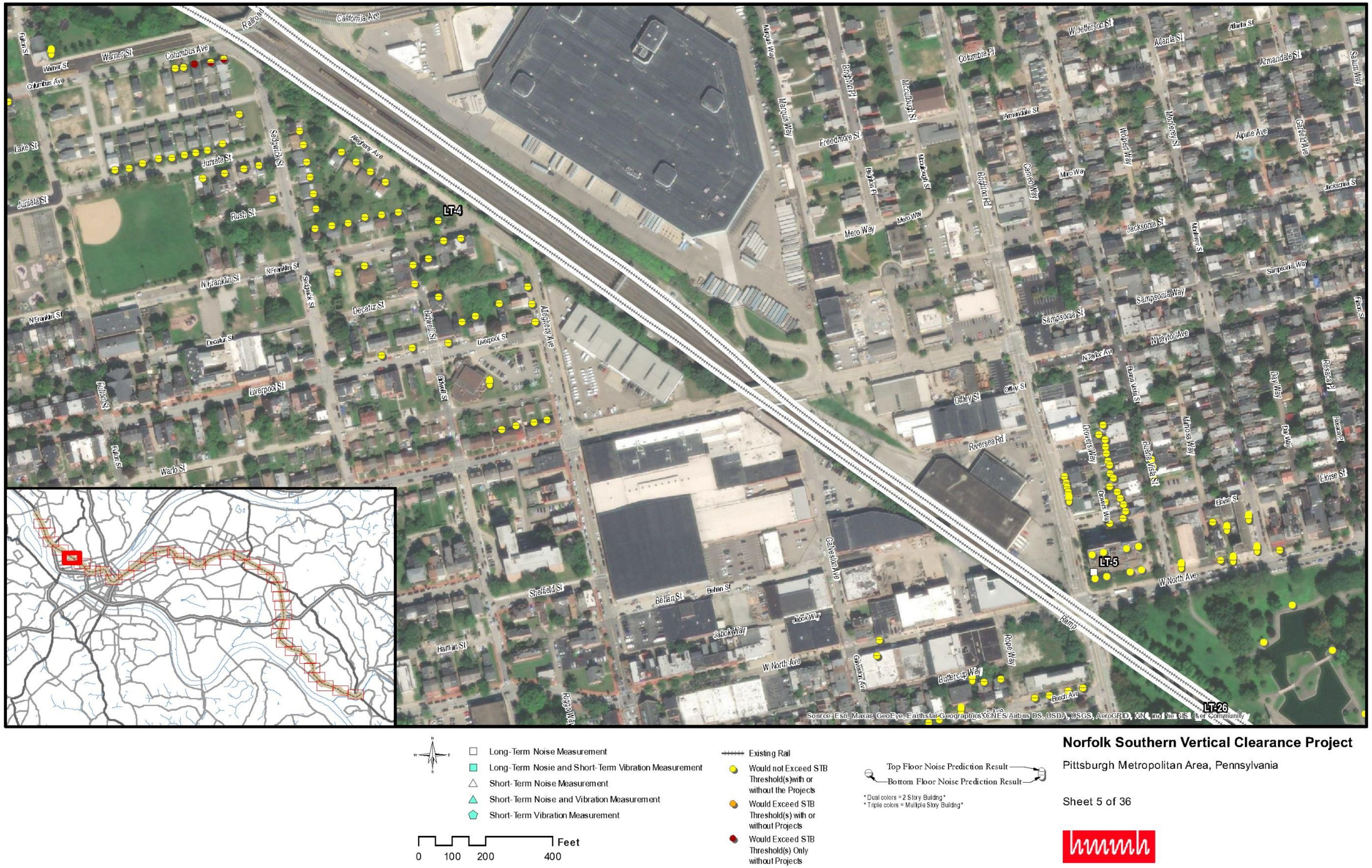

Figure 11. Low-Growth Scenario Noise and Vibration Assessment Map 6

Figure 12. Low-Growth Scenario Noise and Vibration Assessment Map 7

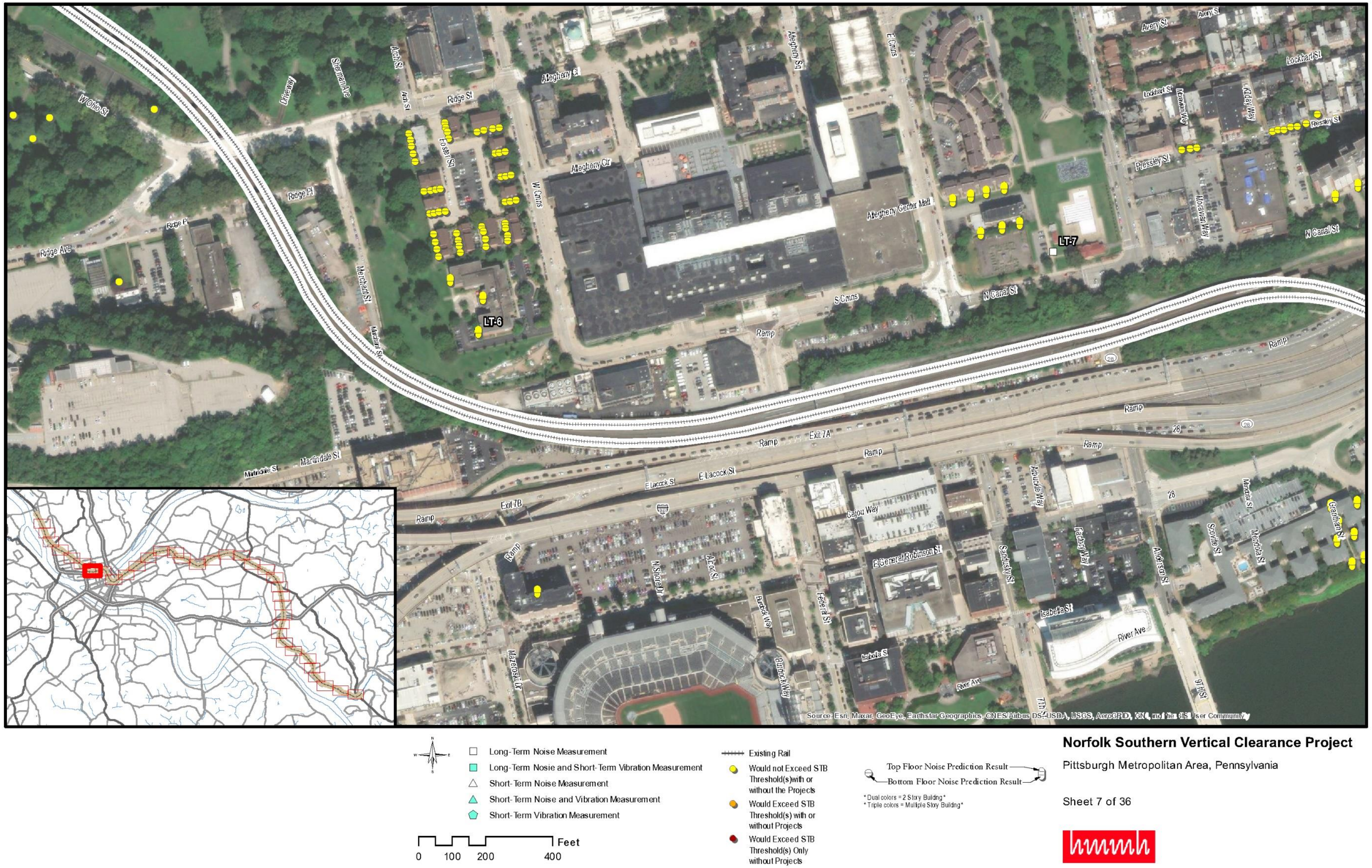

Figure 13. Low-Growth Scenario Noise and Vibration Assessment Map 8

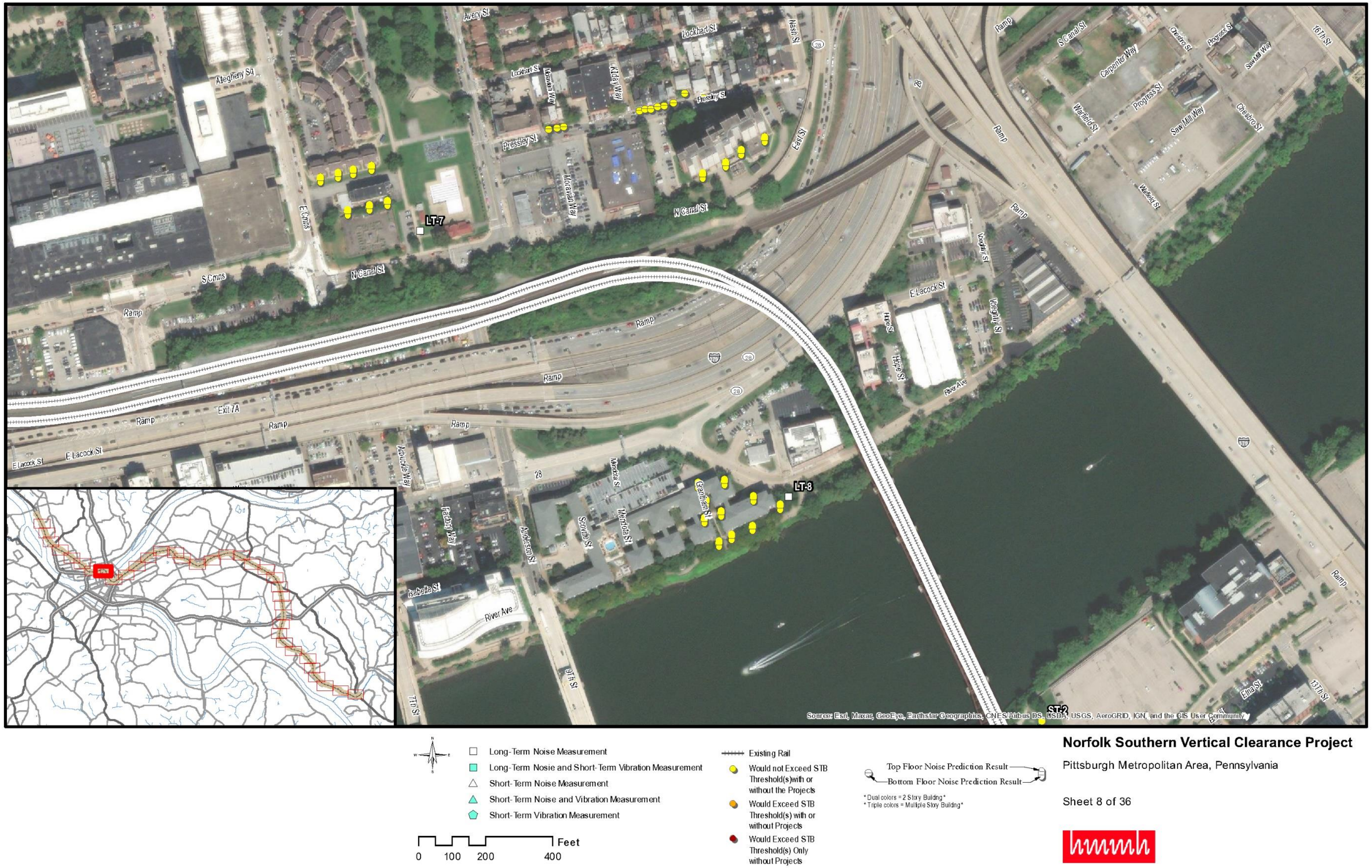

Figure 14. Low-Growth Scenario Noise and Vibration Assessment Map 9

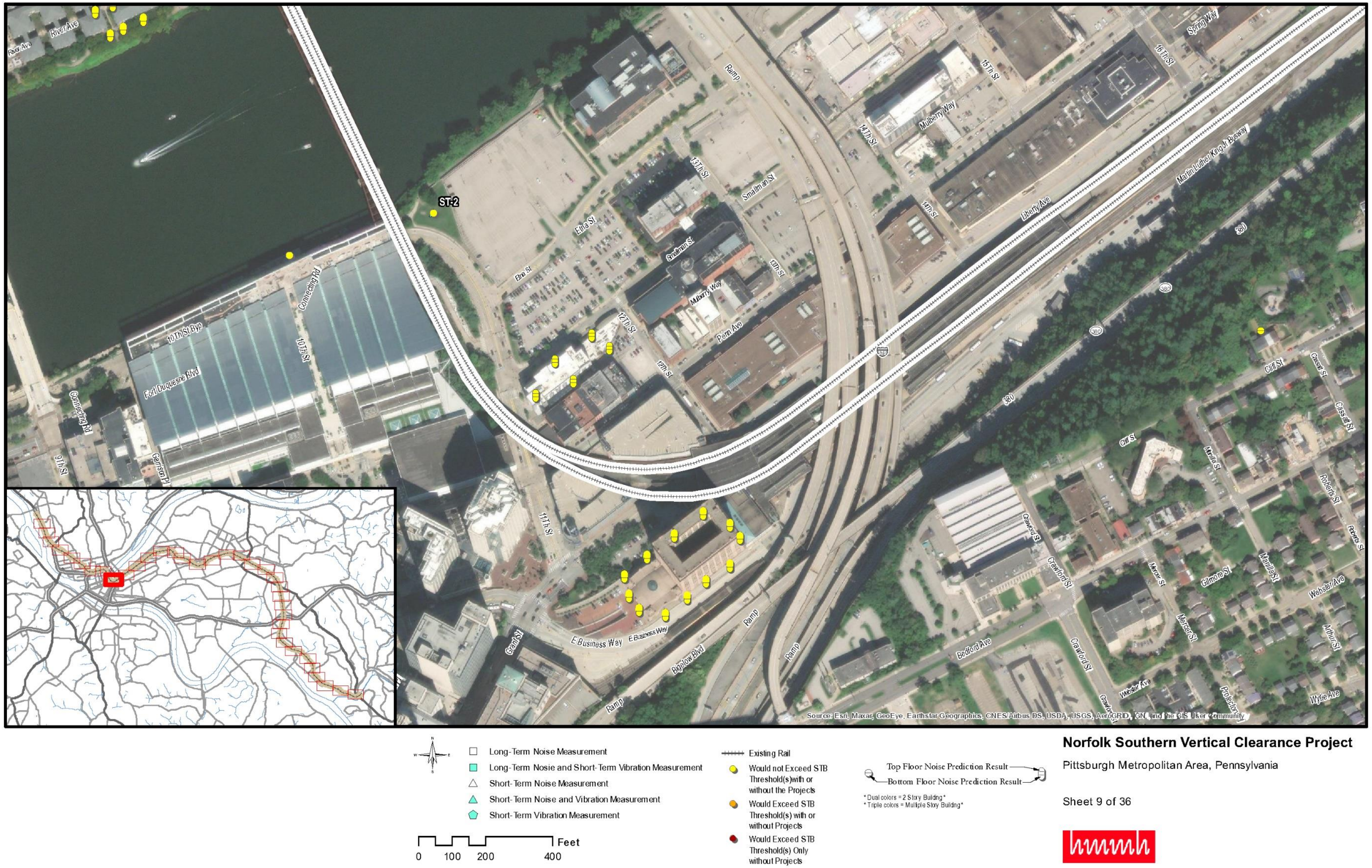

Figure 15. Low-Growth Scenario Noise and Vibration Assessment Map 10

Figure 16. Low-Growth Scenario Noise and Vibration Assessment Map 11

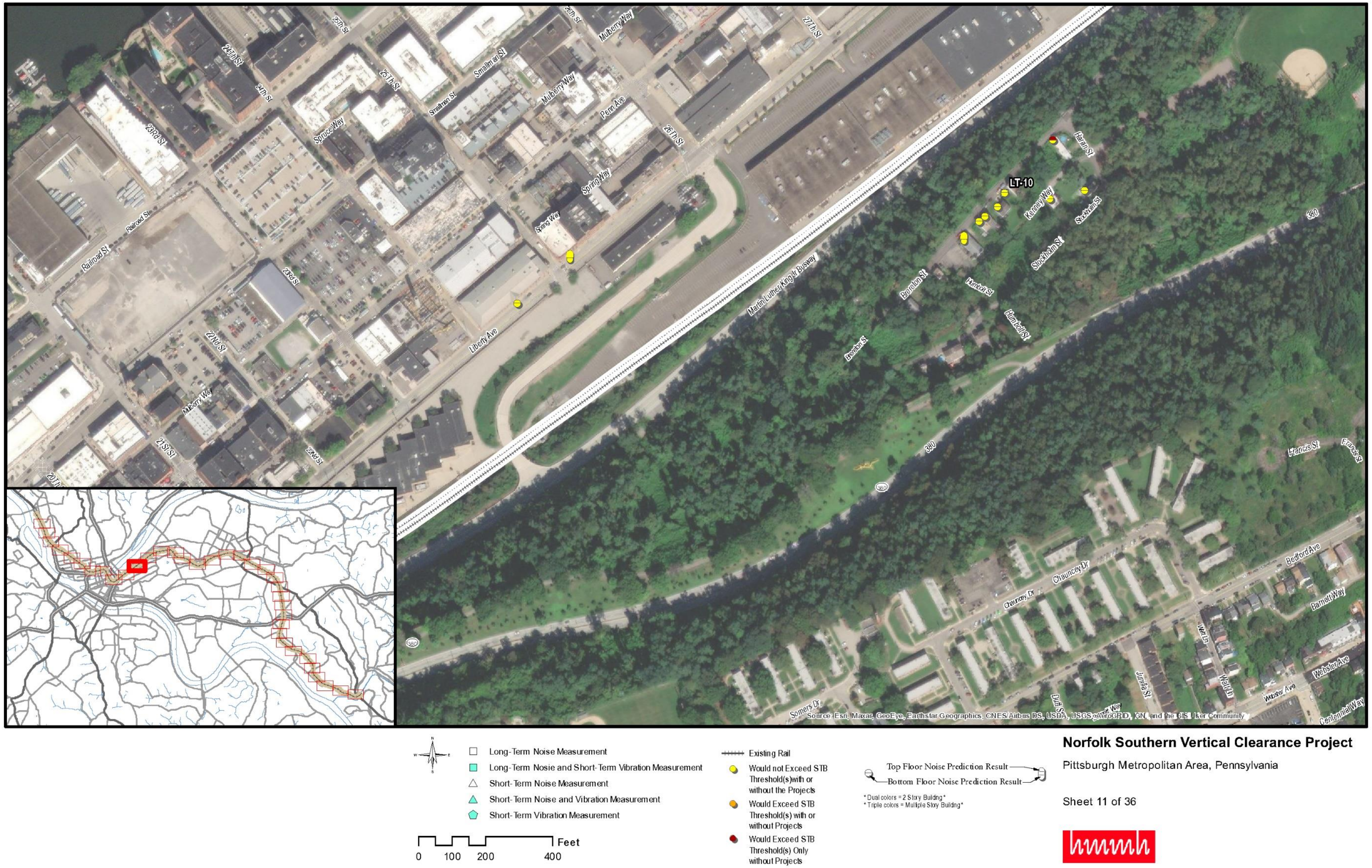

Figure 17. Low-Growth Scenario Noise and Vibration Assessment Map 12

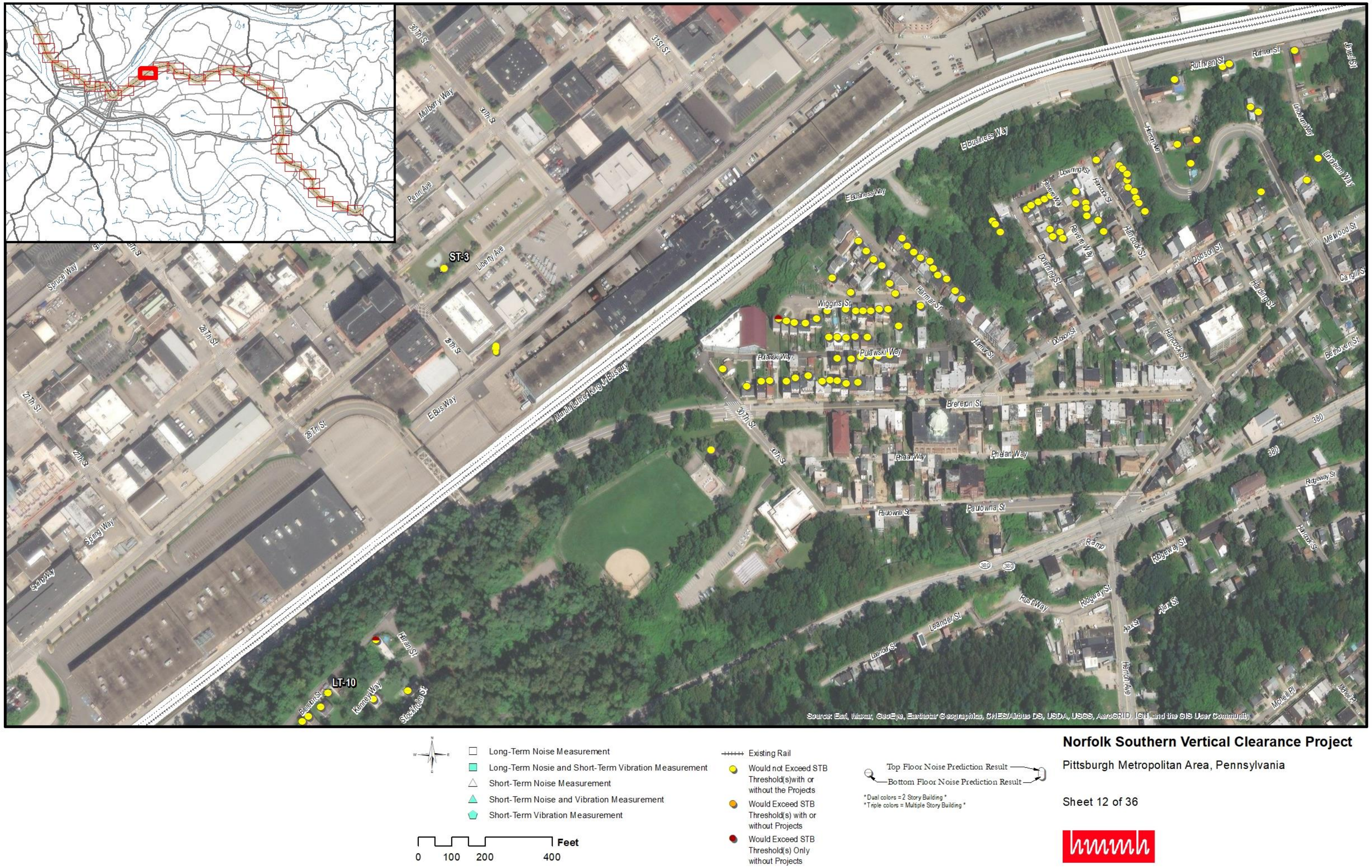

Figure 18. Low-Growth Scenario Noise and Vibration Assessment Map 13

Figure 19. Low-Growth Scenario Noise and Vibration Assessment Map 14

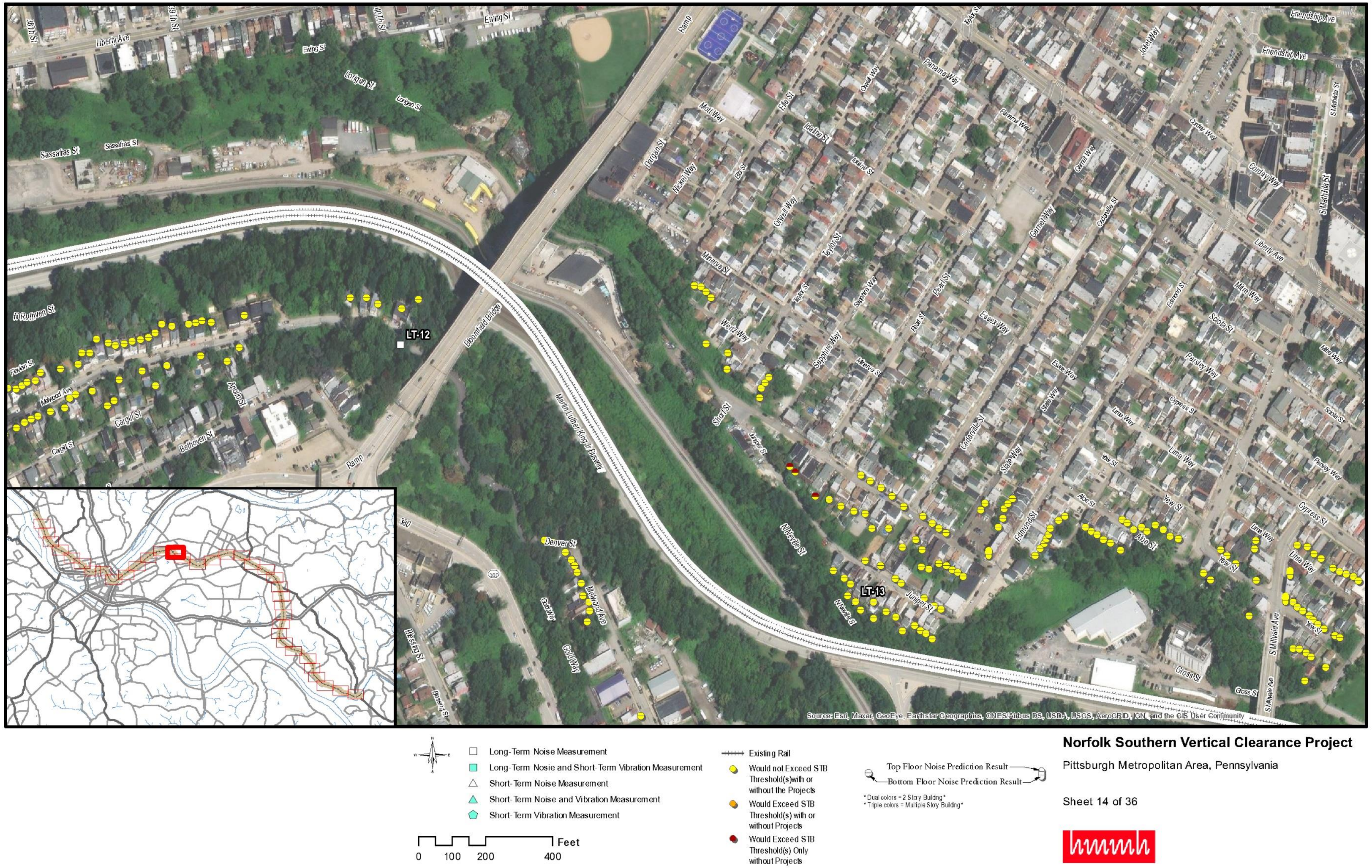

Figure 20. Low-Growth Scenario Noise and Vibration Assessment Map 15

Figure 21. Low-Growth Scenario Noise and Vibration Assessment Map 16

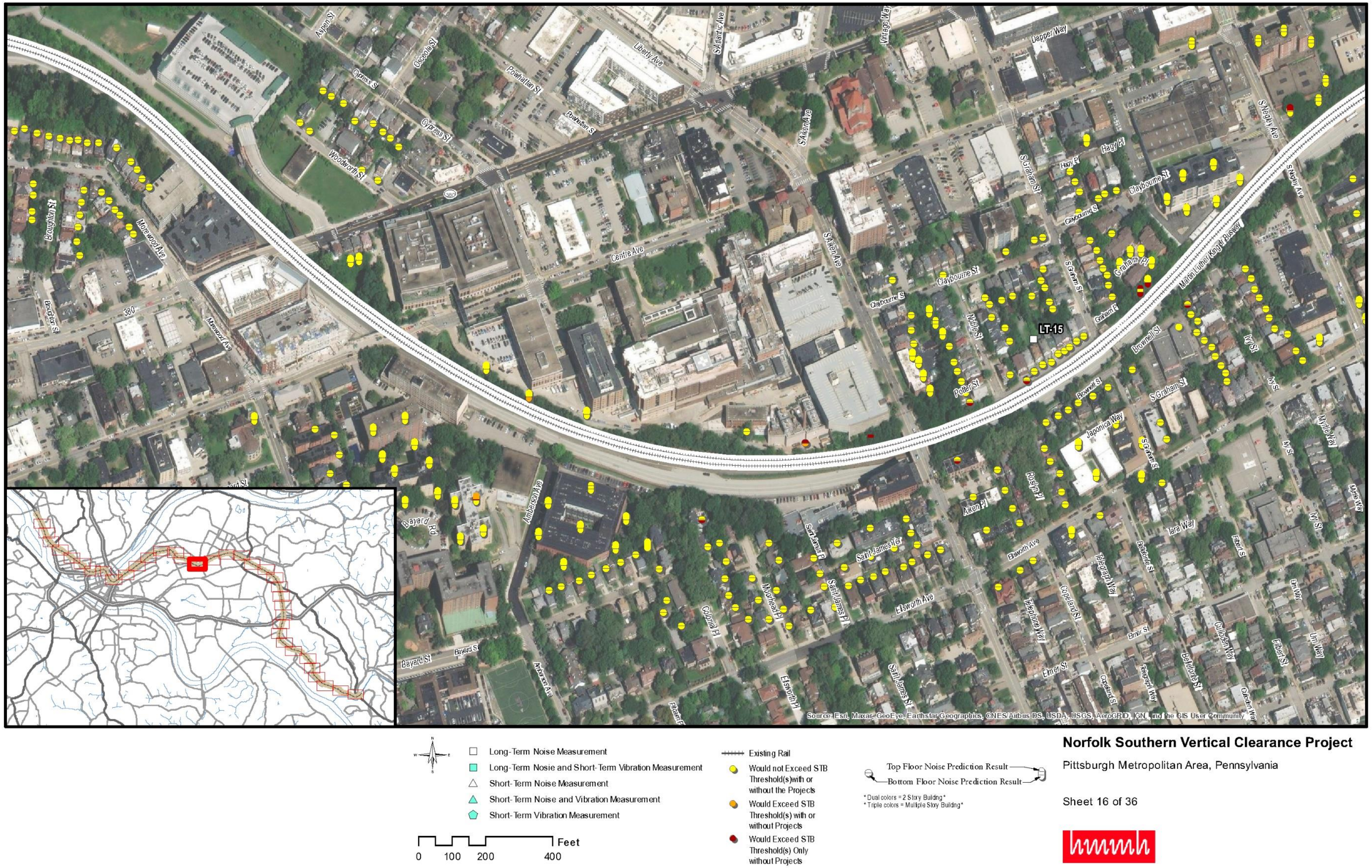

Figure 22. Low-Growth Scenario Noise and Vibration Assessment Map 17

Long-Term Noise Measurement
Long-Term Nosie and Short-Term Vibration Measurement
Short-Term Noise Measurement
Short-Term Noise and Vibration Measurement
Short-Term Vibration Measurement

Feet
0 100 200 400

Existing Rail
Would not Exceed STB Threshold(s)with or without the Projects
Would Exceed STB Threshold(s) with or without Projects
Would Exceed STB Threshold(s) Only without Projects

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result
* Dual colors = 2 Story Building *
* Triple colors = Multiple Story Building *

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Figure 23. High-Growth Scenario Noise and Vibration Assessment Map 18

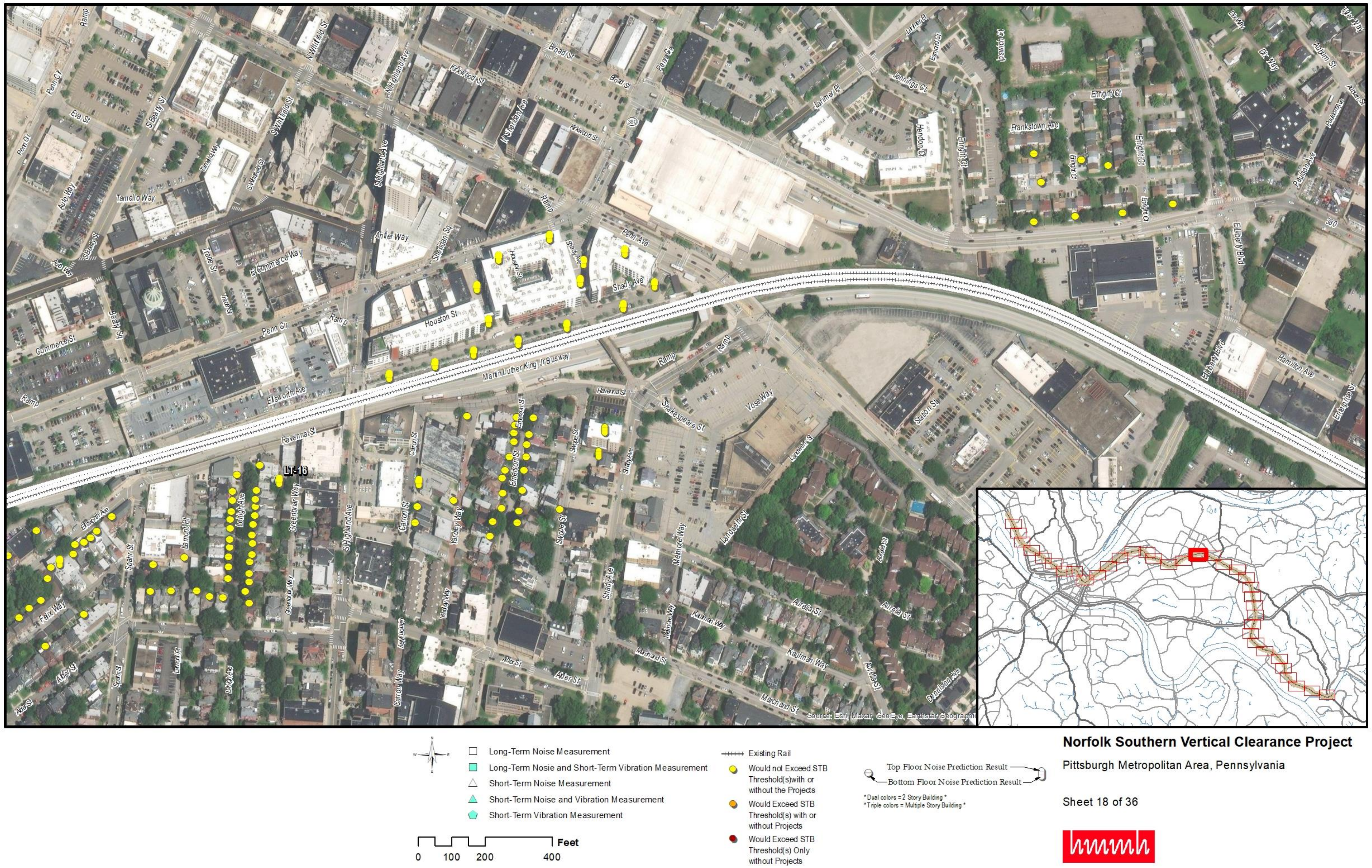

Figure 24. Low-Growth Scenario Noise and Vibration Assessment Map 19

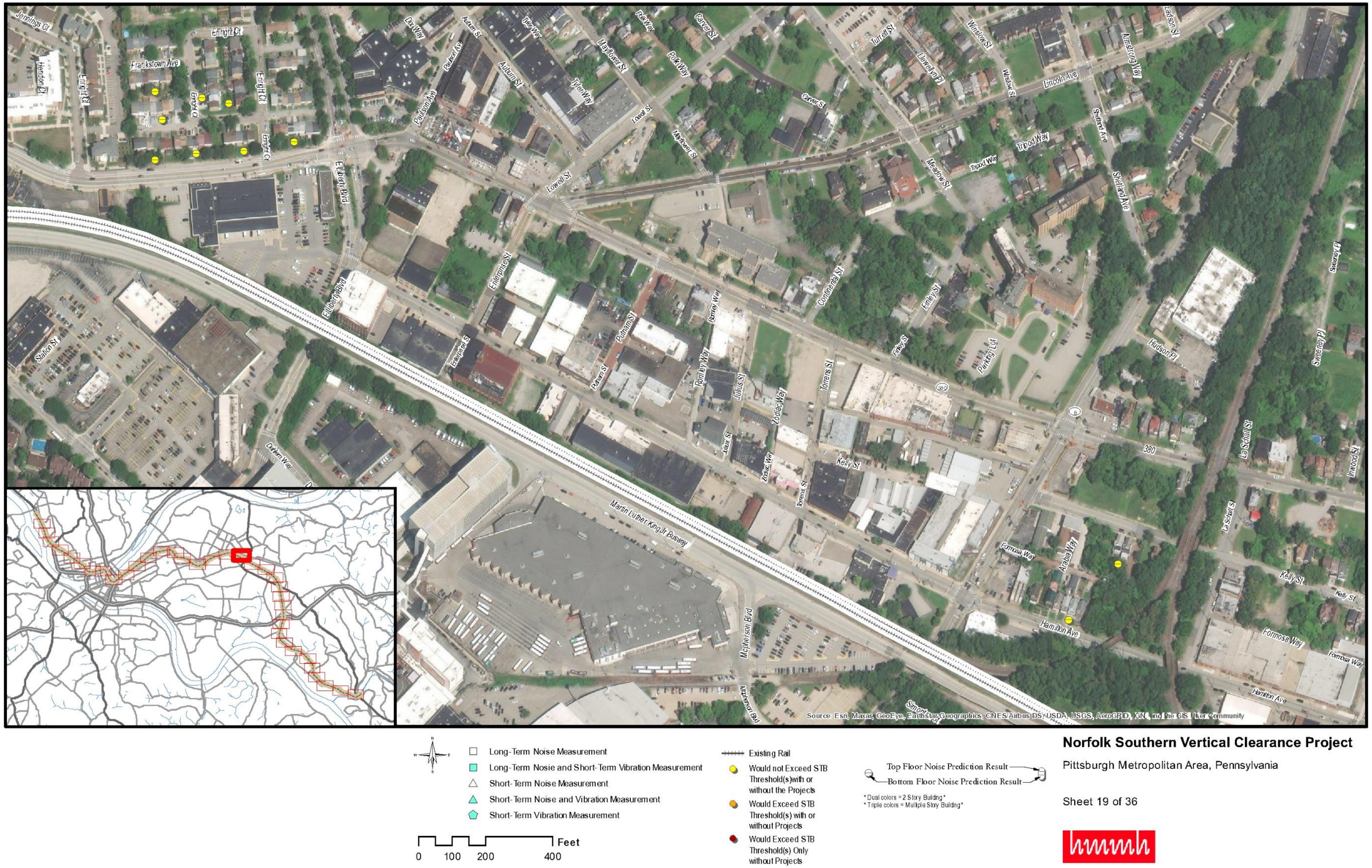

Figure 25. Low-Growth Scenario Noise and Vibration Assessment Map 20

Figure 26. Low-Growth Scenario Noise and Vibration Assessment Map 21

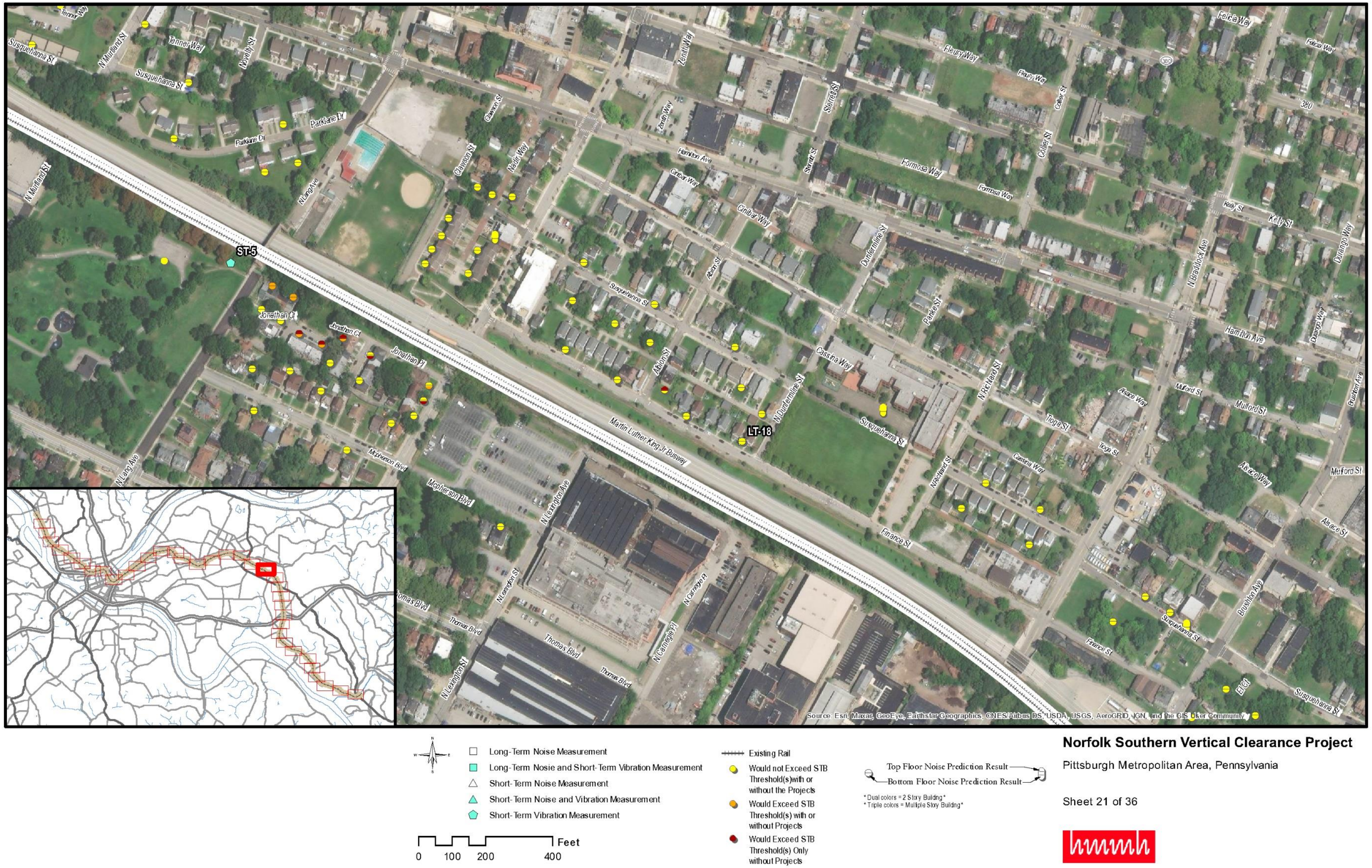

Figure 27. Low-Growth Scenario Noise and Vibration Assessment Map 22

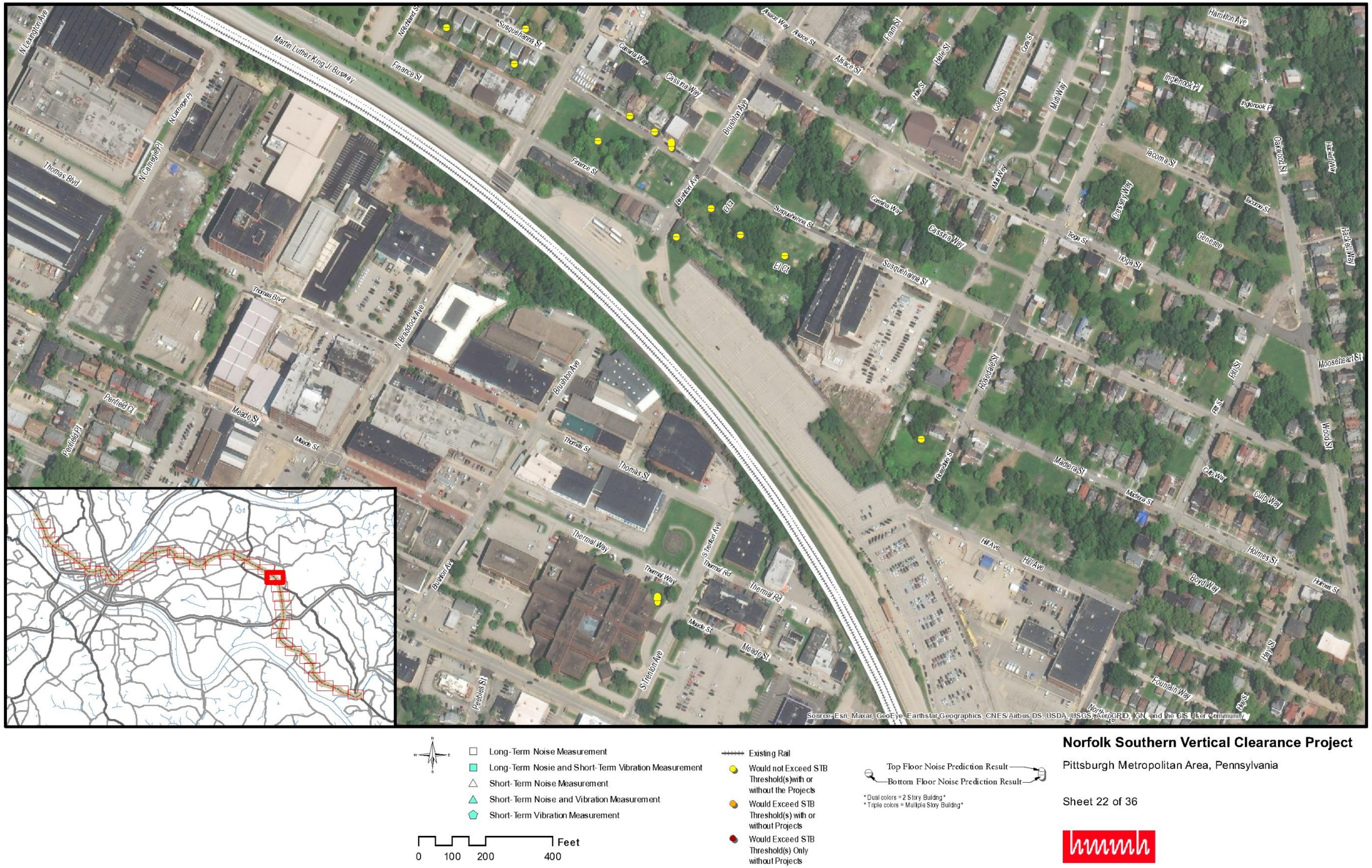

Figure 28. Low-Growth Scenario Noise and Vibration Assessment Map 23

Figure 29. Low-Growth Scenario Noise and Vibration Assessment Map 24

Figure 30. Low-Growth Scenario Noise and Vibration Assessment Map 25

Long-Term Noise Measurement
Long-Term Nosie and Short-Term Vibration Measurement
Short-Term Noise Measurement
Short-Term Noise and Vibration Measurement
Short-Term Vibration Measurement

Existing Rail
Would not Exceed STB Threshold(s) with or without the Projects
Would Exceed STB Threshold(s) with or without Projects
Would Exceed STB Threshold(s) Only without Projects

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result
* Dual colors = 2 Story Building*
* Triple colors = Multiple Story Building*

Feet
0 100 200 400

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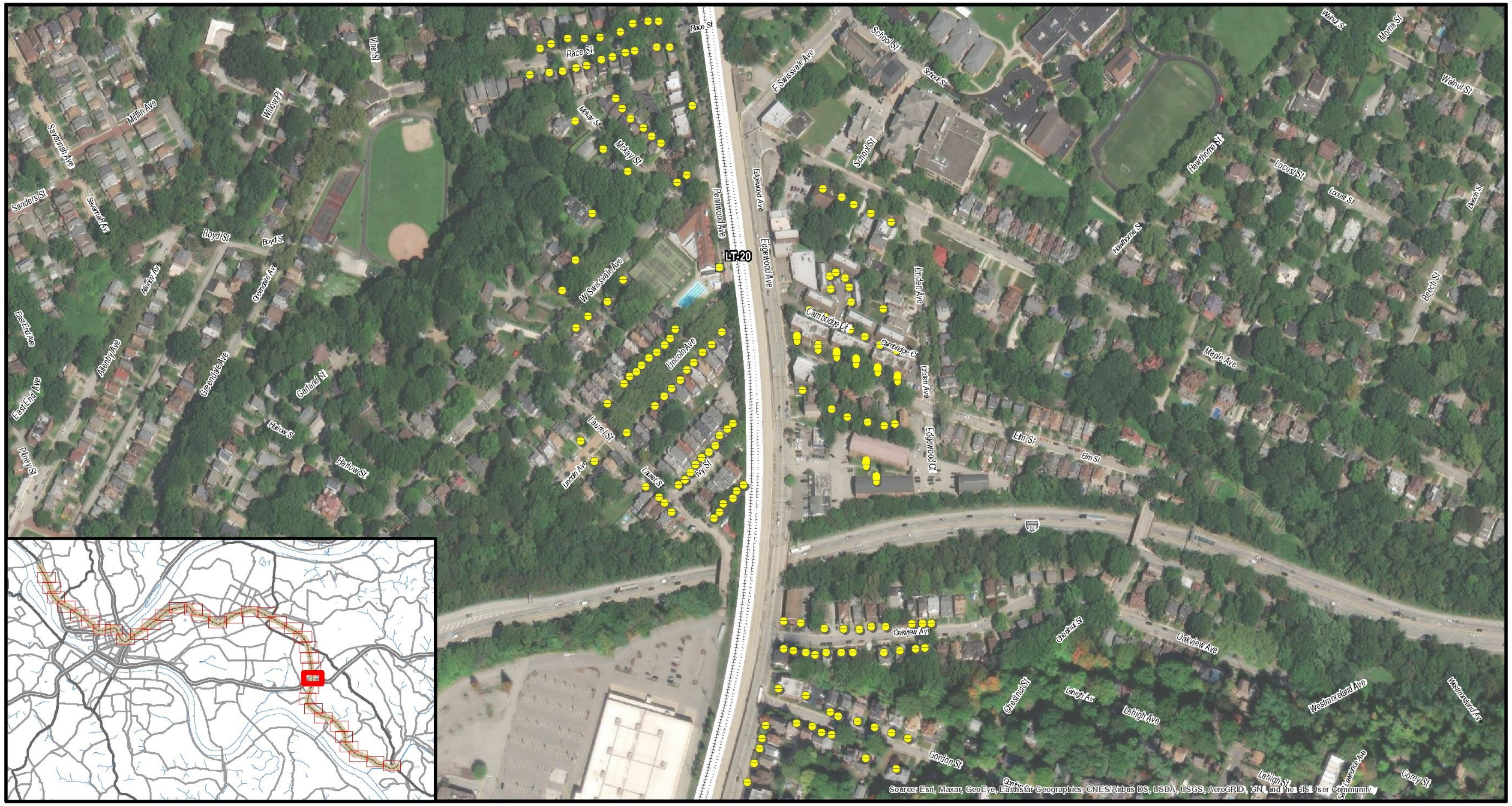
Figure 31. Low-Growth Scenario Noise and Vibration Assessment Map 26



- Long-Term Noise Measurement
- Long-Term Nosie and Short-Term Vibration Measurement
- Short-Term Noise Measurement
- Short-Term Noise and Vibration Measurement
- Short-Term Vibration Measurement

Feet: 0 100 200 400

- Existing Rail
- Would not Exceed STB Threshold(s) with or without the Projects
- Would Exceed STB Threshold(s) with or without Projects
- Would Exceed STB Threshold(s) Only without Projects

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result
* Dual colors = 2 Story Building*
* Triple colors = Multiple Story Building*

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Figure 32. Low-Growth Scenario Noise and Vibration Assessment Map 27

Figure 33. Low-Growth Scenario Noise and Vibration Assessment Map 28

Figure 34. Low-Growth Scenario Noise and Vibration Assessment Map 29

Figure 35. Low-Growth Scenario Noise and Vibration Assessment Map 30

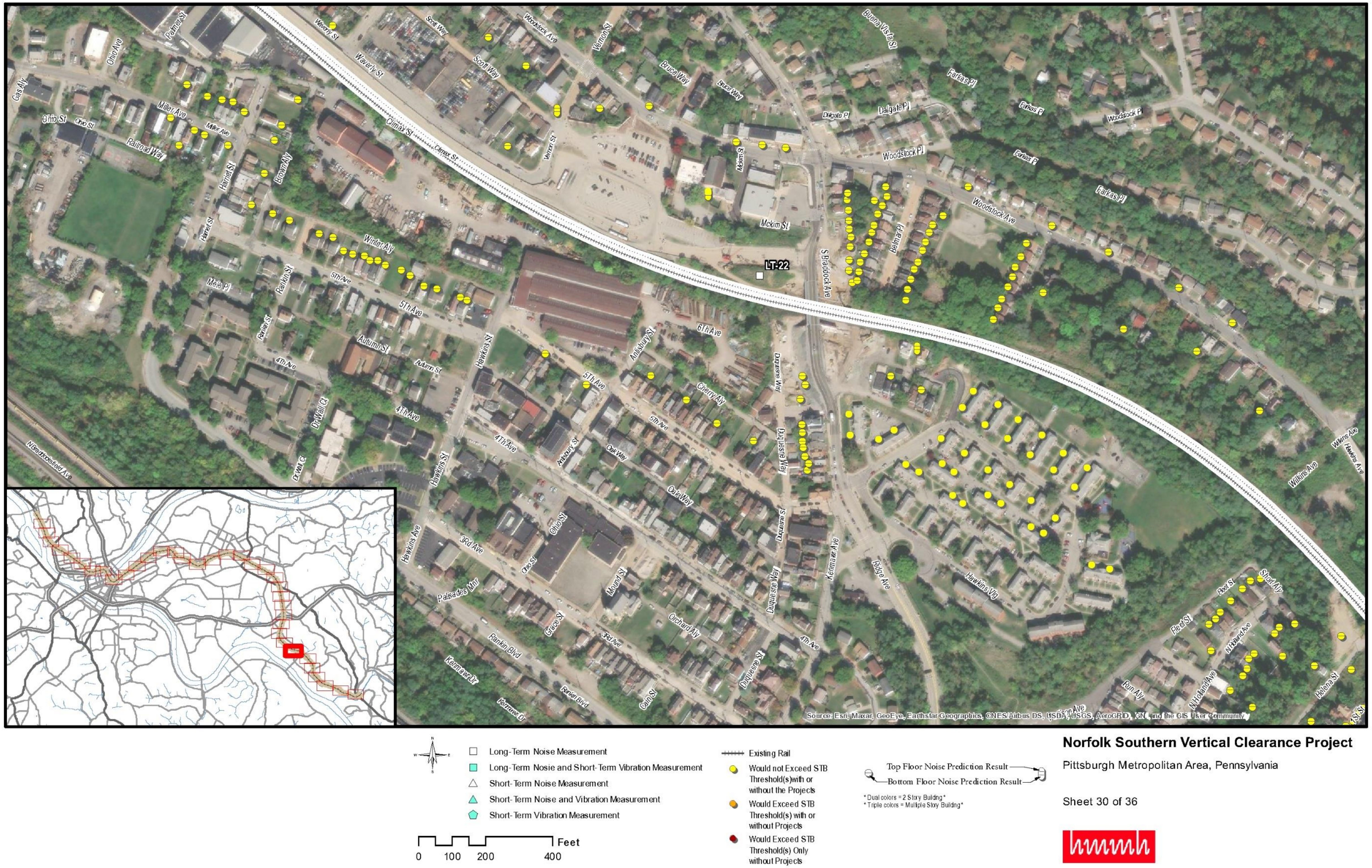
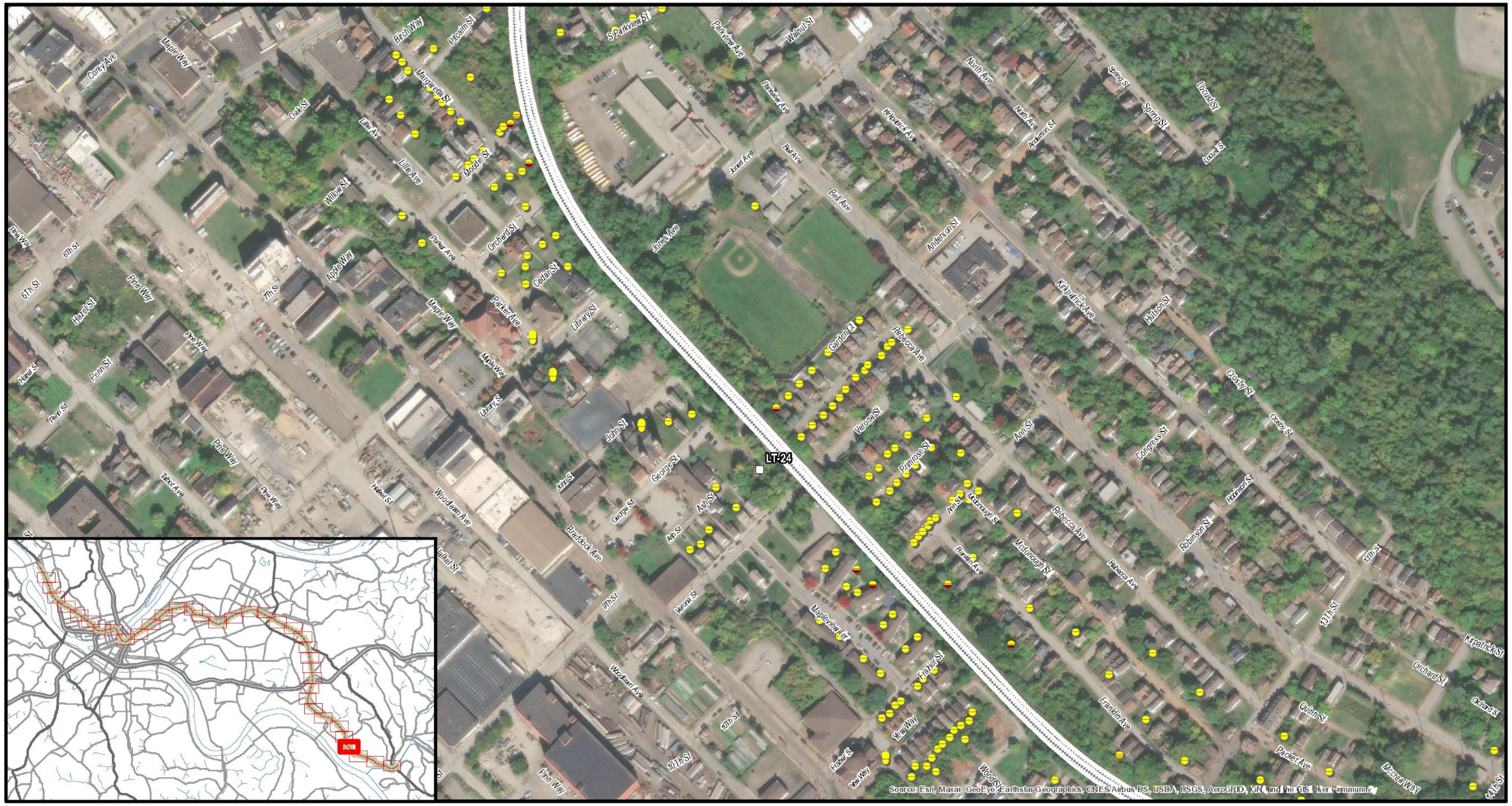


Figure 36. Low-Growth Scenario Noise and Vibration Assessment Map 31

Figure 37. Low-Growth Scenario Noise and Vibration Assessment Map 32

Figure 38. Low-Growth Scenario Noise and Vibration Assessment Map 33



- Long-Term Noise Measurement
- Long-Term Nosie and Short-Term Vibration Measurement
- Short-Term Noise Measurement
- Short-Term Noise and Vibration Measurement
- Short-Term Vibration Measurement

Feet: 0, 100, 200, 400

- Existing Rail
- Would not Exceed STB Threshold(s)with or without the Projects
- Would Exceed STB Threshold(s) with or without Projects
- Would Exceed STB Threshold(s) Only without Projects

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result

* Dual colors = 2 Story Building*
* Triple colors = Multiple Story Building*

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Figure 39. Low-Growth Scenario Noise and Vibration Assessment Map 34

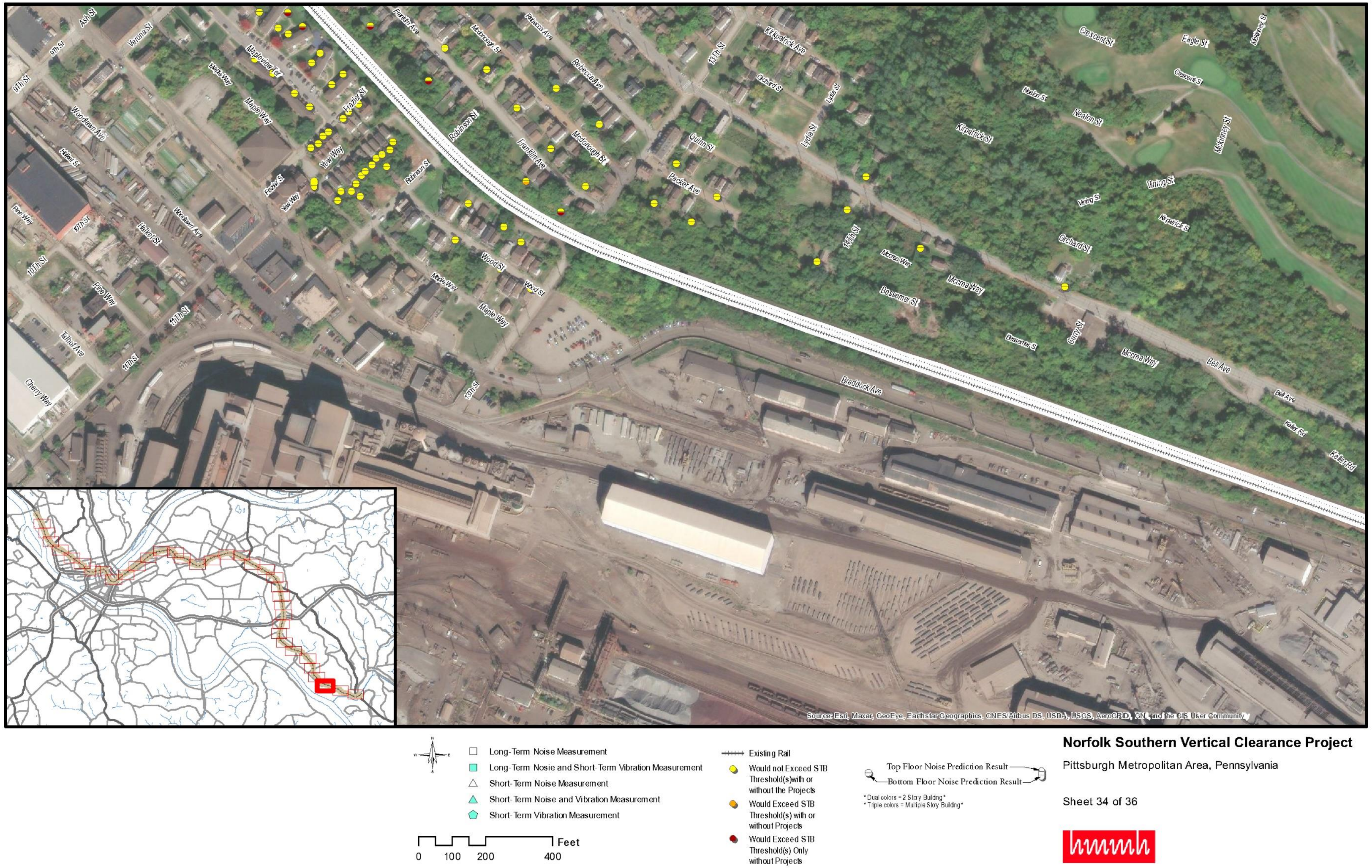

Figure 40. Low-Growth Scenario Noise and Vibration Assessment Map 35

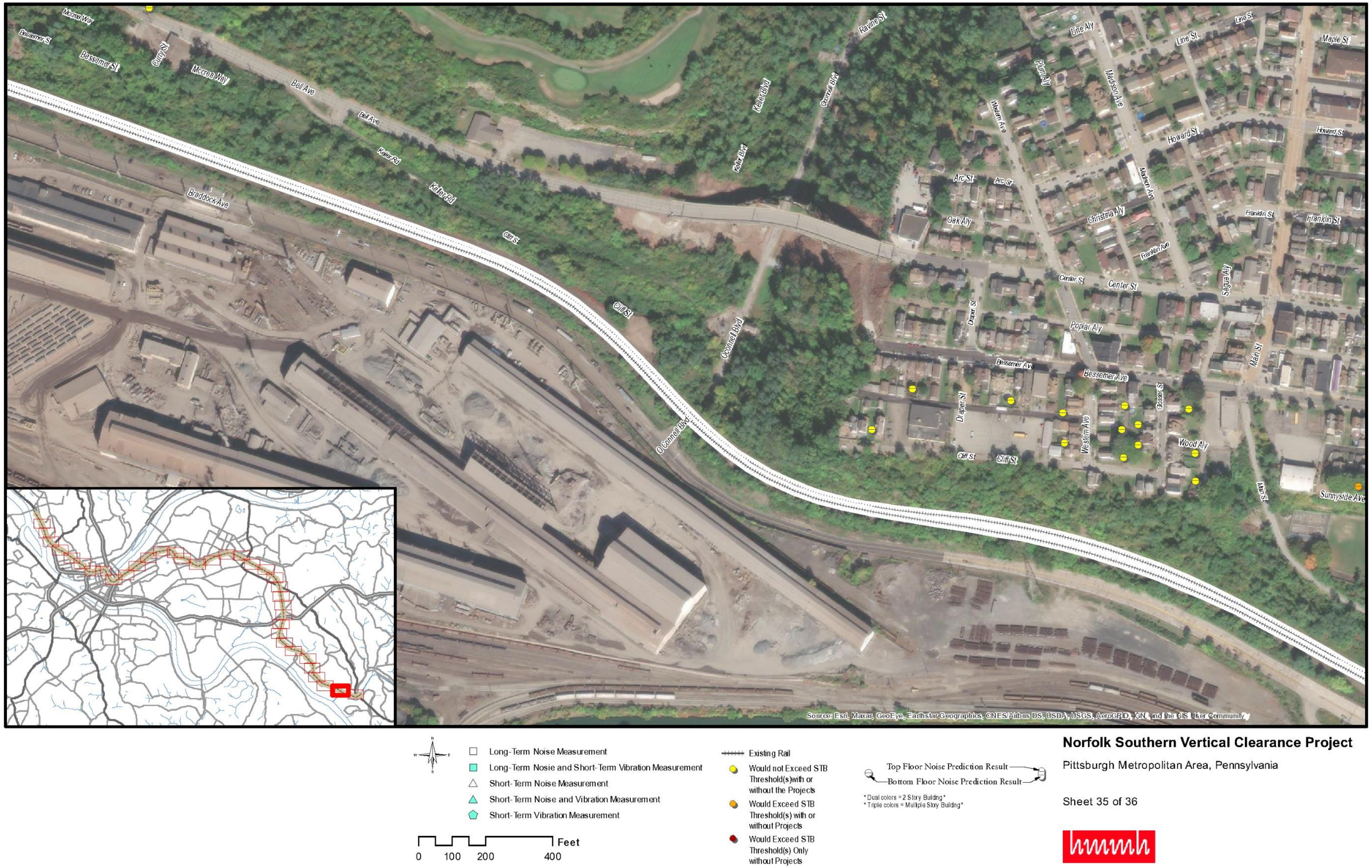

Figure 41. Low-Growth Scenario Noise and Vibration Assessment Map 36

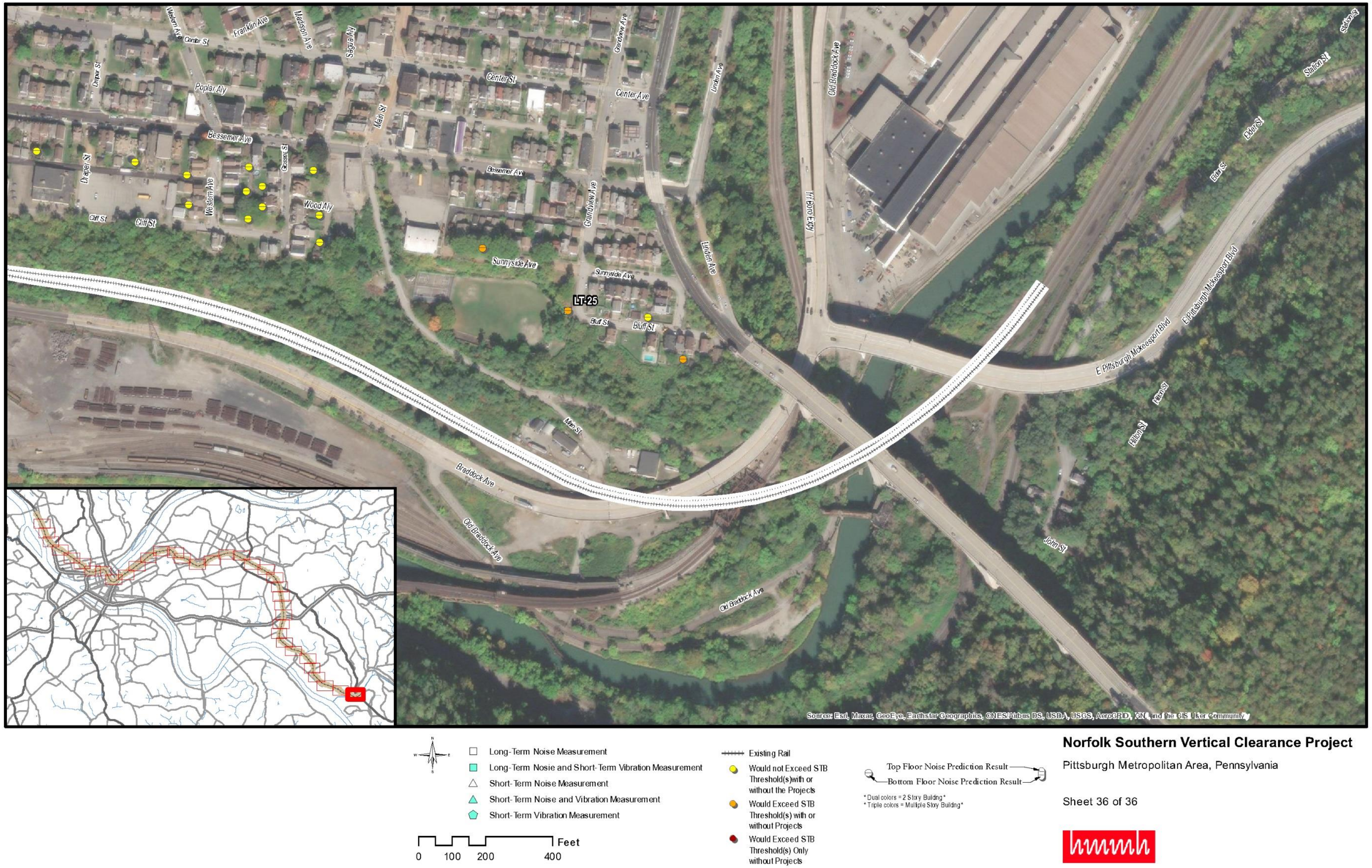

Figure 42. High-Growth Scenario Noise and Vibration Assessment Map 1

Figure 43. High-Growth Scenario Noise and Vibration Assessment Map 2

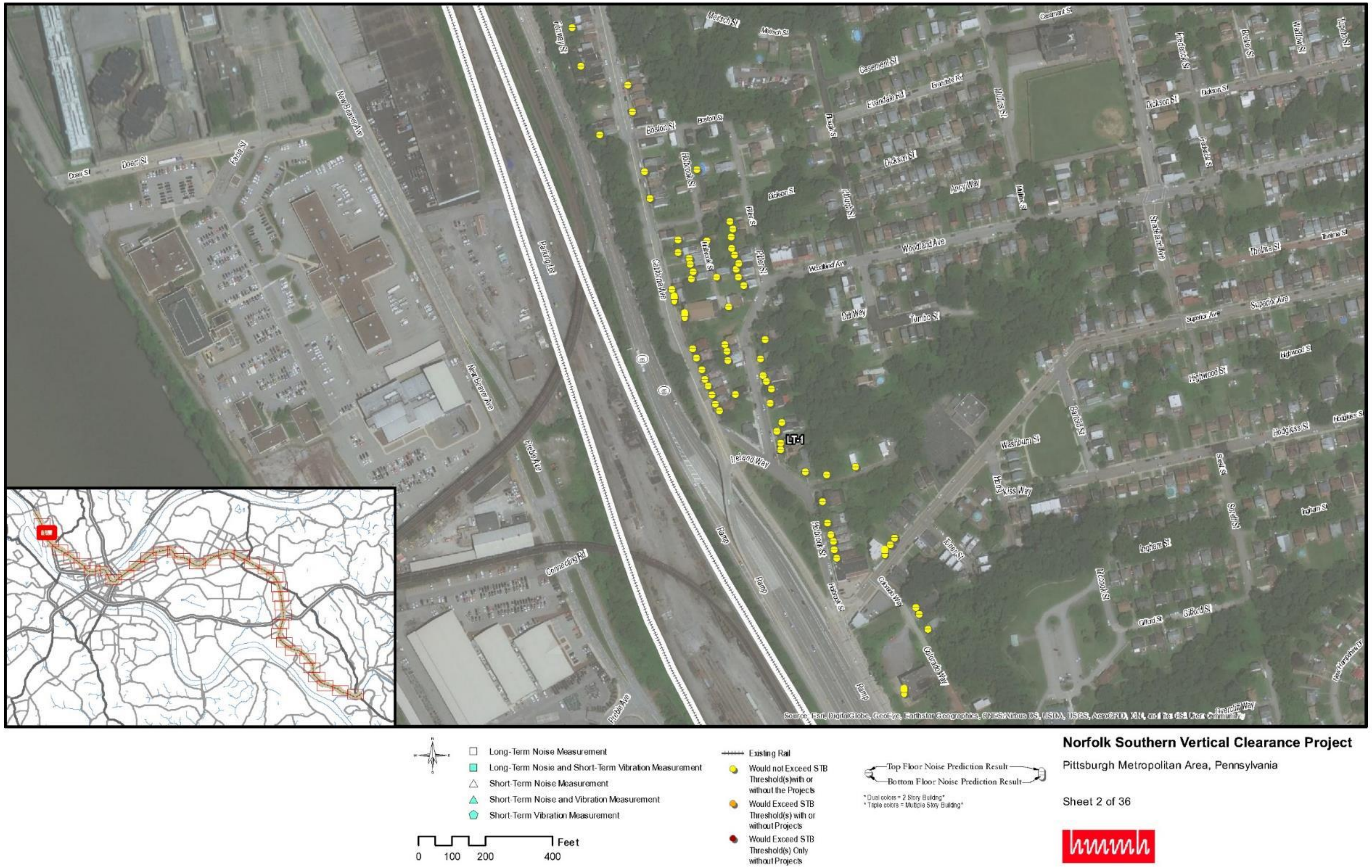

Figure 44. High-Growth Scenario Noise and Vibration Assessment Map 3

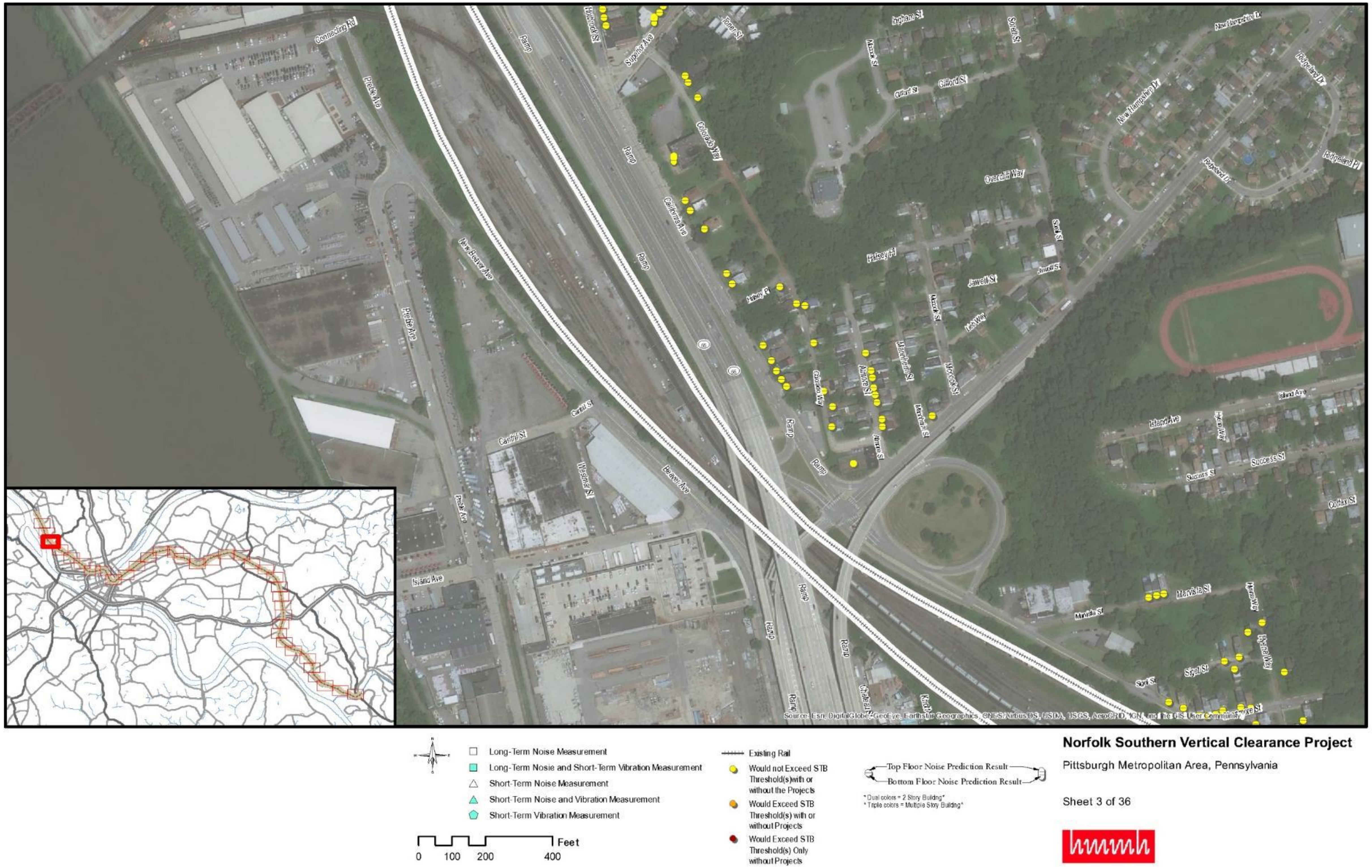

Figure 45. High-Growth Scenario Noise and Vibration Assessment Map 4

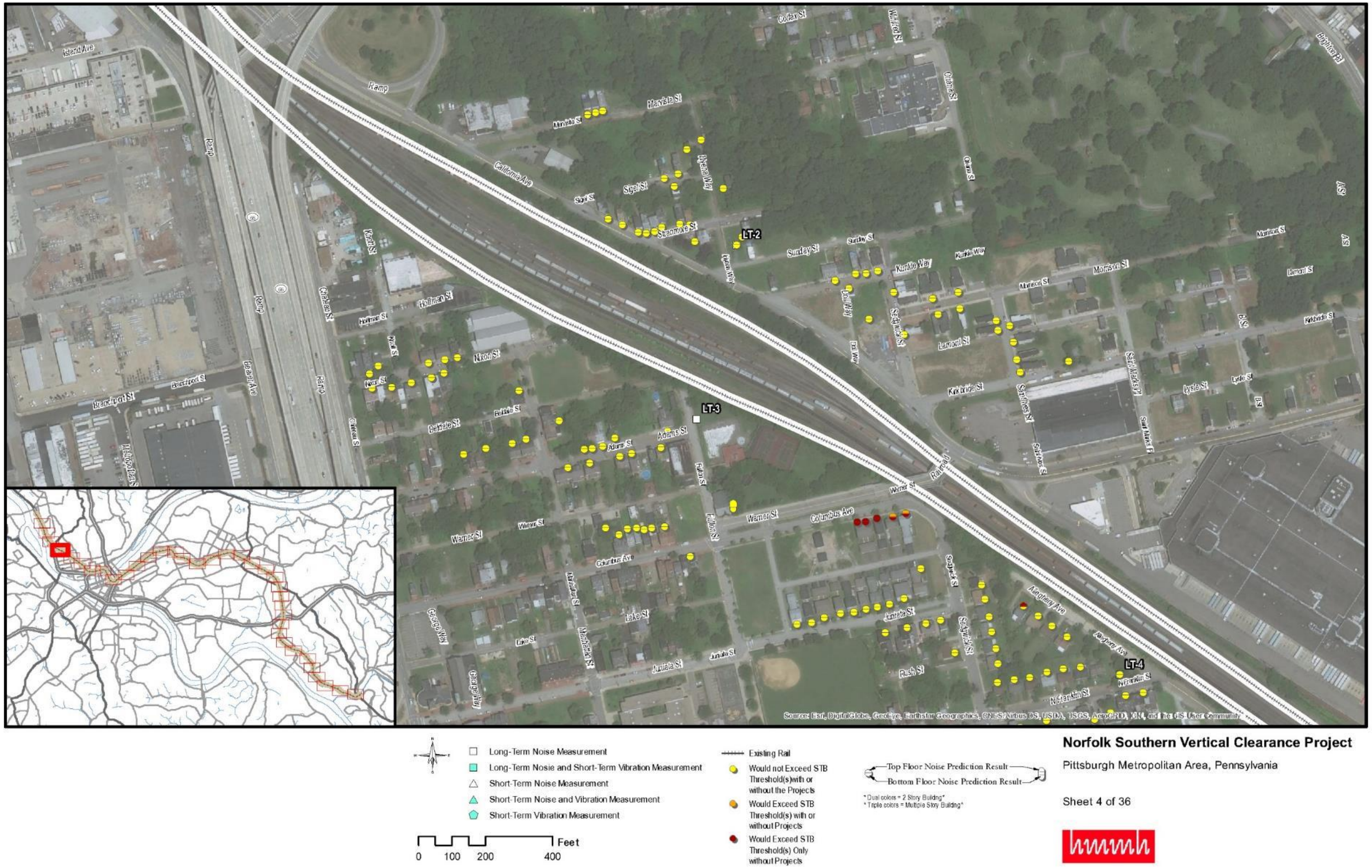

Figure 46. High-Growth Scenario Noise and Vibration Assessment Map 5

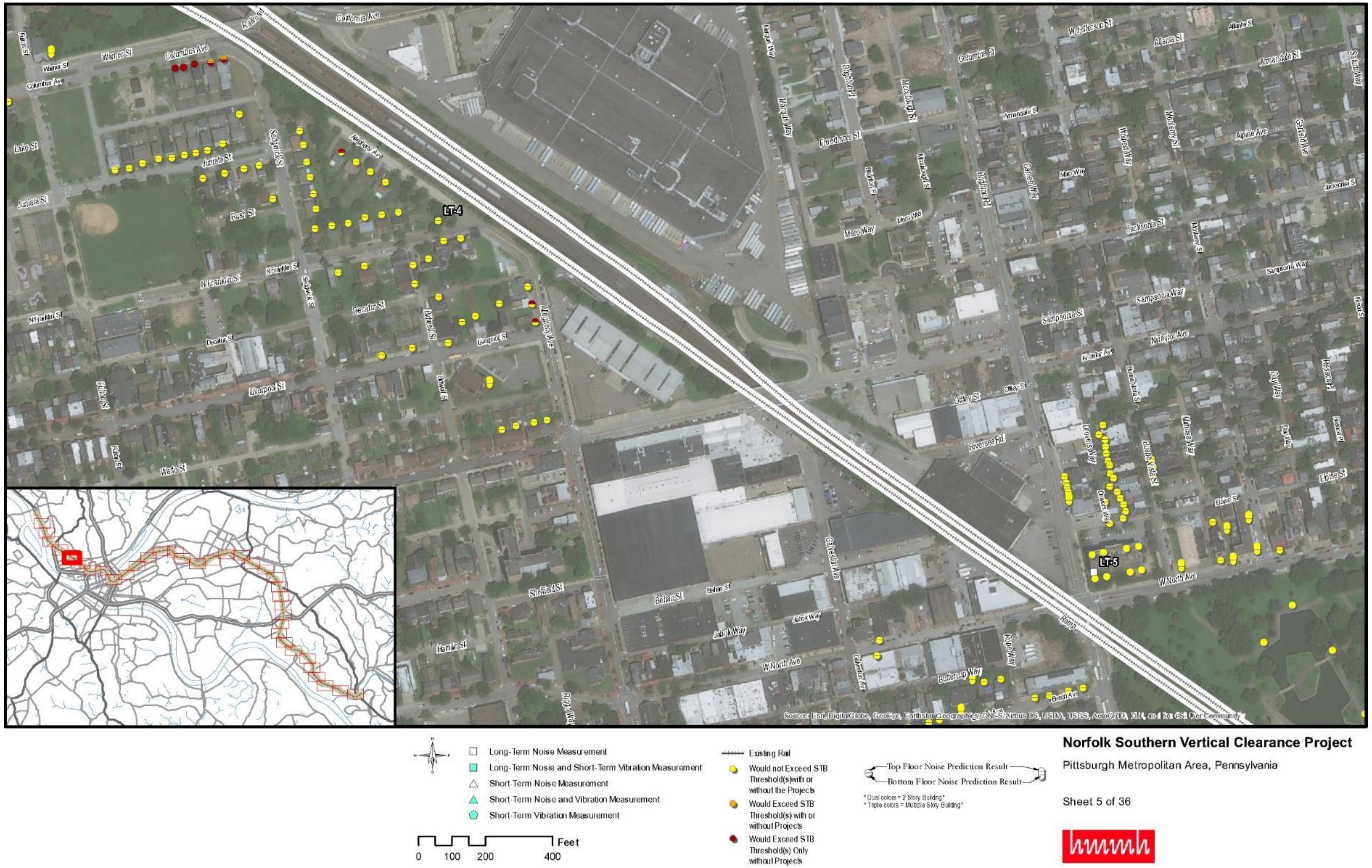

Figure 47. High-Growth Scenario Noise and Vibration Assessment Map 6

Figure 48. High-Growth Scenario Noise and Vibration Assessment Map 7

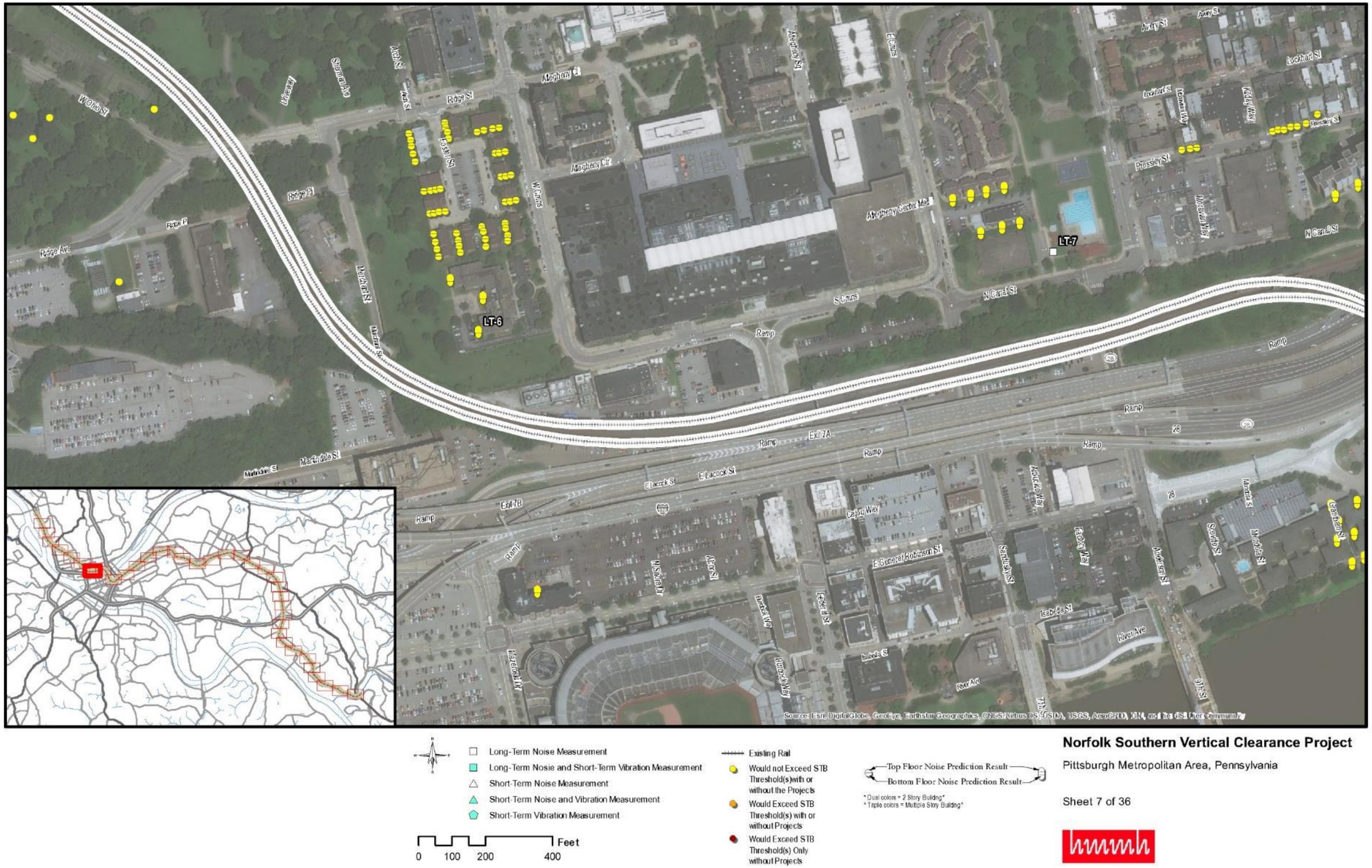

Figure 49. High-Growth Scenario Noise and Vibration Assessment Map 8

Figure 50. High-Growth Scenario Noise and Vibration Assessment Map 9

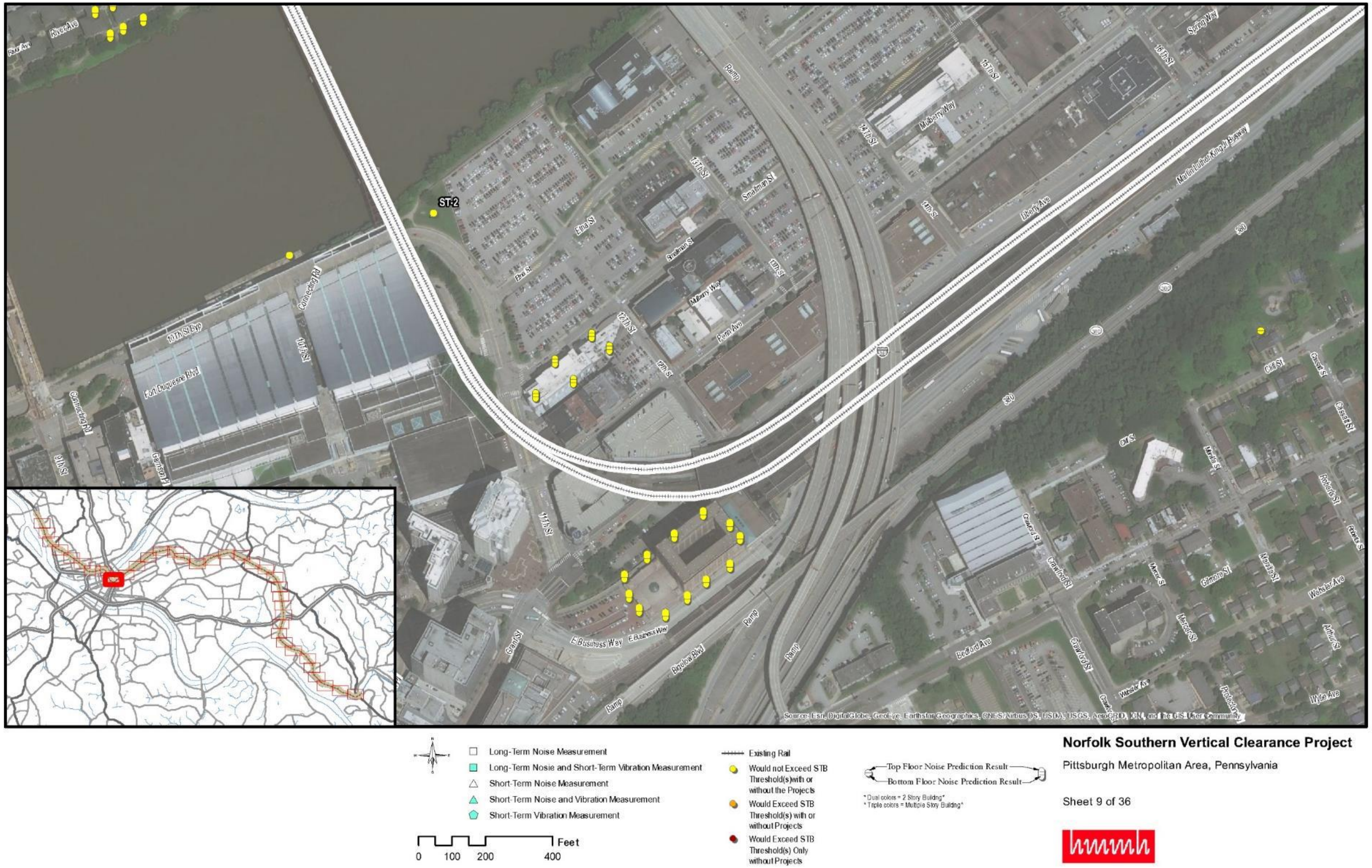

Figure 51. High-Growth Scenario Noise and Vibration Assessment Map 10

Figure 52. High-Growth Scenario Noise and Vibration Assessment Map 11

Figure 53. High-Growth Scenario Noise and Vibration Assessment Map 12

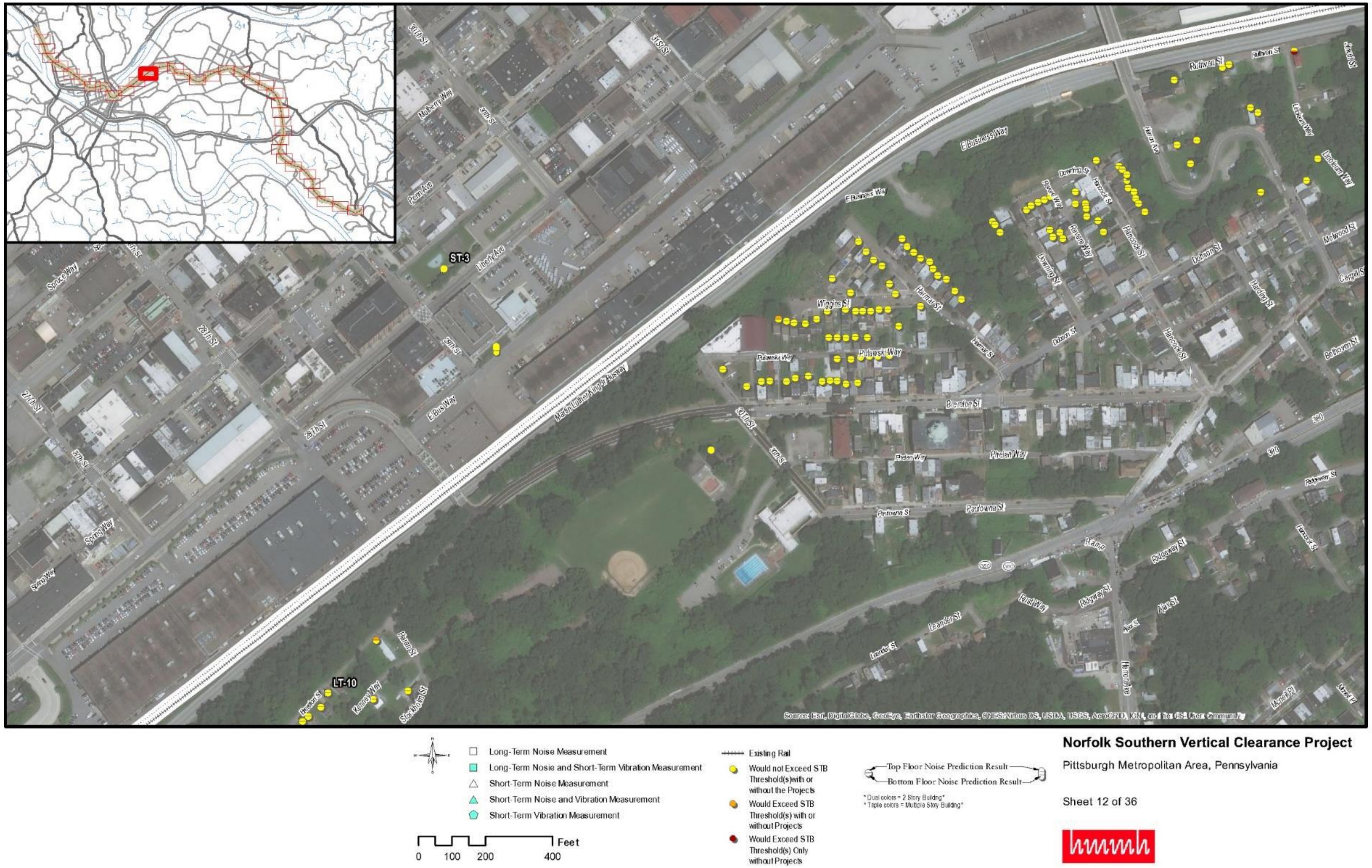

Figure 54. High-Growth Scenario Noise and Vibration Assessment Map 13

Figure 55. High-Growth Scenario Noise and Vibration Assessment Map 14

Figure 56. High-Growth Scenario Noise and Vibration Assessment Map 15

Figure 57. High-Growth Scenario Noise and Vibration Assessment Map 16

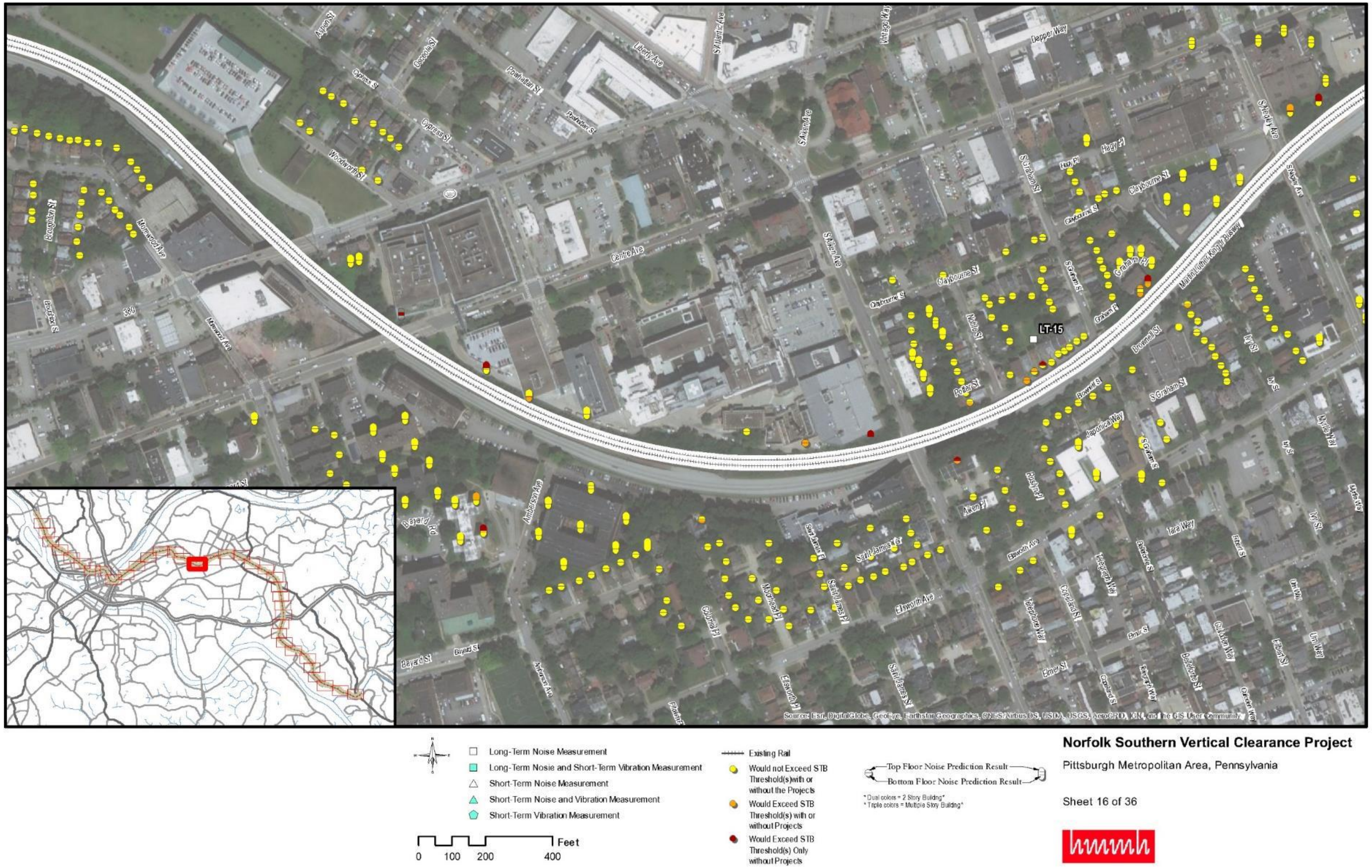

Figure 58. High-Growth Scenario Noise and Vibration Assessment Map 17

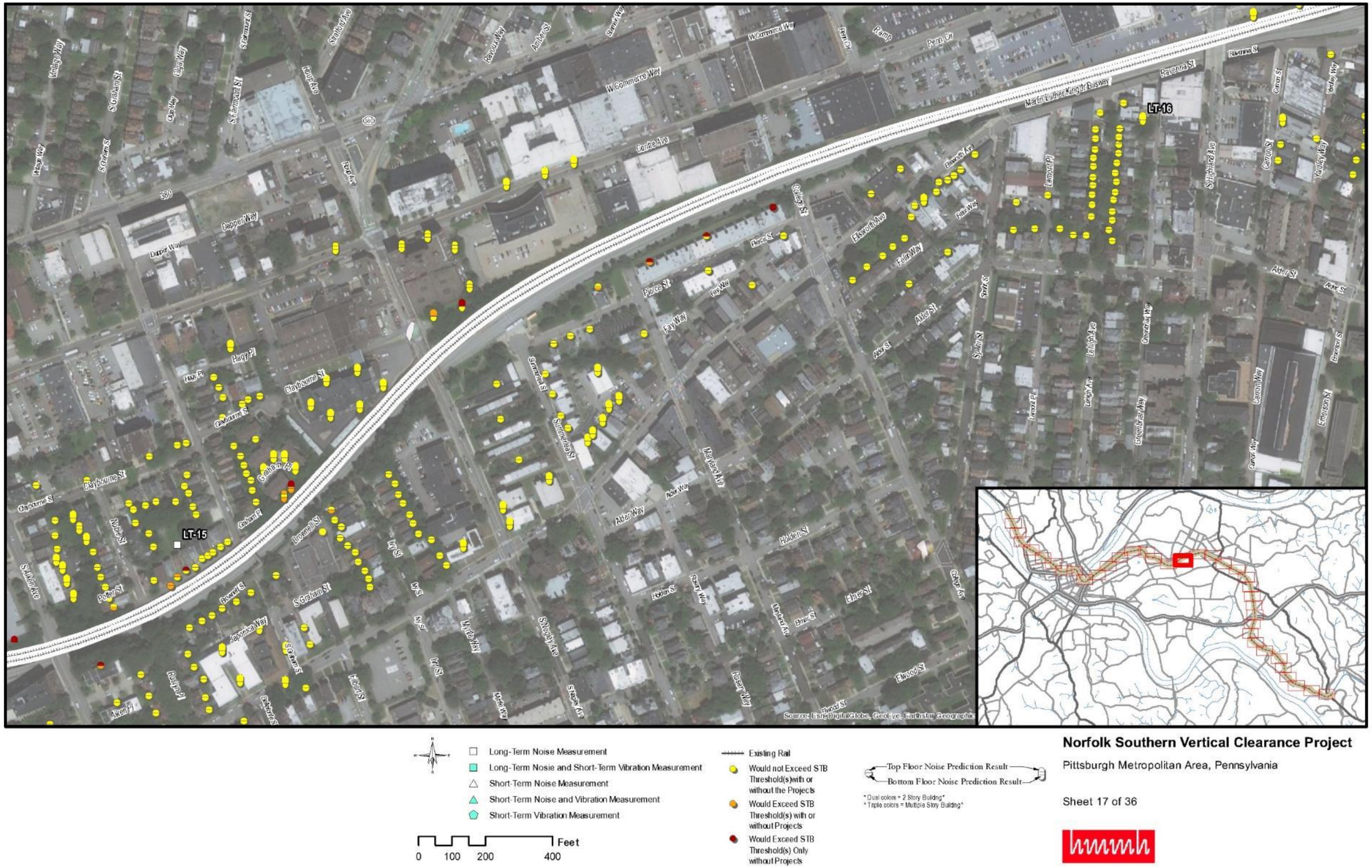

Figure 59. High-Growth Scenario Noise and Vibration Assessment Map 18

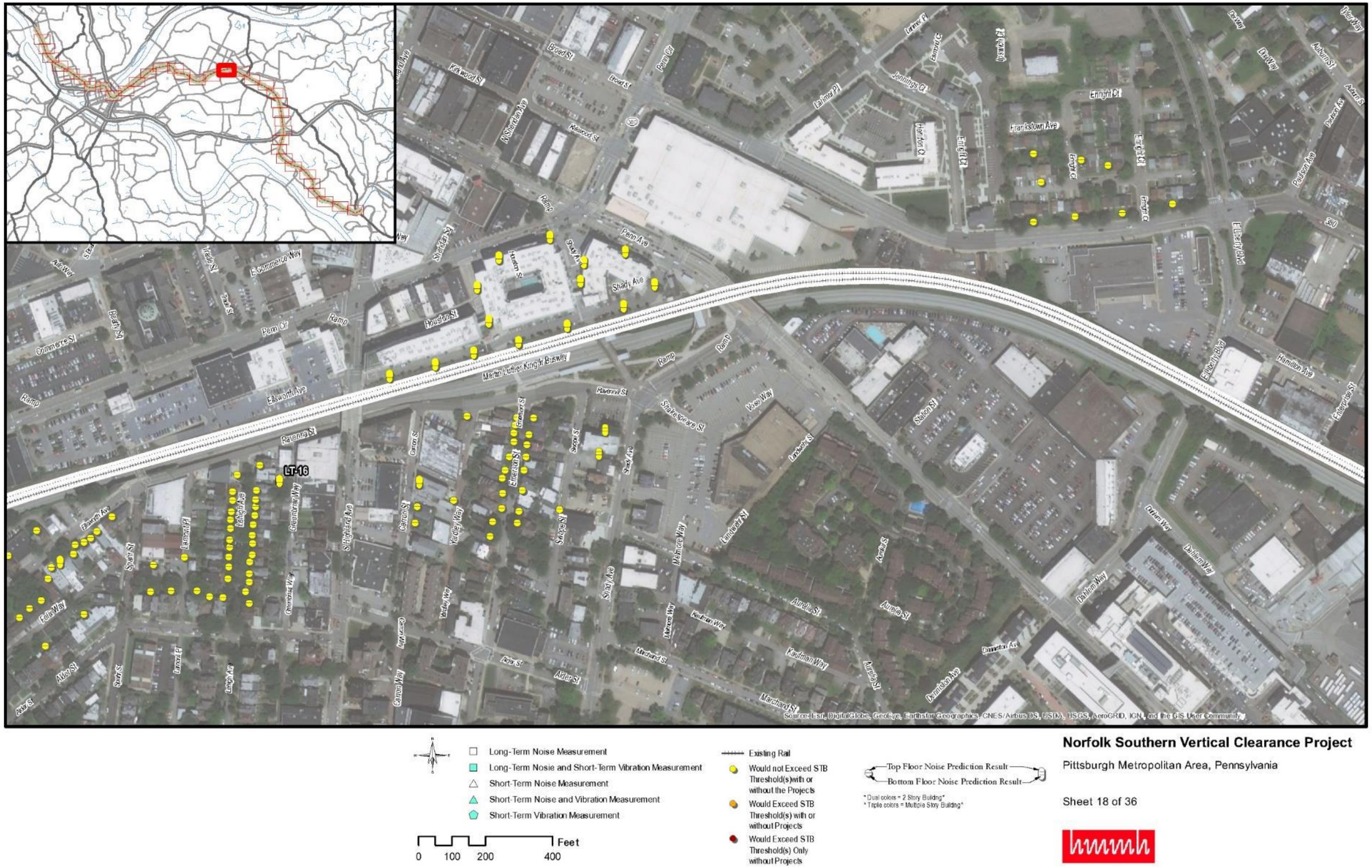

Figure 60. High-Growth Scenario Noise and Vibration Assessment Map 19

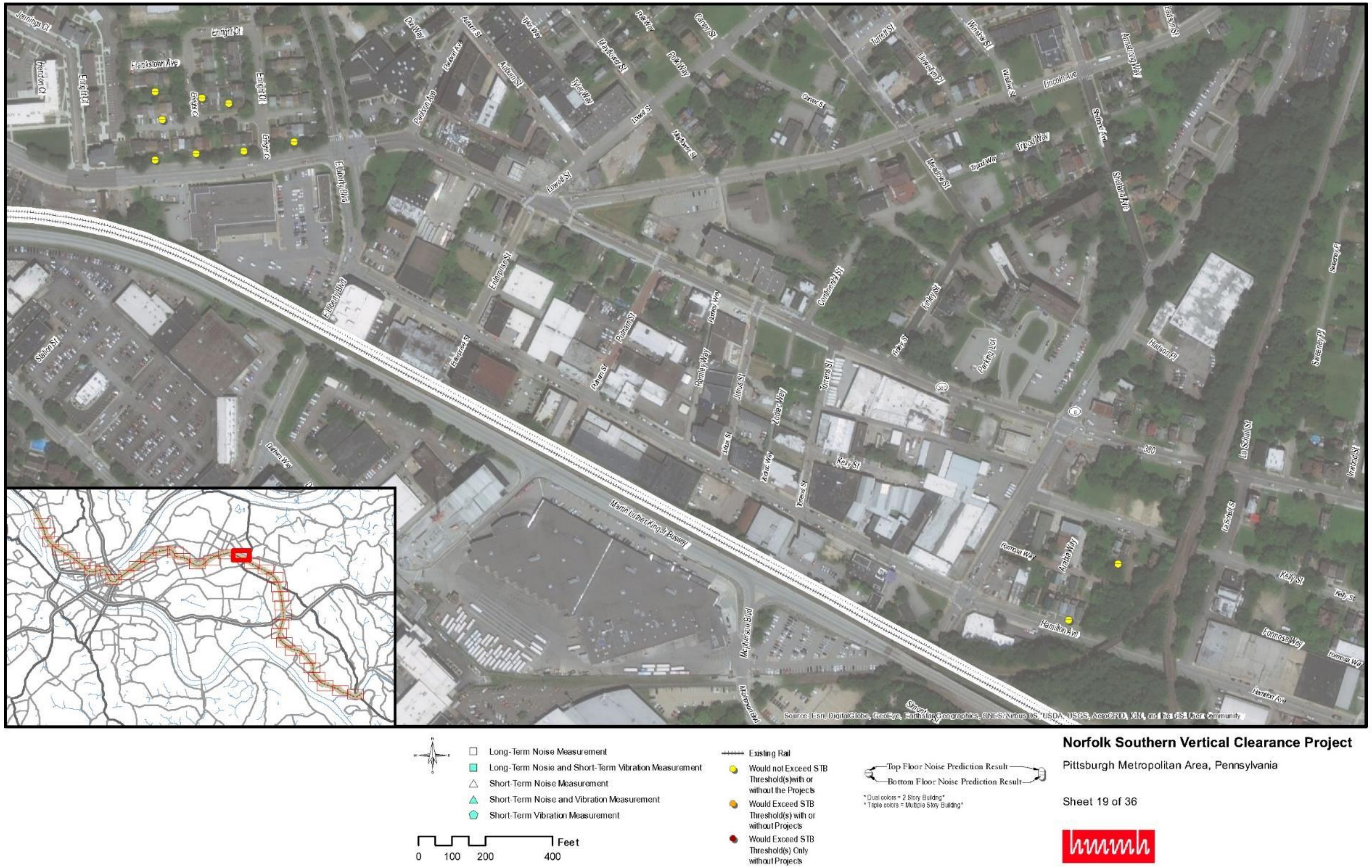

Figure 61. High-Growth Scenario Noise and Vibration Assessment Map 20

Figure 62. High-Growth Scenario Noise and Vibration Assessment Map 21

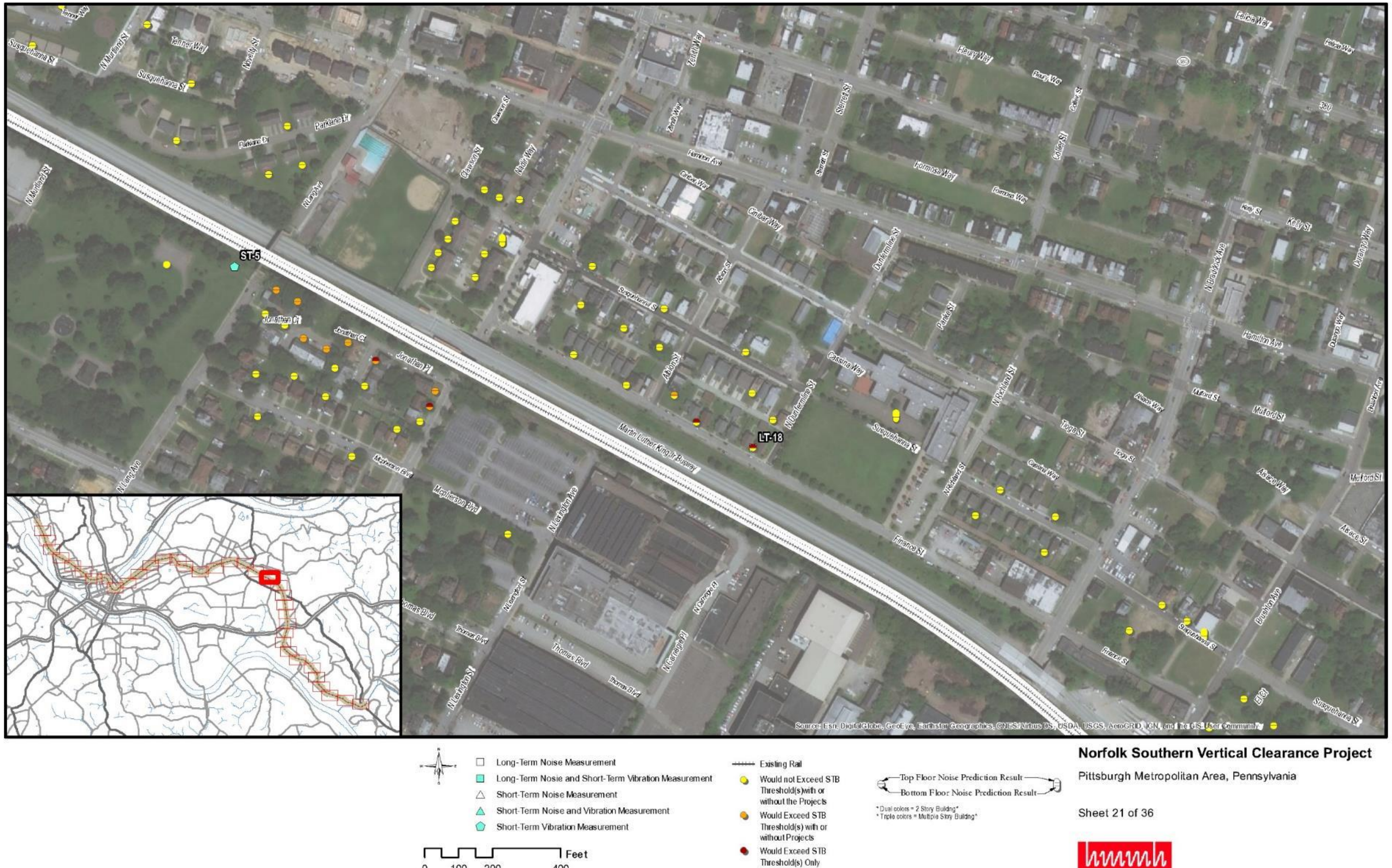

Figure 63. High-Growth Scenario Noise and Vibration Assessment Map 22

Figure 64. High-Growth Scenario Noise and Vibration Assessment Map 23

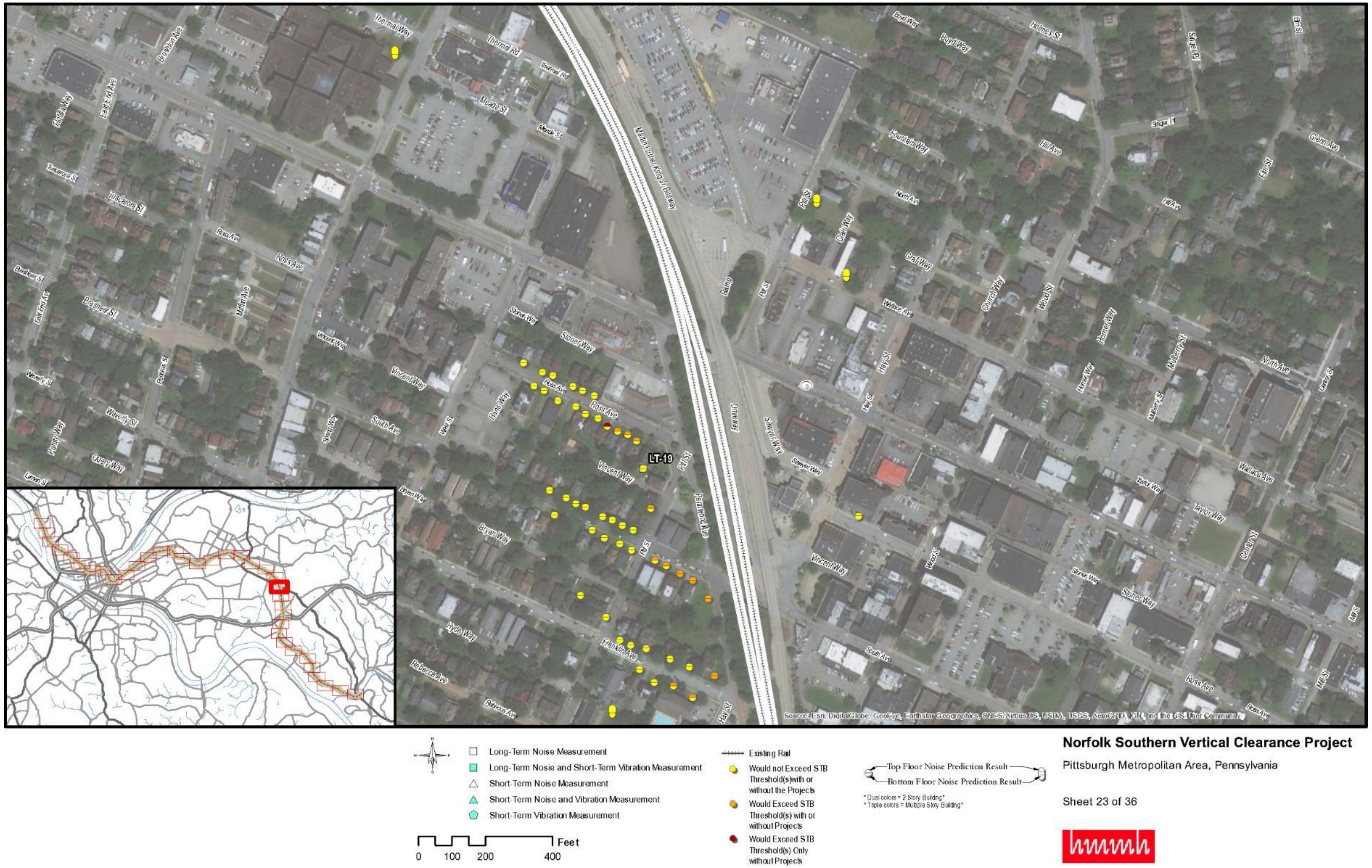

Figure 65. High-Growth Scenario Noise and Vibration Assessment Map 24

Figure 66. High-Growth Scenario Noise and Vibration Assessment Map 25

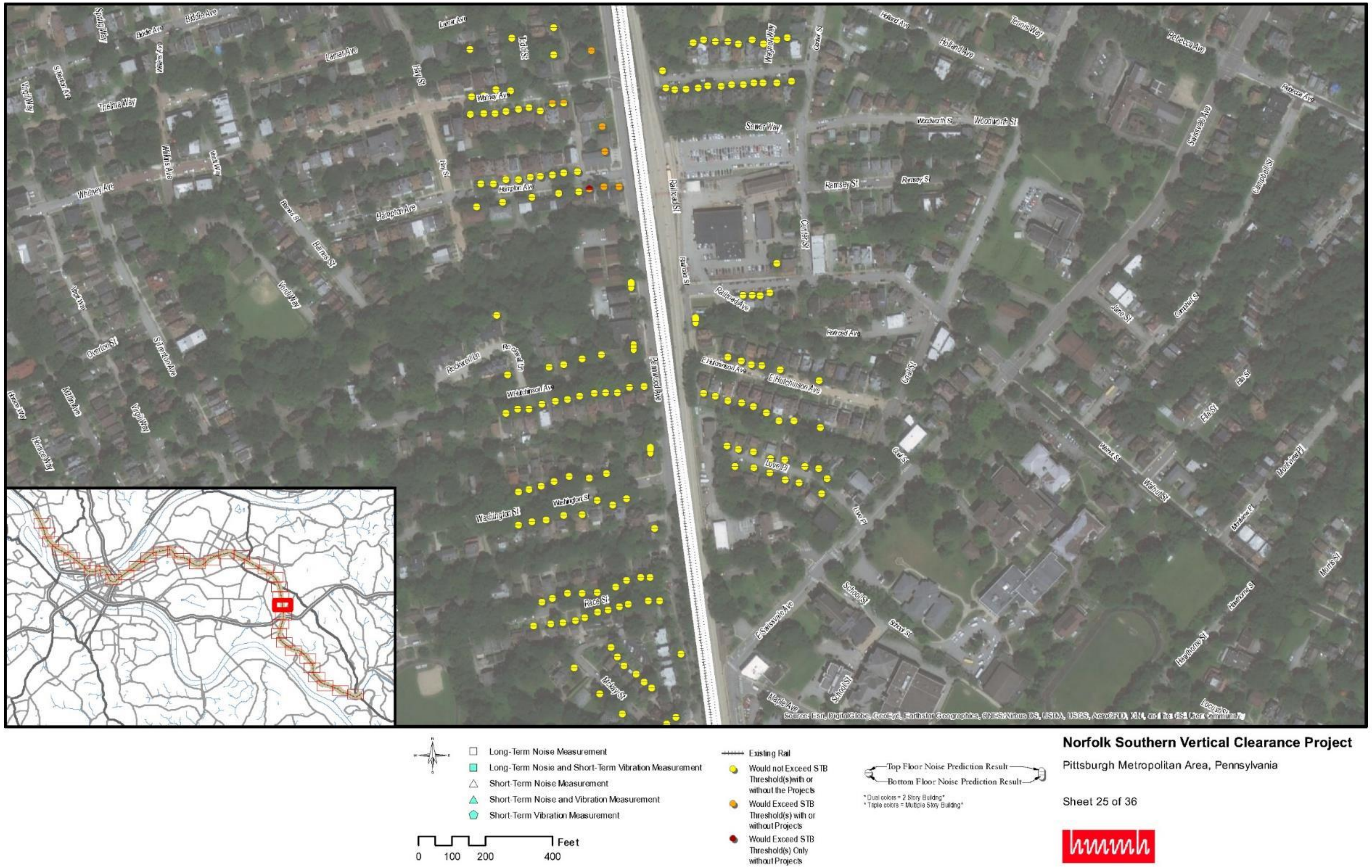

Figure 67. High-Growth Scenario Noise and Vibration Assessment Map 26

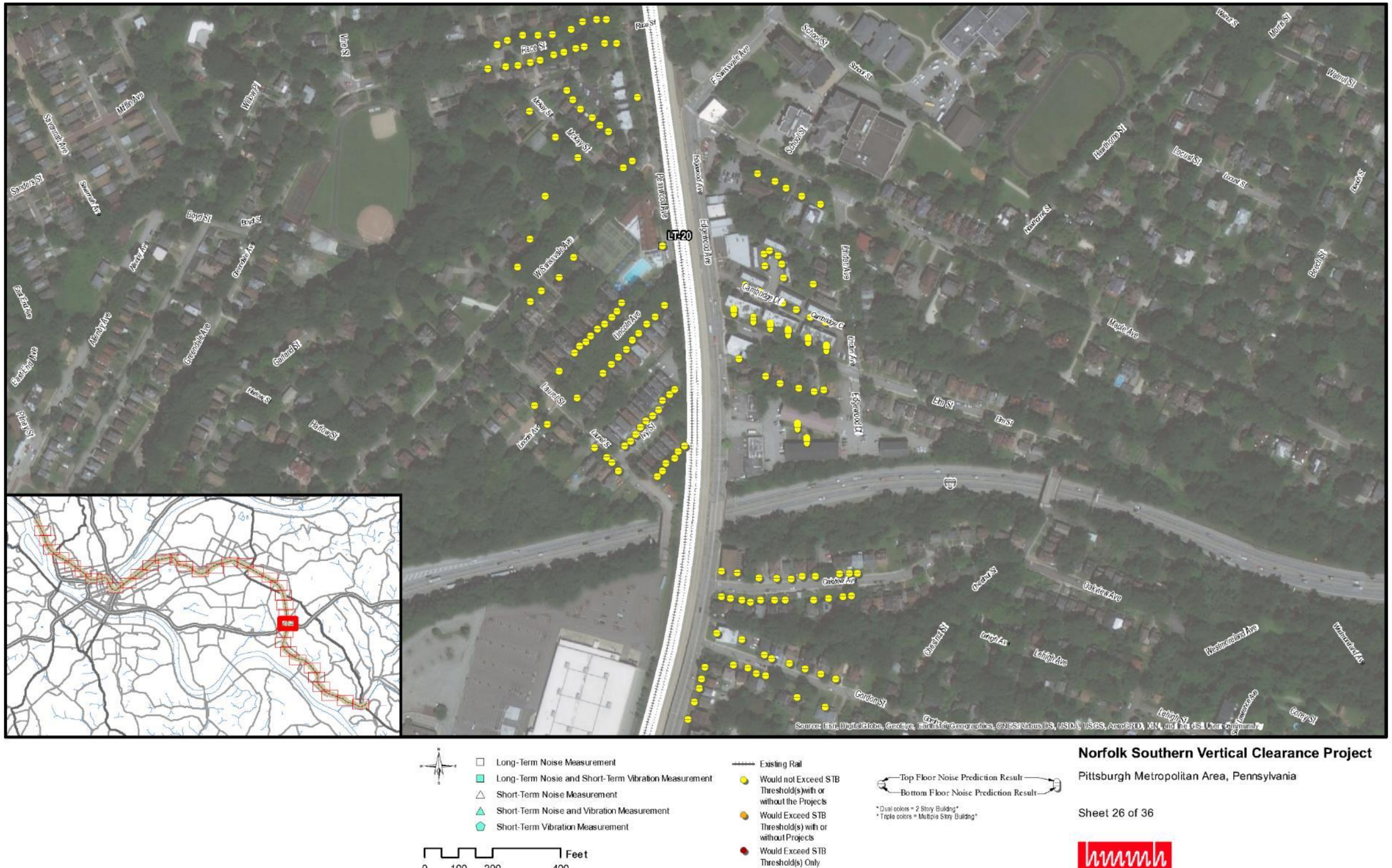

Figure 68. High-Growth Scenario Noise and Vibration Assessment Map 27

Figure 69. High-Growth Scenario Noise and Vibration Assessment Map 28

Figure 70. High-Growth Scenario Noise and Vibration Assessment Map 29

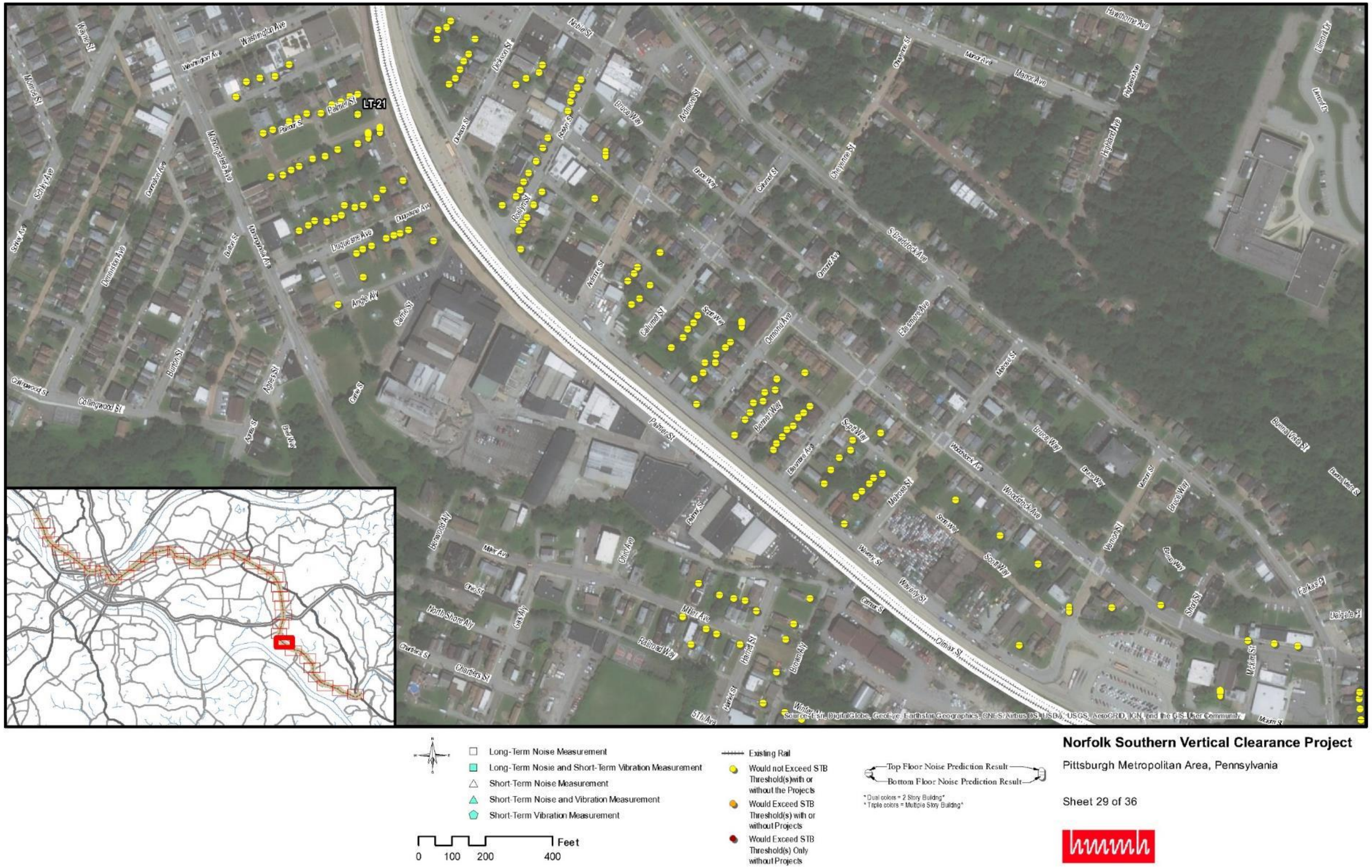

Figure 71. High-Growth Scenario Noise and Vibration Assessment Map 30

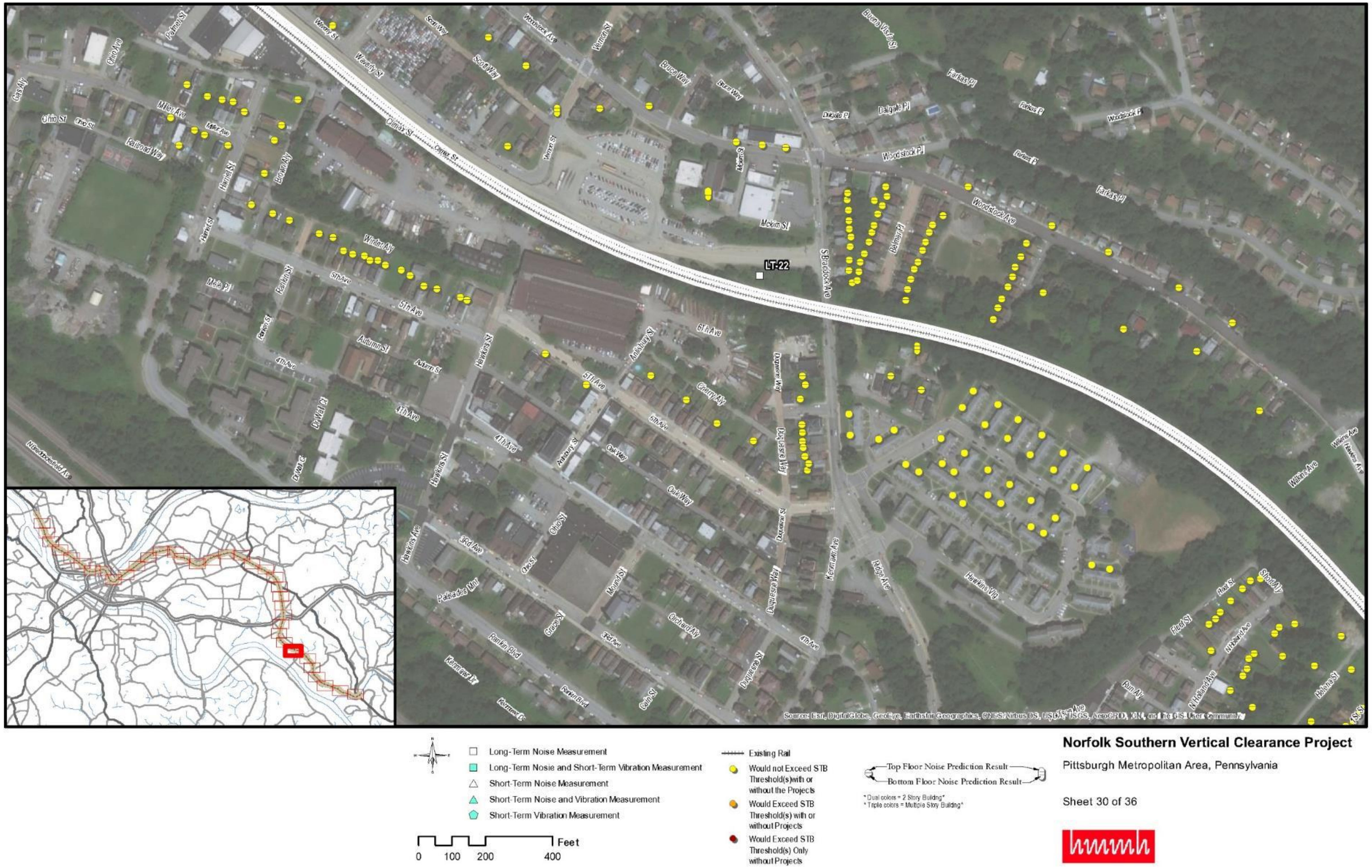

Figure 72. High-Growth Scenario Noise and Vibration Assessment Map 31

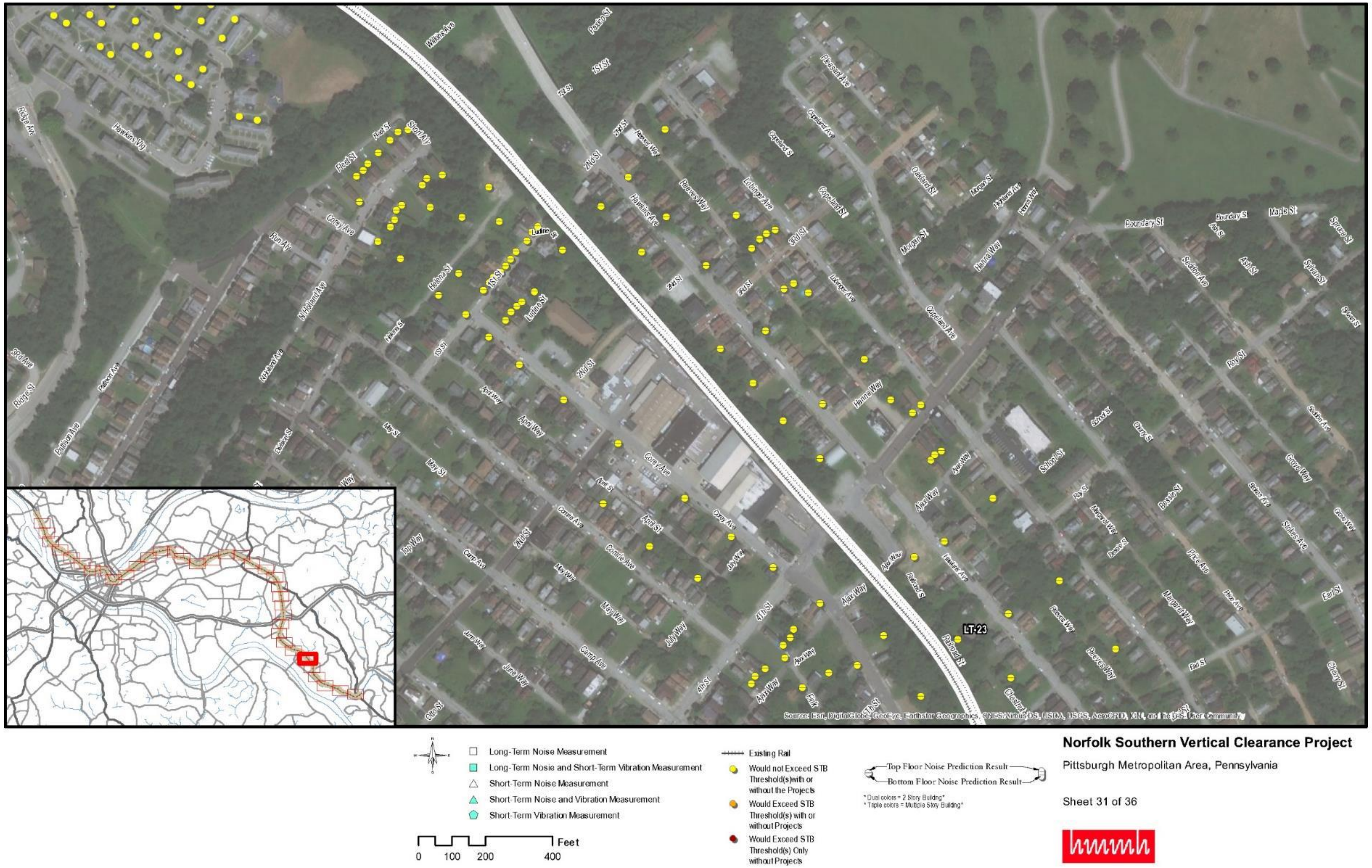

Figure 73. High-Growth Scenario Noise and Vibration Assessment Map 32

Figure 74. High-Growth Scenario Noise and Vibration Assessment Map 33

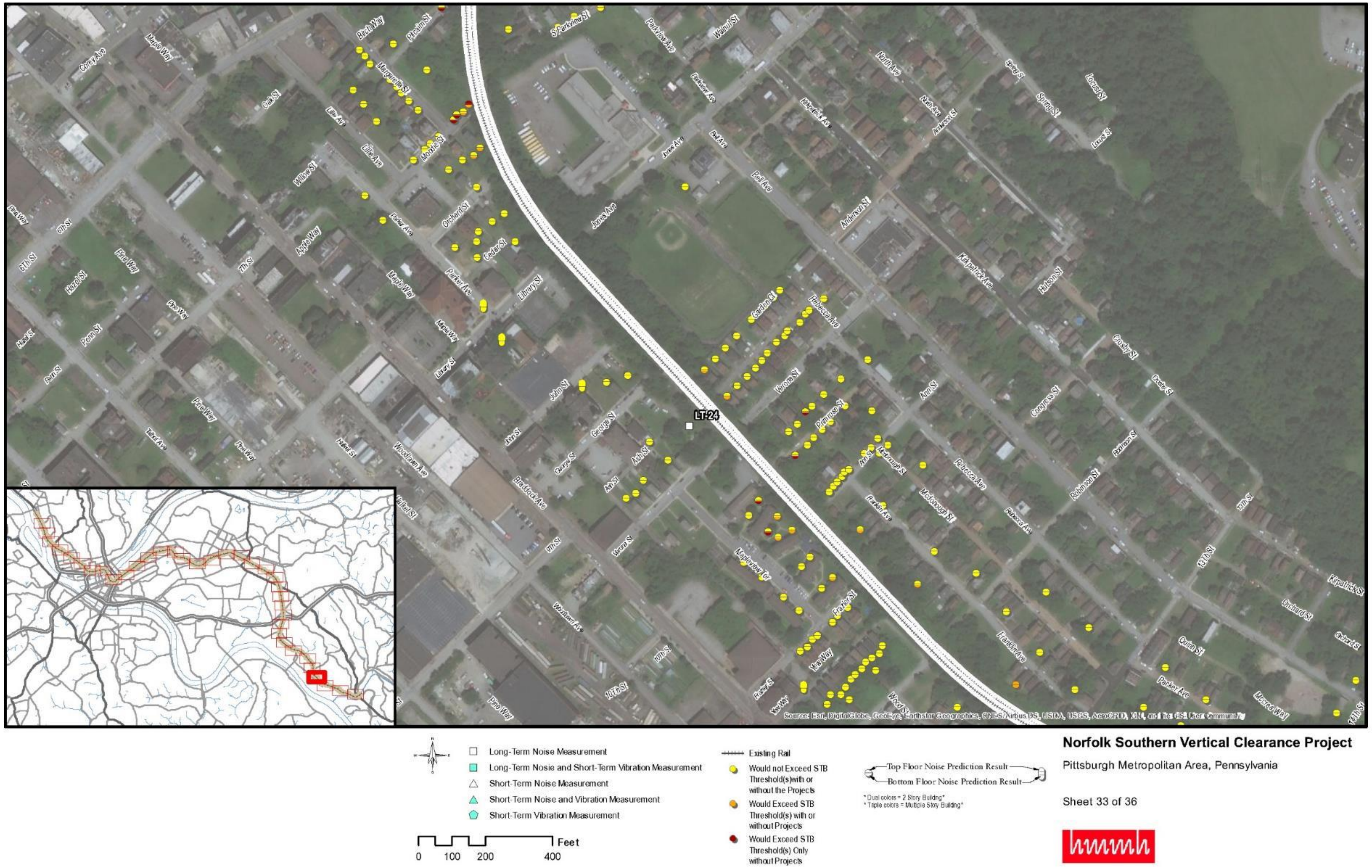

Figure 75. High-Growth Scenario Noise and Vibration Assessment Map 34

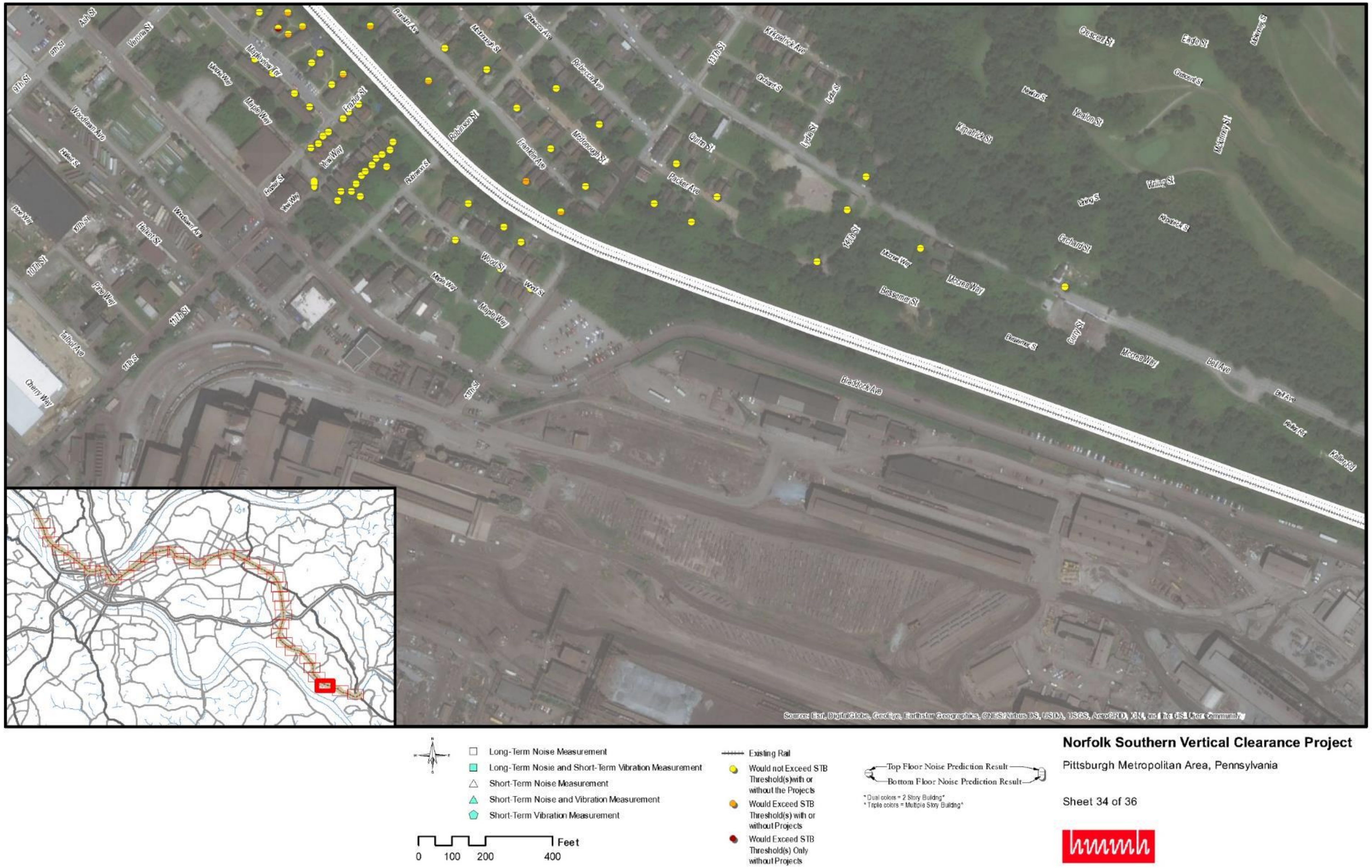

Figure 76. High-Growth Scenario Noise and Vibration Assessment Map 35

□ Long-Term Noise Measurement
Long-Term Nosie and Short-Term Vibration Measurement
△ Short-Term Noise Measurement
Short-Term Noise and Vibration Measurement
Short-Term Vibration Measurement

0 100 200 400 Feet

Existing Rail
Would not Exceed STB Threshold(s) with or without the Projects
Would Exceed STB Threshold(s) with or without Projects
Would Exceed STB Threshold(s) Only without Projects

Top Floor Noise Prediction Result
Bottom Floor Noise Prediction Result
* Dual colors = 2 Story Building*
* Triple colors = Multiple Story Building*

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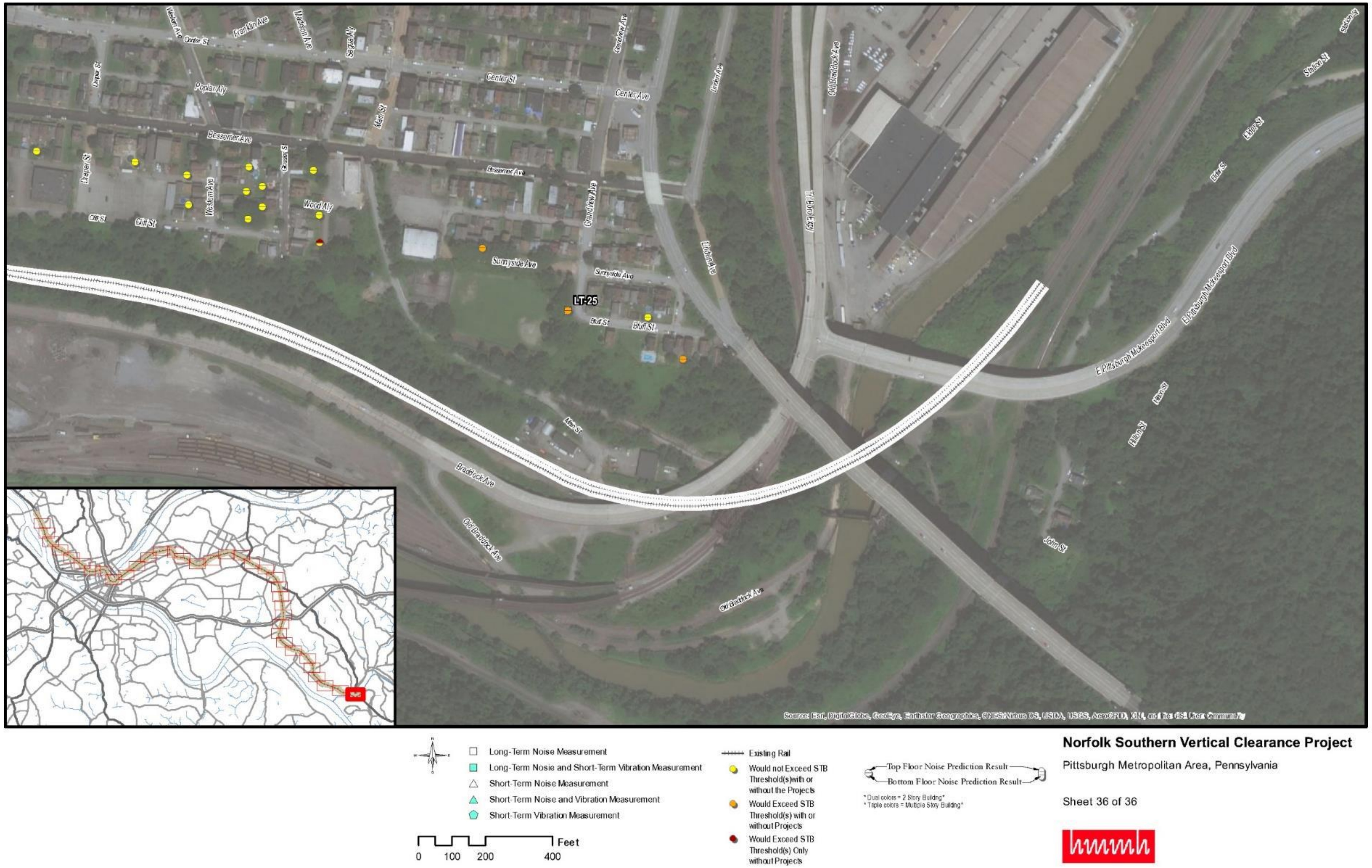
Figure 77. High-Growth Scenario Noise and Vibration Assessment Map 36



Appendix A Measurement Site Photographs

A.1 Long- and Short-Term Noise Measurement Locations

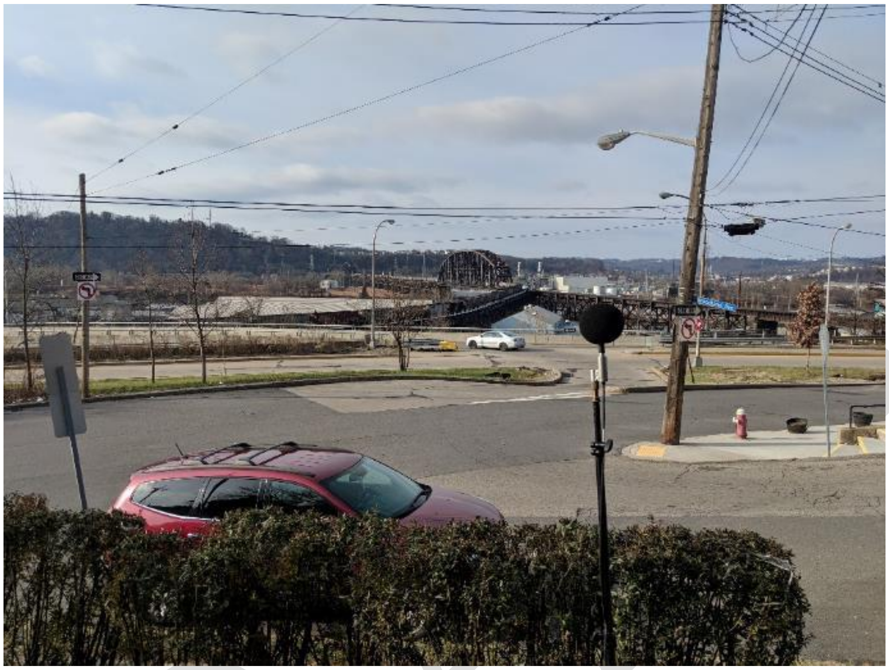


Figure A-1A. Site LT-1: 2462 California Avenue

Figure A-1B. Site LT-1: 2462 California Avenue

Figure A-2. Site LT-2: 1234 Sunday Street

Figure A-3. Site LT-3: 1907 Fulton Street

Figure A-3A. Site LT-3: 1907 Fulton Street

Figure A-4. Site LT-4: 1016 N. Franklin Street

Figure A-5. Site LT-5: 710 W. North Avenue

Figure A-6. Site LT-6: 401 W. Commons

Figure A-7. Site LT-7: 301 Cedar Avenue

Figure A-8. Site LT-8: 100 Anderson Street

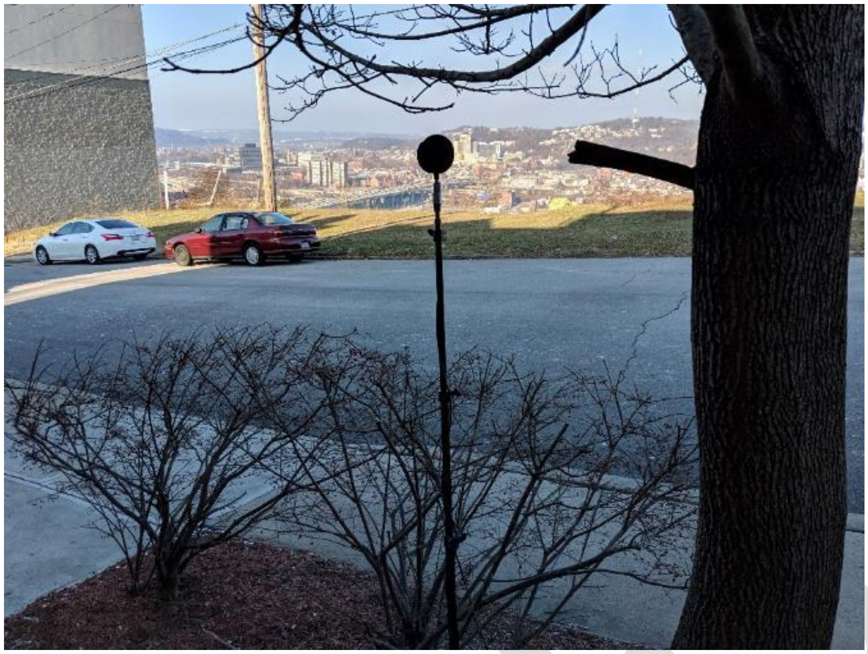


Figure A-9. Site LT-9: 1846 Arcena Street

Figure A-10. Site LT-10: 2630 Brereton Street

Figure A-11. Site LT-11: 3415 Flavian Street

Figure A-12. Site LT-12: 3811 Fleetwood Street

Figure A-13. Site LT-13: 4732 Juniper Street

Figure A-14. Site LT-14: 15 Hemingway Street

Figure A-15. Site LT-15: 5445 Potter Street

Figure A-16. Site LT-16: 205 Lehigh Avenue

Figure A-17. Site LT-17: 6736 Simonton Street

Figure A-18. Site LT-18: 7357 Finance Street

Figure A-19. Site LT-19: 444 Ross Avenue

Figure A-20. Site LT-20: 1 Pennwood Avenue

Figure A-21. Site LT-21: Park Avenue

Figure A-22. Site LT-22: McKim Street

Figure A-23. Site LT-23: 504 Hawkins Avenue

Figure A-24. Site LT-24: 431 Verona Street

Figure A-25. Site LT-25: 300 Main Street

Figure A-26. Site ST-2: 1000 Ft. Duquesne Boulevard

Figure A-27. Site ST-3: 2901 Liberty Avenue

A.2 Vibration Measurement Locations

Figure A-4A. Site LT-4: 1016 N. Franklin Street

Figure A-15A. Site LT-15: 5445 Potter Street

Figure A-20A. Site LT-20: 1 Pennwood Avenue

Figure A-21A. Site LT-21: Park Avenue

Figure A-24A. Site LT-24: 431 Verona Street

Figure A-26A. Site ST-02: 1000 Ft. Duquesne Boulevard

Figure A-28. Site ST-06: 7051 Thomas Boulevard

Figure A-29. Site ST-26: Iron Deer Playground at Allegheny Commons Park West

Appendix B Long Term Noise Measurement Data

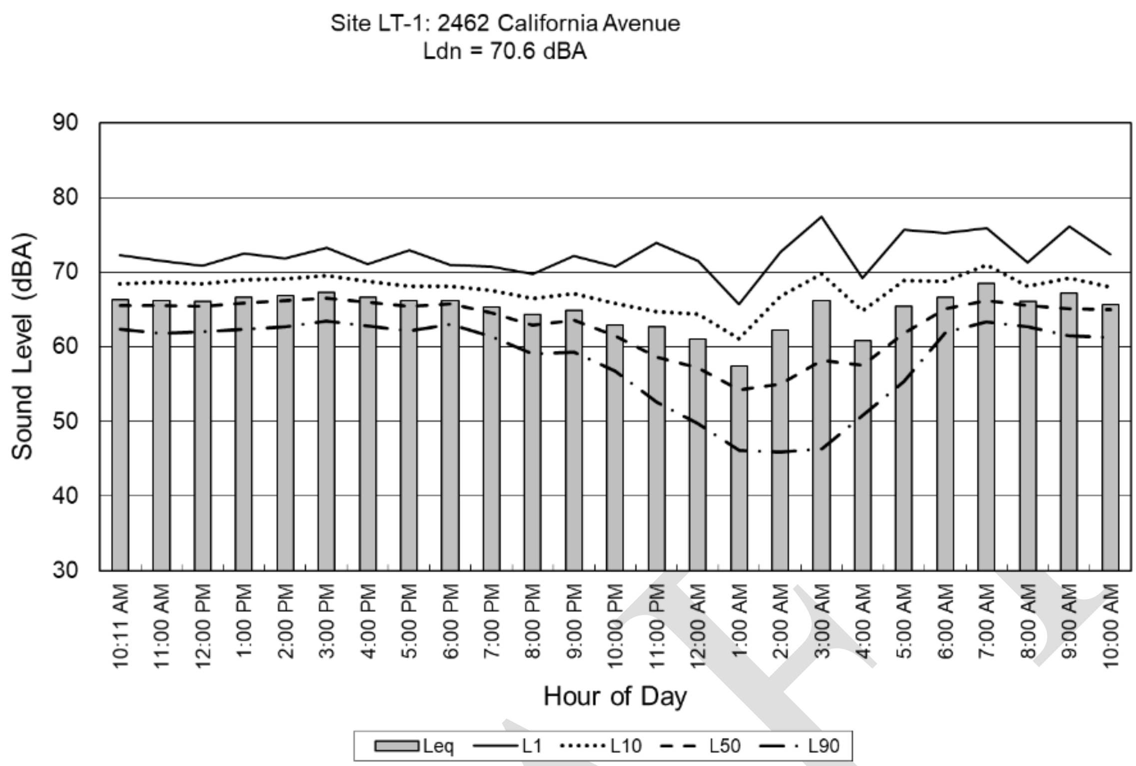


Figure B-1. Site LT-01 Time History Chart

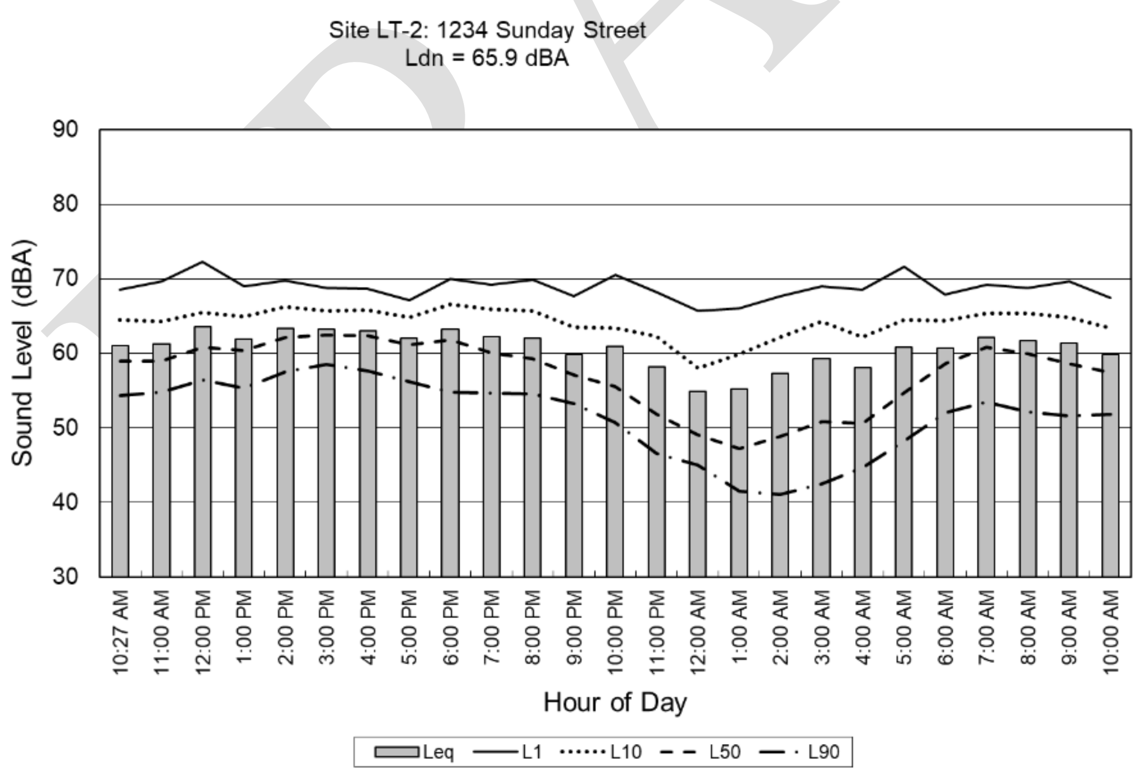


Figure B-2. Site LT-02 Time History Chart

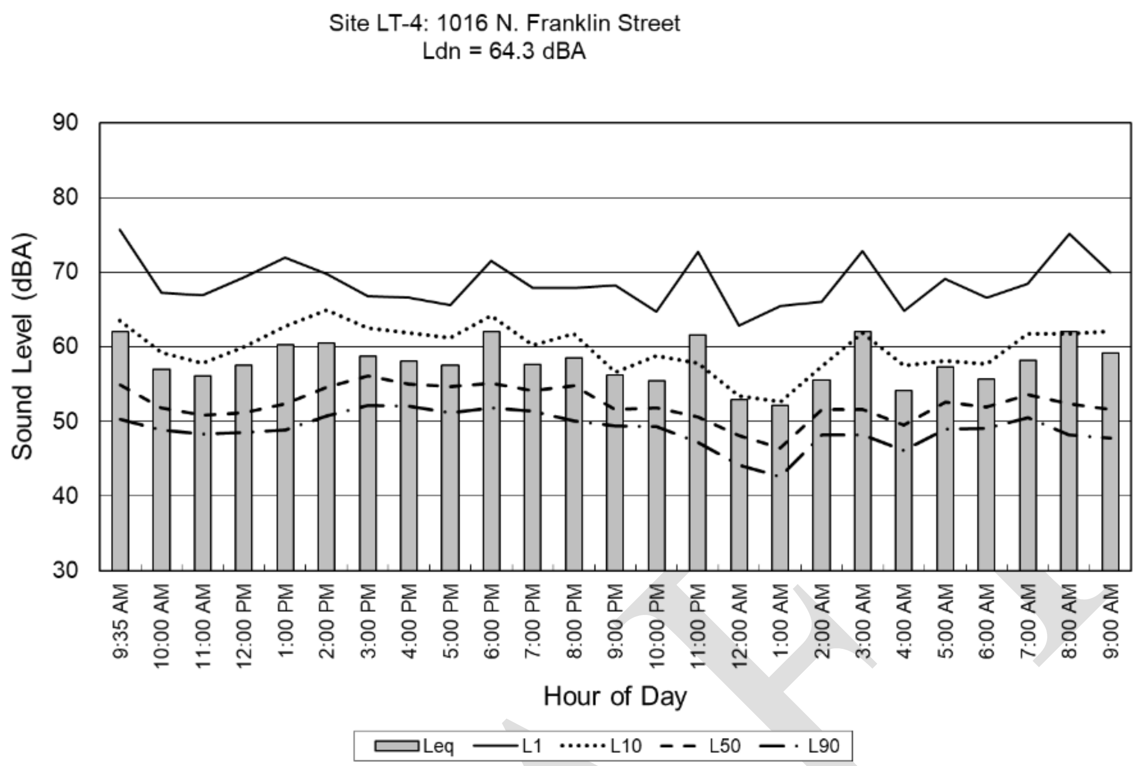


Figure B-3. Site LT-04 Time History Chart

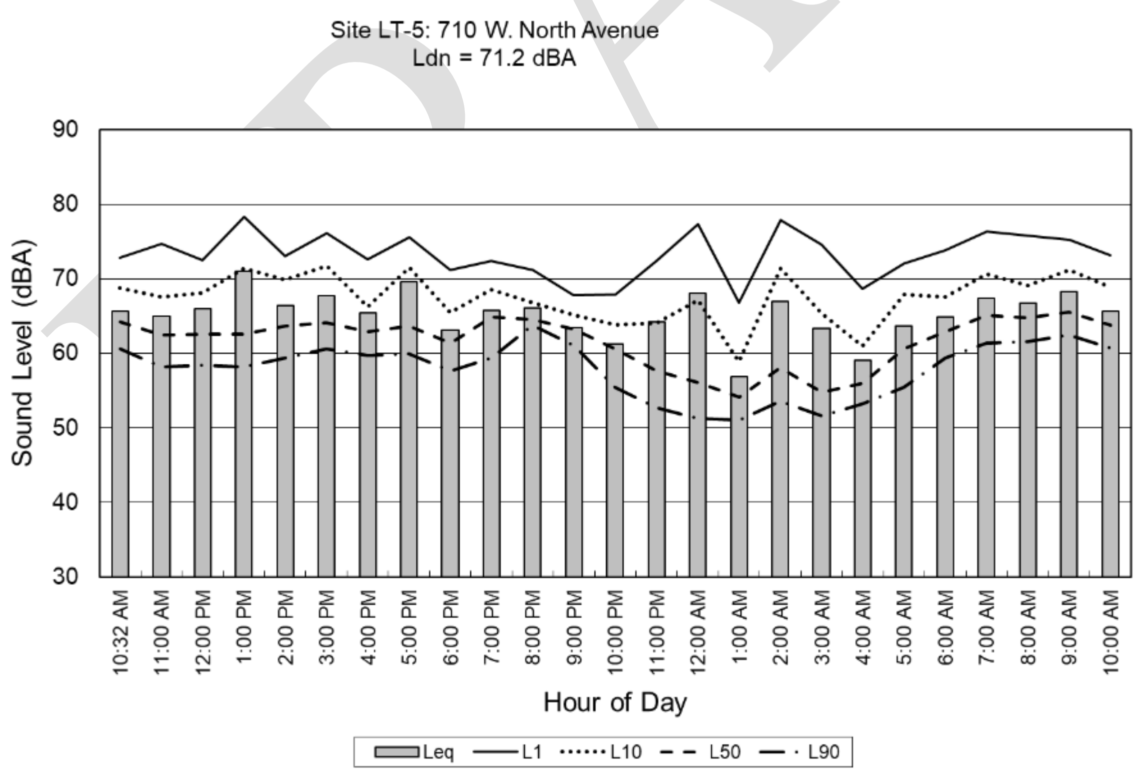


Figure B-4. Site LT-05 Time History Chart

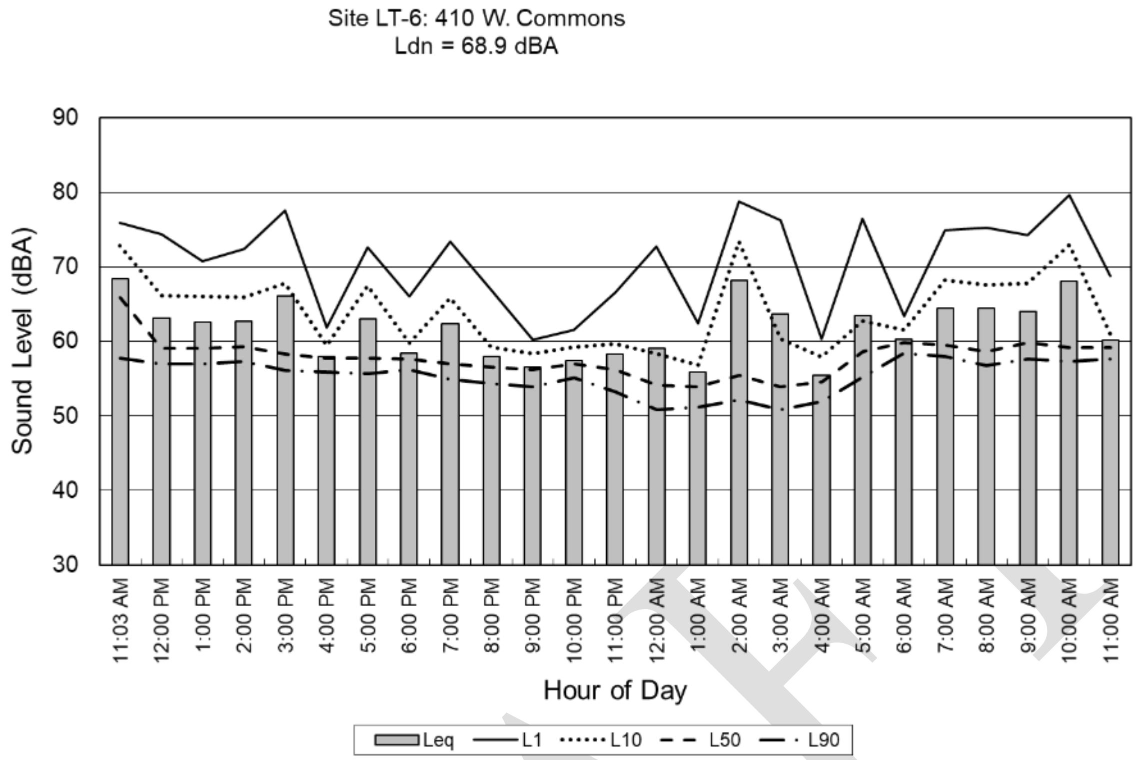


Figure B-5. Site LT-06 Time History Chart

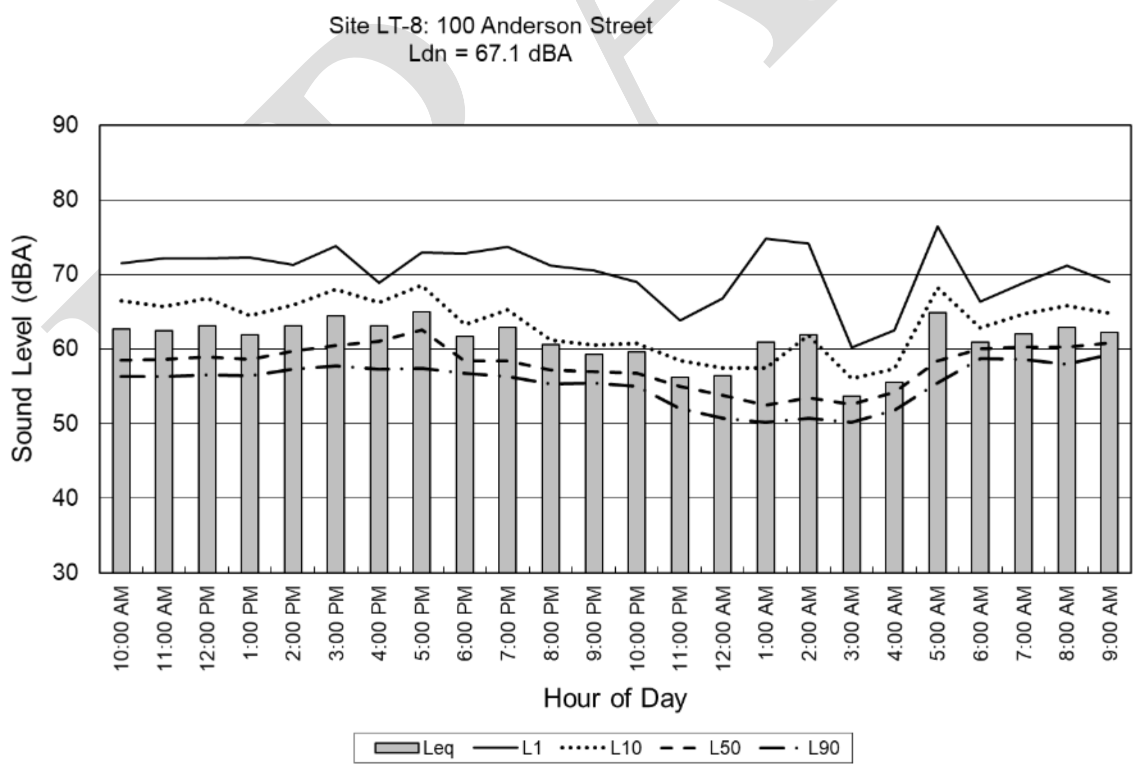


Figure B-6. Site LT-08 Time History Chart

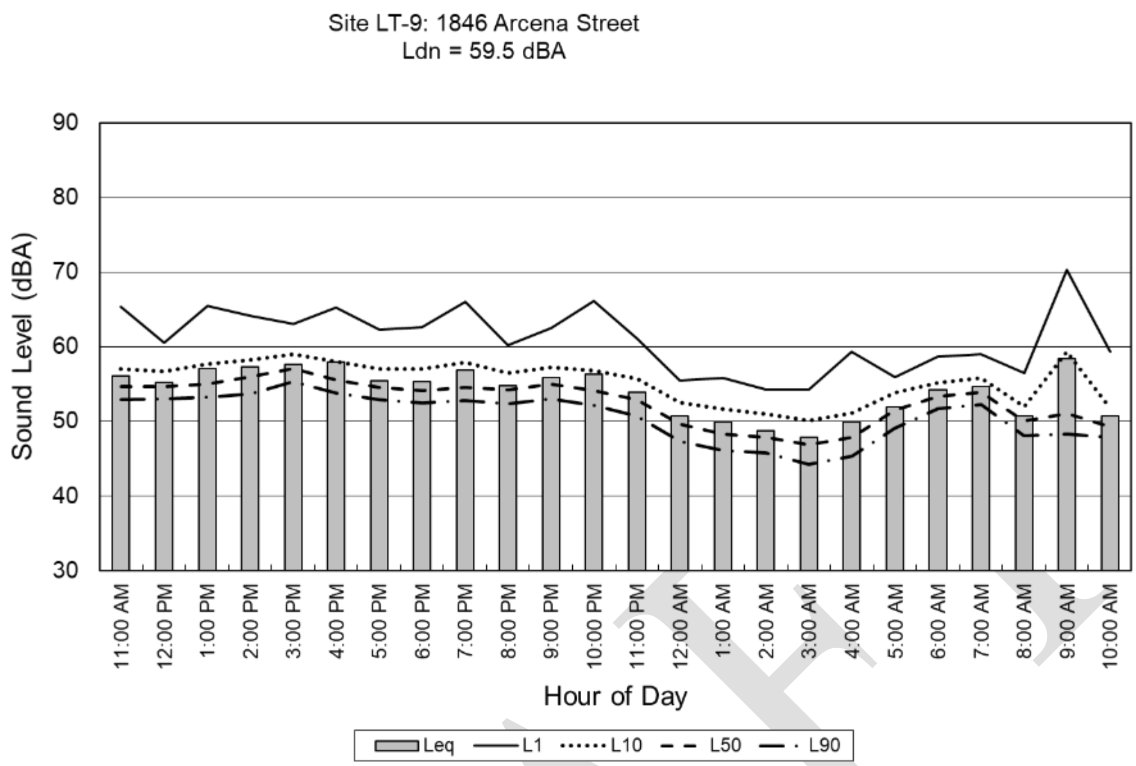


Figure B-7. Site LT-09 Time History Chart

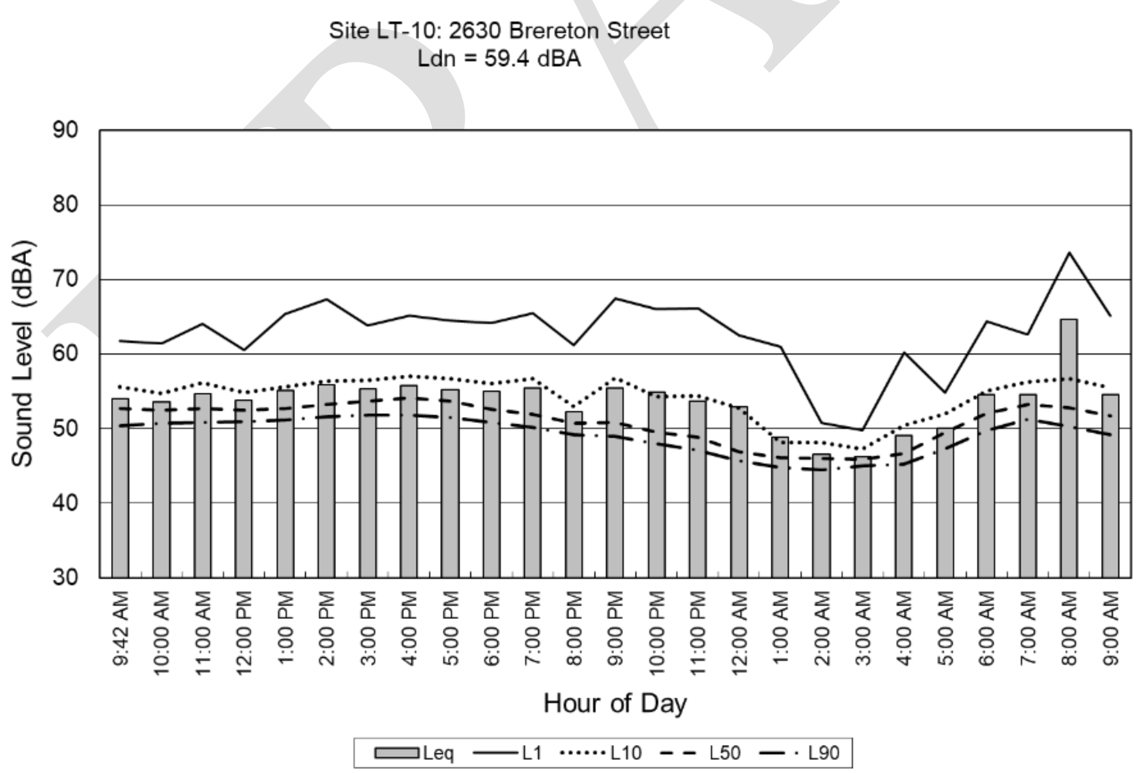


Figure B-8. Site LT-10 Time History Chart

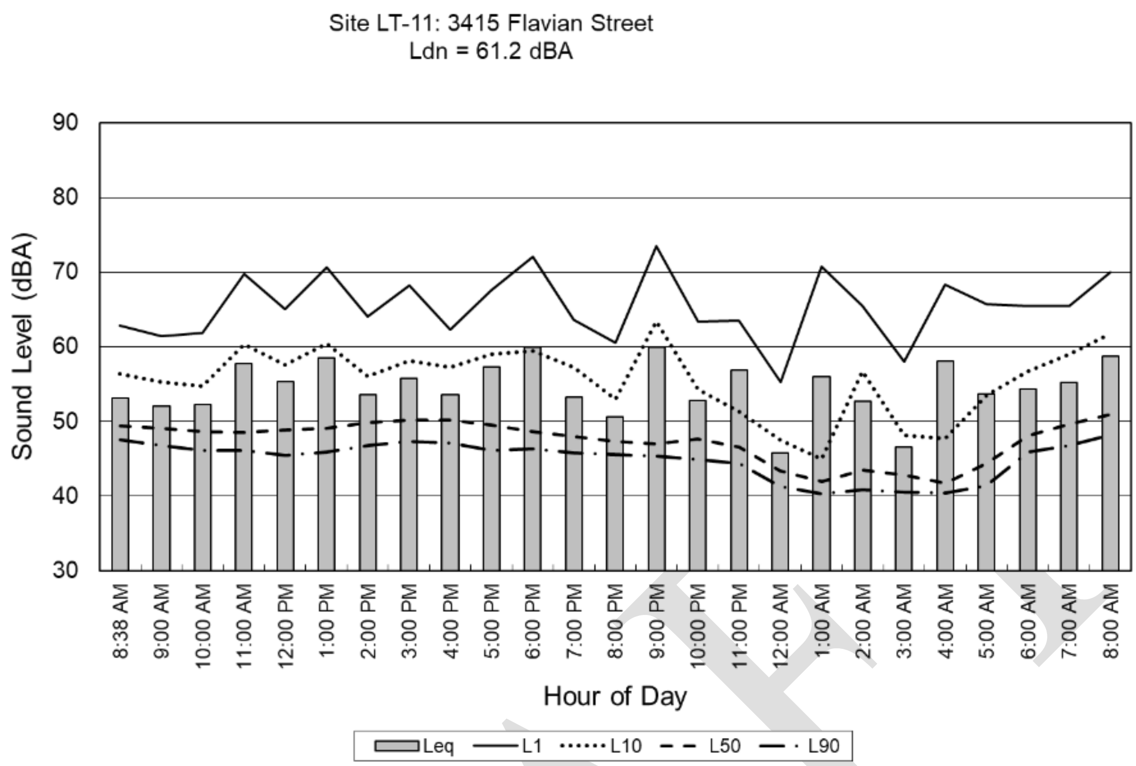


Figure B-9. Site LT-11 Time History Chart

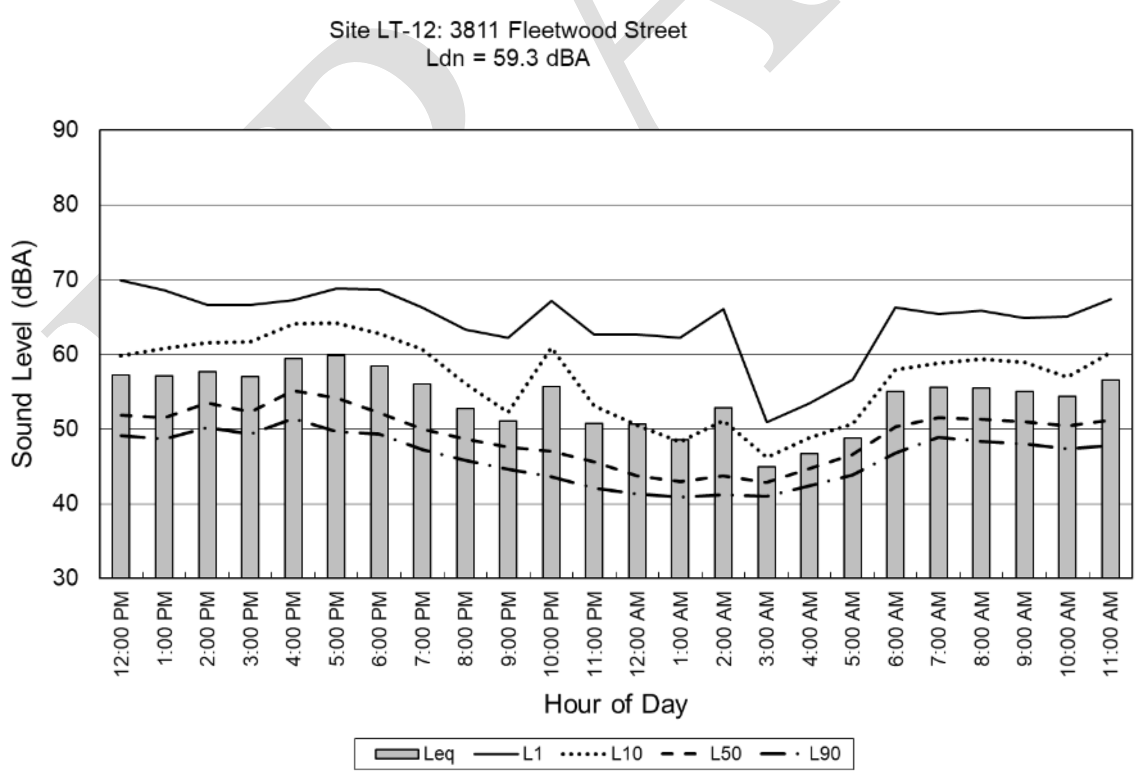


Figure B-10. Site LT-12 Time History Chart

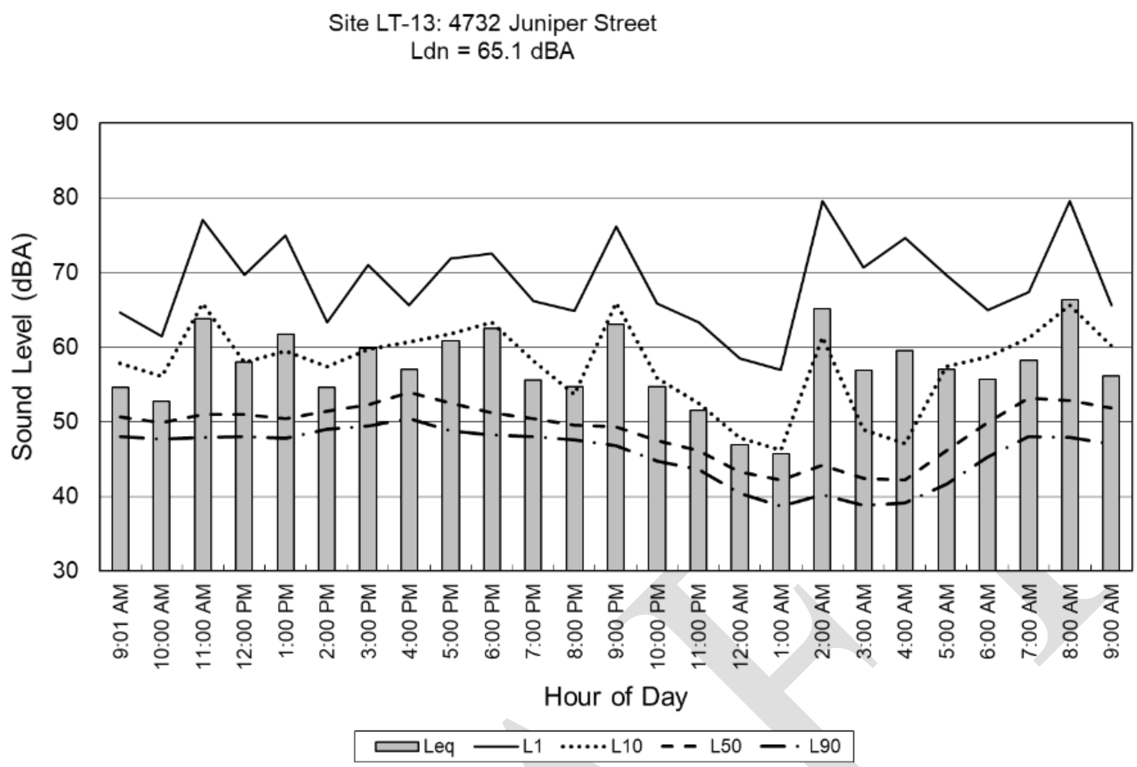


Figure B-11. Site LT-13 Time History Chart

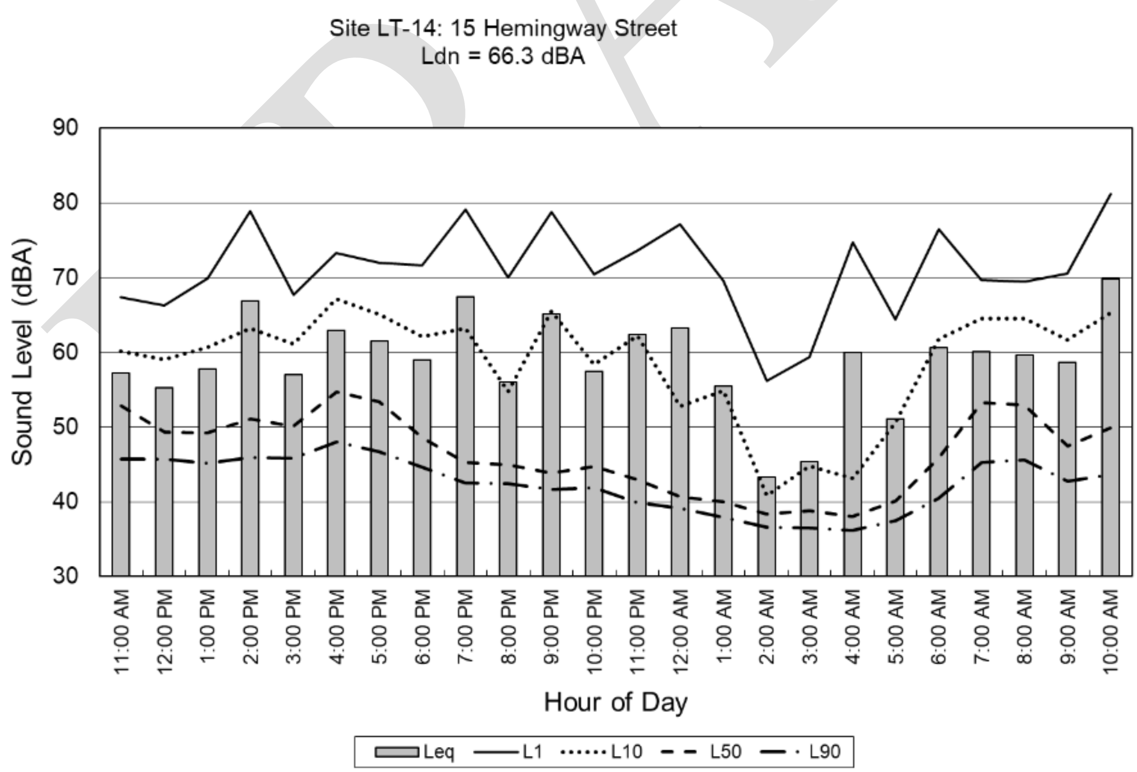


Figure B-12. Site LT-14 Time History Chart

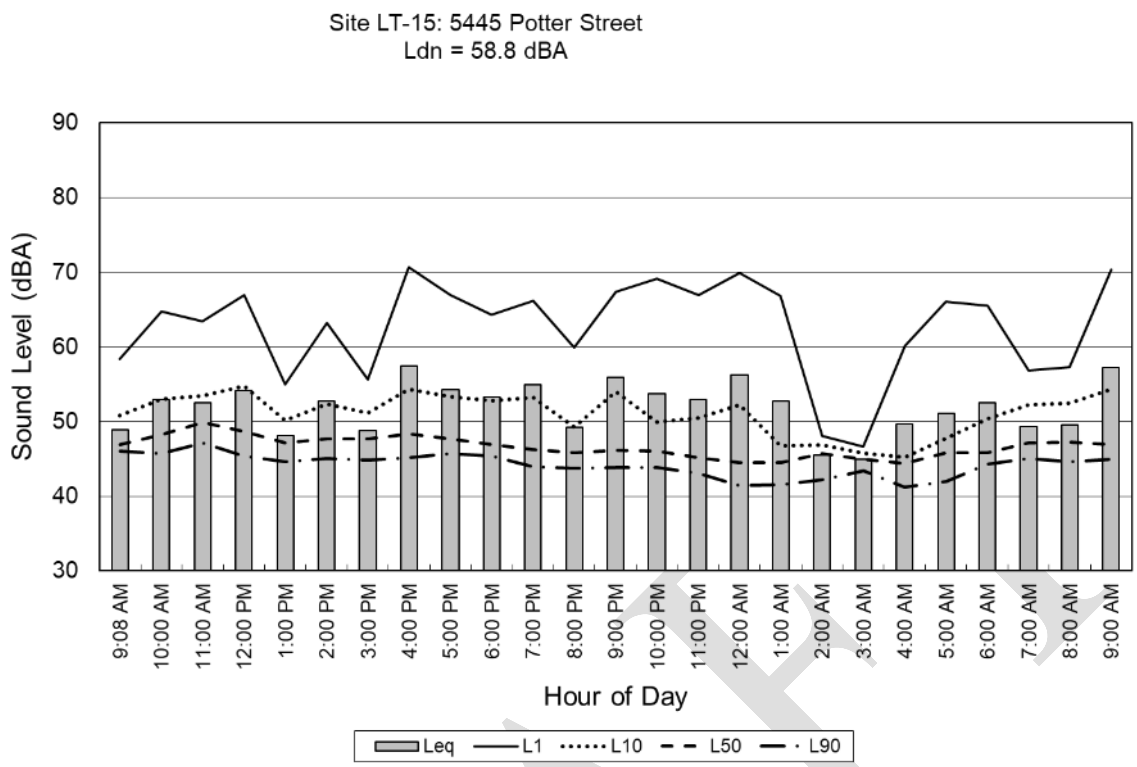


Figure B-13. Site LT-15 Time History Chart

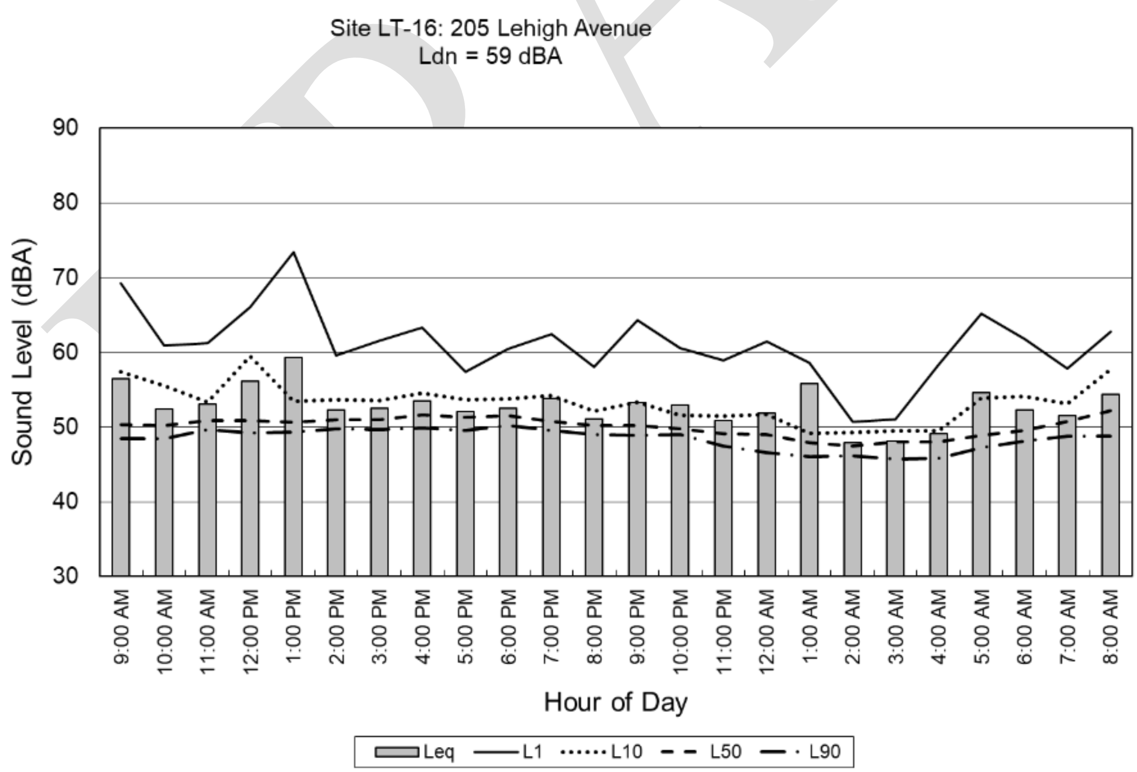


Figure B-14. Site LT-16 Time History Chart

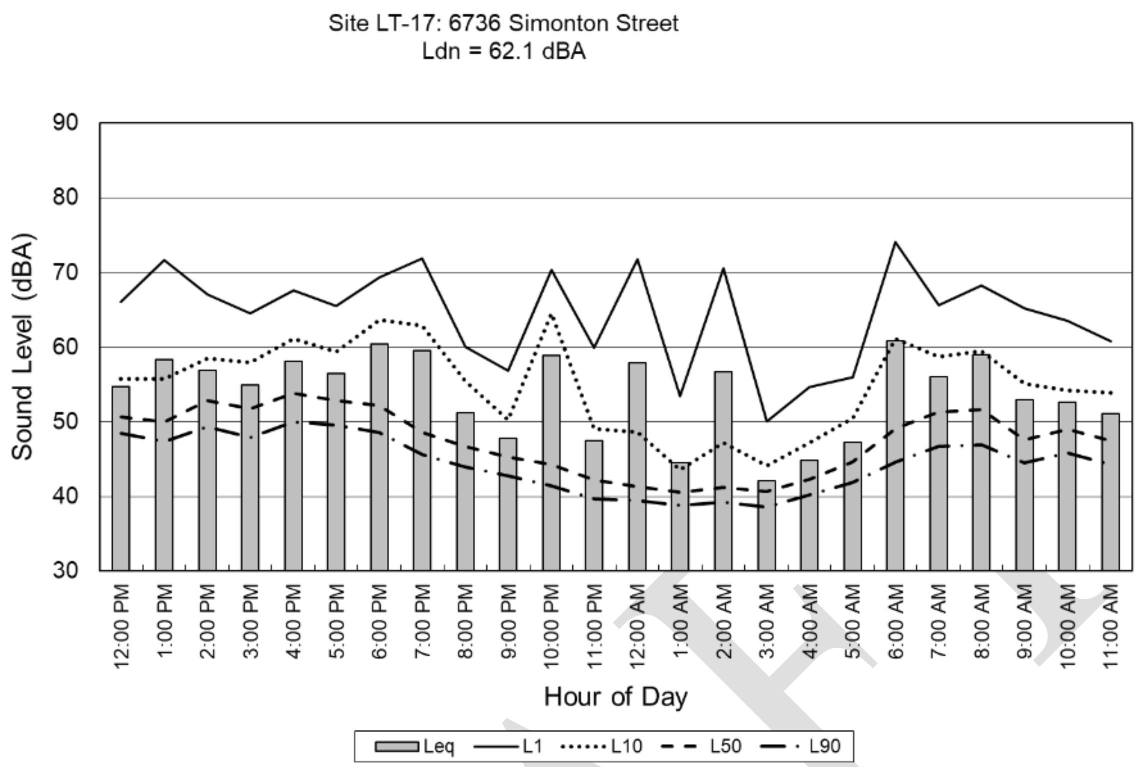


Figure B-15. Site LT-17 Time History Chart

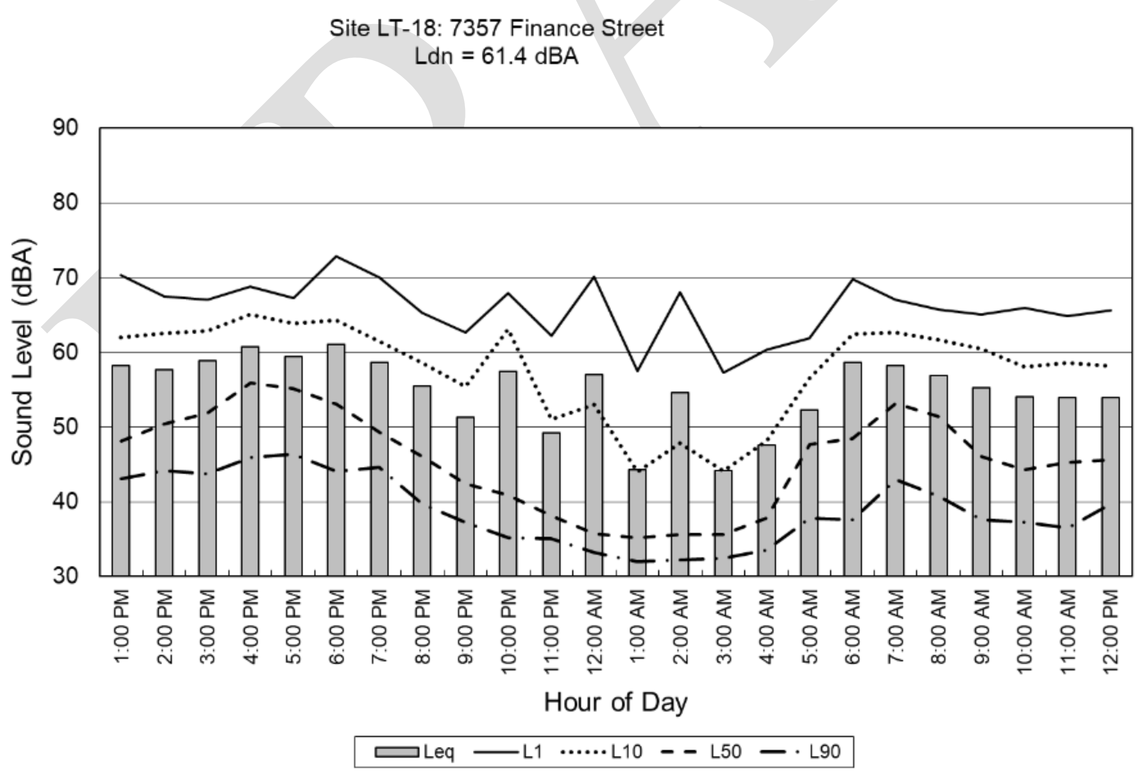


Figure B-16. Site LT-18 Time History Chart

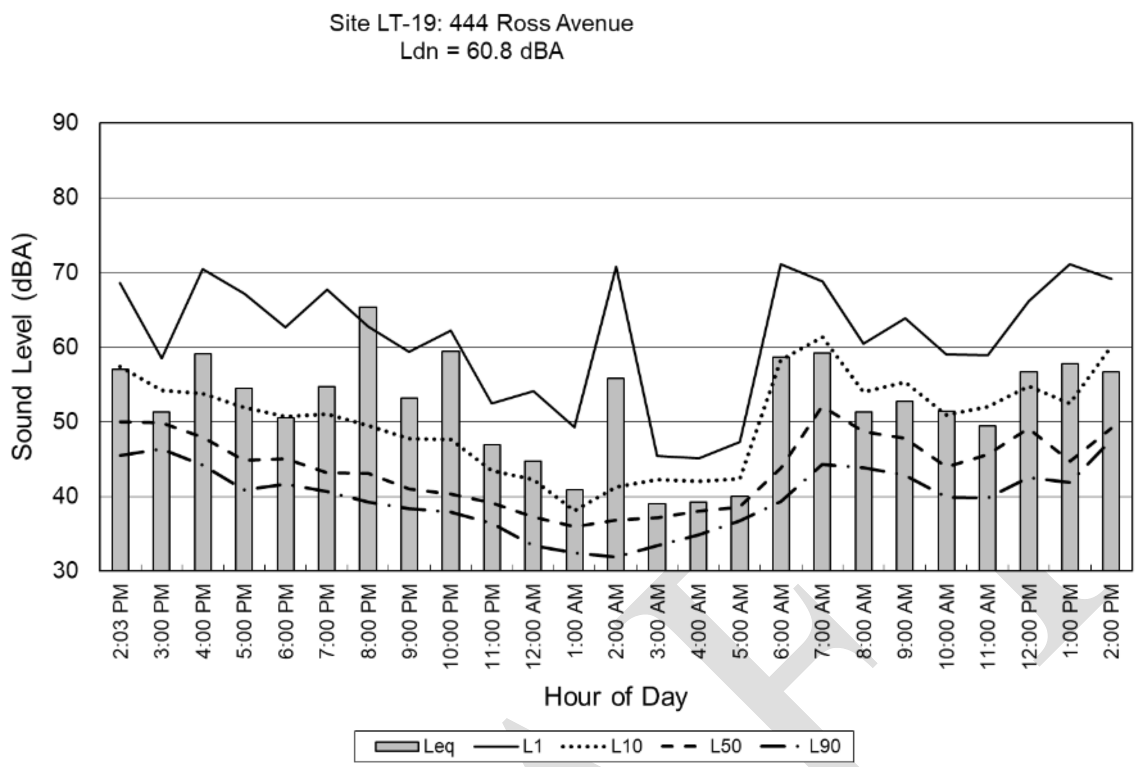


Figure B-17. Site LT-19 Time History Chart

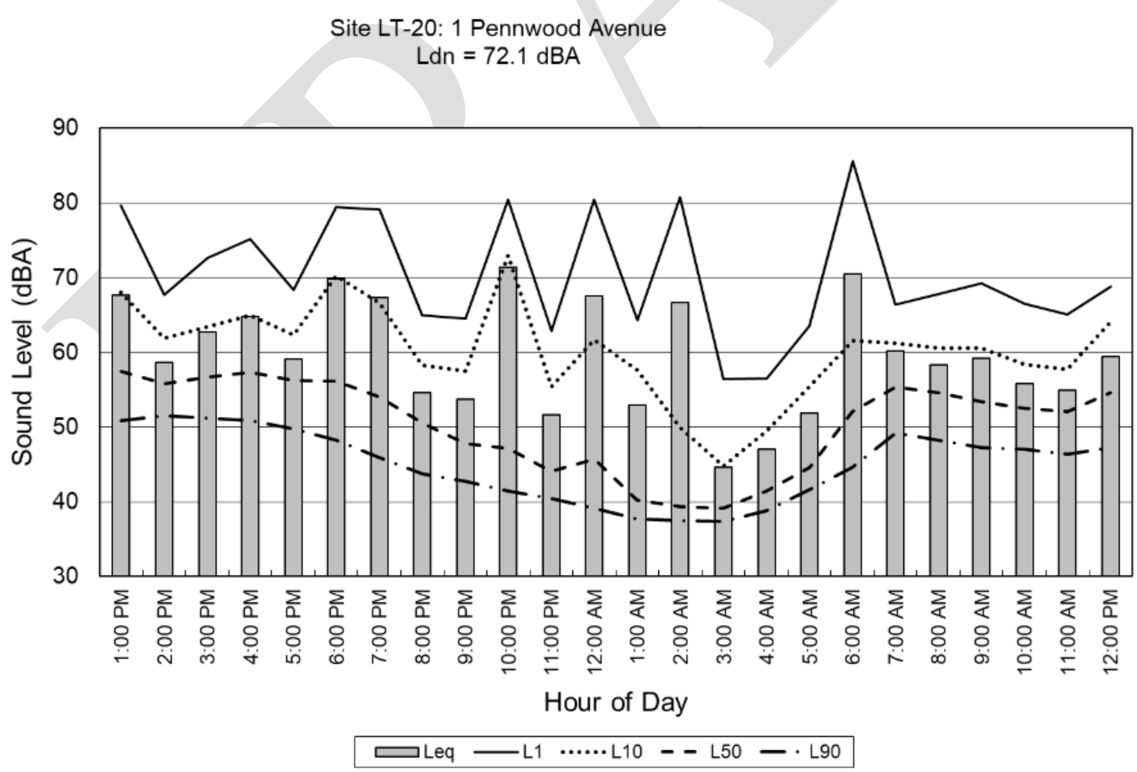


Figure B-18. Site LT-20 Time History Chart

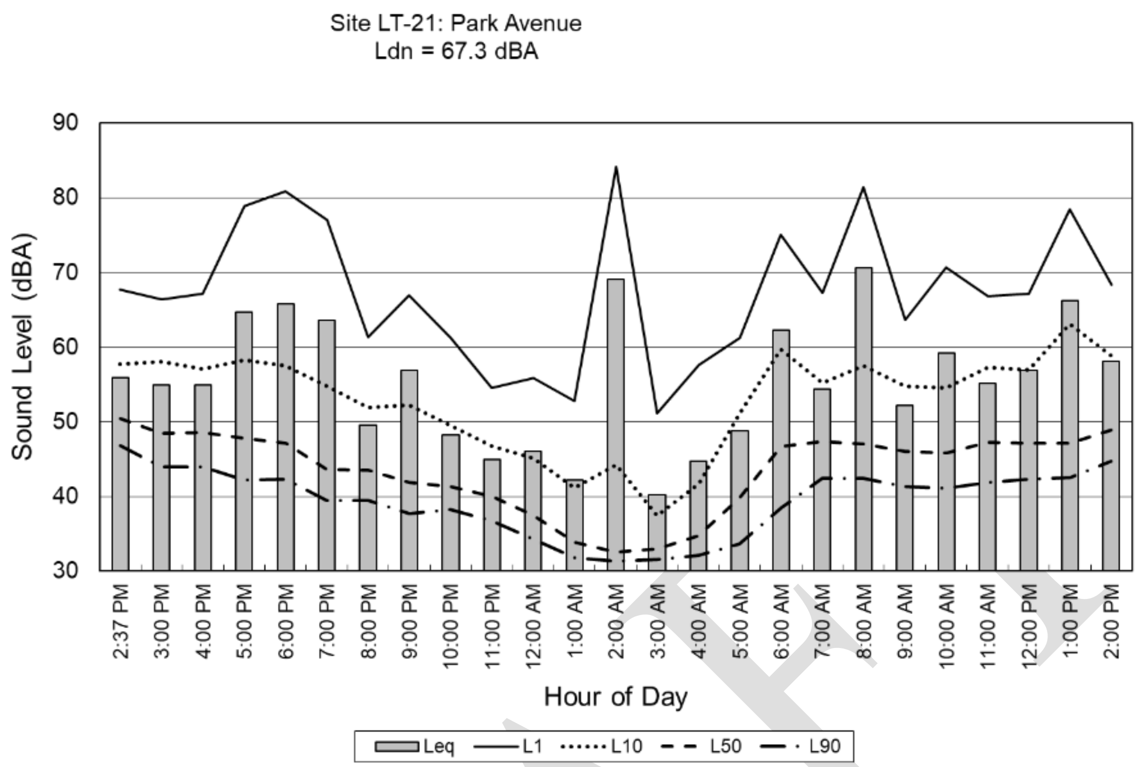


Figure B-19. Site LT-21 Time History Chart

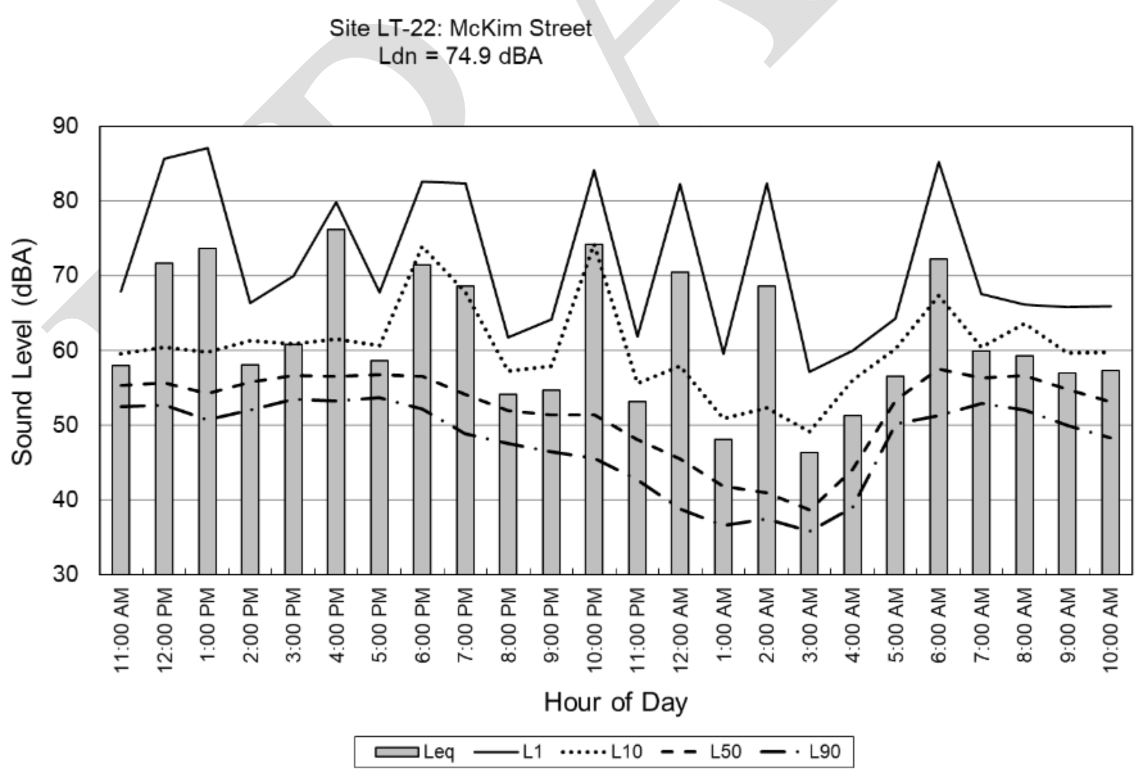


Figure B-20. Site LT-22Time History Chart

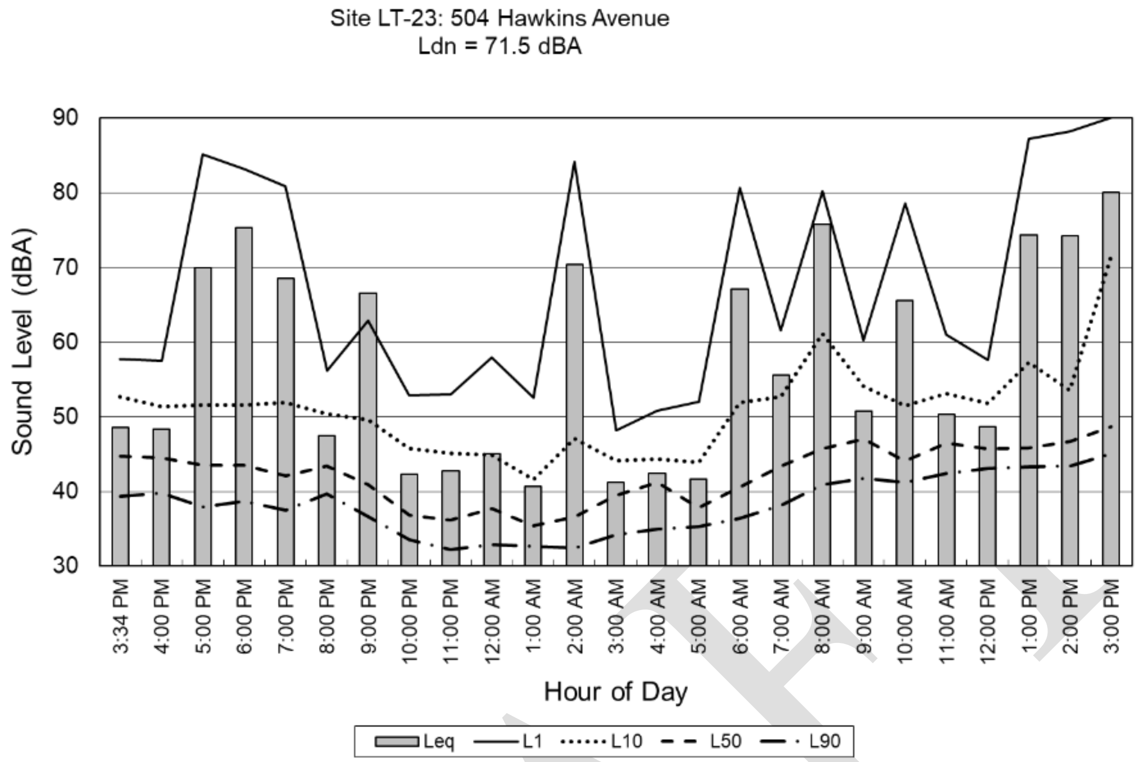


Figure B-21. Site LT-23 Time History Chart

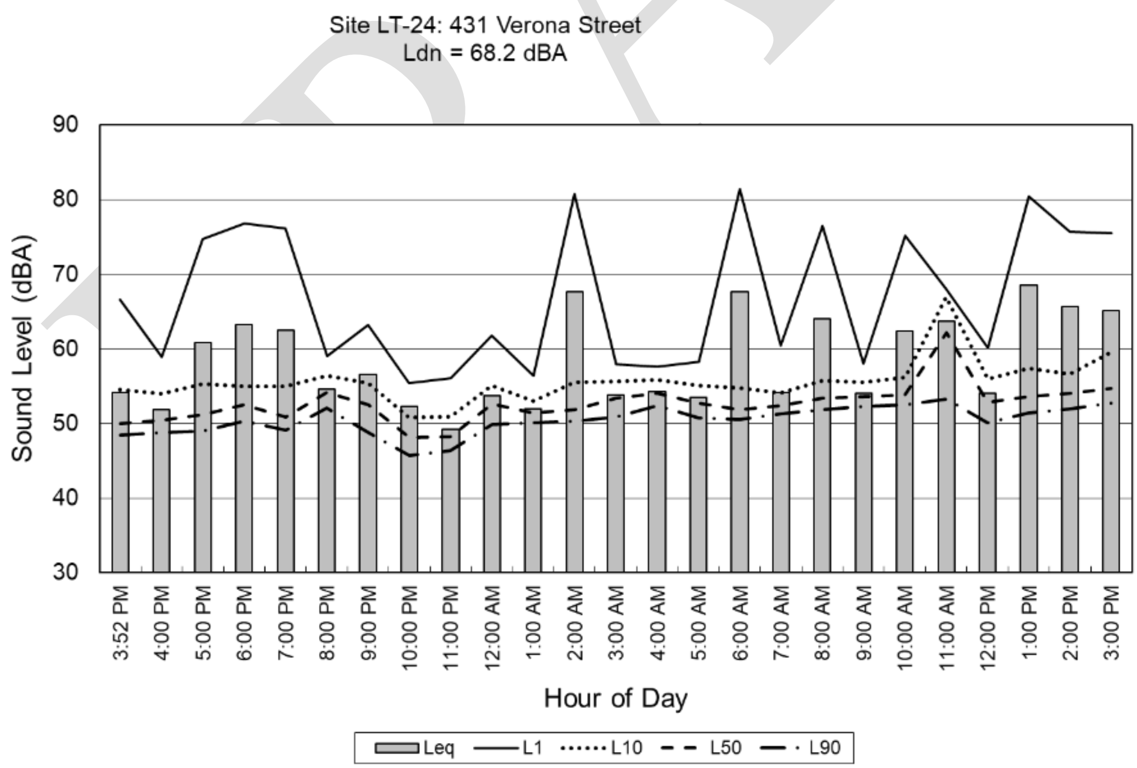


Figure B-22. Site LT-24 Time History Chart

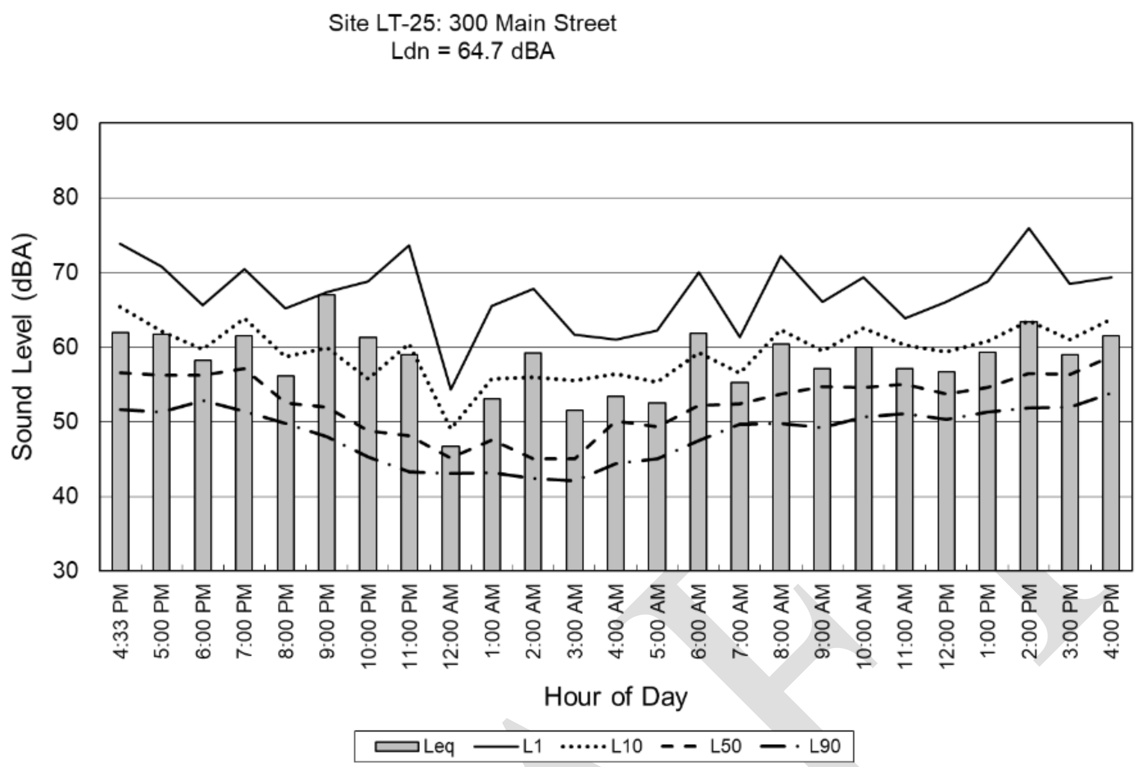


Figure B-23. Site LT-25 Time History Chart

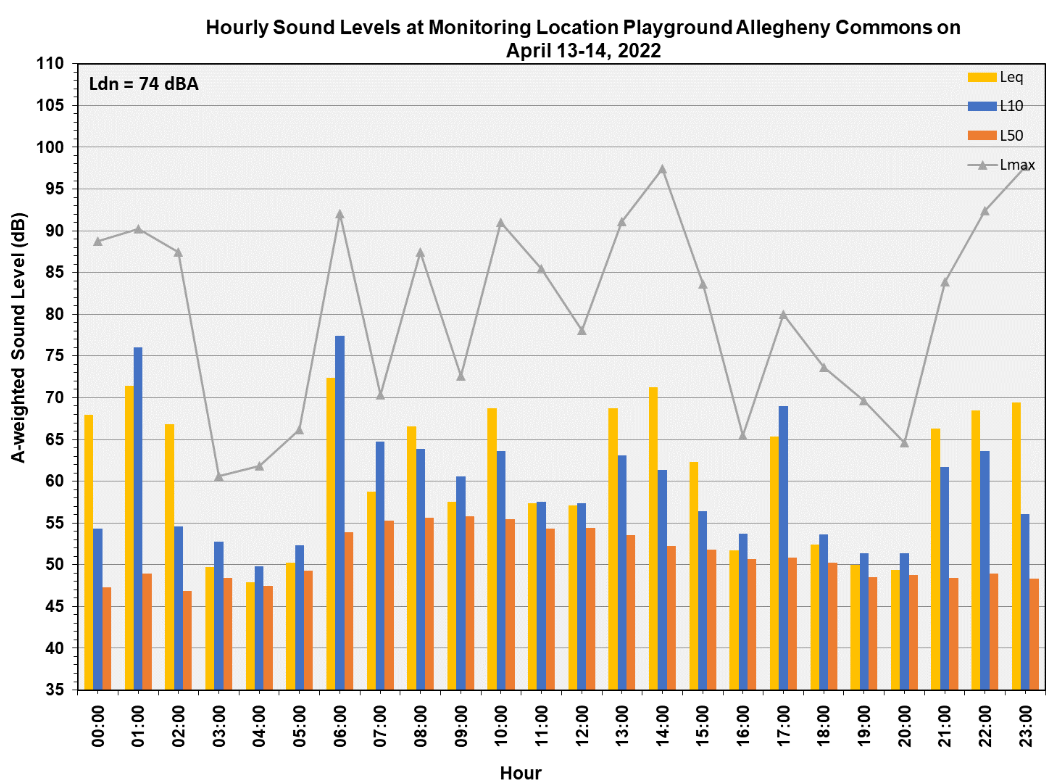


Figure B-24. Site LT-26 Time History Chart

Appendix D

Documentation of Public Involvement

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NORFOLK SOUTHERN

Michael Baker INTERNATIONAL

Pittsburgh Vertical Clearance Project
City of Pittsburgh, Boroughs of Swissvale, Braddock and North Braddock
Allegheny County
Public Open House #1

SUMMARY

Meeting held Tuesday, June 26, 2018
Children's Museum of Pittsburgh - 10 Children's Way,
Pittsburgh, PA 15212
5:00-8:00 PM

OVERVIEW

A public open house was held at the Children's Museum of Pittsburgh between the hours of 5:00 PM and 8:00 PM on June 26, 2018. A Public Officials' preview of the meeting materials was held from 5:00 PM to 5:30 PM and the doors were open for public participation from 6:00 pm to 8:00 PM. The format of the meeting was an open house plans display consistent with PennDOT Publication 295 guidance and was approved by PennDOT and the City of Pittsburgh. The purpose of the open house was to introduce the public to a set of projects involving modifications at nine (9) locations along the Norfolk Southern Railway Company railroad corridor. The public was invited to comment concerning alternatives and potential resources for evaluation arising from the project alternatives. Information gained during this open house will be used for scoping and development of the appropriate environmental analysis of effects and documentation under State History Code and Section 2002/Commonwealth of Pennsylvania Act 120, and related regulations.

The public open house was advertised in two (2) different publications – the Northside Chronicle and the Pittsburgh Post-Gazette. In addition, the Northside community published information on various neighborhood Facebook pages and sent multiple email blasts. Letters were sent to public officials and community members in the project area (see complete list in this packet).

Present were representatives from Norfolk Southern Railway Company (NSRC) and its consultants (Michael Baker International [Michael Baker], Urban Engineers, and WSP) and outside counsel (Earth and Water Group); Pennsylvania Department of Transportation (PennDOT) and its consultant (JMT); and the City of Pittsburgh.

1

NORFOLK SOUTHERN	MICHAEL BAKER	PENNDOT
Rudy Husband	Kirsten Bowen	Cheryl Moon-Sirianni
Mike Wigley	Tim Zinn	Mark Young
Todd Willoughby	Justin Greenawalt	David Conrad
Neal Brown	Jesse Belfast	David Anthony
Shawn Starling	Joe Passmore	**JMT**
Kevin Hauschildt	Ted Coffey	Jen Granger
Jonathan Hocker	Dennis Plitt	Lisa Cooper
Ben Taggart	Greg Cerminara	
Jonathan Glass	Wendy Berrill	**CITY OF PITTSBURGH**
WSP	Justin Bouscher	Karina Ricks
Doug Lang	Clayton Fisher	Michael Panzitta
Urban Engineers	Joe Hall	Robert Michalko
Greg May		
NSRC Outside Counsel - David Moore, Earth and Water Group		

MATERIALS & SIGN-IN

Informational packets were handed out including an NSRC Pennsylvania Operations Fact Sheet and a comment form with a map of the projects and a brief description of the purpose of the projects.

The public open house displayed 26 boards that included:

- Welcome board
- Overall map of the projects
- Explanation of double stack train requirements
- 2 boards for PA History Code and process flow chart
- 9 boards showing areas of potential effects (APE) for the project locations
- 10 boards showing the various project locations using an aerial map
- 2 boards with preliminary alternatives for 2 of the project locations

The public was encouraged to sign in as they entered the open house. Upon sign-in, the attendees were provided with the packets of informational materials on the projects and invited to review the project display boards and ask questions or discuss with the company representatives. There was some confusion with the sign-in process, as there was an organized group of individuals with petitions at the entrance of the venue. As a result, many attendees believed this was the registration table, and it is possible we were unable to obtain names of all the attendees. It is estimated that 300-400 people attended the meeting. Most attendees were in and out of the meeting in the first 90 minutes, and so the allotted two hours for the public portion of the open house appears to have been adequate.

SUMMARY OF COMMENTS RECEIVED

Over 90 comment forms were received at the meeting, with additional comments received subsequently via USPS or email. The comments received to date are summarized in this packet. A list of frequently asked questions (FAQ) will be developed to clarify misinformation and answer common questions.

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Michael Baker
INTERNATIONAL

Appendix E

Documentation of Consulting Party Involvement

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Consulting Parties

HISTORIC PRESERVATION ORGANIZATIONS

Pennsylvania State Historic Preservation Office
Andrea MacDonald, Deputy State Historic Preservation Officer
Attn: Ms. Barbara Frederick
Commonwealth Keystone Building, Second Floor
400 North Street
Harrisburg, PA 17120
717-783-9920 (phone)
chnagle@pa.gov

Pittsburgh History and Landmarks Foundation
Frank Stroker
100 West Station Square Drive, Suite 450
Pittsburgh, PA 15219
412 471-5808 (phone) 412-471-1633 (FAX)
frank@phlf.org

Preservation Pittsburgh
Mr. Matthew W.C. Falcone, President
1501 Reedsdale Street, Suite 5003
Pittsburgh, PA 15233
412-417-5910 (phone)
mfalcone@preservationpgh.org

Rivers of Steel Heritage Corporation
The Bost Building
623 E. Eighth Avenue
Homestead, PA 15120
412-464-4020 (phone) 412-464-4417 (fax)
August R. Carlino, President & CEO
arcarlino@riversofsteel.com
Ron Baraff
rbaraff@riversofsteel.com

Allegheny West Civic Council
Mr. Robert Griewahn, President
806 Western Avenue
Pittsburgh, PA 15233
412-323-8884
Thomas Barbush
412-321-2161
Thomas.barbush@rrd.com

Allegheny Towne Corporation
George Kenderes
46 Foster Square
Pittsburgh, PA 15212
412-321-3140 (phone)
gkenderes@embarqmail.com

Mexican War Streets Society
Margaret M. Connor, President
P. O. Box 6588
Pittsburgh, PA 15212
412-480-8746
Connor.margaret.m@gmail.com

North Side Leadership Conference
Dana Fruzynski, Interim Executive Director
1319 Allegheny Avenue, Second Floor
Pittsburgh, PA 15233
412-231-4714 (Phone) 412-904-3828 (FAX)
dana@pittsburghnorthside.com

Pittsburgh Parks Conservancy
Erin Tobin, Community Engagement Manager
45 South 23rd Street, Suite 101
Pittsburgh, PA 15203
412-682-7275 (Phone) 412-622-0160 (FAX)
etobin@pittsburghparks.org
Brandon Riley
Briley@pittsburghparks.org

LOCAL GOVERNMENT

City of Pittsburgh, Department of City Planning
200 Ross Street, 4th Floor
Pittsburgh, PA 15219
Sarah Quinn, Preservation Planner
412-255-2243 (phone) 412-255-2561 (FAX)
Sarah.quinn@pittsburghpa.gov
Stephanie Joy Everett, Senior Planner
412-255-2256 (phone) 412-255-2838 (fax)
StephanieJoy.Everett@pittsburghpa.gov

City of Pittsburgh, Department of Mobility and Infrastructure
Kim Lucas, Director
414 Grant Street
Pittsburgh, PA 15219
412-255-2883
kimberly.lucas@pittsburghpa.gov
Eric Setzler
eric.setzler@pittsburghpa.gov
Doneisha Myers
doneisha.myers@pittsburghpa.gov

Pittsburgh City Council
The Honorable Bobby Wilson
Pittsburgh City Council District 1
Suite 510, Floor 5
414 Grant Street
Pittsburgh, PA 15219
412-255-2135 (phone) 412-255-2129 (fax)
Darlene.harris@pittsburghpa.gov

PROPERTY OWNERS BY PROJECT

Washington Street

Amtrak Station

W. North Avenue Bridge

900 Brighton Road
Allegheny West Civic Council
806 Western Avenue
Pittsburgh, PA 15233

913 Brighton Road
Robert I. and Carole E. Malakoff
913 Brighton Road
Pittsburgh, PA 15333-1707
412-321-3612 (phone)
carolemalakoff@hotmail.com

800 Beech Avenue
Annette C. Trunzo
800 Beech Avenue
Pittsburgh, PA 15233-1704
act1@pitt.edu
412-606-6312 (phone)

814 Beech Avenue
Margaret S. McNamara
814 Beech Avenue
Pittsburgh, PA 15233-1704
412-913-5934 (phone)
Mmcnamara815@gmail.com

800-814 Beech Avenue
West Park Renaissance, LP
1315 Arch Street
Pittsburgh, PA 15212
Todd Palcic
724-318-5577 (phone)
pghlofts@gmail.com; tpalcic@tharprocess.com

825-845 W. North Avenue
Gramax, LLC
831 W. North Avenue
Pittsburgh, PA 15233-1616
Mitchell Schwartz
Mitchell@smarterguys.com
Elaine Stone
Elaine.stone@smarterguys.com
412-996-7408 (phone)

810 W. North Avenue
810 W. North Ave Associates, LP
Q Development
1008 Brianna Lane

Bethel Park, PA 15102-3795
Rick Belloli and Doug Duerr
412-805-5153 (phone)
Rick@qdevelopment.com
Doug@qdevelopment.com

828 W. North Avenue
828 W. North Ave Associates, LP
Q Development
1008 Brianna Lane
Bethel Park, PA 15102-3795
Rick Belloli and Doug Duerr
412-805-5153 (phone)
Rick@qdevelopment.com
Doug@qdevelopment.com

840 W. North Avenue
Stables Development, LP
P. O. Box 99938
Pittsburgh, PA 15233-0938
Andrew Reichert
areichert@gorealtyco.com

1214 Brighton Road
Ellyn, Inc.
1244 Resaca Place
Pittsburgh, PA 15212-4519
Elise and Charles Yanders
Yanders_family@msn.com
412-322-0482 (phone)

1216 Brighton Road
Ellyn, Inc.
1244 Resaca Place
Pittsburgh, PA 15212-4519
Elise and Charles Yanders
candeymanagement@msn.com
412-322-0482 (phone)

Pennsylvania Avenue Bridge

817-825 Pennsylvania Avenue
North Side Scrap Metals, Inc.
P. O. Box 100016
Pittsburgh, PA 15233-0016
Martin Warhola
412-321-9991 (phone) 412-321-2058 (fax)
Mistermagoo232@gmail.com

ADDITIONAL RESPONSES RECEIVED

Rail Pollution Protection Pittsburgh (RP3)
Glenn Olcerst
Barbara Talerico
1200 Resaca Place
Pittsburgh, PA 15212
glennolcerst@gmail.com
bjtalerico12@gmail.com
412-999-2539 (phone)

Pittsburghers for Public Transit
Alison Keating
5119 Penn Avenue
Pittsburgh, PA 15224
412-606-1286 (Phone)
keatinga@yahoo.com

Columbus Avenue Bridge

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Michael Baker
INTERNATIONAL

Consulting Parties Meeting #1

Meeting Minutes, Sign-In Sheets, and Presentation

Pittsburgh Vertical Clearance Projects

NORFOLK SOUTHERN

Date: November 2019

Project:	Norfolk Southern Railway Company (Norfolk Southern) **Pittsburgh Vertical Clearance Projects**	**Date:**	Wednesday, November 20, 2019
Subject:	Consulting Party Meeting 1	**Time:**	7:30 PM
By:	Michael Baker International (Michael Baker) / Norfolk Southern	**Place:**	Calvary United Methodist Church 971 Beech Avenue Pittsburgh, PA

Attendees: (See attached sign-in sheet, Attachment A)

Tim Zinn (Michael Baker) opened the meeting and welcomed attendees to the Pittsburgh Vertical Clearance Projects Consulting Party Meeting No. 1. He requested that the attendees sign in and obtain a copy of the meeting handout (process flowchart) and the Pennsylvania State Historic Preservation Office (PA SHPO) concurrence letter on identification of historic properties dated November 8, 2019. Following the welcome, Tim introduced the project team and consulting parties.

Presentation:
The following meeting notes record questions and comments from attendees and indicate at which point in the presentation they were received. For a summary of the meeting, please review the corresponding presentation included in Attachment B.

Consulting Parties to Date

- Barbara Talerico (RP3) asked if West Park Towers had been asked to be a consulting party. Tim Zinn (Michael Baker) responded that as a property owner they had been contacted and are also included as a project stakeholder and noted that the West Park Tower building is not historic. Cheryl Nagle (PA SHPO) clarified that individuals do not have to have an interest in historic properties to be a consulting party.

Project Purpose and Need

- Barbara Talerico (RP3) asked if next to "safety" the word "health" could be added to the Purpose and Need Statement. Amy Pinizzotto (Michael Baker) replied that the Purpose and Need Statement has already been approved, but we will look into it.

Studies and Reports

- Doug Duerr (Property Owner) inquired about how adverse effects to specific properties are resolved and if MOAs would be established at the property level. Cheryl Nagle (PA SHPO) responded that mitigation does not take the form of compensation to individual property owners, and that mitigation usually takes the form of broad programs that will benefit a large number of historic resources. It all depends on the adverse effect.
- Tim Zinn (Michael Baker) added that under avoidance and minimization efforts, tweaks to the project design can potentially be made that will eliminate or lessen effects on historic properties.

Terms & Definitions--Historic Property

- Cheryl Nagle (PA SHPO) clarified that National Register of Historic Places (NRHP)-listed or -eligible properties are treated the same way in the compliance process.

1

Washington Avenue

- No discussion

Amtrak Station

- Cheryl Nagle (PA SHPO) concurred (November 8, 2019, letter) that the Union Station train shed contributes to the railroad corridor historic district and is individually listed in the NRHP as part of the train station. The station's period of significance should be revised to 1898-1958.

W North Avenue

Contributing Features of the Pennsylvania Railroad: Mainline (Pittsburgh to Ohio State Line) project segment

- Glenn Olcerst (RP3) noted that a contributing feature, the signal bridge next to the W. North Avenue Bridge, has been removed, as was a section of the decorative wrought-iron railing atop the retaining walls in the Allegheny Commons Historic District. The iron fence was replaced with chain-link fencing. Rudy Husband (Norfolk Southern) replied that the current fence is temporary and that an appropriate fence will be installed with this project.
- John DeSantis (Property Owner) questioned the APE for the W. North Avenue Project and averred that the project's purpose of providing for double-stack clearance will result in increased vertical clearance/taller trains, increased rail traffic and noise, and will not be limited to just the area of Allegheny Commons noted within the APE but stretch all the way to Merchant Street Bridge. Mr. DeSantis asserted that PennDOT, for other transportation projects, specifically highway projects, considers impacts along an entire corridor when increases in traffic are anticipated, such as noise walls along sensitive properties. Mr. DeSantis believed all of Allegheny Commons should be included in the APE. Cheryl Nagle (PA SHPO) indicated that should mitigation efforts be required for an adverse effect on Allegheny Commons, the team would consider the entire NRHP boundary of the historic district and the mitigation efforts may address the entire affected area. Cheryl Nagle (PA SHPO) noted that mitigation can come in many forms as the consulting parties and the agency decide would be appropriate to mitigate adverse effects to historic properties.
- Glenn Olcerst (RP3) requested the JMT report and asserted that we need to consider the impact of the bridge in addition to the effects of the traffic, noise, and visual pollution.
- John DeSantis (Property Owner) asked that consulting parties be provided information on the alternatives for the specific projectas well as alternatives specifically justifying the improvements on this line. Specifically, Mr. DeSantis requested:
    - Alternatives for track lowering
    - Alternatives for modifying structures on this line versus the other line through Pittsburgh
    - Access to the report(s) for alternatives Norfolk Southern and PennDOT prepared justifying the need for the bridge project at W. North Avenue, the need for other projects along the Pittsburgh line, and the need for the project in general.
    - Mr. DeSantis noted that the project team should consider all effects and modify the timetable to finalize reports and release for review.

  Tim Zinn (Michael Baker) explained that the focus of this meeting was to discuss impact to historic properties and that alternatives for each of the bridge structures would be presented and discussed at the next consulting party meeting.

Pennsylvania Avenue

- No discussion

Columbus Avanue

- No discussion

Ohio Connecting (OC) Bridge Flyovers

- No discussion

Draft Historic Bridge Rehabilitation Analysis Report—W. North Avenue Bridge
Discussion of Options A and B

- Tom Barbush (Allegheny West Civic Council) asked if Options A and B would change the line-of-sight by the same amount. Jesse Belfast (Michael Baker) confirmed that the line-of-sight would remain the same under both options as the difference between the two options only pertains to the surface treatment of the outside girders.
- Glenn Olcerst (RP3) quoted Jennie Granger (PennDOT) from an email indicating the sight lines would change if we raised the bridge 1'. He also suggested that traffic studies should be conducted because fire, police, and first responders were near the site.
- Glenn Olcerst (RP3) stated that in 2005 "the original rail was trenched to decrease the visibility of trains and increase the enjoyment of the park."
- Tom Barbush (Allegheny West Civic Council) stated that pedestrian safety needs to be considered in the line-of-sight analysis.
- John DeSantis (Property Owner) believes the Pennsylvania History Code compliance process is progressing ahead of demonstrating that the project is needed and viable. Mr. DeSantis stated his view that the compliance process is flawed as the underlying need for this project has not been demonstrated.
- John DeSantis (Property Owner) also indicated that he feels both Options A and B are valid alternatives that meet the SOI Standards, and that Option A is preferable. He does not agree with the assessment that replacing 85% of the bridge with new steel does not comply with SOI Standards as long as the bridge's general appearance is maintained, suggesting that the options retain the historic property, which is a goal of the SOI Standards for rehabilitation.
- Robert and Carole Malakoff (Property Owners) noted that raising the bridge by even six inches may create a more dangerous intersection than presently exists.

[**Follow up**: Link to SOI Standards to aid in the understanding of the W. North Avene Bridge HBRA Report: https://www.nps.gov/tps/standards/rehabilitation/rehab/stand.htm]

Next Steps

Tim Zinn (Michael Baker) presented a tentative schedule for the compliance process. Following the meeting, the project team will prepare minutes to send to consulting parties. The team requests that consulting parties submit comments on the Identification of Historic Properties Report and the Draft HBRA Report by December 4.

Consulting Party Meeting #2 is planned for spring 2020, during which alternatives and anticipated effects on historic properties will be presented and discussed.

Consulting Party Meeting #3 will focus on the resolution of adverse effects on historic properties and the creation of a memorandum of agreement (MOA) as warranted.

Contacts

Tim Zinn (Michael Baker) provided contact information for Rudy Husband (Norfolk Southern) and the project email for consulting parties to submit comments and questions. NSPghVerticalClearance@gmail.com

John DeSantis (Property Owner) asked at what point on the project calendar a decision would take place that the Pittsburgh Vertical Clearance Projects are needed. Mr. DeSantis also requested that a determination be made on whether the projects should proceed prior to asking consulting parties to comment on project reports. Mr. DeSantis asked that the consulting parties receive documentation 30 days in advance of comment due dates.

Doug Duerr (Property Owner) stated that he believes the schedule is too aggressive and stated that the potential impacts of the project on surrounding properties, including possible impacts to property values, warranted additional timefor comments.

A comment was also made that revised dates should be added to the schedule indicating when documents will be supplied to consulting parties for review.

Glenn Olcerst (RP3) stated his supposition that all the previous bridge projects were paid for by Norfolk Southern and questioned why it is now using grant money.

The information presented in these minutes represents the author's interpretation and understanding of the discussions during the meeting. Any clarifications or corrections to these minutes are to be provided to the author at NSPghVerticalClearance@gmail.com *by December 11. No response implies that information presented is agreed to and recipients have no objection as written.*

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NORFOLK SOUTHERN Michael Baker INTERNATIONAL pennsylvania DEPARTMENT OF TRANSPORTATION

ATTACHMENT A
Consulting Party Meeting 1 Sign-In Sheets

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Pittsburgh Vertical Clearance Projects
Consulting Party Meeting #1
November 20, 2019

NAME	AFFILIATION	SIGNATURE
Rudy Husband	Norfolk Southern	
Mark Young	PennDOT	
David Anthony	PennDOT	
Cheryl Nagle	PA SHPO	
Kirsten Bowen	Michael Baker International	
Amy Pinizzotto	Michael Baker International	
Clayton Fisher	Michael Baker International	
Jesse Belfast	Michael Baker International	
Timothy Zinn	Michael Baker International	

NORFOLK SOUTHERN

Pittsburgh Vertical Clearance Projects
Consulting Party Meeting #1
November 20, 2019

NAME	AFFILIATION	SIGNATURE
Frank Stroker	PHLF	
Matthew Falcone Mellissa McSwigan on behalf of	Preservation Pittsburgh	
August Carlino	Rivers of Steel Heritage Corporation	
Ron Baraff	Rivers of Steel Heritage Corporation	
George Kenderes	Foster Square	
Tom Barbush	Allegheny West Civic Council	
Margaret Connor	Mexican War Streets Society	
Susan Rademacher	Pittsburgh Parks Conservancy	
Glenn Olcerst	Rail Pollution Protection Pittsburgh	
Barbara Talerico	Rail Pollution Protection Pittsburgh	Barbara Talerico
Sarah Quinn Sharon Spooner	City of Pittsburgh—Planning	
Stephanie Joy Everette	City of Pittsburgh—Planning	
Karina Ricks	City of Pittsburg—DOMI	
Darlene Harris	City of Pittsburgh—Council District 1	
Jake Wheatley, Jr.	PA House of Representatives, Dist 19	

NORFOLK SOUTHERN

Pittsburgh Vertical Clearance Projects
Consulting Party Meeting #1
November 20, 2019

NAME	AFFILIATION	SIGNATURE
Robert Malakoff	Property Owner	[illegible]
Carole Malakoff	Property Owner	[illegible]
John DeSantis	Property Owner	[illegible]
Annette Trunzo	Property Owner	
Todd Palcic	Property Owner	
Margaret McNamara	Property Owner	
Mitchell Schwartz	Property Owner	
Elaine Stone	Property Owner	
Doug Duerr	Property Owner	[illegible]
Rick Belloli	Property Owner	
Andrew Reichert	Property Owner	
Elise Yanders	Property Owner	
Charles Yanders	Property Owner	
Martin Warhola	Property Owner	

Pittsburgh Vertical Clearance Projects
Consulting Party Meeting #1
November 20, 2019

NAME	AFFILIATION	SIGNATURE
Alison Keating	Pittsburghers for Public Transit	

Michael Baker
INTERNATIONAL

Appendix F
Qualifications of Preparers

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Timothy G. Zinn Architectural Historian

Mr. Zinn is the Historic Preservation Department Manager for the Pittsburgh office. He serves as both principal investigator and project/task manager for cultural resources investigations across the country in compliance with Section 106 of the National Historic Preservation Act, NEPA, and other state and federal laws governing cultural resources. He is skilled in the preparation of National Register of Historic Places (NRHP) nominations, historic resources surveys, state inventory forms, NRHP eligibility determinations, criteria of effect/adverse effect evaluations, MOAs/MOUs, programmatic agreements, public involvement coordination, archival records research, deed research, and Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation. For 13 years, Mr. Zinn was also an Instructor at the University of Pittsburgh, Department of Anthropology where he taught a course on Cultural Resources Law and Practice.

Mr. Zinn meets the requirements of 36 C.F.R. § 61 (Appendix A) for Architectural Historian as he has a Master of Arts in Historic Preservation from Middle Tennessee State University (1996) and 35 years of applicable experience.

Jesse Belfast Architectural Historian

Mr. Belfast has 19 years of experience in Section 106 compliance, including historic properties surveys and determination of eligibility studies, determination of effect evaluations, memoranda of agreement preparation, and public involvement coordination. Mr. Belfast is also experienced in the preparation a wide range of historical documentation, including historical context reports, HABS/HAER documentation, National Register nominations, state historic structure inventory forms, land use histories, and deed research. His project involvement includes numerous federal, state, municipal, and private-sector clients, including the Department of Homeland Security (with surveys in 15 states), the U.S. Coast Guard, and state departments of transportation in Pennsylvania, West Virginia, Ohio, Maryland, Missouri, Illinois, Arkansas, Mississippi, New Jersey, Louisiana, and Indiana.

Mr. Belfast meets the requirements of 36 C.F.R. § 61 (Appendix A) for *Historian* and *Architectural Historian* as he has a Master of Arts degree in History from Carnegie Mellon University (2001) and 19 years of applicable experience.

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