SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
FOR
CONSTRUCTION OF A CONCRETE CASING EXTENSION IN THE HUDSON YARDS, NEW YORK, NEW YORK

Prepared Pursuant to
the National Environmental Policy Act (42 U.S.C. § 4332), and
FRA's Procedures for Considering Environmental Impacts
(64 FR 28545 and 78 FR 2713)

by the National Railroad Passenger Corporation (Amtrak)
and
Federal Railroad Administration (FRA)

August 2014

This page intentionally left blank.

Supplemental Environmental Assessment (SEA) for Construction of a Concrete Casing Extension in the Hudson Yards, New York, New York

August 2014

Prepared Pursuant to the National Environmental Policy Act (42 U.S.C. § 4332)

and

FRA's Procedures for Considering Environmental Impacts (64 FR 28545 and 78 FR 2713)

Lead Agency:

Federal Railroad Administration (FRA)

Prepared By:

National Railroad Passenger Corporation (Amtrak)

Approved:

David Valenstein
Division Chief
Environment & Systems Planning
Office of Passenger and Freight Programs
Federal Railroad Administration
1200 New Jersey Ave., SE
West Building, MS 20
Washington, DC 20590

Date: 8/20/2014

Stephen J. Gardner
Vice President
NEC Infrastructure & Investment Development
Amtrak
60 Massachusetts Ave., NE
Washington, DC 20002

Date: 8/19/14

The following person may be contacted for information on the SEA:

Amrita Hill
Principal Officer
Major Projects NEC South
Amtrak
60 Massachusetts Ave., NE
Washington, DC 20002

This page intentionally left blank.

TABLE OF CONTENTS

List of Appendices

Figures

Tables

AC	Alternating Current
ACM	Asbestos-Containing Materials
AMTRAK	National Railroad Passenger Corporation
APE	Area of Potential Effect
bgs	below ground surface
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO2e	Carbon dioxide equivalent
DC	Direct Current
DEP	New York City Department of Environmental Protection
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	Greenhouse Gas
LIRR	Long Island Rail Road
MOE	Maintenance of Equipment
MTA	Metropolitan Transportation Authority
µg/m^3	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NEC Future	Northeast Corridor Future Program Studies
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NJT	New Jersey Transit
NO_x	Nitrogen oxide
NRHP	National Register of Historic Places
NYC	New York City
NYCTA	MTA New York City Transit Authority
NYSDEC	State Department of Environmental Conservation
OPRHP	New York State Office of Park, Recreation and Historic Preservation
OTR	Ozone transport region
PM_{10}	Particulate matter less than or equal to 10 microns
$PM_{2.5}$	Particulate matter less than or equal to 2.5 microns
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way
RSCO	Recommended Soil Cleanup Objective
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SEA	Supplemental Environmental Assessment
SVOC	Semivolatile Organic Compound
U.S.C.	U.S. Code
VOC	Volatile Organic Compound

This page intentionally left blank.

CHAPTER ONE INTRODUCTION, BACKGROUND, PURPOSE, AND NEED

1.1 INTRODUCTION

This document is a Supplemental Environmental Assessment (SEA) to a March 2013 Environmental Assessment (EA) prepared by the National Railroad Passenger Corporation (Amtrak) and the Federal Railroad Administration (FRA). The March 2013 EA examined the potential environmental impacts of constructing an underground concrete casing through the Eastern Rail Yard of the John D. Caemmerer West Side Yard (also referred to as Hudson Yards) in New York, NY. Hudson Yards is owned by the Metropolitan Transportation Authority (MTA) and used by the Long Island Rail Road (LIRR). The underground concrete casing through the Eastern Rail Yard would preserve a right-of-way (ROW) for the possibility of future expansion of rail service between New Jersey and New York and would support Amtrak's efforts to improve resiliency in response to future disasters in Amtrak's Northeast Corridor.

After considering the EA and public comments received on the EA, FRA published a Finding of No Significant Impact (FONSI) in May 2013 finding that the construction of a concrete casing in the Eastern Rail Yard of the Hudson Yards will not have foreseeable significant impacts on the quality of the environment and that an Environmental Impact Statement will not be required. Both the EA and FONSI are provided in Appendix A, and this SEA incorporates the EA by reference.

This SEA examines the potential environmental impacts associated with preserving an additional ROW in the Hudson Yards by constructing an extension to the concrete casing addressed in the March 2013 EA. The proposed underground concrete casing extension (Extension) involves construction of an underground rectangular structure 605 feet long, between 50 and 65 feet wide and between 27 and 38 feet tall in the Western Rail Yard of the Hudson Yards.

This SEA is prepared in accordance with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 *et seq*.), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and the Federal Railroad Administration (FRA) *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545 [May 26, 1999] and 78 FR 2713 [January 14, 2013]). This SEA also documents compliance with other applicable Federal environmental laws and regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470), the Clean Air Act (CAA) (42 U.S.C. 7401 *et seq*.), the New York State Environmental Quality Review Act, and New York Environmental Conservation Law Article 8, to the extent that an EA is required with respect to any action required of the MTA and LIRR in connection with a proposed project. Amtrak is the proposed Project sponsor and would design and construct the Extension. Amtrak is preparing this SEA in coordination with FRA, the lead Federal agency, because the Extension would be constructed using Federal funding managed through the FRA.

1.2 BACKGROUND AND SCOPE

A real estate development corporation (Developer), under an agreement with LIRR and MTA, is developing the area above the Hudson Yards by constructing a platform over the Eastern and Western Rail Yards that will provide the footprint for commercial and residential development. This development is referred to as the Overbuild Project and construction is underway in the Eastern Rail Yard.

The proposed Project is to preserve a ROW in the Hudson Yards and includes construction of a concrete casing in the Eastern Rail Yard (addressed in the March 2013 EA) and an extension of the concrete casing in the Western Rail Yard (addressed in this SEA). The Extension would connect with and is immediately west of the underground casing that is currently under construction in the Eastern Rail Yard (see Figure 1). The Extension would preserve additional length of underground ROW in the Western Rail Yard of the Hudson Yards as a potential alignment alternative for a future tunnel under the Hudson River into New York Penn Station. The March 2013 EA provides a discussion of the planning process and reasons that have been identified for expanding rail service into New York Penn Station (see Appendix A).

As part of construction of the concrete casing in the Eastern Rail Yard, a portion of LIRR's Maintenance of Equipment (MOE) building was demolished and the tracks that lead to it, tracks 0 and 1, were temporarily removed from service. The MOE building is scheduled to be substantially complete at the same location by October 2015. Construction of the portion of the Extension under the 11th Avenue bridge would also require tracks 0 and 1 to be taken out of service, thus it is critical to time the Extension construction with the MOE building reconstruction to ensure that these tracks will be placed back in service by the time the MOE building is back in use. Construction of the portion of the Extension under the 11th Avenue bridge must begin by February 2015 to meet the October 2015 deadline to have the MOE building and ancillary tracks 0 and 1 back in service.

1.3 PURPOSE AND NEED

A concrete casing beneath the Hudson Yards is needed to preserve an underground ROW as a potential alignment alternative for a new future tunnel under the Hudson River into New York Penn Station. If the ROW in the Western Rail Yard is not preserved prior to the Overbuild Project foundations being constructed, the use of this location under Hudson Yards as a ROW would be permanently lost. Loss of the ROW in the Western Rail Yard would render the concrete casing that is currently being constructed in the Eastern Rail Yard inaccessible, and along with it one possible alignment for future expansion of rail service between New York and New Jersey that is dependent on this ROW. Timing of construction under the 11th Avenue bridge is dependent on the reconstruction schedule of the MOE building and its ancillary tracks. Additional information regarding the purpose and need to preserve a ROW in the Hudson Yards is provided in Section 1.3, *Purpose and Need,* on page 4 of the March 2013 EA.

Figure 1: Hudson Yards Concrete Casing Extension Project Location Map

Hudson Yards
Proposed Action Area in West Rail Yard Including Staging
Proposed Action West Rail Yard
Proposed Action East Rail Yard (currently under construction)
NJ-495
Roads

Federal Railroad Administration

Imagery:
ESRI ArcGIS Online and data partners

Date.....May 2014
Prepared for.....Federal Railroad Adminstration (FRA)
Contract.....BPO1001987

AMTRAK

CHAPTER TWO DESCRIPTION OF PROPOSED ACTION AND NO ACTION

2.1 PROPOSED ACTION

The proposed action of this SEA is to construct an underground concrete casing extension to preserve a ROW beneath 11th Avenue and in the Western Rail Yard for possible future expansion of rail service via a tunnel under the Hudson River into New York Penn Station. Under the proposed action, Amtrak would construct the Extension in the alignment shown on Figure 2.

2.1.1 Timing

Construction of the Extension would need to begin in the area under the 11th Avenue bridge so that the Extension would connect with the western terminus of the existing concrete casing that is being built in the Eastern Rail Yard. As described in Section 1.3 of this SEA, *Purpose and Need*, it is critical that construction of the Extension under the 11th Avenue bridge begin by February 2015 to ensure that LIRR's MOE building can be returned to service by October 2015.

Construction of the Extension at a future time is not possible due to impacts to the residential and commercial structures of the Overbuild Project. Particularly, construction of the Extension under the 11th Avenue bridge needs to start prior to construction of one of the residential towers proposed in the Eastern Rail Yard (Tower D). Construction of this residential tower will require access along 11th Avenue, and the building may be occupied by 2016. Therefore, conducting work on the 11th Avenue bridge for the proposed action prior to construction and occupation of the residential tower would allow for proper timing and access and would avoid noise, traffic, and access disruptions to residents from construction of the Extension after the building is occupied.

2.1.2 Construct a Concrete Casing Extension

The Extension would be approximately 605 feet long, between 50 and 65 feet wide and between 27 and 38 feet tall. The size of the Extension is based on standard tunnel dimensions and will preserve a ROW so that a train tunnel could be constructed within the concrete casing. The Extension would originate at the western end of the underground concrete casing currently under construction in the Eastern Rail Yard, extend under the 11th Avenue bridge, and continue diagonally across approximately two thirds of the Western Rail Yard and underneath a portion of an historic elevated freight rail line, the Freight Railroad viaduct (referred to as the High Line), which is currently being repurposed into a public aerial greenway (see Figure 2).

No permanent operational components, such as tracks, lighting, ventilation, or electrical systems, would be constructed as part of the proposed action. Minor, temporary systems, such as sump pumps, lighting, and ventilation, would be installed in the casing during construction. The Hudson Yards facility is an active rail yard used by MTA and LIRR for train storage, switching, maintenance, and ancillary LIRR operations. Amtrak would acquire both an easement from MTA for construction of the ROW in the Western Rail Yard and an easement from New York

City for the portion of the ROW under the 11th Avenue bridge. Construction of the Extension would require:

- Temporary removal from service of yard tracks 0 and 1 that lead to LIRR's MOE building for the portion of the Extension under the 11th Avenue bridge. Tracks 0 and 1 are currently out of service and removed due to construction of the concrete casing in the Eastern Rail Yard.
- Temporary relocation and replacement of utilities supported by and under the 11th Avenue bridge (storm/sanitary sewer, electric, water, gas) and signals/communications.
- Excavation of approximately 66,000 cubic yards of soil and 14,000 cubic yards of rock.
- Demolition of LIRR's Emergency Services Building in the Western Rail Yard, temporary relocation of Emergency Services Building functions, and reconstruction to its original condition following completion of the Extension.
- Demolition of the structural support system (two roadway spans and one pier) for the 11th Avenue bridge along with restriction of traffic over half of the bridge at a time and reconstruction of the bridge supports and restoration of traffic.
- Temporary underpinning of the High Line.

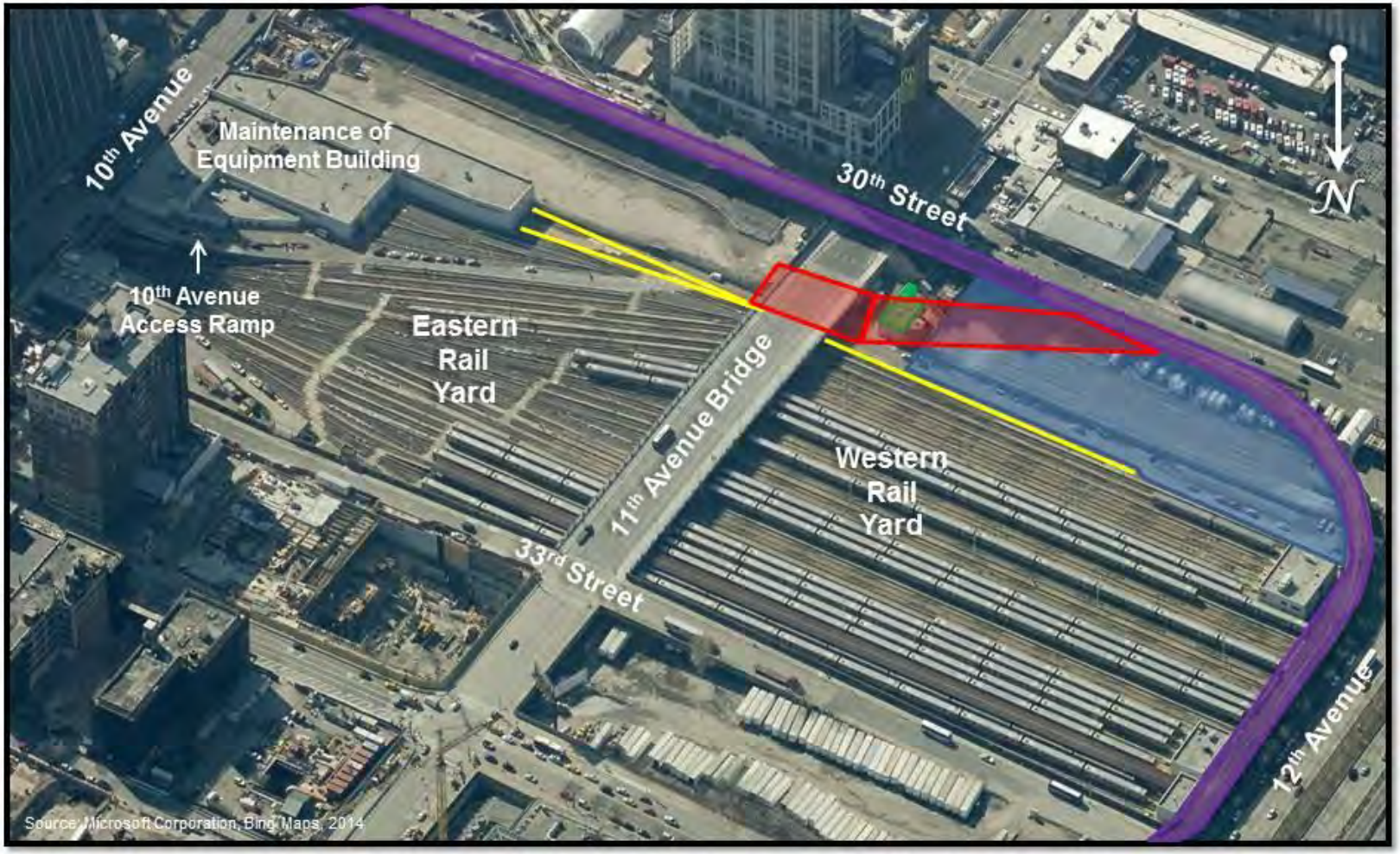


Figure 2: Hudson Yards Concrete Casing Extension Proposed Action Components

- The High Line
- Proposed Staging Areas
- Emergency Services Building
- Proposed Concrete Casing Extension
- Yard Tracks 0 and 1

Federal Railroad Administration

The portion of the Extension that will be constructed under the 11th Avenue bridge will be completed before the portion of the Extension west of 11th Avenue is completed. Amtrak anticipates that construction of the portion under the 11th Avenue bridge will start in February 2015 and be completed by October 2015. Construction of the portion of the Extension west of 11th Avenue is expected to start some time in 2016 or later, depending on when the Developer starts construction of the Overbuild Project in the Western Rail Yard. Construction of the Overbuild Project and the proposed action may occur simultaneously, or Amtrak work may precede Overbuild Project work depending on Amtrak's funding and the Overbuild Project schedule, with the Developer and Amtrak coordinating the construction processes and timing.

The 11th Avenue bridge is owned and maintained by the New York City Department of Transportation and carries six lanes of southbound vehicular traffic with sidewalks on either side of the roadway. Amtrak anticipates that the bridge would be removed in a two-staged sequence, removing the eastern and western halves of the bridge at different times to prevent full closure of the bridge. The new footing and pier for the bridge will be incorporated into the north wall and roof of the Extension. Two or more lanes of traffic and one sidewalk will be kept open at all times during construction of the proposed action, which would maintain existing conditions because only two lanes and one sidewalk are currently open to accommodate work that is being done on the High Line. Closures of the 11th Avenue bridge due to construction activities on the High Line and the Overbuild Project are expected to last through fall 2014.

The anticipated construction sequence for the portion of the Extension under the 11th Avenue bridge would be as follows:

1. Fence off construction zone.
2. Tracks 0 and 1 remain out of service and removed. Temporarily relocate some electrical systems, storm drainage components, and water lines.
3. Restrict traffic on the 11th Avenue bridge to half of the roadway.
4. Install temporary support structures for the bridge. Demolish the pier and roadway superstructure (beams and abutments) on the side of the bridge that does not have traffic.
5. Construct watertight retaining walls around the casing trench, excavate and brace the casing trench.
6. Construct the concrete casing.
7. Reconstruct the pier on the concrete casing.
8. Backfill over the casing trench as work progresses.
9. Reconstruct the roadway superstructure for the first half.
10. Switch traffic to the reconstructed half of the bridge and repeat the same sequence of demolition of the bridge supports, construction of the concrete casing and reconstruction of the second half of the bridge pier and roadway superstructures.
11. Reinstate traffic on the entire bridge (as possible due to lane closures from the Overbuild Project and High Line renovation), restore utilities, and place tracks 0 and 1 back in service.

The anticipated construction sequence for the portion of the Extension in the Western Rail Yard (west of 11th Avenue) would be as follows:

1. Remove and relocate the Emergency Services Building's operations and facilities. The timing of removal and relocation of services of the Emergency Services Building would be dictated by LIRR needs and schedules, LIRR agreement and approvals, and determined by the Developer's requirements for work in the Western Rail Yard or by the need to begin work in the area of that building as part of the proposed action. Demolish the Emergency Services Building after removal and relocation of the building's associated operations and facilities.
2. Support the High Line with underpinning.
3. Construct watertight retaining walls around the casing trench for the portion of the Extension west of 11th Avenue, excavate and brace this portion of the trench, construct concrete casing and backfill casing trench as work progresses.
4. Remove underpinning of the High Line.
5. Reconstruct Emergency Services Building, relocate and restore affected Western Rail Yard utilities, signals, and communications.

Because some phases of construction of the portion of the Extension under the 11th Avenue bridge and west of 11th Avenue would be done concurrently, more than one of the elements of the construction sequences listed above may occur at the same time.

Underpinning of the High Line would involve providing temporary support for a total of 17 foundations. Steel girders would span from one side of the excavation to the other, picking up each column to be underpinned and supported by the retaining walls. Existing High Line foundations would then be removed. The concrete casing roof will be designed to support the original High Line foundations. Amtrak would construct new foundations for the High Line foundations (three of the total 17) that occur outside of the Extension footprint.

The depth of excavation for the Extension varies along the alignment. Excavation for the eastern end of the Extension under the 11th Avenue bridge would reach approximately 60 feet below ground surface (bgs), while excavation at the western end of the Extension (near 30th Street under the High Line) would be between 58 and 70 feet bgs (Gateway Trans-Hudson Partnership, 2013). The newly constructed tunnel for the Number 7 line, which will likely be in service in early 2015 and is operated by MTA New York City Transit Authority (NYCTA), runs approximately 30 feet below the bottom of the proposed Extension for the portion of the Extension beneath the 11th Avenue bridge.

Depth to bedrock drops rapidly west of 11th Avenue; therefore, Amtrak anticipates that excavation of both soil and rock will occur under the 11th Avenue bridge to approximately 100 feet west of 11th Avenue; west of this, Amtrak anticipates that only soil will be excavated for construction of the casing. Rock excavation using blasting or chemical methods may be employed; Amtrak's construction contractor would use industry standard practices for New York City and blasting would be coordinated with LIRR, MTA, NYCTA, and New York City

Department of Transportation (DOT) regarding agency vibration and/or strain limitation requirements. Excavation activities in the area with rock may include special techniques such as rock splitting to reduce vibration impacts to nearby facilities and buildings. Amtrak anticipates that excavation of the casing trench would remove approximately 66,000 cubic yards of soil and 14,000 cubic yards of rock. Excavated materials would be hauled by truck to facilities in New York, New Jersey, or Pennsylvania for disposal or beneficially reused off-site.

Groundwater removed due to construction dewatering of the excavated casing trench would be discharged on-site into the LIRR storm water system under a temporary construction dewatering permit.

The staging areas for equipment and materials would likely be located in the southern portion of the Western Rail Yard within the Hudson Yards (Figure 2), pending coordination with the Developer. Access to the Hudson Yards would be provided by an existing entrance at 30th Street; Amtrak would coordinate access with MTA and LIRR prior to and during construction of the proposed action.

2.2 NO ACTION

The no action alternative described in the March 2013 EA (Appendix A) would be the same for this proposed action; Amtrak would not construct the proposed Project to preserve a ROW in the Hudson Yards. The no action alternative provides a baseline for comparison of impacts that would occur under the proposed action, as discussed in Chapter 3 of this SEA.

CHAPTER THREE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

Chapter 3 describes existing resources that may be affected by the proposed action and no action alternatives and the potential direct and indirect impacts on those resources. Chapter 3 focuses on addressing the type, intensity, and duration of the project-related environmental impacts for each resource area included in this SEA. The impacts can be described in different ways including:

- Type (beneficial or adverse)
- Intensity (negligible, minor, moderate, or substantial)
- Duration (temporary or long-term)

Additionally, impacts are described in terms of whether they are direct or indirect as defined by CEQ as follows: *direct effects* are caused by the action and occur at the same time and place (40 CFR § 1508.8) and *indirect effects* are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR § 1508.8).

Mitigation measures for potential resource impacts from the proposed action are described as appropriate within this chapter. This SEA does not evaluate impacts of the Overbuild Project other than considering cumulative impacts of the Overbuild Project when combined with impacts from the proposed action.

3.2 GEOLOGY

3.2.1 Affected Environment

Geology in the Western Rail Yard is characterized by a layer of metamorphic and igneous bedrock that rapidly slopes downward from approximately 25 feet bgs underneath the 11th Avenue bridge to 150 feet bgs near 12th Avenue (Gateway Trans-Hudson Partnership, 2013). The dominant rock formations in the bedrock layer of the site are the Hartland Formation and the Manhattan Schist Formation, which consist of a combination of schist, schistose gneiss, gneiss, and amphibolite rock types (Gateway Trans-Hudson Partnership, 2013). Rock excavation is regulated by the New York City Buildings Department (New York City Buildings Department, 2014).

3.2.2 Environmental Consequences

No Action

The no action alternative would not affect geology because no excavation of bedrock would occur.

Proposed Action

Excavation for the proposed action would vary in depth from approximately 60 feet bgs underneath the 11th Avenue bridge to approximately 70 feet bgs at its maximum depth near 12th Avenue (Amtrak, 2014). Because depth to bedrock along the alignment increases rapidly west of 11th Avenue, Amtrak anticipates that only the portion of the Extension beneath the 11th Avenue bridge and about 100 feet west of 11th Avenue would require excavation of bedrock. Approximately 14,000 cubic yards of bedrock would be removed to create a trench for construction of the Extension.

Rock excavation using blasting or chemical methods may be employed. Excavation activities in the area with rock may include special techniques such as rock splitting to reduce vibration impacts to nearby facilities and buildings. Amtrak's construction contractor would use industry standard practices for New York City and excavation would be coordinated with LIRR, NYCTA, MTA and New York City DOT regarding agency vibration and/or strain limitation requirements. LIRR and NYCTA would review vibration levels during construction to prevent adverse impacts on LIRR and NYCTA facilities and operations; if LIRR or NYCTA find that vibration levels may adversely affect LIRR or NYCTA facilities, Amtrak, working with LIRR and NYCTA, would reduce vibration to levels acceptable to LIRR and NYCTA. Amtrak would also work with MTA, New York City DOT, and High Line representatives should vibration levels threaten to adversely affect any of those agencies' operations. Amtrak's construction contractor would obtain permits as needed from the City's Department of Buildings for any potential impacts on nearby buildings as a result of excavation activities. Rock material excavated during construction would be hauled by truck to a crushing and recycling facility, beneficially reused off-site, or hauled to a permitted disposal facility.

While the proposed action would permanently remove 14,000 cubic yards of bedrock, there would be no substantial adverse environmental impacts because the removed rock would be handled, staged, transported, and disposed of in accordance with applicable Federal, State, and local regulations. The removal of bedrock would not affect future LIRR, MTA, NYCTA, High Line, or New York City DOT operations because the surface of the Western Rail Yard and the 11th Avenue bridge would be restored following construction of the Extension and would be adequate to support LIRR, MTA, NYCTA, High Line, and New York City DOT operations.

3.3 SOILS

3.3.1 Affected Environment

Soils in the Western Rail Yard are characterized by a layer of historic urban fill at the ground surface underlain by native soil. The historic urban fill varies in depth from about 11 to 30 feet, is categorized as silty sand, and may include varying amounts of gravel, bricks, concrete, roots, and rock fragments. Below the historic urban fill, the native soil is comprised of layers of sand, silt, clay, organics, and glacial till before reaching bedrock (Gateway Trans-Hudson Partnership,

2013). The Developer tested the soils in the Western Rail Yard for contamination; the results of this testing are discussed in Section 3.8, *Hazardous Materials and Hazardous Wastes*.

3.3.2 Environmental Consequences

No Action

The no action alternative would not affect soils because no construction would occur.

Proposed Action

Amtrak anticipates that approximately 66,000 cubic yards of urban fill and native soils would be removed from the proposed action site to excavate the Extension trench. Trucks would haul all soil and fill material excavated from the proposed action site to licensed disposal facilities in New York, New Jersey, or Pennsylvania. Although soils and fill material in the proposed action site are not expected to be classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA) (NYCPC and MTA, 2009), Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak would develop a Soil Management Plan to ensure that contaminated materials are handled, staged, transported, and disposed of in accordance with Federal, State, and local regulations. Therefore, no adverse impacts on soils are anticipated.

3.4 GROUNDWATER

3.4.1 Affected Environment

Within the Western Rail Yard, groundwater is shallow and typically found at approximately 5 to 7 feet bgs (Gateway Trans-Hudson Partnership, 2013). Groundwater flow in the Western Rail Yard is typically east to west, towards the Hudson River (NYCPC and MTA, 2009). Groundwater contained in rock underneath the Western Rail Yard is isolated from the closest aquifer, which is located beneath the Queens and Brooklyn boroughs of New York City. Groundwater in Manhattan is not used as a source of drinking water; instead, potable water is provided to Manhattan from reservoirs in upstate New York (NYCPC and MTA, 2009). The Developer tested the groundwater in the Western Rail Yard for contamination; the results of this testing are discussed in Section 3.8, *Hazardous Materials and Hazardous Wastes*.

3.4.2 Environmental Consequences

No Action

The no action alternative would not impact groundwater resources because no excavation would occur.

Proposed Action

Excavation for the Extension trench would occur in the water table; therefore, construction dewatering (removal of water from the construction area) would be required. Amtrak's construction contractor would prepare a Groundwater Management/Dewatering Plan (that would be reviewed and approved by Amtrak and LIRR prior to implementation) with procedures for handling groundwater encountered during construction. Construction dewatering of the excavated Extension trench would be discharged into the LIRR storm sewer system. Groundwater that is discharged into LIRR's storm sewer system would be treated by Amtrak's construction contractor for the removal of sediment before entering the storm sewer system. LIRR's storm sewer system discharges into the Hudson River at an outfall that is regulated under NYSDEC's General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems, of which LIRR is a permittee (NYCPC and MTA, 2009). Amtrak's construction contractor would be required to conduct verification testing of the groundwater during construction, and the Dewatering Plan would describe procedures to ensure that Amtrak's construction contractor would treat or dispose of any contaminated groundwater released during dewatering operations in accordance with Federal, State, and local regulations.

Impacts to groundwater are anticipated to be temporary and minor and no adverse impacts from handling of groundwater are anticipated.

3.5 AIR QUALITY

3.5.1 Affected Environment

Regulatory background related to the CAA can be found in Section 3.5.1, *Air Quality*, of the 2013 EA (see Appendix A).

The U.S. Environmental Protection Agency (EPA) air quality standards for ozone are 0.12 parts per million (1-hour average) and 0.075 parts per million (8-hour average in effect since March 2008). The standards for fine particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$) are 12 micrograms per cubic meter ($\mu g/m^3$) (annual average) and 35 $\mu g/m^3$ (24-hour average), and for PM_{10} (coarse particulate matter [10 micrometers or less in diameter]) is 150 $\mu g/m^3$ (24-hour average) (EPA, 2014a). The CAA defines non-attainment areas as geographic regions that have been designated as not meeting one or more of the National Ambient Air Quality Standards (NAAQS). Air quality maintenance areas are regions that have attained compliance with the NAAQS.

EPA has designated New York City as a moderate non-attainment area for the 1997 8-hour ozone standard and marginal non-attainment area for the 2008 8-hour ozone standard, and Manhattan as a moderate non-attainment area for PM_{10} (EPA, 2014b). Effective in May of 2002, EPA re-designated New York City from a non-attainment area to a maintenance area for carbon monoxide (CO) (67 FR 76).

On April 18, 2014, EPA redesignated the New York portion of the New York-New Jersey-Connecticut non-attainment area to a maintenance area for the 1997 annual and the 2006 24-hour $PM_{2.5}$ NAAQS (79 FR 75). EPA is in the process of designating attainment and non-attainment areas for the current annual $PM_{2.5}$ NAAQS of 12 $\mu g/m^3$, effective as of March 18, 2013 (78 FR 10). NYSDEC has proposed to the EPA that New York State be designated as attainment for PM2.5 under the current NAAQS (NYSDEC, 2013).

The General Conformity Rule (40 CFR parts 51 and 93) requires that Federal actions or federally funded actions planned to occur in a non-attainment or maintenance area be reviewed prior to their implementation to ensure that the actions will not interfere with that State's plans to meet or maintain the NAAQS, as outlined in the federally approved State Implementation Plan (SIP). Therefore, Amtrak is required to demonstrate that this federally funded action conforms to the approved SIP for the geographic area where action is proposed by performing a conformity applicability analysis. Amtrak must consider the total direct and indirect emissions. If, after evaluation and documentation, the total air emissions associated with the action are considered neither exempt nor below the de minimis levels (i.e., minimum thresholds for which a conformity determination must be performed for various criteria pollutants in various non-attainment areas) as specified in 40 CFR 93.153, then a conformity determination is required (see Table 1).

Table 1
Applicable General Conformity De Minimis Levels

Pollutants of Concern (tons per year)				
NO_x[1]	VOC[1]	PM_{10}[2]	$PM_{2.5}$	CO
100	50	100	100	100

Source: 40 CFR 93.153(b)(1)
[1]Other ozone NAAQS inside an ozone transport region.
[2]Moderate non-attainment area

In addition, EPA has designated the region extending from Northern Virginia to New England as an ozone transport region (OTR), whereby EPA has established more restrictive de minimis emissions levels for areas in the OTR. Since the proposed action would occur within the OTR, a conformity determination would be required if total actual emissions for the Federal action exceed 100 tons of nitrogen oxide (NO_x) or 50 tons of volatile organic compounds (VOCs).

Based on the attainment status designation for New York City, Amtrak must quantify the emissions of NO_x, VOCs, PM_{10}, and $PM_{2.5}$ to determine the applicability of the general conformity regulations. This area is also a "maintenance area" for CO; therefore, Amtrak would also need to quantify CO emissions for the applicability determination.

Climate Change

A background discussion on climate change can be found in Section 3.5.1, *Air Quality*, of the 2013 EA (see Appendix A). NYSDEC has developed a comprehensive Air Quality Management Plan that integrates air quality, climate, energy, and transportation goals. One of the environmental goals is to reduce Greenhouse Gas (GHG) emissions (NYSDEC, 2010). The Inventory of New York City Greenhouse Gas Emissions, December 2013, estimated the citywide CO2e (carbon dioxide equivalent) emissions for 2012 at 47,939,030 metric tons (City of New York, 2013).

3.5.2 Environmental Consequences

No Action

The no action alternative would not impact air quality because no construction would occur.

Proposed Action

According to 40 CFR part 93, the threshold levels for general conformity are 100 tons per year for NO_x, PM_{10}, $PM_{2.5}$ and CO and 50 tons per year for VOCs. As part of this determination, Amtrak considered activities subject to the general conformity requirements, which includes stationary sources, such as diesel generators, construction activities, such as excavation, and mobile sources, such as diesel trucks.

Table 2 shows the total emissions due to the proposed activity for the next 3 years. Annual emissions generated as a result of the proposed activity are not expected to exceed the threshold levels established in the CAA's general conformity regulations.

Table 2
Annual Estimated Emissions for the Proposed Action Compared with Conformity Thresholds

Pollutant	2015 Emissions (tons per year)	2016 Emissions (tons per year)	2017 Emissions (tons per year)	Conformity Threshold (tons per year)
NO_x	19.69	20.06	20.06	100
VOC	2.24	2.64	2.64	50
PM_{10}	2.60	2.92	2.64	100
$PM_{2.5}$	1.92	2.26	1.98	100
CO	9.13	10.79	10.79	100

Air pollutant emissions shown in Table 2 include both direct and indirect air emissions associated with the proposed action. Sources of direct emissions include construction activities and operation of equipment. Sources of indirect emissions include mobile source emissions from increased commuter activity. For the general conformity evaluation, actual emissions were estimated for each source type. Each of these sources of emissions is briefly described below. Detailed assumptions and calculations are provided in Appendix B.

Construction activities that would generate emissions would primarily include the following:

- Earth excavation, grading, and demolition activities;
- Handling and transport of excavated material and debris;
- Operations of heavy-duty diesel and gasoline-powered construction equipment; and
- Heavy-duty diesel trucks operating within construction areas, traveling to the proposed action site to deliver construction materials, and traveling from the site transporting excavated soils and demolition material.

Construction would result in NO_x, VOC, PM_{10}, $PM_{2.5}$, and CO emissions from diesel-burning equipment and from the construction activities listed above. Amtrak's consultant calculated the emissions from diesel-burning construction equipment using an average of emission factors published in *Compilation of Air Pollutant Emission Factors*, *Volume 1: Stationary Point and Area Sources (*EPA, 1995), *Air Emissions Factor Guide to Air Force Stationary Sources* (USAF, 2009), and *Air Emissions Guide for Air Force Mobile Sources* (USAF, 2013) and an estimated average number of construction equipment operated per day throughout construction (between February 2015 through December 2017). Fugitive dust as a result of site clearing and earthmoving activities would temporarily increase during construction of the proposed action. Fugitive dust would be minimized as needed through measures such as the application of water to disturbed areas and haul roads, and speed controls on earthmoving equipment and haul trucks.

Emissions associated with the proposed action would be temporary and minor. A General Conformity analysis determined that construction emissions would not exceed the *de minimis* levels for pollutants and that the proposed action would not adversely impact air quality.

Climate Change

Because GHGs are relatively stable in the atmosphere and are essentially uniformly mixed throughout the troposphere and stratosphere, the climatic impact of GHG emissions does not depend upon the source location. Therefore, regional climate impacts are likely a function of global emissions. GHG emissions were calculated for the proposed action to estimate its contribution to the New York City environment.

Table 3 lists the total GHG emissions from the proposed action by adding 2015, 2016, and 2017 CO_2e emissions, that were estimated to be 5,053 metric tons per year (5,570 tons per year). Emissions of the other GHG emissions would be negligible and are therefore not calculated. The relative contribution of GHG emissions from the proposed action compared to New York City 2012 emissions would be negligible. Therefore, there would be negligible adverse impacts on climate change due to GHG emissions from the proposed action.

Table 3
Comparison of GHG Emissions between the Proposed Action and New York City

Source	CO_2e Emissions (metric tons per year)
Proposed Action	5,053
New York City (2012)	47,939,030
Percentage of 2012 New York City Emissions	0.011%

3.6 CULTURAL RESOURCES

3.6.1 Affected Environment

The regulatory background related to the NHPA can be found in Section 3.6.1, *Cultural Resources*, of the 2013 EA (see Appendix A). Because elements of the proposed action have the potential to create effects on both historic properties and archaeological sites, there are two Areas of Potential Effects (APEs), one for above-ground resources and one for archaeological resources (see Section 106 letter to SHPO, Appendix C). The archaeological APE is for areas where subsurface ground disturbance associated with the proposed action would occur, and the above-ground APE is defined as 90 feet beyond the boundaries of the Work Zone shown on Figure 2.

A URS Architectural Historian qualified under the *Secretary of the Interior's Professional Qualification Standards* (36 CFR Part 61) conducted a site visit and performed research of local and on-line repositories to assess the presence of National Register of Historic Places (NRHP) above-ground and archaeological resources in the APE. This individual evaluated the proposed action's potential to affect built historic properties within the APE. A URS Archaeologist performed the same assessment for archaeological resources. Local repositories included the

New York State Office of Park, Recreation and Historic Preservation (OPRHP) in Peebles Island, New York.

Above-ground properties in the proposed action area include the LIRR Emergency Services Building, the 11th Avenue viaduct constructed in the 1930s, and the High Line Freight Railroad viaduct (High Line). The LIRR Emergency Services Building and the 11th Avenue viaduct are not considered historic because they either date to the 1980s rail yard redevelopment or were substantially altered as part of the 1980s rail yard development project. The Hudson Yards had been used as a rail yard for more than 100 years prior to the 1980s LIRR development, and has served as a storage and maintenance facility of LIRR commuter trains since 1983. The following historic property is located in the Hudson Yards and the above-ground APE: the High Line Freight Railroad viaduct in the vicinity of 10th Avenue from Gansevoort Street to West 34th Street (High Line). Based on previous work done at the Hudson Yards and from OPRHP research, there is low potential for archaeological resources to be present in the archaeological APE.

Appendix C contains the NHPA Section 106 letter to the State Historic Preservation Officer (SHPO) that provides additional information about the APEs, cultural resources within the Hudson Yards Area, and the background information that was used to determine effects on historic properties.

3.6.2 Environmental Consequences

No Action

The no action alternative would not affect cultural resources because no excavation, demolition, or construction would occur.

Proposed Action

Temporary visual obstructions created by machinery and other construction equipment associated with the proposed action could result in temporary loss of context for the architectural resources nearby, resulting in temporary, adverse indirect impacts on cultural resources. Based on available documentation located in the files of the New York SHPO, the *Final General Environmental Impact Statement for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program* (MTA and NYCPC, 2004), the *Final Environmental Impact Statement for the Western Rail Yard* (NYCPC and MTA, 2009) and data gathered during a field investigation of the Hudson Yards in January 2013, the proposed action would have no adverse effect on the historic property identified in the above-ground APE.

As part of the Proposed Action, installation of temporary underpinnings for structural supports of the High Line would not adversely impact the character-defining features or associative attributes that qualify the structure for listing in the NRHP.

Although construction activities such as pile driving, caisson drilling, and bulldozing have the potential to inadvertently damage adjacent historic above-ground cultural resources from ground

vibrations, FRA would require Amtrak to implement protection measures such as monitoring of the High Line to avoid accidental damage during construction, as determined through consultation with the SHPO.

There would be no direct or indirect adverse effects on historic properties from the proposed action. FRA submitted a letter to the NY SHPO on July 2, 2014 requesting concurrence with this determination (Appendix C). A response was received from the NY SHPO in a letter dated July 22, 2014 concurring with FRA's determination and with the understanding that monitoring at the High Line will occur per the New York City Building Code Technical Policy and Procedure Notice (TPPN) #10/88 (Appendix C).

3.7 VISUAL RESOURCES

3.7.1 Affected Environment

The proposed action site is contained within the Hudson Yards and primarily occupies the approximately one-third of the southern portion of the Western Rail Yard (see Figures 1 and 2). The staging area for equipment and materials would be located in the southern portion of the Western Rail Yard. Although the Hudson Yards is bordered by solid permanent fencing at street-level in some areas, which blocks views of the yards from the street, the proposed action site can be seen through existing construction fencing from the street level, from floors above ground level in residential and commercial buildings surrounding the Hudson Yards, and from the 11th avenue bridge. When the portion of the High Line at 30th Street (High Line Section 3) opens in fall 2014 as a public park, the public will have open views from it into the Hudson Yards.

Because the proposed action site is part of an active passenger train storage and maintenance yard, existing views consist of storage and operation buildings, rail tracks, trains, vehicle access roads and ramps, miscellaneous train maintenance equipment, LIRR vehicles and worker vehicles. Construction projects unrelated to the proposed action, primarily the Overbuild Project, are being built in the Hudson Yards and there is considerable construction fencing, equipment, and materials staging that can be seen in the Hudson Yards. As the Overbuild Project progresses, views of the train storage and maintenance yard will be replaced by views of construction activities and then finished components of the Overbuild Project (platform over the Hudson Yards, buildings, parks, walkways, etc). Construction of the Overbuild Project will be ongoing during the entire construction period of the proposed action.

3.7.2 Environmental Consequences

No Action

The no action alternative would not result in any impacts on visual resources because no construction would occur.

Proposed Action

Construction activities associated with the proposed action would result in negligible short-term impacts on views of the Hudson Yards. Because existing buildings and tracks would be restored to their current configurations and the Extension would be buried below ground, no long-term direct or indirect visual impacts from the proposed action are anticipated.

3.8 HAZARDOUS MATERIALS AND HEALTH AND SAFETY

3.8.1 Affected Environment

Regulatory background related to hazardous materials can be found in Section 3.8.1, *Hazardous Materials and Health and Safety*, of the 2013 EA (see Appendix A).

Soil and groundwater within the Western Rail Yard have been previously assessed for contamination. In 2004, the Developer tested soils in the Western Rail Yard for contaminants under RCRA hazardous waste standards (MTA and NYCPC, 2004; NYCPC and MTA, 2009). Testing results indicated that soils throughout the Western Rail Yard are typical of soils in the New York urban environment and contain concentrations of benzene, ethylbenzene, semivolatile organic compounds (SVOCs) and metals that exceed NYSDEC's recommended soil cleanup objective (RSCO) thresholds (NYCPC and MTA, 2009). The benzene and ethylbenzene exceedances were determined to be isolated because only a selection of the soil samples (9 of 175 total soil samples for benzene and 3 of those 9 for ethylbenzene) was over the RSCOs for these contaminants (MTA and NYCPC, 2004). Potential petroleum contamination was noted in two of the soil samples and reported to NYSDEC. NYSDEC determined that one of those samples did not contain any elevated contaminants and the spill case associated with that sample had been closed. The additional sample, taken from the sidewalk near the intersection of 12th Avenue and 33rd Street (outside of the proposed action footprint), contained contamination consistent with petroleum but was determined to be isolated (MTA and NYCPC, 2004; NYCPC and MTA, 2009). None of the samples exhibited concentrations in excess of RCRA standards. The contaminated samples raise no unique environmental concerns, are indicative of background conditions in urban fill, and require no specific precautions beyond the typical measures used during construction at redevelopment sites in New York City (NYCPC and MTA, 2009).

The Hudson Yards Developer tested the groundwater in the Western Rail Yard for contamination in 2004 (NYCPC and MTA, 2009). SVOCs and VOCs that exceed NYSDEC Water Quality Standards were found in 2 of 11 samples. All of the 11 samples had metals in exceedance of NYSDEC Water Quality Standards; however, the elevated metal contamination is likely an attribute of the metals in suspended particles in the Western Rail Yard's turbid groundwater (NYCPC and MTA, 2009), which is common in urban areas with historic urban fill.

The Emergency Services Building contains a diesel-fired emergency generator and a NYSDEC Petroleum Bulk Storage underground storage tank that stores the diesel fuel used by the emergency generator.

3.8.2 Environmental Consequences

No Action

No construction would occur under the no action alternative; therefore, no impacts on worker and public safety or the environment from hazardous materials and wastes would occur.

Proposed Action

Based upon the 2004 soil testing data, soil and fill material that would be excavated from the Western Rail Yard during construction are not expected to require management as RCRA hazardous wastes. The isolated petroleum contamination found in one soil sample during the 2004 test is outside of the proposed action footprint, so no disturbance of soil potentially contaminated by petroleum would occur. All soil and fill excavated from the proposed action site would be hauled by truck to licensed disposal facilities in New York, New Jersey, or Pennsylvania. Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak would develop a Soil Management Plan to ensure that contaminated materials are handled, staged, transported, and disposed of in accordance with Federal, State, and local regulations.

Hazardous building materials (asbestos-containing materials [ACM], lead-based paint, and polychlorinated biphenyl-containing equipment) could be buried in the historic urban fill layer. Other hazardous materials in the proposed action area could include contaminated soils and groundwater. None of the construction waste (excavated materials and/or groundwater) is expected to require management as RCRA hazardous waste (NYCPC and MTA, 2009). However, Amtrak's construction contractor would prepare a Soil Management Plan and Groundwater Management and Dewatering Plan to describe the procedures for the handling and disposal of contaminated soil and groundwater if any are encountered. The off-site transport and disposal would be performed in accordance with Federal, State, and local regulations. Additionally, dust control best management practices would suppress any potential for contaminated dust generated by the construction activities, such as spraying water, thorough cleaning of on-site vehicles, placing gravel on exposed soil, and covering transport vehicles with tarps.

Amtrak's construction contractor would remove groundwater encountered during excavation from the Extension trench and would complete contamination verification testing. The Dewatering Plan would describe procedures to ensure any contaminated groundwater released during dewatering operations would be treated or disposed of in accordance with Federal, State, and local regulations.

Even though the Emergency Services Building was built in the mid-1980s after several bans on using ACM were implemented (MTA and NYCPC, 2009), there are still multiple building materials on the market allowed for use in the United States that contain ACM, such as: vinyl-asbestos floor tiles, roofing felt and coatings, asbestos-cement products, and gaskets. Therefore,

to ensure that building materials removed during the demolition of the Emergency Services Building would not expose workers to ACM, a licensed asbestos professional would perform an ACM survey. Documentation (test results, manufacturer's certification) of ACM status would be maintained with the proposed action's records, with the results forwarded to the LIRR Corporate Safety & Training Department. A lead-based paint survey would also be performed, with results kept in the proposed action's records and sent to the LIRR. Removal of any residual contents of the oil and water separators and the separators themselves would be handled and disposed of in accordance with all Federal, State, and local requirements.

Diesel fuel currently stored in the Emergency Services Building to be demolished would be placed in appropriate containers and transported according to Federal, State and local regulations for disposal or reuse. After the Emergency Services Building is rebuilt, a new diesel fuel tank and emergency generator would be installed with the same location, capacity, and function of the previous equipment.

Construction activities would include the use of hazardous materials and hazardous waste generation (i.e., solvents, hydraulic fluid, oil, and antifreeze) from construction equipment. Amtrak would implement appropriate safety measures such as preparing a Health and Safety Plan along with procedures for the handling, storage, and disposal of hazardous materials and wastes during construction activities to limit worker, public, and environmental exposure; therefore, no impacts on worker and public safety are expected. Prior to construction, Amtrak would also require the construction contractor to develop a site-specific plan containing hazardous materials and wastes spill prevention and cleanup procedures.

With implementation of the hazardous materials and hazardous waste best management practices and adhering to Federal, State, and local requirements for handling of hazardous materials and wastes, no direct or indirect adverse impacts from hazardous materials or wastes are anticipated as a result of the proposed action.

3.9 NOISE AND VIBRATION

3.9.1 Affected Environment

The New York City Noise Control Code (Local Law 113, 2005) establishes sound-level standards for various activities and equipment, contains guidelines, and sets limits for noise generated from construction activities. Noise generated by construction is evaluated using noise impact criteria provided in the *City Environmental Quality Review Technical Manual* (NYC Mayor's Office of Environmental Coordination, 2012). Excavation, including rock splitting and blasting, and underpinning activities are regulated by the New York City Buildings Department (New York City Buildings Department, 2014).

Existing noise levels throughout normal business hours (7:00 am to 7:00 pm) in the Western Rail Yard are high; outside of standard business and construction hours (evenings and weekends), noise levels are lower. Vehicular and train traffic and construction equipment create the most

common and the highest noise levels in the Western Rail Yard. Other commonly occurring loud noises include local vehicular traffic on City streets and aircraft flying overhead, particularly originating from a heliport on 12th Avenue. Construction noise is currently being generated in and around the Hudson Yards by projects unrelated to the proposed action, including nearby residential and commercial construction. Although there is a residential building to the immediate southeast and a convention center to the immediate north of the Western Rail Yard, no noise-sensitive receptors (such as churches, schools, hospitals, or landmarks/parks) are within hearing range of the Western Rail Yard.

The Western Rail Yard and surrounding areas currently experience vibration from existing trains and tunnels, vehicular traffic over the 11th avenue viaduct, construction activities such as rock excavation, rock splitting and blasting and operation of heavy equipment and construction vehicles.

3.9.2 Environmental Consequences

No Action

The no action alternative would have no effect on noise or vibration levels because no construction would occur.

Proposed Action

Construction activities associated with the proposed action such as rock splitting and blasting, the operation of heavy equipment, and haul trucks would cause temporary increases in noise levels, although these increases would be almost indistinguishable from existing construction noises already occurring in and surrounding the Hudson Yards. The section of the High Line surrounding the Hudson Yards is set to open in fall of 2014; therefore, there will be people visiting the High Line park adjacent to the Western Rail Yard while the proposed action is under construction. Although construction noise from the proposed action may disturb people visiting the High Line, the noise from the proposed action would be short-term and would blend in with the noise from other ongoing construction in the Hudson Yards such as the Overbuild Project, which will continue well beyond the completion of the proposed action. Amtrak's construction contractor would comply with the New York City Noise Control Code to minimize impacts from noise. In addition to following the City regulations, and based on noise mitigation measures that are currently being followed for construction of the concrete casing in the Eastern Rail Yard, Amtrak's contractor would limit rock splitting, blasting and/or pounding to the hours of 7:00 am to 10:00 pm to minimize disruptions to residents in nearby buildings. Amtrak's construction contractor would also implement good engineering practices that minimize equipment noise such as proper maintenance and operation by muffling devices and shutting off idling machinery when not in use.

Vibrations from rock excavation and construction can travel into the soil and rock and potentially into the foundations and walls of nearby buildings and facilities, including NYCTA's No. 7 line underground rail tunnel that is currently under construction below the bottom of the Extension.

Special excavation techniques such as rock splitting would be used to reduce vibration impacts so that no adverse impacts on nearby facilities, buildings, tracks, and railroad systems would occur. Amtrak would monitor vibration levels at the No. 7 line tunnel, the 11th Avenue bridge, LIRR facilities (as identified by LIRR) and along the High Line to determine if vibration from the proposed action is at levels acceptable to avoid adverse impacts on these structures and facilities; Amtrak would mitigate the vibrations to acceptable levels as needed in coordination with the property owners (i.e., LIRR, New York City Department of Parks and Recreation and Friends of the High Line for the High Line, NYCTA for the No. 7 line and New York City DOT for the 11th Avenue bridge). Amtrak's construction contractor would obtain excavation and rock splitting and blasting permits from the City's Buildings Department.

With implementation of noise and vibration control measures and compliance with city, State, and Federal noise regulations, noise and vibration impacts from the proposed action on buildings and operations would be short-term and within acceptable limits.

3.10 ACCESS AND TRAFFIC

3.10.1 Affected Environment

A detailed discussion on the access and traffic surrounding the Hudson Yards, the routes that employees associated with the proposed action may use when commuting to work, local truck routes, and on- and off-street parking can be found in Section 3.10.1, *Access and Traffic*, of the 2013 EA (see Appendix A). Because the access and traffic information provided in the 2013 EA is current to date, Amtrak assumes that these same routes for employees and trucks associated with the proposed action would apply to this SEA.

The 11th Avenue bridge over the rail yards, which divides Hudson Yards into the Eastern Rail Yard and Western Rail Yard, carries six lanes of southbound vehicular traffic with sidewalks on either side of the roadway. Currently only two lanes of traffic and one sidewalk are open due to construction activities on the High Line and the Overbuild Project; these closures are expected to last through fall 2014.

3.10.2 Environmental Consequences

No Action

The no action alternative would have no effect on traffic and access because no construction would occur.

Proposed Action

The proposed action would result in additional traffic on the streets both within Manhattan and outside of Manhattan from construction workers traveling to the Hudson Yards, concrete trucks, haul trucks transporting excavated materials from the proposed action site, and from delivery of construction-related equipment to the proposed action site. These direct traffic impacts would be most noticeable when traffic is already congested during morning and evening peak commute

times, primarily around the intersection of 11th Avenue at West 34th Street during the morning peak traffic period, the intersections of West 34th Street with both 11th and 10th Avenues during mid-day traffic peaks, and at 12th Avenue/West 34th Street during the evening rush hour.

Throughout the proposed action duration, Amtrak anticipates that it would need to haul approximately 5,000 truckloads of soil and rock from the proposed action site. Both soils and rock that are excavated would be hauled by truck to facilities in New York, New Jersey, or Pennsylvania (up to 100 miles away) for disposal and recycling, respectively. Because disposal facilities operate during normal business hours, haul trucks would only operate during the day, with an estimated average of 19 haul trucks per day leaving the proposed action site during the excavation period. On some weekdays, more than 19 haul trucks may leave the site if a holiday or other construction-related access or delays limit hauling days. The additional truck traffic would result in direct adverse impacts on traffic in the region from the proposed action; however, given the existing amount of traffic in Manhattan and the region, impacts would be temporary and minor. Adherence to truck routes for haul trucks associated with the proposed action and employee and construction equipment parking in designated areas would minimize impacts on access and traffic from the proposed action.

There would be direct adverse impacts on traffic using the 11th Avenue bridge during the construction period of the Extension portion underneath the 11th Avenue bridge (February 2015 to October 2015) because road closures would be required on the 11th Avenue bridge between 30th and 33rd Streets. The bridge would be removed in a two-staged sequence, removing the eastern and western halves of the bridge at opposing times to prevent full closure of the bridge. For each stage of bridge closure, two lanes would remain open. Safety measures such as a temporary concrete barrier and lighting would be used to maintain safe roadway conditions. Lane closures on the 11th Avenue bridge currently exist due to construction of the High Line and Overbuild Project, and these lane closures would continue with implementation of the proposed action. Upon the completion of the Extension construction underneath the 11th Avenue bridge, all lanes on the 11th Avenue bridge would be restored. Adverse impacts to traffic from this road closure would be temporary.

Worker and equipment access to the Hudson Yards would be provided by an existing entrance at 30th Street and in coordination with MTA and LIRR. All construction vehicles and equipment would be stored or parked in the staging areas located in the southern portion of the Western Rail Yard or in the smaller staging areas in portions of the Eastern Rail Yard closest to 11th Avenue. Minor impacts from construction workers using City streets for parking of their personal vehicles near the Hudson Yards would occur. Construction fencing (e.g., chain link fence), and other barriers would be maintained around the work zone to prevent public access.

Impacts to pedestrians would be direct and noticeable during the construction period of the Extension portion underneath the 11th Avenue bridge because closures of the sidewalk on either side of the 11th Avenue bridge would be required. The sidewalks on either side of the bridge would be closed at opposing times to maintain one sidewalk at all times for pedestrian access.

Upon the completion of the Extension construction underneath the 11th Avenue bridge, the sidewalks on both sides of the 11th Avenue bridge would be restored to service. Since one sidewalk on the bridge would be open and available to pedestrian traffic at all times, adverse impacts to pedestrians from this road closure would be minor and temporary.

3.11 UTILITIES AND LIRR OPERATIONS

3.11.1 Affected Environment

LIRR and MTA currently use the Hudson Yards for train switching, storage, and maintenance. Several utilities are located in the Hudson Yards as described below.

Storm Drainage System

An existing 38-inch by 60-inch storm drainage system currently collects peak discharges from the northern section of the Western Rail Yard. Since the Western Rail Yard is primarily impervious surface, most of the stormwater entering the system is runoff that has been channeled into the yard's drainage system. Runoff from the Western Rail Yard travels through the drainage system to an outfall in the Hudson River. This outfall is regulated under NYSDEC's General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems, of which LIRR is a permittee (NYCPC and MTA, 2009). Rainwater that does infiltrate the ground percolates down into the water table and joins groundwater flowing towards the Hudson River.

Electrical

Existing electrical systems (including Alternating Current [AC] power, Direct Current [DC] negative, and DC positive) provide service to facilities within Hudson Yards The AC power system currently provides lighting for the access roads, exterior lighting of the operations and storage buildings, and facility power to the buildings. Electrical power is provided by the City to the light poles on either side of the 11th Avenue bridge.

Water

The Western Rail Yard contains 10-inch and 6-inch fire protection water lines and potable water lines, which provide service to the fire hydrants and facilities, respectively.

Emergency Services Building

The Emergency Services Building contains a fire protection water line pump, a diesel-fired emergency generator, an underground diesel fuel tank that serves the emergency generator, and a switch gear and battery charging room for the toilet servicing carts. A water tank is located on the northwest exterior side of the building. The toilet servicing area is staffed daily by eight LIRR employees. The remainder of the building's operations are only accessed by LIRR personnel on a temporary basis when an item is needed or requires maintenance.

Train Tracks

The Hudson Yards rail yard contains 30 yard tracks for the storage of trains. Track 0 is located in the Eastern Rail Yard near the MOE Building and is used for the storage of trains. Track 1 is used to move trains into the Eastern Rail Yard and onto the six tracks that feed into the MOE Building for train service and repair. The MOE Building and yard tracks 0 and 1 are currently out of service due to construction of a concrete casing in the Eastern Rail Yard.

3.11.2 Environmental Consequences

No Action

No impacts on utilities and infrastructure would occur under the no action alternative because no construction would occur.

Proposed Action

Amtrak's construction contractor would rebuild all utilities in their original locations after completion of the proposed action and restore the utilities to their full pre-construction function and capacity.

Storm Drainage System

Amtrak would remove approximately 300 feet of the existing Western Rail Yard storm drainage system and three manholes for excavation of the trench for the Extension underneath the 11th Avenue bridge. Amtrak would re-route the drainage system further north in the Western Rail Yard. The re-routing of the system would require the temporary installation of 360 feet of 48-inch-diameter plastic piping and 4 manholes. Upon the proposed action's completion, the temporary re-routing piping and manholes would be removed and the original drainage system and manholes would be returned to their original capacity and function.

During the construction of the Extension under the 11th Avenue bridge, each side of the bridge would be out of service at opposing times. While the west side of 11th Avenue is closed, the western storm drainage system on the bridge would be moved to the functioning east side. While the east side of 11th Avenue is closed, the eastern storm drainage system on the bridge would be moved to the functioning west side.

Electrical

Two electrical AC duct banks in the proposed Extension alignment area west of 11th Avenue would need to be removed and temporarily relocated during the construction of the concrete casings. During the construction of the Extension under the 11th Avenue bridge, temporary lights would be provided so that lighting on each side of the bridge is maintained during construction.

Water

The fire protection and potable water lines located within the proposed action alignment would need to remain in service during construction because they provide service to areas of the

Hudson Yards other than the Western Rail Yard. Therefore, 400 linear feet each of potable water and fire suppression lines would be temporarily relocated outside of the construction zone.

Emergency Services Building

The Emergency Services Building would be demolished during the proposed construction and utility services to this building would be temporarily relocated in Hudson Yards. At the completion of the Extension construction, the Emergency Services Building would be rebuilt in its original location. No facility upgrades would occur during reconstruction of the Emergency Services Building other than changes needed to conform to any new building codes and standards to be in compliance with State and Federal building codes and relevant building standards.

Items currently inside the building or their replacements, including the water tank at the building's exterior, generally would be temporarily relocated in Hudson Yards. Prior to demolition of the building, equipment currently in the building that provides essential services would be installed in the Hudson Yards to provide continual services. This equipment includes an emergency generator and related fuel storage, booster pumps and related auxiliary equipment for the fire water mains, and an electrical substation. Amtrak's contractor would handle any diesel fuel currently associated with the generator that is currently housed in the building, either by disposing it or reusing or recycling it in accordance with applicable regulatory requirements. During the relocation, all operations and services associated with the Emergency Services Building would be maintained and accessible throughout construction. Once the Emergency Services Building is rebuilt, a new emergency generator and diesel tank would be installed in accordance with all regulatory and permitting requirements; all other items (or new replacements) would return to their original location, capacity, and function. The eight LIRR employees that staff the toilet servicing portion of the Emergency Services Building would be temporarily relocated during construction and would return to their original reporting location once the building is rebuilt.

Train Tracks

Amtrak would need to place the portion of yard tracks 0 and 1 in the Western Rail Yard out-of-service during construction of the Extension. The tracks, track 0 in the Eastern Rail Yard near the MOE Building and track 1 which leads into the yard's MOE Building in the Eastern Rail Yard, are currently not in use because the MOE Building has been demolished and the lead tracks removed for the construction of the concrete casing in the Eastern Rail Yard. The portion of yard tracks 0 and 1 in the Western Rail Yard would reach substantial completion by October 2015 concurrent with opening of the new MOE Building. Amtrak would obtain LIRR approval prior to taking tracks out of service.

Summary

Temporary moderate direct and indirect adverse impacts to LIRR and MTA operations would occur as a result of the proposed action. Amtrak would make provisions to maintain MTA and

LIRR operations throughout construction. Amtrak would coordinate a detailed Site Logistics Plan with the LIRR and MTA during the design phase of this proposed action. With implementation of the mitigation measures discussed in this section, impacts on LIRR and MTA operations and onsite facilities would not be adverse.

3.12 SECTION 4(F) EVALUATION OF IMPACTS TO THE HIGH LINE

3.12.1 Affected Environment

As stipulated in 49 USC 303(c) (referred to as Section 4[f]), U.S. DOT agencies, which includes FRA, may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance, or land of an historic site of national, state or local significance as determined by the Federal, state, regional or local officials having jurisdiction over the resource only if there is no prudent and feasible alternative to using that land and the program or project includes all possible planning to minimize harm to such properties from use. The High Line is a publicly owned park and a historic site listed in the NRHP and is considered a protected property under Section 4(f). Upon evaluation of programs and projects under Section 4(f), FRA may determine that there is no use, direct use, temporary use, or constructive use of the Section 4(f) property. De minimis impacts are described under 49 USC 303(d).

Under Section 4(f), the project can use the Section 4(f) resource as a direct use (resource is permanently incorporated as part of the project), temporary use (resource is temporarily utilized adversely in terms of preservation purposes), or constructive use (resource is not permanently incorporated into the project, but the impacts are severe and significantly impair the resource).

3.12.2 Environmental Consequences

No Action

No impacts on properties that require evaluation under Section 4(f) of the DOT Act would occur under the no action alternative because no construction would occur.

Proposed Action

Because the majority of the High Line park is open to the public, with Section 3 of the High Line that surrounds the Hudson Yards planned to be open for public use in fall 2014, it has been evaluated as an existing, publically owned park under Section 4(f). The temporary supports constructed as part of the proposed action would not adversely impact the activities, features, or attributes that qualify the park for protection under Section 4(f). The section of the High Line park that is above the proposed action (Section 3 (see Figure 2)) would not need to be closed during the placement and removal of the temporary support structures that will underpin the High Line during construction of the Extension. The proposed action would not preclude the public from using the High Line park during the construction period of the Extension, nor would

it have any short- or long-term impacts on the public's ability to use the park or on the High Line structure itself. Therefore, FRA has determined that the proposed action would not result in use of a Section 4(f) property.

3.13 CUMULATIVE EFFECTS

This section addresses cumulative effects from the proposed action. Indirect impacts are discussed under the Environmental Consequences sections for individual resources in Chapter 3 and are therefore not discussed further except where they would contribute to potential cumulative impacts. Cumulative effects are the impact on the environment, which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, State, and local) or individuals.

3.13.1 Reasonably Foreseeable Future Actions

The following is a list of the major projects at the Hudson Yards that are included in the evaluation of cumulative effects for the proposed action; this list has been updated from the list of future actions described in the March 2013 EA. These projects are in the immediate vicinity of the proposed action and are currently ongoing, or planned with funding, and could potentially result in cumulative impacts when combined with the proposed action.

- Construction of the concrete casing in the Eastern Rail Yard of the Hudson Yards under the proposed Project (see March 2013 EA in Appendix A).
- The High Line Redevelopment Project is a public park built on an historic freight rail line elevated above the streets on Manhattan's West Side. It is owned by the City of New York, and maintained and operated by Friends of the High Line. The recycling and redesign of the former railway into an aerial greenway has spurred real estate development in the adjacent neighborhoods. Section 3 of the High Line, which is adjacent to the Hudson Yards, is set to open in fall 2014.
- The Hudson Yards Project (Overbuild Project) is a mixed-use development of residential, commercial, and civic uses and open space to be construction on a platform over the Hudson Yards. The project is led by a private developer, Related Companies, and will contain approximately 13 million square feet of residential and commercial space in three office buildings, multiple residential towers, a school, and a cultural facility. The project will benefit from several public investments, including the extension of the No. 7 Subway line to a new station at 34th street between 10th and 11th Avenues and investments in the nearby High Line and Hudson River Park. The Developer has started construction of this project in the Eastern Rail Yard. The Overbuild Project is anticipated to be completed in late 2018.

- The Brookfield Manhattan West development, located at Ninth Avenue and 33rd Street, is 28.6 million square feet of office space and mixed-use development. The completed development will consist of two towers, one for office space and one for residential space, an outdoor art and entertainment plaza, and a hotel. Construction on the development started in 2013 and is anticipated to be completed in 2020.
- An application has been submitted by MTA and LIRR, in coordination with Amtrak, to FRA's Hurricane Sandy Competitive Resilience Program for the construction of perimeter protection around the Hudson Yards to prevent Hudson River floodwaters from entering Hudson Yards. The perimeter protection would include modifying or replacing the Hudson Yards' eastern and northern perimeter walls and installing a temporary wall on the southern perimeter that can withstand floodwaters. The installation of sump pumps and sump pits near 12th Avenue would also be included. Pending application approval, the design is anticipated to start in late 2014.
- In March of 2013, LIRR began a restoration project in the Hudson Yards that includes replacing numerous Hurricane Sandy damaged signals, switches, third rail components, and other assets. The project also includes the replacement of LIRR facilities' flood-damaged fire alarm systems. The restoration project is currently ongoing.
- Various entities have proposed conceptual proposals and plans for new buildings and renovations in the surrounding area. No specific plans have been identified at this time.

Because Amtrak is only in the early planning stages of studies to consider expanded services and increased train capacity with a new tunnel under the Hudson River (see discussions of the Master Plan, Northeast Corridor Future Program Studies, and the Gateway Program, discussed in Chapter 1), Amtrak has not yet developed specific plans or designs, nor has it received or identified any funding for construction of such a tunnel at this time. Therefore, this program could not be considered in the evaluation of cumulative impacts. Additionally, no rail or rail yard projects are planned in the foreseeable future at the Hudson Yards by LIRR, MTA, or Amtrak.

3.13.2 Potential Cumulative Impacts

This section addresses only those resources subject to cumulative environmental effects; resources that are not present within the proposed action site or that would not be affected by the proposed action are not addressed. Cumulative impacts from the proposed action when combined with other projects discussed in Section 3.13.1 above are described below. All impacts from the proposed action would be temporary, lasting part or all of the approximate 30 months of construction. Additionally, because the proposed action is for construction of an underground structure that would be covered by the Overbuild Project, and the scale of the proposed action is minor when compared to the scale and magnitude of the Overbuild Project, the contribution of the proposed action to cumulative impacts, when combined with the Overbuild Project impacts, would be moderate.

Cumulative impacts from the proposed action when combined with the reasonably foreseeable future actions listed above would be limited to the proposed action construction phase and include an increase in traffic, air and noise pollution, soil and groundwater disturbance, disturbances to nearby buildings and facilities from vibration, impacts on visual resources from the presence of construction equipment, the potential for contact with hazardous materials, and impacts on LIRR and MTA utilities and operations. These cumulative impacts would be temporary, and with implementation of mitigation measures such as traffic control, adherence to city, State, and Federal regulations for noise and vibration and hazardous wastes and materials, OSHA regulations, and Amtrak's coordination with the Developer, Friends of the High Line, New York City DOT, LIRR, and MTA, any cumulative impacts are anticipated to be minor to moderate.

This page intentionally left blank.

CHAPTER FOUR DISTRIBUTION

The SEA is available for public review online on FRA's Web site at: https://www.fra.dot.gov/Page/P0666. Please submit comments no later than September 18, 2014 via email to HillA@amtrak.com or by mailing them to:

Ms. Amrita Hill
Principal Officer, Major Projects NEC South
Amtrak
60 Massachusetts Ave NE
4th Floor
Washington DC 20002

A hard copy of the SEA is available at the following location:

Science Industry and Business Library
New York Public Library
188 Madison Avenue
New York, NY 10016
(917) 275-6975
Library Hours:
Mon., Fri., Sat.: 11:00 a.m. – 6:00 p.m.
Tues., Wed., Thurs.: 10:00 a.m. – 8:00 p.m.
Sun.: Closed

The Federal Transit Administration, the NYSDEC, New York City Department of Parks, Friends of the High Line, and New York City DOT were directly invited to comment on the SEA.

This page intentionally left blank.

CHAPTER FIVE LIST OF PREPARERS

URS:

Suzanne Richert, NEPA Specialist, Project Manager

Christopher Gerber, CHMM, Program Manager

Angela Chaisson, CWB, Senior NEPA Specialist, Internal Technical Reviewer

Stephanie Liguori, NEPA Specialist, Author Various Sections

Mark Edwards, Principal Cultural Resources Specialist, Cultural Resources Section

Brian Cleven, Senior Archaeologist, Cultural Resources Section

Vijay Apte, Senior Air Quality, Scientist, Author Air Resources Sections

Amy Siegel, Document Control Supervisor

Young Cho, Document Control Specialist

FRA:

Michelle W. Fishburne, Environmental Protection Specialist

Trevor Gibson, Transportation Analyst

Elizabeth Gross, Attorney Advisor

Amtrak:

Amrita Hill, Principal Officer Major Projects, Infrastructure and Investment Development

Michael Stern, Associate General Counsel, Corporate Affairs

Marilyn Jamison, Senior Director, Major Projects and Environmental Support

Andrew Galloway, Chief, NEC Corridor Planning and Performance

Claudia Taccetta, Senior Environmental Coordinator

Craig Rolwood, Project Director, Structures Design

James Richter, Deputy Chief Engineer, Structures

This page intentionally left blank.

CHAPTER SIX REFERENCES

Amtrak. 2011. Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase I – Section 1. Final Report. April 8.

Amtrak. 2012a. Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase 1 – Section 2A. Draft Report. July 12.

Amtrak. 2012b. Amtrak Gateway Project, High Speed Rail Penn Station, New York Feasibility Study, Phase 1 – Section 2B. Final Report. August 17.

Amtrak. 2014. Grant Application to Federal Railroad Administration for the Hudson Yards Concrete Encasement Project – Phase II. March 21.

City of New York. 2013. Inventory of New York City Greenhouse Gas Emissions. December. Available online at http://nytelecom.vo.llnwd.net/o15/agencies/planyc2030/pdf/greenhousegas_2013.pdf. Accessed April 16, 2014.

City of New York. 2014. New York City Traffic Rules and Regulations, Chapter 4, Title 34 of the Rules of the City of New York. 2-15-2012. Available online at http://www.nyc.gov/html/dot/html/motorist/traffic_rules.shtml. Accessed April 25, 2014.

EPA. 1995. Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources. AP-42, Fifth Edition. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. January. Available online at http://www.epa.gov/ttn/chief/ap42/. Accessed April 16, 2014.

EPA. 2014a. National Ambient Air Quality Standards (NAAQS) Website. http://www.epa.gov/air/criteria.html. Accessed April 16, 2014.

EPA. 2014b. The Green Book Nonattainment Areas for Criteria Pollutants. http://www.epa.gov/oaqps001/greenbk/index.html. Accessed April 16, 2014.

Gateway Trans-Hudson Partnership. 2013. Amtrak Gateway Project: Engineering Design of Stage 1 Tunnel in the Hudson Yards. Confidential Draft Submission to Amtrak. September 12.

Jones & Stokes. 2007. Addressing Climate Change in NEPA and CEQ Documents. Updated in August. www.climatechangefocusgroup.com. Accessed March 7, 2013.

Metropolitan Transportation Authority (MTA) and New York City Planning Commission (NYCPC). 2004. Final General Environmental Impact Statement for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program. http://www.nyc.gov/html/dcp/html/hyards/eis.shtml. Accessed April 28, 2014.

NYCPC and MTA. 2009. Final Environmental Impact Statement for the Western Rail Yard. October. http://www.nyc.gov/html/dcp/html/env_review/western_rail_yard.shtml. Accessed April 28, 2014.

New York City Buildings Department. 2014. Excavation information website. http://www.nyc.gov/html/dob/html/safety/excavation.shtml. Accessed May 1, 2014.

New York City Mayor's Office of Environmental Coordination. 2012. City Environmental Quality Review Technical Manual. January. Revised June 5, 2013. http://www.nyc.gov/html/oec/html/ceqr/technical_manual_2012.shtml. Accessed April 25, 2014.

New York State Department of Environmental Conservation (NYSDEC). 2010. Air Quality Management Plan. June. http://www.dec.ny.gov/chemical/72352.html. Accessed April 16, 2014.

NYSDEC. 2013. Letter to Judith A. Enck, EPA Regional Administrator. October 2, 2013. Available online at: http://www.epa.gov/pmdesignations/2012standards/rec/r2nyrec1.pdf.

U.S. Air Force (USAF). 2009. Air Emissions Factor Guide to Air Force Stationary Sources. December 2009. HQ AFCEE/TDNQ, San Antonio, TX.

USAF. 2013. Air Emissions Guide for Air Force Mobile Sources. August. Air Force Civil Engineer Center, San Antonio, TX.

Appendix A

Environmental Assessment and Finding of No Significant Impact for Construction of a Concrete Casing in the Hudson Yards, New York, New York

This page intentionally left blank.

ENVIRONMENTAL ASSESSMENT
FOR CONSTRUCTION OF A CONCRETE CASING IN THE HUDSON YARDS, NEW YORK, NEW YORK

Prepared Pursuant to
the National Environmental Policy Act (42 U.S.C. § 4332), and
FRA's Procedures for Considering Environmental Impacts
(64 FR 28545 and 78 FR 2713)

by the National Railroad Passenger Corporation (Amtrak)
and
Federal Railroad Administration (FRA)

March 2013

TABLE OF CONTENTS

List of Appendices

Figures

Tables

Photographs

AC	Alternating Current
ACM	Asbestos Containing Materials
APE	Area of Potential Effect
bgs	below ground surface
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO_2	Carbon dioxide
DC	Direct Current
DEP	New York City Department of Environmental Protection
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FRA	Federal Railroad Administration
GHG	Greenhouse Gas
LIRR	Long Island Rail Road
MOE	Maintenance of Equipment
MTA	Metropolitan Transportation Authority
$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NEC Future	Northeast Corridor Future Program Studies
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NJT	New Jersey Transit
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxide
NRHP	National Register of Historic Places
NYC	New York City
NYSDEC	New York State Department of Environmental Conservation
OPRHP	New York State Office of Park, Recreation and Historic Preservation
OTR	Ozone transport region
Pb	Lead
PM_{10}	Particulate matter less than or equal to 10 microns
$PM_{2.5}$	Particulate matter less than or equal to 2.5 microns
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way
SDP	Service Development Plan
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SVOC	Semivolatile Organic Compound
U.S.C.	U.S. Code
VOC	Volatile Organic Compound

This page intentionally left blank.

CHAPTER ONE INTRODUCTION, BACKGROUND, PURPOSE, AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) examines the potential environmental impacts of constructing an underground concrete casing through the John D. Caemmerer West Side Yard (also referred to as Hudson Yards) rail yard in New York, NY. The casing would preserve a right-of-way (ROW) for the possibility of future expansion of rail service between New Jersey and New York (see Figure 1) and would support Amtrak's efforts to improve resiliency in response to future disasters in Amtrak's Northeast Corridor. This EA is prepared in accordance with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 *et seq*.), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and the Federal Railroad Administration (FRA) *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545 [May 26, 1999] and 78 FR 2713 [January 14, 2013]). This EA also documents compliance with other applicable Federal environmental laws and regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470) and the Clean Air Act (CAA) (42 U.S.C. 7401 *et seq*.).

The proposed underground concrete casing (the "proposed Project") involves construction of an underground rectangular structure 800 feet long, 50 feet wide, and approximately 35 feet tall. The casing would preserve an underground ROW as a potential alignment alternative for a new future tunnel under the Hudson River into New York Penn Station. The National Railroad Passenger Corporation (Amtrak) is the proposed Project sponsor and would design and construct the underground concrete casing. Because the Project site—the Hudson Yards rail yard—is owned by the Metropolitan Transportation Authority (MTA) and used by the Long Island Rail Road (LIRR), Amtrak is preparing this EA in coordination with MTA and LIRR. Preliminary project cost estimates for the design and construction of the concrete casing range from $120 million to $160 million. FRA is the lead Federal agency for this EA because Amtrak anticipates constructing the proposed Project using Federal funding managed through the FRA.

1.2 BACKGROUND

In 2010, Amtrak, in cooperation with FRA, representatives of 12 northeastern States, commuter railroad owners, and other stakeholders prepared the *Northeast Corridor Infrastructure Master Plan* (Master Plan) (Amtrak, 2010a) for Amtrak's Northeast Corridor infrastructure, which predicts a significant increase in Amtrak and New Jersey Transit (NJT) ridership and train service across the Hudson River by the year 2030. Numerous other studies have identified the need for expansion of intercity and commuter train services into Penn Station, including the *Amtrak Vision for the Northeast Corridor 2012 Update Report* (NEC Vision Update) (Amtrak, 2012a), and *A Vision for High-Speed Rail in the Northeast Corridor* (Amtrak, 2010b), and the *Northeast Corridor Future Program Studies* (FRA, 2013). These studies indicate that the existing two 100-year-old, single-track tunnels under the Hudson River, connecting New Jersey and New York

Figure 1: Hudson Yards Concrete Casing Project Location Map

- Hudson Yards
- Project Location
- NJ-495
- Roads

Federal Railroad Administration

Imagery:
ESRI ArcGIS Online and data partners

Date.....January 2013
Prepared for.....Federal Railroad Adminstration (FRA)
Contract.....BPO1001987

City, currently operate at maximum capacity—approximately 25 trains per hour per direction—and are insufficient to meet the projected increase in demand.

The Master Plan recommends construction of a new tunnel under the Hudson River to meet the need of increased commuter rail ridership projections. The Master Plan described a vision encompassing all classes of passenger service and clearly documents that the current Penn Station and Hudson River tunnel system is vulnerable to continuous delay and disruption and cannot accommodate growth essential to the region's continued vitality.

As a key part of its planning for future service to and from New York City, Amtrak has developed a conceptual program, known as the "Gateway Program," which includes a vision to provide future double track capacity between Newark, New Jersey, and New York Penn Station. The Gateway Program includes two new track tunnels under the Hudson River from New Jersey, which would converge and travel through the west side of Manhattan to connect with a future expanded Moynihan and Penn Station, as well as elements in New Jersey including: new Portal Bridges, Newark to Secaucus improvements, and Newark and Secaucus Station Improvements. Amtrak is in the early planning stages of the Gateway Program, and there are no definitive funding sources for design or construction. Amtrak has developed conceptual studies to evaluate the feasibility of building future tunnels under the Hudson River from New Jersey through the west side of Manhattan to connect with Penn Station. These studies determined that the Hudson Yards Eastern Rail Yard provides the appropriate site for connectivity to Penn Station, from the west, and there is limited space available underground to construct a tunnel that could integrate new operations with the existing infrastructure at Penn Station (further details about the importance of the proposed Project location in the Eastern Rail Yard are discussed in Chapter 2 of this EA). While the proposed Project would preserve the ROW beneath the Hudson Yards, and thus the viability of a future tunnel from the west into Penn Station, it does not preclude the evaluation of alternative alignments for increasing capacity or services into Manhattan in future NEPA analyses as these conventional programs develop into proposed projects for Federal funding.

In February 2012, FRA launched the Northeast Corridor Future Program Studies (NEC FUTURE), a comprehensive planning effort to define, evaluate and prioritize future investments in the Northeast Corridor. The NEC FUTURE purpose and need discusses the present and future challenges facing the Northeast Region and identifies a need and continual growth in passenger rail transportation demands. The NEC FUTURE work includes both a Service Development Plan (SDP) and a broad environmental analysis of program-level alternatives to create a framework for the future investments needed to improve passenger rail capacity and service through 2040. A Tier 1 Environmental Impact Statement and the SDP are currently underway with expected completion in 2015.

The flooding of Amtrak's existing rail tunnels from Superstorm Sandy and the resulting extended rail service outage into Penn Station highlighted the vital need for improvements to harden the existing tunnel system from future flooding and other emergencies and to create redundant capacity into Penn Station. Superstorm Sandy exposed the risks of solely relying on a system of

100-year-old tunnels for rail access into New York City, the Nation's biggest metropolis and financial capital. Equally important, new tunnel infrastructure would allow removal of the existing century-old tunnels from service for extended periods to retrofit them with flood prevention measures and make other improvements needed to ensure reliable operation, which is currently not possible because of the current density of rail traffic in the existing tunnels.

1.3 PURPOSE AND NEED

In 2010, the Related Companies, a real estate development corporation (Developer), under an agreement with LIRR and MTA, proposed plans to develop the area above the Hudson Yards. This development, referred to as the Overbuild Project, has all necessary local and State approvals, and construction of the Overbuild Project south of the proposed Project site started in December 2012. The Overbuild Project involves constructing a platform above the Hudson Yards that will provide the footprint for commercial and residential development with buildings as tall as 1,250 feet above the ground surface. The placement of immense support structures throughout the Eastern Rail Yard for the Overbuild Project platform is projected to start in mid-2013.

The purpose of the proposed Project is to preserve an underground ROW in the Eastern Rail Yard of the Hudson Yards between 10th and 11th Avenues. Amtrak has identified this area underneath the Hudson Yards as the only viable location where a future tunnel from the west (under the Hudson River) could provide a direct connection with the existing infrastructure in Penn Station (Amtrak, 2011; Amtrak, 2012b; Amtrak, 2012c). The placement of immense support structures throughout the Eastern Rail Yard for the Overbuild project, projected to begin in mid-2013, will permanently foreclose the use of the area underneath the Hudson Yards for the construction of a future tunnel from the west connecting with Penn Station.

Preserving the ROW would maintain opportunities to expand rail services to meet future demand as well as improve intercity and commuter rail system safety and reliability. In addition, this proposed Project supports Amtrak's effort to improve resiliency in the passenger rail system for response to disasters, particularly flooding. New construction, including that proposed to preserve the ROW, would be designed to withstand flood levels at new standards, using criteria that would have prevented the flooding caused by Superstorm Sandy. There is an urgent need to preserve the ROW. If it is not preserved while the Overbuild Project foundations are being constructed, the use of this location under Hudson Yards would be permanently lost, and along with it one possible alignment for future expansion of rail service between New York and New Jersey that is dependent on this ROW.

CHAPTER TWO DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The proposed action of this EA is to design and construct an underground concrete casing in the Eastern Rail Yard portion of the Hudson Yards rail yard in the borough of Manhattan, New York City, NY. In a series of studies, Amtrak, in coordination with LIRR, MTA, and the Developer, has determined that there is one clear alignment on the west side of Manhattan–Hudson Yards– that would allow full connectivity of a future tunnel into Penn Station from the west. Under the proposed action, Amtrak would preserve an underground ROW to maintain this alignment as part of an alternative for future study, and only viable option to enter Penn Station from the west. Amtrak has determined that a concrete casing could be designed and constructed in conjunction with the Overbuild Project to preserve this area under Hudson Yards. The studies that evaluated the location, methods, and timing to preserve the ROW are described below.

2.1.1 Alignment of the ROW

Amtrak conducted a series of studies in 2011 and 2012 to evaluate conceptual-level alignments for the location of a new tunnel between the Hudson River and Penn Station, including: *Penn Station New York Major Support Facilities and Potential Improvements between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase I – Section 1* (Amtrak, 2011), *Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase 1 – Section 2A* (Amtrak, 2012b), and *Amtrak Gateway Project, High Speed Rail Penn Station, New York Feasibility Study, Phase 1 – Section 2B* (Amtrak, 2012c). As a result of these three studies, Amtrak determined that the Hudson Yards Eastern Rail Yard (see Figure 1) is the only location that could provide the appropriate space for the vertical and horizontal alignment of a new tunnel that would be fully and effectively integrated operationally with the existing Penn Station complex of tracks and platforms.

Within the Eastern Rail Yard, the specific location of a new tunnel is limited by physical and design constraints such as the presence of the Empire Line Tunnel, existing building foundations, and elevation requirements for the trains that would use the tunnels. Therefore, in a study prepared by Tutor Perini Corporation and Parsons Brinckerhoff, 2012 (Appendix A), Amtrak determined there is one underground location that is viable for a future tunnel within the Eastern Rail Yard (see Figure 2).

2.1.2 Timing

An in-depth engineering analysis undertaken by Amtrak, the Developer, LIRR, MTA and other parties (Tutor Perini/Parsons Brinkerhoff, 2012 [Appendix A]) determined that construction of the concrete casing needs to start prior to construction of the Overbuild Project support structures that are planned in the area of the ROW.

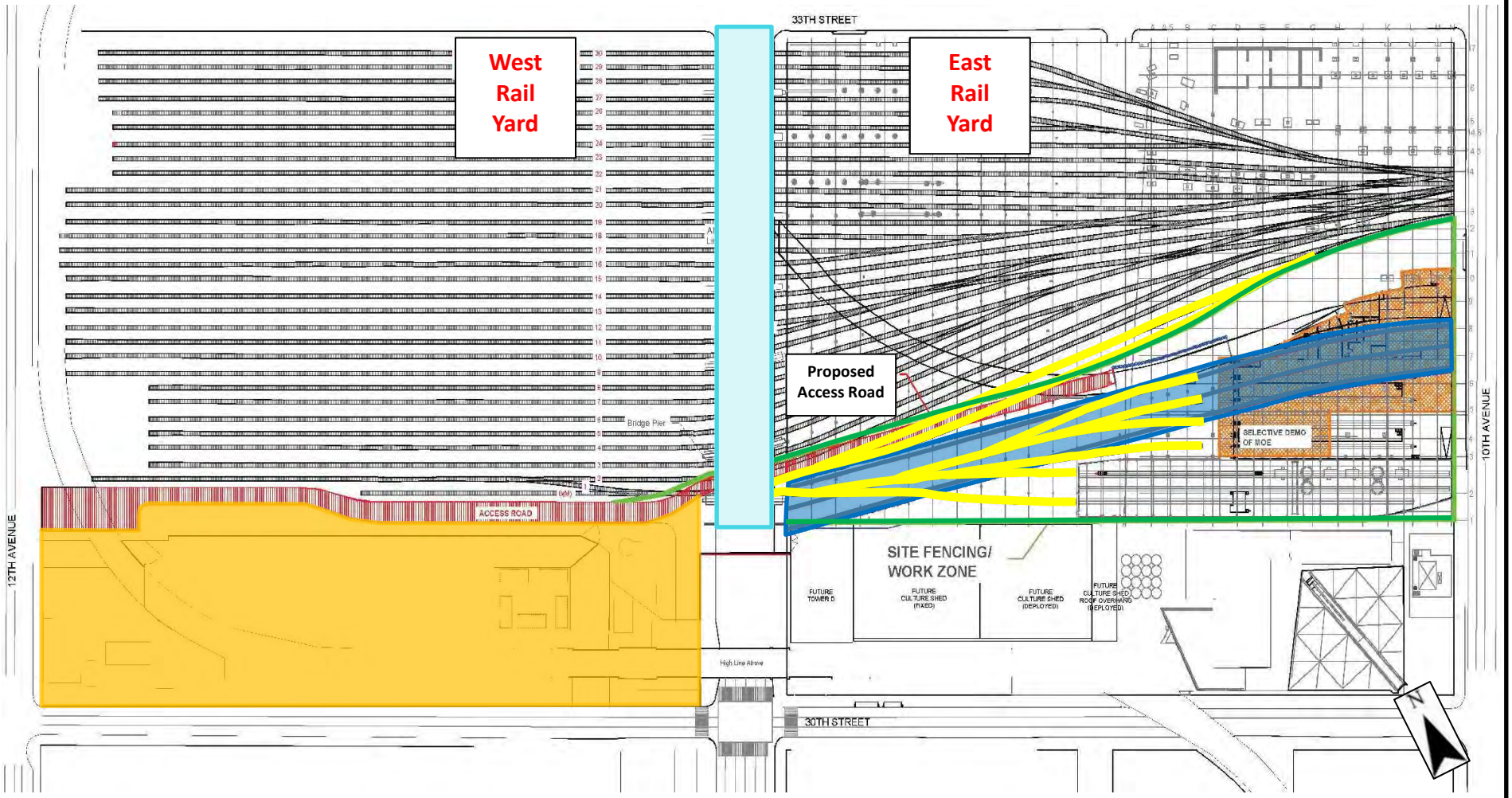


Figure 2: Hudson Yards Proposed Action Components

- *Proposed Action Work Zone*
- *Proposed Access Road*
- *MOE Building Demolition Area*
- *11th Avenue Bridge*
- *Proposed Concrete Casing*
- *Temporary Removal of Existing Tracks*
- *Construction Staging Area*

Federal Railroad Administration

Source:
Amtrak Gateway Project – Hudson Yards Study Final Report 11-16-2012

Construction at a future time is not possible due to unacceptable disruptions to LIRR facilities and unacceptable impacts to the residential and commercial structures of the Overbuild Project from rock blasting and excavation. Therefore, to protect the opportunity to construct a future tunnel entering Penn Station from the west, the foundation plan for the Overbuild Project must take into account the structural concrete casing (the proposed Project). The Tutor Perini Corporation and Parsons Brinckerhoff study (Appendix A) stated that the only means to preserve the ROW underground would be to construct an approximately 800-foot long, reinforced concrete, cut-and-cover box, also known as a concrete casing.

2.2 DESCRIPTION OF ALTERNATIVES

2.2.1 No Action

For the no action alternative, Amtrak would not construct the concrete casing to preserve the ROW. Construction of the Overbuild Project platform will still occur under the no action alternative, with placement of the support structures planned to start in mid-2013.

2.2.2 Construct a Concrete Casing

To preserve the ROW, Amtrak would construct a concrete encasement structure in the alignment shown on Figure 2. The concrete casing would be approximately 800 feet long, 50 feet wide, 35 feet tall, and would extend underground from 10th Avenue to 11th Avenue between 31st and 33rd Streets (see Figure 2 and Photograph 1). The size of the concrete casing is based on standard tunnel dimensions so that the preserved ROW would have sufficient space for the future construction of a train tunnel within the concrete casing.

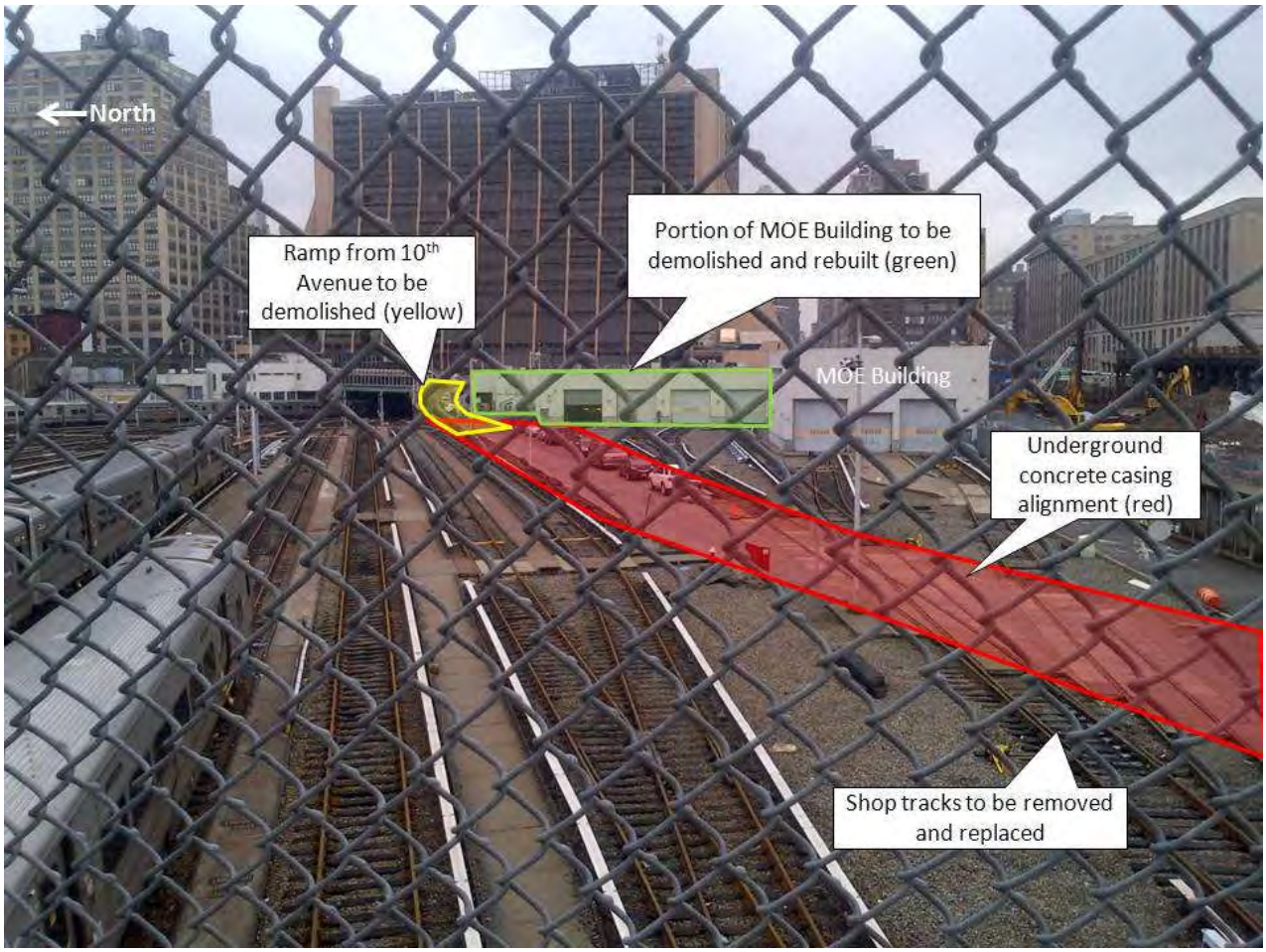
No operational components, such as tracks, lighting, ventilation, or electrical systems, would be constructed as part of the proposed Project. The proposed Project would not change or add to existing rail operations and would not become operational unless this ROW is selected for construction of future rail tunnels. The proposed Project preserves an area between 10th and 11th Avenues as an important option for a tunnel under Hudson Yards from the west. This proposed Project does not preclude future studies or the design and construction of future alignments for tunnels entering Manhattan from New Jersey. Future tunnels for expanding Amtrak intercity rail services would be studied as separate environmental impact studies pursuant to NEPA for construction of new tunnels. Therefore, this EA only addresses impacts from the construction of the underground concrete casing.

The Hudson Yards facility is an active rail yard used by LIRR and MTA for train storage, switching, and maintenance. Amtrak would acquire an easement from MTA for the ROW. Construction of the concrete casing would require:

- Demolition of the northern part of the LIRR Maintenance of Equipment (MOE) Building and reconstruction to its original condition following completion of the concrete casing.
- Temporary relocation of all MOE Building functions to other LIRR maintenance and shop facilities until the portion of the MOE Building being demolished is reconstructed.

- Demolition of a concrete ramp that originates at 10th Avenue and provides vehicular access to the Eastern Rail Yard. The ramp would not be rebuilt because construction of the Overbuild Project platform will preclude use of that space for a ramp.
- Temporary removal of shop tracks to the MOE Building and yard tracks, Track 0 and part of Track 1, and their reconstruction after completion of the concrete casing construction.
- Temporary removal from service certain yard tracks and their immediate return to service to allow for contractor work access during nights, weekends, or "foul time periods."
- Temporary relocation and replacement of utilities (storm/sanitary sewer, electric, water, gas) and signals/communications within the Eastern Rail Yard.
- Excavation of approximately 83,000 cubic yards of soil and bedrock.

Figure 2 and Photograph 1 show the elements of the proposed action alternative.



Proposed footprint of concrete casing and other proposed action elements viewed from the 11th Avenue bridge looking east

In general, the anticipated construction sequence would be as follows:

1. Fence off construction zone.
2. Relocate utilities, demolish part of MOE Building, demolish 10th Avenue ramp, and remove shop tracks.
3. Construct watertight retaining walls around the casing trench.
4. Excavate and brace the casing trench.
5. Construct the concrete casing.
6. Backfill over the casing trench.
7. Reconstruct MOE Building, relocate and restore utilities, signals, and communications.
8. Rebuild shop and yard tracks to their original condition and return to service.

The depth of excavation for the concrete casing varies along the alignment. Excavation for the western end of the concrete casing (near 11th Avenue) would reach approximately 54 feet below ground surface (bgs), while excavation at the eastern end of the casing (near 10th Avenue) would be approximately 35 feet bgs (Tutor Perini/Parsons Brinkerhoff, 2012). Excavation activities would include controlled rock blasting techniques, with special techniques such as channel drilling and rock splitting planned in some areas to reduce vibration impacts to nearby facilities and buildings.

Amtrak anticipates that excavation of the casing trench would remove approximately 47,300 cubic yards of soil and 35,700 cubic yards of rock. Excavated materials would be hauled by truck to facilities in New York, New Jersey, or Pennsylvania for disposal or beneficially reused off-site.

Construction dewatering of the excavated casing trench would be done by one of two methods (or a combination of the two). One option would be to pump groundwater into storage containers and then haul the water to an off-site disposal facility. A second option would be to discharge water on-site under a temporary construction dewatering permit.

The main staging area for equipment and materials would be located along paved areas in the southern portion of the Western Rail Yard within the Hudson Yards (Figure 2). Some smaller staging areas would be used within the construction work zone of the Eastern Rail Yard (see Figure 2 for extent of work zone).

Site preparation, relocation of utilities, demolition of a portion of the MOE Building, demolition of the 10th Avenue ramp, and removal of the yard tracks is expected to begin in June 2013, with casing construction scheduled to start in July 2013. Construction of the Overbuild Project and the proposed Project would occur simultaneously, with the Developer and Amtrak coordinating the construction processes and timing. The proposed Project is anticipated to be completed within 24 months from the start date.

Amtrak's construction contractor would secure the portion of the MOE Building that would not be demolished with appropriate heating and utility services supplied as necessary to maintain and safeguard the building and its contents. Although only part of the MOE Building would be

demolished, all activities currently performed in the MOE Building would be transferred to other LIRR maintenance and shop facilities.

2.3 EVALUATION OF THE ALTERNATIVES

2.3.1 No Action

The no action alternative would prevent Amtrak, NJT, and other rail service providers from including the ROW underneath the Overbuild Project in any potential alignment for the future construction of a tunnel that would support expanded intercity and NJT commuter rail services, as well as improve intercity and commuter rail system safety and reliability. Therefore, if the underground concrete casing is not constructed at the same time as the Overbuild Project foundations, the ROW underneath the Overbuild Project would be permanently lost as a potential alignment for the future expansion of rail service between New York and New Jersey. There are no underground areas remaining as feasible options for a new tunnel from the west that could provide a direct connection with the existing infrastructure in Penn Station because of physical and design restrictions (e.g., other underground tunnels, building foundations, elevation requirements, etc.) other than the alignment specified as the proposed Project (Amtrak, 2011; Amtrak, 2012b; Amtrak, 2012c).

2.3.2 Construct a Concrete Casing

Construction of the proposed underground concrete casing in conjunction with the Overbuild Project would preserve this ROW and essential location for a potential future tunnel alignment between the Hudson River and Penn Station. Preserving this ROW with the concrete casing would assist Amtrak in meeting the need for providing increased ridership and improved safety and reliability of intercity and commuter rail access as identified in the Master Plan (Amtrak, 2010a), the NEC Vision Update (Amtrak, 2012a), and the *Access to the Region's Core in Hudson County, New Jersey and New York County, New York Final Environmental Impact Statement* (FTA et al., 2008).

CHAPTER THREE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

Chapter 3 describes existing resources that may be affected by the proposed action and no action alternatives and the potential direct and indirect impacts on those resources from each alternative. Cumulative impacts are addressed in Section 3.12. Environmental resources that are not present within the proposed Project area and, therefore, are not discussed in this EA include:

- Surface water and wetlands
- Vegetation and habitat
- Wildlife
- Threatened and endangered species
- Coastal zone resources

Mitigation measures for potential resource impacts from the proposed action are described as appropriate within this chapter.

Chapter 3 focuses on addressing the type, intensity, and duration of the project-related environmental impacts for each resource area included in this EA. The impacts can be described in different ways including:

- Type (beneficial or adverse)
- Intensity (negligible, minor, moderate, or substantial)
- Duration (temporary or long-term)

Additionally, impacts are described in terms of whether they are direct or indirect as defined by CEQ as follows: *direct effects* are caused by the action and occur at the same time and place (40 CFR § 1508.8) and *indirect effects* are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR § 1508.8).

This EA does not evaluate impacts of the Overbuild Project other than considering cumulative impacts of the Overbuild Project when combined with the proposed Project (see Section 3.12). For a discussion of the impacts as a result of the Overbuild Project, see the *Final General Environmental Impact Statement for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program* (MTA and NYCPC, 2004).

3.2 GEOLOGY

3.2.1 Affected Environment

Geology in the Eastern Rail Yard is characterized by a layer of metamorphic bedrock that slopes from east to west, varying in depth bgs from about 6 to 8 feet in the northeast corner of the

Eastern Rail Yard to about 53 feet bgs in the southwest portion (Langan, 2009; Langan, 2012). Bedrock in the area of the proposed Project alignment varies from approximately 10 feet bgs near 10th Avenue to 48 feet bgs near 11th Avenue (Tutor Perini/Parsons Brinkerhoff, 2012). In some areas, the bedrock is slightly weathered and therefore, softer than unweathered rock. However, it typically it ranges from hard to very hard (Langan, 2012).

3.2.2 Environmental Consequences

No Action

No impacts affecting the geology would occur under the no action alternative because no excavation of bedrock would occur.

Proposed Action

Excavation for the proposed Project would vary in depth from approximately 35 feet bgs near 10th Avenue to approximately 54 feet bgs at its maximum depth near 11th Avenue (Tutor Perini/Parsons Brinkerhoff, 2012). Therefore, rock blasting would be necessary to excavate approximately 35,700 cubic yards of bedrock to create a trench for construction of the concrete casing (Tutor Perini/Parsons Brinkerhoff, 2012). Excavation would involve controlled rock blasting techniques, with special techniques such as channel drilling and rock splitting planned in some areas to reduce vibration on nearby facilities, buildings, tracks, and railroad systems and operations. LIRR would review vibration levels to prevent any substantial impacts on LIRR facilities and operations; if LIRR finds that vibration levels may adversely affect LIRR facilities, Amtrak, working with LIRR, would reduce vibration to levels acceptable to LIRR.

Amtrak's construction contractor would obtain rock blasting permits as needed from the New York City Fire Department and the City's Department of Buildings. Rock material excavated during construction would be hauled by truck to a crushing and recycling facility, beneficially reused off-site, or hauled to a permitted disposal facility.

While the proposed Project would permanently remove 35,700 cubic yards of bedrock, there would be no substantial adverse environmental impacts because the removed rock would be handled, staged, transported, and disposed of in accordance with applicable Federal, State, and local regulations. The removal of bedrock would not affect the future LIRR operations because the surface of the Eastern Rail Yard would be restored following construction of the casing and would be adequate to support the presence of LIRR trains.

3.3 SOILS

3.3.1 Affected Environment

Soils in the Eastern Rail Yard are characterized by a layer of historic urban fill at the ground surface that lies on top of native soil. The depth of historic urban fill varies from about 12 to 25 feet, is categorized as silty sand, and may include varying amounts of cinders, gravel, bricks, wood, concrete, cobbles, and boulders (Langan, 2009). Below the historic urban fill, the native

soil is comprised of layers of sand, silt, and glacial till before reaching bedrock (Langan, 2012). The Developer tested the soils in the Eastern Rail Yard for contamination; the results of this testing are discussed in Section 3.8 Hazardous Materials and Hazardous Wastes.

3.3.2 Environmental Consequences

No Action

The no action alternative would not have any impacts on soils because no construction would occur.

Proposed Action

Amtrak anticipates that approximately 47,300 cubic yards of urban fill and native soils would be removed from the proposed Project site to excavate the concrete casing trench. Trucks would haul all soil and fill material that is excavated from the proposed Project site to licensed disposal facilities in New York, New Jersey, or Pennsylvania. Although soils and fill material in the proposed Project site are not expected to be classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA) (Langan, 2009), Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak would develop a Soil Management Plan to ensure that contaminated materials are handled, staged, transported, and disposed of in accordance with Federal, State, and local regulations. Therefore, no adverse impacts from excavation or handling of soils and no adverse impacts on soils are anticipated.

3.4 GROUNDWATER

3.4.1 Affected Environment

Within the Eastern Rail Yard, groundwater is typically found at approximately 3 feet to 14 feet bgs. From regional data, and as confirmed by groundwater elevation measurements at the Hudson Yards, the horizontal groundwater flow in the Eastern Rail Yard is generally to the southwest, towards the Hudson River. Groundwater that is contained in rock underneath the Eastern Rail Yard is isolated from the closest aquifer, located beneath the Queens and Brooklyn boroughs of New York City (Langan, 2009).

3.4.2 Environmental Consequences

No Action

The no action alternative would not impact groundwater resources because no excavation would occur.

Proposed Action

Excavation for the concrete casing trench would occur in the water table; therefore, construction dewatering (removal of water from the construction area) would be required. Amtrak's construction contractor would prepare a Groundwater Management/Dewatering Plan that would

address procedures for handling groundwater encountered during construction. Construction dewatering of the excavated concrete casing trench would be done by one of two methods (or a combination of the two). The first method would involve pumping groundwater into storage containers then hauling the water to an off-site disposal facility. The second method would involve discharging groundwater to a New York City Department of Environmental Protection (DEP) sanitary or combined sewer pursuant to a DEP dewatering permit, or discharging it to a storm sewer under a temporary New York State Department of Environmental Conservation (NYSDEC) construction dewatering permit and with New York City DEP approval if discharges would exceed 10,000 gallons per day into New York City sewers. Amtrak's construction contract would require testing of the groundwater, and the Dewatering Plan would describe procedures to ensure that Amtrak's construction contractor would treat or dispose of any contaminated groundwater released during dewatering operations in accordance with Federal, State, and local regulations.

Impacts to groundwater are anticipated to be temporary and minor, and no adverse impacts from handling of groundwater are anticipated.

3.5 AIR QUALITY

3.5.1 Affected Environment

The CAA of 1970 and its amendments require the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for ambient air pollutants considered harmful to public health and the environment (i.e., criteria pollutants). The CAA established two types of NAAQS: primary and secondary standards to protect public health and public welfare, respectively (40 CFR part 50). NAAQS have been established for the following criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and two types of particulate matter (PM_{10} is coarse particulate matter [10 micrometers or less in diameter] and $PM_{2.5}$ is fine particulate matter [2.5 micrometers or less in diameter]). Ground level ozone results from a chemical reaction of sunlight, volatile organic compounds (VOCs), and nitrogen oxide (NO_x), which are ozone precursors, while SO_2 is a precursor for $PM_{2.5}$. The standards are expressed as a concentration in air and duration of (often both short- and long-term) exposure. As with all aspects of environmental regulations, States have the authority to adopt stricter standards.

The EPA air quality standards for ozone are 0.12 parts per million (1-hour average) and 0.075 parts per million (8-hour average in effect since March 2008). The standards for $PM_{2.5}$ are 15 micrograms per cubic meter ($\mu g/m^3$) (annual average) and 35 $\mu g/m^3$ (24-hour average), and for PM_{10} is 150 $\mu g/m^3$ (24-hour average). The CAA defines non-attainment areas as geographic regions that have been designated as not meeting one or more of the NAAQS. Air quality maintenance areas are regions that have attained compliance with the NAAQS.

EPA has designated New York City as a moderate non-attainment area for the 1997 8-hour ozone standard and marginal non-attainment area for the 2008 8-hour ozone standard and a non-

attainment area for 1997 and 2006 $PM_{2.5}$ EPA standards, and Manhattan as a moderate non-attainment area for PM_{10} (EPA, 2012a; EPA, 2012b). EPA re-designated New York City from a non-attainment area to a maintenance area for CO after demonstrating compliance with the CO standards.

On December 31, 2012, EPA issued a finding that the New York-New Jersey-Connecticut non-attainment area for $PM_{2.5}$ is now in attainment for the 2006 24-hour $PM_{2.5}$ NAAQS and suspended requirements to submit an attainment demonstration as long as this area continues to meet the 2006 $PM_{2.5}$ standard (77 FR 76867 Dec. 31, 2012).

The General Conformity Rule (40 CFR parts 51 and 93) requires that Federal actions or federally funded actions planned to occur in a non-attainment or maintenance area be reviewed prior to their implementation to ensure that the actions will not interfere with that State's plans to meet or maintain the NAAQS, as outlined in the federally approved State Implementation Plan (SIP). Therefore, Amtrak is required to demonstrate that this federally funded action conforms to the approved SIP for the geographic area where action is proposed by performing a conformity applicability analysis. Amtrak must consider the total direct and indirect emissions. If, after evaluation and documentation, the total air emissions associated with the action are considered neither exempt nor below the de minimis levels (i.e., minimum thresholds for which a conformity determination must be performed for various criteria pollutants in various non-attainment areas) as specified in 40 CFR 93.153, then a conformity determination is required (see Table 1).

Table 1
Applicable General Conformity De Minimis Levels

Pollutants of Concern (tons per year)				
NO_x[1]	VOC[1]	PM_{10}[2]	$PM_{2.5}$	CO
100	50	100	100	100

Source: 40 CFR 93.153(b)(1)
[1]Other ozone NAAQS inside an ozone transport region.
[2]Moderate non-attainment area

In addition, EPA has designated the region extending from Northern Virginia to New England as an ozone transport region (OTR), whereby EPA has established more restrictive de minimis emissions levels for areas in the OTR. Since the proposed Project would occur within the OTR, a conformity determination would be required if total actual emissions for the Federal action exceed 100 tons of NO_x or 50 tons of VOCs.

Based on the attainment status designation for New York City, Amtrak must quantify the emissions of NO_x, VOCs, PM_{10}, and $PM_{2.5}$ to determine the applicability of the general conformity regulations. This area is also a "maintenance area" for CO; therefore, Amtrak would also need to quantify CO emissions for the applicability determination.

Climate Change

There is scientific consensus that human activities, such as fossil fuel combustion, deforestation, and other land use changes, are changing the chemical composition of the Earth's atmosphere resulting in the accumulation of trace greenhouse gases (GHGs) in the atmosphere. GHGs (e.g., water vapor, carbon dioxide [CO_2], methane, nitrous oxide, and hydrofluorocarbons) absorb the radiation energy from the sun and Earth. Water vapor occurs naturally and accounts for the largest percentage of GHGs, while CO_2 is the second-most abundant GHG. GHGs may be contributing to an increase in the Earth's average surface temperature, which in turn is expected to affect weather patterns, average sea levels, and increased intrusion of seawater into estuaries. Other effects are changes in precipitation rates, an increase in ozone levels due in part to changes in atmospheric photochemistry, and decreased water availability and quality (Jones & Stokes, 2007).

NYSDEC has developed a comprehensive air quality management plan that integrates air quality, climate, energy, and transportation goals. One of the environmental goals is to reduce GHG emissions (NYSDEC, 2010). The Inventory of New York City Greenhouse Gas Emissions, September 2010, estimated the citywide CO2e emission for 2009 at 49,301,948 metric tons.

3.5.2 Environmental Consequences

No Action

The no action alternative would not impact air quality because no construction would occur.

Proposed Action

According to 40 CFR part 93, the threshold levels for general conformity are 100 tons per year for NO_x, PM_{10}, $PM_{2.5}$ and CO and 50 tons per year for VOCs. As part of this determination, Amtrak considered activities subject to the general conformity requirements, including the following stationary sources, construction activities, and mobile sources.

Table 2 shows the total emissions due to the proposed activity for the next 2 years. Annual emissions generated as a result of the proposed activity are not expected to exceed the threshold levels established in the CAA's general conformity regulations.

Table 2
Annual Estimated Emissions for the Proposed Project Compared with Conformity Thresholds

Pollutant	2013 Emissions (tons per year)	2014 Emissions (tons per year)	Conformity Threshold (tons per year)
NO_x	20.72	20.10	100
VOC	2.52	2.47	50
PM_{10}	3.05	2.96	100
$PM_{2.5}$	2.02	1.93	100
CO	9.77	9.64	100

Air pollutant emissions shown in Table 2 include both direct and indirect air emissions associated with the proposed Project. Sources of direct emissions include construction activities and operation of equipment. Sources of indirect emissions include mobile source emissions from increased commuter activity. For the general conformity evaluation, actual emissions were estimated for each source type. Each of these sources of emissions is briefly described below. Detailed assumptions and calculations are provided in Appendix B.

Construction activities that would generate emissions would primarily include the following:

- Earth excavation, grading, and demolition activities;
- Handling and transport of excavated material and debris;
- Operations of heavy-duty diesel and gasoline-powered construction equipment; and
- Heavy-duty diesel trucks operating within construction areas, traveling to the proposed Project site to deliver construction materials, and traveling from the site transporting excavated soils and demolition material.

Construction would result in NO_x, VOC, PM_{10}, $PM_{2.5}$, and CO emissions from diesel-burning equipment and from the construction activities listed above. Amtrak's consultant calculated the emissions from diesel-burning construction equipment using an average of emission factors published in *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources (*EPA, 1995), *Air Emissions Factor Guide to Air Force Stationary Sources* (USAF, 2009a), and *Air Emissions Factor Guide to Air Force Mobile Sources* (USAF, 2009b) and an estimated average number of construction equipment operated per day throughout construction (between May 2013 and December 2014). Fugitive dust as a result of site clearing and earthmoving activities would temporarily increase during construction of the proposed Project. Fugitive dust would be minimized as needed through measures such as the application of water to disturbed areas and haul roads, and speed controls on earthmoving equipment and haul trucks.

Because LIRR staff that currently work in the MOE Building would be temporarily transferred to other LIRR facilities and MOE Building functions would be relocated to other LIRR facilities, staff commutes to and from work would change until the MOE Building is rebuilt and functional. Because only 34 staff would be transferred, the commute to other LIRR facilities would be in

New York City (Queens), and the transfer would be temporary, Amtrak's consultant considered the mobile source emissions associated with the temporary transfer of MOE Building staff and operations negligible, and therefore, did not calculate them.

Emissions associated with the proposed Project would be temporary and minor. A General Conformity analysis determined that construction emissions would not exceed the *de minimis* levels for pollutants and that the proposed Project would not adversely impact air quality.

Climate Change

Because GHGs are relatively stable in the atmosphere and are essentially uniformly mixed throughout the troposphere and stratosphere, the climatic impact of GHG emissions does not depend upon the source location. Therefore, regional climate impacts are likely a function of global emissions. GHG emissions were calculated for the proposed Project to estimate its contribution to the New York City environment.

Table 3 lists the total GHG emissions from the proposed Project by adding 2013 and 2014 CO_2 emissions, that were estimated to be 2,998 metric tonnes per year (3,304 tons per year). Emissions of the other GHG emissions would be negligible and are therefore not calculated. The relative contribution of GHG emissions from the proposed Project compared to New York City 2009 emissions would be negligible. Therefore, there is no adverse impact on climate change due to GHG emissions from the proposed Project.

Table 3
Comparison of GHG Emissions Between the Proposed Project and New York City

Source	CO_2 Emissions (metric tonnes per year)
Proposed Project	2,998
New York City (2009)	49,301,948
Percentage of 2009 New York City Emissions	6.08E-3%

3.6 CULTURAL RESOURCES

3.6.1 Affected Environment

The NHPA outlines Federal policy to protect historic properties and promote historic preservation in cooperation with States, tribal governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Officer (SHPO) as the entity responsible for administering state-level programs. Section 106 of the NHPA (16 U.S.C. 470f) and its implementing regulations (36 CFR part 800 *et seq.*) outline the procedures for Federal agencies to follow to take into account the effect of their undertakings on historic properties. The Section 106 process applies to any Federal undertaking (here the proposed Project) that has the potential to affect historic properties, defined in the NHPA as those properties (archaeological sites,

standing structures, or other historic resources) that are listed in or eligible for listing in the NRHP.

Because elements of the proposed Project have the potential to create effects on both historic properties and archaeological sites, there are two Areas of Potential Effects (APEs): one for above-ground resources and one for archaeological resources (see Section 106 letter to SHPO, Appendix C). The archaeological APE is for areas where subsurface ground disturbance associated with the proposed Project would occur, and the above-ground APE is defined as 90 feet beyond the boundaries of the Work Zone shown on Figure 2.

Above-ground properties in the proposed Project area include the 1983 MOE Building, the 1980s LIRR tracks that service the MOE Building, and the 11th Avenue Viaduct constructed in the 1930s. None of these properties are considered historic because they either date to the 1980s rail yard redevelopment or were substantially altered as part of the 1980s rail yard development project. The Hudson Yards had been used as a rail yard for more than 100 years prior to the 1980s LIRR development and has served as a storage and maintenance facility of LIRR commuter trains since 1983.

A URS Architectural Historian qualified under the Secretary of the Interior's Professional Qualification Standards (36 CFR part 61) conducted a site visit and performed research of local and on-line repositories to assess the presence of NRHP above-ground and archaeological resources in the APE. This individual determined the proposed Project's potential to affect built historic properties within the APE. A URS Archaeologist performed the same assessment for archaeological resources. Local repositories included the New York State Office of Park, Recreation and Historic Preservation (OPRHP) in Peebles Island, New York.

The following two historic properties are located in the Hudson Yards and the above-ground APE: the High Line Freight Railroad viaduct in the vicinity of 10th Avenue from Gansevoort Street to West 34th Street (High Line) and the New York Improvement and Tunnel Extension of the Pennsylvania Railroad from New Jersey to Manhattan to Queens (Hudson River Tunnels). Based on previous work done at the Hudson Yards and from OPRHP research, there is low potential for archaeological resources to be present in the archaeological APE.

Appendix C contains the NHPA Section 106 letter to the SHPO that provides additional information about the APEs, cultural resources within the Hudson Yards Area, and the background information that was used to determine effects on historic properties.

3.6.2 Environmental Consequences

No Action

The no action alternative would not affect cultural resources because no excavation, demolition, or construction would occur.

Proposed Action

Temporary visual obstructions created by machinery and other construction equipment associated with the proposed Project could result in temporary loss of context for the architectural resources nearby, resulting in temporary, adverse indirect impacts on cultural resources. Based on available documentation located in the files of the New York SHPO, the *Final General Environmental Impact Statement for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program* (MTA and NYCPC, 2004), the *Final Environmental Impact Statement for the Western Rail Yard* (NYCPC and MTA, 2009) and data gathered during a field investigation of the Hudson Yards in January 2013, the proposed Project would have no adverse effect on the two historic properties identified in the above-ground APE.

Although construction activities such as pile driving, caisson drilling, and bulldozing have the potential to inadvertently damage adjacent historic above-ground cultural resources from ground vibrations, Amtrak would implement protection measures such as monitoring of the High Line and Hudson River Tunnels to avoid accidental damage during construction, as determined through consultation with the SHPO.

There would be no direct or indirect adverse effects on historic properties from the proposed Project. FRA submitted a letter to the NY SHPO on March 5, 2013, requesting concurrence with this determination. No response has been received as of the date of issuance of this EA.

3.7 VISUAL RESOURCES

3.7.1 Affected Environment

The proposed Project site is contained within Hudson Yards, and primarily occupies the southern half of the Eastern Rail Yard between 10th and 11th Avenues, although some staging areas for construction materials/equipment would occur in the Western Rail Yard (see Figures 1 and 2). The proposed Project site can be seen (through existing construction fencing) from the street level, and from floors above ground level in residential and commercial buildings surrounding Hudson Yards. Because the proposed Project site is part of an active passenger train storage and maintenance yard, existing views primarily consist of the MOE Building, rail tracks, trains, vehicle access roads and ramps, miscellaneous train maintenance equipment, and worker vehicles (see Photograph 1). Hudson Yards is bordered by permanent fencing in some areas that block views of the yards from the street level. Construction projects unrelated to the proposed Project are being built in the Hudson Yards, and there is considerable construction fencing, equipment, and materials staging at the Eastern Rail Yard.

3.7.2 Environmental Consequences

No Action

The no action alternative would not result in any impacts on visual resources because no construction would occur.

Proposed Action

Because the Eastern Rail Yard contains other ongoing construction projects (other than the Overbuild Project), construction activities associated with the proposed Project would be difficult to distinguish from other activities. Construction activities associated with the proposed Project would result in negligible short-term impacts on views of the Hudson Yards. Because existing buildings and tracks would be restored to their current configuration and the concrete casing would be buried below ground, no long-term direct or indirect visual impacts are anticipated from the proposed Project.

3.8 HAZARDOUS MATERIALS AND HEALTH AND SAFETY

3.8.1 Affected Environment

The terms "hazardous materials" and "hazardous waste" as used in this assessment refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation and Liability Act, and the Solid Waste Disposal Act (42 U.S.C. 9601-9675), as amended by the RCRA. Hazardous materials include substances that, because of their quality, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment (42 U.S.C. 9602). Hazardous wastes include solid, liquid, gaseous, semisolid, or any combination of wastes that display one or more hazardous waste characteristics such as corrosivity, reactivity, and toxicity (40 CFR part 261).

Soil and groundwater within the Eastern Rail Yard have been previously assessed for contamination (Langan, 2009 and Langan, 2012). In 2008, the Developer tested soils in the Eastern Rail Yard for contaminants under RCRA hazardous waste standards (Langan, 2009). Testing results indicated that soils throughout the Eastern Rail Yard are typical of soils in the New York urban environment and contain concentrations of semivolatile organic compounds (SVOCs) and metals that exceed NYSDEC guidelines (Langan, 2009). None of the samples exhibited concentrations in excess of RCRA standards, nor did they exhibit reactivity or ignitability characteristics indicative of a hazardous waste. This contamination raises no unique environmental concerns, is indicative of background conditions in historical fill, and requires no specific precautions beyond the typical measures used during construction at redevelopment sites in New York City (Langan, 2009).

The Hudson Yards Developer tested the groundwater in the Eastern Rail Yard for contamination in 2008 (Langan, 2009). One groundwater sample in the southern portion of the Eastern Rail Yard contained concentrations of volatile organic compounds (VOCs) that exceed NYSDEC guidelines, and one sample north of the MOE Building contained concentrations of SVOCs that exceed NYSDEC guidelines. However, most groundwater samples had no evidence of pollutants in excess of NYSDEC guidelines (Langan, 2009).

The MOE Building contains a variety of hazardous materials associated with cleaning and maintenance activities (e.g., cleaning solvents, oil, and grease); all hazardous materials and

wastes are currently stored in RCRA-approved containers and are transported off-site as needed for licensed disposal.

Adjacent to the MOE Building are underground oil and water separators that treat water discharges from the MOE Building and would be removed for construction of the proposed Project.

3.8.2 Environmental Consequences

No Action

No construction would occur under the no action alternative; therefore, no impacts on worker and public safety or the environment from hazardous materials and wastes would occur.

Proposed Action

Hazardous materials could be encountered during excavation activities through exposure to groundwater or during demolition of the MOE Building.

Based upon the 2008 soil testing data, excess soils and fill material that would be excavated from the Eastern Rail Yard during construction are not expected to require management as RCRA hazardous wastes. All soil and fill that is excavated from the proposed Project site would be hauled by truck to licensed disposal facilities in New York, New Jersey or Pennsylvania. Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak would develop a Soil Management Plan to ensure that contaminated materials are handled, staged, transported, and disposed of in accordance with Federal, State, and local regulations.

Hazardous building materials (asbestos-containing materials, lead based paint, and polychlorinated biphenyl-containing equipment) could be buried in the historic urban fill layer. Other hazardous materials in the proposed Project area could include contaminated soils and groundwater. None of the construction waste (excavated materials and/or groundwater) is expected to require management as RCRA hazardous waste (Langan, 2009). However, Amtrak's construction contractor would prepare a Soil Management Plan and Groundwater Management and Dewatering Plan to describe the procedures for the handling and disposal of contaminated soil and groundwater if any are encountered. The off-site transport and disposal would be performed in accordance with Federal, State, and local regulations. Additionally, dust control best management practices would suppress any potential for contaminated dust that is generated by the construction activities, such as spraying water, thorough cleaning of on-site vehicles, placing gravel on exposed soil, and covering transport vehicles with tarps.

Amtrak's construction contractor would remove groundwater encountered during excavation from the trench and would test it for contamination. The Dewatering Plan would describe procedures to ensure any contaminated groundwater released during dewatering operations would be treated or disposed of in accordance with Federal, State, and local regulations.

Even though the MOE Building was built in 1983 after several bans on using asbestos-containing materials (ACM) were implemented, there are still multiple building materials on the market that are allowed for use in the United States that contain ACM, such as: vinyl-asbestos floor tiles, roofing felt and coatings, asbestos-cement products, and gaskets. Therefore, to ensure that building materials removed during the demolition of the MOE Building would not expose workers to ACM, a licensed asbestos professional would perform a survey to determine whether all building materials are non-ACM. Documentation (test results, manufacturer's certification) of non-ACM status would be maintained with the proposed Project's records, with the results forwarded to the LIRR Corporate Safety & Training Department. A lead-based paint survey would also be performed, with results kept in the proposed Project's records and sent to the LIRR. Removal of any residual contents of the oil and water separators and the separators themselves would be handled and disposed of in accordance with all Federal, State, and local requirements.

Hazardous materials that are currently stored in the part of the MOE Building to be demolished would be placed in appropriate containers for transport and shipped off-site according to Federal, State and local regulations to other MOE maintenance facilities for their continued use.

Because the MOE Building would not be in use during construction of the proposed Project, the elimination of the oil and water separator during construction would have no impacts. Once the MOE Building is rebuilt, new oil and water separators would be installed to prevent the discharge of hazardous materials from the MOE Building once it resumes operations.

Construction activities would include the use of hazardous materials and hazardous waste generation (i.e., solvents, hydraulic fluid, oil, and antifreeze) from construction equipment. Amtrak would implement appropriate safety measures such as preparing a Health and Safety Plan along with procedures for the handling, storage, and disposal of hazardous materials and wastes during construction activities to limit worker, public, and environmental exposure; therefore, no impacts on worker and public safety are expected. Prior to construction, Amtrak would also require the construction contractor to develop a site-specific plan containing best management practices for hazardous materials and wastes spill prevention and cleanup procedures.

With implementation of the hazardous materials and hazardous waste best management practices and adhering to Federal, State, and local requirements for handling of hazardous materials and wastes, no direct or indirect adverse impacts are anticipated as a result of the proposed Project.

3.9 NOISE AND VIBRATION

3.9.1 Affected Environment

The New York City Noise Control Code (Local Law 113, 2005) establishes sound-level standards for various activities and equipment and contains guidelines and sets limits for noise generated from construction activities. Noise generated by construction is evaluated using noise

impact criteria provided in the *City Environmental Quality Review Technical Manual* (NYC Mayor's Office of Environmental Coordination, 2012). Rock blasting within New York City is regulated by the New York City Fire Department and the New York City Buildings Department.

Existing noise levels throughout the Eastern Rail Yard are very high, with lower levels occurring outside of standard business and construction hours (evenings and weekends). Vehicular and train traffic and construction equipment create the most common and the highest noise levels in the Eastern Rail Yard. Other commonly occurring loud noises include local traffic and aircraft flying overhead. Construction noise is currently being generated in and around the Hudson Yards by projects unrelated to the proposed Project, including nearby residential and commercial construction. Although there is a residential building adjacent to the Eastern Rail Yard to the south, no noise-sensitive receptors (such as churches, schools, hospitals, or landmarks/parks) are within hearing range of the Eastern Rail Yard.

The Eastern Rail Yard and surrounding areas currently experience vibration from existing underground trains and tunnels, construction activities such as rock blasting and drilling, and heavy equipment and vehicle operation.

3.9.2 Environmental Consequences

No Action

The no action alternative would have no effect on noise or vibration levels because no construction would occur.

Proposed Action

Construction activities associated with the proposed Project would cause temporary increases in noise levels, although these increases would be indistinguishable from existing construction noises already occurring at the proposed Project site. Amtrak's construction contractor would comply with the New York City Noise Control Code to minimize impacts from noise along with implementing good engineering practices such as proper maintenance and operation by muffling devices and shutting off idling machinery when not in use.

Vibrations from rock blasting would travel into the soil and rock and potentially into the foundations and walls of nearby buildings and facilities, including Amtrak's Empire Line Tunnel that is immediately north of the proposed Project in the Eastern Rail Yard. Special rock-blasting techniques such as channel drilling and rock splitting would be used to reduce vibration impacts so that no adverse impacts on nearby facilities, buildings, tracks, and railroad systems would occur. LIRR would notify Amtrak if vibration was occurring beyond LIRR-approved levels, and Amtrak would mitigate the vibrations to acceptable levels to prevent any substantial impacts on LIRR facilities and operations. As noted in Section 3.2.2, Amtrak's construction contractor would obtain rock blasting permits from the New York City Fire Department and the City's Buildings Department as needed. With implementation of noise and vibration control measures and compliance with city, State, and Federal noise and blasting regulations, the proposed Project

would not result in adverse impacts on buildings, facilities or operations from noise and vibration associated with demolition and construction activities.

3.10 ACCESS AND TRAFFIC

3.10.1 Affected Environment

The area of Manhattan in the vicinity of Hudson Yards is heavily used on a daily basis by pedestrians and vehicles. Hudson Yards is surrounded by streets, with 10th Avenue on the east, West 30th Street to the south, 12th Avenue on the west, and West 33rd Street to the north (Figure 1). Sidewalks run alongside these streets and avenues; however, because of ongoing construction at Hudson Yards unrelated to the proposed Project, in some areas pedestrians are either re-directed to sidewalks on the opposite side of the street (West 30th Street) or temporary sidewalks are provided (e.g., along 10th Avenue). The 11th Avenue bridge over the rail yards divides Hudson Yards into the Eastern Rail Yard and Western Rail Yard.

Construction-related traffic (e.g., equipment, worker vehicles, and transport trucks) associated with construction projects at or in the vicinity of Hudson Yards unrelated to the proposed Project primarily travels along five north-south avenues (8th, 9th, 10th, 11th, and 12th Avenues) and three bi-directional crosstown streets (23rd, 34th Street, and 42nd Streets) within Manhattan to and from the Hudson Yards area. Table 4 shows the routes employees are assumed to use when commuting to the Hudson Yards from outside Manhattan (MTA and NYCPC, 2004).

Table 4
Predicted Employee Commuter Routes to Hudson Yards from Outside Manhattan

Traveling From	Route
The Bronx and Westchester	12th Avenue/Route9A North to Henry Hudson Parkway
Brooklyn and Staten Island	12th Avenue/Route 9A South to Brooklyn-Battery Tunnel
Queens and Long Island	West 34th Street East to Queens Midtown Tunnel
New Jersey via George Washington Bridge	12th Avenue/Route9A North to Henry Hudson Parkway
New Jersey via Holland Tunnel	12th Avenue/Route 9A South
New Jersey via Lincoln Tunnel	11th Avenue (at West 40th Street) Entrance

Source: MTA and NYCPC, 2004

The City of New York prohibits trucks having an overall length of 33 feet or more from roadways except for designated through and local truck routes, as indicated in *New York City Traffic Rules and Regulations* (City of New York, 2012). Local trucks are defined as trucks intended for the purpose of delivery, loading, or providing service within Manhattan; local trucks in the vicinity of the proposed Project area are restricted to the following routes (MTA and NYCPC, 2004):

- 8th, 9th, 10th, 11th, and 12th Avenues
- 23rd Street from First Avenue to Twelfth Avenue
- West 30th Street from Broadway to Eleventh Avenue
- 31st Street from Third Avenue to Tenth Avenue
- 34th Street from First Avenue to Twelfth Avenue
- West 40th Street from the Lincoln Tunnel entrance to Eleventh Avenue
- West 41st Street from Ninth Avenue to the Lincoln Tunnel entrance
- 42nd Street from First Avenue to Twelfth Avenue

Local trucks traveling in and out of Manhattan would use certain routes, depending on their cargo. Trucks removing spoils that are traveling to New Jersey or Pennsylvania would likely use the Lincoln Tunnel. Concrete delivery trucks would likely travel from the Bronx, Queens, or Brooklyn and steel delivery trucks would originate west and use the Lincoln Tunnel and George Washington Bridge. Amtrak assumes that trucks delivering and removing any other construction materials not specified would use these same routes in and out of Manhattan (MTA and NYCPC, 2004).

Both on-street and off-street parking are available in the area surrounding the Hudson Yards. On-street parking is metered and can be difficult to find, especially during typical business hours (Monday to Friday from 7 a.m. to 7 p.m.). Off-street parking is available in both private and commercial parking facilities.

3.10.2 Environmental Consequences

No Action

The no action alternative would have no effect on traffic and access because no construction would occur.

Proposed Action

Throughout the proposed Project duration, Amtrak anticipates that it would need to haul approximately 5,190[1] truckloads of soil and rock from the proposed Project site. Both soils and rock that are excavated would be hauled by truck to facilities in New York, New Jersey, or Pennsylvania (up to 100 miles away) for disposal and recycling, respectively. Because disposal facilities operate during normal business hours, haul trucks would only operate during the day,

[1] Amtrak anticipates a total of 83,000 cubic yards of soil and rock would be excavated from the tunnel trench. Assuming haul trucks would have a 16-cubic-yard capacity, approximately 5,190 truckloads would be needed to transport the material off-site. Assuming haul trucks would run on weekdays only results in 20 trucks per day over a 12 month period (5,190 divided by 260 weekdays per year)

with an estimated average of 20 haul trucks per day leaving the proposed Project site during the 12-month excavation period. On some weekdays, more than 20 haul trucks may leave the site if a holiday limits hauling days. The additional truck traffic would result in direct impacts on traffic in the region from the proposed Project; however, given the existing amount of traffic in Manhattan and the region, impacts would be temporary and minor.

The proposed Project would result in additional traffic on the streets both within Manhattan and outside of Manhattan from construction workers traveling to the Hudson Yards, haul trucks transporting excavated materials from the proposed Project site, and from delivery of construction-related equipment to the proposed Project site. These direct traffic impacts would occur mostly during morning and evening peak commuter and would likely be most noticeable where traffic is already congested, primarily around the intersection of 11th Avenue at West 34th Street during the morning peak traffic period, the intersections of West 34th Street with both 10th and 11th Avenues during mid-day traffic peaks, and at 12th Avenue/West 34th Street during the evening rush hour. Project-related trucks would adhere to designated local truck routes to minimize impacts. No lane closures or traffic re-routing would be needed for the proposed Project since all Project-related work would occur within the Hudson Yards.

All worker and construction vehicles would park along the access road in the Western Rail Yard of the Hudson Yards; construction vehicles and equipment would be stored or parked in the staging areas shown on Figure 2. Therefore, parking in the Hudson Yards area would not be affected by the proposed Project. The sidewalk along the west side of 10th Avenue would be closed for part of the construction period; however, most of this sidewalk is already closed and the pedestrian walkway that has already been provided could be used. Therefore, pedestrian routes are not expected to be affected by the proposed Project. Construction fencing (e.g., chain link fence), and other barriers would be maintained around the work zone to prevent public access.

The existing vehicular ramp from 10th Avenue that provides private access to the Hudson Yards would be permanently removed for construction of the proposed Project. Access to the Hudson Yards would be provided by an existing paved access road from 12th Avenue.

Adherence to truck routes for haul trucks associated with the proposed Project and employee and construction equipment parking in designated areas would minimize impacts on access and traffic from the proposed Project. Impacts on access and traffic would be direct, but would be temporary and minor.

3.11 UTILITIES, INFRASTRUCTURE, AND LIRR OPERATIONS

3.11.1 Affected Environment

LIRR and MTA currently use the Hudson Yards for train switching, storage, and maintenance. A site investigation for the proposed Project was performed on behalf of Amtrak to identify the utilities and infrastructures that could be affected by the construction of an underground concrete

casing at the proposed Project site to connect to a potential future tunnel (Tutor Perini/Parsons Brinkerhoff, 2012). Amtrak's construction contractor would temporarily take the utility lines that cross the proposed Project alignment out of service or relocate them and keep them operational during construction, as described below. Amtrak's construction contractor would rebuild all utilities in their original locations after proposed Project completion and restore the utilities to their full pre-construction function and capacity. All information in this Section is taken from the *Amtrak Gateway Project-Hudson Yards Study Final Report* (Tutor Perini/Parsons Brinkerhoff, 2012).

Storm Sewer and Sanitary Sewer

Existing sanitary sewer lines serve the MOE Building. In addition, runoff from the proposed Project site drains into an existing storm water collection system of catch basins and underground pipes that discharges to City sewers, and is then conveyed to one of the several wastewater treatment plants that serve the City. Rainwater that infiltrates the ground percolates down into the water table and joins groundwater flow towards the Hudson River (Langan, 2009).

Electrical

Existing electrical systems (including Alternating Current [AC] Power, Direct Current [DC] negative and DC positive) provide service to facilities within Hudson Yards. The AC Power system currently provides lighting for the Eastern Rail Yard access ramp, the road that provides access into the rail yard from 10th Avenue, exterior lighting of the MOE Building, and facility power to the interior of the MOE Building.

Signals and Communications

The proposed Project site includes fire alarm and telephone communications systems that serve the Hudson Yards and the MOE Building. The site also includes a signal system comprised of switches, cabling, hardware and conduits that serve the LIRR yard and MOE Building.

Water

The proposed Project site includes 10-inch fire protection water lines and 6-inch potable water lines, which provide service to the proposed Project site as well as surrounding areas.

Gas

A 5-inch gas line at the proposed Project site services only the MOE Building.

MOE Building

The MOE Building addresses LIRR's daily fleet needs by providing an on-site location for immediate attention to unscheduled repairs of rolling stock equipment, scheduled inspections, and required modifications including wheel truing. The MOE Building also houses a large storeroom that supports MOE operations and provides the tools necessary for inspection and maintenance without requiring rail yard personnel to transport equipment into the building. The storeroom contains mostly train parts, handling equipment, and cleaning and service materials.

Currently, the building is in operation for two shifts, five days a week with 34 personnel assigned to the building.

Train Tracks

The proposed Project work area contains yard tracks 0, 1, and 2 used for train switching and storage. The proposed Project work area also includes shop tracks 1s through 6s used to get trains into the MOE Building for service and repair. The shop tracks are also used for the staging and then repairing of rolling stock.

3.11.2 Environmental Consequences

No Action

No impacts on utilities and infrastructure would occur under the no action alternative because no construction would occur.

Proposed Action

Storm Sewer and Sanitary Sewer

Amtrak would remove a portion of the existing Eastern Rail Yard storm water collection and discharge system for excavation of the trench for the concrete casing. Amtrak would install temporary stormwater infrastructure (i.e., catch basins and storm sewer lines) to collect and discharge stormwater runoff and to maintain the integrity of LIRR's current collection systems, in compliance with DEP and NYSDEC regulations and at locations acceptable to LIRR. Upon the proposed Project's completion, all affected storm sewers and catch basins would be returned to their original capacity and function.

Electrical

For the portion of the MOE Building that would remain standing, alternate arrangements to provide AC Power to the building may be needed. Temporary construction lighting would be provided along the access road and in the construction work zone. AC Power lines that connect the LIRR Emergency Facilities building west of 11th Avenue in the Western Rail Yard to portions of the Hudson Yards that would remain in operation during the concrete casing construction would also be affected. Therefore, Amtrak would keep this portion of the AC Power system servicing the Emergency Facilities building operable during construction including providing a temporary emergency generator for LIRR use if necessary.

The proposed Project construction would necessitate removal of a portion of the existing DC Negative and Positive systems serving the MOE Building. Therefore, the affected portions of the DC Negative and Positive systems would be temporarily taken out of service. Another segment of the DC Positive system that serves tracks north of the proposed Project would be disrupted during construction. These tracks would remain in operation throughout the proposed Project construction; therefore, Amtrak would temporarily relocate or maintain that portion of the DC Positive system to keep these tracks in service. Upon completion of the proposed Project,

Amtrak would restore any portion of the electrical systems removed during proposed Project construction with in-kind electrical systems.

Signals and Communications

Because the proposed Project construction would disrupt the existing signals and communications systems for the portion of the LIRR yard serving the MOE Building, the affected portions of these systems that are unnecessary to LIRR operations and safety would be temporarily taken out of service and fully restored after completion of the proposed concrete casing. The proposed Project would replace, subject to LIRR approval, that portion of the signals and communications systems needed for continued LIRR operations and safety with a temporary arrangement adequate to meet LIRR needs.

Water

The fire protection and potable water lines that lie within the proposed Project alignment would need to remain in service during construction because they provide service to areas of the Hudson Yards other than the MOE Building. Therefore, the water lines would be temporarily relocated outside of the construction zone. Temporarily exposed water lines would be protected from freezing by insulation or heat trace. All water lines would be fully restored upon completion of the concrete casing.

Gas

The Amtrak construction contractor would deactivate and cap the gas line that lies within the proposed Project alignment outside of the construction area. If it is necessary to remove the existing gas line during construction, the gas line would be fully restored upon completion of the concrete casing.

MOE Building and Ramp

Although the utilities servicing the part of the MOE Building that would be demolished would be removed and shut-down during the proposed Project construction, utilities to the portion of the MOE Building left standing (e.g., water lines, heat and air conditioning, electrical) would either be maintained or relocated as needed to protect the MOE Building from degradation and to provide security services, or be prepared for being off-line (such as insulating water lines that are susceptible to freezing) and periodically checked for integrity so that they could easily be turned back on and fully functional after the proposed Project construction. Any voids left in the portion of the MOE Building that would remain standing would be closed or filled by temporary walls to provide security and protection from the weather. No facility upgrades would occur during reconstruction of the MOE Building other than changes needed to conform to any new building codes and standards to be in compliance with State and Federal building codes and relevant building standards. The access ramp from 10th Avenue into the Eastern Rail Yard would be demolished prior to construction of the concrete casing. The ramp would not be rebuilt because construction of the Overbuild Project platform precludes use of that space for a ramp.

The MOE Building's functions would be temporarily transferred to the Hillside and Morris Park LIRR facilities in the Queens borough of New York City. Because most of the transferred facility functions would be performed inside LIRR buildings, any additional equipment and activities would likely be imperceptible to the surrounding communities. Equipment that is relocated to the Hillside and Morris Park locations for service would be transported there on LIRR trains. The movement of the equipment from Hudson Yards to the Hillside and Morris Park facilities is not expected to require more than two train trips per day, and, given existing number of LIRR train trips per day, this number of additional trips would be minor. The Hillside and Morris Park facilities would be able to accommodate the transferred functions without experiencing an increase in the number of personnel shifts per day, although a small increase in staffing at these two locations and an increase in personnel overtime hours would be necessary to accommodate the additional services. The transfer of functions may also lead to delays in repairs and a decrease in the amount of spare equipment available because of the increased workload at the Hillside and Morris Park locations. The majority of the 34 MOE Building personnel would be temporarily reassigned to the Hillside shop. The Hillside facility can be accessed by LIRR commuter trains. Therefore, the relocation of personnel for the proposed Project would not result in significant impacts on transportation, as defined by the New York City Environmental Quality Review Technical Manual[2] (New York City Mayor's Office of Environmental Coordination, 2012). While the cost of performing the MOE Building current functions would increase while the building is unavailable, LIRR does not anticipate any adverse impact on its provision of transportation services to the public.

Train Tracks

Amtrak would need to remove yard track 0, the portion of yard track 1 that is in the Eastern Rail Yard, and shop tracks 4s through 6s for construction of the proposed Project because the tracks lay directly over the proposed Project alignment. These tracks would be replaced after the proposed Project's completion. Amtrak would need to take yard track 2 out of service temporarily or install new switches because the construction work zone would encompass the tracks for part of the construction period. The portion of yard track 1 that is in the Western Rail Yard would be taken out of service temporarily to install a new switch. Amtrak would obtain LIRR approval prior to removing tracks or taking tracks out of service.

Summary

Temporary moderate direct and indirect adverse impacts to LIRR and MTA operations would occur as a result of the proposed Project. Amtrak would work closely with the LIRR to minimize the duration of disruption to facilities (e.g., some yard tracks would not be removed but only

[2]Chapter 16, Section 300 of the New York City Environmental Quality Review Technical Manual (2012) notes that no significant adverse environmental impacts would occur absent unusual circumstances when a project will result in less than an additional 50 peak hour vehicle trips or 200 peak hour subway/rail or bus transit riders.

taken temporarily out of service and a portion of the MOE Building will remain standing). Amtrak would coordinate a detailed Site Logistics Plan with the LIRR during the design phase of this proposed Project. With implementation of the mitigation measures discussed in this section, impacts on LIRR and MTA operations would not be adverse.

3.12 CUMULATIVE EFFECTS

This section addresses cumulative effects from the proposed Project. Indirect impacts are discussed under the Environmental Consequences sections for individual resources in Chapter 3 and are therefore not discussed further except where they would contribute to potential cumulative impacts. Cumulative effects are the impact on the environment, which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, State, and local) or individuals.

3.12.1 Reasonably Foreseeable Future Actions

The following is a list of the major projects at Hudson Yards that are included in the evaluation of cumulative effects for the proposed Project. These projects are in the immediate vicinity of the proposed Project and are currently ongoing, or planned with funding, and could potentially result in cumulative impacts when combined with the Proposed Project.

- The **High Line Redevelopment Project** is a public park built on an historic freight rail line elevated above the streets on Manhattan's West Side. It is owned by the City of New York, and maintained and operated by Friends of the High Line. The High Line is a one mile linear greenway, with plans for expansion that would extend this existing urban park towards the Hudson River. The recycling and redesign of the former railway into an aerial greenway has spurred real estate development in the adjacent neighborhoods.
- The DEP is drilling the **New York City potable water tunnel shaft**, a vertical shaft in the southeast corner of the Eastern Rail Yard, to connect to an underground water tunnel. Construction of the shaft is expected to be completed in 2013.
- The **Hudson Yards Project** (Overbuild Project) is a mixed-use development of residential, commercial, and civic uses and open space to be construction on a platform over the Hudson Yards. The project is led by the private developer, Related Companies, and will contain approximately 13 million square feet of residential and commercial space in three office buildings, multiple residential towers, a school, and a cultural facility. The project will benefit from several public investments, including the extension of the No. 7 Subway line to a new station at 34th street between 10th and 11th Avenues and investments in the nearby High Line and Hudson River Park. The Developer has obtained all necessary approvals and permits for the work.

- Various entities have proposed conceptual proposals and plans for new buildings and renovations in the surrounding area. No specific plans have been identified at this time.

Because Amtrak is only in the early planning stages of studies to consider expand services and increase train capacity with a new tunnel under the Hudson River (see discussions of the Master Plan, NEC FUTURE, and the Gateway Program, discussed in Chapter 1), Amtrak has not yet developed specific plans or designs, nor has it received or identified any funding for construction of such a tunnel at this time. Therefore, this program could not be considered in the evaluation of cumulative impacts. Additionally, no rail or rail yard projects are planned in the foreseeable future at the Hudson Yards by LIRR, MTA, or Amtrak.

3.12.2 Potential Cumulative Impacts

This section addresses only those resources subject to cumulative environmental effects; resources that are not present within the proposed Project site or that would not be affected by the proposed Project are not addressed. Cumulative impacts from the proposed Project when combined with other projects discussed in Section 3.12.1 above are described below. All impacts from the proposed Project would be temporary, lasting part or all of the approximate 24 months of construction. Additionally, because the proposed Project is for construction of an underground structure that would be covered by the Overbuild Project, and the scale of the proposed Project is minor when compared to the scale and magnitude of the Overbuild Project, the contribution of the proposed Project to cumulative impacts, when combined with the Overbuild Project impacts, would be negligible.

Cumulative impacts from the proposed Project when combined with the reasonably foreseeable future actions listed above would be limited to the proposed Project construction phase and include an increase in traffic, air and noise pollution, soil and groundwater disturbance, disturbances to nearby buildings and facilities from vibration, impacts on visual resources from the presence of construction equipment, the potential for contact with hazardous materials, and impacts on LIRR and MTA utilities and operations. These cumulative impacts would be temporary, and with implementation of mitigation measures such as traffic control, adherence to city, State and Federal regulations for noise and vibration and hazardous wastes and materials, OSHA regulations, and Amtrak's coordination with the Developer, LIRR, and MTA, any cumulative impacts are anticipated to be minor.

This page intentionally left blank.

CHAPTER FOUR DISTRIBUTION

The Draft EA is available for public review online on FRA's Web site at http://www.fra.dot.gov/Page/P0214. Please submit comments no later than April 29, 2013 via email to HillA@amtrak.com or by mailing them to:

Ms. Amrita Hill
Principal Officer, Major Projects NEC South
Amtrak
60 Massachusetts Ave NE
4th Floor
Washington DC 20002

A hard copy of the EA is available at the following location:

Science Industry and Business Library
New York Public Library
188 Madison Avenue
New York, NY 10016
(917) 275-6975
Library Hours:
Mon., Fri., Sat.: 11:00 a.m. – 6:00 p.m.
Tues., Wed., Thurs.: 10:00 a.m. – 8:00 p.m.
Sun.: Closed

A copy of the EA was provided to the Federal Transit Administration (FTA) requesting comments and also to inquire what FTA projects, if any, may be in or planned within the proposed Project area. In addition, the NYSDEC and New York City Department of Transportation were invited to comment on the proposed Project and EA regarding excavation activities in New York City and traffic impacts and controls during construction, respectively.

This page intentionally left blank.

CHAPTER FIVE LIST OF PREPARERS

URS:

Jeffrey Reidenauer, PhD, Project Manager

Christopher Gerber, CHMM, Program Manager

Angela Chaisson, CWB, Senior NEPA Specialist, Internal Technical Reviewer

Suzanne Richert, NEPA Specialist, Author Various Sections

Stephanie Liguori, NEPA Specialist, Author Various Sections

Erica Antill, GIS Specialist, Figures

Mark Edwards, Principal Cultural Resources Specialist, Cultural Resources Section

Jeff Winstel, Senior Architectural Historian, Cultural Resources Section

Brian Cleven, Senior Archaeologist, Cultural Resources Section

Vijay Apte, Senior Air Quality, Scientist, Author Air Resources Sections

Mike Kendall, Principal Air Quality Scientist, Technical Review of Air Resources Sections

Amy Siegel, Document Control Supervisor

Young Cho, Document Control Specialist

FRA:

Michelle W. Fishburne, Environmental Protection Specialist

Trevor Gibson, Transportation Analyst

Whitney Phend, Attorney Advisor

Amtrak:

Amrita Hill, Principal Officer Major Projects, Infrastructure and Investment Development

Michael Stern, Associate General Counsel, Corporate Affairs

Marilyn Jamison, Senior Director, Major Project Partnerships

Drew Galloway, Assistant Vice President, Policy and Development

Claudia Taccetta, Senior Environmental Coordinator

Craig Rolwood, Project Director, Structures Design

Related Companies:

Nick Mazzaferro, Vice President

This page intentionally left blank.

CHAPTER SIX REFERENCES

Amtrak. 2010a. *Northeast Corridor Infrastructure Master Plan*. Available at http://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&cid=1241245669222. Accessed March 7, 2013.

Amtrak. 2010b. *A Vision for High-Speed Rail in the Northeast Corridor*. September. Available at http://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&p=1237608345018&cid=1241245669222. Accessed March 7, 2013.

Amtrak. 2011. *Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase I – Section 1*. Final Report. April 8.

Amtrak. 2012a. *Amtrak Vision for the Northeast Corridor 2012 Update Report.* July 9. Available at http://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&p=1237608345018&cid=1241245669222. Accessed March 7, 2013.

Amtrak. 2012b. *Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase 1 – Section 2A*. Draft Report. July 12.

Amtrak. 2012c. *Amtrak Gateway Project, High Speed Rail Penn Station, New York Feasibility Study, Phase 1 – Section 2B.* Final Report. August 17.

City of New York. 2012. New York City Traffic Rules and Regulations, Chapter 4, Title 34 of the Rules of the City of New York. 2-15-2012. Available online at http://www.nyc.gov/html/dot/html/motorist/traffic_rules.shtml. Accessed March 6, 2013.

Federal Railroad Administration (FRA). 2013. Northeast Corridor Future Program Studies Web site. Available at http://necfuture.com/about/. Accessed March 7, 2013.

Federal Transit Administration (FTA), NJ Transit Corporation, the Port Authority of New York and New Jersey, U.S. Army Corps of Engineers, U.S. Coast Guard and Federal Railroad Administration. 2008. *Access to the Region's Core in Hudson County, New Jersey and New York County, New York Final Environmental Impact Statement*. Available online at: http://web.archive.org/web/20110429194201/http://arctunnel.com/library/feis_documents.aspx. Accessed March 5, 2013.

Jones & Stokes. 2007. Addressing Climate Change in NEPA and CEQ Documents. Updated in August. www.climatechangefocusgroup.com. Accessed March 7, 2013.

Langan Engineering and Environmental Services. 2009. *Phase II Environmental Site Investigation Report: LIRR West Side Storage Yards, East Rail Yard*. January.

Langan Engineering and Environmental Services. 2012. *Geotechnical Engineering Study: Hudson Yards – Terra Firma, Manhattan, New York.* May 17.

Metropolitan Transit Authority (MTA) and New York City Planning Commission (NYCPC). 2004. *Final General Environmental Impact Statement for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program*. http://www.nyc.gov/html/dcp/html/hyards/eis.shtml. Accessed March 7, 2013.

NYCPC and MTA. 2009. *Final Environmental Impact Statement for the Western Rail Yard*. http://www.mta.info/mta/planning/wry/feis.html. Accessed March 7, 2013.

New York City Mayor's Office of Environmental Coordination. 2012. *City Environmental Quality Review Technical Manual*. January. http://www.nyc.gov/html/oec/html/ceqr/technical_manual_2012.shtml. Accessed March 7, 2013.

Tutor Perini Corporation and Parsons Brinckerhoff. 2012. *Amtrak Gateway Project – Hudson Yards Study Final Report*. November 16.

U.S. Air Force (USAF). 2009a. *Air Emissions Factor Guide to Air Force Stationary Sources.* December 2009. HQ AFCEE/TDNQ, San Antonio, TX.

USAF. 2009b. *Air Emissions Factor Guide to Air Force Mobile Sources*. December 2009. HQ AFCEE/TDNQ, San Antonio, TX.

U.S. Environmental Protection Agency (EPA). 1995. *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources.* AP-42, Fifth Edition. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. January. Available online at http://www.epa.gov/ttn/chief/ap42/.

EPA. 2012a. 8-hour ozone nonattainment areas (2008 standard) Website. http://www.epa.gov/oaqps001/greenbk/hindex.html. Accessed March 5, 2013.

EPA. 2012b. National Ambient Air Quality Standards (NAAQS) Website. http://www.epa.gov/air/criteria.html. Accessed March 5, 2013.

This page intentionally left blank.

FINDING OF NO SIGNIFICANT IMPACT

Construction of a Concrete Casing in the Hudson Yards, New York, New York

Federal Railroad Administration

Introduction:

The National Railroad Passenger Corporation (Amtrak) has proposed to construct an underground concrete casing through the Hudson Yards rail yard in New York, NY. The proposed underground concrete casing (the "proposed Project") would preserve an underground right-of-way (ROW) for the possibility of future expansion of rail service between New Jersey and New York. The proposed Project would also support Amtrak's effort to improve resiliency with respect to future disasters in Amtrak's Northeast Corridor.

The proposed Project site—the Hudson Yards rail yard—is owned by the Metropolitan Transportation Authority (MTA) and used by the Long Island Rail Road (LIRR). Amtrak is the proposed Project sponsor and would design and construct the underground concrete casing. Amtrak anticipates constructing the proposed Project using Federal funding managed through the Federal Railroad Administration (FRA).

Purpose and Need:

The purpose of the proposed Project is to preserve an underground ROW in the Eastern Rail Yard of the Hudson Yards between 10th and 11th Avenues. Preserving the ROW would maintain opportunities to expand rail services in order to meet future demand and improve intercity and commuter rail system safety and reliability. In addition, the proposed Project supports Amtrak's effort to improve resiliency in the passenger rail system with respect to disasters, particularly flooding. The proposed Project would be designed to withstand flood levels at new standards, using criteria that would have prevented the flooding caused by Superstorm Sandy.

There is an urgent need to preserve the ROW because, in December of 2012, Related Companies (the "Developer") began construction of a large-scale development, referred to as the "Overbuild Project" in the area above the Hudson Yards. The Overbuild Project involves constructing a platform that will provide the footprint for a commercial and residential development. The placement of immense support structures throughout the Eastern Rail Yard for the Overbuild Project platform is projected to start in mid-2013. If the underground ROW is not preserved while the Overbuild Project foundations are constructed, the use of this location under Hudson Yards would be permanently lost, and along with it one possible alignment for future expansion of rail service between New York and New Jersey.

Description of Proposed Action:

The proposed action is to design and construct an underground concrete casing in the Eastern Rail Yard portion of the Hudson Yards rail yard in the borough of Manhattan, New York, NY. In a series of studies, Amtrak, in coordination with LIRR, MTA, and the Developer, has determined that there is one clear alignment on the west side of Manhattan–Hudson Yards–that would allow full connectivity of a future tunnel into Penn Station from the west. Specifically, these studies, *Penn Station New York Major Support Facilities and Potential Improvements between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines,*

Phase I – Section 1 (2011), *Penn Station New York Major Support Facilities and Potential Improvements Between the Hudson River and 7th Avenue, Preliminary Track Alignment Design and Impacted Disciplines, Phase 1 – Section 2A* (2012), and *Amtrak Gateway Project, High Speed Rail Penn Station, New York Feasibility Study, Phase 1 – Section 2B* (2012), determined that the Hudson Yards Eastern Rail Yard is the only location that could provide the appropriate space for the vertical and horizontal alignment of a new tunnel that would be fully and effectively integrated operationally with the existing Penn Station complex of tracks and platforms. One of these studies, an in-depth engineering analysis titled *Amtrak Gateway Project – Hudson Yards Study Final Report* (2012), demonstrated that, unless this ROW is preserved during the Overbuild Project's construction, unacceptable disruptions to LIRR facilities and impacts to the residential and commercial structures of the Overbuild Project from rock blasting and excavation would preclude future consideration of this alignment alternative.

Description of Alternatives:

The two alternatives considered for the proposed Project are the construction of the concrete casing (action) or not constructing the concrete casing (no action).

No Action:

For the no action alternative, Amtrak would not construct the concrete casing to preserve the ROW.

Construction of Concrete Casing:

The action alternative includes the construction of a concrete casing structure that would be approximately 800 feet long, 50 feet wide, and 35 feet tall and would extend underground from 10th Avenue to 11th Avenue between 31st and 33rd Streets. Construction of the concrete casing would require:

- Demolition of the northern part of the LIRR Maintenance of Equipment (MOE) Building and reconstruction to its original condition following completion of the concrete casing.
- Temporary relocation of all MOE Building functions to other LIRR maintenance and shop facilities until the portion of the MOE Building being demolished is reconstructed.
- Demolition of a concrete ramp that originates at 10th Avenue and provides vehicular access to the Eastern Rail Yard. The ramp would not be rebuilt because construction of the Overbuild Project platform will preclude use of that space for a ramp.
- Temporary removal of shop tracks to the MOE Building and yard tracks, Track 0 and part of Track 1, and their reconstruction after completion of the concrete casing construction.
- Temporary removal from service certain yard tracks and their immediate return to service.
- Temporary relocation and replacement of utilities and signals/communications within the Eastern Rail Yard.
- Excavation of approximately 83,000 cubic yards of soil and bedrock.

No operational components, such as tracks, lighting, ventilation, or electrical systems, would be constructed as part of the proposed Project.

Evaluation of Alternatives:

No Action:

Under this alternative, construction of the Overbuild Project would still occur, preventing Amtrak, New Jersey Transit (NJT), or any other rail service from utilizing a ROW underneath the Overbuild Project that would support expanded intercity and NJT commuter rail services and improve intercity and commuter rail system safety and reliability in the Hudson Yards. Therefore, if the underground concrete casing is not constructed at the same time as the Overbuild Project foundations, the ROW beneath the Overbuild Project would be permanently lost as a potential alignment for the future expansion of rail service between New York and New Jersey.

Construction of Concrete Casing:

Construction of the Concrete Casing would preserve an important location underground for an expanding intercity and NJT commuter rail services. There are no underground areas remaining as feasible options for a new tunnel from the west that could provide a direct connection with the existing infrastructure in Penn Station because of physical and design restrictions other than the alignment specified as the proposed Project.

While the proposed Project would preserve the only clear alignment allowing a new tunnel from the west that fully integrates with the existing Penn Station complex, it does not preclude future studies or the design and construction of alternative future alignments for tunnels entering Manhattan from New Jersey. The proposed Project would not change or add to existing rail operations and would not become operational unless this ROW is selected in a future study for the construction of a rail tunnel.

Environmental Consequences and Mitigation Measures:

FRA has analyzed the current environmental conditions and the consequences of the proposed Project's environmental impacts in the Environmental Assessment (EA). Based upon the analysis in the EA, summarized below, FRA concludes that the construction of the concrete casing, including proposed mitigation measures for unavoidable impacts, would have no foreseeable significant environmental impacts.

This Finding of No Significant Impact (FONSI) does not discuss resources that are not located within the proposed Project area or would otherwise not be affected by the proposed Project. These resources include: surface water and wetlands, vegetation and habitat, wildlife, threatened and endangered species, and coastal zone resources.

Geology: There would be no substantial adverse environmental impacts from the removal of 35,700 cubic yards of bedrock from the proposed Project site. Amtrak's construction contractor would handle, stage, transport, and dispose of all removed rock in accordance with applicable Federal, State, and local regulations. Amtrak's construction contractor would obtain rock blasting permits as needed from New York City's Fire Department and the City's Department of Buildings. The removal of bedrock would not affect the future LIRR operations because the surface of the Eastern Rail Yard would be restored following construction of the casing and would be adequate to support the presence of LIRR trains.

Soils: No adverse impacts from the excavation or handling of the estimated 47,300 cubic yards of urban fill and native soils that would be removed from the proposed Project site are

anticipated. Trucks would haul all soil and fill material that is excavated from the proposed Project site to licensed disposal facilities. Although the *Phase II Environmental Site Investigation Report: LIRR West Side Storage Yards, East Rail Yard,* prepared by Langan Engineering and Environmental Services for Related Companies in 2009, determined that soils and fill material in the proposed Project site are not expected to be classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA), Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak's construction contractor would develop a Soil Management Plan to ensure that contaminated materials are handled, staged, transported, and disposed of in accordance with Federal, State, and local regulations.

Groundwater: Impacts to groundwater are anticipated to be temporary and minor and no adverse impacts from the handling of groundwater are expected. Amtrak's construction contractor would prepare a Groundwater Management/Dewatering Plan that would address procedures for handling groundwater encountered during construction. Amtrak's construction contract would require testing of the groundwater, and the Dewatering Plan would describe procedures to ensure that Amtrak's construction contractor would treat or dispose of any contaminated groundwater released during dewatering operations in accordance with Federal, State, and local regulations. Groundwater removed from the construction area would be either hauled off-site to a disposal facility or discharged into a New York City Department of Environmental Protection (DEP) sewer under a temporary New York State of Environmental Conservation construction dewatering permit. If discharges into New York City sewers would exceed 10,000 gallons a day, Amtrak's construction contractor would obtain New York City DEP approval.

No adverse impacts to potable water supplies are expected. Groundwater underneath New York City is never used as a potable water supply; residents instead receive their water from reservoirs in upstate New York. The closest potable supply of groundwater to the proposed Project site is the aquifer systems of Long Island; however, these systems are geographically isolated from the groundwater of Manhattan by a saltwater-freshwater interface.

Air Quality: Air pollutant emissions associated with the proposed Project would be temporary and minor, and would not adversely impact air quality. Annual emissions generated as a result of the proposed Project are not expected to exceed threshold levels established in the Clean Air Act's general conformity regulations. Fugitive dust as a result of site clearing and earthmoving activities would temporarily increase during construction of the proposed Project. Amtrak's construction contractor would minimize fugitive dust as needed through measures such as the application of water to disturbed areas and haul roads, and speed controls on earthmoving equipment and haul trucks. Carbon dioxide (CO_2) is the only greenhouse gas (GHG) considered in the EA because emissions from other GHGs would be negligible. As shown in the EA, annual CO_2 emissions from the proposed Project are expected to be 2,998 metric tons, or 0.00608 percent of the total annual CO_2 emissions generated in New York City. Therefore, the relative contribution of GHGs from the proposed Project compared to those generated in New York City would be negligible.

Cultural Resources: The EA assessed the effects of the proposed Project on cultural resources in accordance with Section 106 of the National Historic Preservation Act. None of the properties in the proposed Project area are considered historic because they either date to the 1980s rail yard redevelopment or were substantially altered as part of the 1980s rail yard development project. However, there are two above-ground historic properties in the Hudson Yards area outside of the

proposed Project site: the High Line Freight Railroad viaduct and the New York Improvement and Tunnel Extension of the Pennsylvania Railroad (Hudson River Tunnels). Temporary visual obstructions created by construction equipment associated with the proposed Project could result in temporary loss of context for the architectural resources nearby. However, based on available documentation located in the files of the New York State Historic Preservation Office (SHPO) (*Final Generic Environmental Impact State for the proposed No. 7 Subway Extension and Hudson Yards Rezoning and Development Program* (2004) and *Final Environmental Impact Statement for the Western Rail Yard* (2009)) and data gathered during a field investigation of the Hudson Yards, the proposed Project would have no adverse effect on the two historic properties identified. Based on previous work done at the Hudson Yards and from New York State Office of Park, Recreation and Historic Preservation research, there is low potential for archaeological resources to be present in the archaeological area of potential effect.

In a letter dated April 1, 2013, the New York SHPO concurred with FRA's determination that the Proposed project would have no adverse effects on historic properties with the condition that a Construction Protection Plan (CPP) is put in place for all properties within 90 feet of the proposed work that are either listed or eligible for listing on the National Register of Historic Places, and that the CPP shall meet the requirements of the New York City Building Code, Department of Building Technical Policy and Procedure Notice (TPPN) #10/88.

Visual Resources: No long-term direct or indirect visual impacts are anticipated from the proposed Project. Because the Eastern Rail Yard contains other ongoing construction projects (other than the Overbuild Project), construction activities associated with the proposed Project would be difficult to distinguish from other activities. Construction activities associated with the proposed Project would result in negligible short-term impacts on views of the Hudson Yards, but the concrete casing would be buried below ground and existing buildings and tracks would be restored to their current configuration after the completion of the proposed Project.

Hazardous Materials Health and Safety: Hazardous materials could be encountered during excavation activities through exposure to soils and fill, exposure to groundwater, or during demolition of the MOE Building. However, with implementation of the hazardous materials and hazardous waste best management practices and adhering to Federal, State, and local requirements for handling of hazardous materials and wastes, no direct or indirect adverse impacts are anticipated as a result of the proposed Project.

The *Phase II Environmental Site Investigation Report: LIRR West Side Storage Yards, East Rail Yard* (2009), determined that excess soils, fill material, and construction waste that would be excavated from the Eastern Rail Yard during construction are not expected to require management as RCRA hazardous wastes. Amtrak's construction contractor would complete verification testing in accordance with RCRA regulations and disposal facility acceptance requirements when soils are excavated. Amtrak's construction contractor would develop a Soil Management Plan, a Groundwater Management Plan, and a Dewatering Plan to ensure that contaminated materials are handled, staged, transported, treated, and disposed of in accordance with Federal, State, and local regulations.

Before Amtrak's construction contractor would demolish the MOE Building, Amtrak's construction contractor would complete a lead based paint survey of the building and a survey to determine whether there are asbestos-containing materials. Hazardous materials that are currently stored in the part of the MOE Building to be demolished or found in the building

materials would be placed in appropriate containers for transport and shipped off-site according to Federal, State and local regulations, or to other MOE maintenance facilities for their continued use. Construction activities would include the use of hazardous materials and hazardous waste generation from construction equipment, but no impacts on worker and public safety are expected. Amtrak's construction contractor would implement appropriate safety measures, such as preparing a Health and Safety Plan, along with procedures for the handling, storage, and disposal of hazardous materials and wastes during construction activities to limit worker, public, and environmental exposure.

Noise and Vibration: With implementation of noise and vibration control measures and compliance with city, State and Federal noise and blasting regulations, the proposed Project would not result in adverse impacts on buildings, facilities or operations from noise and vibration associated with demolition and construction activities.

Construction activities associated with the proposed Project would cause temporary increases in noise levels, although these increases would be indistinguishable from existing construction noises already occurring at the proposed Project site. Amtrak's construction contractor would comply with the New York City Noise Control Code to minimize impacts from noise, along with implementing good engineering practices such as proper maintenance and operation by muffling devices and shutting off idling machinery when not in use.

Vibrations from rock blasting would travel into the soil and rock and potentially into the foundations and walls of nearby buildings and facilities. Special rock-blasting techniques would be used to reduce vibration impacts so that no adverse impacts on nearby facilities, buildings, tracks, and railroad systems would occur. LIRR would notify Amtrak if vibration was occurring beyond LIRR-approved levels, and Amtrak's construction contractor would mitigate the vibrations to acceptable levels to prevent any substantial impacts on LIRR facilities and operations.

Access and Traffic: The proposed Project would have direct impacts on access and traffic, but these would be temporary and minor. Traffic impacts may occur from construction workers traveling to the Hudson Yards, haul trucks transporting excavated materials from the proposed Project site, and from delivery of construction-related equipment to the proposed Project site. These impacts would be most noticeable where traffic is already congested, but would otherwise be minimal when compared to the existing traffic conditions. Project-related trucks would adhere to designated local truck routes to minimize impacts. The proposed Project would not need lane closures or traffic re-routing since all Project-related work would occur within the Hudson Yards. All worker and construction vehicles would park along the access road in the Western Rail Yard of the Hudson Yards; construction vehicles and equipment would be stored or parked in staging areas. Therefore, the proposed Project would not affect parking in the Hudson Yards area.

The proposed Project is not expected to affect pedestrian routes since the majority of the sidewalk along the west side of 10th Avenue, which would be closed entirely for part of the construction period, is already closed, and a pedestrian walkway has been provided. Construction fencing and other barriers would be maintained around the work zone to prevent public access. The existing vehicular ramp from 10th Avenue that provides private access to the Hudson Yards would be permanently removed for construction of the proposed Project. An existing paved access road from 12th Avenue would provide access to the Hudson Yards.

Utilities, Infrastructure, and LIRR Operations: Temporary moderate direct and indirect adverse impacts to LIRR and MTA operations would occur as a result of the proposed Project. Amtrak would work closely with the LIRR to minimize the duration of disruption to facilities. Any facilities or utilities removed or out of service during the construction of the proposed Project would be accessible in a temporary capacity during construction, if they are necessary. All facilities and utilities removed before or during construction would be replaced to their full pre-construction capacity and function in accordance with Federal, State and local regulations after construction is complete, except for the 10th Avenue ramp. Amtrak would coordinate a detailed Site Logistics Plan with LIRR during the design phase of this proposed Project. With implementation of the mitigation measures, impacts on LIRR and MTA operations would not be adverse. Listed below are the utilities and infrastructure that the proposed Project would affect:

- Eastern Rail Yard storm sewers and sanitary sewers,
- Electrical systems that service the MOE Building and yard tracks,
- The signals and communications systems for the portion of the LIRR yard serving the MOE Building,
- Potable water lines and fire protection within the proposed Project alignment,
- Gas line that lies within the proposed Project alignment,
- MOE Building and 10th Avenue ramp, and
- Yard and shop tracks.

Cumulative Impacts: Because impacts from the proposed Project would be temporary, lasting part or all of the approximate 24 months of construction and the scale of the proposed Project is minor when compared to the scale and magnitude of the Overbuild Project, the contribution of the proposed Project to cumulative impacts, when combined with the Overbuild Project impacts, would be negligible. FRA has determined that construction of the concrete casing, including proposed mitigation measures for unavoidable impacts described above, would have no foreseeable significant cumulative environmental impacts.

Notice of Availability and Comments Received on the EA:

A Notice of Availability for the EA was published in the Federal Register on April 3, 2013 (78 FR 20169) announcing the start of the public comment period. The EA public comment period ended on April 29, 2013. During the comment period, the EA was available for review at the FRA Office of Railroad Policy and Development in Washington, DC, at the New York Public Library in New York, NY, and online at FRA's website. Three comments were received on the EA: one from the United States Department of the Interior (DOI) and two from the public. The two comments from individuals were in support of the project.

The DOI comment requested a technical evaluation of the dewatering of the shallow groundwater, the impacts on the areas groundwater levels, and that FRA provide data to support the concept that the groundwater beneath the Eastern Rail Yard is isolated from the deeper aquifer. FRA's response to the DOI comment is as follows:

The groundwater at the Hudson Yards site is geographically isolated from the closest potable water source, the Long Island aquifer system, by a freshwater-saltwater interface (EPA, 2010 and EPA, 2012). Furthermore, the groundwater at the project site flows to the south and west (Stumm and Chowdhury, 2003).

Project design features would be used to prevent the lowering of the surrounding groundwater levels. The design includes a Support of Excavation (SOE) system that would be used to excavate the concrete casing trench. The SOE incorporates secant pile walls drilled into the top of rock. This SOE system is designed to prevent dewatering and lowering of the groundwater levels in the soils adjacent to the excavation. Grouting would be used to seal significant seepages in the secant pile walls during excavation. Along the northeast wall of the excavation, the structural box of the existing Empire Line Tunnel would provide the necessary groundwater cut-off into the top of rock in lieu of the secant pile wall. Grouting would be used to control any significant groundwater seepages that may occur through the bedrock that is exposed in the excavation beneath the secant pile walls and Empire Line Tunnel.

References:

Environmental Protection Agency (EPA). 2010. *Nassau and Suffolk Counties, New York, Nassau-Suffolk Aquifer System*. May 1975. Available at http://www.epa.gov/region2/water/aquifer/nasssuff/nassau.htm. Last updated October, 2010. Accessed on April 25, 2013.

EPA. 2012. *Kings and Queens Counties, New York, Brooklyn-Queens Aquifer System*. December, 1983. Available at http://www.epa.gov/region2/water/aquifer/brooklyn/brooklyn.htm. Last updated September, 2012. Accessed on April 25, 2013.

Stumm, F. and S. Chowdhury.2003. Delienation of ground water flow in fractured rock in the southwestern part of Manhattan, New York, through use of advanced borehole geophysical methods. Ground Water Monitoring & Remediation,Vol 23., No. 3; 42-49. Available at http://ny.water.usgs.gov/pubs/jrn/ny3005/jrn03-ra3b00e.pdf. Accessed May 3, 2013.

Conclusion and Finding of No Significant Impact:

FRA concludes that the March 2013 EA, prepared for the proposed Project, satisfies the requirements of FRA's Procedures for Considering Environmental Impacts and that it has afforded adequate opportunity for the review by parties with an interest in the project. FRA finds that the construction of a concrete casing in the Hudson Yards will have no foreseeable significant impacts on the quality of the environment. This FONSI is based on the EA, which FRA has determined to adequately and accurately discuss the purpose and need, environmental issues, impacts of the proposed Project, and appropriate mitigation measures. The EA and comments received on the EA provide sufficient evidence and analysis for determining that an Environmental Impact Statement is not required.

Joseph C. Szabo
Administrator
Federal Railroad Administration

5/16/13
Date

Appendix B

Air Quality Calculations

This page intentionally left blank.

Projected Emissions for CY 2015

All Sources

Construction Under 11th Avenue and 11th Avenue Bridge Demolition and Rebuild

Emission Source	Projected Emissions (tons per year)							CY 2015 (metric tons per year)
	CO	NOx	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	CO_2e
Construction Equipment Operation	9.13	19.69	2.24	1.69	1.69	1.22	1,761.95	1,598.41
Site Preparation - Fugitive Emissions	--	--	--	1.55E-01	1.55E-01	--	--	--
Rock/Soil Transport - Fugitive Emissions	--	--	--	0.74	0.08	--	--	--
Concrete Transport - Fugitive Emissions	--	--	--	0.02	0.00	--	--	--
Total	9.13	19.69	2.24	2.60	1.92	1.22	1,761.95	1,598.41

Projected Emissions for CY 2016

All Sources

Construction West of 11th Avenue

Emission Source	Projected Emissions (tons per year)							CY 2016 (metric tons per year)
	CO	NOx	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	CO_2e
Construction Equipment Operation	10.79	20.06	2.64	1.90	1.90	1.31	1,903.81	1,727.11
Site Preparation - Fugitive Emissions	--	--	--	2.84E-01	2.84E-01	--	--	--
Rock/Soil Transport - Fugitive Emissions	--	--	--	0.74	0.08	--	--	--
Total	10.79	20.06	2.64	2.92	2.26	1.31	1,903.81	1,727.11

Projected Emissions for CY 2017

All Sources

Construction West of 11th Avenue

Emission Source	Projected Emissions (tons per year)							CY 2017 (metric tons per year)
	CO	NOx	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	CO_2e
Construction Equipment Operation	10.79	20.06	2.64	1.90	1.90	1.31	1,903.81	1,727.11
Site Preparation - Fugitive Emissions	--	--	--	0	0	--	--	--
Rock/Soil Transport - Fugitive Emissions	--	--	--	0.74	0.08	--	--	--
Total	10.79	20.06	2.64	2.64	1.98	1.31	1,903.81	1,727.11

Notes:

1. Assume $PM=PM_{10}=PM_{2.5}$

Casing Construction Equipment Projected Hours of Operation

Amtrak Hudson Yard Project

Diesel Equipment		Average Rated HP	No. of Units	Construction Under 11th Avenue (Includes Bridge Demolition and Rebuild) CY 2015 Hours	Construction West of 11th Avenue CY 2016 Hours	CY 2017 Hours
Manlift	Forklifts	51	1	0	540	540
855 Liebherr Crane	Cranes	604	1	0	960	960
777 Manitowoc Crane	Cranes	600	2	720	0	0
Atlas ROC D3 Drill Rig	Bore/Drill Rigs	156	2	0	360	360
KR-803-1 Rock Anchor Drill	Bore/Drill Rigs	140	1	0	270	270
Bauer B28 Drill	Bore/Drill Rigs	475	1	720	0	0
Dump Truck	Dumpers/Tenders	400	5 in CY2015 and 10 in CY2016-17	363	600	600
Generator	Generator Sets	75	1	1440	240	240
Mobile Crane	Cranes	300	1	0	180	180
Pay Loader	Rubber Tire Loaders	60	1	0	1080	1080
Pay Loader 980 CAT	Rubber Tire Loaders	150	2	1320	0	0
Hydraulic Drill Rig BG 28	Bore/Drill Rigs	475	2	0	360	360
Track Drill	Bore/Drill Rigs	200	1	720	0	0
Concrete Mixer Truck	Cement & Motor Mixers	470	3	1980	1080	1080
Excavator 322C CAT	Excavators	470	1	0	1080	1080
Excavator 318E CAT	Excavators	114	3	0	1080	1080
Excavator 336 CAT	Excavators	470	1	1080	0	0
Impact Hammer CAT H160E	Crushing/Processing Equipment	100	1	720	0	0
Vibratory Hammer 1412B ICE	Crushing/Processing Equipment	100	1	240	0	0
Air Compressor	Air Compressors	80	1 in CY2015 and 2 in CY2016-17	2640	2160	2160
Hoe Ram	Other Construction Equipment	60	1	0	360	360
Compactor	Plate Compactors	80	1	600	0	0
Paver	Pavers	200	1	240	0	0
Welder 400 amp	Welders	80	1	1320	0	0
Grout Plant	Pumps	80	1	480	0	0
Pickup Truck	Off-Highway Trucks	489	2	0	1080	1080

Assumptions:

Construction on the portion of the concrete casing under 11th Avenue is projected to start in February 2015 and be completed by October 2015.
Construction on the portion of the concrete casing west of 11th Avenue will start in early 2016 and end in 2017 as a worst case scenario.
Typical workday will include 10 hours of construction (7:00 am to 5:00 pm), 6 days per week.
Estimated hours of operation for casing excavation and construction are based on projected run months provided by Parsons Brinkerhoff and approved by Amtrak.
Depending on the type of equipment, hours of operation are estimated to be 4, 6, 8 or 12 per day.

Dump Truck Hours for casing excavation estimated as follows:

Cubic yards of soil and rock transp	80,000		
Cy/truck/trip hauled =	16		
Total trips =	5000		
Average run per trip =	3		
Total hours operated =	15000		
Total hours/truck =	1500	300	2015 hours per truck
		600	2016 hours per truck
		600	2017 hours per truck

Dump Truck Hours for bridge demolition estimated as follows:

Cubic yards of concrete transported =		740
Cy/truck/trip hauled =		8
Total trips =		93
Average run per trip =		3
Total hours operated =		278
Total hours/truck =		56
Tons of steel transported =		184
Tons/truck/trip hauled =		15
Total trips =		12
Average run per trip =		3
Total hours operated =		37
Total hours/truck =		7

Concrete and steel hours/truck =	63	hours per year per truck

Construction Equipment Air Quality Emission Factors

Amtrak Hudson Yard Project

Diesel Equipment		Average Rated HP[1]	Loading Factors[2]	Emission Factors (lbs/1000 HP-hr)[2]						Emission Factors (lbs/hr)[3]					
				CO	NOx	VOC	PM[4]	SOx	CO_2e	CO	NOx	VOC	PM[4]	SOx	CO_2e
Manlift	Forklifts	51	59%	6.5	9.97	0.9	0.9	0.88	1275	1.96E-01	3.00E-01	2.71E-02	2.71E-02	2.65E-02	38.36
855 Liebherr Crane	Cranes	604	43%	3.02	12.06	0.84	0.64	0.82	1186	7.84E-01	3.13E+00	2.18E-01	1.66E-01	2.13E-01	307.99
777 Manitowoc Crane	Cranes	600	43%	3.02	12.06	0.84	0.64	0.82	1186	7.79E-01	3.11E+00	2.17E-01	1.65E-01	2.12E-01	305.99
Atlas ROC D3 Drill Rig	Bore/Drill Rigs	156	43%	5.49	15.37	1.32	1.06	0.84	1204	3.68E-01	1.03E+00	8.85E-02	7.11E-02	5.63E-02	80.75
KR-803-1 Rock Anchor Drill	Bore/Drill Rigs	140	43%	5.49	15.37	1.32	1.06	0.84	1204	3.30E-01	9.25E-01	7.95E-02	6.38E-02	5.06E-02	72.47
Bauer B28 Drill	Bore/Drill Rigs	475	43%	5.49	15.37	1.32	1.06	0.84	1204	1.12E+00	3.14E+00	2.70E-01	2.17E-01	1.72E-01	245.92
Track Drill	Bore/Drill Rigs	200	43%	5.49	15.37	1.32	1.06	0.84	1204	4.72E-01	1.32E+00	1.14E-01	9.12E-02	7.22E-02	103.54
Dump Truck	Dumpers/Tenders	400	21%	18.74	16.43	5.01	3.11	1.04	1513	1.57E+00	1.38E+00	4.21E-01	2.61E-01	8.74E-02	127.08
Generator	Generator Sets	75	43%	6.95	13.98	1.85	1.35	0.88	1261	2.24E-01	4.51E-01	5.97E-02	4.35E-02	2.84E-02	40.68
Grout Plant	Pumps	80	43%	6.92	14.09	1.76	1.37	0.88	1261	2.38E-01	4.85E-01	6.05E-02	4.71E-02	3.03E-02	43.38
Mobile Crane	Cranes	300	43%	3.02	12.06	0.840	0.64	0.82	1186	3.90E-01	1.56E+00	1.08E-01	8.26E-02	1.06E-01	152.98
Pay Loader	Rubber Tire Loaders	60	59%	4.87	11.75	0.86	0.82	0.84	1199	1.72E-01	4.16E-01	3.04E-02	2.90E-02	2.97E-02	42.45
Pay Loader 980 CAT	Rubber Tire Loaders	150	59%	4.87	11.75	0.86	0.82	0.84	1199	4.31E-01	1.04E+00	7.61E-02	7.26E-02	7.43E-02	106.11
Impact Hammer H160E CAT	Crushing/Processing Equipmer	100	43%	4.21	12.72	0.99	0.79	0.84	1213	1.81E-01	5.47E-01	4.26E-02	3.40E-02	3.61E-02	52.16
Vibratory Hammer 1412B ICE	Crushing/Processing Equipmer	100	43%	4.21	12.72	0.99	0.79	0.84	1213	1.81E-01	5.47E-01	4.26E-02	3.40E-02	3.61E-02	52.16
Hydraulic Drill Rig BG 28	Bore/Drill Rigs	475	43%	5.49	15.37	1.32	1.06	0.84	1204	1.12E+00	3.14E+00	2.70E-01	2.17E-01	1.72E-01	245.87
Concrete Mixer Truck	Cement & Motor Mixers	470	43%	7.17	15.79	1.81	1.35	0.86	1253	1.45E+00	3.19E+00	3.66E-01	2.73E-01	1.74E-01	253.15
Excavator 322C CAT	Excavators	470	59%	3.75	10.03	0.75	0.71	0.84	1204	1.04E+00	2.78E+00	2.08E-01	1.97E-01	2.33E-01	333.81
Excavator 318E CAT	Excavators	114	59%	3.75	10.03	0.75	0.71	0.84	1204	2.52E-01	6.75E-01	5.04E-02	4.78E-02	5.65E-02	80.97
Excavator 336 CAT	Excavators	470	59%	3.75	10.03	0.75	0.71	0.84	1204	1.04E+00	2.78E+00	2.08E-01	1.97E-01	2.33E-01	333.87
Air Compressor	Air Compressors	80	43%	5.49	12.55	1.30	1.08	0.88	1275	1.89E-01	4.32E-01	4.47E-02	3.72E-02	3.03E-02	43.86
Compactor	Plate Compactors	80	43%	9.92	14.99	2.43	1.72	0.90	1308	3.41E-01	5.16E-01	8.36E-02	5.92E-02	3.10E-02	45.00
Paver	Pavers	200	59%	4.76	10.72	0.90	0.88	0.84	1224	5.62E-01	1.26E+00	1.06E-01	1.04E-01	9.91E-02	144.43
Welder 400 amp	Welders	80	21%	20.31	15.19	5.12	3.06	1.06	1533	3.41E-01	2.55E-01	8.60E-02	5.14E-02	1.78E-02	25.75
Hoe Ram	Other Construction Equipment	60	59%	6.46	13.01	0.99	0.95	0.82	1195	2.29E-01	4.61E-01	3.50E-02	3.36E-02	2.90E-02	42.29
Pickup Truck	Off-Highway Trucks	489	59%	3.66	11.27	0.64	0.57	0.82	1192	1.06E+00	3.25E+00	1.85E-01	1.64E-01	2.37E-01	344.04

1. Average horsepower ratings were obtained from Parsons Brinkerhoff or from a review of various manufacturers' specifications.
2. Loading factors and emission factors from USAF CEE Air Emissions Guide For Air Force Mobile Sources, August 2013, Section 4.
3. Emission Factors (lbs/hr) = (Average Rated HP X Loading Factors X Emission Factors (lbs/1000 HP-hr)) / 1000
4. $PM=PM_{10}=PM_{2.5}$

This page intentionally left blank.

Projected Emissions for CY 2015
Construction Equipment
Construction Under 11th Avenue (includes Bridge Demolition and Rebuild)

Construction Equipment	Usage (hrs)	Emissions (lbs)					
		CO	NOx	VOC	PM_{10}	SO_2	CO_2e
Manlift	0	0.00	0.00	0.00	0.00	0.00	0.00
855 Liebherr Crane	0	0.00	0.00	0.00	0.00	0.00	0.00
777 Manitowoc Crane	720	1,121.99	4,480.53	312.08	237.77	304.65	440,622.72
Atlas ROC D3 Drill Rig	0	0.00	0.00	0.00	0.00	0.00	0.00
KR-803-1 Rock Anchor Drill	0	0.00	0.00	0.00	0.00	0.00	0.00
Bauer B28 Drill	720	807.36	2260.31	194.12	155.88	123.53	177060.24
Track Drill	720	339.94	951.71	81.73	65.64	52.01	74,551.68
Dump Truck	363	2,857.10	2,504.92	763.82	474.15	158.56	230,651.25
Generator	1440	322.76	649.23	85.91	62.69	40.87	58,579.79
Grout Plant	480	114.26	232.65	29.06	22.62	14.53	20,821.63
Mobile Crane	0	0.00	0.00	0.00	0.00	0.00	0.00
Pay Loader	0	0.00	0.00	0.00	0.00	0.00	0.00
Pay Loader 980 CAT	1320	1,137.83	2,745.27	200.93	191.58	196.26	280,134.36
Impact Hammer H160E CAT	720	156.41	472.57	36.78	29.35	31.21	45,065.38
Vibratory Hammer 1412B ICE	240	43.45	131.27	10.22	8.15	8.67	12,518.16
Hydraulic Drill Rig BG 28	0	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Mixer Truck	1980	8,607.40	18,955.48	2,172.86	1,620.64	1,032.41	1,503,699.33
Excavator 322C CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Excavator 318E CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Excavator 336 CAT	1080	1,459.98	3,904.97	292.00	276.42	327.04	468,752.36
Air Compressor	2640	498.58	1139.74	118.06	98.08	79.92	115783.50
Compactor	600	204.75	309.39	50.16	35.50	18.58	26,997.12
Paver	240	134.80	303.59	25.49	24.92	23.79	34,663.68
Welder	1320	450.39	336.85	113.54	67.86	23.51	33,995.81
Hoe Ram	0	0.00	0.00	0.00	0.00	0.00	0.00
Pickup Truck	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions	**(lb/yr):**	**18,257.0**	**39,378.5**	**4,486.8**	**3,371.3**	**2,435.5**	**3,523,897.0**
Total Emissions	**(tpy)**	**9.13**	**19.69**	**2.24**	**1.69**	**1.22**	**1,761.95**
Total Emissions	**(Metric Tons/yr)**						**1,598.41**

Projected Emissions for CY 2016
Construction Equipment
Construction West of 11th Avenue

Construction Equipment	Usage (hrs)	Emissions (lbs)					
		CO	NOx	VOC	PM_{10}	SO_2	CO_2e
Manlift	540	105.62	162.00	14.62	14.62	14.30	20,715.73
855 Liebherr Crane	960	752.98	3,006.93	209.44	159.57	204.45	295,673.14
777 Manitowoc Crane	0	0.00	0.00	0.00	0.00	0.00	0.00
Atlas ROC D3 Drill Rig	360	265.15	742.33	63.75	51.20	40.57	58,140.22
KR-803-1 Rock Anchor Drill	270	89.23	249.82	21.46	17.23	13.65	19,566.42
Bauer B28 Drill	0	0.00	0.00	0.00	0.00	0.00	0.00
Track Drill	0	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	600	9,444.96	8,280.72	2,525.04	1,567.44	524.16	762,483.46
Generator	240	53.79	108.21	14.32	10.45	6.81	9,763.30
Grout Plant	0	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Crane	180	70.12	280.03	19.50	14.86	19.04	27,535.79
Pay Loader	1080	186.19	449.23	32.88	31.35	32.11	45,843.80
Pay Loader 980 CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Impact Hammer H160E CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Vibratory Hammer 1412B ICE	0	0.00	0.00	0.00	0.00	0.00	0.00
Hydraulic Drill Rig BG 28	360	807.36	2,260.31	194.12	155.88	123.53	177,029.50
Concrete Mixer Truck	1080	4,694.94	10,339.36	1,185.20	883.99	563.13	820,199.63
Excavator 322C CAT	1080	1,123.07	3,003.82	224.61	212.63	251.57	360,516.14
Excavator 318E CAT	1080	817.21	2,185.76	163.44	154.72	183.05	262,333.02
Excavator 336 CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	2160	815.86	1,865.03	193.19	160.50	130.78	189,463.91
Compactor	0	0.00	0.00	0.00	0.00	0.00	0.00
Paver	0	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0	0.00	0.00	0.00	0.00	0.00	0.00
Hoe Ram	360	82.33	165.80	12.62	12.11	10.45	15,225.07
Pickup Truck	1080	2,280.84	7,023.26	398.84	355.21	511.01	743,131.59
Total Emissions	**(lb/yr):**	**21,589.7**	**40,122.6**	**5,273.0**	**3,801.8**	**2,628.6**	**3,807,620.7**
Total Emissions	**(tpy)**	**10.79**	**20.06**	**2.64**	**1.90**	**1.31**	**1,903.81**
Total Emissions	**(Metric Tons/yr)**						**1,727.11**

Projected Emissions for CY 2017
Construction Equipment
Construction West of 11th Avenue

Construction Equipment	Usage (hrs)	Emissions (lbs)					
		CO	NOx	VOC	PM_{10}	SO_2	CO_2e
Manlift	540	105.62	162.00	14.62	14.62	14.30	20,715.73
855 Liebherr Crane	960	752.98	3,006.93	209.44	159.57	204.45	295,673.14
777 Manitowoc Crane	0	0.00	0.00	0.00	0.00	0.00	0.00
Atlas ROC D3 Drill Rig	360	265.15	742.33	63.75	51.20	40.57	58,140.22
KR-803-1 Rock Anchor Drill	270	89.23	249.82	21.46	17.23	13.65	19,566.42
Bauer B28 Drill	0	0.00	0.00	0.00	0.00	0.00	0.00
Track Drill	0	0.00	0.00	0.00	0.00	0.00	0.00
Dump Truck	600	9,444.96	8,280.72	2,525.04	1,567.44	524.16	762,483.46
Generator	240	53.79	108.21	14.32	10.45	6.81	9,763.30
Grout Plant	0	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Crane	180	70.12	280.03	19.50	14.86	19.04	27,535.79
Pay Loader	1080	186.19	449.23	32.88	31.35	32.11	45,843.80
Pay Loader 980 CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Impact Hammer H160E CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Vibratory Hammer 1412B ICE	0	0.00	0.00	0.00	0.00	0.00	0.00
Hydraulic Drill Rig BG 28	360	807.36	2,260.31	194.12	155.88	123.53	177,029.50
Concrete Mixer Truck	1080	4,694.94	10,339.36	1,185.20	883.99	563.13	820,199.63
Excavator 322C CAT	1080	1,123.07	3,003.82	224.61	212.63	251.57	360,516.14
Excavator 318E CAT	1080	817.21	2,185.76	163.44	154.72	183.05	262,333.02
Excavator 336 CAT	0	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	2160	815.86	1,865.03	193.19	160.50	130.78	189,463.91
Compactor	0	0.00	0.00	0.00	0.00	0.00	0.00
Paver	0	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0	0.00	0.00	0.00	0.00	0.00	0.00
Hoe Ram	360	82.33	165.80	12.62	12.11	10.45	15,225.07
Pickup Truck	1080	2,280.84	7,023.26	398.84	355.21	511.01	743,131.59
Total Emissions	**(lb/yr):**	**21,589.7**	**40,122.6**	**5,273.0**	**3,801.8**	**2,628.6**	**3,807,620.7**
Total Emissions	**(tpy)**	**10.79**	**20.06**	**2.64**	**1.90**	**1.31**	**1,903.81**
Total Emissions	**(Metric Tons/yr)**						**1,727.11**

Source: Emission factors and methodology from USAF CEE Air Emissions Guide For Air Force Mobile Sources (Section 4, August 2013).
Notes:
1. Assume PM= PM10=PM2.5

Fugitive Dust Emissions (Site Preparation)
Amtrak Hudson Yard Project

CY 2015	
Description:[1]	
Square feet:	337,500
Total acres of land disturbed:	3.874
Assumed number of 10-hr days:	30
Assumed equivalent acres/day:	0.129

CY 2016	
Description:[1]	
Square feet:	618,750
Total acres of land disturbed:	7.102
Assumed number of 10-hr days:	60
Assumed equivalent acres/day:	0.118

Equation for Fugitive Dust Emissions (PM_{10})
E_{TSP} (lb/yr) = 80 * No. of 8-hr days * Acres/day

Equation for Fugitive Dust Emissions (PM_{10})
E_{TSP} (lb/yr) = 80 * No. of 8-hr days * Acres/day

Calculation
E_{TSP} (lb/yr) = 80 * 30 days * 0.129 acres/day
E_{TSP} = 309.92 lb/yr
1.55E-01 tpy

Calculation
E_{TSP} (lb/yr) = 80 * 60 days * 0.118 acres/day
E_{TSP} = 568.18 lb/yr
2.84E-01 tpy

Assumptions:

[1] The construction site is an existing building, bridge, and the surrounding area. The area of disturbance is conservatively assumed to be 50 percent of the area.

[2] It is assumed that construction activity related to site preparation will be completed in CY 2015 for the portion of the casing under 11th Avenue and CY 2016 for the portion of the casing west of 11th Avenue.

Source of Equation:

Emission factors and methodology from USAF CEE Air Emissions Guide For Air Force Mobile Sources (Section 4, August 2013).
Note: Assume PM= PM_{10}=$PM_{2.5}$

Fugitive Dust Emissions (Rock/Soil Transport)
Amtrak Hudson Yard Project

Input Parameters:

Soil moved during excavation =	80,000	cy	
Soil moved during excavation =	129,600	tons	(1.62 tons/cy)
Mean wind speed =	9.1	mph	(New York, NY)
Material silt content =	11	(Mean, Table 13.2.2-1, Page 13.2.2-3)	
Material moisture content =	12	(Mean, Table 13.2.4, Page 13.2.4-2)	

Emissions from loading/unloading excavated rock/soil into dump trucks (USEPA AP-42, Eq. 1, Section 13.2.4, January 1995)

$EF = k\ (0.0032)\ [U/5)^{1.3} / (M/2)^{1.4}]$

0.0004	**lbs/ton**	**PM**
0.0002	**lbs/ton**	**PM_{10}**
0.00003	**lbs/ton**	**$PM_{2.5}$**

where:

EF = emission factor, lbs/ton

U = mean wind speed, miles/hr (mph)

M = material moisture content (%)

Therefore, total emissions from loading/unloading excavated rock/soil from dump trucks =

EF * tons/yr of rock/soil loading/unloading

54.41	lbs/yr	**0.027**	**tons/yr**	**PM**	**E1**
25.73	lbs/yr	**0.013**	**tons/yr**	**PM_{10}**	**E1**
3.90	lbs/yr	**0.0019**	**tons/yr**	**$PM_{2.5}$**	**E1**

Emissions from driving dump trucks on unpaved roads (USEPA AP-42, Eqs. 1a and 2, Section 13.2.2, November 2006)

$EF = [k(s/12)^{a}\ (W/3)^{b}][(365-p)/365]$

6.52	**lbs/VMT/truck**	**PM**
1.76	**lbs/VMT/truck**	**PM_{10}**
0.18	**lbs/VMT/truck**	**$PM_{2.5}$**

where:

k = particle size multiplier = 4.9 lb/VMT (PM), 1.5 lb/VMT (PM10) and 0.15 lb/VMT (PM2.5)

s = material silt content (%)

W = Weight of the vehicle (tons) = 40 tons

p = Number of days when precipitation was greater than 0.01 inches = 130 (Figure 13.2.2-1)

a = 0.7 for PM, 0.90 for PM_{10} and 0.9 for PM2.5 (Table 13.2.2-2, Page 13.2.2-5)

b = 0.45 for PM, PM_{10} and PM2.5 (Table 13.2.2-2, Page 13.2.2-5)

VMT = vehicle miles travelled by loaded & unloaded trucks on unpaved roads

VMT = (80,000 cy/year of excavated soil)/(truck load)*(average distance travelled each way)

VMT = ((80,000 cy/yr) / (16 cy/truck))*5 miles/round trip

VMT = 25,000 VMT/yr

Therefore, total emissions from driving dump trucks on unpaved roads =

EF *VMT

162,942	lbs/yr	**81.47**	**tons/yr**	**PM**
44,000	lbs/yr	**22.00**	**tons/yr**	**PM_{10}**
4,500	lbs/yr	**2.25**	**tons/yr**	**$PM_{2.5}$**

Fugitive Dust Emissions (Continued)
Amtrak Hudson Yard Project

Assume fugitive dust from unpaved roads is controlled using water sprays.

Assume 90% control efficiency from water spray

Therefore, actual controlled emissions from driving dump trucks on unpaved roads =

uncontrolled emissions * 0.1

8.15	**tons/yr**	**PM**	**E2**
2.20	**tons/yr**	**PM10**	**E2**
0.225	**tons/yr**	**PM2.5**	**E2**

Total annual fugitive emissions from soil removal (tons/yr) =

=E1+E2

8.174	**tons/yr**	**PM**
2.213	**tons/yr**	**PM_{10}**
0.227	**tons/yr**	**$PM_{2.5}$**

Fugitive Dust Emissions (Concrete Transport)
Amtrak Hudson Yard Project

Input Parameters:

Concrete moved during excavation =	740	cy	
Concrete moved during excavation =	1,199	tons	(1.62 tons/cy)
Mean wind speed =	9.1	mph	(New York, NY)
Material silt content[1] =	11	(Mean, Table 13.2.2-1, Page 13.2.2-3)	
Material moisture content[1] =	12	(Mean, Table 13.2.4, Page 13.2.4-2)	

Emissions from loading/unloading excavated rock/soil into dump trucks (USEPA AP-42, Eq. 1, Section 13.2.4, January 1995)

$EF = k\ (0.0032)\ [U/5)^{1.3} / (M/2)^{1.4}]$

0.0004	**lbs/ton**	**PM**
0.0002	**lbs/ton**	**PM_{10}**
0.00003	**lbs/ton**	**$PM_{2.5}$**

where:

EF = emission factor, lbs/ton

U = mean wind speed, miles/hr (mph)

M = material moisture content (%)

Therefore, total emissions from loading/unloading demolished concrete from dump trucks =

EF * tons/yr of rock/soil loading/unloading

0.50	lbs/yr	**2.52E-04**	**tons/yr**	**PM**	**E1**
0.24	lbs/yr	**1.19E-04**	**tons/yr**	**PM_{10}**	**E1**
0.04	lbs/yr	**1.80E-05**	**tons/yr**	**$PM_{2.5}$**	**E1**

Emissions from driving dump trucks on unpaved roads (USEPA AP-42, Eqs. 1a and 2, Section 13.2.2, November 2006)

$EF = [k(s/12)^a\ (W/3)^b][(365-p)/365]$

6.52	**lbs/VMT/truck**	**PM**
1.76	**lbs/VMT/truck**	**PM_{10}**
0.18	**lbs/VMT/truck**	**$PM_{2.5}$**

where:

k = particle size multiplier = 4.9 lb/VMT (PM), 1.5 lb/VMT (PM10) and 0.15 lb/VMT (PM2.5)

s = material silt content (%)

W = Weight of the vehicle (tons) = 40 tons

p = Number of days when precipitation was greater than 0.01 inches = 130 (Figure 13.2.2-1)

a = 0.7 for PM, 0.90 for PM_{10} and 0.9 for PM2.5 (Table 13.2.2-2, Page 13.2.2-5)

b = 0.45 for PM, PM_{10} and PM2.5 (Table 13.2.2-2, Page 13.2.2-5)

VMT = vehicle miles travelled by loaded & unloaded trucks on unpaved roads

VMT = (740 cy/yr of concrete/(truck load)*(average distance traveled each way)

VMT = ((740 cy/yr) / (16 cy/truck))*5 miles/round trip

VMT = 231.25 VMT/yr

Therefore, total emissions from driving dump trucks on unpaved roads =

EF *VMT

1,507	lbs/yr	**0.75**	**tons/yr**	**PM**
407	lbs/yr	**0.20**	**tons/yr**	**PM_{10}**
42	lbs/yr	**0.02**	**tons/yr**	**$PM_{2.5}$**

Fugitive Dust Emissions (Continued)
Amtrak Hudson Yard Project

Assume fugitive dust from unpaved roads is controlled using water sprays.

Assume 90% control efficiency from water spray

Therefore, actual controlled emissions from driving dump trucks on unpaved roads =

uncontrolled emissions * 0.1

0.08	**tons/yr**	**PM**	**E2**
0.02	**tons/yr**	**PM10**	**E2**
0.002	**tons/yr**	**PM2.5**	**E2**

Total annual fugitive emissions from concrete demolistion (tons/yr) =

=E1+E2

0.076	**tons/yr**	**PM**
0.020	**tons/yr**	**PM_{10}**
0.002	**tons/yr**	**$PM_{2.5}$**

1. Assumed to be the same as soil as information on concrete was unavailable.

This page intentionally left blank.

Appendix C

SHPO Consultation

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

JUL 2 1 2014

Ms. Beth A. Cumming
Historic Site Restoration Coordinator Historic Preservation Field Services
New York State Office of Parks, Recreation, and Historic Preservation
Peebles Island Resource Center
1 Delaware Avenue
Cohoes, NY 12047

RE: Amtrak Right of Way Preservation
Concrete Casing Extension in the Hudson Yards
New York City, New York County, NY

Dear Ms. Cumming:

The Federal Railroad Administration (FRA) is notifying your agency that the National Railroad Passenger Corporation (Amtrak) will receive Federal funding to preserve an underground right of way by extending a concrete casing (Project) under the existing Hudson Yards located in New York, New York. Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations (36 Code of Federal Regulations [CFR] Part 800) "Protection of Historic Properties (Section 106)," this letter is being transmitted to initiate the Section 106 consultation process for the Project.

Amtrak has enlisted URS Corporation (URS) to assist with environmental and Cultural Resources Management (CRM) services required for the development of a supplemental Environmental Assessment (EA) for the Project. The URS CRM team, located in Germantown, Maryland, undertook investigations to determine the presence of historic and above-ground properties and archaeological sites, defined as those that are listed or eligible for listing in the National Register of Historic Places (NRHP) in the Project area. All work was conducted or directed by staff that meet the *Secretary of the Interior's Professional Qualification Standards* (36 CFR Part 61) in Architectural History, History, and Archaeology. Résumés for Project personnel are available upon request.

Project Background

In 2010, Amtrak, in cooperation with FRA, representatives of 12 northeastern states, commuter railroad owners, and other corridor stakeholders, prepared a master plan for Amtrak's Northeast Corridor infrastructure. The *Northeast Corridor Infrastructure Master Plan* projects a significant increase in Amtrak and New Jersey Transit ridership across the Hudson River by the year 2030. Several other studies have identified the need for expansion of commuter and intercity train services into Penn Station including the *Amtrak Vision for the Northeast Corridor2012 Update Report, A Vision for High-Speed Rail in the Northeast Corridor*, and the Northeast Corridor Future Program Studies. The existing 100-year-old, two-

track tunnels under the Hudson River operate at maximum capacity–approximately 25 trains per hour per direction–and are insufficient to meet the projected demand. Given this projected and inevitable demand for increased service, Amtrak anticipates additional train tracks will ultimately need to be constructed between New Jersey and Penn Station in New York.

In addition, a real estate development corporation, under an agreement with Long Island Rail Road (LIRR) and Metropolitan Transportation Authority (MTA), proposed plans to develop the area above the Hudson Yards. Construction of part of this development (referred to as the overbuild project) started in December 2012 in the southern portion of the Hudson Yards Eastern Rail Yard (east of proposed Project site), and is planned to start in 2016 for the Western Rail Yard in the area of the Project site. There are numerous physical limitations for the various alignments of future trans-Hudson tunnel alternatives. The potential right of way underneath the overbuild project is one of the few viable alignments that can be used to construct a new tunnel into Penn Station. If the overbuild project is designed and constructed without consideration of this potential tunnel alignment, future construction of a tunnel in this underground space would be infeasible. Therefore, it is important that the structural concrete casing extension is built prior to construction of the overbuild platform support structures, so that the right of way is preserved for future consideration.

Description of the Undertaking

The undertaking involves the extension of a concrete casing (i.e., a structural box) limited to a 605-foot-long section under the LIRR Hudson Yards in Midtown Manhattan. The general Project area (Hudson Yards) is defined by 12th and 10th Avenues to the west and east, and West 33rd Street and West 30th Street to the north and south (Attachment 1). The proposed action components would occur in an area under 11th Avenue between 33rd Street and 30th Street extending diagonally mid-way between 11th and 12th Avenues just north of 30th Street (Attachment 2). The concrete casing extension would be approximately 50 to 65 feet wide and 27 to 38 feet tall. The depth of the concrete casing extension would range from 60 feet below ground surface at 11th Avenue to 75 feet below ground surface at 30th Street. The trench for the concrete casing extension would be dug into urban fill, native soils, and bedrock, respectively from the ground surface down. Additional location and construction details regarding the undertaking are summarized in Attachment 4 and enclosed plans.

Areas of Potential Effects

As defined in NHPA § 800.16(d), the Area of Potential Effects (APE) means "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character of use of historic properties, if such properties exist. The area of potential effects is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking."

Because elements of the Project have the potential to create effects on both above-ground resources and archaeological sites, two APEs have been developed–one for above-ground resources and one for archaeological resources. The APEs for this Project are depicted in Attachment 5.

The archaeological APE was developed for areas where subsurface ground disturbance associated with the Project would occur. Substantial disturbance would occur in the Work Zone in the west half of the Hudson Yards, between 11th and 12th Avenues and 30th and 33rd Streets. In addition, the construction staging area is included in the archaeological APE (see Attachment 2). This area would contain heavy construction equipment, which may have the potential to impact archaeological resources, if present.

The above-ground APE is defined as an area 90 feet beyond the boundaries of the Work Zone and the construction staging area. The completed Project would be entirely underground. The buffer of 90 feet beyond the Work Zone and construction staging area (Attachment 5) is the distance that any development or alteration must comply with New York City Building Code *Technical Policy and Procedure Notice* (TPPN) #10/88 that "requires a monitoring program to reduce the likelihood of construction damages to adjacent historic structures and to detect at an early stage the beginnings of damage so that construction procedures can be changed."

Historic Properties, Archaeological Resources, and Determination of Effects

FRA has evaluated the Project area pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and determined the following historic property is located in the Above-ground APE:

The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street (High Line)

There is no potential for precontact or prehistoric archaeological resources within the Project area. The probability of encountering undisturbed prehistoric archaeological sites in this highly developed area of Manhattan is extremely minimal. The potential for historic archaeological resources within the Project area is diminished by the area having functioned as a rail yards since the 1860s. Although maps of this period show railroad-related buildings such as a freight depot, lumber yard, there has been no indication in the archaeological record of foundations associated with these structures. There has been extensive construction and continuous ground disturbance in the Project archaeological APE. As described in detail in Attachment 6, the potential for archaeological resources has been assessed in this area by various other project studies indicating the site has no archaeological sensitivity. Therefore, FRA has determined that there is low historic and prehistoric archaeological potential for the Project. The proposed undertaking, thus, is not expected to affect significant archaeological resources.

For the historic or above ground properties, FRA assessed the Project and the construction activities potential for affecting the historic resources. The completed Project would be entirely underground and would have no visual impact on the surrounding buildings or environment. Construction activities that could potentially affect adjacent architectural resources include the following:

- Possible vibration effects during construction from excavation for access and ventilation shafts, subway station caverns, rail interlocking chambers, and ancillary space.

- Cut-and-cover construction activities as the means of concrete casing extension construction. The possible effects of these activities could include ground vibrations from construction equipment, accidental damage by construction equipment, and possible structural damage as a result of settlement or other changes to foundation conditions.

Although construction activities such pile driving, caisson drilling, and bulldozing have the potential to inadvertently damage adjacent historic above-ground cultural resources, FRA would require implementation of protection measures as part of Amtrak's construction specifications to avoid accidental construction damage. These measures to protect historic resources are strongly suggested pursuant to 36 CFR Part 800, and are consistent with New York City Building Code, Department of Building Technical Policy and Procedure Notice (TPPN) #10/88, which "requires a monitoring program to reduce the likelihood of construction damages to adjacent historic structures and to detect at an early stage the beginnings of damage so that construction procedures can be changed."

According to New York City code, this monitoring requirement only applies to designated New York City Landmark and State/National Register-listed properties within 90 feet of a lot under development or alteration. The 1934 High Line has only been determined eligible for listing in the State/National Register; however, construction monitoring consistent with TPPN #10/88 is recommended by the 2012 geotechnical engineering study by Langan Engineering & Environmental Services, Inc. This study "anticipates at a minimum … the High Line will require monitoring." This monitoring "may include optical surveying, seismographs (vibration monitoring), crack gauges and borehole instruments such as inclinometers or pressure cells."

It is possible that temporary, adverse indirect impacts on the context or visual setting of some historic architectural and structural resources could result during construction. Construction activities that would be visible from street level could result in temporary visual obstructions created by machinery and other construction equipment and result in temporary loss of context for the architectural resources nearby. However, any such impacts would only be temporary and indirect, and only last the duration of the construction period.

FRA has evaluated this Project pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and has determined that the proposed Project would have No Adverse Effect on the following historic properties:

The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street (High Line)

FRA reached this conclusion after considering available documentation located in the files of the New York SHPO, the 2004 Final General Environmental Impact Statement (EIS) for the Hudson Yards Special Development District, the 2008 EIS for the West Yard Development Project and using data gathered during a field investigation that took place in April 2014. This evaluation was conducted or directed by an architectural historian and archaeologist who meet the requirements of the *Secretary of the Interior's Professional Qualification Standards* (36 CFR Part 61) in their respective disciplines.

FRA is seeking concurrence from the New York State Office of Parks, Recreation, and Historic Preservation with this finding of No Adverse Effect and recommendation for monitoring pursuant to 36 CFR 800.5(c)(1). FRA anticipates a response within 30 calendar days of receipt of this letter. FRA may consider a lack of response as concurrence with the above finding, as provided for in 36 CFR 800.5(c)(1).

In the event that your office disagrees with our finding, please notify us via overnight or private delivery service to ensure timely receipt of your communications.

If you have questions or wish to discuss this Project further, please contact Michelle Fishburne, the region Environmental Protection Specialist, at (202) 493-0398 or by email at michelle.fishburne@dot.gov.

Sincerely,

David Valenstein
Chief, Environmental & Systems Planning System

DV:jw/mre

Enclosures

cc: Michelle W. Fishburne, FRA
Craig Rolwood, Amtrak
Marilyn Jamison, Amtrak
Drew Galloway, Amtrak
Mark Edwards, URS

Attachment 1

Figure 1: Hudson Yards Concrete Casing Extension Project Location Map

- Hudson Yards
- Project Location Including Staging Areas
- NJ-495
- Roads

Federal Railroad Administration

Imagery:
ESRI ArcGIS Online and data partners

Date.....May 2014
Prepared for.....Federal Railroad Adminstration (FRA)
Contract.....BPO1001987

Attachment 2

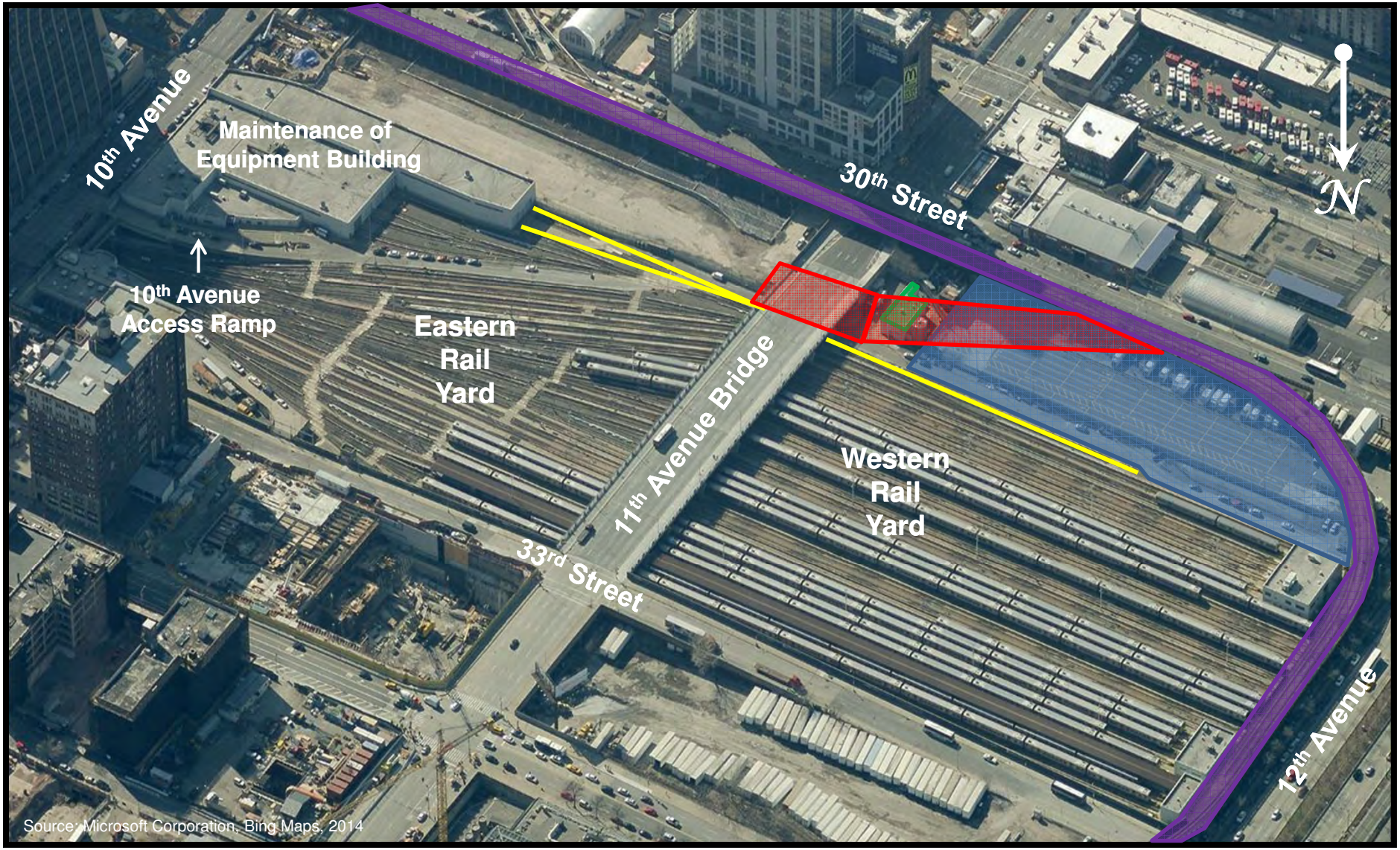
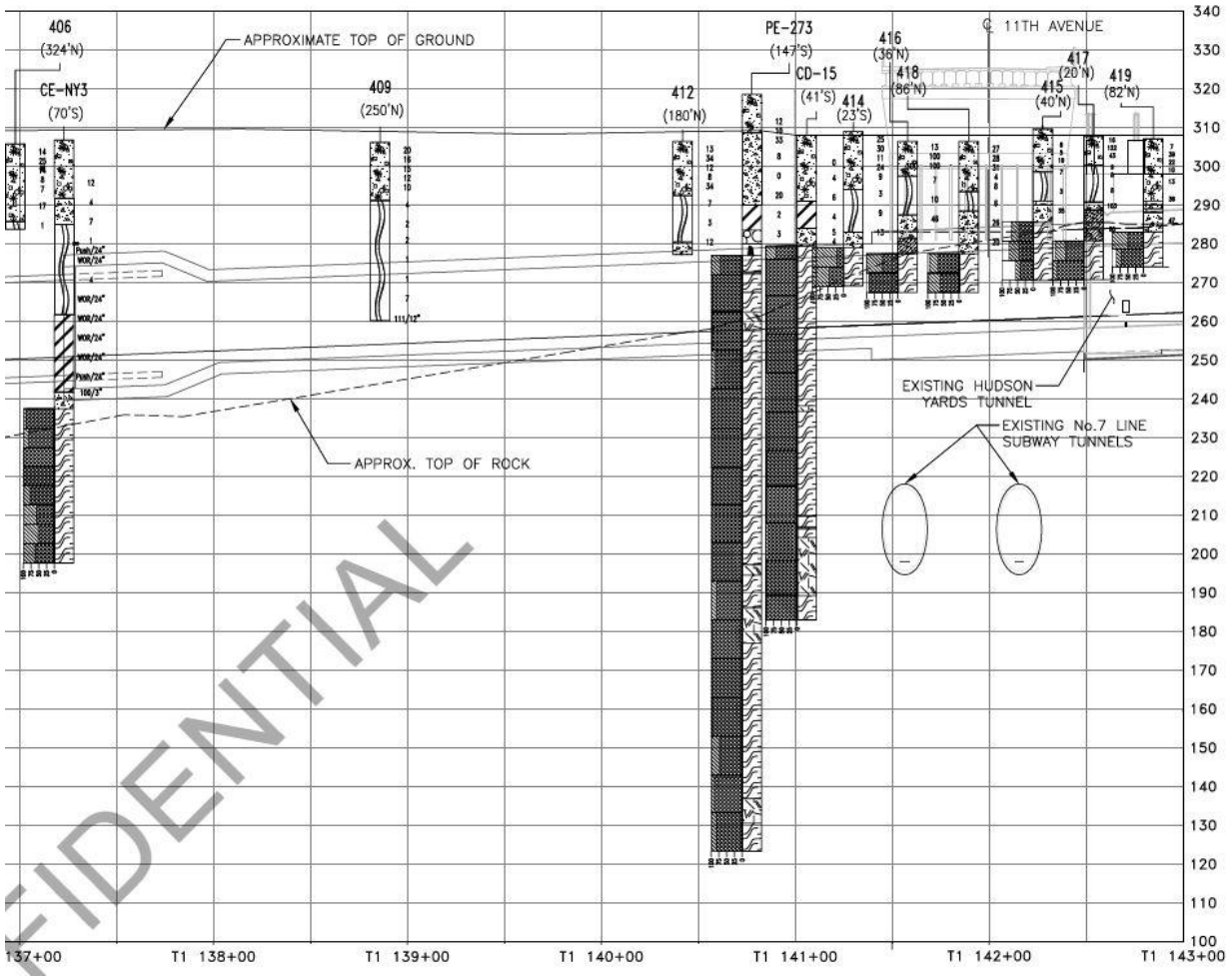


Figure 2: Hudson Yards Concrete Casing Extension Proposed Action Components

- The High Line
- Proposed Staging Areas
- Emergency Services Building
- Proposed Concrete Casing Extension
- Yard Tracks 0 and 1

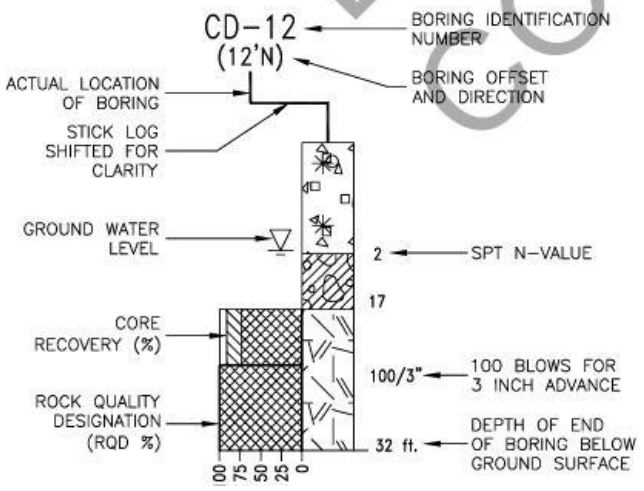
Federal Railroad Administration

Attachment 3



LEGEND:

- FILL
- SAND, SILT OR CLAY/SILT WITH FINE LAYERS OF SAND
- ORGANIC SILT AND CLAY
- GLACIAL TILL
- BOULDERS/COBBLES
- DECOMPOSED ROCK
- SCHIST GROUP – INCLUDES MICA SCHIST, SCHISTOSE GNEISS, AMPHIBOLITE, AND GNEISSIC SCHIST
- GRANITE GROUP – INCLUDES GRANITE, PEGMATITE, GRANOFELS, APLITE, AND GRANITE GNEISS



PROJECT	Concrete Casing Extension in the Hudson Yards
SCALE	N/A
SOURCE	Amtrak

Attachment 3

URS

PROJECT NO. 15303991

Figure No. 1

Attachment 4

ATTACHMENT 4 – Undertaking Location and Construction Information

Amtrak Right of Way Preservation
Concrete Casing Extension in the Hudson Yards
New York City, New York County, NY

The Hudson Yards facility is an active rail yard used by LIRR and MTA for train storage, switching, and maintenance. Amtrak would acquire an easement from MTA for construction of the ROW in the rail yard, and would acquire an easement from New York City for the portion of the ROW under 11th Avenue. Construction of the concrete casing extension would require:

- Temporary removal from service of yard tracks 0 and 1 that lead to LIRR's Maintenance of Equipment building for the portion of the concrete casing extension under 11th Avenue. Tracks 0 and 1 are currently out of service and removed due to construction of the concrete casing in the Eastern Rail Yard.
- Temporary relocation and replacement of utilities supported by and under 11th Avenue (storm/sanitary sewer, electric, water, gas) and signals/communications.
- Excavation of approximately 66,000 cubic yards of soil and 14,000 cubic yards of rock.
- Demolition of the Emergency Services Building, temporary relocation of Emergency Services Building functions, and reconstruction to its original condition following completion of the concrete casing extension.
- Demolition of the structural support system (two roadway spans and one pier) for the 11th Avenue bridge along with restriction of traffic over half of the bridge at a time and reconstruction of the bridge supports and restoration of traffic.
- Temporary underpinning of the High Line.

Attachment 2 of the Section 106 letter shows the elements of the proposed action alternative.

The portion of the concrete casing extension that will be constructed under 11th Avenue will be completed before the portion of the casing west of 11th Avenue is completed. Amtrak anticipates that construction of the portion under 11th Avenue will start in February 2015 and completed by October 2015. Construction of the portion of the concrete casing extension west of 11th Avenue is expected to start some time in 2016 or later, depending on when the Developer starts construction of the Overbuild Project in the Western Rail Yard. Construction of the Overbuild Project and the proposed Project would occur simultaneously, with the Developer and Amtrak coordinating the construction processes and timing.

The 11th Avenue bridge is owned and maintained by the New York City Department of Transportation and carries six lanes of southbound vehicular traffic with sidewalks on either side of the roadway. Amtrak anticipates that the bridge would be removed in a two-staged sequence, removing the eastern and western halves of the bridge at different times to prevent full closure of

the bridge. The new footing and pier for the bridge will be incorporated into the north wall and roof of the concrete casing. Two or more lanes of traffic and one sidewalk will be kept open at all times during construction of the proposed Project, which would maintain existing conditions because only two lanes and one sidewalk are currently open to accommodate work that is being done on the High Line.

The anticipated construction sequence for the portion of the concrete casing extension under 11th Avenue would be as follows:

1. Fence off construction zone.
2. Tracks 0 and 1 remain out of service and removed. Temporarily relocate utilities.
3. Restrict traffic on the 11th Avenue bridge to half of the roadway.
4. Demolish the pier and roadway superstructure (beams and abutments) on the side of the bridge that does not have traffic. Install temporary support structures for the bridge.
5. Construct watertight retaining walls around the casing trench, excavate and brace the casing trench.
6. Construct the concrete casing.
7. Reconstruct the pier on the concrete casing.
8. Backfill over the casing trench as work progresses.
9. Reconstruct the roadway superstructure for the first half.
10. Switch traffic to the reconstructed half of the bridge and repeat the same sequence of demolition of the bridge supports, construction of the concrete casing and reconstruction of the second half of the bridge pier and roadway superstructures.
11. Reinstate traffic on entire bridge, restore utilities, and place tracks 0 and 1 back in service.

The anticipated construction sequence for the portion of the concrete casing extension in the Western Rail Yard (west of 11th Avenue) would be as follows:

1. Demolish the Emergency Services Building. The timing of removal and relocation of services of the Emergency Services Building may be dictated either by the Developer's requirements for work in the Western Rail Yard or by the need to begin work in the area of that building as part of the proposed Project.
2. Support High Line with underpinning.
3. Construct watertight retaining walls around the casing trench for the portion of the casing west of 11th Avenue, excavate and brace this portion of the trench, construct concrete casing and backfill casing trench as work progresses.
4. Remove underpinning of High Line.
5. Reconstruct Emergency Services Building, relocate and restore utilities, signals, and communications.

Because some phases of construction of the portion of the concrete casing extension under 11th Avenue and west of 11th Avenue would be done concurrently, more than one of the elements of the construction sequences listed above may occur at the same time.

Underpinning of the High Line would involve providing temporary support for 17 foundations. Steel girders would span from one side of the excavation to the other, picking up each column to be underpinned and supported by the retaining walls. Existing High Line foundations would then be removed. The concrete casing roof will be designed to support the original High Line foundations. Approximately three of the 17 High Line foundations occur outside of the concrete casing extension footprint but would be affected by the proposed Project; new foundations for these foundations would be constructed.

The depth of excavation for the concrete casing extension varies along the alignment. Excavation for the eastern end of the concrete casing extension under 11th Avenue would reach approximately 60 feet below ground surface (bgs), while excavation at the western end of the casing (near 30th Street under the High Line) would be between 58 and 70 feet bgs (Gateway Trans-Hudson Partnership, 2013). The newly constructed tunnel for the Number 7 line, which will likely be in service in early 2015 and is owned and operated by MTA New York City Transit, runs approximately 30 feet below the bottom of the proposed concrete casing extension for the portion of the casing extension beneath 11th Avenue.

Depth to bedrock drops rapidly west of 11th Avenue; therefore, Amtrak anticipates that excavation of both soil and rock will occur under 11th Avenue to approximately 100 feet west of 11th Avenue; west of this, Amtrak anticipates that only soil will be excavated for construction of the casing. Excavation activities in the area with rock may include special techniques such as rock chipping to reduce vibration impacts to nearby facilities and buildings. Amtrak anticipates that excavation of the casing trench would remove approximately 66,000 cubic yards of soil and 14,000 cubic yards of rock. Excavated materials would be hauled by truck to facilities in New York, New Jersey, or Pennsylvania for disposal or beneficially reused off-site.

Construction dewatering of the excavated casing trench would be done by one of two methods (or a combination of the two). One option would be to pump groundwater into storage containers and then haul the water to an off-site disposal facility. A second option would be to discharge water on-site under a temporary construction dewatering permit.

The staging areas for equipment and materials would be located in the southern portion of the Western Rail Yard within the Hudson Yards (see Attachment 2 of this Section 106 letter package). Access to the Hudson Yards would be provided by an existing ramp from 10th Avenue into the Eastern Rail Yard until that ramp is demolished for the Overbuild Project. After the 10th Avenue ramp is removed, access into the Hudson Yards will be from existing entrances at 30th Street and 12th Avenues.

Attachment 5

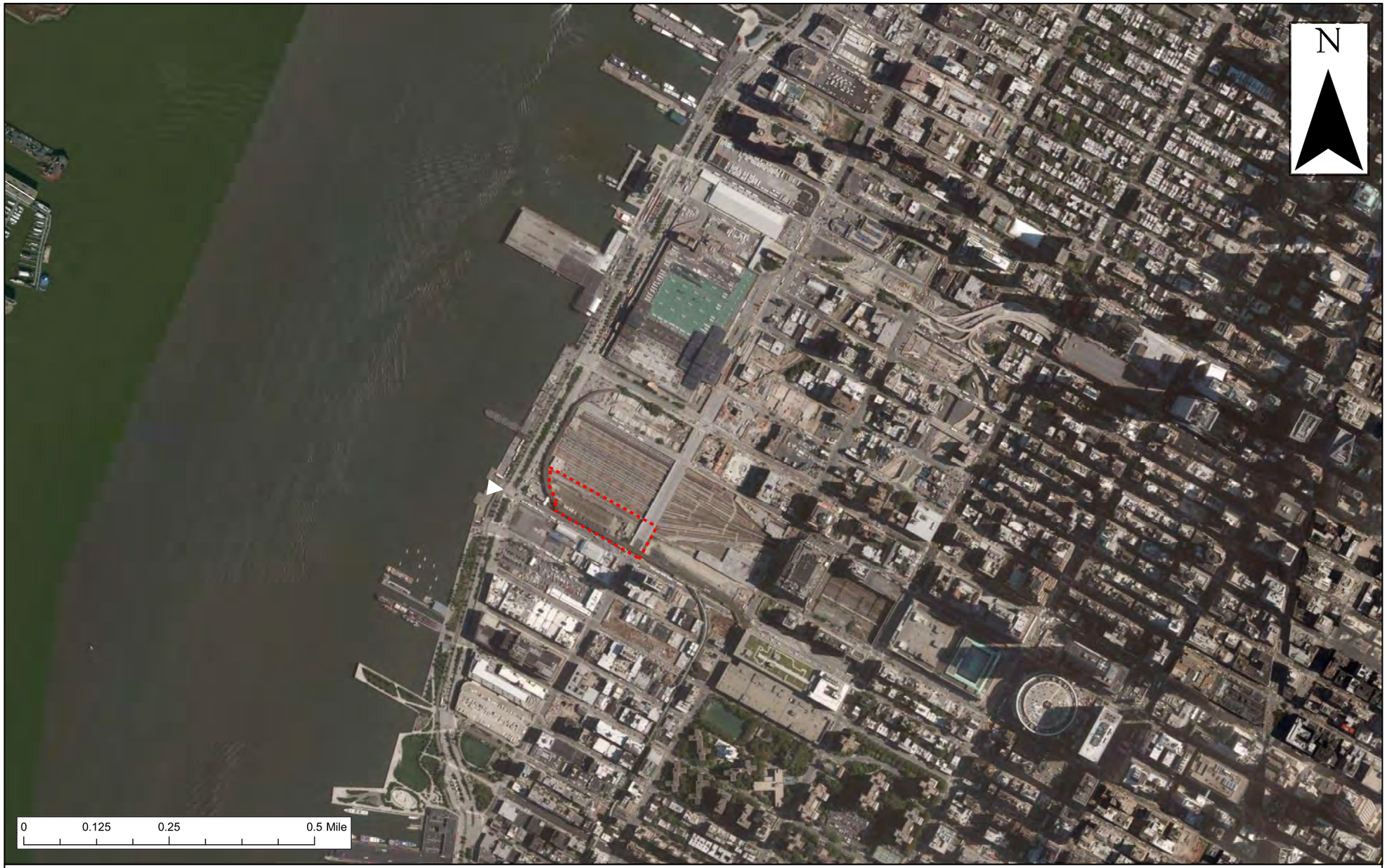


Figure 1: Hudson Yards Concrete Casing Extension
Archaeological Area of Potential Effect (APE) Aerial Map

Archaeological APE

Federal Railroad Administration

Imagery: ESRI ArcGIS Online and data partners
Date: May 2014

AMTRAK

Figure 2: Hudson Yards Concrete Casing Extension
Archaeological Area of Potential Effect (APE) Topographic Map

Archaeological APE

Federal Railroad Administration

Imagery: ESRI ArcGIS Online and data partners

Date: May 2014

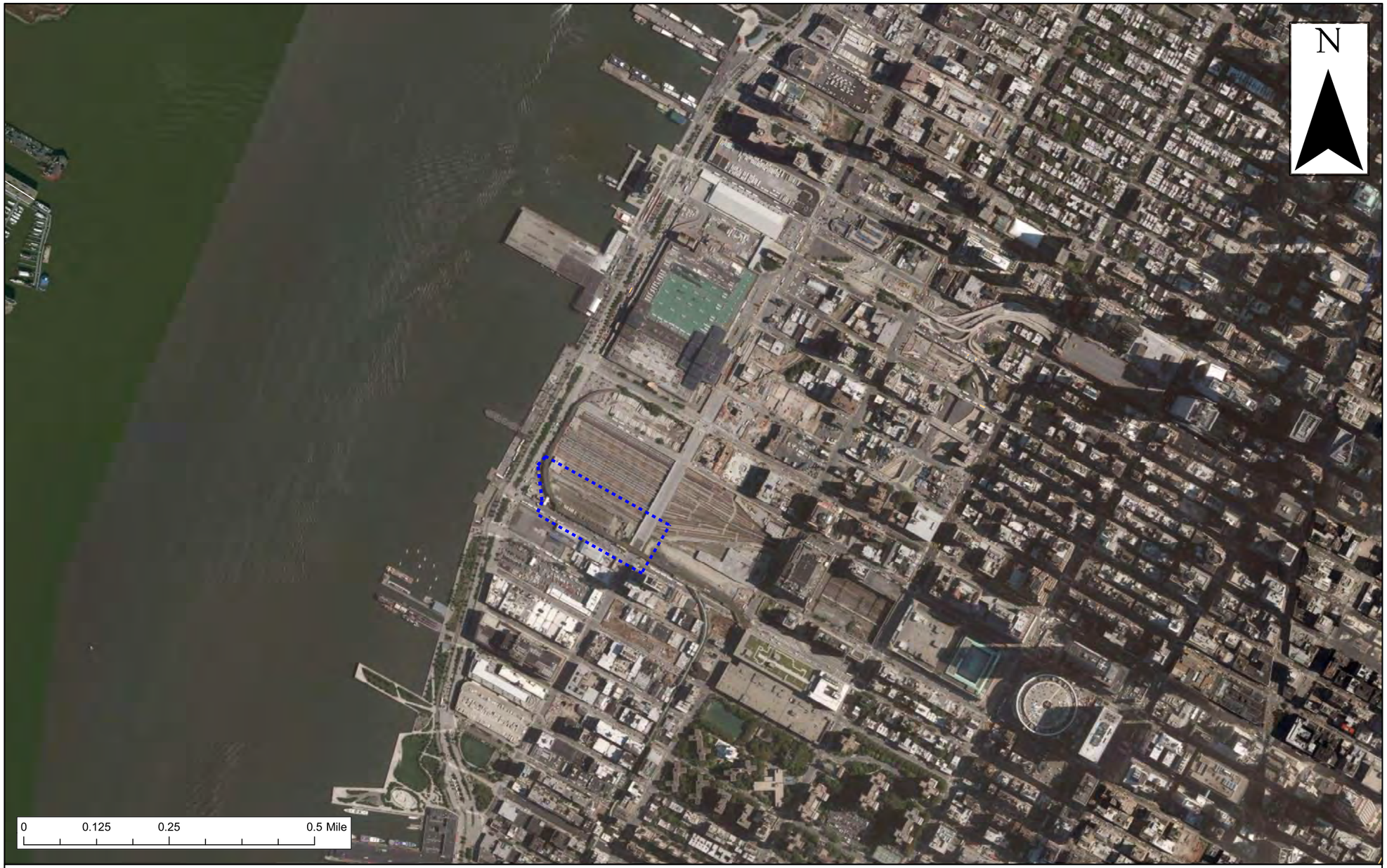


Figure 3: Hudson Yards Concrete Casing Extension
Above-Ground Area of Potential Effect (APE) Aerial Map

Above-Ground APE

Federal Railroad Administration

Imagery: ESRI ArcGIS Online and data partners
Date: May 2014

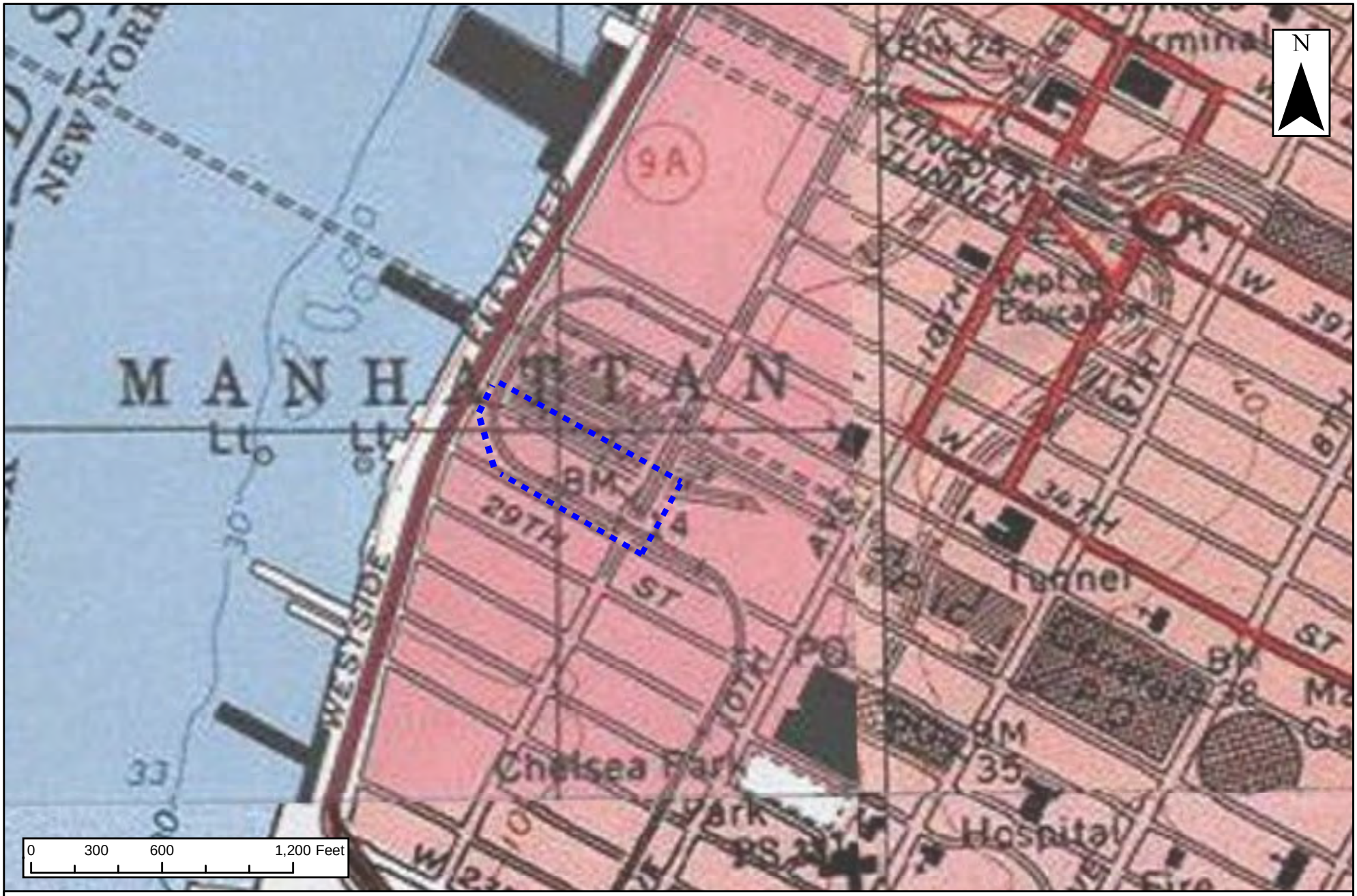


Figure 4: Hudson Yards Concrete Casing Extension
Above-Ground Area of Potential Effect (APE) Topographic Map

Above-Ground APE

Federal Railroad Administration

Imagery: ESRI ArcGIS Online and data partners

Date: May 2014

Attachment 6

ATTACHMENT 6 – Cultural Resource Information

Amtrak Right of Way Preservation
Concrete Casing Extension in the Hudson Yards
New York City, New York County, NY

Historic Development of Project Area

Throughout the 18th century, the west side of what is now Midtown Manhattan was farmland. In the early 19th century, most of this land was owned by George Rapelje, grandson of Dutch settler, Joris Rapelje, one of the first immigrant workers brought to New Netherlands, as the 17th-century colonial province on the East Coast of North America was known, by the Dutch West India Company. The land in the proposed project area was purchased by the Rapelje family in 1720 from Sir Peter Warren, a British Naval Officer and British Member of Parliament. Later in the century, several additional estates were established around present day 9th Avenue. The area remained largely rural in the early 19th century, consisting of market gardens, estates, and unimproved lands, much of which were owned by the municipal government.

The Rapelje family started selling off development tracts in the 1820s. These tracts had boundaries that conformed to the street and avenue grid system, adopted by the New York Legislature in 1811, but not approved until 1835. Once the grading and filling was completed, the avenues and streets were established north to West 35th Street. Midtown soon became home to German immigrants who came to work on the Croton Aqueduct and wished to escape the crowded conditions of Lower Manhattan.

The *Map of the City of New York and the Island of Manhattan, William. Bridges, 1811*, illustrates that all of the West Rail Yard of the Hudson Yard was in the Hudson River (Attachment 6, Figure 1). Before the mid-19th century landfill projects, the Hudson River shoreline was located in the project area, near what is now Eleventh Avenue. In 1849, the Hudson River Railroad was completed, terminating at West 32nd Street and Eleventh Avenue. By 1853 it was extended to the south by crossing to the intersection of West 30th Street and 10th Avenue and then running down Tenth Avenue and continuing onto West Street. The *Map of the City of New York Showing the Original High Line and the Location of the different Farms and Estates, 1853*, illustrates that nearly all of the West Rail Yard and all of the project area except for the 11th Street Avenue was in the Hudson River (Attachment 6, Figure 2). When the Hudson River Railroad connected to the New York Central Railroad, the project area attracted industries that relied on the rail system, such as slaughterhouses and meatpackers. Three-to-five story brick tenements were soon constructed by real estate speculators and occupied by the workers in these industries.

An *1865 Sanitary and Topographical Map* shows that the West Rail Yard west of 11th Street remained almost all under water, and the East Rail Yard was either made land or marsh. The 1866 *Plan of the City of New York from the Battery to Spuyten Duyvil Creek*, indicates a great deal of land filling had occurred in the proposed project area. A pier in the Hudson River between 33rd and 32nd Streets contains railroad tracks that continue onto the top half of the West Rail Yard and curve south into the East Rail Yard past a roundhouse and a car shop. Lumber

storage, stone yards, coal yards, a limekiln and an iron works surround the two train yard blocks, suggesting the area was principally a freight rail yard for industrial operations.

An *1891 Map of New York City,* by George Bromley (Attachment 6, Figure 3) shows the project area primarily contains lumber yards. The New York City and Hudson River Railroad (NYC & HRRR) owned the area between Tenth and Twelfth Avenues, and 30th and 31st Streets and included two structures, one of which is labeled "freight depot." The block to the north of the depot appears to have been vacant. South of the 30th Street are more lumberyards.

In the late 19th and early 20th centuries, pier development along the Hudson River waterfront continued to spur industrial development in the vicinity of Eleventh and Twelfth Avenues. These industrial facilities mixed with existing residential areas in Hell's Kitchen and Chelsea while fostering additional residential development. The 1908 opening of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad, which included tunneling under the Hudson and East Rivers and through Manhattan, connected the Nation's largest port with the Nation's largest railroad, and greatly changed the character of Midtown.

The 1911 Sanborn Maps show the area between West 30th and West 33rd consisting mostly of railroad tracks associated with the recently completed massive improvements to the Pennsylvania Railroad that included tunneling under the nearby Hudson River (Attachment 6, Figures 4 and 5). The subsequent development of the Pennsylvania Station, the U.S. General Post Office, and the 7th Avenue subway sparked major development. The printing and publishing businesses relocated from the City Hall area to the Pennsylvania Station area, attracted by the new post office, rail lines and shipping piers.

Historic Properties Located in the Above-ground APE

Built above-ground properties in the project area include the circa 1983 LIRR Emergency Services Building, (Attachment 6, Figures 6) and the Eleventh Street Viaduct, (Attachment 6, Figure 7) constructed in the 1930s. Neither of these properties are considered historic as they either date to the 1980s yard redevelopment or were substantially altered as part of the 1980s yard development project. The site had been used as rail yards for more than 100 years prior to the 1980s LIRR development. Since 1983, the yard has served as the storage and maintenance facility for LIRR commuter trains.

The Emergency Services Building, located within the Work Zone, consists of an above-ground water tank and a building housing fire pumps..

The Eleventh Avenue Viaduct runs from West 30th Street to West 37th Street and was constructed in the 1930s as part of the West Side Improvement project. The viaduct is a steel-frame structure with a reinforced concrete deck. Sections were reconstructed during the West Side Yards redevelopment in the 1980s, including new foundations consisting of driven piles and caissons extending to bedrock. The south viaduct abutment, which extends approximately 150 feet north of West 30th Street, was repaired at the same time, and a new road deck was recently installed.

The 2004 *Final Generic Environmental Impact Statement for the No. 7 Subway Extension-Hudson Yards Rezoning and Development Program* (FGEIS) prepared by the City of New York Planning Commission and the Metropolitan Transportation Authority, identified historic architectural resources within that project's APE, which includes the APE for this concrete casing project. The FGEIS included all properties previously listed, or determined eligible for listing, in the New York State and National Registers (S/NR) located in its project area. In addition, the report identified all properties that were New York City Landmarks and Historic Districts (NYCL), and properties that have been found by the New York City Landmarks Preservation Commission (LPC) to appear eligible for designation, considered for designation ("heard") by the LPC at a public hearing, or scheduled for consideration at such a hearing.

To ensure that any additional archaeological and historic properties identified since the 2004 Hudson Yards FGEIS were considered for this EA, a URS architectural historian undertook research at the New York State Office of Recreation Parks and Historic Preservation (ORPPHP) at Peebles Island, NY, to examine relevant NRHP files and New York State Historic Resource Inventory files. New York State Library records were also researched. On-line research included records from the Library of Congress and the David Rumsey Collection. The URS architectural historian completed research and conducted a site visit during the week of April 18, 2014. Photo-documentation of the APE was completed at the same time.

Potential historic architectural resources for the project area are those that appeared to meet at least one of the four National Register Criteria for Evaluation and were identified based on field survey and through historical documentary research at the New York Public Library and Avery Architectural Library at Columbia University, the Municipal Archives, and the New York City Department of Buildings archives.

This field survey for 2004 FGEIS project included a much larger area than the proposed project area. The survey extended from W. 30th Street north to W. 43rd Street and from Eleventh Avenue to Seventh Avenue in the Garment Center District. Ninety-eight potential properties were identified and submitted to the New York State OPRHP and the LPC for evaluation and determination of NRHP eligibility. None of the identified architectural resources are located within the Project area. The Eleventh Avenue viaduct was not included in this list of 98 resources, although it is within the 2004 FGEIS survey area and was constructed over 50 years ago. Presumably, the authors of the document did not feel the structure met at least one NRHP Criteria, or the structure lacked sufficient historic integrity, as defined by NRHP guidelines.

Infrastructure facilities running underneath the West Rail Yard include the Amtrak Hudson River Tunnels and the Empire Line Tunnel. The 1986 Empire Line Tunnel runs east of the proposed tunnel between Eleventh Avenue and Tenth Avenue. The Amtrak Hudson River Tunnels are approximately 380 feet north of the Eleventh Avenue end of the Project.

The New York Improvements and Tunnel Extension of the Pennsylvania Railroad was determined eligible for listing in the NRHP in April of 2011 by the New York State OPRHP (Attachment 6, Figure 8).The determination was made for a previous Amtrak Security Enhancement Project (PRJ29112351) Replacement and Upgrading of Fire and Life Safety Supervisory Control and Data Acquisition System, New York City, New York County, New York, funded by the American Recovery and Reinvestment Act. The Statement of Significance

provided by the New York State Office of Parks, Recreation & Historic Preservation (OPRHP) state that

> …the subterranean and subaqueous railroad tracks and tunnels of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad meet Criterion A for transportation history and Criterion C for engineering design. Built between 1903 and 1910, this linear transportation corridor was the largest and most advanced metropolitan railroad project undertaken in the United States at that point in history. Extending from Weehawken, New Jersey, beneath the Hudson River, beneath Manhattan, and under the East River to Long Island City, Queens, the system's engineering represents various construction techniques and designs that met the various needs of the project and the geological conditions.

Character-defining features of the New York Improvement and Tunnel Extension of the Pennsylvania Railroad include the tube with bottom trench shape and the cast iron construction. Another important element are the bore segments every 15 feet to accommodate a screw pile driven into bedrock to stabilize the tunnels, solving the problem of the unstable silt river floor shifting and potentially fracturing the cast iron tube while a train was moving through. Monolithic masonry panels line the tubes, which contain only a single track to prevent derailments and collisions. Walkways on 3 feet high benches run along both sides. These benches were designed to be 1 foot higher than the average Pullman car in order to prevent derailments. The benches are constructed of hollow terra-cotta tiles to accommodate electrical cables, including high-tension and low-tension power lines and telegraph, telephone, and signal wires

The Empire Line Tunnel was constructed in 1986 as part of the overall West Side Yard redevelopment project and is not considered historic.

The above-ground 1934 High Line elevated freight tracks runs along the perimeter of the West Rail Yard, and over the Access Road needed for the project. The OPRHP determined that this resource was eligible for the State and National Registers on February 20, 2004.

The High Line was completed by the New York Central Railroad in 1934 to replace an at-grade Tenth Avenue track. The High Line was a key component of the Lower West Side's unparalleled commercial transportation advantages. The 1.45-mile steel and concrete viaduct, abandoned since 1980, is almost 30 feet above grade and runs from Gansevoort Street to West 34th Street, roughly parallel to Tenth Avenue.

The High Line is eligible under Criterion A as a significant transportation structure important to New York City's 20th-century industrial development. The High Line connected the industrial concerns along its route with regional and national markets. The objective of the High Line was to facilities the movement of raw materials and products in and out of this industrial section of the city. The viaduct passed through or along many industrial buildings. The rise of trucking in the 1950s led to a drop in rail freight on the High Line, and the southernmost portion, between

Bank and Clarkson Streets, was torn down in the 1960s. In 1993, the southern section between Bank and Little West Twelfth Street was demolished. In the early 1980s, the northern section of the High Line between West 33th and 35th Streets was demolished for construction of the Jacob K. Javits Convention Center. Despite the removal of these sections, the High Line retains much of its historic integrity and is a visual reminder of one of Manhattan's important industrial transportation corridors.

Character-defining features of the High Line in the project area include the loop track shape around the West Rail (Caemmerer) Yard, and the spur that runs east to Tenth Avenue connecting to a large, double-track platform over the avenue adjacent to the Morgan General Mail Facility. Along West 30th Street the loop track viaduct crosses over Eleventh Avenue on a trestle and then curves northward as it reaches Twelfth Avenue continuing over 33rd Street, where it begins to decline. Along 30th Street, the track and spur have a concrete parapet with recessed panels and square concrete posts between the tubular steel railings.

FRA has evaluated the project area pursuant to the regulations adopted by the Advisory Council on Historic Preservation (36 CFR Part 800, "Protection of Historic Properties") and determined the following historic property is located in the Above-ground APE:

> *The High Line Freight Railroad viaduct in the vicinity of Tenth Avenue from Gansevoort Street to W. 34th Street*

Potential for the Presence of Resources in the Archaeological APE

The project area has functioned as a rail yard since the 1860s. Although maps of this period show railroad-related buildings such as lumber sheds, there has been no indication in the archaeological record of foundations associated with these structures. Beginning in the early 20th century, ground was disturbed in the area with the construction of the New York Improvements and Tunnel Extension of the Pennsylvania Railroad. The four tunnels of the Hudson River Tunnel run through the Hudson Yards east to west, and this massive and unprecedented construction project, created significant ground disturbance in the area. In the 1930s, as part Robert Moses' 1930s West Side Improvement project, Eleventh Avenue, north of 30th Street, was developed as a viaduct over the rail yards, creating even more ground disturbance in the project area.

In the 1980s, the West Side Yard redevelopment created the Caemerer Yards, which also involved substantial construction activity. The project included removal of the existing yard operation tracks and the placement of a concrete slab across the western one-half to two-thirds of the entire yard. The remaining eastern section will filled with ballast. Other areas were paved with asphalt and used for parking and storage. Five new structures were built to support operations, including the Emergency Services building. The southern abutment of the Eleventh Street Viaduct was repaired and new east-west tracks connecting to Penn Station were then constructed on top of the slab and ballast areas.

The project area's potential for archaeological resources was previously assessed as part of the 2004 FGEIS for the Hudson Yards Development and 2008 Environmental Impact Statement (EIS) for the West Side Yard. Documentary studies conducted for the FGEIS addressed the

possibility of potentially significant historical archaeological resources surviving later disturbances. Information was gathered to compare, both horizontally and vertically, subsurface disturbance record and the historical past.

Documentary studies addressed the possibility that potentially significant historical archaeological resources exist within each APE and the likelihood that such archaeological resources have survived later disturbances. Data were gathered to compare, both horizontally and vertically, the historical past and the subsurface disturbance record. For residential-related archaeological resources, the dates of construction, occupancy, ownership and how old the dwelling was before access to City sewer and water were considered. The likelihood of occupants depending on privies and pits for at least 3 years prior to the advent of municipal sewer and water increased the probability for the presence of associated shafts with the potential for archaeological resources. Based on recommendations from the City's LPC a 10-year period of occupancy by a family or families had to be established for a site to potentially yield historic period resources.

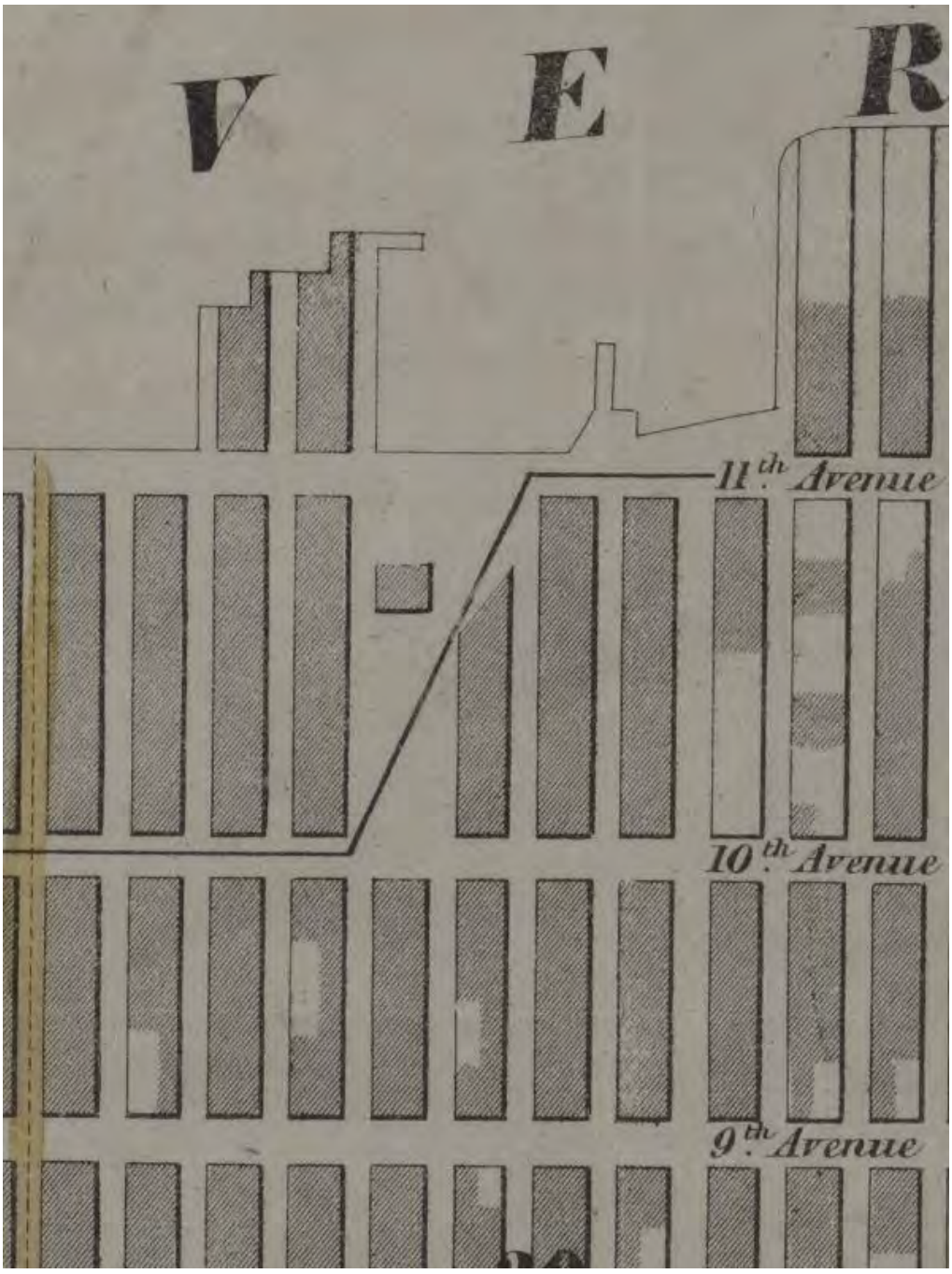
Reference material consulted included collections at the New York Public Library Map Division and Local History Room, the Municipal Archives, the Manhattan Borough President's Office, the Department of Design and Construction's Subsurface Bureau, the City Register's Office, the New York City Department of Environmental Protection's Bureau, the City Register's Office, and the New York City Department of Environmental Protection's Bureau of Sewer and Water Operations (NYC DEP), the New York City Department of Building and the New-York Historical Society. Census Records and City Directories were also consulted, along with records from the New York State OPRHP, the New York State Museum in Albany, and the New York City LPC.

A total of 39 lots and two street beds were evaluated, none of which are on the block bounded by the Twelfth Avenue and Tenth Avenue, and 30th and 33rd Streets, which contains the Work Zone and the Construction Lay-down area for the proposed Project (Attachment 6, Figure 9). Of the 39 lots evaluated, 34 were determined to lack archaeological resource potential due to lack of initial deposition, the inability to associate any occupancy with initial deposits, or subsequence disturbance to compromised integrity. The New York State OPRHP review of the FGEIS archaeological assessment concluded that they had no further archaeological concerns with the No. 7 Subway Extension-Hudson Yards Rezoning and Development Program.

Conclusions from the West Side Yard EIS archaeological resource evaluation were similar to the results of the FGEIS assessment for archaeological potential. The New York State OPRHP and the New York City LPC determined the development site had no archaeological sensitivity.

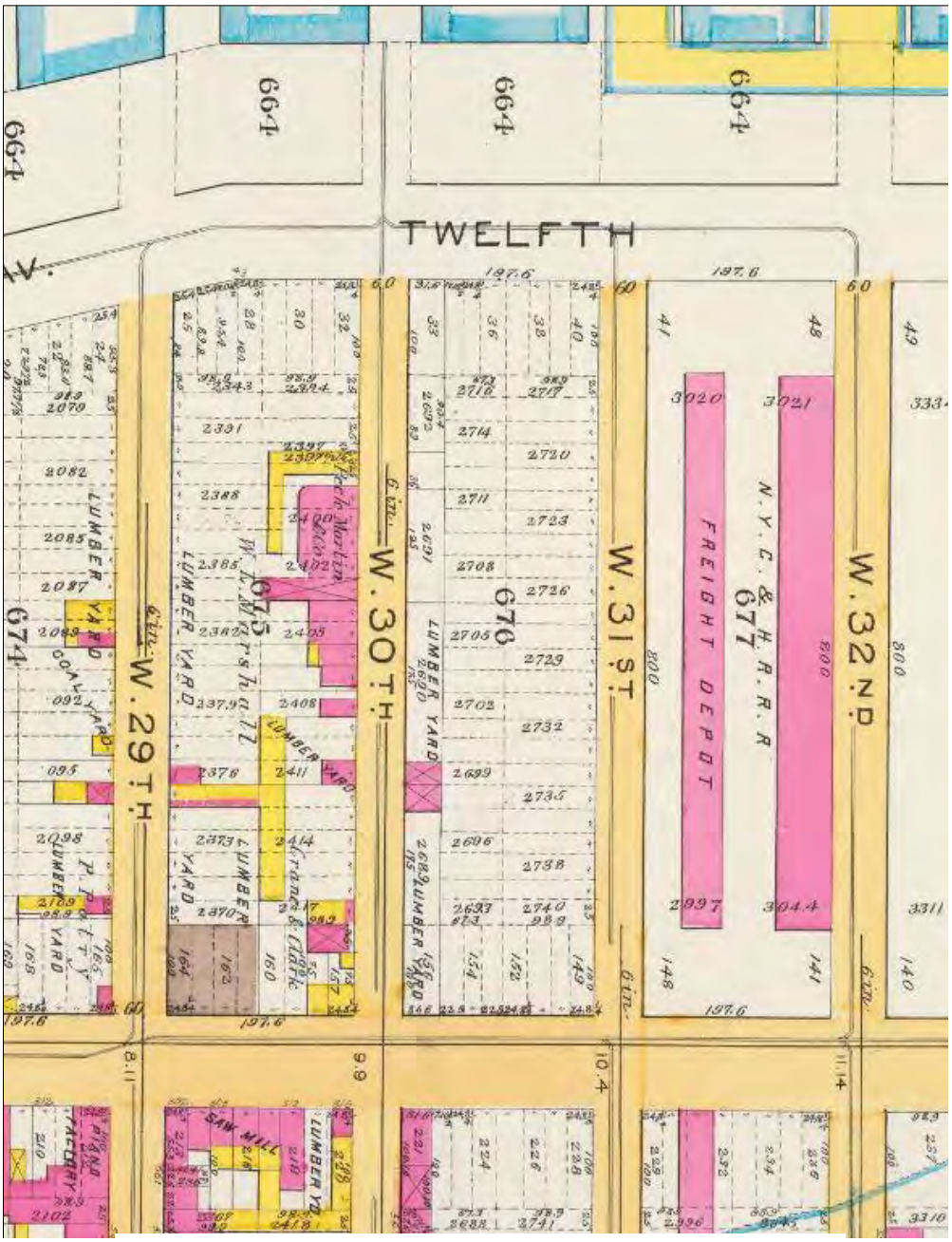
Map of the City of New York and the Island of Manhattan, William Bridges,1811.

PROJECT Concrete Casing Extension	**Attachment** 6
SCALE Scale Not Shown	URS / **PROJECT NO.** 15303991
SOURCE Library of Congress	**Figure No.** 1



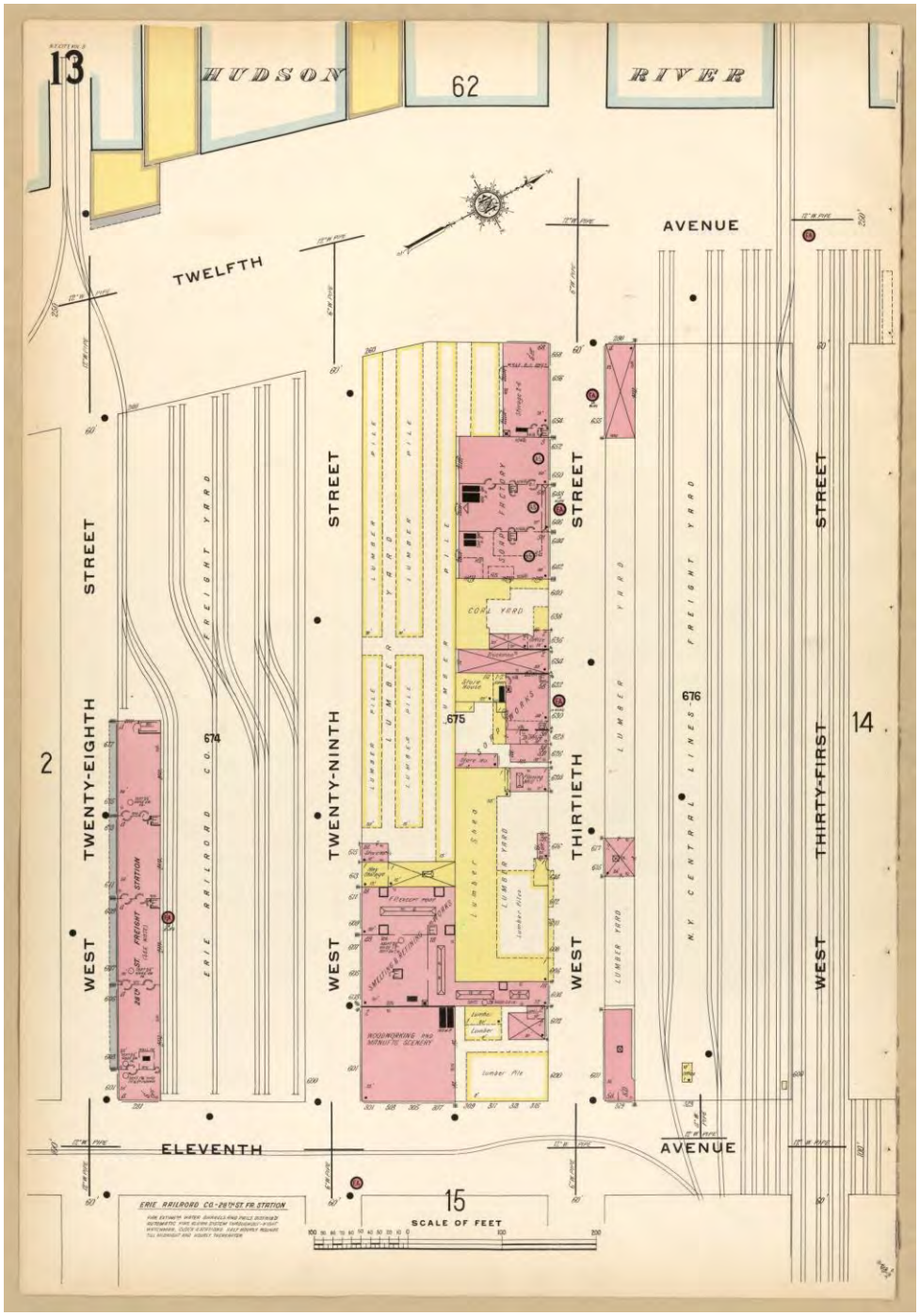
Map of the City of New York Showing the Original High Line and the Location of the Different Farms and Estates, 1853

PROJECT Concrete Casing Extension	**Attachment** 6
SCALE Scale Not Shown	URS / PROJECT NO. 15303991
SOURCE Library of Congress	Figure No. 2



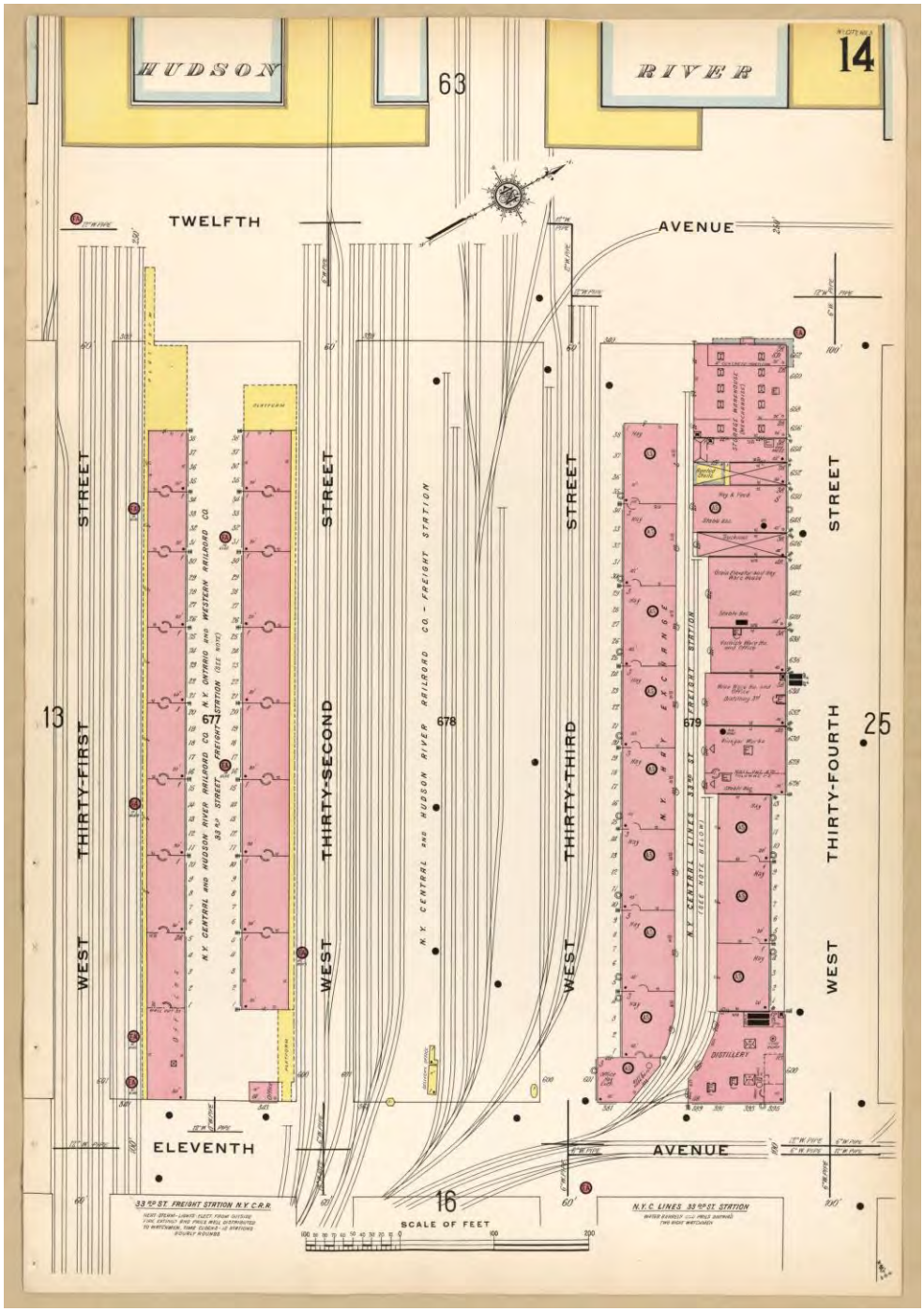
Outline and Index Map of New York City. Manhattan Island. Plate 18.

PROJECT Concrete Casing Extension	**Attachment** 6	
SCALE Not Shown to Scale	URS	**PROJECT NO.** 15303991
SOURCE http://www.davidrumsey.com/		**Figure No.** 3



Sanborn Fire Insurance Map from New York, Bronx, Kings, Queens, Richmond, New York, 1911, Plate 13

PROJECT	Concrete Casing Extension	**Attachment** 6	
SCALE	1:100	URS	**PROJECT NO.** 15303991
SOURCE	Library of Congress		**Figure No. 4**



Sanborn Fire Insurance Map from New York, Bronx, Kings, Queens, Richmond, New York, 1911, Plate 14

PROJECT	Concrete Casing Extension	**Attachment** 6	
SCALE	1:100	URS	**PROJECT NO.** 15303991
SOURCE	Library of Congress		**Figure No. 5**

Emergency Services Building Looking Southwest from Eleventh Avenue Viaduct

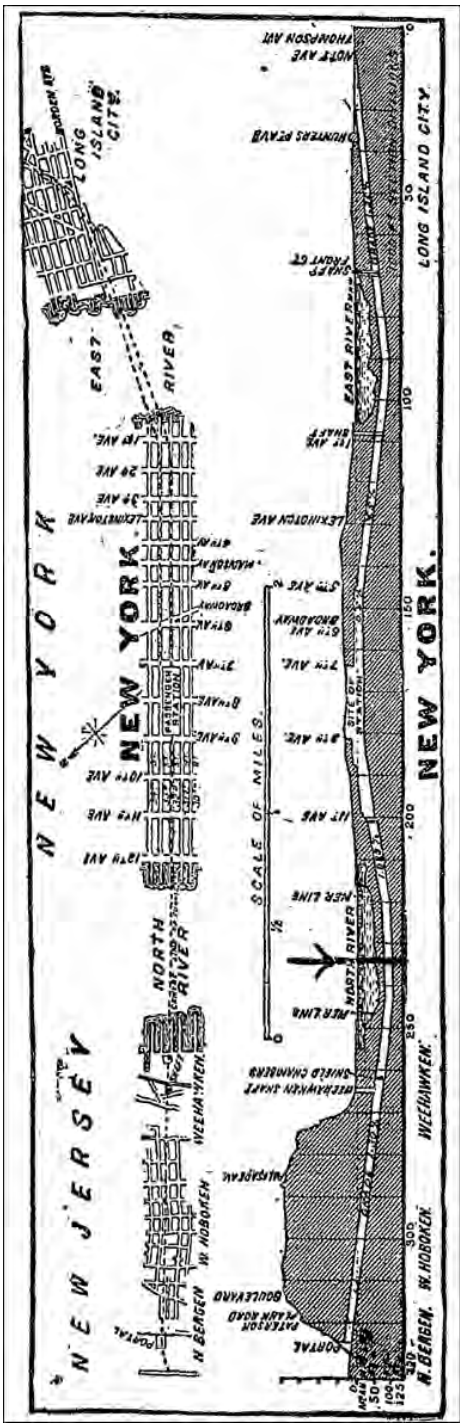
Emergency Services Building Looking Northwest from Eleventh Avenue Viaduct

PROJECT Concrete Casing Extension	**Attachment** 6	
SCALE N/A	URS	**PROJECT NO.** 15303991
SOURCE URS		**Figure No. 6**

Eleventh Avenue Viaduct Looking South and West

High Line, 30th Street and Eleventh Avenue, Looking Northwest

PROJECT	Concrete Casing Extension	**Attachment** 6	
SCALE	N/A	URS	**PROJECT NO.** 15303991
SOURCE	URS		**Figure No. 7**



PROJECT **Concrete Casing E**xtension	**Attachment** 6
SCALE 1:1 Mile	
SOURCE "Penny's North River Tunnel a Marvel of Skill"- New York Times, Sept. 9 1906.	URS
	PROJECT NO. 15303991
	Figure No 8

PROJECT Concrete Casing Extension	**Attachment** 6	
SCALE .75:500	URS	**PROJECT NO.** 15303991
SOURCE No. 7 Subway Extension – Hudson Yards Redevelopment and Zoning Program FGEIS, 2004.		**Figure No.** 9

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks, Recreation and Historic Preservation

Division for Historic Preservation
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

July 22, 2014

David Valenstein
Chief, Environmental & Systems Planning System
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, District of Columbia 20590

Re: FRA
Amtrak ROW Preservation: Concrete Casing Extension in Hudson Yards
Above the Hudson Yards, Manhattan, New York County
14PR02712

Dear Mr. Valenstein:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

We understand that the undertaking involves the extension of a concrete casing limited to a 605-foot-long section under the LIRR Hudson Yards in Midtown Manhattan. The High Line Freight Railroad is located within the Area of Potential Effect and has previously been determined eligible for listing on the National Register of Historic Places. We have no archaeological concerns owing to prior disturbance. Based upon this review, the SHPO concurs with your agency's determination of ***No Adverse Effect to Historic Properties*** by the proposed concrete casing project. We understand that monitoring at the High Line will occur per the New York City Building Code Technical Policy and Procedure Notice (TPPN) #10/88.

If further correspondence is required regarding this project, I can be reached at (518) 237-8643, ext. 3260 or at eric.kuchar@parks.ny.gov. Please be sure to refer to the Project Review (PR) number noted above.

Sincerely,

Eric N. Kuchar
Historic Preservation Technical Specialist