

**Environmental Assessment
HHC Metropolitan Hospital Hazard Mitigation
New York City, New York County, NY**

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APE	Area of Potential Effects
BAD	Best Available Data
BFE	Base Flood Elevation
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHASP	Construction-Related Health and Safety Plan
CO	Carbon Monoxide
COC	Community of Concern
CRIS	NYSHPO Cultural Resources Information System
CWA	Clean Water Act of 1977
CZMP	Coastal Zone Management Plan
dB	Decibels
dBA	A-weighted Decibels
DPR	New York City Department of Parks and Recreation
EA	Environmental Assessment
ED	Emergency Department
EFH	Essential Fish Habitat
EHP	FEMA’s Department of Environmental and Historic Preservation
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
FDNY	New York City Fire Department
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
HHC	New York City Health and Hospitals Corporation
ICU	Intensive Care Unit
IPaC	USFWS Information, Planning, and Conservation System
L _{dn}	Day Night Noise Level
L _{eq}	Equivalent Noise Level
LWRP	Local Waterfront Revitalization Plan
MBTA	Migratory Bird Treaty Act of 1918
MEP	Mechanical, Electrical, and Plumbing
MHB	Mental Health Building
MHC	Metropolitan Hospital Center

NAA	Non-Attainment Area
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NYCBC	New York City Building Code
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
NYSHPO	New York State Historic Preservation Office
PM ₁₀	Particulate Matter <= 10 micrometers
PM _{2.5}	Particulate Matter <= 2.5 micrometers
RAP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SPL	Sound Pressure Level
SRIA	Sandy Recovery Improvement Act of 2013
USACE	United States Army Corps of Engineers
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
VCP	NYSDEC Voluntary Cleanup Program
WPA	Works Progress Administration

1.0 INTRODUCTION

On October 29, 2012, Hurricane Sandy caused storm damage to several areas of New York State including Metropolitan Hospital in New York City, New York County, New York. President Barack Obama declared Hurricane Sandy a major disaster on October 30, 2012. The declaration authorized federal public assistance to affected communities and certain non-profit organizations per Federal Emergency Management Agency (FEMA) 4085-DR-NY and in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (42 U.S.C. 5172) as amended; the Sandy Recovery Improvement Act (SRIA) of 2013 and the accompanying Disaster Relief Appropriations Act, 2013. SRIA amended Title IV of the Stafford Act, adding Section 428 which authorizes alternative procedures for permanent work funding under FEMA’s Public Assistance Program. The New York City Health and Hospitals Corporation (HHC) (Subgrantee), which operates the city’s public healthcare system has applied to FEMA for financial assistance with a comprehensive flood mitigation project for Metropolitan Hospital Center (MHC), its healthcare campus located in the East Harlem neighborhood of Manhattan. The New York State Division of Homeland Security and Emergency Services is the Grantee partner for the proposed action.

Hurricane Sandy flooded the MHC campus with contaminated floodwaters, causing damage to critical electrical systems. HHC is seeking funding from FEMA pursuant to sections 406 and 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act for the Proposed Project, which would prevent damage to the hospital from future storm or flooding events by providing a flood barrier around the hospital campus and improved stormwater management systems.

This Environmental Assessment (EA) has been prepared in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended; and the Council on Environmental Quality (CEQ) Regulations for Implementation of NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508). The purpose of the EA is to analyze the potential environmental impacts of the Proposed Project and alternatives, including a no action alternative, and to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact (FONSI). In accordance with above referenced regulations and FEMA’s regulations for NEPA compliance found at 44 CFR Part 10, FEMA is required, during decision making, to fully evaluate and consider the environmental consequences of major federal actions it funds or undertakes.

2.0 PURPOSE AND NEED

FEMA’s Public Assistance Program and Hazard Mitigation Program fosters the protection of health, safety, and welfare of citizens, assists communities in recovering from and mitigating

damages caused by disasters, and reduces future losses resulting from natural disasters. The purpose of this project is to implement measures to prevent future flood damage to MHC's critical hospital spaces and to improve stormwater management systems. The need for this project is to repair flood damages caused by Hurricane Sandy and to incorporate resiliency measures to minimize damages to the critical facility's infrastructure due to future storm events and to ensure the hospital remains fully operational during and after future storm or flooding events. The alternatives considered in this analysis would reduce the need for further disaster assistance and/or eliminate repetitive damage and suffering.

3.1 PROJECT LOCATION AND BACKGROUND

MHC, located in the East Harlem neighborhood of Manhattan, is part of HHC, a public benefit corporation and the largest municipal healthcare system in the United States. HHC provides quality medical, mental health, and substance abuse services to 1.4 million New Yorkers. MHC was founded in 1875 and moved to its current location along First Avenue in 1955. MHC, which is one of HHC's 11 acute care hospitals, serves approximately 675,000 residents from East Harlem and neighboring areas in Manhattan, Queens, and the Bronx. The hospital sees approximately 15,000 inpatient admissions, 69,000 emergency room visits, and 338,000 outpatient visits annually. The hospital is also a Level 2 Trauma Center and a designated 911 receiving Hospital by the New York City Fire Department (FDNY) Bureau of Emergency Medical Services.

MHC is located on a superblock, a block larger than a traditional block and has the effect of discontinuing a portion of a street grid, bounded by Second Avenue, East 99th Street, First Avenue, and East 97th Street (see Figure 1-1). The surrounding East Harlem neighborhood is predominantly residential. The campus contains the following buildings (see Figure 1-2):

- The Main Building, an 18-story building located in the center of the campus, which contains the majority of the hospital facilities, including the Emergency Department (ED), surgical suites, and the intensive care unit (ICU). The Main Building also contains the hospital's boiler/chiller room in the basement.
- The Mental Health Building (MHB), a 14-story building located at the northwest corner of the campus along East 99th Street, which contains in-patient and out-patient mental health and substance abuse treatment facilities.
- The Outpatient Diagnostic Building, an 8-story building located on the western side of the campus along Second Avenue, which contains outpatient clinics, support spaces, and offices.

Hurricane Sandy caused both wind and flood related damage to MHC; peak flood depth at the nearest high water mark was 10.9 feet NAVD88 and at the nearest gauge measurement was 11.2 feet NAVD88. Due to the loss of utility power, the hospital operated under emergency power, with emergency protective measures (including sandbag berms and pumps) preventing

floodwater entry into many critical areas. Despite the protective measures, floodwater caused the failure of one of the emergency generators, temporarily causing the loss of all power to the ICU and the data center. Although MHC was not evacuated, the loss of power in the ICU required the relocation of critical life supported patients to another part of the hospital. In addition, MHC began receiving patients evacuated from Bellevue Hospital, another HHC facility impacted by flooding from Hurricane Sandy, and could not receive patients in the ED for a short period of time due to the shortage of staff and beds. MHC continued to operate over capacity and did not return to normal operations until February 2013, three months after the storm, when Bellevue Hospital reopened.

Since Hurricane Sandy, several storm-related repairs have been made to MHC to bring the hospital back to a state of good repair (e.g., asbestos removal and abatement; mold removal; roof repair; fence repair; mechanical and electrical repairs; replacement of damaged surfaces, equipment, or furnishings).

4.1 ALTERNATIVES

Several alternative courses of action were evaluated for the MHC Hazard Mitigation project. The alternatives were evaluated based upon engineering constraints, environmental impacts and available property. Budgetary constraints were considered for feasibility of alternatives but were not the controlling factor.

Guidance provided in 40 CFR 1502.14 regarding the NEPA provision of an alternative analysis states that an agency must rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their elimination. Additionally, a No Action Alternative must be included. This section discusses the No Action Alternative, or also known as the “Future without Federal Project Condition,” the feasible alternatives that would provide for the purpose and need and the alternative that was eliminated from full analysis.

4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, no alterations would be made to the MHC campus or hospital facilities. No federal funds would be provided and the status quo would be maintained and the hospital would remain in its existing condition. The hospital would continue to operate under the repair measures described above, and no hazard mitigation would be pursued to enhance the hospital’s resiliency. The MHC campus and hospital facilities would remain at risk from future storm or flooding events with repetitive financial losses and disruption of critical healthcare services. The surrounding community would experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care, in the event a future storm or flooding event causes a partial or full cessation of operations at MHC.

4.2 Alternative 2: Proposed Alternative: Comprehensive Mitigation System

Under this Alternative, a perimeter flood protection system would surround the MHC campus. This system would be designed to the 0.2 percent annual probability (“500-year”) flood elevation plus three feet of freeboard for sea level rise and would include floodwalls along the open portions of the campus’ perimeter and strengthening of the basement walls of the MHB at the northwest corner of the campus. Additionally, flood proof doors would be installed at several locations along the first floor. Vehicular and pedestrian floodgates would be provided to maintain access to the hospital. The tunnel between the MHB and the Main Building along East 99th Street (which carries high pressure steam piping, chilled water piping, and electrical conduits), would be rebuilt to support the floodwall’s weight, and a floodgate would be added by the MHB tunnel access door. Several manholes around the campus perimeter would also be sealed with watertight covers (see Appendix B, Figure 4-1).

The Proposed Alternative would also include the following mitigation measures:

- A new stormwater piping system along the north and south sides of the hospital campus, along with two submersible flood pump stations, would be installed to convey stormwater collected within the protected perimeter to two new discharge locations to the combined sewer; sump pumps would also be installed at specific low points around the campus to collect and remove accumulated stormwater.
- Updates to the existing sanitary sewer system would be made, including disconnecting sanitary fixtures on the first floor and reconnecting them to new sanitary sewer lines on the north and south sides of the hospital, and upsizing existing cellar pumps.
- Deployable flood planks for the loading dock would be placed at both the top and bottom of the loading dock ramp, which would provide a secondary layer of defense at this particularly vulnerable point should the perimeter wall be overtopped.
- Two utility tunnels connected to the boiler/chiller room in the Main Building basement would be sealed to prevent water entry, including installing floodproof doors at the tunnel entrances; a third tunnel would be sealed and abandoned in place.
- The New York City/New York State Emergency Management Chempack Room would be relocated from the Main Building’s basement to the first floor; in order to accommodate the Chempack Room, the vacated paramedics/ambulance quarters would be renovated to provide the required waterproofing, security measures, and climate control.

4.3 Alternatives Considered and Dismissed

The Subgrantee considered another alternative, Alternative 3: Mitigation-in-Place. This alternative would include measures to protect the existing MHC facilities by elevating the critical Mechanical, Electrical, and Plumbing (MEP) systems from the basement to at least the second

floor. All mitigation work would be performed within the existing buildings, and no new structures would be constructed on the MHC campus. To accommodate the relocated MEP systems, departments being displaced would need to move elsewhere on campus. In addition, new connections to the relocated MEP systems would need to be made, which would require extensive modifications to existing buildings.

Alternative 3 (Mitigation-in-Place) was dismissed due to code compliance issues and the difficulty of maintaining hospital operations during the extensive renovations required to the existing buildings to accommodate the new MEP systems. Relocated MEP systems and departments would be required to comply with code (the New York City Building Code [NYCBC] and related electrical and fire protection codes). This alternative is cost-prohibitive due to the significant phasing required to relocate the MEP systems and displaced departments and would take much longer than the Proposed Alternative to construct.

4.4 Summary of Alternatives

Three alternatives were considered by the Subgrantee for implementation at MHC. One alternative - Alternative 3 (Mitigation-in-Place) - was dismissed. The remaining alternatives are:

- 1) No Action Alternative
- 2) Comprehensive Mitigation System (Proposed Alternative)

See Section 10, Summary of Impacts Table, for a summary of environmental and cultural resources impacts. The following section focuses impact analysis on environmental and cultural resources in regards to the No Action and Proposed alternatives.

5.1 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

5.1 Geology, Topography, and Soils

5.1.1 Existing Conditions

The Project Site is located within a developed urban area on the east side of Manhattan between East 97th and East 99th Streets and east of Second Avenue, with predominantly flat or gently sloped areas. Soils in the eastern and far southern portions of the Project Site are classified as ULA (urban land-Laguardia complex, 0 to 3 percent slopes), while soils in the northwestern portion of the Project Site are classified as UrA (urban land, reclaimed substratum, 0 to 3 percent slopes) (see Appendix B, Figure 5.1-1). Urban lands consist of paved areas or areas of highly disturbed land and are considered “nonsoil areas” by the United States Department of Agriculture Natural Resources Conservation Service.

Historical topographical mapping (Viele 1865) indicates that the area was previously marshland, and included streams that drained towards the East River. This area is shown to have extended as far south as East 91st Street, as far north as East 104th Street, and as far inland as Third Avenue. Below the surficial fill soils, organic soils are expected to be encountered. Historic borings from the Works Progress Administration (WPA) include some of the original borings made at the site for the "Harlem Hospital." These borings show that the upper 20 to 30 feet of soil at the site comprises miscellaneous fill underlain by 10 to 15 feet of organic soils. Below the fill and organic soils, more competent soils, typical of glacial deposits, are found. Historical borings from the WPA confirm more recent geologic mapping of the area (Baskerville 1994), which indicate that calcite-dolomite marble (believed to be part of the Inwood Marble formation) is present beneath the site. Bedrock beneath the site is estimated to be between 100 and 150 feet below existing ground surface, with the top of rock sloping eastward to the East River.

5.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

As discussed above under "Existing Conditions," the Project Site is heavily developed with highly disturbed soils. No development or other significant alterations to soils, topography, or geologic resources would occur on this land in the near future. Therefore, these resources within the Project Site under the No Action Alternative would be largely the same as at present and would not be affected by the No Action Alternative.

Alternative 2: Proposed Alternative

As discussed above, under "Existing Conditions," the Project Site is heavily developed with highly disturbed soils. Construction and operation of the Proposed Alternative would not result in significant alterations to topography or geologic resources within the Project Site (including bedrock). Installation of the perimeter boundary protection system would require excavation of existing soils but it will be minimal and would not result in adverse effects to soil resource. Similarly, installation of the perimeter boundary protection system is not expected to require removal of bedrock. Best management practices (BMPs) would be used to prevent erosion and soil loss. Therefore, these resources within the Project Site under the Proposed Alternative would be largely the same as at present and would not be affected by the Proposed Alternative.

5.2 Air Quality

As required by the Clean Air Act (CAA), primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone, respirable particulate matter (both particles with an aerodynamic diameter of less than or equal to 2.5 micrometers [PM_{2.5}], and particles with an aerodynamic

diameter of less than or equal to 10 micrometers [PM₁₀]), sulfur dioxide (SO₂), and lead. The primary standards represent levels that are required to protect the public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary standards are generally either the same as the secondary standards or more restrictive. The NAAQS are presented in Appendix C Table 5.2-1. The NAAQS for CO, annual NO₂, and 3-hour SO₂ have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only. New York State also has standards for total suspended particulate matter, settleable particles, non-methane hydrocarbons, 24-hour and annual SO₂, and ozone which correspond to federal standards that have since been revoked or replaced, and for the non-criteria pollutants of beryllium, fluoride, and hydrogen sulfide.

The CAA, as amended in 1990, defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by the United States Environmental Protection Agency (EPA), the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA, followed by a plan for maintaining attainment status once the area is in attainment.

The conformity requirements of the CAA and regulations promulgated thereunder (conformity requirements) limit the ability of federal agencies to assist, fund, permit, and approve projects that do not conform to the applicable SIP. When subject to this regulation, the federal agency is responsible for demonstrating conformity for its proposed action. Conformity determinations for federal actions other than those related to transportation plans, programs, and projects which are developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 et seq.) must be made according to the requirements of 40 CFR Part 93 (federal general conformity regulations).

Under the general conformity regulations, a general conformity determination for federal actions is required for each criteria pollutant or precursor in non-attainment or maintenance areas where the action's direct and indirect emissions have the potential to emit one or more of the six criteria pollutants at rates equal to or exceeding the prescribed *de minimis* rates for that pollutant. In the case of this project, the prescribed annual rates are 50 tons of VOCs and 100 tons of nitrogen oxides (NO_x) (ozone precursors, ozone non-attainment area in transport region), 100 tons of CO (CO maintenance area), and 100 tons of PM_{2.5}, SO₂, or NO_x (PM_{2.5} and precursors in PM_{2.5} attainment area).

The general conformity requirements do not apply to federal actions that:

- Do not exceed the prescribed emissions threshold levels;
- Occur in an attainment area;

- Are related to transportation plans, programs, and projects developed, funded, or approved under Title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601); or
- Qualify for exemptions or where the emissions are not reasonably foreseeable as defined in Part 93.153.

The regulation assumes that a proposed federal action whose criteria pollutant emissions have already been included in the local SIP's attainment or maintenance demonstrations conforms to the SIP.

The emissions from construction activities are subject to air conformity review. Therefore, a qualitative assessment was conducted to evaluate whether the construction of the Proposed Project would have the potential to result in adverse effects on air quality.

5.2.1 Existing Conditions

The existing background ambient air quality in the area of the Project Site is based on the air quality monitoring data collected by the New York State Department of Environmental Conservation (NYSDEC) in Region 2 at air quality monitoring stations nearest to the study area. The summary of the concentrations of all criteria pollutants in the vicinity of the Project Site are presented in Appendix C, Table 5.2-2. All data statistical forms and averaging periods are consistent with the definitions of the NAAQS. These existing concentrations are based on recent published measurements, averaged according to the NAAQS (e.g., PM_{2.5} concentrations are averaged over the three years); the background concentrations are the highest values in past years and are used as a conservative estimate of the highest background concentrations for future conditions. As shown in the table, there were no monitored violations of the NAAQS for the pollutants at these sites.

New York City has been designated as in attainment for CO, PM_{2.5}, and Lead and is currently in attainment of the annual-average NO₂ standard. Manhattan has been designated as a moderate NAA for PM₁₀. In June 2012 and again in March 2015, New York State formally requested that the EPA reclassify the area as a moderate NAA. New York State has begun submitting SIP documents in December 2014. The EPA has designated the entire state of New York as “unclassifiable/attainment” of the 1-hour NO₂ standard effective February 29, 2012; since additional monitoring is required for the 1-hour standard, areas will be reclassified once three years of monitoring data are available (likely 2017). The EPA has established a 1-hour SO₂ standard, and based on the available monitoring data, all New York State counties currently meet the 1-hour standard; draft attainment designations were published by the EPA in February 2013, indicating that the EPA is deferring action to designate areas in New York State and expects to proceed with designations once additional data are gathered.

Metropolitan Hospital has a State Facility Permit issued by NYSDEC pursuant to 6 NYCRR Part 201. The permitted sources include two distillate oil-fired boilers. The current operating permit

will expire May 2025 (Appendix A, Document 5.1-1). The State Facility Permit limits the facility's emissions for NO_x to 24.5 tons per year.

5.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no alterations would be made to the MHC campus or hospital facilities. The No Action alternative would not result in any increase in emission levels during construction or operation and therefore, would not have an adverse effect on air quality. The emissions sources would continue operating under the existing State Facility Permit, which will expire in May 2025.

Alternative 2: Proposed Alternative

The Proposed Alternative would not introduce new sources that would require a major modification to the existing NYSDEC State Facility Permit.

Construction activities would be carried out in accordance with all applicable regulatory requirements. As required by EPA regulations, ultra-low-sulfur diesel fuel would be used for all construction-related vehicles and non-road construction equipment. Vehicle trips after the construction period are not expected to increase and consequently would not increase emissions from mobile sources. New stationary sources or modify existing permitted air emission sources would not be introduced and therefore not increasing emissions from current levels. In addition, all necessary measures would be implemented to ensure adherence to the New York City Air Pollution Control Code regulating construction-related dust emissions.

The construction activities associated with the Proposed Alternative are anticipated to be approximately 50 months. In order to maintain continuous functionality of the hospital during the construction timeframe, construction activities would employ a phased approach. Emissions from on-site construction equipment and on-road construction-related vehicles such as trucks and construction worker vehicles have the potential to affect air quality. Construction of the Proposed Alternative would require the use of concrete trucks and delivery trucks as well as non-road equipment such as excavators, backhoes, loaders, and cranes. Construction would not involve extensive building demolition, excavation, or foundation activities, which typically generate the highest levels of air emissions. Although the installation of the perimeter boundary protection system would require excavation of existing soils, these activities would be minimal. In addition, measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. Further, the approach and procedures for constructing the NCSS would be typical of the methods utilized in other construction projects throughout New York City.

Accordingly, as the potential operational and construction emissions are expected to be below the applicable *de minimis* levels, no general conformity analysis would be required, and the Proposed Alternative would not result in adverse effects on air quality.

5.3 Wetlands and Water Quality

Executive Order (EO) 11990 Wetlands Management requires Federal agencies to avoid funding activities that directly or indirectly support occupancy, modification, or development of wetlands, whenever there are practicable alternatives.

Congress enacted the Federal Water Pollution Control Act in 1948 which was later reorganized and expanded in 1972 and became known as the Clean Water Act (CWA) in 1977. The CWA regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into Waters of the United States and traditional navigable waterways. USACE regulation of activities within navigable waters is also authorized under the 1899 Rivers and Harbors Act. Under the National Pollutant Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit, called a State Pollutant Discharge Elimination System permit through NYSDEC as authorized by the EPA.

5.3.1 Existing Conditions

The majority of the Project Site is heavily developed and occupied by existing hospital buildings, asphalt-paved parking lots, and small patches of upland vegetation. The Project Site is more than 150 feet from the East River, which is the closest surface water feature. It is separated from the East River by FDR Drive, First Avenue, and waterfront sites. FEMA uses the National Wetlands Inventory, state-specific mapping tools and on-site surveys to identify wetlands. The U.S. Fish & Wildlife Service's (USFWS) National Wetlands Inventory (NWI) map for the Project Site (see Appendix B, Figure 5.3-1) does not indicate any NWI-mapped wetlands on or within the vicinity of the Project Site. The NYSDEC tidal wetlands map for the Project Site (see Appendix B, Figure 5.3-2) indicates that there are no NYSDEC-mapped wetlands on or within the vicinity of the Project Site. Because the Project Site is more than 150 feet from the East River, mapped as NYSDEC Littoral Zone Tidal Wetlands, and separated from the East River by the FDR Drive, there is no NYSDEC Tidal Wetlands Adjacent Area within the Project Site. In addition, there are no other surface waters considered Waters of the United States on or in the vicinity of the Project Site.

5.3.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

As discussed above under “Existing Conditions,” there are no NWI- or NYSDEC-mapped wetlands, NYSDEC-regulated wetland adjacent areas, or other Waters of the United States within or in the vicinity of the Project Site. Therefore, Alternative 1 would not adversely affect wetlands or water quality although, during future flooding events it is possible that there would be localized water quality effects from contaminated floodwaters as occurred during Hurricane Sandy.

Alternative 2: Proposed Alternative

Similar to the No Action Alternative, because the Project Site is located in a highly urbanized area served by a storm sewer system, and because there are no NWI- or NYSDEC-mapped wetlands, NYSDEC-regulated wetland adjacent areas, or other Waters of the United States on or in the vicinity of the Project Site, the Proposed Alternative would not adversely affect wetlands or water quality. The proposed perimeter boundary protection system and stormwater management practices would minimize potential for future flood events to cause localized water quality effects from contaminated floodwaters.

5.4 Floodplain

EO 11988 (Floodplain Management) requires a Federal agency avoid direct or indirect support of development within the floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRM) to identify the floodplains for the National Flood Insurance Program. Federal actions within the “100-year” floodplain or in the case of the Hospital (a critical facility as defined in 44 CFR Part 9), the “500-year” floodplain require the Federal agency to conduct an Eight-Step process (Appendix A, Document 5.4-1). This process, like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA’s regulations on conducting the Eight-Step process are contained in 44 CFR Part 9.

5.4.1 Existing Conditions

FEMA released preliminary FIRMs on January 30, 2015 that precede the future publication of new, duly adopted, final FIRMs. The preliminary FIRMs represent the Best Available Flood Hazard Data at this time. FEMA encourages communities to use the preliminary FIRMs when making decisions about floodplain management until final maps are available. As indicated in the FEMA Preliminary Flood Hazard Areas map for the Project Site (see Appendix B, Figure 5.4-1, FIRM panel 3604970087G), the majority Project Site is located within the “100-year” floodplain (Zone AE) with a Base Flood Elevation (BFE) for the Project Site of +13 feet North American Vertical Datum of 1988 (NAVD88) and small portions are located within the “500-year” floodplain with a BFE of +14.5 feet NAVD88. The majority of the Project Site is heavily developed and occupied by existing hospital buildings, asphalt-paved parking lots, and small patches of upland vegetation.

New York City is affected by local, fluvial, and coastal flooding that affect the City’s Atlantic coast, bays such as Upper New York Bay, tidally influenced rivers such as the Hudson and East Rivers, streams, and inlets such as Mill Basin Inlet in Jamaica Bay (FEMA 2013). Within New York City, tidal flooding is the primary cause of area-wide flooding. Coastal floodplains such as those in the project area are influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes [FEMA 2013]), not by fluvial flooding. Because the East River is a tidal strait, its surface water elevations are controlled by the tidal levels.

5.4.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under Alternative 1 no development or significant alterations to the Project Site would occur. Thus, MHC would continue to be located within the “100-year” floodplain, would not be mitigated to the “500-year” floodplain, and would continue to be vulnerable to potential flooding from storm events.

Alternative 2: Proposed Alternative

The Proposed Alternative would result in the modification of an existing facility, portions of which are located within the “100-year” and “500-year” floodplains. Therefore, as indicated in Appendix A, Document 5.4-1 (8 Step Process, 44 CFR Part 9), there is no practicable alternative that would not occur within the “100-year” floodplain. However, construction and operation of the Proposed Alternative would conform to the amended EO 11988 through the establishment of a new perimeter flood protection system surrounding the hospital campus. This system would

include floodwalls along the open portions of the campus' perimeter and strengthening of the basement walls of the MHB at the northwest corner of the campus. Other mitigation measures that would be implemented include watertight manhole covers, submersible flood pump stations, sump pumps, floodproof doors, and relocation of the Chempack Room, as discussed in Section 4.0 "Alternatives." The floodplain on and in the vicinity of the Project Site is affected by coastal flooding from the East River, which itself is strongly influenced by water elevation differences between the Long Island Sound and Upper New York Harbor. As indicated in the Hydrology and Hydraulics study conducted in 2015 (Appendix A, Document 5.4-2, the flood volume displaced by the Metropolitan Hospital campus is comparatively much less than the storm tide volume of the East River. Thus, the proposed modifications to the existing hospital facilities will not adversely affect floodplains on or in the vicinity of the Project Site and will not increase the storm tide risk to adjacent properties.

5.5 Coastal Resources

The Coastal Zone Management Act, administered by states with shorelines in coastal zones requiring those states to have a Coastal Zone Management Plan (CZMP) to manage coastal development. Projects falling within designated coastal zones must be evaluated to ensure they are consistent with the CZMP. Projects receiving federal assistance must follow the procedures outlined in 15 CFR 930.90 – 930.101 for federal coastal zone consistency determinations. In order to guide development and resource management within the State's coastal area, substantive policies have been identified and promulgated by the New York State Department of State (NYSDOS) and NYSDEC.

The Coastal Erosion Hazard Law (Environmental Conservation Law 34) empowers NYSDEC to identify and map coastal erosion hazard areas and to adopt regulations (6 NYCRR Part 505). The Coastal Erosion Hazard Area Permit Program manages regulated activities or land disturbance to properties within the coastal erosion hazard areas.

5.5.1 Existing Conditions

As shown in Appendix B, Figure 5.5-1, the Project Site is not located within the New York State Coastal Zone. A section on the eastern side of the complex adjacent to the west side of 1st Avenue is within the Coastal Zone where a portion of the floodwall will be located, and thus, the Proposed Project has been analyzed for its conformance with the State's adopted Coastal Management Plan due to the potential indirect impacts to the Coastal Zone.

The Project Site is within the coastal zone as defined by New York City in its Local Waterfront Revitalization Plan (LWRP) (2002 NYCPlanning). However, the Project Site is not within a Coastal Erosion Hazard Area or a designated Scenic Area.

5.5.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would have no direct impacts on coastal resources. No new uses would be introduced to the coastal zone.

Alternative 2: Proposed Alternative

FEMA has reviewed New York State's Coastal Policies, 1 through 44, with respect to their applicability to the Proposed Alternative and with respect to the Proposed Alternative's conformance to those adopted policies. Based on this review, FEMA certifies that the Proposed Alternative is consistent with the policies of the NYS Coastal Management Program and will not hinder the achievement of those policies. A New York State Coastal Consistency Analysis for the Proposed Alternative contains a summary of the Proposed Alternative's consistency with each of the State's 44 Coastal Management Policies. In addition, a consultation letter was sent to the NYSDOS on April 16th 2015 requesting concurrence with this consistency determination and concurrence was received on May 5th 2015 (Appendix D, Concurrence 5.5-1). In addition, consistency of the Proposed Project with the City's LWRP will be evaluated during local review and approval of the Project.

The Proposed Alternative would repair, rehabilitate, and increase the resiliency of the existing hospital which was damaged during Hurricane Sandy. This alternative would minimize future flood risks to this critical facility, as defined in 44 CFR Part 9, which would in turn minimize property damage and reduce the danger to public health and safety that could result from future flooding events.

5.6 Vegetation

Local Law 3 of 2010 amended Section 18-107 of the Administrative Code of the City of New York and codifies the New York City Department of Parks and Recreation's (DPR) ability to regulate the replacement of trees on or within jurisdiction of the NYCDPR which includes all trees growing in the public right-of-way and on land mapped as City parkland. The law requires permits from the NYCDPR for the removal of trees within NYCDPR jurisdiction and requires replacement of trees that are removed. The law protects against the unauthorized removal, destruction, irreparable damage, and injury to trees under the jurisdiction of the NYCDPR.

5.6.1 Existing Conditions

The Project Site is occupied by existing hospital buildings, asphalt-paved parking lots, and relatively small patches of maintained lawns and landscaped areas along the perimeters of the buildings and southern boundary of the Project Site (see Appendix B, Figures 5.6-1 and 5.6-2).

These vegetated patches occupy approximately 10 percent of the area within the Project Site. Following Edinger *et al.* (2002), the ecological community characterization guidance manual used to describe ecological communities in New York in a standardized manner; the Project Site would include mowed lawn with trees, paved road/path, and urban structure exterior. The only vegetated community within the Project Site is the mowed lawn with trees community, which is dominated by London plane tree (*Platanus acerfolia*) and honey locust (*Gledistia triacanthos*) in the canopy, and grasses in the herbaceous layer. Table 5.6-1 in Appendix C lists the vegetation observed during the February 24, 2015 reconnaissance investigation.

5.6.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The majority of the Project Site is heavily developed, with limited vegetation (e.g., mowed lawn with trees). Vegetation within the Project Site under Alternative 1 would be largely the same as at present and would remain subject to impact by potential future inundation.

Alternative 2: Proposed Alternative

Construction of the Proposed Alternative would result in the loss of the area of mowed lawn with trees due to construction of the proposed floodwall. Construction of the Proposed Alternative will require the removal of trees within the Project Site. However, all work would be performed in compliance with Local Law 3 of 2010 and the DPR's Tree Protection Protocol to minimize potential adverse effects. The mowed lawn with trees on the Project Site has limited ecological value because it is a smaller isolated space disconnected from other vegetated areas in the predominantly urbanized New York City environment. Operation and construction of the Proposed Alternative would not result in adverse effects on vegetation within the New York Metropolitan region. If feasible, native trees and other native landscaping plants will be planted on the Project Site to offset the vegetation lost as a result of construction of the Proposed Alternative.

5.7 Wildlife and Fish

5.7.1 Endangered and Threatened Species

The Endangered Species Act (ESA) of 1973 provides a program for the conservation of federally listed threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are the USFWS and the U.S. National Oceanic and Atmospheric Administration's National Marine Fisheries Service. The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of

designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife.

5.7.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency for implementing the MBTA is the USFWS. The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any migratory birds or result in the destruction or adverse modification of designated critical habitat of such species.

5.7.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Bald eagle has been delisted from the Federal Threatened and Endangered Species list.

5.7.4 Essential Fish Habitat

Federal agencies are required to assess the potential impacts that proposed actions and alternatives may have on Essential Fish Habitat (EFH), in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. The project site is on land and no direct or indirect impacts from considered alternatives on waterbodies classified as EFH are anticipated, therefore, no further Essential Fish Habitat assessment has been conducted.

5.7.5 Existing Conditions

5.7.5.1 Wildlife and Fish

The Project Site and surrounding area mainly (approximately 90 percent) consists of lots covered by buildings and asphalt in a heavily urbanized and commercial/residential setting with limited habitat for disturbance tolerant wildlife species. The remaining portion of the Project Site (approximately 10 percent) consists of maintained lawns with shade trees. The Breeding Bird Atlas is a periodic census of the distribution of breeding birds across New York State. The most recent census was conducted from 2000-2005 indicates 33 bird species as confirmed or probable/possible breeders in the survey block in which the Project Site is located (Block 5851A) (see Appendix C, Table 5.7-1). Of these bird species, the Project Site provides suitable breeding habitat for only a few urban-adapted birds, such as the rock pigeon (*Columba livia*), house

sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*). These are extremely disturbance-tolerant, generalist species that can thrive in heavily developed, urban environments. The European starling and house sparrow were observed within the vicinity of the Project Site during the February 24, 2015 reconnaissance investigation.

Habitat for mammals is limited within the Project Site and is likely to be used only by urban-adapted and synanthropic species (those that benefit from an association with humans). These include the raccoon (*Procyon lotor*), Norway rat (*Rattus norvegicus*), grey squirrel (*Sciurus carolinensis*), and domestic cat (*Felis catus*). The grey squirrel was the only mammal observed in the vicinity of the Project Site during the February 24, 2015 reconnaissance investigation.

The Project Site lacks any habitat, including surface water features that would be suitable for reptiles and amphibian species. As such, no reptiles or amphibians are considered to have the potential to occur within the Project Site; thus, further assessment of reptiles and amphibians is not necessary. There are no waterbodies or aquatic organisms within the Project Site; thus, further assessment of aquatic habitat and organisms is not necessary.

5.7.5.2 Threatened & Endangered

The northern long-eared bat (*Myotis septentrionalis*; threatened) is the only federally endangered, threatened, or proposed species listed by the USFWS Information, Planning, and Conservation (IPaC) system as occurring on or in the vicinity of the Project Site (Appendix A, Document 5.7-1). The peregrine falcon (*Falco peregrinus*; endangered) is the only state-listed species bird documented by the 2000-2005 Breeding Bird Atlas in Block 5851A. A review of the NYSDEC New York Nature Explorer database for state-listed species indicates that no state-listed species have the potential to occur within a 0.5 mile radius of the Project Site.

Northern Long-eared Bat

The northern long-eared bat is considered a forest-dependent species that is sensitive to fragmentation and requires interior forest for both foraging and breeding (Foster and Kurta 1999, Broders et al. 2006, Henderson et al. 2008). Although they may occur in urbanized areas (Whitaker et al. 2004, Johnson et al. 2008) and will occasionally utilize buildings and other artificial structures rather than trees for roosting (Timpone et al. 2010, USFWS 2013), urban northern long-eared bats tend to occur near large, forested parks or other green spaces with abundant tree cover (Johnson et al. 2008). The New York Natural Heritage Program (NYNHP) and NYSDEC have no records of sightings or other encounters with the northern long-eared bat from any of the five boroughs of New York City (NYNHP 2014, NYSDEC 2014), and no nuisance bats ever collected from New York City and submitted to the New York State Department of Health for rabies testing have included a northern long-eared bat (NYSDEC 2014). Because no caves, mines, or small or large woodlands occur near the Project Site, northern long-eared bats are not considered to have the potential to occur in the area during either the breeding or non-breeding period.

Peregrine Falcon

The peregrine falcon is ranked as “S3B” by NYNHP, indicating that there are typically 21 to 100 breeding occurrences or limited breeding acreage in the state. Currently, New York City is expected to have the largest urban population of peregrine falcons within the state (NYCDEP 2011). Peregrine falcons often nest on ledges or holes on the faces of rocky cliffs but will nest on human-made structures such as bridges and tall buildings, especially near or in urban areas. In the New York City area, wintering birds frequent buildings and open areas containing plentiful prey in more natural settings. The Peregrine falcon’s diet primarily consists of birds, ranging from songbirds to small geese and also bats and other small mammals (White et al. 2002). Although the peregrine falcon is known to occur within New York City, they do not nest within the Project Site, and the potential occurrence of any peregrine falcons in the area would be limited to migrants briefly passing through or individuals from nest sites elsewhere in the city pursuing prey. In addition, no peregrine falcons were observed during the February 24, 2015 reconnaissance investigation.

5.7.5.3 Migratory Bird Treaty Act

As discussed above, the most recent census of the Breeding Bird Atlas was conducted from 2000-2005 and documented 33 species as confirmed or probable/possible breeders in the survey block in which the Project Site is located (Block 5851A). The species considered likely to breed within the vicinity of the Project Site are the rock pigeon, house sparrow, and European starling. These species are not protected under MBTA, and the Project Site does not contain designated critical habitat for any species protected under MBTA. Therefore, no further assessment under MBTA is required.

5.7.5.4 Bald and Golden Eagle Protection Act

The Project Site and surrounding area mainly consists of lots covered by buildings and asphalt in a heavily urbanized and commercial/residential setting and lacks suitable habitat for Bald eagles (*Haliaeetus leucocephalus*) and Golden eagles (*Aquila chrysaetos*), and neither species is reported as breeding in the vicinity of the Project Site (see Appendix C, Table 5.7-1). Therefore, no further assessment under the Bald and Golden Eagle Protection Act is required.

5.7.6 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The majority of the Project Site is heavily developed with limited habitat for disturbance-tolerant wildlife species. No development or other significant alterations to habitat would occur on this land in the near future. Therefore, this alternative would not affect wildlife or federally or state-listed species within the Project Site.

Alternative 2: Proposed Alternative

Wildlife and Fish

Construction of the Proposed Alternative would not adversely affect wildlife at either the individual or population level. Terrestrial wildlife habitat at the Project Site comprises buildings and paved parking lots with limited area of mowed lawns with trees. Construction activities would result in the loss of a portion of lawn with trees. The loss of this habitat, common within the New York Metropolitan area would not adversely affect the few urban-adapted species that use this habitat (e.g., house sparrow, European starling, Norway rat). As extreme generalists that are highly disturbance-tolerant, any individuals of these species that may be temporarily displaced from the Project Site during construction would be expected to move to alternative habitat. Overall, construction and operation of the Proposed Alternative would not adversely affect wildlife resources at the individual or population level.

Threatened and Endangered

As discussed above under “Existing Conditions,” no other federal- or state-listed endangered, threatened, or special concern species are considered to have the potential to occur within the Project Site. Therefore, construction and operation of the Proposed Alternative would not result in any adverse effects to threatened, endangered, and special concern species.

5.8 Cultural Resources

As a federal agency, FEMA must consider the potential effects of its funded actions upon cultural resources prior to engaging in any undertaking. This obligation is defined in Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CFR Part 800. The NHPA of 1966 defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register.” Eligibility criteria for listing a property on the National Register of Historic Places (NRHP) are found at 36 C.F.R. Part 60.

The New York State Historic Preservation Office (NYSHPO) maintains a database of New York’s historic properties. Requirements for review include the identification of significant cultural resources that may be impacted by the undertaking. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

Only those cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the NRHP. The term “eligible for

inclusion in the NRHP” includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Sites that have not been evaluated at the time of the undertaking may be considered potentially eligible for inclusion in the NRHP and as such, are afforded the same regulatory consideration as nominated properties.

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts to cultural resources are evaluated prior to the undertaking for both Standing Structures (above ground resources) and Archaeology (below ground resources).

5.8.1 Historic (Standing) Structures

5.8.1.1 Existing Conditions –Historic Standing Structures

The Metropolitan Hospital was founded in 1875 by the New York Department of Public Charities and Corrections, as the Homeopathic Hospital on Ward’s Island. Affiliated with the New York Homeopathic Medical College (a/k/a the New York Medical College), it is known as the oldest partnership between a hospital and private medical school in the United States. In 1894, the hospital moved to its second location was on Blackwell’s Island (a.k.a. Welfare Island and Roosevelt Island), where it occupied the former New York City Asylum for the Insane. At this time the hospital was renamed the Metropolitan Hospital. By 1907, Metropolitan Hospital had grown to more than 1300 bed capacity and was the largest general hospital in the U.S. Between 1949 and 1952 home care services were instituted. The third and final location of the Metropolitan Hospital was dedicated in 1955 with two buildings on two city blocks in Manhattan. As the hospital grew, the Mental Health Building and a 14-story pavilion were constructed in 1966.

A search for known historic standing structures was conducted within the APE using the NYSHPO Cultural Resources Information System (CRIS) to determine if any buildings in the APE are listed on or determined eligible for listing on the State and National Registers of Historic Places individually or within historic districts. In addition, listings of New York City Landmarks and Historic Districts were also reviewed.

The Metropolitan Hospital (USN#06101.018493), with an address at 1901 First Avenue, is listed in SHPO’s CRIS database as not eligible for inclusion on the National Register of Historic Places (NRHP). Within the APE, defined as a radius of 500 feet to include the entire superblock, three properties located to the northeast, east and south of the hospital have been reviewed by the NYSHPO: Draper Hall (USN#06101.018975) 1918 First Avenue; J.H.S. 99 (USN#06101.015231) 410 East 100th Street; and Co-op Technical High School (USN#06101.017925) 321 East 96th Street and each have been determined not eligible for the

NRHP. There are no designated historic districts, scenic landmarks, landmarks or landmark interiors in close proximity to the Metropolitan Hospital. However, there are buildings within the APE that are more than forty-five years of age located on the north/northeast side and the west side of the hospital.

5.8.1.2 Potential Impacts and Proposed Mitigation to Standing Historic Structures

Alternative 1: No Action

Since no alterations would be made to the MHC, the No Action alternative would have no effect on known historic standing structures. In any case, no known historic standing structures are identified in the APE.

Alternative 2: Proposed Alternative

The proposed project would result in a perimeter flood protection system, including floodwalls. There are no known historic standing structures located on the MHC campus or the APE. Therefore, the proposed alternative would have no adverse effect on historic standing structures.

5.8.2 Archaeological Resources

5.8.2.1 Existing Conditions

In order to evaluate the archaeological sensitivity of the area for which improvements are proposed, FEMA conducted a field inspection of the project site, performed an evaluation of geological data, and conducted documentary research within the Area of Potential Effects (APE) and surrounding landscape. FEMA archaeologists used the NYSHPO CRIS to locate areas that have been previously surveyed for cultural resources, properties listed in the New York and NRHP, and areas of archaeological sensitivity.

The APE for archaeological resources includes any land surface that may be altered during the course of project construction. Such impacts associated with the Hazard Mitigation Program includes subterranean disturbances most associated with the installation of the perimeter flood protection system including floodwalls along the open portions of the campus' perimeter, a new stormwater piping system along the north and south sides of the hospital campus, and new sump pumps and associated utilities for such improvements. Thus, the APE for archaeological resources is limited to the area of proposed ground disturbance.

Prehistoric Archaeological Resources

Research conducted using records, maps, and literature from the NYSHPO CRIS reveals the project site is located in an area of archaeological sensitivity. There is a certain degree of correlation between particular environmental elements and the location of human activities

across a landscape. As a result, a comprehensive analysis of the environmental elements found in a given area can be used to predict the location and preservation of prehistoric and historic archaeological remains. Prediction of prehistoric site potential is based upon the geographic setting, prehistoric settlement models within the northeast, and general knowledge based upon previous archaeological research. Research of archaeological site files located on CRIS revealed there are no known prehistoric archaeological sites eligible for, or listed in, the NRHP within and/or adjacent to the APE. One previously recorded prehistoric site was identified within one-half mile of the APE. Recorded in 1922, the Rechewanis/Konaande site is located approximately 1,400 feet west of the APE and is recorded as the contact-period Native American village site. While this site may have been preserved, the likelihood of associated intact deposits located within the APE are low based on the substantial ground disturbing activities that have taken place since it was located in the early 20th century.

Review of the historical topographical mapping indicates that the APE was previously marshland, and included streams that drained towards the East River. This area is shown to have extended as far south as East 91st Street, as far north as East 104th Street, and as far inland as Third Avenue. Historic borings from the WPA (as described above) include some of the original borings made at the site for the “Harlem Hospital” and reveal the upper 20 to 30 feet of soil comprises miscellaneous fill underlain by 10 to 15 feet of organic soils. Below the fill and organic soils, more competent soils, typical of glacial deposits, are found. Bedrock beneath the site is estimated to be between 100 and 150 feet below existing ground surface, with the top of rock sloping eastward to the East River.

Overall, the vertical and horizontal limits of disturbance will be limited to areas that have been previously disturbed by the construction of the existing structures and will be located within the limits of previously disturbed urban soils. The only evidence of Native American activity that might be located within the APE would be random, sparsely distributed artifacts. Therefore, based on the environmental and topographic conditions, the potential for encountering in-situ prehistoric archaeological resources is considered low.

Historic Archaeological Resources

Research of archaeological site files located on CRIS revealed there are no historic-period archaeological sites located on and/or within one-half mile of the APE. Review of historic maps including topographical and historic aerials beginning in the early-19th century extending to present, reveal that hospital campus was constructed beginning in the 1950s which resulted in substantial earth moving practices including grading and filling. Historic archaeological resources pre-dating construction of the facility are considered low due to lack of documented development.

Overall, the vertical and horizontal limits of disturbance will be limited to areas that have been previously disturbed by the construction of the existing structures. Thus, all improvements will

be located within the limits of previously disturbed urban soils and the potential to encounter in-situ historic-period archaeological resources is considered low.

5.8.2.2 Potential Impacts and Proposed Mitigation, Archaeological Resources

Alternative 1: No Action

Since no work or ground disturbance will occur, the No Action alternative would have no effect on archaeological properties.

Alternative 2: Proposed Alternative

The potential of locating identifiable archaeological sites within the proposed alternative is also low due to the extensive subterranean disturbance that has been extensive throughout the historical development (i.e., construction) of the hospital campus and surrounding area and inclusion of the upper 20-30 feet of fill. These disturbances have severely impacted any potential archaeological resources to be present. As a result of these combined results, the likelihood of encountering intact prehistoric and/or historic archaeological resources is considered low. No additional archaeological survey is recommended.

5.9 Aesthetic Resources

This analysis considers the potential loss of, or impact to, any aesthetic resources or viewshed. A viewshed is an area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point. Viewsheds are areas of particular scenic or historic value that have been deemed worthy of preservation against development or other change. Viewsheds are spaces that are readily visible from public areas and thoroughfares, such as from public roadways, public parks, or high-rise buildings. If the viewshed is integral to the setting of a landmark building or part of the NHPA Evaluation Criterion for a buildings' eligibility, the viewshed must be considered for any new development or renovation proposal.

5.9.1 Existing Conditions

The area around the Metropolitan Hospital Campus is a developed urban area that predominantly contains streets, medical facilities, and residential buildings. The area is located near the East River. NYSDEC designates certain rivers in New York State with aesthetic value as Wild, Scenic, or Recreational Rivers; while the East River is not a designated Wild, Scenic, or Recreational River; it is one of the defining natural features of New York City. Views of the East River are generally available to the north of the campus down cross-streets leading to the river and from the sidewalks on the FDR Drive access road. However, views of the river from points along First Avenue are limited due to large buildings such as Draper Hall, and views down some

cross-streets are limited by the portion of FDR Drive that is elevated south of East 97th Street. Therefore, the primary viewsheds in the area of the Metropolitan Hospital Campus are located along East 99th Street, East 100th Street, and the FDR Drive access road.

5.9.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action alternative, no alterations would be made to the Metropolitan Hospital Campus or its facilities, and there would be no changes to the viewsheds along East 99th Street, East 100th Street, and the FDR Drive access road or to the scenic value of the area; therefore, there would be no effect on aesthetic resources.

Alternative 2: Proposed Alternative

The Proposed Alternative includes several alterations to the Metropolitan Hospital Campus, particularly the construction of a floodwall along the open portions of the campus' perimeter. The proposed floodwall would not impede visual access to the East River, which is most visible from points to the east of First Avenue down the cross-streets leading to the river. The East River would remain visible along East 99th Street, East 100th Street, and the FDR Drive access road viewsheds. Other alterations to the campus, such as sealing utility tunnels and improving the stormwater and sanitary sewage conveyance systems, would be generally located in the interior of the existing hospital buildings and in below-grade spaces and would not affect any views from public areas on the ground level. Therefore, the Proposed Alternative would not result in any impacts to aesthetic resources.

5.10 Socioeconomic Resources and Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations, requires agencies to identify and address disproportionately high and adverse human health or environmental effects its activities may have on minority or low income populations. The population was determined by selecting all census block groups with at least half of their physical area within ¼-mile of the Project Site (see Figure 5.10.1-1).

Per EPA Region 2 Guidelines for Conducting Environmental Justice Analyses, for New York, a community would be considered an EJ community if the minority population was 51.51% or higher or if 23.59% or more of the population was below the poverty line.

According to the 2010 Decennial Census, in 2010, the Community of Concern (COC) population included 30,550 persons, 61.0% of which were minority. Of the entire COC population, 31.9% identified as Hispanic, 15.4% identified as Non-Hispanic Black, 11.2% identified as Non-Hispanic Asian, and 2.5% identified as Non-Hispanic and another race besides White.

For the same area, the 2009-2013 American Community Survey reported a poverty rate of 17.9% and a per capita income of \$49,480. Based on the above calculations, the minority rate but not the poverty rate is above the EPA threshold for an EJ community.

5.10.1 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no alterations would be made to the hospital campus or facilities. There would be no disproportionate or adverse effect on minority or low income populations. The MHC campus and facilities would remain at risk from future storm or flooding events with potential disruption of critical healthcare services. In the event a future storm or flooding event causes partial or full cessation of operations at MHC, the surrounding community, including minority or low-income populations served by MHC, could experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care.

Alternative 2: Proposed Alternative

Potential impacts on the COC would be a temporary increase of noise levels and traffic during construction. The construction activities associated with the Proposed Alternative would be subject to all New York City construction and noise regulations. There would be no disproportionate or adverse effect on minority or low income populations. The actions under Proposed Alternative would also benefit the community by reducing the risk of future flood damage to MHC and preventing future service interruptions in healthcare and emergency care.

5.11 Land Use and Planning

5.11.1 Existing Conditions

Metropolitan Hospital is located in the predominantly residential East Harlem neighborhood of Manhattan: approximately 67 percent of the lots in the area contain residential buildings (see Appendix B Figure 5.11-1). The area primarily contains multi-family apartment buildings, including a multi-building public housing complex, the George Washington Houses, located immediately to the west of the Metropolitan Hospital Campus. Draper Hall, a 14-story building that was formerly a residence for medical students and nurses affiliated with Metropolitan Hospital, is located immediately to the east of the campus; the building was vacated following Hurricane Sandy due to flooding damage and is expected to be fully renovated into a senior housing facility in the near future. The area also contains several public schools: the Life Sciences Secondary School, the School of Cooperative Technical Education, Middle School 224 Manhattan East School for Arts & Academics, and DREAM Charter School. Two public parks,

the Marx Brothers Playground and the Stanley Isaacs Playground, are located to the south of the campus. The Bobby Wagner Walk, part of the East River Esplanade, is located to the east of the campus.

MHC is located within a medium-density residential zoning district (R7-2), and the area around the campus includes other medium- and high-density residential districts (R7A, R8A, and R10). Residential zoning districts permit a variety of housing types and community facilities, including hospitals, but do not permit commercial or manufacturing uses.

5.11.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no alterations would be made to the Metropolitan Hospital Campus or its facilities. Metropolitan Hospital would remain in its current condition with hospital facilities operating under temporary repair measures. There are no associated potential impacts to land use and planning.

Alternative 2: Proposed Alternative

Under the Proposed Alternative, the Metropolitan Hospital Campus would be altered by a series of improvements to prevent floodwaters from entering the hospital through vulnerable points on the campus and to allow the hospital to fully operate under backup systems for electricity and steam in the event that utility services are shut off. Alterations under this alternative would not affect land uses on the Metropolitan Hospital Campus and would conform to the existing zoning regulations. While construction of the Proposed Alternative would result in the loss of the area of mowed lawn with trees due to construction of the proposed floodwall, this alteration would only affect a small portion of the Metropolitan Hospital Campus and would not affect its primary use as a medical facility. The Proposed Alternative would not affect land uses on any other sites and would not affect the applicable zoning regulations or other planning policies; therefore, there would be no impacts to land use and planning.

5.12 Infrastructure

5.12.1 Existing Conditions

The Project Site is located within a developed urban area and is served by major utilities for all infrastructures. Underground utilities at Metropolitan Hospital and the surrounding area include electric, natural gas, and city water and sewer lines. Electrical power is provided by Consolidated Edison (Con Ed). Metropolitan Hospital maintains its own backup on-site emergency power generation capabilities, with three generators located in the basement: Generator #1 supplies

emergency power for main hospital facilities, with separate systems for the ED and ICU (Generator #2) and MHB (Generator #3). Natural gas is provided to Metropolitan Hospital by Con Ed. Water is supplied by the City of New York, which maintains three water supply systems with a watershed area of over 2,000 square miles and a storage capacity of 550 billion gallons. The Metropolitan Hospital campus is located in an area that is served by a combined sewer system: wastewater (both sanitary sewage and stormwater) is conveyed to the Wards Island Wastewater Treatment Plant, where it is fully treated by physical and biological process before it is discharged into the East River. Metropolitan Hospital's ordinary solid waste is collected by the New York City Department of Sanitation, and the hospital's regulated medical waste is collected by a licensed private hauler.

5.12.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no alterations would be made to the Metropolitan Hospital campus or facilities. Metropolitan Hospital's infrastructure would remain vulnerable to damage from flooding in the event of a future storm. In particular, mechanical equipment located in the basement and cellar, including the emergency generators, would remain vulnerable to floodwater: during Hurricane Sandy, floodwater entered the room housing Generator #1 through an adjacent Con Ed utility vault, and extensive pumping was required to prevent damage to the generator.

Alternative 2: Proposed Alternative

The Proposed Alternative, including the construction of a perimeter boundary protection consisting of floodwalls along the open portions of the campus' perimeter and strengthening of the basement walls of the MHB, would not affect Metropolitan Hospital's primary electrical, gas, and water and sewer services, which would continue to be provided by the City of New York and major utilities such as Con Ed. These systems are expected to have sufficient capacity to accommodate the demand for utility services with the Proposed Alternative.

The perimeter boundary protection system and other mitigation measures would provide a defense against flooding for critical hospital infrastructure. In particular, improvements such as sealing utility tunnels and manholes and installing floodproof doors in below-grade spaces would prevent floodwater from reaching critical equipment, particularly the emergency generators located in the basement. With these improvements, the Proposed Alternative would have no adverse effects on infrastructure.

5.13 Noise

The Noise Control Act of 1972 required the EPA to create a set of noise criteria. In response, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* in 1974 which explains the impact of noise on humans. The EPA report found that keeping the maximum 24-hour L_{dn} value below 70 dBA would protect the majority of people from hearing loss. The EPA recommends an outdoor L_{dn} of 55 dBA. According to published lists of noise sources, sound levels, and their effects, sound causes pain starting at approximately 120 to 125 dBA (depending on the individual) and can cause immediate irreparable damage at 140 dBA. OSHA has adopted a standard of 140 dBA for maximum impulse noise exposure.

Sound pressure level (SPL) is used to measure the magnitude of sound and is expressed in decibels (dB or dBA), with the threshold of human hearing defined as 0 dBA. The SPL increases logarithmically, so that when the intensity of a sound is increased by a factor of 10, its SPL rises by 10 dB, while a 100-fold increase in the intensity of a sound increases the SPL by 20 dB. Equivalent noise level (L_{eq}) is the average of sound energy over time, so that one sound occurring for 2 minutes would have the same L_{eq} of a sound twice as loud occurring for 1 minute. The day night noise level (L_{dn}) is based on the L_{eq} , and is used to measure the average sound impacts for the purpose of guidance for compatible land use. It weights the impact of sound as it is perceived at night against the impact of the same sound heard during the day. This is done by adding 10 dBA to all noise levels measured between 10:00 pm and 7:00 am. For instance, the sound of a car on a rural highway may have an SPL of 50 dBA when *measured* from the front porch of a house. If the measurement were taken at night, a value of 60 dBA would be recorded and incorporated into the 24-hour L_{dn} .

L_{eq} and L_{dn} are useful measures when used to determine levels of constant or regular sounds (such as road traffic or noise from a ventilation system). However, neither represents the sound level as it is perceived during discrete events, such as fire sirens and other impulse noises. They are averages that express the equivalent SPL over a given period of time. Because the decibel scale is logarithmic, louder sounds (higher SPL) are weighted more heavily; however, loud infrequent noises (such as fire sirens) with short durations would not significantly increase L_{eq} or L_{dn} over the course of a day.

5.13.1 Existing Conditions

The Project Site is located on the east side of Manhattan, bounded to the north by East 99th Street, to the east by First Avenue, to the south by East 97th Street, and to the west by Second Avenue. The surrounding area includes residences (north of East 99th Street and west of Second Avenue), the Marx Brothers Playground and School of Cooperative Technical Education south of East 97th Street, and other medical and research institutions east of First Avenue. Existing

noise levels at the Project Site are relatively high due to noise from vehicular traffic on First and Second Avenues, which are major thoroughfares, and FDR Drive, which is a major highway.

5.13.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would not result in any increase in noise levels at any nearby noise receptors resulting from operation or construction of the Proposed Project. Nor would any noise-sensitive spaces be constructed that would be subject to existing noise at the Project Site.

Alternative 2: Proposed Alternative

Construction associated with the proposed utility improvements, floodwall, and interior fit-out of the relocated Chempack Room would have the potential to generate noise at nearby noise receptors resulting from operation of on-site construction equipment. Construction activity on the Project Site is subject to the NYC Noise Control Code's requirements for construction noise control, including noise emission limits for specific pieces of equipment, the requirement for barriers and enclosures for exterior construction where necessary, and logistics arrangements to reduce noise at surrounding receptors. The noise receptors with the greatest potential to experience elevated levels of noise would be the residential receptors immediately north and west of the Project Site as well as the playground and school receptors immediately south of the Project Site. Construction associated with interior fit-out of the proposed relocated Chempack Room would primarily involve hand tools and occur inside and would consequently not result in elevated noise levels at surrounding noise receptors. Construction of the proposed utility improvements and floodwall would include louder construction equipment, including pile driving, and would occur outside of existing buildings; however, the surrounding area already experiences high levels of noise resulting from vehicular traffic on FDR Drive and First and Second Avenues. Consequently, the level of construction noise expected to be generated by construction of the proposed utility improvements and floodwall would be expected to result in noise level increases that would be imperceptible or only barely perceptible at nearby noise receptor locations, except during pile driving activity. During pile driving activity noise level increments at nearby receptors would be greater; however, pile driving activity would occur only for at most approximately 30 days in any single location and for approximately 55 days over the proposed project's 50-month construction period, which is a relatively short period of time. Furthermore, the proposed utility improvement construction would occur over a relatively short period of time adjacent to any specific noise receptor. Consequently, construction of the Proposed Alternative would not result in any significant adverse noise impacts.

The Proposed Alternative would not result in any new or relocated stationary noise sources (e.g., mechanical equipment), nor would the Proposed Alternative result in any noise-sensitive spaces being constructed that would be subject to existing noise at the Project Site.

Consequently, operation of the Proposed Alternative would not result in any significant adverse noise impacts.

5.14 Transportation

5.14.1 Existing Conditions

The Metropolitan Hospital Campus is bounded by Second Avenue to the west, East 99th Street to the north, First Avenue to the east, and East 97th Street to the south. The roadway network surrounding the Project Site is characterized by high traffic volumes, comparable to other commercial or mixed-use areas in Manhattan. Several bus routes serve the Project Site and surrounding blocks (Appendix B Figure 5.13-1). The nearest subway station (the No. 6 train) is located along Lexington Avenue, approximately ½ mile away from the Project Site.

5.14.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action Alternative

Under the No Action Alternative, no alterations would be made to the Metropolitan Hospital Campus or its facilities. Metropolitan Hospital would remain in its current condition with hospital facilities operating under temporary repair measures. Therefore, there would be no potential impacts to transportation under this alternative.

Alternative 2: Proposed Alternative

The Proposed Alternative would not increase the capacity of the hospital and as a result would not generate new trip-making after the construction period.

The anticipated duration of the construction activities for the Proposed Alternative is approximately 50 months. In order to maintain continuous functionality of the hospital during construction, construction activities would be implemented in phases. During construction, a temporary increase in vehicle trips is anticipated as a result of the ingress and egress of construction equipment, the delivery of construction materials, and the construction workers accessing the Project Site. Similarly, as a result of construction worker activity, transit and pedestrian trips may also increase during construction. Transportation operations are expected to return to near existing conditions after the construction period and would not result in any potential transportation impacts.

Throughout the construction period, traffic lanes and sidewalks may be closed or protected for varying periods of time. Some street lanes and sidewalks may be continuously closed, and some lanes and sidewalks may be closed only intermittently to allow for certain construction activities. Approval and implementation of all sidewalk and lane closures during construction would be coordinated with the New York City Department of Transportation's Office of Construction

Mitigation and Coordination. Access to the hospital and hospital services would be maintained throughout the construction period.

5.15 Public Health and Safety

5.15.1 Existing Conditions

The Project Site is within the boundaries of the New York City Police Department's 23rd precinct and the FDNY 43rd Company. As discussed in Section 3.0, Metropolitan Hospital sees approximately 15,000 inpatient admissions, 69,000 emergency room visits, and 338,000 outpatient visits annually. The hospital is also a Level 2 Trauma Center and a designated 911 receiving Hospital by the New York City Fire Department Bureau of Emergency Medical Services.

5.15.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no alterations would be made to the Metropolitan Hospital Campus or facilities. The Metropolitan Hospital Campus and facilities would remain at risk from future storm or flooding events with potential disruption of critical healthcare services. The surrounding community would experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care, in the event a future storm or flooding event causes partial or full cessation of operations at Metropolitan Hospital.

Alternative 2: Proposed Alternative

The Proposed Alternative protects public health and safety by minimizing the risk of loss of function as result of a future storm or flooding event. It would enhance the facility's ability to provide continuous operation and reduce potential strain on the city's other emergency operations and facilities. During construction of the Proposed Alternative, no closures to the hospital's facilities would be required and access to hospital facilities and services would be maintained.

5.16 Hazardous Materials

5.16.1 Existing Conditions

A limited preliminary environmental review consisting of an evaluation of regulatory database listings and historic fire insurance maps was completed for the Project Site and nearby properties to identify the presence or potential presence of any recognized environmental conditions (RECs) - meaning the presence or likely presence of any hazardous substances or petroleum

products in, on, or at a property. The evaluation identified the Project Site's inclusion in the NYSDEC Voluntary Cleanup Program (VCP Site Code: V00538) - Consolidated Edison East 99th Street Works (associated with contamination from former on-site manufactured gas plant operations); several aboveground and underground petroleum tanks registered with the NYSDEC Petroleum Bulk Storage program (Facility ID 2-212121 and 2-609083); active-status NYSDEC petroleum spills (including Spill Nos. 9803363, 9611273, 1108428, 1105948 and 1403301); and several closed-status spills with documented petroleum-contaminated soil/groundwater; and the Project Site's listing as a Large Quantity Generator of hazardous wastes (RCRA ID NYD061204319 and NYR000130351) for various waste streams. Historical Sanborn maps identified past on-site uses included a Consolidated Gas Works facility and numerous industrial/automotive facilities including garages/repair shops/manufacturing activities and filling stations with gasoline tanks. Historical filling of the Project Site may also have affected subsurface conditions due to the unknown nature of the fill materials.

5.16.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action alternative, no alterations would be made to the campus or its facilities. Soil/groundwater remediation associated with the active-status spills and VCP would continue to be addressed in coordination with NYSDEC; and bulk chemical, petroleum, and hazardous waste generation/storage/disposal would continue to be conducted in accordance with local, state, and federal requirements. No negative environmental impacts related to hazardous materials are anticipated under this alternative.

Alternative 2: Proposed Alternative

The greatest potential for exposure to any contaminated materials would occur during construction, specifically the associated subsurface disturbance. The project would be subject to NYSDEC requirements under the VCP. The potential for adverse impacts would be minimized by adhering to the following:

- If required by NYSDEC, supplemental subsurface investigation, targeting the areas where subsurface disturbance would occur, would be performed in accordance with an Investigation Work Plan and Health and Safety Plan approved by NYSDEC. The Investigation Work Plan would include collection and laboratory analysis of subsurface samples followed by preparation of a written report with findings.
- Following implementation of any required supplemental investigation, a Remedial Action Plan (RAP) and Construction-Related Health and Safety Plan (CHASP) would be prepared (based on the results of all available data) for implementation during the subsurface disturbance associated with the Proposed Project. The RAP and CHASP would address requirements for items such as: handling MGP wastes, petroleum tank removal, dust control, and contingency measures, such as addressing unforeseen

petroleum tanks be encountered. The RAP would also include any necessary measures required to be incorporated into elements of the new construction, e.g., vapor barriers. The RAP and CHASP would be subject to NYSDEC approval.

- If dewatering is necessary for the proposed construction, water would be discharged to combined sewers in accordance with DEP requirements or to storm sewers discharging to the Harlem River in accordance with NYSDEC requirements.
- All petroleum tanks no longer required and any encountered during construction would be properly removed in accordance with the applicable regulations, including NYC Fire Department and NYSDEC requirements (including tank registration and spill reporting/remediation).
- As with the No Action Alternative, soil/groundwater remediation associated with the active-status spills and VCP program would be addressed in conjunction with NYSDEC oversight; and bulk chemical, petroleum, and hazardous waste generation/storage/disposal would continue to be conducted in accordance with local, state, and federal requirements.
- Any Asbestos Containing Material, Lead Based Paint, and/or Polychlorinated Biphenyl-containing building components affected by the proposed project would be properly managed (including abatement activities where necessary) in accordance with all applicable federal, state and local regulations.

With these measures, the proposed development would not result in any significant adverse impacts related to hazardous materials.

5.17 Climate Change

Executive Order 13514 sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy and economic performance. Executive Order 13653 sets standards to prepare the United States for the impacts on climate change. FEMA is required, under these Executive Orders, to implement climate change adaptability and green infrastructure in FEMA funded projects when feasible.

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5.17.1 Existing Conditions

Climate change impacts relevant to the project are summarized below. Broader discussion of climate change impacts can be found in the following documents and are incorporated here by reference, as recommended by CEQ:

- Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC 2013)
- Third National Climate Assessment (United States Global Change Research Program 2014)
- New York City Panel on Climate Change 2015 Report, (NPCC3 2015)

While climate change impacts many aspects of climate, resulting in myriad secondary effects, the only effect directly relevant to the project’s planning efforts for which reasonably foreseeable consequences can currently be projected is sea level rise and its interaction with coastal storms. According to NPCC3, sea levels in New York City are projected to increase by up to 30” by the 2050s (90th percentile estimate, with a middle range, 25-75th percentile, of 11-21”), 58” by the 2080s (middle range 18-39”), and 75” by 2100 (middle range 22-50”). A “100-year” flood, which is a flood with a 1.0 percent probability of occurring annually under current conditions, would have up to a 12.7 percent probability of occurrence annually by the 2080s.

5.17.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

In the No Action condition, energy use and the associated GHG emissions would not change.

The No Action alternative does not provide for flood damage risk reduction and other hazard mitigation measures; therefore, the Metropolitan Hospital would remain at risk from future storm or flooding events with repetitive financial losses and disruption of critical healthcare services. The surrounding community would experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care, in the event a future storm or flooding event causes partial or full cessation of operations at Metropolitan Hospital.

Alternative 2: Proposed Alternative

With the Proposed Alternative, energy use and the associated GHG emissions would not change, since the No Action would not affect any of the energy used in the existing condition, described in detail above. The Draft CEQ (CEQ 2014) guidance suggests a threshold of 25,000 metric tons annual for requiring quantified analysis; the Proposed Alternative is well below the 25,000 metric ton threshold as discussed in Air Quality, thus not requiring analysis.

Design guide for critical facilities, FEMA 543 (FEMA 2015), was followed during the designing phase of the project. Though it does not explicitly address climate change, it does recommend designing to a “500-year” flood for critical facilities, including health care facilities. However, as

described above (see Section 4.2), the Proposed Alternative is designed to incorporate a comprehensive mitigation system that provides resiliency, designed to provide flood damage risk reduction and other hazard mitigation measures up to an elevation of 19 feet NAVD88, which is 3 feet above the current “500-year” flood level. With sea level rise in mind, this design elevation would be at the future “500-year” flood level after 2050, possibly later (depending on how much sea level actually rises). Given the range of future projections, design to this level may be sufficient through the end of the century, but should sea levels rise at the higher rates currently projected by 2050, additional changes to the perimeter boundary protection system could be considered at that time.

The Proposed Project is not anticipated to significantly exacerbate impacts of climate change on the project area. The potential for induced flooding was evaluated, and as described in more detail in the floodplain section, because the floodplain on and in the vicinity of the Project Site is affected by coastal flooding, the proposed modifications to the existing hospital facilities will not adversely affect floodplains on or in the vicinity of the Project Site and will not contribute to additional flooding of areas adjacent to the Project Site.

5.18 Cumulative Impacts

In accordance with NEPA, this EA considers the overall cumulative impact of the Proposed Alternative and other actions that are related in terms of time or proximity. According to the CEQ regulations, cumulative impacts represent the “impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what federal agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

Cumulative impacts are those impacts “... which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions...” (40 CFR 1508.7) The statutory basis for considering cumulative impacts of federal actions is the NEPA of 1969, 42 U.S.C. 4321 et seq. In the context of evaluating the scope of a proposed action, direct, indirect and cumulative impacts must be considered.

In addition to NEPA, other statutes require federal agencies to consider cumulative impacts. These include the Clean Water Act section 404 (b) (1) guidelines; the regulations implementing the conformity provisions of the Clean Air Act; the regulations implementing Section 106 of the NHPA; and the regulations implementing section 7 of the ESA.

Recovery efforts are in progress throughout the area impacted by Hurricane Sandy including demolition, reconstruction, and new construction from the private sector as well as state and federal sectors. Numerous projects including roads, buildings, recreational facilities, and public

utilities to restore pre-disaster conditions are under way throughout New York City and near the Metropolitan Hospital site. This includes the proposed restoration of Draper Hall and renovation of the building into a senior housing facility, discussed above in Section 5.1, “Land Use and Planning.” The Proposed Project is not anticipated to impact these projects and there are no other FEMA funded projects within the area that would be affected by the project. In reviewing the impacts of the proposed action, cumulative effects are mostly constrained by existing New York City and state regulatory frameworks including permitting and required reviews. Additional impacts not addressed through these existing local and state means are predominantly temporary, incremental, and not a significant impact to the human or natural environment. The Proposed Project once fully implemented would repair, rehabilitate, and increase the resiliency of the hospital to minimize damage to the critical facility’s infrastructure due to future storm events and to ensure the hospital remains fully operational during future storm or flooding events.

6.0 PERMITS AND PROJECT CONDITIONS

The Subgrantee is responsible for obtaining all applicable Federal, State, and local permits and other authorizations for project implementation prior to construction and adherence to all permit conditions. Any substantive change to the approved scope of work will require re-evaluations by FEMA for compliance with NEPA and other laws and EOs. The Subgrantee must also adhere to the following conditions during project implementations and consider the below conservation recommendations. Failure to comply with grant conditions may jeopardize Federal funds:

1. The Best Available Data (BAD) must be used to determine the 500-year floodplain elevation for final engineering design in accordance with 44 CFR Part 9. At the time of this publication, the Preliminary Flood Insurance Rate Map Community-Panel Number 3604970087G dated January 30, 2015 is the BAD.
2. Any proposed construction in the floodplain must be coordinated with the local floodplain administrator and must comply with Federal, state and local floodplain laws and regulations.
3. Excavated soil and waste materials shall be managed and disposed of in accordance with applicable Federal, state, and local regulations. Solid waste haulers will be required to have a NYSDEC waste hauler permit and all waste will need to be disposed of or processed at a permitted facility.
4. Threatened or endangered species are likely to not be found in the area of the proposed project site. As a result, pursuant to section 7(a)(4) of the Endangered Species Act (ESA) and implementing regulations at 50 CFR Part402.02 and 50CFR Part402.10, FEMA has determined that the proposed action would not be likely to jeopardize endangered or threatened species, or destroy or adversely modify critical habitat. If any threatened or endangered species are to be found in project area, work will cease and consultation with USFW and other appropriate agencies will be conducted.

5. In the event that unmarked graves, burials, human remains, or archaeological deposits are uncovered, the Subgrantee and its contractors will immediately halt construction activities in the vicinity of the discovery, secure the site, and take reasonable measures to avoid or minimize harm to the finds. The Subgrantee will inform the Grantee, NYSHPO and FEMA immediately. The Subgrantee must secure all archaeological findings and shall restrict access to the area. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior’s Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the Subgrantee is notified by the Grantee to proceed.
6. A Construction Protection Plan may be required for this site to identify the coordination needed to limit potential impacts to the environment, protected resources and communities within and abutting the Project area.
7. The Subgrantee and its contractor are required to use best management practices for construction not limited to sedimentation and erosion control measures, dust control, noise abatement and restriction of work areas to limit vegetation removal and habitat impacts.
8. Occupational Safety and Health Administration (OSHA) standards shall be followed during construction to avoid adverse impacts to worker health and safety.
9. The Subgrantee shall submit copies of all obtained permits to the Grantee/FEMA at or prior to final closeout of the public assistance grant.
10. Subgrantee shall not initiate construction activities until fifteen (15) days after the date that the FONSI has been signed as “APPROVED.”

7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

This Draft EA will be made available for agency and public review and comment for a period of 30 days. The public information process will include a public notice with information about the proposed project in the *New York Post*. A hard copy of the Draft EA will be available for review at these locations:

New York Public Library
112 E 96th Street
New York, NY 10128

Metropolitan Hospital Center
Room 122c
1901 First Avenue
New York, NY 10029

Contact: Noel Alicea, Associate Director, Public Affairs, 212-423-8162
Mariana Bayas, Coordinating Manager, 212-423-8151

New York City Health and Hospitals Corporation
Room 519
125 Worth Street
New York, NY 10013

Contact: Patricia Lockhart, Secretary to the Corporation & Records Access Officer
212-788-3368

An electronic copy of the EA may be requested by emailing FEMA at FEMA-4085-Comment@fema.dhs.gov. The EA will also be made available for download at <http://www.nyc.gov/html/hhc/html/about/About-PublicNotice-MetropolitanEA.shtml>.

This EA reflects the evaluation and assessment of the federal government, the decision-maker for the federal action; however, FEMA will take into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. The public is invited to submit written comments by mail to: FEMA NY Sandy Recovery Office, Attn: EHP-Metropolitan Hospital Hazard Mitigation EA Comments, 118-35 Queens Blvd., Forest Hills, NY 11375, or FEMA-4085-Comment@fema.dhs.gov. If no substantive comments are received from the public and/or agency reviewers the EA will be adopted as final and a FONSI will be issued by FEMA. If substantive comments are received, FEMA will evaluate and address comments as part of the FONSI record documentation or in a Final Environmental Assessment.

Notices of Availability of the EA will be sent to the following parties:

Metropolitan Hospital Community Advisory Board
Matthew S. Washington, Manhattan Community Board 11
La Shawn Henry, Land Use Committee, Manhattan Community Board 11
Gale Brewer, Manhattan Borough President
Melissa Mark-Viverito, Speaker, New York City Council, District 8
Mark Treyger, New York City Council, District 47 & Chairperson, Committee on Recovery and Resiliency
José M. Serrano, NYS Senator
Robert Rodriguez, NYS Assembly Member
Charles Rangel, US Congress
Charles E. Schumer, US Senate
Kirsten Gillibrand, US Senate
U.S. Environmental Protection Agency
New York State Department of Health
New York State Department of Environmental Conservation
New York State Department of State
New York State Historic Preservation Office
New York City Mayor’s Office of Environmental Coordination
New York City Department of Buildings
New York City Department of City Planning
New York City Department of Health and Mental Hygiene
New York City Landmarks Preservation Commission
New York City Department of Parks and Recreation
New York City Department of Environmental Protection
New York City Department of Transportation
City Record
Environmental Notice Bulletin

8.0 CONCLUSION

The Subgrantee identified that Alternative 2 Comprehensive Mitigation System is the best-suited alternative to repair, rehabilitate, and increase the resiliency of Metropolitan Hospital and to minimize damage to the critical facility’s infrastructure and ensure the hospital remains fully operational during and after future storm or flooding events. The perimeter boundary protection system and other mitigation measures would provide a defense against flooding, thus minimizing risk of future damage to the hospital’s critical assets and minimizing future disruption of function and service to the community. The continuous functionality of the hospital is critical to minimize deleterious public health, economic, and environmental consequences that could arise as a result

of a disruption in the hospital's service. This EA concludes that the construction and operation of the perimeter boundary system and other mitigation measures would have no significant adverse impact on the human environment. In addition, certain design, regulatory compliance, and/or best management practices would be adhered to.

9.0 LIST OF PREPARERS

FEMA Region II, SRO NY
118-35 Queens Boulevard
Forest Hills, NY 11375

Health and Hospitals Corporation
125 Worth Street
New York, NY 10013

AKRF, Inc.
440 Park Avenue South
New York, NY 10016

ARCADIS U.S., Inc.
27-01 Queens Plaza North, Suite 800
Long Island City, NY 11101

Base Tactical
121 W Long Lake Road, Suite 330
Bloomfield Hills, MI 48304

10.0 SUMMARY IMPACT TABLE

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Comprehensive Mitigation System (Proposed Alternative)
5.1	Geology, Topography, and Soils	No effect	Construction and operation would not result in significant alterations to topography or geology (including bedrock) within the Project Site. Installation of the perimeter boundary protection system would require excavation of existing soils but it would be minimal and would not result in adverse effects to soil resource. Best management practices (BMPs) would be used to prevent erosion and soil loss and these resources within the Project Site would not be affected by the Proposed Alternative.
5.2	Air Quality	No effect	The potential operational and construction emissions are expected to be below the applicable <i>de minimis</i> levels, no general conformity analysis would be required, and this alternative would not result in adverse effects to air quality.
5.3	Wetlands and Water Quality	During future flood events it would be possible for localized water quality effects from contaminated floodwaters.	The Proposed Alternative would not adversely affect wetlands or water quality. The proposed perimeter boundary protection system and stormwater management practices would minimize the potential for future flood events to cause localized water quality effects from contaminated floodwaters.
5.4	Floodplain	MHC would continue to be located within the 100-year floodplain, 500-year floodplain, and would continue to be vulnerable to	There would not be a practicable alternative that is located outside of the 100-year floodplain. Construction and operation of the Proposed Alternative would not adversely affect

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Comprehensive Mitigation System (Proposed Alternative)
		potential flooding from future storm events.	floodplains on or in the vicinity of the project site and would not increase the storm tide risk to adjacent properties.
5.5	Coastal Resources	No effect	The Proposed Alternative is consistent with New York State’s Coastal Policies and will not hinder the achievement of those policies.
5.6	Vegetation	Existing vegetation would continue to be subject to future inundation of contaminated flood waters.	Construction activities would result in the direct loss of mowed lawns areas with trees. The proposed alternative includes the removal of trees. Potential adverse effects would be minimized by performing all work in compliance with Local Law 3 of 2010 and the NYCDPR’s Tree Protection Protocol. Operation and construction of the Proposed Alternative would not result in adverse effects on vegetation within the New York Metropolitan region.
5.7	Wildlife and Fish	No effect	Construction and operation of the Proposed Alternative would not adversely affect wildlife resources at the individual or population level nor would it result in any adverse effects to threatened, endangered, or special concern species.
5.8	Cultural Resources		
5.8.1	Historic (Standing) Structures	No effect	Construction protection measures would be developed and implemented to avoid inadvertent construction related impacts on historic buildings. These construction protection measures would be included in a Construction Protection Plan (CPP) to be developed in consultation with

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Comprehensive Mitigation System (Proposed Alternative)
			SHPO and implemented in coordination with a licensed professional engineer. With the development and implementation of the CPP, the Proposed Alternative would not be expected to adversely affect historic standing structures.
5.8.2	Archaeological Resources	No effect	The proposed floodwall construction would have minimal impact to potential archaeologically sensitive soils. The likelihood of encountering intact prehistoric and/or historic archaeological resources is considered low.
5.9	Aesthetic Resources	No effect	No effect
5.10	Socioeconomic Resources and Environmental Justice	In the event a future storm or flood event causes partial or full cessation of operations at the MHC campus and facilities, the surrounding community, including minority and low-income populations, could experience interruptions of critical healthcare service and threats to human health due to the loss of healthcare functions, particularly emergency care.	The Proposed Alternative would not have a disproportionate or adverse effect on minority or low income populations. The Proposed Alternative would benefit the community, including minority or low-income populations, by reducing the risk of future flood damage to MHC campus and facilities and preventing future service interruptions in healthcare and emergency care.
5.11	Land Use and Planning	No effect	The Proposed Alternative would not result in any adverse effects to land use and planning.
5.12	Noise	No effect	Construction and operation of the Proposed Alternative would not result in any significant adverse noise impacts.

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Comprehensive Mitigation System (Proposed Alternative)
5.13	Transportation	No effect	During construction, a temporary increase in vehicle, transit, and pedestrian trips is anticipated. Transportation operations are expected to return to near existing conditions after the construction period and would not result in any potential adverse effects on transportation. The Proposed Alternative would not increase the capacity of the hospital and would not generate new trip-making after the construction period. Approval and implementation of all sidewalk and lane closures during construction would be coordinated with the New York City Department of Transportation’s Office of Construction Mitigation and Coordination.
5.14	Public Health and Safety	The MHC campus and facilities would remain at risk from future storm or flooding events with potential disruption of critical healthcare services. The surrounding community could experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care, in the event a future storm or flooding event causes partial or full cessation of operations at MHC.	The Proposed Alternative would protect public health and safety by minimizing the risk of loss of function as result of a future storm or flooding event. It would enhance the facility’s ability to provide continuous operation and reduce potential strain on the city’s other emergency operations and facilities. During construction of the Proposed Alternative, no closures to the hospital’s facilities would be required and access to hospital facilities and services would be maintained.
5.15	Hazardous Materials	No effect	Any potential for adverse effects would be minimized by adhering to NYC Department of Environmental

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Comprehensive Mitigation System (Proposed Alternative)
			Protection (NYCDEP) best management practices (BMP). With these BMPs, the Proposed Alternative would not result in any significant adverse impacts related to hazardous materials.
5.16	Climate Change	No effect	The Proposed Alternative would have no effect to energy use and associated GHG emissions. The Proposed Alternative is not anticipated to significantly exacerbate impacts of climate change on the project area.

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