4.7 Hazardous Materials

Regulatory Setting

HUD policy requires that all property proposed for use in HUD programs be free of hazardous materials, contamination, and toxic chemicals where presence of such materials could conflict with the intended utilization of the property [See 24 CFR 50.3(i)]. HUD policy further requires that particular attention be given to sites in the general proximity of industrial or other sites that contain hazardous materials and that analysis of risk posed by such materials be undertaken by qualified professionals.

HUD policy (24 CFR Part 51 Subpart C) also requires that a determination be made as to whether buildings or individuals would be subject to increased risk of thermal radiation and blast-overpressure as a result of project implementation. In order to make this determination, a calculation of the distance to aboveground storage tanks (ASTs) must be completed. The Acceptable Separation Distance (ASD) is the area beyond which the explosive or combustive hazard would not cause thermal radiation or blast-overpressure damage to buildings or individuals. HUD requires that projects that result in new outdoor recreational uses undergo this analysis because of the vulnerability of the increased number of park users to blast-overpressure and thermal radiation. All three of the Project's Build Alternatives include enhancements to outdoor park and open spaces. Therefore the Project is subject to these regulations.

4.7.1 Methodology

The methodology for the hazardous waste screening was comprised of the following four steps: (1) site reconnaissance, (2) review of historical records, (3) review of state and federal records, and (4) inquiries of state and federal agencies. This comprehensive approach resulted in identification of available information regarding the potential presence of hazardous materials within 100 feet of the limit of disturbance for each of the three proposed Build Alternatives. This Hazardous Waste Analysis Area (**Figure 4.63**), which extended 100 feet beyond the proposed limit of disturbance, accounts for mapping discrepancies among data sources and for potential contamination migration. Within the Analysis Area, properties were classified as Recognized Environmental Conditions (RECs) if there was documented and unresolved soil and/or groundwater contamination.

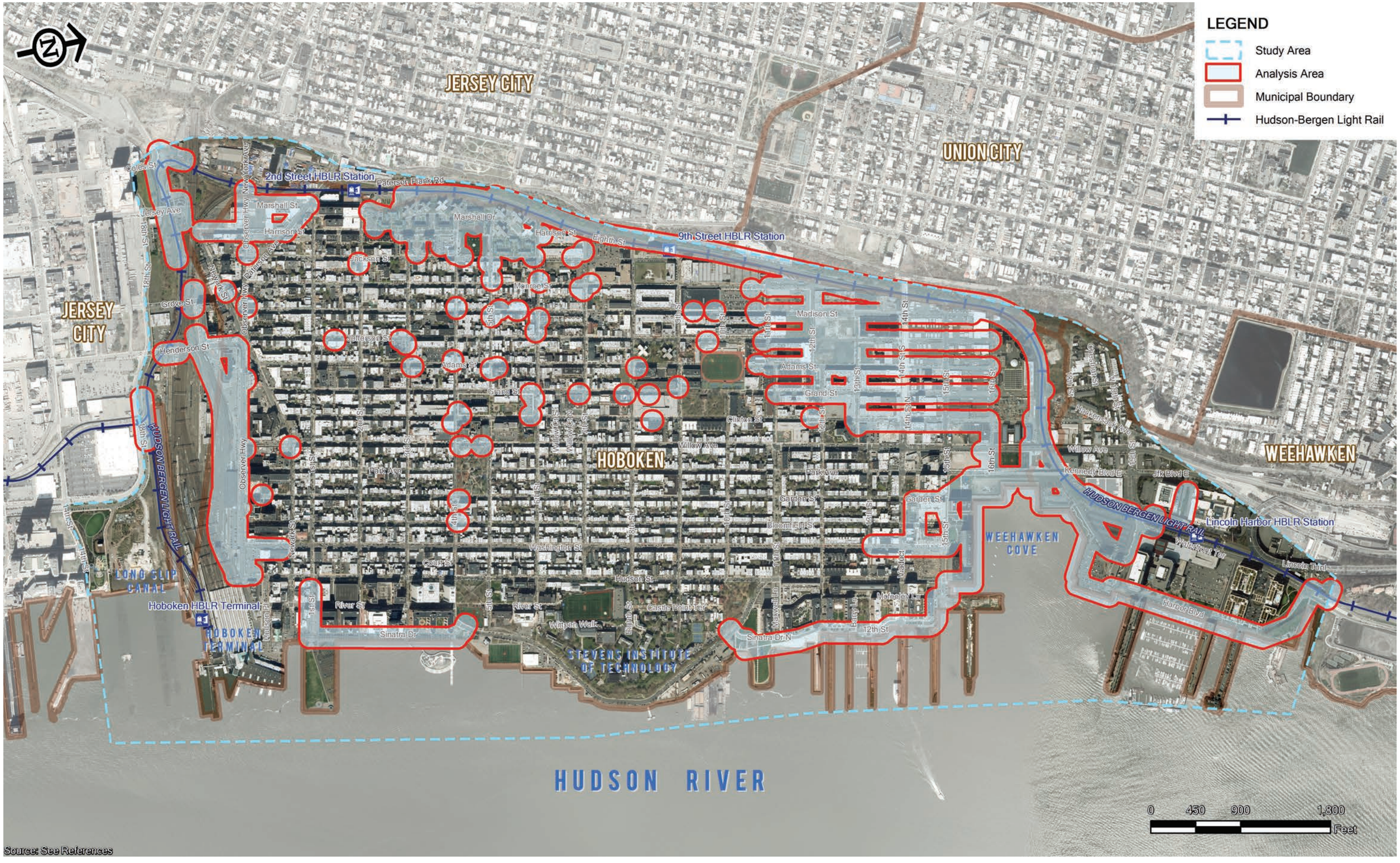
A field reconnaissance of the Hazardous Waste Analysis Area was conducted on September 9, 2015 and June 26, 2016 to assess specific environmental criteria as they pertain to the Project. Criteria included inspecting businesses within the Analysis Area from the street or curb to determine the nature of operations and potential presence of contaminated substances. Additionally, when possible, properties within the Analysis Area were inspected for ASTs, storage containers or drums of hazardous materials, stained pavement/soil, stressed vegetation, electrical transformers or hydraulic equipment that possibly contain polychlorinated biphenyls (PCBs), and surface indications of underground storage tanks (USTs).

To determine if any historic land uses in the Analysis Area were a contamination concern, Sanborn Fire Insurance Maps from 1885, 1887, 1891, 1900, 1906, 1910, 1936, 1937, 1950, 1951, 1979, 1988, and 2006 were reviewed. Information obtained from a review of the Sanborn Fire Insurance Maps is provided in the Hazardous Waste TES (Dewberry 2016). Additionally, historical aerial photographs from 1940, 1943, 1951, 1954, 1961, 1966, 1974, 1981, 1985, 1991, 1994-95, 2006, 2009, 2011, and 2013 were reviewed. The Environmental Data Resources, Inc. (EDR®) Aerial Photo Decade Package obtained from EDR®, of Shelton, Connecticut, was reviewed.

Information from federal and state environmental records identifying sites with recorded environmental activities was obtained from EDR®. The EDR® report dated July 9, 2015 was reviewed and the location of each site was verified within the Analysis Area during the field reconnaissance. Information regarding each site was gathered and a summary of the findings was compiled. Searches of the NJDEP databases were also conducted through the NJDEP website (Data Miner). NJDEP Geographic Information System (GIS) data layers for Known Contaminated Sites (KCS), Classification Exception Areas (CEAs), and Deed Notices within the Analysis Area were evaluated. EPA database searches were accessed through the EPA website. All record searches were conducted to identify sites with recorded environmental activities within the Hazardous Waste Analysis Area. A complete list of databases searched can be found in the Hazardous Waste TES (Dewberry 2016).

File reviews were conducted at NJDEP's offices in Trenton, New Jersey to obtain additional information on the nature of soil and groundwater contamination in the project Analysis Area. Any potentially contaminated sites identified through database review, historic mapping and imagery, or NJDEP's Data Miner site that could not be eliminated as RECs based on the data reviewed were submitted for file review at NJDEP under an Open Public Records Act request. The file reviews were conducted for 175 potentially contaminated sites on multiple days between August, 2015 and June, 2016. Federal and state regulatory agencies were contacted concerning environmental incidents at businesses or other locations within the Analysis Area. The public affairs specialist from the EPA Region 2 Hudson River Field Office was contacted to obtain information on contamination within the Hudson River.

The methods used for determining ASD were in accordance with HUD guidance (Acceptable Separation Distance Guidebook, October 2011). The following three-step process was used. First, facilities that store, handle, or process explosive or flammable materials within stationary ASTs were identified. Second, the ASD between the AST and the Project was calculated. Third, a determination was made whether the Project is within the ASD of that AST.



Source: See References

Figure 4.63 Hazardous Waste Analysis Area

4.7.2 Affected Environment

4.7.2.1 Potential Hazardous Waste Sites

A review of the available Sanborn Maps indicates that the southern portion of the Study Area has consisted of a large railroad terminal with transportation operations from the earliest map in 1885 until the present. From 1887 until at least 1988, the stretch of Hudson River waterfront consisted of ship yards and piers, with ferries and various other maritime operations that supported major industries. By 2006, most of the maritime operations were no longer present.

From 1887 to 1988, the first few blocks inland from the waterfront consisted of a variety of commercial and industrial operations that supported daily living and development (banking, hotel, lumber, coal, iron works, cattle, food, etc.). By 2006, most of the industrial operations were no longer present and those areas had been converted into residential or office buildings. North of the railroad and west of the near-waterfront, the inland areas were sparsely developed with primarily residential properties prior to 1937. After this time, some industrial/manufacturing properties were in operation, likely until the mid-1960s to early-1970s. However, most of the area has since become residential and commercial, with an occasional industrial/manufacturing property.

Based on a review of the EDR® Report, NJDEP's GIS data layers, NJDEP's Data Miner online database, and the EPA website, there are numerous KCSs located within the Analysis Area including parcels with soil and groundwater contamination. In addition, almost the entire Study Area is underlain by historic fill material, as shown on New Jersey Geological and Water Survey mapping. Based on NJDEP's Historic Fill Material Technical Guidance, it can be assumed that this material contains contaminants typical of historic fill including elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals.

One site within the Analysis Area is listed on EPA's National Priority List. The National Priority List is a subset of the Comprehensive Environmental Response's Comprehensive Liability and Information System and identifies sites for priority cleanup under the Superfund program. This site is known as Hudson River PCB Superfund site. A 200-mile portion of the Hudson River was added to the EPA National Priority List in 1983, requiring Superfund cleanup. According to the EPA, General Electric Co. (GE) reportedly discharged 1,330,000 pounds of PCBs into this stretch of river. It is not possible to tell how far downstream the contamination has traveled.

A review of the NJDEP Groundwater Contamination Areas list reveals that there is one NJDEP Groundwater Contamination Area within the Analysis Area. NJDEP Groundwater Contamination Areas are sites where groundwater contamination has been identified and, where appropriate, the NJDEP has established a Groundwater Classification Exception Area (CEA). CEAs are institutional controls in geographically defined areas within which the New Jersey Ground Water Quality Standards (GWQS) for specific contaminants have been exceeded. NJDEP guidance on CEAs further defines a CEA as an area within which one or more constituent standards and designated uses are suspended in accordance with N.J.A.C. 7:9C-1.6. When a CEA is designated, the constituent standards and designated aquifer uses are suspended for the term of the designation.

A total of 50 RECs were identified within the Analysis Area, see **Figure 4.64**. **Table 4.36** provides summary descriptions of the location and potential environmental contaminants at each REC within the Analysis Area. Most of these REC locations are reflective of past industrial or commercial activities that took place at these locations. At many of these RECs, some level of remedial action has already been undertaken or is ongoing and a number of these RECs have been developed for residential occupancy. For a detailed description of the RECs, please refer to the Hazardous Waste TES (Dewberry 2016).

4.7.2.2 Aboveground Storage Tanks

ASTs were initially inventoried using aerial photographs and then field verified. Aerial photographs were studied to identify any ASTs within one mile of proposed improvements for all three Build Alternatives. On September 13, 2016, a site visit was conducted to confirm the presence and size of the tanks identified on the aerial photographs. Tank sizes were estimated by measuring dimensions off of aerial photographs and confirming during the site reconnaissance. Due to limited site access, some tanks could only be viewed from a distance. Therefore, dimensions and capacities are approximate.

The ASDs of the ASTs were calculated using HUD's online Acceptable Separation Distance Electronic Assessment Tool (https://www.hudexchange.info/environmental-review/asd-calculator/). This tool was developed by the Environmental Planning Division to calculate the ASD from stationary hazards such as ASTs. Information including whether the tank is under pressure, whether the tank is diked, and the volume in gallons of the tank was entered into the online tool for each tank. ASDs for Blast Over Pressure, Thermal Radiation for People, and Thermal Radiation for Buildings were considered. Ultimately, the ASD for Thermal Radiation for People was used, as it is the most conservative value. None of the tanks were noted to be under pressure. The calculated ASD for Thermal Radiation for People was noted for each tank and plotted as a circle around each tank.

Using GIS, the ASD for Thermal Radiation for People for each tank was viewed relative to the locations of proposed recreational improvements for the three Build Alternatives. Tanks with ASDs that do not intersect with locations of proposed improvements were excluded from further analysis. A total of ten ASTs were identified within one mile of the three Build Alternatives. Only three of the 10 tanks were located within the ASD of Resist recreational improvements and none of the tanks were located within the ASD of DSD recreational improvements (see **Table 4.37**). Two of the three tanks, AST 5 and AST 6, located

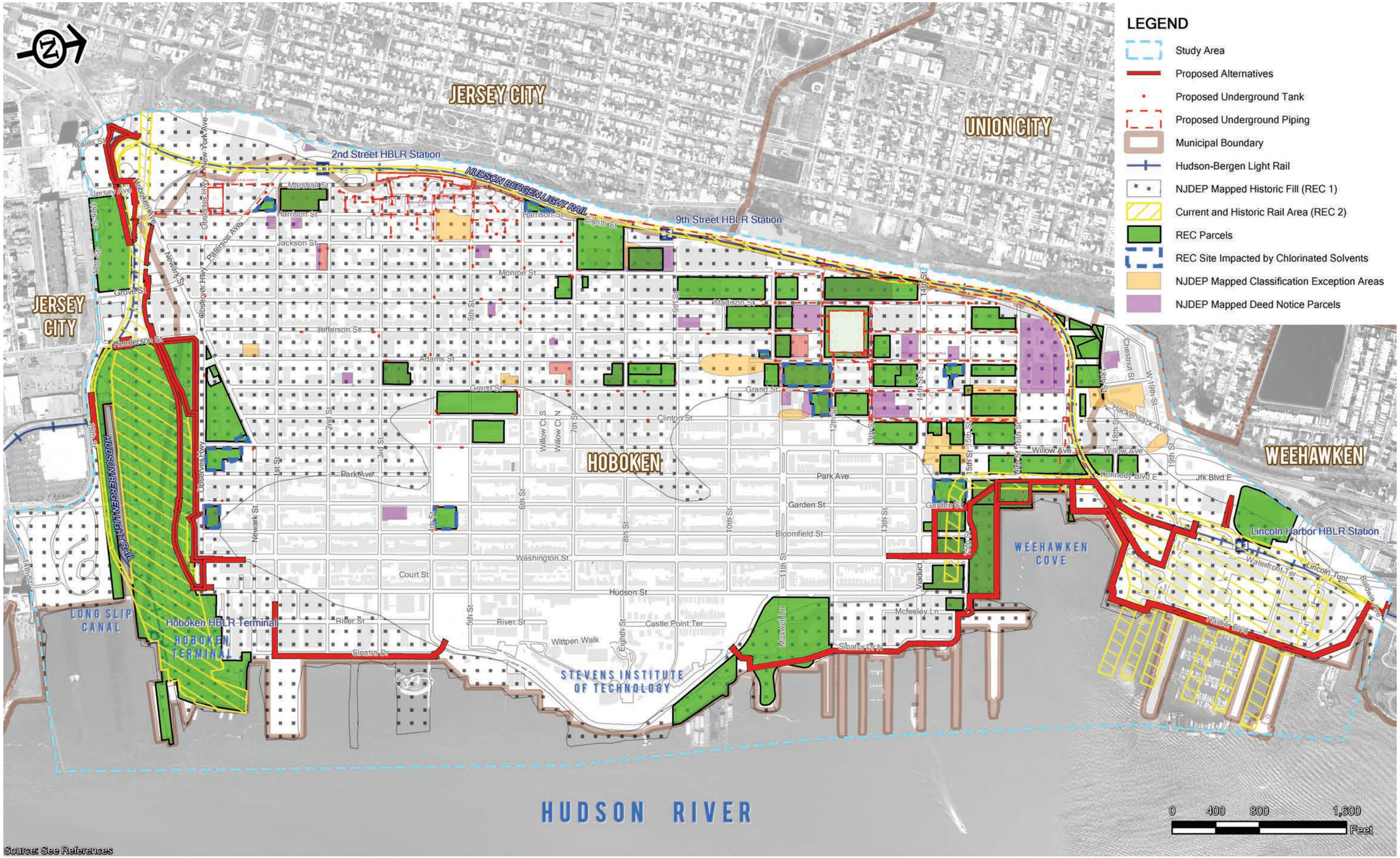


Figure 4.64 Recognized Environmental Conditions

Table 4.36 Summary of Potential Environmental Conditions

REC ID	NAME	MUNICIPALITY	STREET	NATURE OF POTENTIAL CONTAMINANTS
REC-1	Historic Fill	Hoboken, Jersey City, Weehawken	Study Area Wide	Semi-volatile organic compounds, metals
REC-2	Current/Historic Rail Use	Hoboken, Jersey City, Weehawken	Various	Diesel range organics, creosote, solvents, petroleum
REC-3	Hudson River Sediments	Hoboken, Jersey City, Weehawken	NA	PCB, coal tar creosote
REC-4A	NJDOT/NJ TRANSIT Rail Yard	Hoboken, Jersey City	Various	Volatile organic compounds, PCB, metals, petroleum products, aromatic hydrocarbons
REC-4B				
REC-4C				
REC-5	Observer Highway Development	Hoboken	50 Bloomfield Street and 51 Garden Street	Petroleum products
REC-6	Former Maxwell House Coffee	Hoboken	1101-1125 Hudson Street	Chlorinated organic solvents
REC-7	Union Dry Dock & Repair Company	Hoboken	901 Sinatra Drive	Petroleum products, metals, volatile organic compounds, chlorinated solvents
REC-8	Dell Aquilla Site (aka Hoboken Cove)	Hoboken	1500 Hudson Street	Petroleum products
REC-9	SGS US Testing	Hoboken	1409-1427 Park Avenue	Petroleum products, metals, pesticides, chlorinated solvents
REC-10	Hoboken/ Weehawken Cove (aka Old Todd Shipyard)	Hoboken	1501 Park Avenue	PCB, metal
REC-11	R. Neumann & Co.	Hoboken	300 Observer Highway	Petroleum products
REC-12	Millenium Towers (aka Lifschultz Fast Freight)	Jersey City	677 Grove Street/850 Jersey Avenue	PCB, metal
REC-13A	Former Cocheo Brothers	Weehawken	1801-1831 Willow Avenue	Benzene, MTBE
REC-13B				
REC-14	Hoboken DPW	Hoboken	256 Observer Highway	Benzene
REC-15A	International Bus Service and Burlington Coat Factory	Hoboken	1501-1507 Clinton Street	Semi-volatile organic compounds, metals
REC-15B			1502-1530 Willow Avenue	
REC-16	Hoboken Service Center/Amoco Station	Hoboken	425 Newark Street	Semi-volatile organic compounds, metals
REC-17	Former Service Station	Hoboken	150 14th Street	
REC-18	Cognis Corporation	Hoboken	12th Street	Semi-volatile organic compounds, metals
REC-19	Poggi Press	Hoboken	1501-1531 Adams Street	Diesel, semi-volatile organic compounds, metals
REC-20	American Eagle Magnesium and Aluminum Corp.	Hoboken	1316 Adams Street	Petroleum, semi-volatile organic compounds, metals
REC-21	Tarragon Corp.	Hoboken	1024-1030 Adams Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-22	Atlantic Steamers Supply Co.	Hoboken	1100-1118 Adams Street	PCB, diesel
REC-23	Tarragon Corp.	Hoboken	1101-1111 Madison Street 1100-1110 Jefferson Street	Semi-volatile organic compounds, metals

Table 4.36 Summary of Potential Environmental Conditions (continued)

REC ID	NAME	MUNICIPALITY	STREET	NATURE OF POTENTIAL CONTAMINANTS
REC-24	1405 Clinton Street	Hoboken	1405 Clinton Street	Semi-volatile organic compounds, metals
REC-25	Former Ferguson Propeller, Inc.	Hoboken	1132 Clinton Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-26	Hoboken Coal Gas; Cumberland Farms/Gulf Station	Hoboken	1200 Clinton Street; 1316-1330 Willow Avenue	Benzene, semi-volatile organic compounds, metals
REC-27	PSE&G Vault Expansion Project	Hoboken	In Front of 1331 Grand Street	Semi-volatile organic compounds, metals
REC-28	5-15 Church Towers	Hoboken	5-15 Church Towers	Semi-volatile organic compounds, metals
REC-29	Demerest School	Hoboken	400-414 Bloomfield Street	Petroleum, semi-volatile organic compounds, metals
REC-30	Harrison Realty Associates	Hoboken	600 Harrison Street	Petroleum, semi-volatile organic compounds, metals
REC-31	Grand Street Condominiums	Hoboken	1200 Grand Street	Semi-volatile organic compounds, metals
REC-32	Grand Adams Apartments	Hoboken	300 Grand Street	Semi-volatile organic compounds, metals
REC-33	Grand Street Mercury	Hoboken	720-732 Grand Street	Mercury, semi-volatile organic compounds, metals
REC-34	Triboro Hardware	Hoboken	812 Grand Street	Metals, polycyclic aromatic hydrocarbons, semi-volatile organic compounds, metals
REC-35	Interboro Recycling	Hoboken	1001-1015 & 1114 Madison Street, 1000-1002 & 1024-1030 Jefferson Street	Semi-volatile organic compounds, metals
REC-36	1100-1114 Madison Street & 1101-1113 Monroe Street	Hoboken	1100-1114 Madison Street & 1101-1113 Monroe Street	Lead, PCB, semi-volatile organic compounds, metals
REC-37	Universal Folding Box Co.	Hoboken	Madison Street & 13th Street	Semi-volatile organic compounds, metals
REC-38	Levelor Lorentzen, Inc.	Hoboken	700-720 Monroe Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-39	301 Newark Street	Hoboken	301 Newark Street	Semi-volatile organic compounds, metals
REC-40	Metro Web Corporation	Hoboken	1420-1424 Willow Avenue & 1427 Clinton Street	Semi-volatile organic compounds, metals
REC-41	Albee Services	Hoboken	410 8th Street	Semi-volatile organic compounds, metals
REC-42	LMT Steel Products, Inc.	Hoboken	551 11th Street	Semi-volatile organic compounds, metals
REC-43	Jefferson Street Properties	Hoboken	1515-1530 Jefferson Street	Semi-volatile organic compounds, metals
REC-44	Haulaway Inc.	Hoboken	1417-1429 Adams Street	Semi-volatile organic compounds, metals
REC-45	1032-1040 Grand Street	Hoboken	1032-1040 Grand Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-46	Ehrlich Trucking	Hoboken	700 First Street	Semi-volatile organic compounds, metals
REC-47	Irving's Service Center	Hoboken	701-703 First Avenue	Lead, semi-volatile organic compounds, metals
REC-48	Parcel R208 - NJ TRANSIT	Weehawken	77 West 18th Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-49	Singer Property	Weehawken	3 and 4 West 18th Street	Semi-volatile organic compounds, metals, chlorinated solvents
REC-50	Digital Realty Trust	Weehawken	300 Boulevard East	Semi-volatile organic compounds, metals

Source: Dewberry, 2015-2017

Table 4.37 Aboveground Storage Tanks within the Acceptable Separation Distance

TANK ID	LOCATION	SIZE/CAPACITY	ASD FOR THERMAL RADIATION FOR PEOPLE (FEET)	WITHIN ASD?
AST 5	NJ TRANSIT Rail Yard, at Observer Highway and Marin Blvd., Hoboken	Approx. 40' tall and 20' diameter. Capacity is approx. 100,000 gallons. There is secondary containment in the form of an 80' by 32' fabricated steel vessel	229.16	Yes
AST 6	NJ TRANSIT Rail Yard, at Observer Highway and Marin Blvd., Hoboken	Approx. 40' tall and 20' diameter. Capacity is approx. 100,000 gallons. There is secondary containment. in the form of an 80' by 32' fabricated steel vessel	229.16	Yes
AST 10	Cognizant Technology building on JFK Blvd., Weehawken	Approx. 30' long and 13' diameter. Capacity is approx. 30,000 gallons	1140.69	Yes

Source: HUD's online Acceptable Separation Distance Electronic Assessment Tool; Dewberry Fieldwork 2015-2017

in NJ TRANSIT's Rail yard at the southern end of Hoboken, have secondary containment in the form of an approximately 80-foot by 32-foot fabricated steel vessel designed to contain the contents of the tanks.

4.7.3 Environmental Consequences

Alternative 1

Alternative 1 would impact a total of 46 RECs under Option 1 and Option 2. For the Resist improvements only, Alternative 1, Option 1 would impact 12 RECs and Option 2 would impact 15 RECs. For the DSD improvements only, 42 RECs would be impacted under both Options. Some RECs would be impacted by both Resist and DSD improvements. Alternative 1 Options 1 and 2 would require off-site disposal of a total of 150,993 tons and 150,265 tons of contaminated soil, respectively, based on an assumption that all of the excavated soil would be considered contaminated (**Figure 4.65**). Of those totals, 29, 324 tons would be excavated for Resist under Option 1 and 28,596 tons would be excavated for Resist under Option 2. A total of 121,669 tons would be excavated for the construction of DSD. The quantity of soil to be excavated assumes the entire footprint of each DSD feature including the BASF site, NJ TRANSIT site, and Block 10 site would be excavated. Any design variations would be on the surface and would not affect the quantity of soil excavated. The RECs impacted under Alternative 1 are depicted on **Table 4.38** and discussed in detail in the Hazardous Waste TES (Dewberry 2016). Contaminants at these RECs include metals, pesticides, PCBs, chlorinated solvents, petroleum products, lead, benzene, and diesel products. Excavation depth would range from six feet below ground surface (bgs) along the Resist barriers to up to 12 feet bgs in DSD locations. The contaminants may be found either in soils or in the groundwater, which is found only a few feet below the surface throughout the Analysis Area.

Excavation of contaminated soils and extraction of contaminated groundwater could expose workers to a health risk during construction activities. Health risks would depend on the specific contaminants and concentrations identified. Exposure may occur via direct contact, inhalation, or ingestion pathways. In addition, contaminated soils that are stockpiled in the construction area could be transported off site by wind or water erosion. The potential health risks for workers would be minimized through implementation of a soil and groundwater sampling and monitoring plan, which would identify potential contaminants prior to initiation of any construction activities. Based on the results from the sampling effort, a health and safety plan would be designed and implemented to minimize safety risks associated with construction. A material management plan would be developed to address how any contaminated soil or groundwater would be handled for off-site disposal. The health and safety plan and the material management plan would include provisions to avoid health risks to persons in the project vicinity.

Implementation of Alternative 1 would not impact any known underground storage tanks. However, unregistered USTs may be located within areas of proposed excavation and would need to be addressed, if identified, during construction.

ASTs with ASDs that intersected the locations of the proposed features were reviewed to see if parks are proposed. Aerial photographs were used to identify intervening development. Each AST was analyzed to see if mitigation would be required. Resist feature construction is proposed within the ASD of ASTs 5 and 6. However, there are no recreational components proposed along the Resist feature within the ASD of these tanks and the construction of the Resist feature in this location is not anticipated to result in any change to current public use patterns in this area. AST 10 is an approximately 30,000-gallon tank located on the eastern side of the Cognizant Technology building on JFK Blvd. in Weehawken. The tank is approximately 200 feet southwest of the Lincoln Harbor Light Rail Station. The ASD for this tank (1,140.69 feet) intersects the Hudson River waterfront walkway, where recreational improvements are proposed under Alternative 1. However, there is intervening development in the form of a multi-story parking garage to the east and a multi-story office and retail building to the southeast. No DSD recreational improvements are located within the ASD of any of the tanks. Therefore, based on HUD guidance, Alternative 1 is in compliance regarding ASTs 5, 6, and 10 and no further action is required.

Both DSD and Resist would involve excavation of more than 200 cubic yards of contaminated soil and are expected to qualify under the Linear Construction Program. As such, only soil and groundwater

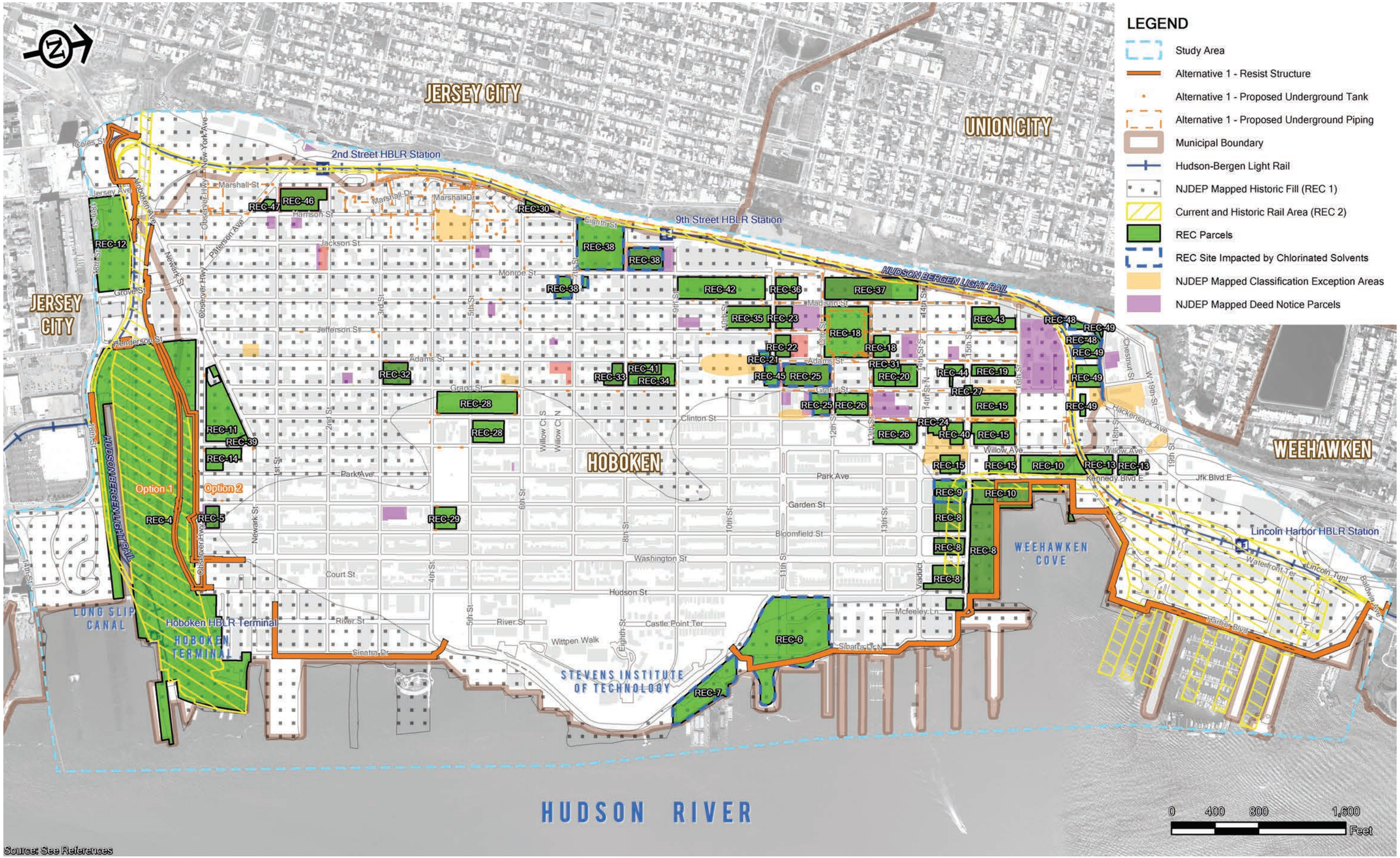


Figure 4.65 Recognized Environmental Conditions - Alternative 1

Table 4.38 RECs within the Limits of Disturbance for Alternatives 1, 2, and 3

SITE ID		IMPACTS TO RECS			
REC ID	NAME	WITHIN 100 FT OF LIMITS OF DISTURBANCE			
		RESIST ALT 1	RESIST ALT 2	RESIST ALT 3	DSD
REC-1	Historic Fill	X	X	X	X
REC-2	Current/Historic Rail Use	X	X	X	X
REC-3	Hudson River Sediments	X	X	X	X
REC-4A	NJDOT/NJ TRANSIT Rail Yard	X	X	X	X
REC-4B					
REC-4C					
REC-5	Observer Highway Development	X*	X*	X*	X
REC-6	Former Maxwell House Coffee	X	X	X	
REC-7	Union Dry Dock & Repair Company	X			
REC-8	Dell Aquilla Site (aka Hoboken Cove)	X	X	X	X
REC-9	SGS US Testing		X	X	
REC-10	Hoboken/ Weehawken Cove (aka Old Todd Shipyard)	X	X	X	X
REC-11	R. Neumann & Co.	X*	X*	X*	X
REC-12	Millenium Towers (Lifschultz Fast Freight)	X	X	X	
REC-13A	Former Cocheo Brothers	X	X	X	
REC-13B					
REC-14	Hoboken DPW	X*	X*	X*	X
REC-15A	International Bus Service and Burlington Coat Factory	X	X	X	X
REC-15B					
REC-16	Hoboken Service Center / Amoco Station		X*	X*	
REC-17	Former Service Station		X	X	
REC-18	Cognis Corporation				X
REC-19	Poggi Press				X
REC-20	American Eagle Magnesium and Aluminum Corp.				X
REC-21	Tarragon Corp.				X
REC-22	Atlantic Steamers Suppply Co.				X
REC-23	Tarragon Corp.				X
REC-24	1405 Clinton Street				X
REC-25	Former Ferguson Propeller, Inc.				X
REC-26	Hoboken Coal Gas; Cumberland Farms/ Gulf Station				X
REC-27	PSE&G Vault Expansion Project	X	X	X	X
REC-28	5-15 Church Towers				X
REC-29	Demerest School				X
REC-30	Harrison Realty Associates				X
REC-31	Grand Street Condominiums				X
REC-32	Grand Adams Apartments				X
REC-33	Grand Street Mercury				X
REC-34	Triboro Hardware				X
REC-35	Interboro Recycling				X
REC-36	1100-1114 Madison Street & 1101-1113 Monroe Street				X
REC-37	Universal Folding Box Co.				X
REC-38	Levelor Lorentzen, Inc.				X
REC-39	301 Newark Street				X
REC-40	Metro Web Corporation				X
REC-41	Albee Services				X
REC-42	LMT Steel Products, Inc.				X
REC-43	Jefferson Street Properties				X
REC-44	Haulaway Inc.				X
REC-45	1032-1040 Grand Street				X
REC-46	Ehrlich Trucking				X
REC-47	Irving's Service Center				X
REC-48	Parcel R208 - NJ TRANSIT				X
REC-49	Singer Property				X
REC-50	Digital Realty Trust		X	X	

Note: *Option 2 only

Source: Dewberry, 2015-2017

required to be excavated for the construction would be removed. Remediation of contamination outside of the limits of disturbance is not part of the Project. Approximately 150,000 tons (approximately 30,000 tons for Resist and 120,000 tons for DSD) of contaminated soils are anticipated be excavated and disposed off site and replaced with clean fill material to reduce future exposure. Therefore, Alternative 1 would have a long-term, beneficial impact on soil conditions within the Study Area. This beneficial impact would be moderate in scale. Alternative 1 is expected to have a minor beneficial impact on contaminated groundwater, as groundwater treatment would be limited to off-site treatment of the de-watering effluent required to be pumped out for construction. In light of the procedures adopted to identify and address any contaminated soil and groundwater, the presence of these contaminated materials would not conflict with the intended use of the property and Alternative 1 would be in full compliance with 24 CFR 50.3(i).

The removal of contaminated soils represents a direct benefit. Indirect impacts could include air emissions from trucks required to transport soils off-site; however, this impact cannot be quantified until soil disposal locations have been determined. These locations will be determined as part of a Material Management Plan (MMP) prior to construction and once the soils have been fully characterized. Mitigation measures to reduce vehicle emissions and other impacts from construction equipment are included in Section 4.6 Air Quality.

Alternative 2

Alternative 2 would impact a total of 48 RECs under Option 1 and 49 RECs under Option 2. For the Resist features, Alternative 2, Option 1 would impact 14 RECs and Option 2 would impact 18 RECs. For the DSD improvements, 42 RECs would be impacted under both Options. Some RECs would be impacted by both Resist and DSD improvements. Alternative 2 Options 1 and 2 would require off-site disposal of 138,450 tons and 138,139 tons of contaminated soil, respectively, based on an assumption that all of the excavated soil would be considered contaminated (**Figure 4.66**). Of those totals, 16,781 tons would be excavated for Resist under Option 1 and 16,470 tons would be excavated for Resist under Option 2. A total of 121,669 tons would be excavated for the construction of DSD. The quantity of soil to be excavated assumes the entire footprint of each DSD feature, including the BASF site, NJ Transit site and Block 10 site, would be excavated. Any design variations would be on the surface and would not affect the quantity of soil excavated. The RECs impacted under Alternative 2 are depicted in Table 4.39 and discussed in detail in the Hazardous Waste TES (Dewberry 2016). Contaminants at these RECs include metals, pesticides, PCBs, chlorinated solvents, petroleum products, lead, benzene, and diesel products. Excavation depth would range from six feet bgs along the Resist barriers to up to 12 feet bgs in DSD locations. The contaminants may be found either in soils or in the groundwater, which is found only a few feet below the surface throughout the Analysis Area.

Excavation of contaminated soils and extraction of contaminated groundwater could expose workers to a health risk during construction activities. Health risks would depend on the specific contaminants and concentrations identified. Exposure may be via direct contact, inhalation, or ingestion pathways. In addition, contaminated soils that are stockpiled in the construction area could be transported off site by wind or water erosion. The potential health risks for workers would be minimized through implementation of a soil and groundwater sampling and monitoring plan, which would identify potential contaminants prior to initiation of any construction activities. Based on the results from the sampling effort, a health and safety plan would be designed and implemented to minimize safety risks associated with construction. A material management plan would be developed to address how any contaminated soil or groundwater would be handled for off-site disposal. The health and safety plan and the material management plan would include provisions to avoid health risks to persons in the project vicinity.

Implementation of Alternative 2 would not impact any known underground storage tanks. However, unregistered USTs may be located within areas of proposed excavation and would need to be addressed, if identified, during construction.

ASTs with ASDs that intersected the locations of proposed features were reviewed to see if parks are proposed and aerial photographs were used to identify intervening development. Each AST was analyzed to see if mitigation would be required. Resist feature construction is proposed within the ASD of ASTs 5, 6, and 10. However, there are no recreational improvements proposed along the Resist barrier within the ASD of these tanks and the construction of the Resist features in this location is not anticipated to result in any change in current public use patterns in this area. In addition, there is intervening development in the form of a multi-story parking garage to the east and a multi-story office and retail building to the southeast between the Project and AST 10. No DSD recreational components are located within the ASD of any of the tanks. Therefore, based on HUD guidance, Alternative 2 is in compliance regarding aboveground storage tanks 5, 6, and 10 and no further action is required.

Both DSD and Resist would involve excavation of more than 200 cubic yards of contaminated soil and are expected to qualify under the Linear Construction Program. As such, only soil and groundwater required to be excavated for the construction would be removed. Remediation of contamination outside of the limits of disturbance is not part of the Project. Approximately 140,000 tons (approximately 20,000 tons for Resist and 120,000 tons for DSD) of contaminated soils are anticipated to be excavated and disposed off site and replaced with clean fill material to reduce future exposure. Therefore, Alternative 2 would have a long-term, beneficial impact on soil conditions within the Study Area, which would be moderate in scale. Alternative 2 is expected to have a minor beneficial impact on contaminated

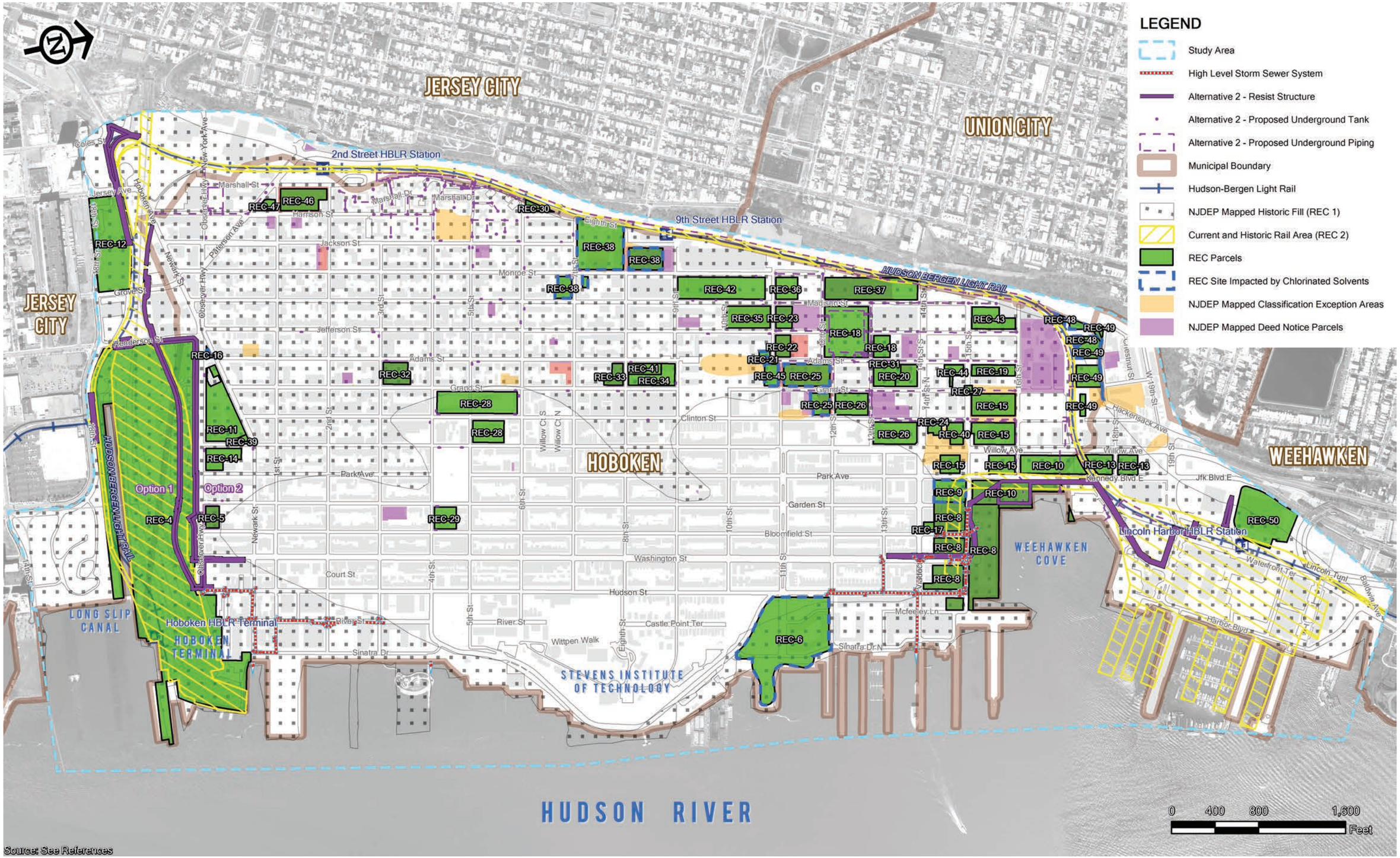


Figure 4.66 Recognized Environmental Conditions - Alternative 2

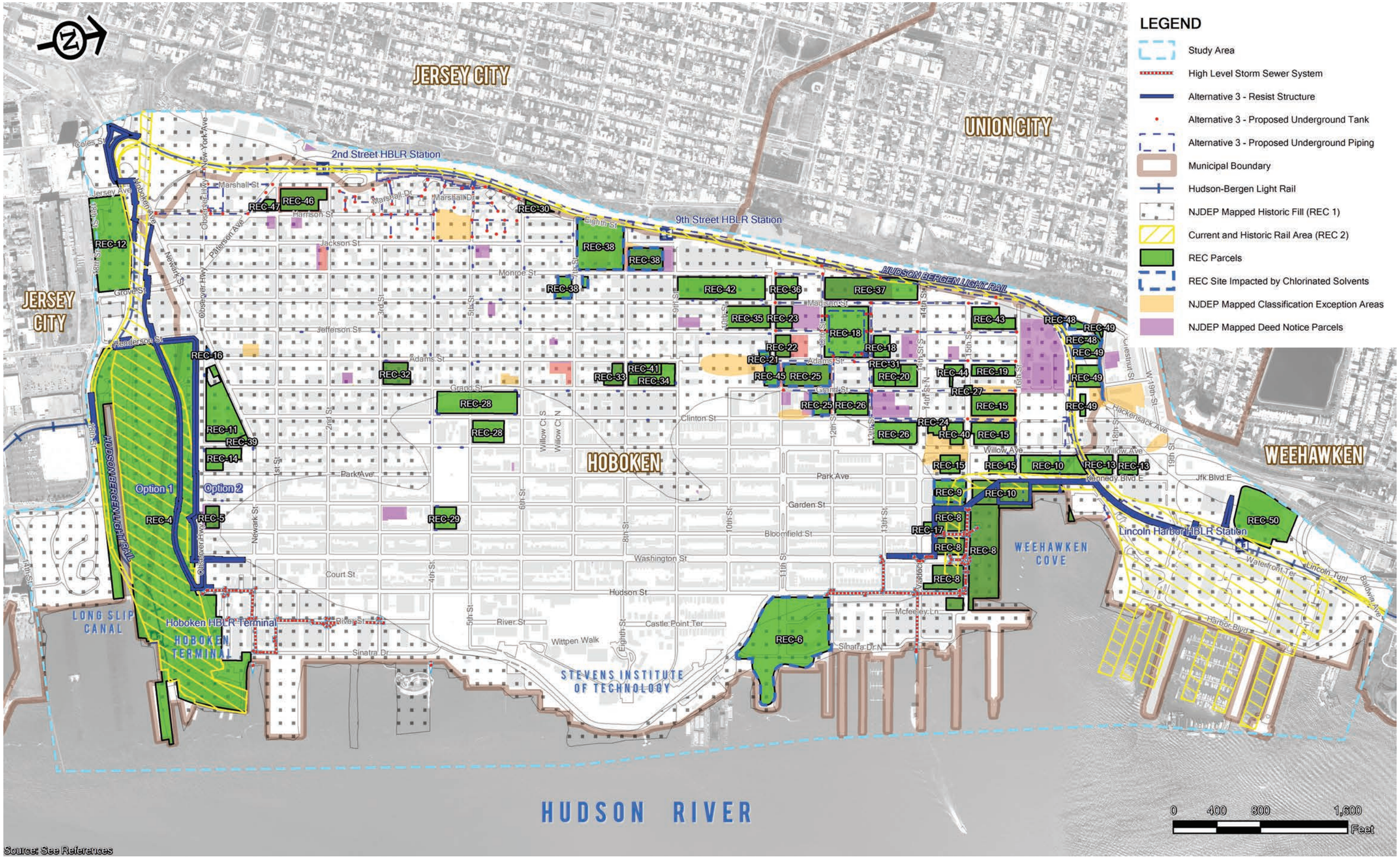


Figure 4.67 Recognized Environmental Conditions - Alternative 3

groundwater, as groundwater treatment would be limited to off-site treatment of the de-watering effluent required to be pumped out for construction. In light of the procedures adopted to identify and address any contaminated soil and groundwater, the presence of these contaminated materials would not conflict with the intended use of the property and Alternative 2 would be in full compliance with 24 CFR 50.3(i).

The removal of contaminated soils represents a direct benefit. Indirect impacts could include air emissions from trucks required to transport soils off-site; however, this impact cannot be quantified until soil disposal locations have been determined. These locations will be determined as part of a Material Management Plan (MMP) prior to construction and once the soils have been fully characterized. Mitigation measures to reduce vehicle emissions and other impacts from construction equipment are included in Section 4.6 Air Quality.

Alternative 3

Alternative 3 would impact a total of 48 RECs under Option 1 and 49 RECs under Option 2. For the Resist features, Alternative 3, Option 1 would impact 14 RECs and Option 2 would impact 18 RECs. For the DSD features, 42 RECs would be impacted under both Options. Some RECs would be impacted by both Resist and DSD features. Alternative 3 Options 1 and 2 would require off-site disposal of 137,712 tons and 137,431 tons of contaminated soil, respectively, based on an assumption that all of the excavated soil would be considered contaminated (**Figure 4.67**).

Of those totals, 16,043 tons would be excavated for Resist under Option 1 and 15,762 tons would be excavated for Resist under Option 2. A total of 121,669 tons would be excavated for the construction of DSD. The quantity of soil to be excavated assumes the entire footprint of each DSD feature, including the BASF site, NJ TRANSIT site, and Block 10 site, would be excavated. Any design variations would be on the surface and would not affect the quantity of soil excavated. The RECs impacted under Alternative 3 are depicted in **Table 4.38** and discussed in detail in the Hazardous Waste TES (Dewberry 2016). Contaminants at these RECs include metals, pesticides, PCBs, chlorinated solvents, petroleum products, lead, benzene, and diesel products.

Excavation depth would range from six feet bgs along the Resist barriers to up to 12 feet bgs in DSD locations. The contaminants may be found either in soils or in the groundwater, which is found only a few feet below the surface throughout the Analysis Area.

Excavation of contaminated soils and extraction of contaminated groundwater could expose workers to a health risk during construction activities. Health risks would depend on the specific contaminants and concentrations identified. Exposure may be via direct contact, inhalation, or ingestion pathways. In addition, contaminated soils which are stockpiled in the construction area could be transported off site by wind or water erosion. The potential health risks for workers would be minimized through implementation of a soil and groundwater sampling and monitoring plan, which would identify potential contaminants prior to initiation of any construction activities. Based on the results from the sampling effort, a health and safety plan would be designed and implemented to minimize safety risks associated with construction. A material management plan would be developed to address how any contaminated soil or groundwater would be handled for off-site disposal. The health and safety plan and the material management plan would include provisions to avoid health risks to persons in the project vicinity.

Implementation of Alternative 3 would not impact any known underground storage tanks. However, unregistered USTs may be located within areas of proposed excavation and would need to be addressed, if identified, during construction.

ASTs with ASDs that intersected the locations of proposed features were reviewed to see if parks are proposed and aerial photographs were used to identify intervening development. Each AST was analyzed to see if mitigation would be required. Resist structure construction is proposed within the ASD of ASTs 5, 6, and 10. However, there are no recreational improvements proposed along the Resist barrier within the ASD of these tanks and the construction of the Resist sstructure in this location is not anticipated to result in any change in current public use patterns in this area. In addition, there is intervening development in the form of a multi-story parking garage to the east and a multi-story office and retail building to the southeast between the Project and AST 10. No DSD recreational improvements are located within the ASD of any of the tanks. Therefore, based on HUD guidance, Alternative 3 is in compliance regarding ASTs 5, 6, and 10 and no further action is required.

Both DSD and Resist would involve excavation of more than 200 cubic yards of contaminated soil and are expected to qualify under the Linear Construction Program. As such, only soil and groundwater required to be excavated for the construction would be removed. Remediation of contamination outside of the limits of disturbance is not part of the Project. Approximately 140,000 tons (approximately 20,000 tons for Resist and 120,000 tons for DSD) of contaminated soils are anticipated be excavated and disposed off site and replaced with clean fill material to reduce future exposure. Therefore, Alternative 3 would have a long-term, beneficial impact on soil conditions within the Study Area, which would be moderate in scale. Alternative 3 is expected to have a minor beneficial impact on contaminated groundwater, as groundwater treatment would be limited to off-site treatment of the de-watering effluent required to be pumped out for construction. In light of the procedures adopted to identify and address any contaminated soil and groundwater, the presence of these contaminated materials would not conflict with the intended use of the property and Alternative 3 would be in full compliance with 24 CFR 50.3(i).

The removal of contaminated soils represents a direct benefit. Indirect impacts could include air emissions from trucks required to transport soils off-site; however, this impact cannot be quantified until

soil disposal locations have been determined. These locations will be determined as part of a Material Management Plan (MMP) prior to construction and once the soils have been fully characterized. Mitigation measures to reduce vehicle emissions and other impacts from construction equipment are included in Section 4.6 Air Quality.

No Action Alternative

The No Action Alternative would result in no removal of contaminated soils and groundwater; there would be no potential health risk to workers or others in the project vicinity. Since no contaminated soils would be removed, soil and groundwater contamination levels would remain unchanged from current conditions.

4.7.3.1 Mitigation and Best Management Practices included in Alternatives 1, 2 and 3

The following measures would be implemented for DSD and Resist alternatives to minimize hazardous waste impacts:

- A soil and groundwater Sampling, Analysis, and Monitoring Plan (SAMP) and a Health and Safety Plan (HASP) would be developed and implemented in the proposed construction areas in and adjacent to these RECs to assess the presence, type, and level of contamination. Sample locations would be biased toward the areas of proposed excavation, based on the engineering design, as well as towards locations adjacent to known or suspected contamination from RECs. All site investigation activities would be performed in accordance with the most current version of NJDEP Technical Requirements for Site Remediation, N.J.A.C. 7:26E, and other applicable guidance documents.
- Additionally, the Site Remediation Reform Act, N.J.S.A. 58:10C-1 et seq., establishes a program for the licensing of environmental professionals who have the responsibility for oversight of contaminated site investigation and cleanup. Since contamination has been identified or is suspected within the Analysis Area and over 200 cubic yards of soil would be disturbed under both the Resist and DSD portions of the Project, the Project would be required to enter the New Jersey Licensed Site Remediation Professional (LSRP) Program as a Linear Construction Project and comply with Chapter 16 of the NJDEP Administrative Requirements for the Remediation of Contaminated Sites, N.J.A.C. 7:26C.
- Alternate construction methods such as installing casing around piles or using shallower depth structural supports may be required in areas contaminated with chlorinated solvents to minimize the risk of cross contamination.
- Health and safety precautions would be instituted for the protection of the construction personnel and the public. Methods may include dust control measures to prevent the accidental inhalation of contaminated soil. Any specific monitoring requirements would be outlined in the HASP.
- Soil and groundwater sampling and site investigation activities intended to determine the presence, type, and level of contamination would be performed on any sites proposed for acquisition, prior to construction. Construction workers should wear personal protective equipment (PPE) to minimize exposure to any possible contamination and adhere to strict OSHA guidelines, as applicable.
- Should contamination be detected, an MMP would be prepared to address the remedial approach. An MMP typically includes management techniques for regulated material; standard operating procedures for the excavation, stockpiling, transporting, measurement, and disposal of regulated material; techniques for receiving facility certification and permits; qualifications of the licensed hauler; proposed routes to the receiving facilities; waste characterization forms; a sampling and analysis protocol for characterizing the regulated material; and requirements of the receiving facility to accept the regulated material. Sampling data would be used to develop health and safety specifications and environmental plans for the Project. Potential mitigation would include engineering controls. Due to the widespread occurrence of historic fill material within the Study Area and the abundance of RECs, it is anticipated that the majority of excavated soils that are not re-used on-site would need to be properly disposed off-site.
- Potentially contaminated soils requiring excavation would be temporarily stockpiled pending waste characterization results. Excavation and staging would be performed using methods that minimize the disturbance of the soil. At a minimum, all potentially contaminated soil would be staged on an impervious surface and covered with plastic sheeting. If it is determined that soils contain hazardous waste, they should not be moved from one stockpile to another without prior approval from the NJDEP and/or necessary permits and approved remedial action plans. No excavation/movement of contaminated soil or hazardous waste may occur without prior NJDEP and/or EPA approval, as applicable.
- Due to the high water table within the Study Area and the depth of the proposed features, contaminated groundwater is anticipated to be encountered during construction. Groundwater would be handled in an NJDEP-approved manner. Drainage measures including de-watering may be instituted to control groundwater levels within excavations. Contaminated groundwater would be pumped into tank trucks for off-site treatment and disposal.
- At the completion of construction, a Linear Construction Report (LCR) would need to be prepared to document soil excavation activities and the management of contaminated soil and groundwater during construction. Additionally, the LCR would document the extent of contamination left in place or reused within the Project limits and the remedial activities completed on the Project. Although not required for Linear Construction Projects, a Response Action Outcome (RAO) may

be issued by the LSRP in some cases.

- All project activities must be performed in accordance with state and federal regulations, including all applicable Resource Conservation and Recovery Act (RCRA) standards.
- Depending on funding sources and responsible parties involved in the development of the BASF, NJ Transit and Block 10 sites, applicable environmental compliance would be required related to contaminated materials.
- Any in-water work would be executed in full compliance with applicable regulations and policies in recognition of the designation of the Hudson River as a superfund site.