

Appendix A9

Tier 1 Hazardous, Toxic, and Radioactive Waste Survey Report

New York & New Jersey Harbor & Tributaries Coastal Storm Risk Management Feasibility Report and Tier 1 Environmental Impact Statement

09 August 2022

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List of Acronyms

AES	Applied Environmental Services
AOC	Administrative Order on Consent
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAA	Clean Air Act
CBS	Chemical Bulk Storage
CoC	Certificate of Completion
CWA	Clean Water Act
DoD	United States Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EDR	Environmental Data Resources
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
FCS	Fire Control Station
FR	Feasibility Report
FUDS	Formerly Used Defense Site
FUSRAP	Formerly Utilized Sites Remedial Action Program
GAC	Granular Activated Carbon
GIS	Geographic Information System
GPO	GIS Program Office
HATS	Harbor & Tributaries Focus Area Feasibility Study
HTRW	Hazardous, Toxic, and Radioactive Waste
IC/ECs	institutional/engineering controls
ITS	New Jersey Information Technology Services
LTANK	Leaking Tank
LUST	Leaking Underground Storage Tank
MLTS	Material License Tracking System
MPG	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NFA	No Further Action
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
NPL	National Priority List
NRC	Nuclear Regulatory Commission
NYSDEC	New York State Department of Environmental Conservation
NYNJ	New York & New Jersey
OMRRR	Operations, Maintenance, Repair, Replacement, and Rehabilitation
OU	Operable Unit
PAH	polyaromatic hydrocarbons
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PDEIA	Preliminary Draft Environmental Impact Statement
PED	preconstruction engineering and design
PFAS	Per- and Polyfluoroalkyl Substances

PRP	potentially responsible party
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SUNY	State University of New York
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
TCE	Trichloroethylene
TSCA	Toxic Substance Control Act
USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

TABLE OF CONTENTS

LIST OF ACRONYMS..... i

ACKNOWLEDGEMENT iii

List of Acronyms i

1. Introduction **1**

1.1. NYNJHATS Regions 1

1.2. NYNJHATS Alternatives and Measures..... 3

1.3. Purpose of the HTRW Survey 3

1.4. HTRW Survey Process 3

1.5. Regulatory Framework..... 4

1.6. Limits of Survey 4

1.7. Data Sources 5

1.7.1. Primary Data Sources 5

1.7.2. Secondary Data Sources..... 5

1.8. HTRW Groups Used in This Survey..... 6

1.8.1. Group A – National Priority List and Ongoing Corrective Action Sites 6

1.8.2. Group B – State Program Sites 7

1.8.3. Group C – Sites with Hazardous Chemical Usage and Releases..... 8

1.8.4. Group D – Bulk Chemical and Petroleum Storage and Known Spill Sites 11

1.8.5. Group E – Radiological Sites 11

2. Hackensack Passaic Region – A Line **13**

2.1. Group A Sites..... 13

2.1.1. Riverside Industrial Park..... 13

2.1.2. Diamond Alkali 14

2.1.3. PJP Landfill..... 14

2.1.4. Syncon Resins 15

2.1.5. Passaic River Superfund Site 15

2.1.6. Lower Hackensack River Superfund Site 16

2.2. Group B Sites..... 16

2.3. Group C Sites..... 17

2.3.1. Chrome Sites 17

2.3.2. Coal Ash Sites 17

2.3.3. Lead Smelter Sites 17

2.3.4. Dry Cleaners & Automotive Service Sites..... 17

2.3.5. Major Facilities 17

2.3.6. Industrial Hazardous Waste 18

2.3.7. PFAS Sites 18

2.3.8. FUDS 18

2.4. Group D Sites 18

2.5. Group E Sites 18

2.6. Summary of Hackensack Passaic Region - A Line..... 19

2.6.1. Regional Summary Review 19

2.6.2. Further Consideration 19

3. Hackensack Passaic Region – B Line **27**

3.1. Group A Sites..... 27

3.1.1. Berry’s Creek Drainage Basin 27

3.1.2. Ventron/Velsicol..... 27

3.1.3. Arsynco Inc. 28

3.1.4. Scientific Chemical Processing 28

3.1.5. Universal Oil Products, Inc. 29

3.2.	Group B Sites.....	29
3.3.	Group C Sites.....	29
3.3.1.	Dry Cleaners & Automotive Service Sites.....	30
3.3.2.	Major Facilities	30
3.3.3.	PFAS Sites	30
3.4.	Group D Sites	30
3.5.	Group E Sites	30
3.6.	Summary of Hackensack Passaic – B Line	30
3.6.1.	Regional Summary Review	30
3.6.2.	Further Considerations.....	30
4.	Jamaica Bay Region	37
4.1.	Group A Sites.....	37
4.1.1.	Coney Island Creek	37
4.2.	Group B Sites.....	37
4.2.1.	175 Roger Ave.	37
4.2.2.	Edgemere Landfill.....	37
4.2.3.	– London French Cleaners/Dayton Plaza	38
4.2.4.	K – Rockaway Park Manufactured Gas Plant (MGP)	38
4.2.5.	K – Former Brooklyn Borough Gas Works	38
4.2.6.	Fountain Avenue Landfill.....	38
4.2.7.	Pennsylvania Avenue Landfill	39
4.3.	Group C Sites.....	39
4.3.1.	Dry Cleaners & Automotive Service Sites.....	39
4.3.2.	Lead Sites.....	39
4.3.3.	FUDS and UXO	40
4.4.	Group D Sites	40
4.5.	Group E Sites	40
4.6.	Summary of Jamaica Bay Region	40
4.6.1.	Regional Summary Review	40
4.6.2.	Further Considerations.....	40
5.	Long Island Sound Region	47
5.1.	Group A Sites.....	47
5.2.	Group B Sites.....	47
5.2.1.	Pelham Bay Landfill	47
5.2.2.	Fort Totten	47
5.2.3.	College Point Oil Lagoon	47
5.3.	Group C Sites.....	47
5.3.1.	Dry Cleaners & Automotive Service Sites.....	48
5.3.2.	Lead and Lead Smelters.....	48
5.3.3.	PFAS Site.....	48
5.3.4.	FUDS and UXO	48
5.4.	Group D Sites	48
5.5.	Group E Sites	48
5.5.1.	SYLVANIA CORNING NUCLEAR CORP., INC., SYLVANIA LAB	48
5.6.	Summary of Long Island Sound.....	49
5.6.1.	Regional Summary Review	49
5.6.2.	Further Considerations.....	49
6.	Lower Bay Region	56
6.1.	Group A Sites.....	56
	International Flavors and Fragrances, Inc.....	56

6.1.1.	International Flavors and Fragrances, Inc.	56
6.1.2.	Raritan Bay Slag/National Lead	56
6.1.3.	Atlantic Salt	57
6.2.	Group B Sites	58
6.3.	Group C Sites	58
6.3.1.	Mine Sites	58
6.3.2.	Dry Cleaners & Automotive Service Sites	58
6.3.3.	PFAS Sites	58
6.3.4.	FUDS	58
6.4.	Group D Sites	59
6.5.	Group E Sites	59
6.6.	Summary of Lower Bay Region	59
6.6.1.	Regional Summary Review	59
6.6.2.	Further Considerations	60
7.	Port Washington / Long Island Sound Region	67
7.1.	Group A Sites	67
7.1.1.	Edmos Corporation (Mapped Site)	67
7.1.2.	Li Tungsten Corp. (Unmapped Site)	67
7.1.3.	Applied Environmental Services (Unmapped Site)	68
7.1.4.	Mattiace Petrochemical Co., INC. (M&M Drum Cleaning Company) (Unmapped Site)	68
7.1.5.	Town of North Hempstead Solid Waste Management Authority – Port Washington Landfill (Unmapped Site)	69
7.1.6.	Stanton Cleaners Area Ground Water Contamination (Unmapped Site)	69
7.2.	Group B Sites	69
7.2.1.	Crown Dykman	69
7.2.2.	Li Tungsten	70
7.2.3.	Powers Chemco	70
7.2.4.	Mattiace Petro Chemicals	70
7.2.5.	Penetrex Processing Company	70
7.2.6.	Shore Realty Corporation	70
7.3.	Group C Sites	71
7.3.1.	Dry Cleaners & Automotive Service Sites	71
7.3.2.	FUDS	71
7.3.3.	NYSDEC Non-Registry Sites	71
7.4.	Group D Sites	71
7.5.	Group E Sites	71
7.5.1.	LI TUNGSTEN CORP (Radinfo)	71
7.5.2.	GLADSKY'S PROPERTY FORMERLY GLADSKY'S MARINE	72
7.6.	Summary of Port Washington – Long Island Sound	72
7.6.1.	Regional Summary Review	72
7.6.2.	Further Considerations	72
8.	Raritan Region	79
8.1.	Group A Sites	79
8.1.1.	Sayreville Landfill	79
8.2.	Group B Sites	79
8.3.	Group C Sites	79
8.3.1.	Dry Cleaners & Automotive Service Sites	80
8.4.	Group D Sites	80
8.5.	Group E Sites	80
8.6.	Summary of Raritan	80

8.6.1.	Regional Summary Review	80
8.6.2.	Further Considerations.....	80
9.	Upper Bay / Arthur Kill Region.....	87
9.1.	Group A Sites.....	87
9.1.1.	Hudson River PCBs (Sediment).....	88
9.1.2.	Pierson’s Creek	88
9.1.3.	White Chemical Co.	88
9.1.4.	Orbis Products (Nu-Soils Inc.).....	89
9.1.5.	Chemical Control Corp.	89
9.1.6.	ISP-LCP.....	89
9.1.7.	American Cyanamid Co.	89
9.1.8.	Cycle Chem Inc.	90
9.1.9.	Military Ocean Terminal (Landfill).....	90
9.1.10.	Gowanus Canal.....	90
9.1.11.	Hudson County Chromate Sites (West to East).....	90
9.1.12.	Jewett White Lead.....	92
9.2.	Group B Sites.....	92
9.2.1.	New Jersey Collocated HTRW Sites	93
9.2.2.	Hudson County Chromate	93
9.2.3.	633 Court Street (Chemtura).....	93
9.2.4.	643 Court Street	93
9.2.5.	688-700 Court Street (Chemtura)	93
9.3.	Group C Sites.....	93
9.3.1.	Dry Cleaners & Automotive Service Sites.....	94
9.3.2.	Industrial Hazardous Waste	94
9.3.3.	PFAS Sites	94
9.3.4.	FUDS	94
9.3.5.	Lead and Lead Smelters.....	94
9.4.	Group D Sites	95
9.5.	Group E Sites	95
9.6.	Summary of Upper Bay – Arthur Kill	95
9.6.1.	Regional Summary Review	95
9.6.2.	Further Considerations.....	95
10.	Manhattan (Lower Hudson / East River) Region.....	102
10.1.	Group A Sites.....	102
10.1.1.	iPark Edgewater, LLC (Mapped Site)	102
10.1.2.	All County Environmental Service Corp. (Mapped Site).....	103
10.1.3.	Radiac Research Corp. (Mapped Site)	103
10.1.4.	Grand Street Mercury (Mapped Site).....	103
10.1.5.	Hoboken Auto Body (Mapped Site).....	103
10.1.6.	City Chemical Corp. (Mapped Site)	103
10.1.7.	Con Edison NYC Steam Explosion (Mapped Site)	104
10.1.8.	Con-ED Farragut Substation PCB Spill (Mapped Site)	104
10.1.9.	180 Maiden Lane (Mapped Site)	104
10.1.10.	Quanta Resources (Unmapped)	105
10.1.11.	Hudson River PCBs (Unmapped)	105
10.2.	Group B Sites.....	105
10.2.1.	2350 Fifth Avenue (Mapped Site)	105
10.2.2.	21-16 44 th Road, LIC (Mapped Site).....	106
10.2.3.	49 Dupont Street (Mapped Site)	106

10.2.4.	105 Hudson Street (Mapped Site)	107
10.2.5.	99 Hudson Street LLC – 108 Greene St. (Mapped Site)	107
10.2.6.	Central Parking 70 Greene St. (Mapped Site)	107
10.2.7.	Bright Horizons Children Center – 8 Columbus Drive. (Mapped Site).....	107
10.2.8.	Mandalay on the Hudson. (Mapped Site)	107
10.2.9.	Crystal Point Condos (Mapped Site).....	107
10.2.10.	Lane Northeast (Mapped Site)	107
10.2.11.	US Army Corps of Engineers Metro NY (Mapped Site)	108
10.2.12.	7701 Marine Road Proposed Child Care (Mapped Site).....	108
10.2.13.	7009 7101 River Road (Mapped Site).....	108
10.2.14.	The Watermark (Mapped Site).....	108
10.2.15.	Palisade General Hospital (Mapped Site).....	108
10.2.16.	Kingston Pointe (Mapped Site).....	108
10.3.	Group C Sites.....	108
10.3.1.	Abandoned Mines and Former Mines.....	108
10.3.2.	FUDS	108
10.3.3.	PFAS.....	109
10.3.4.	Lead and Lead Smelters.....	109
10.4.	Group D Sites	109
10.5.	Group E Sites	110
10.6.	Summary of Manhattan	111
10.6.1.	Regional Summary Review	111
10.6.2.	Further Considerations.....	111
11.	Summary and Next Steps.....	118
11.1.	Summary of Findings.....	118
11.2.	Summary of Potential Impacts.....	118
11.3.	Summary of Potential Benefits	118
11.4.	Next Steps	119
12.	References	120

TABLES

Table 1-1	Alternatives by Region	3
Table 1-2	Group A Databases.....	7
Table 1-3	Group B Databases.....	7
Table 1-4	Group C Databases.....	10
Table 1-5	Group D Databases	11
Table 1-6	Group E Databases.....	12
Table 2-1	Hackensack Passaic Region - A Line – Group A Sites	13
Table 3-1	Hackensack Passaic Region B Line – Group A Sites.....	27
Table 6-1	Lower Bay - Group A Sites.....	56
Table 6-2	Lower Bay Region - Group D	65
Table 7-1	Port Washington – Long Island Sound - Group A Sites	67
Table 8-1	Raritan - Group A Sites	79
Table 9-1	Upper Bay – Arthur Kill - Group A Sites.....	87
Table 10-1	Manhattan (Lower Hudson / East River) - Group A Sites.....	102
Table 11-1	HTRW Sites by Region and Alternative	118

FIGURES

Figure 1-1 NYNJHATS Region Location Map	2
Figure 2-1 Hackensack Passaic Region – A Line – Locations of Measures Within Each Alternative	20
Figure 2-2 Hackensack Passaic Region – A Line – Group A	22
Figure 2-3 Hackensack Passaic Region – A Line – Group B	23
Figure 2-4 Hackensack Passaic Region – A Line – Group C	24
Figure 2-5 Hackensack Passaic Region – A Line – Group D	25
Figure 2-6 Hackensack Passaic Region – A Line – Group E	26
Figure 3-1 Hackensack Passaic Region – B Line – Locations of Measures Within Each Alternative	31
Figure 3-2 Hackensack Passaic Region – B Line – Group A	32
Figure 3-3 Hackensack Passaic Region – B Line – Group B	33
Figure 3-4 Hackensack Passaic Region – B Line – Group C	34
Figure 3-5 Hackensack Passaic Region – B Line – Group D	35
Figure 3-6 Hackensack Passaic Region – B Line – Group E	36
Figure 4-1 Jamaica Bay Region – Locations of Measures Within Each Alternative	41
Figure 4-2 Jamaica Bay Region – Group A	42
Figure 4-3 Jamaica Bay Region – Group B	43
Figure 4-4 Jamaica Bay Region – Group C	44
Figure 4-5 Jamaica Bay Region – Group D	45
Figure 4-6 Jamaica Bay Region – Group E	46
Figure 5-1 Long Island Sound Region - Locations of Measures Within Each Alternative	50
Figure 5-2 Long Island Sound Region - Group A	51
Figure 5-3 Long Island Sound Region - Group B	52
Figure 5-4 Long Island Sound Region - Group C	53
Figure 5-5 Figure 5 3 Long Island Sound Region - Group D	54
Figure 5-6 Long Island Sound Region - Group E	55
Figure 6-1 Lower Bay Region - Locations of Measures Within Each Alternative	61
Figure 6-2 Lower Bay Region - Group A	62
Figure 6-3 Lower Bay Region - Group B	63
Figure 6-4 Lower Bay Region - Group C	64
Figure 6-5 Lower Bay Region - Group E	66
Figure 7-1 Port Washington / Long Island Sound Region - Locations of Measures Within Each Alternative	73
Figure 7-2 Port Washington / Long Island Sound Region - Group A	74
Figure 7-3 Port Washington / Long Island Sound - Group B	75
Figure 7-4 Port Washington / Long Island Sound - Group C	76
Figure 7-5 Port Washington / Long Island Sound - Group D	77
Figure 7-6 Port Washington / Long Island Sound - Group E	78
Figure 8-1 Raritan Region - Locations of Measures Within Each Alternative	81
Figure 8-2 Raritan Region - Group A	82
Figure 8-3 Raritan Region - Group B	83
Figure 8-4 Raritan Region - Group C	84
Figure 8-5 Raritan Region - Group D	85
Figure 8-6 Raritan Region - Group E	86
Figure 9-1 Upper Bay - Arthur Kill Region - Locations of Measures Within Each Alternative	96
Figure 9-2 Upper Bay - Arthur Kill Region - Group A	97
Figure 9-3 Upper Bay - Arthur Kill Region - Group B	98
Figure 9-4 Upper Bay - Arthur Kill Region - Group C	99
Figure 9-5 Upper Bay - Arthur Kill Region - Group D	100

1. Introduction

The United States Army Corps of Engineers (USACE) New York District is preparing a Draft Integrated Tier 1 Feasibility Report (FR) and Environmental Impact Statement (EIS) for the New York & New Jersey Harbor & Tributaries Focus Area Feasibility Study (NYNJHATS). This Hazardous, Toxic, and Radioactive Waste (HTRW) Survey report presents detailed analyses of HTRW sites located within the NYNJHATS Regions and supports the HTRW summary presented in the Draft Integrated Tier 1 FR/EIS. A Tier 1 Review is a broad-level review, as compared to a Tier 2 Review which consists of subsequent specific detailed reviews.

1.1. NYNJHATS Regions

USACE has identified nine planning regions within the NYNJHAT Study (Figure 1-1). These Regions are defined as:

1. Hackensack Passaic Region – A Line
2. Hackensack Passaic Region – B Line
3. Jamaica Bay Region
4. Long Island Sound Region
5. Lower Bay Region
6. Port Washington / Long Island Sound Region
7. Raritan Region
8. Upper Bay / Arthur Kill Region
9. Manhattan (Lower Hudson / East River) Region

Figure 1-1 NYNJHATS Region Location Map

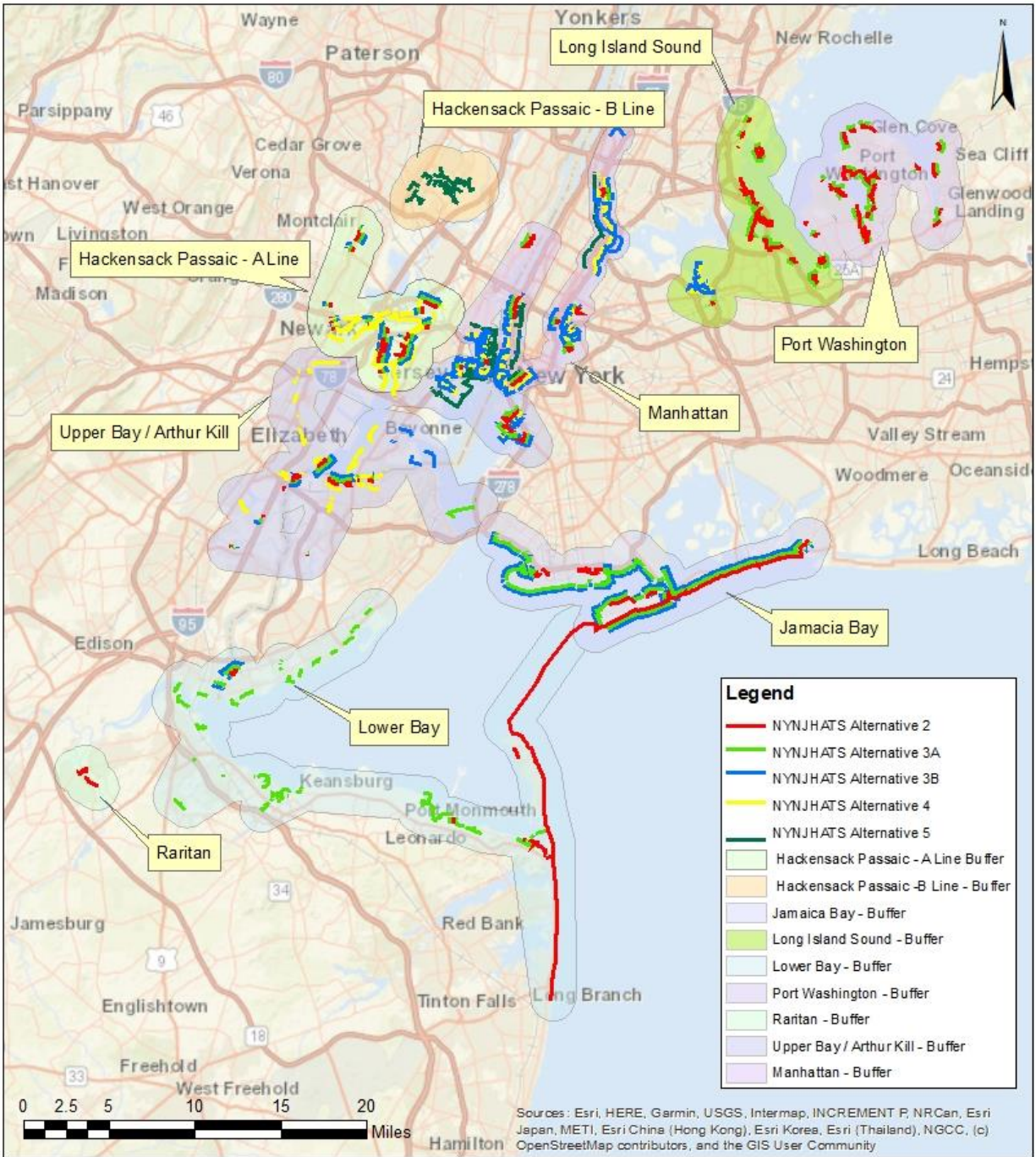


Figure 1-1
NYNJHATS Site Location Map
NYNJHATS - HTRW Study

1.2. NYNJHATS Alternatives and Measures

For the NYNJHAT Study, USACE has identified five action Alternatives plus a No Action Alternative. Each action Alternative includes a different combination of coastal storm risk management (CSRM) measures. Some Alternatives span more than one Region. Multiple Alternatives can include many of the same measures. Some Alternatives and some larger measures span more than one Region (Table 1-1).

All five action Alternatives will include combinations of structural and non-structural measures, and natural and nature-based features. Structural measures increase elevation and extents of proposed shore-based measures (e.g., floodwalls and levees) and include (newly added) shore-based measures. Non-structural measures include acquisition & relocation and building retrofit (wet or dry floodproofing).

The five action Alternatives are:

- Alternative 2 - NY-NJ Harbor-Wide Surge Gates/Beach Restoration
- Alternative 3A - Upper Bay-Newark Bay Surge Gate and Jamaica Bay Surge Gate Plan
- Alternative 3B - Newark Bay, Jamaica Bay, Newtown Creek, Gowanus Creek, Flushing Creek, Bronx River, Westchester Creek Surge Gates and Multiple SBM's (i.e., East Harlem, Astoria, Long Island City, Jersey City and Lower West Side, and multiple Hudson River towns)
- Alternative 4- Single Water Body Barriers/Floodwalls/Levees: Jamaica Bay, Hackensack River, Newtown Creek, Gowanus Creek, Flushing Creek, Bronx River, Westchester Creek Surge Gates and Multiple SBM's (i.e., East Harlem, Astoria, Long Island City, Jersey City and Lower West Side, and multiple Hudson River towns)
- Alternative 5 - Perimeter Only Solutions

Table 1-1 Action Alternatives by Region

REGION	ACTION ALTERNATIVE				
	2	3A	3B	4	5
Hackensack Passaic - Line A	✓	✓	✓	✓	
Hackensack Passaic - Line B					✓
Jamaica Bay	✓	✓	✓	✓	
Long Island Sound	✓	✓	✓	✓	
Lower Bay	✓	✓	✓		
Port Washington / Long Island Sound	✓	✓			
Raritan	✓				
Upper Bay / Arthur Kill	✓	✓	✓	✓	✓
Manhattan (Lower Hudson / East River)	✓	✓	✓	✓	✓

1.3. Purpose of the HTRW Survey

The purpose of the HTRW Survey is to determine the approximate number and nature of HTRW sites collocated with the proposed measures. HTRW sites identify where potential contamination from chemicals that may adversely impact human health and the environment may be present in groundwater, soil, or sediment. When an HTRW site is collocated with a measure, remediation may be required of any portion of the HTRW site that crosses the footprint of the measure to ensure that contamination is not further released to the environment and does not adversely impact human health. This report allows USACE to determine if remediation would be required prior to constructing a measure.

1.4. HTRW Survey Process

In order to provide USACE with a regional summary of potential HTRW sites, the following process was completed:

1. The approximate locations of identified measures were reviewed using digital map files.
2. The approximate locations of all measures occurring in an individual planning Region were generated as separate map files.
3. The separate map files were provided to subcontractor Environmental Data Resources, LLC (EDR).
4. EDR generated a Corridor Report (Attachment A) for each Region identifying where known HTRW sites are.
5. The Corridor reports were reviewed along with the results of additional research using other HTRW site databases.
6. The identified measures were overlaid on top of the HTRW sites to determine which measures may be collocated with HTRW sites.

This report identifies the HTRW sites requiring further consideration during later stages of the project development and design as they may affect or be affected by the proposed CSRMM measures.

Sections 2 through 10 of this report summarize and provide maps of those HTRW sites that could be identified within each of the nine Regions. When sufficient information was available from a database, a narrative description of the HTRW site is provided in this report.

1.5. Regulatory Framework

This HTRW Survey report was prepared in accordance with the USACE Engineering Regulation (ER) 1165-2-132 and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 United States Code 9601 et seq. as managed and overseen by the United States Environmental Protection Agency (EPA). HTRW is defined by ER 1165-2-132 as:

“Except for dredged material and sediments beneath navigable waters proposed for dredging... HTRW includes any material listed as a ‘hazardous substance’ under CERCLA... Dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRW only if they are within the boundaries of a site designated by the EPA or a state for a response action (either a removal action or a remedial action) under CERCLA, or if they are part of a National Priority List (NPL) site under CERCLA.”

CERCLA Section 103 defines "hazardous substance" by reference to the following authorities:

- Clean Water Act (CWA) section 311 (“CWA Hazardous Substances”)
- CWA section 307(a) (“CWA Toxic Pollutants”)
- Clean Air Act (CAA) section 112 (“CAA Hazardous Air Pollutants (HAPs)”)
- Resource Conservation and Recovery Act (RCRA) section 3001 (“RCRA Hazardous Wastes”)
- Toxic Substance Control Act (TSCA) section 7 (currently no substances are designated under this authority)
- CERCLA section 102(a) also gives EPA authority to designate additional hazardous substances not listed under the statutory provisions cited above.

These authorities have identified and defined over 800 individual non-radionuclide hazardous substances and 1,500 known radionuclides, of which 760 are individually listed in the hazardous substances list.

1.6. Limits of Survey

This HTRW Survey report supports USACE decision making for the current feasibility phase activities as well as those to be made in the following phases: Tier 2, preconstruction engineering and design (PED); land acquisition; construction; operations; maintenance; repair; replacement; and rehabilitation (OMRRR). Further refinement of the HTRW analyses would be required in subsequent phases of the Study.

The HTRW Survey used publicly available HTRW data as well as data Mabbett obtained from proprietary databases provided by Environmental Data Resources, Inc. (EDR) located in Shelton, Connecticut (Section 1.7). No field visits, site investigations, or samplings were performed. The public and proprietary databases do not always identify the

exact location of an HTRW site within a real property parcel, the media (e.g., soil, sediment, groundwater) that is contaminated, nor the specific chemicals responsible for the contamination. Because this is a broad-level HTRW Survey, it is not necessary to identify the exact location of an HTRW site and is not within the Draft Integrated Tier 1 FR/EIS scope. Once USACE selects an Alternative, a more detailed study would be conducted, including during Tier 2 and PED. Where the exact location was identified, it has been included in this report.

Estimating the extent of groundwater contamination and its colocation with any NYNJHATS proposed measure is an inexact process as groundwater continuously transports contamination away from the source area. For proposed measures that are within the tidal zone (typical tidal range at Port Newark 4.5 feet [Marine Weather, 2022]), the groundwater in adjacent soils rises and falls with the tide which has the overall effect of increasing transportation rates of groundwater contamination (Ding, 2009). This creates conditions where groundwater contamination within tidal zones may be encountered significantly further from the source location.

Potential risks from contamination at an HTRW site may vary depending on the specific alignment of the final selected NYNJHAT Study Alternative, the specific measure, and the construction required at that location. The risks are also affected by temporal variations where, for example, an HTRW site impacts construction but not operation, or where an HTRW site may pose long-term risks after construction has been completed. The extent of these potential variations is outside the scope of the HTRW Survey.

The NYNJHATS Regions are highly urbanized, and many areas have an extensive history of utility work and historical soil disturbance from construction, filling operations, and demolitions. Additionally, underground utilities can serve as pathways for groundwater and soil vapor contamination. These prior subsurface disturbances can move, place, or even remove contaminated soils.

1.7. Data Sources

1.7.1. Primary Data Sources

Three data sources were consulted and compared to develop the HTRW Survey for each Region.

- **EDR Corridor Reports** – One Corridor Report for each Region was generated using publicly available data and proprietary databases developed and maintained by EDR. The potential HTRW sites for each Region include buffers ranging from 0.25 to 1.25 miles around the proposed measures. The Reports include supporting data from Geographic Information System (GIS) geodatabases/Access databases. The relevant data from the Corridor Reports is included in the discussion of each Region (Sections 2 through 9). The Corridor Reports themselves are included as Attachment A of this report.
- **New Jersey GIS Clearinghouse** – The New Jersey Department of Environmental Protection (NJDEP) maintains a publicly available database of GIS shapefiles called NJDEP Open Data and the Clearinghouse provides HTRW site-specific technical data.
- **New York State GIS Clearinghouse** – In cooperation with New York State Department of Environmental Conservation (NYSDEC), the New York State Office of Information Technology Services' (ITS) GIS Program Office (GPO) provides statewide GIS framework shapefiles (NYSDEC, 2022). The NYSDEC source provides decision documents and investigative documents for the HTRW sites. The available NYSDEC decision documents include work plans, investigative reports, and administrative files.

1.7.2. Secondary Data Sources

The following secondary sources were consulted for non-environmental data, supporting environmental data, and HTRW site-specific data that allowed for additional context for HTRW assessment and reporting. These included wetlands delineations, property boundaries, and HTRW site reports that could be linked to GIS and EDR database entries via HTRW site name or HTRW site ID numbers from the EPA, NJDEP, or NYSDEC.

- **EPA Fact Sheet and NPL Records** – The USEPA provides public-facing fact sheets and access to some reports and decision documents on their website. This data provides HTRW site-specific information,

including maps and summaries of environmental contamination, risks to human health and the environment, proposed remedies, and Records of Decision (RODs) for HTRW sites. The EPA does not maintain this data for federal facilities completing remediation under their own CERCLA authority or in collaboration with the USEPA. Federal facilities typically maintain their own Administrative Record with varying levels of public access.

- **NYSDEC Decision Documents** –The GIS data provides additional context from the NYSDEC website for technical data on each HTRW site. However, detailed HTRW site-specific information is not included in this broad-level report unless the HTRW site is considered an immediate risk to human health and the environment (NYSDEC Class A).
- **ESRI GIS Servers** – ESRI, the developers of the ArcGIS software, maintain a GIS Server with extensive mapping support for aerial photography, navigation maps, and some public utilities.

1.8. HTRW Groups Used in This Survey

Some of the large linear NYNJHAT Study Alternatives are located in more than one Region, but the majority of the Alternatives are located in a single Region. Figure 1-1 shows the nine Regions and identifies which NYNJHAT Study Alternatives are located within each Region. For the purposes of the HTRW Survey, the type of measure is considered. Likewise, due to the high level of urbanization and industrialization of the NYNJHAT Study Regions, a single measure may overlap with dozens of HTRW sites.

To assist reviewers on making decisions on the impact of HTRW on any given alternative, the HTRW sites have been divided into five groups (A through E). Each HTRW Site Group, as defined in the following sections, is discussed in detail for each of the Regions with supporting maps.

In general, the HTRW Site Groups have been developed to show related HTRW sites together for consideration. In general, this data is provided by multiple databases and publicly available GIS Layers. The specific data sources used to develop the HTRW Site Groups is discussed below.

1.8.1. Group A – National Priority List and Ongoing Corrective Action Sites

These HTRW sites include known National Priority List (NPL) sites with contaminated soil or groundwater, as well as HTRW sites listed on EDR's 2020 Corrective Action. CERCLA was established by Congress in 1980 and gave EPA the funds and authority to remediate contaminated HTRW sites where there is no identifiable or capable potentially responsible party (PRP). The purpose of CERCLA, also referred to as Superfund, is to protect human health and the environment, require that identified responsible parties pay for remediation, involve communities in the process, and return contaminated HTRW sites to productive uses (EPA 2022).

HTRW sites that are within the CERCLA NPL program, rather than a state remediation program, are not necessarily more contaminated but often have no active PRP managing the HTRW site other than EPA. This could be due to historical bankruptcy or confused or unclear ownership history. New York provides NPL site boundaries while New Jersey provides known groundwater contamination boundaries. When this data provides actionable information on contamination adjacent to or crossing the NYNJHAT Study Alternatives, it has been presented as part of Group A.

The EDR 2020 Corrective Action data is in Group A with the NPL sites because it highlights HTRW sites with ongoing active remediation as of 2020. Many of the 2020 Corrective Action sites will also be listed in Group C (State Program Sites).

Table 1-2 Group A Databases

Database/Layer	Source
EDR's NPL Database	EDR Corridor Report
2020 Corrective Action	EDR Corridor Report
New Jersey NPL Sites	https://www.nj.gov/dep/gis/digidownload/
New Jersey NPL Subsites	https://www.nj.gov/dep/gis/digidownload/
New York NPL Sites	https://gis.ny.gov/gisdata/

1.8.2. Group B – State Program Sites

New Jersey and New York typically have active PRP participation in HTRW site restoration and management. However, the state program HTRW site lists are extensive and very active in most of the Regions.

Due to the substantial number of state program HTRW sites within the Regions, Group B focuses on HTRW sites with deed notifications or active engineering controls and does not include assessments of fully remediated or closed HTRW sites. Future surveys may want to consider these former HTRW sites.

Table 1-3 Group B Databases

Database/Layer	Source
NJ Known Contaminated Sites	https://www.nj.gov/dep/gis/digidownload/
New Jersey NPL Sites	https://www.nj.gov/dep/gis/digidownload/
NJ Extent of GW Contamination	https://www.nj.gov/dep/gis/digidownload/
New York Remediation Sites	https://gis.ny.gov/gisdata/
New York Remediation Boundaries	https://gis.ny.gov/gisdata/

The NYSDEC provides five classifications for hazardous waste Registry sites that are specified in the New York State Environmental Conservation Law (NYSDEC, 2022a). The New York Registry is the state managed HTRW site program, often colloquially called “State Superfund” program, though it is not related to the CERCLA program managed by EPA. For the HTRW Survey at the reconnaissance level, only Classes 1, 2 and 4 (below) of the Registry sites will be discussed in Group B. In later stages of the improvement planning, Class 3 sites might require an assessment. NYSDEC also defines five separate classifications for non-Registry sites in the same database; these are discussed in Group C below (Section 1.6.3).

- **Class 1 Site:** Causing, or presenting an imminent danger of causing, irreversible or irreparable damage to the public health or the environment – immediate action is required.
- **Class 2 Site:** Significant threat to the public health or environment – action required. These sites may also be listed on the Federal NPL.
- **Class 3 Site:** Does not present a significant threat to the environment or public health – action may be deferred.
- **Class 4 Site:** Site properly closed – requires continued management. This classification is assigned to an HTRW site that has been properly closed but that requires continued site management consisting of operation, maintenance, and/or monitoring. Class 4 is appropriate for an HTRW site where remedial

construction actions have been completed for all operable units, but the site has not necessarily been brought into compliance with standards, criteria, or guidance (e.g., a groundwater extraction and treatment system has been installed and is operating properly but groundwater standards have not been achieved yet). The Record of Decision should define the remedial action objectives that need to be achieved during site management. If a Certificate of Completion (CoC) is to be issued for an HTRW site, the CoC is issued concurrently with the reclassification.

- **Class 5 Site:** Site properly closed – does not require continued management. This classification is assigned to an HTRW site that has been properly closed and requires no further action. This may include an HTRW site where continued operation, maintenance, or monitoring is not needed to achieve/maintain protectiveness, but the site is not suitable for delisting from the Registry (e.g., DEC is unable to obtain an institutional control).

1.8.3. Group C – Sites with Hazardous Chemical Usage and Releases

Group C focuses on facilities that use hazardous materials and have been documented as having current or historical impacts. In general, these sites and facilities that use materials that have a high likelihood of creating environmental contamination and are typically high-volume generators of hazardous wastes as defined under RCRA and CERCLA. The sites identified by these reports are single addresses, and often contain only minimal detail, with no volumes, chemicals, or extent of contamination. Therefore, the data provides a high-level screening tool, but all data from the databases requires field confirmation and assessment.

This Group includes the following proprietary environmental databases provided in the Corridor Reports:

- **Chrome Sites** – May impact groundwater and soils. Hexavalent chromium is sufficiently soluble to be transported from a source location in a variety of groundwater conditions and is a known human carcinogen. Primary concerns are direct contact and consumption of contaminated media. Construction issues include dust generation from contaminated soils and caked soils on clothing.
- **Coal Ash Sites** – Coal Ash sites have been undergoing a series of regulatory changes. These sites create carcinogenic polyaromatic hydrocarbons (PAHs) as well as sulfur impacted runoff. They also create pH changes that can have an impact on the fate and transport of metals. PAHs are known human carcinogens but are highly immobile with the primary risks from direct soil contact, dust generation during construction, and incidental consumption.
- **Lead Smelters** – Lead smelter operations create lead dust both at the facility and during transport. Lead is a known carcinogen but is primarily managed through the TSCA which limits lead concentrations at child play and no-play areas. Lead impacts arise mostly from contact, ingestion, and dust generation. However, lead in soil may impact groundwater and surface water in acidic conditions.
- **Lead** – In addition to lead smelters, the Lead Database contains sites that have lead in soil contamination above the action levels for that site. Construction sites use the industrial (non-play area) lead in soil limit set by TSCA (typically 1,600 mg/kg). However, many of the Lead Database sites are related to schools and public buildings and are reporting lead values that exceed the TSCA defined play-area value, typically 400 mg/kg.
- **Current and Historic Dry Cleaners** – Dry cleaners historically used solvents, typically trichloroethylene (TCE) and tetrachloroethylene (PCE). PCE, TCE, and daughter products of their breakdown in the groundwater are toxic and carcinogenic. Though PCE and TCE are denser than water, they will dissolve slowly into the surrounding groundwater at concentrations that present unacceptable risks to human health and the environment. These compounds are also volatile and will enter the unsaturated soil vadose zone above the water table and penetrate buildings and trenches at concentrations that are dangerous to building tenants and workers. These vapors also may enter trenches during construction, especially if the work is being completed at or near the groundwater table.
- **Historic Automotive Repair Shops** – Automotive repair shops use solvents, but also may store and use chrome products, fuels, and other hazardous materials, including paints, acids, and products that

introduce metals and aerosols to the environment or mobilize existing metals due to changing soil chemistry. These can impact soil, groundwater, and surface water.

- **Major Facilities** – Major facilities is a catch-all term for sites that are hazardous waste generators or processors. Individual facilities may not be contaminated but are included here to screen for potential risks and impacts. Major facilities often appear on multiple environmental databases and may have any type of contamination.
- **Industrial Hazardous Waste Facilities** – These sites process, store, and transfer hazardous waste of all types for all media.
- **Per- and Polyfluoroalkyl Substances (PFAS) Sites** –PFAS are manufactured compounds with a long lifespan in the environment. They are thought to be toxic at relatively low levels and may bioaccumulate in living tissue. They are used in some industries, but also are present in firefighting foam and fire retardants used in manufacturing and industry as safety equipment. Regulations on PFAS, and the understanding of their toxicity and risk to human health and the environment, are changing rapidly. PFAS compounds are generally encountered in aqueous form in groundwater and surface water but may be present in waste and soils. They do not readily aerosol or evaporate.
- **Formerly Used Defense Sites (FUDS)** – FUDS sites are former United States Department of Defense (DoD) sites that may have any of the common hazardous wastes in soil or groundwater, including any or the ones discussed above. They have a potential for radiological materials as well based on historical usage of radiological activities at some FUDS sites (e.g., former Nike missile sites); these sites also may be associated with unexploded ordnance (UXO) (see below). In general, an HTRW site is added to the FUDS database following an investigation where contamination to soil or water has been identified.
- **UXO** – A database of UXO discoveries and sites. UXO is a unique hazardous waste as it creates single instances of risk, rather than a contaminated media. However, some UXO may include chemical warheads, such as mustard gas, which can explode and injure workers or residents.
- **Mines** – The Mines Database included excavation areas and works. The sites within the NYNJHAT Study Regions are associated with sand dredging and processing, rather than mining and excavation.
- **Vapor Reopened** – The Vapor Reopened database provides data on sites that were previously closed, but due to groundwater contamination have been reopened to assess vapor intrusion issues. Vapor intrusion is a primary risk pathway for new construction and trenching operations.

Group C also includes the following non-Registry sites in New York State, including sites that are being investigated in the Brownfield Program or other remediation programs (NYSDEC, 2022b). For this HTRW Survey report, Classes A, P, and PR non-Registry sites will be included. The NYSDEC and GPO layers and databases that identify these sites do not include area boundaries, therefore precise assessments cannot be provided.

- **Class A (Active):** This classification is assigned to a non-Registry site in any remedial program where work is underway and not yet complete (e.g., Brownfield Cleanup Program, Environmental Restoration Program, Voluntary Cleanup Program, and RCRA Corrective Action Program sites). This may include Manufactured Gas Plant sites or those being remediated under an EPA Cooperative Agreement.
- **Class C (Complete):** This classification is assigned to sites where the Department has determined that remediation has been satisfactorily completed under a remedial program (e.g., State Superfund, Brownfield Cleanup Program, Environmental Restoration Program, Voluntary Cleanup Program, and RCRA Corrective Action Program). State Superfund (Registry) sites must have completed all active operation, maintenance, or monitoring requirements before they can be delisted and made Class C. Non-Registry sites may be made Class C after successful completion of all required construction or after no further action remedy has been determined by the Department. These sites will be issued a Certificate of Completion (COC) but may still require ongoing maintenance and periodic certification of institutional/engineering controls (IC/EC).

- Class P (Potential):** This classification is used for sites where preliminary information indicates that it may have contamination that makes it eligible for consideration for placement on the Registry of Inactive Hazardous Waste Disposal Sites (commonly referred to as the list of State Superfund sites, this program is not related to the Federal CERCLA Superfund program) (NYSDEC, 2022a). Further information and/or investigation, in the form of a site characterization, is needed to determine if a Class P site qualifies for listing on the Registry. To qualify for placement on the Registry, there must be evidence that hazardous waste was disposed on the site and that any resulting contamination presents a significant threat (or reasonably foreseeable threat) to public health or the environment. Class P sites are not listed on the Registry, and many are eventually found to not qualify for Registry listing. Sites that do not qualify for listing are typically then reclassified to a “Class N” site.
- Class PR (Potential RCRA Corrective Action):** “Class PR” is a specialty classification code that is not related to the Registry. This is used for sites that are, or have been, subject to the requirements of the RCRA. RCRA sites are those that are managing or have actively managed hazardous waste (e.g., waste solvents from a manufacturing process). If spills occurred resulting in environmental contamination remediation may be necessary under the RCRA Corrective Action Program. Class PR sites are investigated and reviewed to determine if RCRA corrective action is necessary. If so, remediation is carried out under a RCRA permit, order, or other legal mechanism.
- Class N (No Further Action at this time):** The investigation and evaluation of a Class N site results in a determination that contamination at the site does not warrant placing the site on the Registry, or that it is being addressed under a Brownfield Program. Or it indicates the site was in a Brownfield Program, or other non-Registry program, but remediation was not completed, and the site did not otherwise qualify for listing on the Registry. As an example, this occurs when a volunteer begins a Brownfield Project and then for economic or other reasons, determines they cannot complete the work and the Project is terminated. If the contamination at the Brownfield site qualifies it for placement on the Registry, the NYSDEC acts to do so. If the site re-enters a Brownfield program, it can be reclassified to Class A (Active) to indicate that work has recommenced, a withdrawn application, or waste disposal were identified at the site but without a related release.

Table 1-4 Group C Databases

Database/Layer	Source
Chrome Sites	EDR Corridor Report
Coal Ash Sites	EDR Corridor Report
Lead Smelters	EDR Corridor Report
Lead	EDR Corridor Report
Dry Cleaners	EDR Corridor Report
Historic Automotive Repair Shops	EDR Corridor Report
Major Facilities	EDR Corridor Report
Mines	EDR Corridor Report
Industrial Hazardous Waste Facilities	EDR Corridor Report
PFAS Sites	EDR Corridor Report
FUDS	EDR Corridor Report
Vapor Reopened	EDR Corridor Report
UXO	EDR Corridor Report

NYSDEC Non-Registry Site	NYGIS / NYSDEC GIS Clearing House
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1.8.4. Group D – Bulk Chemical and Petroleum Storage and Known Spill Sites

This HTRW Site Group consists of the major chemical and petroleum storage locations collated with and in the vicinity of the NYNJHAT Study Alternatives, with a focus on known spills, releases, and reported leaking tanks. Bulk storage databases include the following databases:

Table 1-5 Group D Databases

Database/Layer	Source
Underground Storage Tanks (USTs)	EDR Corridor Report
Above ground Storage Tanks (ASTs)	EDR Corridor Report
Chemical Bulk Storage (CBS)	EDR Corridor Report
Leaking Underground Storage Tanks (LUST)	EDR Corridor Report
Leaking Tanks (LTANKS)	EDR Corridor Report
Historic LUSTs	EDR Corridor Report
SPILLS	EDR Corridor Report
NY Spills	EDR Corridor Report
Spills 90	EDR Corridor Report
NJ Release	EDR Corridor Report
Fuels Program	EDR Corridor Report

The proprietary databases include a number of overlapping identities (e.g., spills, NY spill, NJ Release, Spills 90, and Fuels Program). The database managers have attempted to remove duplicates from the system, but due to the large number of sites, and the various ways of tracking a release (latitude and longitude, cross streets, facility names, and/or state or federal ID numbers), it cannot be determined in a group of spills or releases is one event or multiple events.

The majority of leaking UST and spills sites provided in these databases are likely to be leaking or released petroleum products (gasoline, diesel, oil, kerosene, waste oil, etc.), which are generally not considered hazardous but do present a vapor intrusion and potentially groundwater contact issues during any construction, utility work, or other soil disturbing activities. Non-petroleum USTs may present a hazardous or toxic risk and can also pose soil-vapor, groundwater, or soil contact risks. The databases do not normally specify the release or tank contents.

Non-release locations (ASTs, USTs, and CBS) are provided to provide context for the area. Though releases from ASTs are typically found early due to visual inspection, UST releases may not be detected until site closure and removal, if then. An area with many bulk storage facilities, has a generally higher potential risk of contaminated soils and vapor risks, which will be considered in the feasibility and design phases.

1.8.5. Group E – Radiological Sites

The databases generally provide two categories of radiological hazards, radiological waste spills or releases, as well as facilities with known radiological use. Two primary radiological waste site databases were publicly accessible and reviewed for this Survey:

- **Formerly Utilized Sites Remedial Action Program (FUSRAP) Database** – This database includes sites that took part of the World War II era Manhattan Project and may have handled radioactive materials. There

were few regulatory requirements during the time frame of the Manhattan Project and the FUSRAP program was developed to address radiological wastes left over from that time. The FUSRAP database is maintained by the Department of Energy (DOE) (DOE, 2020).

- **RAD INFO** – This proprietary database lists facilities that generate radiological wastes, these facilities may not have any spill or release, but are included in this Survey as potential HTRW sites.
- **Material Licensing Tracking System (MLTS)** – A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC.

In addition, the Corridor Reports for each Region were reviewed for other sites with radiological wastes or radionuclides listed as part of the release or wastes stored onsite. If identified, the sites were reported in the Group G subsection for each of the Regions.

Table 1-6 Group E Databases

Database/Layer	Source
FUSRAP	EDR Corridor Report
RAD INFO	EDR Corridor Report
MLTS	EDR Corridor Report

2. Hackensack Passaic Region – A Line

The Hackensack Passaic Region – A Line (Figures 2-2 through 2-6) is primarily located in Newark and includes areas along the Hackensack and Passaic Rivers. It includes a number of major interstate and rail corridors and is heavily industrialized along State Route 21 and Route 9.

The NYNJHAT Study Alternatives are located along the Passaic River (approximately six miles) from Bellview to the confluence with the Hackensack, and Hackensack River for two miles above the confluence. The Hackensack Passaic Region – A Line encompasses Alternatives 2, 3A, 3B, and 4 (Figure 2-1). Alternative 4 has more measures that have a larger footprint and are more contiguous. Alternative 5 has no proposed measures within this Region.

2.1. Group A Sites

A total of seven NPL sites and two Corrective Action 2020 Sites were identified within approximately a mile of the Hackensack Passaic Region – A Line (Figure 2-2). Of those seven NPL, three appear to be collocated with the proposed measures. The remaining NPL and corrective actions sites are in the vicinity of the proposed measures but not collocated. However, groundwater moved contaminants and sites may be comingled. As the proposed measures are located along the Passaic and Hackensack River, there is the possibility that contaminated groundwater from an NPL site could be encountered.

Table 2-1 Hackensack Passaic Region - A Line – Group A Sites

Site Name	Collocated / Distance
Riverside Industrial Park	Yes
Frey Industries	Yes
Diamond Alkali Company	Yes
SCA Chem Services Co / Earthline Div.	No
Federated Metals Corp	No
Safety Kleen Envirosystems Co.	No
Langer Transport Corp	No
PJP Landfill	Potentially (see site summary)
Clean Earth of North Jersey	No
Standard Chlorine Chemical Company	No
Diamond Head Oil Refinery	No
Passaic River Sediment Superfund Site	Yes (Sediment)

2.1.1. Riverside Industrial Park

Located at 29 Riverside Avenue the Riverside Industrial Park includes numerous sites. The EPA is led a majority of the site activities until 2014, when the PRP begun a Remedial Investigation/Feasibility Study (RI/FS) to delineate the impacts, estimate risk to human health and the environment and develop remedial alternatives. The identified PRPs are Honeywell International and PPG Industries (EDR, 2022a). The site consists of 7.6 acres and remains partially active. The property was used for paint, resins, linseed oil and varnish manufacturing from 1902 to 1971 by Patton Paint Company, which merged into the Paint and Varnish Division of Pittsburgh Plate Glass Company in 1920. Pittsburgh Plate Glass Company changed its name to PPG Industries, Inc., in 1968. (EPA, 2021)

EPA's cleanup plan requires removing and disposing found across the site including contaminated soils, non-aqueous phase liquids, USTs, contaminated sewer water, and groundwater. EPA will assess if vapors from soil

below the surface (also known as soil gas) are getting into occupied buildings at the site at levels of concern and, if needed, EPA will require the installation of vapor intrusion mitigation systems to protect occupants from vapor intrusion. (EPA, 2020)

Soil vapors may intrude into trenches during construction, likewise, groundwater from the Riverside Site is expected to be present at very shallow conditions.

2.1.2. Diamond Alkali

The main plant of Diamond Alkali was located at 80 Lister Avenue in Newark, New Jersey approximately five miles upgradient from Newark Bay along the western shore of the Passaic River (Figure 2-2). The Diamond Alkali plant previously manufactured agricultural chemicals and herbicides. These products were utilized in the production of “Agent Orange,” which was utilized for both agricultural and non-agricultural purposes throughout the 1950s and 1960s during the Vietnam War. A bi-product of Agent Orange manufacturing, 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD), was released to the site and has polluted the surface and subsurface soils and groundwater of the plant. In addition, TCDD polluted the adjacent Passaic River. Although production of Agent Orange ceased in the 1970s, adverse effects of manufacturing processes are still present to this day. Due to the known pollution concerns, the New Jersey Department of Environmental Protection (NJDEP) prohibits the consumption of fish or shellfish from the Lower Passaic River and Newark Bay (EPA, 2022a).

The Diamond Alkali investigations started in 1984 when the facility was added to the NPL. The bounds of the facility’s NPL designation has been expanded based on completed investigations. In 2001 an interim remedial action was completed in 2001. The remedial action included the installation of a flood wall, subsurface slurry walls, and groundwater collection and treatment system, and capping to prevent future exposure to contaminated soil and releases to the Passaic River. In 2012, contaminated sediment on the east bank of the Passaic River near Lyndhurst, New Jersey was dredged for removal and subsequently capped. In 2016 the USEPA signed a Record of Decision for the lower 8.3 miles of the Passaic River which includes bank to bank dredging to a depth of 2.5 feet, engineering and institutional controls, and long-term monitoring (USFWS et al 2020). The investigations, delineations, and remedial planning is ongoing for the Diamond Alkali Plant.

The lower Passaic below the plant is collocated with the proposed measures in this Region.

2.1.3. PJP Landfill

The PJP Landfill Superfund Site is an inactive landfill located on approximately 87 acres in an industrial area in Jersey City, Hudson County, New Jersey. It is bordered on the north and west by the Hackensack River, on the southeast by Truck Routes 1 and 9 and there are various light industries along the other borders. The Site is bisected by the Slip Avenue Ditch which runs roughly east-west conveying run-off from the PJP Landfill and the Jersey City stormwater/sewer system to the Hackensack River (EPA, 2022a).

From 1970 to 1985, subsurface fires attributed to spontaneous combustion of buried drums and decomposition landfill materials frequently burned on a 45-acre portion of the landfill under the skyway. Throughout the early 1980s, NJDEP and the Hudson Regional Health Commission inspected the Site and conducted sampling and air monitoring due to the large amount of smoke emitted by the fires.

Landfill operations contaminated the soil, sediment, surface water and groundwater with hazardous chemicals including volatile and semi-volatile compounds, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and metals.

Though the Slip Avenue Ditch lies between the superfund site and the Hackensack River, any measures along the eastern side of the river may be collocated with the landfill. Likewise, the shallow groundwater from the landfill may reach the river.

2.1.4. *Syncon Resins*

The Syncon Resins NPL site is a fifteen-acre NPL site is located at 77 Jacobus Avenue, Kearny NJ; and occupies a narrow peninsula of land bordered by the Passaic River and the Hackensack River. The rivers meet about one and one-half miles south of the site and form the upper reaches of Newark Bay. The Syncon Resins site has been divided up into two Operable Units (OUs), which are being investigated and remediated individually.

EPA selected a cleanup plan in the site's 1986 Record of Decision (ROD). The ROD called for several cleanup activities including removing the contents of the storage tanks and vessels for off-site disposal and decontaminating buildings and tank structures, as necessary. It also called for excavating lagoon liquids, sediments, and contaminated surface soil for off-site disposal and installing a cover over the site to allow natural flushing of underlying soil and groundwater contaminants. The ROD required collection and treatment of contaminated water from the shallow aquifer, to be discharged to the Passaic River following treatment (EPA, 2022b).

EPA completed the OU1 cleanup was in October 1993. NJDEP currently operates the groundwater treatment system. EPA conducted supplemental studies to enhance the existing cleanup system at the site and to address the removal of total petroleum hydrocarbons. EPA selected a cleanup plan in September 2010 to excavate and drain contaminated soil, remove buried debris, and install a connecting drainage layer. EPA completed the engineering work needed to carry out the September 2010 plan in October 2012. Funding to start the cleanup became available in August 2015 and EPA began the work in October 2016 after making some necessary revisions of the engineering design work. The construction was completed in October 2018. The presence of contaminated groundwater could pose a risk to construction, structures, utility work, or ground disturbing activities on the north or south shore of the Passaic River.

2.1.5. *Passaic River Superfund Site*

The Diamond Alkali Superfund site includes the former manufacturing facility at 80-120 Lister Avenue in Newark, New Jersey, the Lower Passaic River Study Area (LPRSA), and the Newark Bay Study Area. The LPRSA includes the 17-mile tidal stretch of the river from Dundee Dam to Newark Bay and tributaries. The Newark Bay Study Area includes Newark Bay and portions of the Hackensack River, Arthur Kill and Kill van Kull. The area surrounding the site is densely populated and heavily industrialized (EPA, 2022a).

Kolker Chemical Works, Inc. produced Dichloro-diphenyl-trichloroethane (DDT) and other chemicals at 80 Lister Avenue in the 1940s. The Diamond Alkali Company, later purchased by and merged into Occidental Chemical Corporation (OCC), owned and operated the facility in the 1950s and 1960s. The facility manufactured agricultural chemicals including herbicides used in "Agent Orange," a defoliant chemical that removes the leaves from trees and plants. These manufacturing processes produced an extremely toxic chemical, 2,3,7,8-TCDD (dioxin), as a byproduct. The state of New Jersey and EPA sampled at and near 80 Lister Avenue and in the river in 1983. Sampling revealed high levels of the toxic chemical dioxin. Following the sampling, EPA listed the site on the Superfund NP) in 1984. EPA and NJ found dioxin, pesticides, and other hazardous substances in the soil and groundwater at 80-120 Lister Avenue as well as dioxin, polychlorinated biphenyls (PCBs), metals, PAHs, and pesticides in sediment in the Lower Passaic River.

With NJDEP oversight, OCC completed a remedial investigation/feasibility study (RI/FS) for 80-120 Lister Avenue from 1984 to 1987. The RI/FS showed that many hazardous substances contaminated the 80-120 Lister Avenue properties and the Passaic River, including dioxin, semi-volatile and volatile compounds, herbicides, pesticides, PCBs, and metals. The widespread contamination affected soil, groundwater, air, surface water, and building structures.

The cleanup consisted of several actions that took over a decade to complete. With EPA oversight, OCC covered contaminated material with a cap to prevent it from spreading. OCC also installed subsurface slurry walls and a flood wall. These barriers block the spread of contaminated groundwater. Finally, with EPA oversight, OCC constructed a groundwater collection and treatment system to further stop the spread of contamination. These

cleanup actions prevent exposure to contaminated soil and put a stop to further releases into the river. OCC completed the work for this interim cleanup plan in 2001.

OCC signed an Administrative Order on Consent with EPA in 1994 to investigate a six-mile stretch of the Lower Passaic River. Tierra Solutions, Inc. (Tierra) performed the work on OCC's behalf. The investigation found contaminants of concern that originated from the Diamond Alkali facility. Tierra found 2,3,7,8-TCDD (dioxin) and other pesticides throughout the six-mile stretch, with the highest concentrations adjacent to the 80-120 Lister Avenue facility.

This investigation also found many other contaminants of concern not necessarily linked to Diamond Alkali's operations. The investigation revealed that contaminated sediment moved into and out of the six-mile stretch, leading to the conclusion that a more comprehensive study was needed. As a result, EPA expanded the scope of the investigation in 2002 to include a stretch of river from Newark Bay to 17 miles upriver, now called the 17-mile Lower Passaic River Study Area (LPRSA).

EPA formed a partnership in 2004 with the U.S. Army Corps of Engineers, New Jersey Department of Transportation, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, and NJDEP to conduct a joint study of the LPRSA. The partnership integrated the RI/FS for the LPRSA performed under the Superfund program with a Feasibility Study under the Water Resources Development Act.

EPA investigated contamination in sediment and water of the Lower Passaic River, the major tributaries, combined sewer overflows, and stormwater outfalls to the river from 2004 to 2007. The CPG entered into a new agreement with EPA in 2007 in which the group agreed to take over the performance of the 17-mile LPRSA RI/FS, under EPA oversight.

Cleanup activities in 2012 and 2014 removed and disposed of contaminated sediment from two areas of the river. Tierra removed sediment with the highest concentration of dioxin in 2012 from the portion of the Lower Passaic River adjacent to the 80-120 Lister Avenue facility. The CPG dredged and capped a highly contaminated mudflat on the east bank of the river near Lyndhurst in a project called the River Mile 10.9 Removal.

Currently, the cleanup work is being conducted in several stages: immediate actions and interim cleanup actions on the land portion of the site, short- and medium-term (called time critical and non-time critical) actions in the Passaic River, remediating the 17-mile LPRSA starting with the lower 8.3 miles long-term, and remediating Newark Bay long-term.

2.1.6. Lower Hackensack River Superfund Site

On September 7, 2022 the USEPA announced the addition of the lower Hackensack River to the Superfund National Priorities List. Although it is not mapped on these figures, the Superfund designations extends from Newark Bay to the Oradell Dam, and consists of contaminated sediments related to hundreds of years of sewage and industrial discharge within New Jersey's Bergen and Hudson Counties. For additional information visit: <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0201845#bkgground>.

2.2. Group B Sites

There are at least 58 sites with deed notifications (deed restrictions) and/or engineering controls collocated with the proposed measures along the Passaic and Hackensack Rivers (Figure 2-3). There are more than 200 others within 0.25 miles. Due to the nature of the underlying database the precise bounds of these sites cannot be determined without a in person review with the site owner and/or the NJDEP (NJDEP, 2022). This is a fraction of the listed contaminated sites collated and adjacent to the proposed measures, however, these sites have either legal restrictions (deed notifications) on site activities or physical barriers and systems (engineering controls) that need to be considered. Sites on these lists may include petroleum sites, which are typically not categorized as hazardous waste, but do create toxic conditions associated with soil gas vapor. An example of these facilities include:

- The Passaic Riverside Industrial Park (also a Superfund site) due to the presence of a refinery, the Accupack facility, and car maintenance facilities on the riverbank. South of Interstate 280 and east of the Passaic River in Harrison are six contaminated sites with deed and engineering controls. The petroleum sites include refineries, storage, and transport facilities.
- Approximately two miles upstream from the confluence and on the southside of the Passaic River are four contaminated sites together and collocated with the proposed measures. These include Chemical Waste Management of NJ, Duralac Chemical Corp, Benjamin Moore, and Hilton Davis Chemical Corps.
- A similar grouping of industrial facilities collocated with the proposed measures is located on the western bank of the Passaic River and located immediately west of the confluence of the Passaic and Hackensack Rivers, these include Elan Chemical, Equistar Chemicals, General Chemical Co., 3M Co, and Darling Delaware Company (a food processing company).
- On the east bank of the Hackensack River at the confluence is the Hudson County Chromate sites (some of which are part of a Superfund site, as well petroleum refinery, storage, and transport sites. These are collocated with the proposed measures.
- On the west bank at the crossing point of the Newark – Jersey City turnpike bridge there is a cluster related to turnpike operations and more Hudson Chromate contaminated sites.

2.3. Group C Sites

The Group C sites for this Region show strong correlation to the contaminated site with deed notifications and engineering controls (Group B). However, this data from the Hackensack Passaic – A Line Region Corridor Report (EDR, 2022a) is able to narrow down specific contamination types but is not able to distinguish between active and non-active sites, or sites with existing legal controls, active engineering controls, or installed remediation systems.

2.3.1. Chrome Sites

As seen previously, there are two main collocated clusters of chrome sites, the Hudson County Chromate facility on the eastern bank of the Hackensack River at the confluence with the Passaic and the chromate sites located between the Pulaski and Lincoln highways on the western bank of the Hackensack River.

Though there is no chromate site shown on the eastern bank where the Newark- Jersey City Turnpike is located, there is one shown on the eastern bank just north of the Eastern Terminal Ventures.

2.3.2. Coal Ash Sites

No coal ash sites were identified as being collocated with the proposed measures.

2.3.3. Lead Smelter Sites

There are two lead smelter sites located south of the Passaic River approximately two miles upstream from the confluence with the Hackensack River. Both lead smelter sites may be collocated with the proposed measures due to their presence close to the river and likely use of the Passaic River system.

2.3.4. Dry Cleaners & Automotive Service Sites

A total of 49 dry cleaners, historical automotive services, and/or Historic Cleaners are collocated with the proposed measures. The majority of these facilities (47 of 49) are located along the Passaic River, mostly along State Route 21. Most of these facilities are automotive service stations rather than dry cleaners.

2.3.5. Major Facilities

There are seven to ten major facilities along the lower Passaic River, primarily located in the last two miles above the confluence with the Hackensack. Due to the size of the facilities and the limits of the database search, the boundaries of these facilities cannot be determined. It is assumed that a majority of these facilities are large enough to reach the riverfront where the measures are proposed. These facilities include

- Chemical Waste Management of NJ

- Duralac Chemical Corp
- Benjamin Moore
- Hilton Davis Chemical Corp
- Elan Chemical Corps
- Equistar Chemicals LP
- General Chemical Corp.
- BASF WYANDOTTE CORP

Two major facilities are located along the Hackensack and collocated with the proposed measures; both of these are located north of the Newark – Jersey City Turnpike Bridge (Figure 2-4).

2.3.6. *Industrial Hazardous Waste*

One Industrial Haz Waste facilities are located on the lower Passaic River, the Chemical Waste Management of NJ facility also listed in the Major Facility's database above.

2.3.7. *PFAS Sites*

One PFAS site is collocated with the proposed measures, and four other measures are within a mile of the PFAS site. The collocated PFAS site is along the lower Passaic River near the previously identified Elan Chemical Co., Equistar Chemicals LP, and General Chemical Co. facilities.

2.3.8. *FUDS*

There are four FUDS sites mapped in the vicinity of the NYNJHAT Study Alternatives, of which one of them (Eagle Products / NIRP – McKiernan-Terry) is collocated. In addition, on unmapped site, the US Naval Shipyards in Kearny was unmapped, but is collocated with the proposed measures.

The McKiernan-Terry facility is a private facility that was contracted by the DoD to make condensers, pumps, and other maritime auxiliary machinery used at the nearby shipyards. The database does not indicate there is current contamination.

2.4. **Group D Sites**

Approximately 18 LUST sites were mapped as potentially collocated with the proposed measures in this Region (Figure 2-5). The majority of the LUST sites are located on the northern reach of the Passaic River and are along a major service corridor where the automotive service stations are located; therefore, most of those LUST sites are likely to be petroleum releases (gasoline and diesel). Two LUST sites along the lower reach of the Passaic River are collocated with the measures and the Syncon Resins NPL site.

Spills sites are located along most of the Passaic and Hackensack River reaches of the proposed measures. Expectedly, many of those spills are located at NPL and Major Facility sites including Syncon Resins, Diamond Alkali, and the Hudson County Chromate Facilities.

USTs are present throughout the Region with more than one hundred located along the path of the proposed measures. Due to the small size of USTs, it cannot be determined to what extent the USTs are specifically collocated with the proposed measures. However, as leaks and releases are only discovered upon exploration each UST poses a risk to site workers.

2.5. **Group E Sites**

Four sites were listed with release of radiological materials and one FUSRAP site was identified in this Region (Figure 2-6). The Research Organic Inorganic Facility is collocated with the northern terminus of the Passaic River proposed measures, the incident was the release of 240 lbs. of radiological material/wastes in 1987. The radionuclides were not provided in the report.

A 2019 incident was identified at a PSE & G facility, but the database included ten PSE & G facilities within the vicinity of the proposed measures, of which three are collocated. The nature, volume, and radionuclide material were not identified in the database.

The Clean Earth Facility west of the Passaic River is collocated and had multiple releases between 2015 and 2019. The IWS Transfer facility on the east bank of the Hackensack River at the foot of the Pulaski Highway Bridge had a release in 2015.

The Hudson County Chromate facility on the east bank of the Hackensack River at the confluence (also listed on the NJ Known Contaminated Sites, Chrome sites, and Spills databases) was listed. No details of releases of radiological materials were provided in the database. The FUSRAP program sites may not have used radiological materials.

2.6. Summary of Hackensack Passaic Region - A Line

2.6.1. Regional Summary Review

The confluence of the Hackensack and Passaic Rivers is highly industrialized and urbanized, this is also true for the adjacent Upper Bay Region (Section 9). The area consists of light industrial facilities (automotive service centers, leaking USTs, and storage sites) along the upper Passaic River within and around both the Belleview Industrial Park and the Riverside Industrial Park and heavy industry in the southern reaches of the Passaic River and along the Hackensack River (Figure 2-2 to 2-6). Proposed measures within these areas will likely encounter petroleum, metals, and small-scale releases common to light industrial facilities. Riverside Industrial Park contains many spills and other release sites with one of the contained facilities a Federal NPL site. The Belleview Industrial Park at the northwestern terminus of the proposed measures has many poorly located spills, releases, NJDEP managed releases and a recent radiological material incident.

As the Passaic turns eastward, there are additional light industrial (automotive) and leaking UST sites for about one mile until the Diamond Alkali and Duralac Facilities and other chemical companies are encountered. This includes a NL site as well as a number of industrial facilities with a history of spills and releases. As the Passaic turns back southward toward the confluence with the Hackensack River, the trend for larger industrial facilities and chemical corporations continues.

Due to the size of the major industrial facilities and waste handlers and generators, it is not possible to identify where in these facilities the HTRW is located, however, most of these facilities will be placed along the riverbank in order to make use of the transport options made available by the port.

At the confluence of the Hackensack and Passaic Rivers on the eastern bank is the Hudson County Chromate Facility. This facility and adjacent properties were present in all groupings. Based on a review of the data chromium and solvents are likely to be encountered in the soil and groundwater at the site, with various engineering controls present throughout the facility and adjacent facilities to manage potential discharges of contaminated groundwater to the surface water.

North of Hudson County Chromate near the Pulaski highway there is a grouping of sites and facilities from the Pulaski to the Newark – Jersey City Turnpike. These include a NPL site, various facilities along the terminal of the bridge.

The peninsula between the Hackensack and Passaic Rivers is industrial with many major industrial facilities with a history of spills and releases. However, these are fewer in number than the western and southern bank of the Passaic.

2.6.2. Further Consideration

Overall, the two major issues in this Region appear to be the stretch of the lower Passaic River starting at the Diamond Alkali and Duralac facilities and running all the way to the Hackensack River. The Hudson Valley Chromate

site is also a major consideration and additional assessment would be required to understand exactly where the contamination is located. All work south and east of Diamond Alkali would likely require significant consideration and preplanning to manage exposure and disturbance of HTRW and assure that engineering controls remain in place and effective.

The Passaic west of and north of Diamond Alkali is heavily industrialized, but the database suggests a majority of the spills and issues are related to metals and fuels, rather than solvents or other hazardous and/or toxic chemicals (chromium, industrial products). However, any work compete along this stretch of river would require assessment of engineering controls and groundwater conditions prior to trenching or utility work.

As the Lower Hackensack River was recently designated a Superfund Site by the USEPA, further information will become available as remedial investigations commence, therefore, USACE will coordinate with the USEPA, and other Federal, State, Local agencies as appropriate, in future phases of the NYNJHAT Study.

Figure 2-1 Hackensack Passaic Region – A Line – Locations of Measures Within Each Alternative

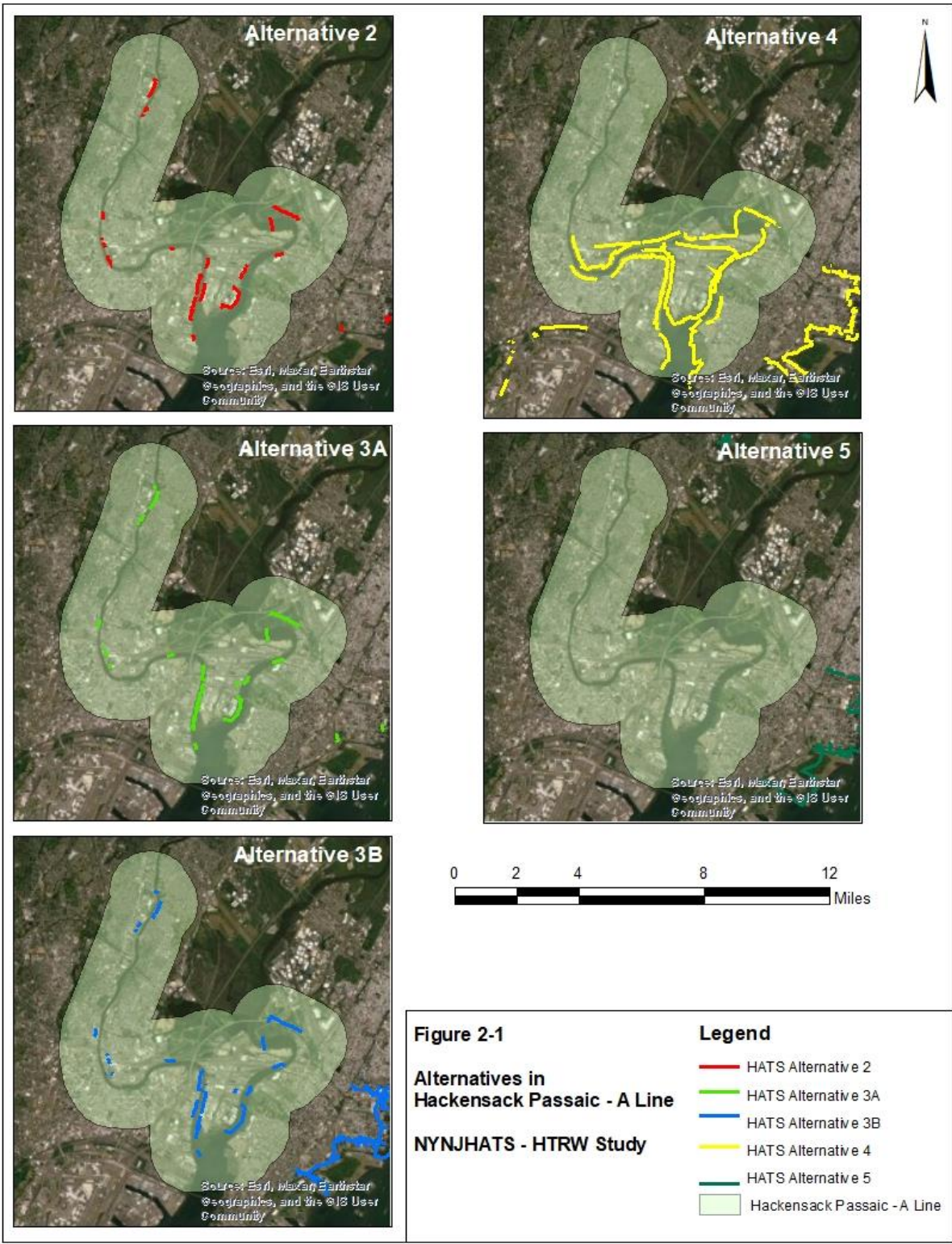


Figure 2-2 Hackensack Passaic Region – A Line – Group A

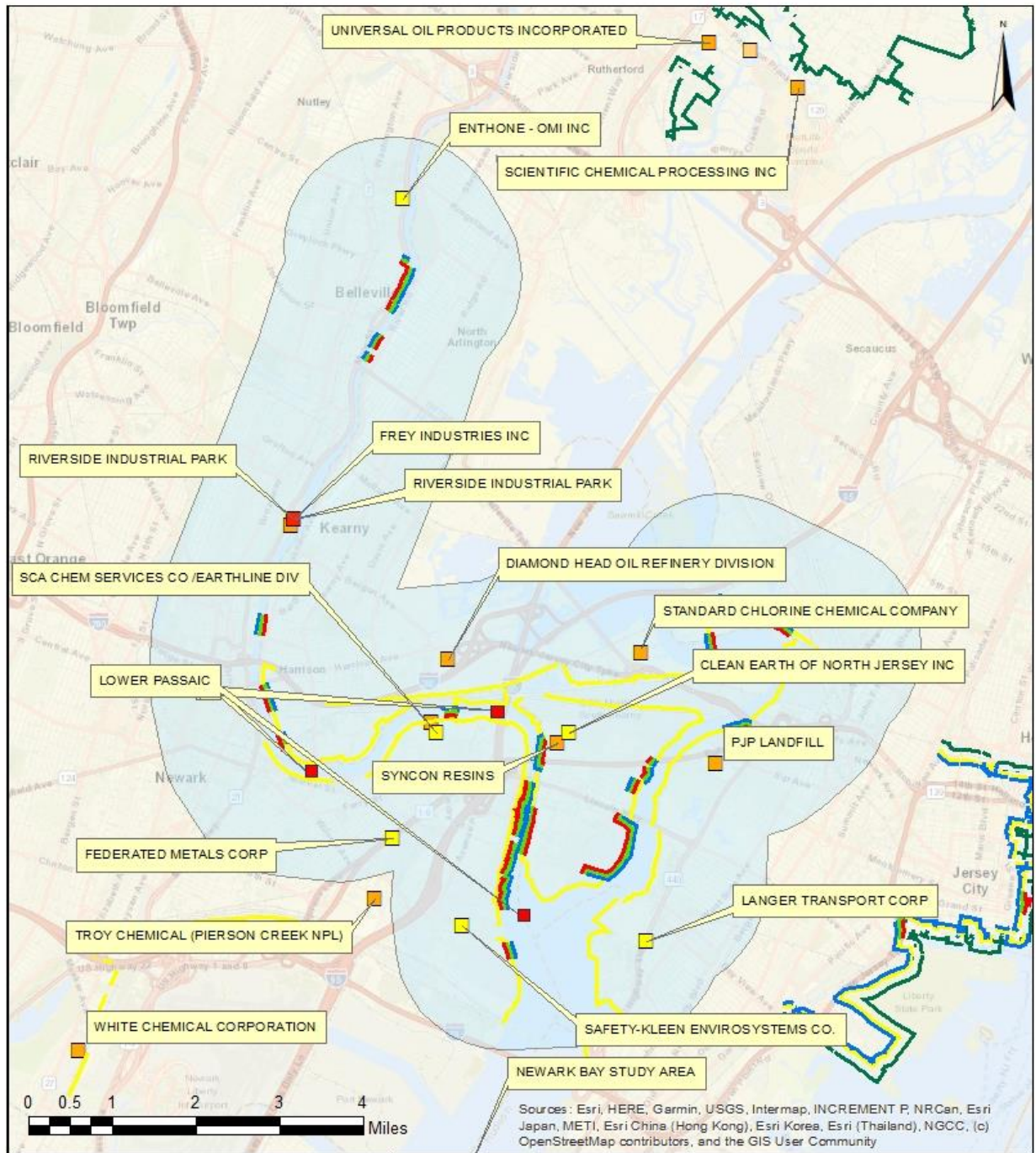


Figure 2-2

Group A
Hackensack Passaic Region - A Line
NYNJHATS - HTRW Study

Legend

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> — HATS Alternative 2 — HATS Alternative 3A — HATS Alternative 3B — HATS Alternative 4 — HATS Alternative 5 | <p>Group A Databases</p> <ul style="list-style-type: none"> EDR's Listed 2020 COR ACTION EDR's Listed NPL NJ's Listed NPL Sites NJ's Listed NPL Subsites | <ul style="list-style-type: none"> Hackensack Passaic - A Line <p>NOTE:
 For visualization purposes, Alternatives 3A, 3B, 4, and 5 are offset from center.</p> |
|--|---|--|

Figure 2-3 Hackensack Passaic Region – A Line – Group B

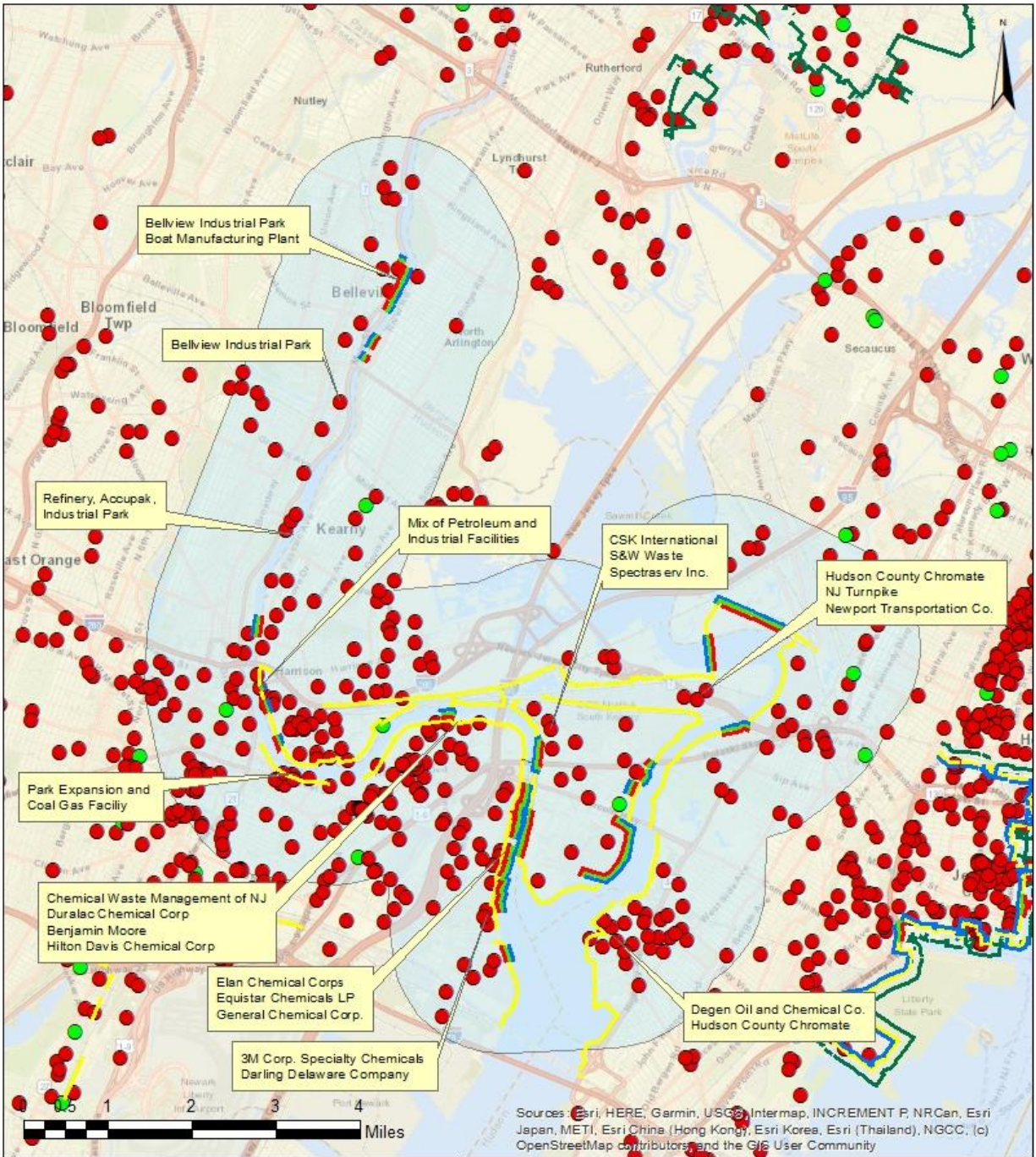


Figure 2-3
Group B
Hackensack Passaic Region - A Line
NYNJHATS - HTRW Study

Legend	
— HATS Alternative 2	● Ongoing Engineering Controls
— HATS Alternative 3A	● Ongoing Deed Notification
— HATS Alternative 3B	● Deed Notification and Engineering Controls
— HATS Alternative 4	 1.3 Mile Buffer - Hackensack Passaic - A Line
— HATS Alternative 5	

Figure 2-4 Hackensack Passaic Region – A Line – Group C

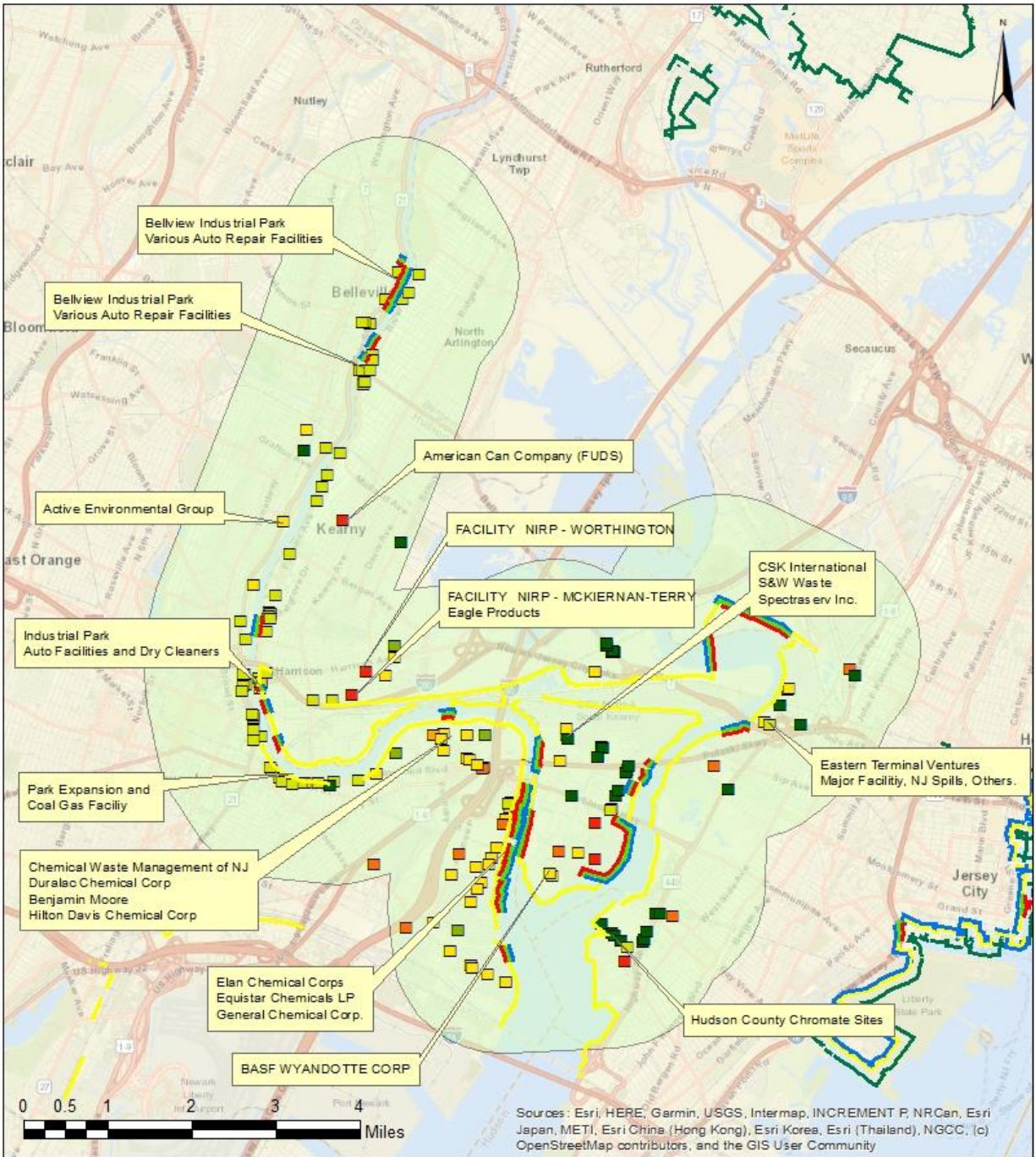


Figure 2-4

**Group C Sites
Hackensack Passaic Region - A Line**

NYNJHATS - HTRW Study

Legend

- | | |
|--|---|
| <ul style="list-style-type: none"> — HATS Alternative 2 — HATS Alternative 3A — HATS Alternative 3B — HATS Alternative 4 — HATS Alternative 5 1.3 Mile Buffer - Hackensack Passaic - A Line | <p>Group C Databases</p> <ul style="list-style-type: none"> ■ CHROME ■ COAL ASH ■ LEAD SMELTERS ■ DRYCLEANERS, E DR HistAuto, EDR Hist Cleaner ■ HIST MAJOR FACILITIES, MAJOR FACILITIES ■ Ind. Haz Waste ■ PFAS ■ FUDS |
|--|---|

Figure 2-5 Hackensack Passaic Region – A Line – Group D

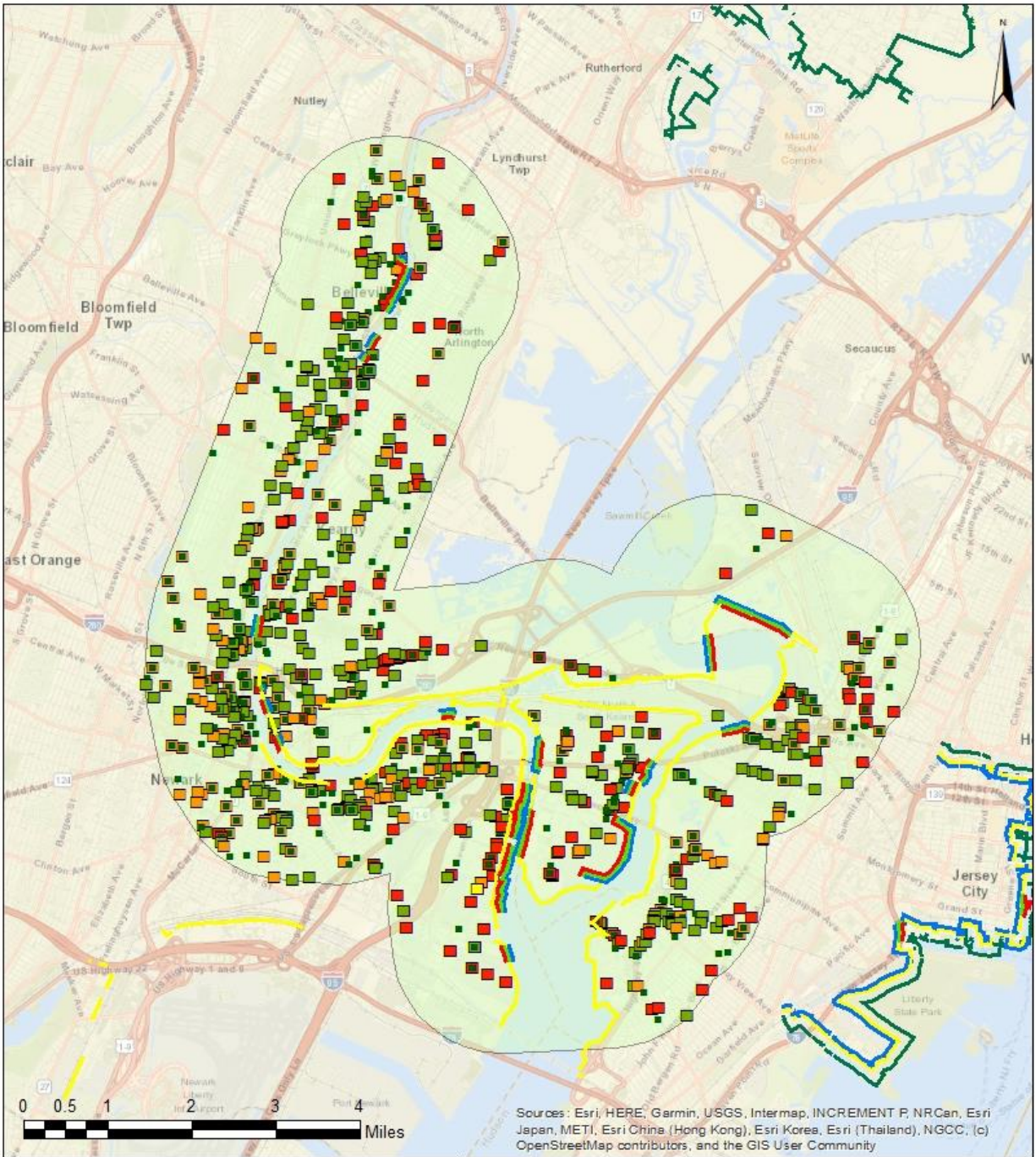


Figure 2-5

**Group D
Hackensack Passaic Region - A Line**

NYNJHATS - HTRW Study

Legend

- | | |
|---|---|
| — HATS Alternative 2 | ■ UST/AST |
| — HATS Alternative 3A | ■ HIST LUST |
| — HATS Alternative 3B | ■ FUELS PROGRAM |
| — HATS Alternative 4 | ■ LUST |
| — HATS Alternative 5 | ■ SPILLS |
| 1.3 Mile Buffer - Hackensack Passaic - A Line | |

Figure 2-6 Hackensack Passaic Region – A Line – Group E

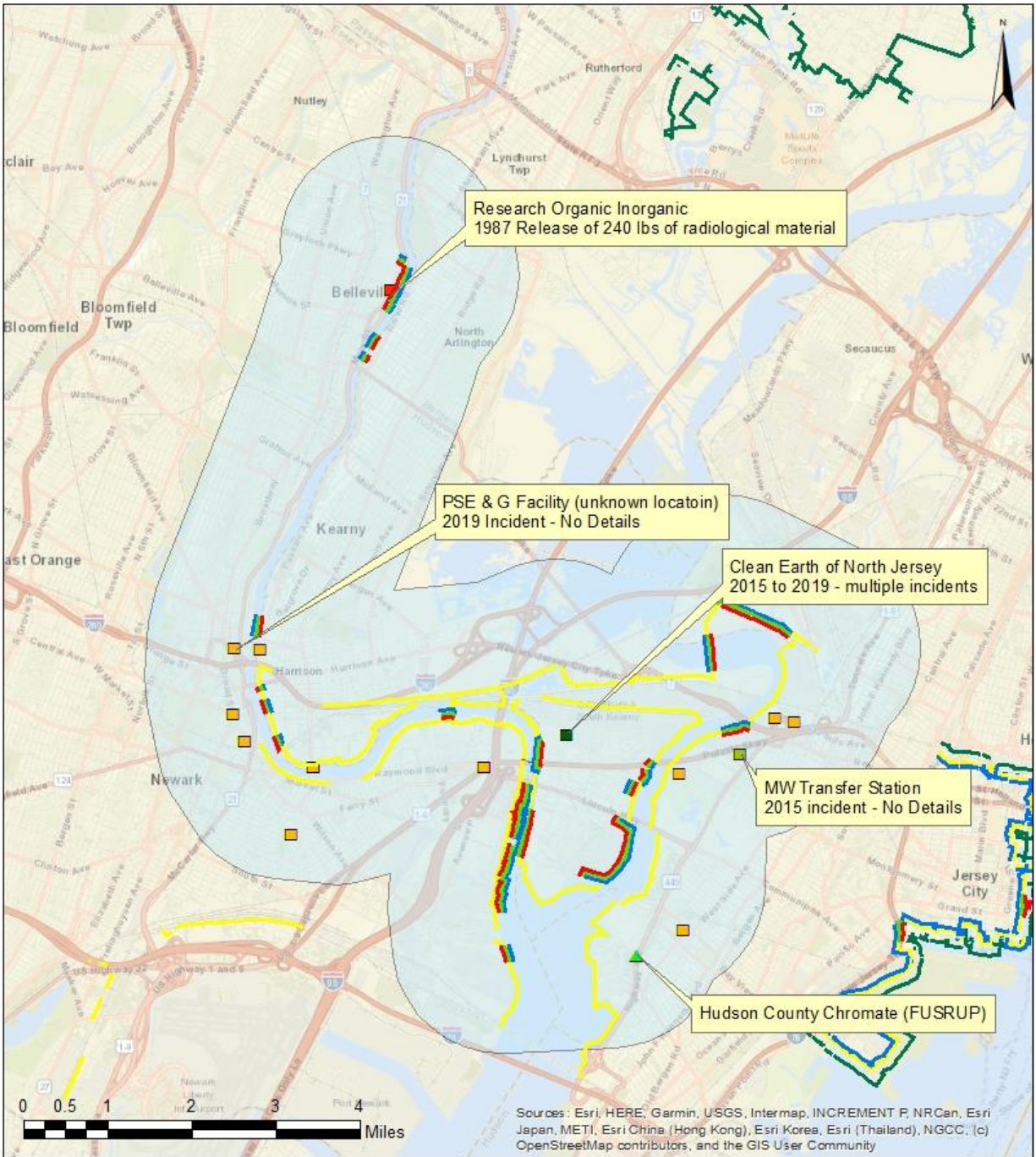


Figure 2-6

**Group E
Hackensack Passaic Region - A Line**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- CLEAN EARTH OF NORTH JERSEY
- IWS TRANSFER SYSTEMS OF N.J.
- PSE & G Facilities
- RESEARCH ORGANIC INORGANIC
- ▲ FUSRAP
- 1.3 Mile Buffer - Hackensack Passaic - A Line

3. Hackensack Passaic Region – B Line

The seven miles of the Hackensack Passaic Region – B Line (Figure 3-2 through 3-6) is primarily located in Newark and includes areas along the Hackensack and Passaic Rivers north of the A-Line discussed in Section 2. It includes a number of major interstate and rail corridors and is heavily industrialized along State Route 21 and Route 9.

The proposed activity areas are located along the Passaic River (approximately six miles) from Bellview to the confluence with the Hackensack, and Hackensack River for two miles above the confluence. The Hackensack Passaic Region – B Line encompasses Alternative 5 (Figure 3-1). Alternative 2, 3A, 3B, and 4 measures are not proposed for this Region.

3.1. Group A Sites

A total of four NPL sites and one Corrective Action 2020 Sites were identified in within approximately a mile of the Hackensack Passaic Region – B Line (Figure 3-2). Of those NPL sites, four appear to be collocated with the proposed measures. The remaining NPL and corrective actions sites are in the vicinity of the proposed measures but not collocated. However, groundwater moved contaminants and sites may be comingled. As the proposed measures on located along the Passaic and Hackensack River, there is the possibility that contaminated groundwater from an NPL site could be encountered.

Table 3-1 Hackensack Passaic Region B Line – Group A Sites

Site Name	Collocated/Distance
Berry's Creek Drainage Basin	Yes
E C Electroplating Inc.	No
Arsynco Inc.	Yes
Scientific Chemical Processing Inc.	Yes
Universal Oil Products Inc.	Yes
Ventron/Velsicol	Yes

3.1.1. Berry's Creek Drainage Basin

Berry's Creek Drainage Basin is part of the Ventron/Velsicol Superfund site. Berry's Creek is approximately 4.5-miles long from the West Riser tide gate to the Hackensack River. Berry's Creek is a tidally influenced estuary whose tidal influence is controlled by tide gates across major tributaries to the creek (EPA, 2018).

The USEPA signed a Record of Decision (ROD) for the interim cleanup plan of the Berry's Creek Study Area (BCSA). The BCSA has a long history of industrial discharges, landfilling, sewage discharges, and urban runoff that has contaminated the sediment and water, which in turn contaminated fish and animals via the food chain. Known contaminants include mercury (including methylmercury), PCBs, and chromium at levels that pose an unacceptable risk to humans and wildlife. The BCSA has been divided into five geographic segments, with EPA leading the interim actions to control the release of contamination from the sediments in the Upper and Middle Berry's Creek. The Berry's Creek cleanup plan is currently sensitive to ongoing flood mitigation efforts in the Meadowlands marsh areas (EPA, 2018).

3.1.2. Ventron/Velsicol

Ventron/Velsicol operated as a mercury processing plant between 1929 and 1974. Process wastes containing mercury and other contaminants were disposed of on the 40-acre property and to Berry's Creek. Soils, groundwater, surface water, and sediments are contaminated on-site. Off-site, sediments, surface water, and biota are contaminated (see section 3.1.1 regarding the off-Site Berry's Creek Drainage Basin area (EPA, 2022c).

In 1929, F.W. Berk and Company, Inc. (Berk) began operating a processing plant and manufacturing mercury products. Berk continued to operate the plant until 1960, when the corporation dissolved. Wood Ridge Chemical Corporation, a wholly owned subsidiary of the Velsicol Chemical Corporation, acquired the plant and the property.

The main operations of the mercury processing plant included the manufacture of red oxide of mercury, yellow oxide of mercury, phenyl mercuric acetate and other organic and inorganic mercury compounds. The plant also reclaimed mercury from both in-house and customer waste products (e.g., amalgams, batteries, thermometers, impure mercury).

Velsicol continued to operate the plant until 1968, when the Ventron Corporation, a predecessor to Morton, purchased WRCC and the 7-acre parcel on which the plant was located from Velsicol. Velsicol retained ownership of the rest of the site property until transferring ownership to NWI Land Management, Inc., in 1986. Ventron operated the plant until its closure in 1974. In 1974, the parcel of land where the plant was located was sold to Robert and Rita Wolf (Wolf). Wolf demolished the plant in 1974 and, in 1975, subdivided the land and transferred title of the western parcel to U.S. Life Insurance Company. Two warehouses were built, one on each parcel.

EPA placed the site on the Superfund National Priorities List in 1984. NJDEP selected a cleanup plan for the upland portion of the site in 2006 that called for excavation and off-site disposal of highly contaminated soils, the capping of mercury-contaminated soils remaining on site, land use restrictions, a barrier system to contain mercury concentrations beneath one of the on-site buildings, and a clean buffer zone between the capped areas and creeks/wetlands. This cleanup was reportedly completed in 2010 (EPA, 2022c).

3.1.3. *Arsynco Inc.*

The Arsynco facility is located in a heavy industrial and commercial area at the western boundary of the Hackensack Meadowlands tidal marsh area. The facility consisted of several manufacturing/storage buildings, as well as two ponds. Between the early 1900s and 1969, the site was used for a variety of chemical and pharmaceutical manufacturing operations. Arsynco manufactured specialty organic chemicals and pharmaceutical intermediates, propylene imine and derivatives, hair dyes, silicone intermediates, a quaternary ammonium salt, propiophenone, and isobutyrophenone between 1969 and 1993 (EPA, 2022d).

The site is currently undergoing remediation for VOCs, SVOCs, metals, and PCBs in soil, as well as VOCs and inorganics in groundwater. Contamination is the result of former site operations (spills, releases, and discharges), disposal of process wastes on-site, and the presence of poor-quality historical fill materials. The facility is being cleaned up under the NJDEP property transfer program.

To address contaminated soils, a combination of excavation and off-site disposal, capping/containment, on-site consolidation into a designated area of the site under an existing approval granted by EPA in accordance with TSCA regulations, and both in-situ and ex-situ treatment via air sparging and soil vapor extraction were selected for remedies. The selected remedy for groundwater remediation consisted of air sparging and vapor extraction, enhanced bioremediation, and natural attenuation (for shallow groundwater) and pump and treat and monitoring natural attenuation (for deep groundwater) (EPA, 2022d).

The soil remediation work at the site is complete. Due to the filing for Chapter 11 Bankruptcy by Aceto Corporation and several of its subsidiaries, including Arsynco, Inc., all remediation work at the Arsynco site was stopped in 2019.

3.1.4. *Scientific Chemical Processing*

The Scientific Chemical Processing site was reportedly used for solvent refining and solvent recovery in the 1940s. SCP used the site for processing industrial wastes from 1971 until the company was shut down by court order in 1980. About 375,000 gallons of hazardous substances were stored on site in tanks, drums, and tank trailers. After drummed materials were removed to address immediate threats to human health and the environment, and after

site investigations, EPA placed the site on the Superfund program's National Priorities List in September 1983. Today, the property hosts a solar panel field (EPA, 2022e).

Four tanks containing hazardous substances, including PCBs, were removed from the site between 1985 and 1986 and the property was fenced off to reduce public access. An interim remedy was implemented by EPA in 1992. A final remedy for the on-property soil and shallow groundwater was selected in 2002, making the formerly interim remedy permanent. Field work for the remedy took place between 2008 and 2011. Deep and off-property groundwater treatment is still ongoing.

3.1.5. Universal Oil Products, Inc.

Universal Oil Products, Inc. (UOP) consists of a 75-acre area of land in which various chemicals were manufactured between 1930 and 1979. EPA divided the site into two Operable Units (OUs) to assist with site management: OU1 consists of upland soil and shallow groundwater, and OU2 consists of a former lagoon area, low-lying marshes, and the waterway channels of Ackermans Creek and its tributaries (EPA, 2022e).

The upland portion of UOP is the former location of the Union Ink Company, which manufactured printing inks, lacquers, enamels, coatings, and silk-screening inks between 1930 and 1945. Trubek Laboratories, Inc. began operations at the site in 1932 as a chemical manufacturing facility and began operating a solvent recovery facility handling waste chemicals in 1955. Trubek constructed and began operating a wastewater treatment plant and two wastewater holding lagoons in 1956 located on the OU2 marsh area. UOP purchased the property from Trubek in 1963. Between 1956 and 1971, seepage from the wastewater lagoons and routing handling of products and wastes resulted in the release of various hazardous substances to the upland soils and groundwater (currently OU1) and the tidal marshes and waterways (currently OU2). Honeywell International Inc. (Honeywell) became the owner of the property in 2002 following a series of mergers and name changes.

In 1983, the NJDEP issued an Administrative Consent Order requiring UOP to conduct a RI/FS study. The site was also listed on the EPA NPL on September 8, 1983. NJDEP was the lead agency for site from 1982 to 2008, after which EPA assumed the role of lead agency. Honeywell and its predecessors have been conducting response actions under NJDEP and EPA oversight since the early 1980s (EPA, 2022e).

3.2. Group B Sites

Approximately twenty-one (21) active state remediation sites with both engineering controls and deed notices are collocated with the proposed measures (Figure 3-3). The NYDEP does not provide significant data on the nature or extent of contamination at these sites, though none are listed on the state groundwater contamination database. It was noted that the sites that were collated potentially fell within the following light industrial categories when compared to the sites presented in the Corridor Report and discussed in Section 3.3 below (EDR, 2022b).

- Service Stations
- Printing Services,
- Theater Companies
- Leather manufacturer
- Warehousing
- Foam manufacturers

3.3. Group C Sites

Ten Group C sites collocated with the proposed measures for this Region were identified (Figure 3-4), mostly associated his current and historical light industrial facilities, one of which was only identified as a major facility (EDR, 2022b).

3.3.1. Dry Cleaners & Automotive Service Sites

Of the three historical dry cleaners within the search area for the Hackensack Passaic – B Line only one was collocated with the proposed measures along Commerce Boulevard. Two collocated automotive facilities were identified along Patterson Plank Road.

3.3.2. Major Facilities

Two current major facilities were identified in the Region, one of them, a foam manufacture, is collocated with the proposed measures. Six historical major facilities were collocated with the proposed measures. The historical sites include the Marin Picard/Verflex facility, Randolph Products, a coating facility, and a Foam manufacturing facility.

3.3.3. PFAS Sites

One mapped PFAS site, Marine Electric Systems, was located along Routt 17 in the PFAS database (EDR, 2022b). As the proposed measures are located between the PFAS site and the surface water body, it is likely that the groundwater could contain PFAS.

3.4. Group D Sites

An estimated 25 to 30 spills as defined and mapped in the Corridor Report databases (EDR, 2022b) were identified as being collocated, or directly adjacent, to the NYNJHAT Study Alternatives proposed (Figure 3-5). The majority of the spills appeared to be associated with previously identified light industrial facilities (foam manufactures, plating shops, large scale printing facilities, and automotive service centers. Manhattan produces, a manufacture collocated with the proposed measures, was notable as having multiple spills in the database (Figure 3-5).

A total of 25-35 historically identified leaking USTs were identified as collocated, or likely collocated with the proposed measures. No release volume or material data was presented for the spills or leaking USTs. Several the identified facilities potentially contain other-than-petroleum projects.

3.5. Group E Sites

No FUSRAP facilities, or other radiological waste sites, were identified in the Hackensack Passaic – B Line Region (Figure 3-6).

3.6. Summary of Hackensack Passaic – B Line

3.6.1. Regional Summary Review

This Region is heavily urban, with moderate industrialization in comparison with the Hackensack Passaic – A Line Region discussed in Section 2. The five mapped Group A sites (NPL and corrective action) are located close to the NYNJHAT Study Alternatives. However, in comparison with other sites, the Hackensack Passaic B Line appears to have less HTRW sites, and they appear to be located in a few areas with interstate and harbor/shoreline access.

3.6.2. Further Considerations

During design and construction, the boundaries of the NPL sites and state active remediation sites need to be reviewed and assessed in greater detail to determine if there is contaminated sediment, soils, and/or groundwater present at the construction sites.

Figure 3-1 Hackensack Passaic Region – B Line – Locations of Measures Within Each Alternative

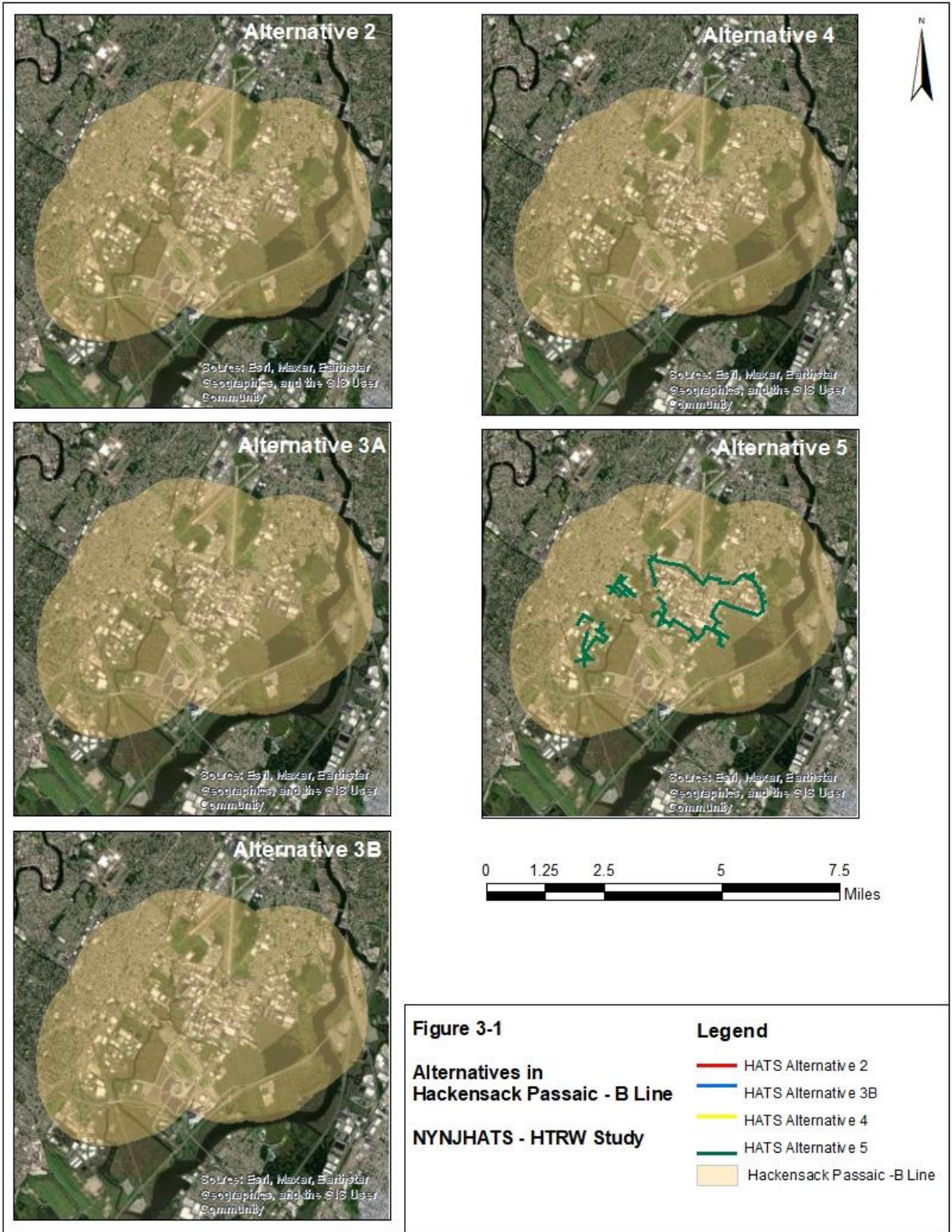


Figure 3-2 Hackensack Passaic Region – B Line – Group A

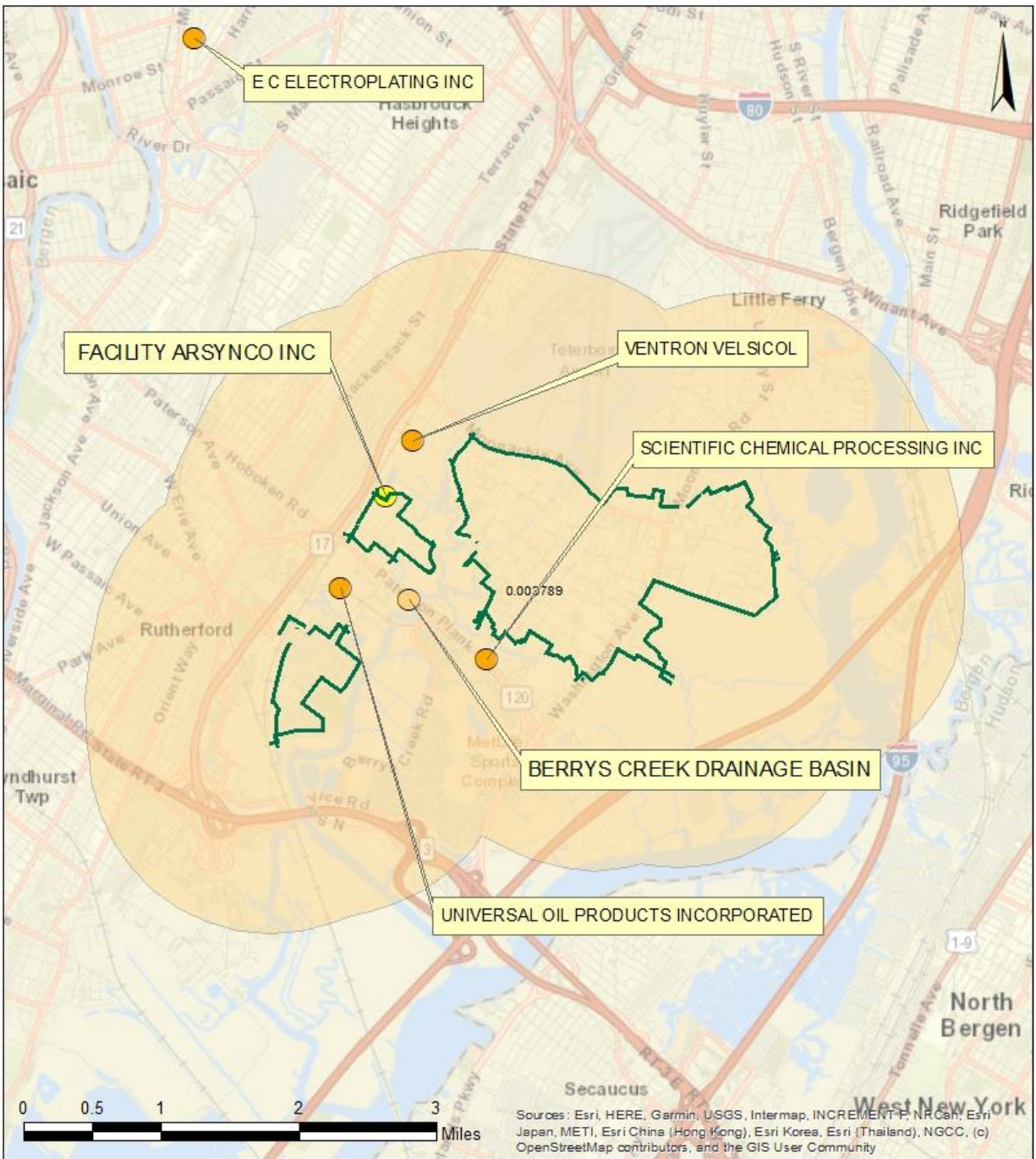


Figure 3-2

**Group A Sites
Hackensack Passaic - B Line**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- Hackensack Passaic - B Line - Buffer
- 2020 COR ACTION
- NPL
- NJ's Listed NPL Sites
- NJ's Listed NPL Subsites

Figure 3-3 Hackensack Passaic Region – B Line – Group B

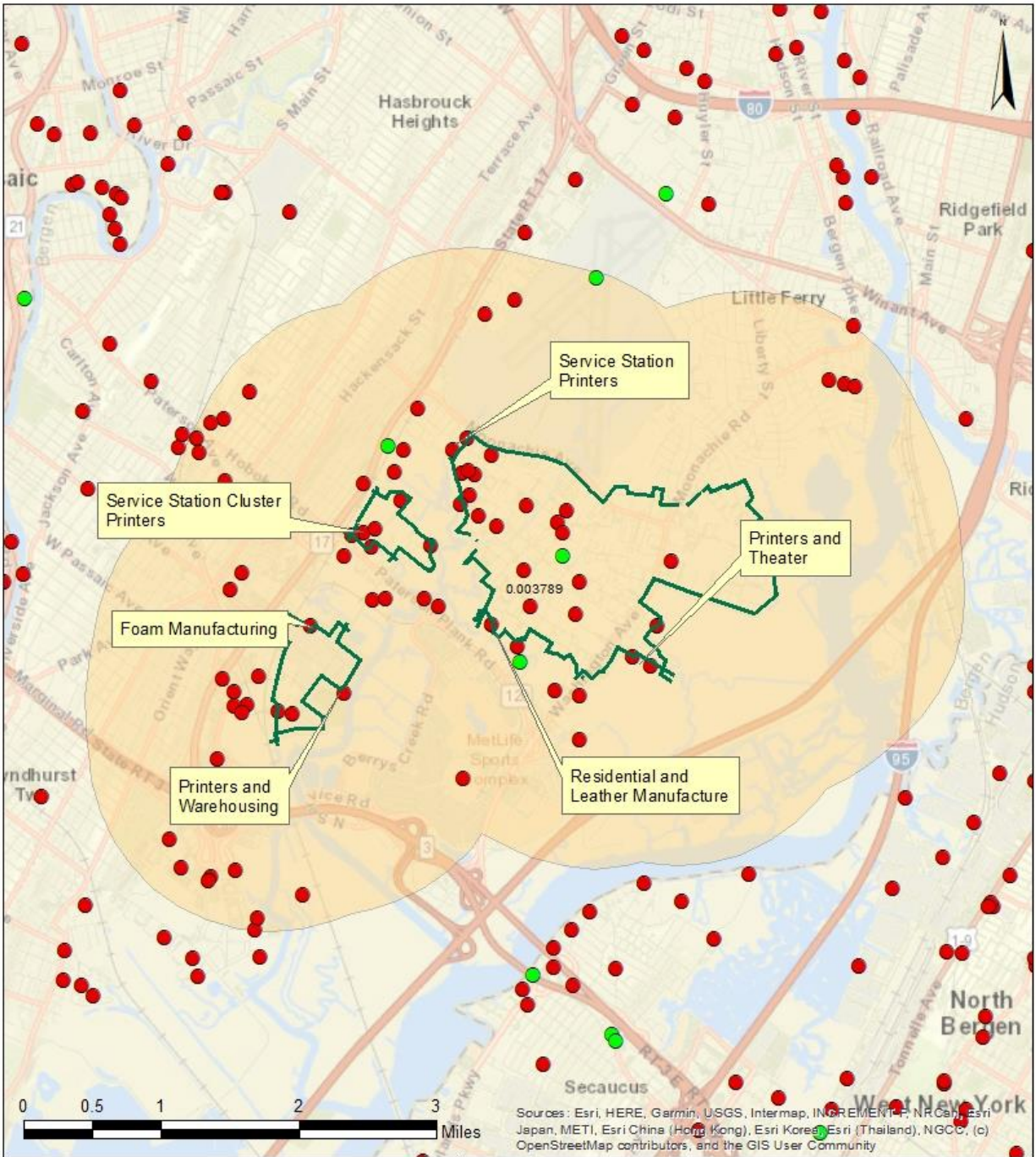


Figure 3-3
Group B Sites
Hackensack Passaic - B Line
NYNJHATS - HTRW Study

Legend	
—	HATS Alternative 2
—	HATS Alternative 3A
—	HATS Alternative 3B
—	HATS Alternative 4
—	HATS Alternative 5
●	Ongoing Engineering Controls
●	Ongoing Deed Notification
●	Deed Notification and Engineering Controls
	Hackensack Passaic-B Line - Buffer
	NJ Extent of GW Contamination

Figure 3-4 Hackensack Passaic Region – B Line – Group C

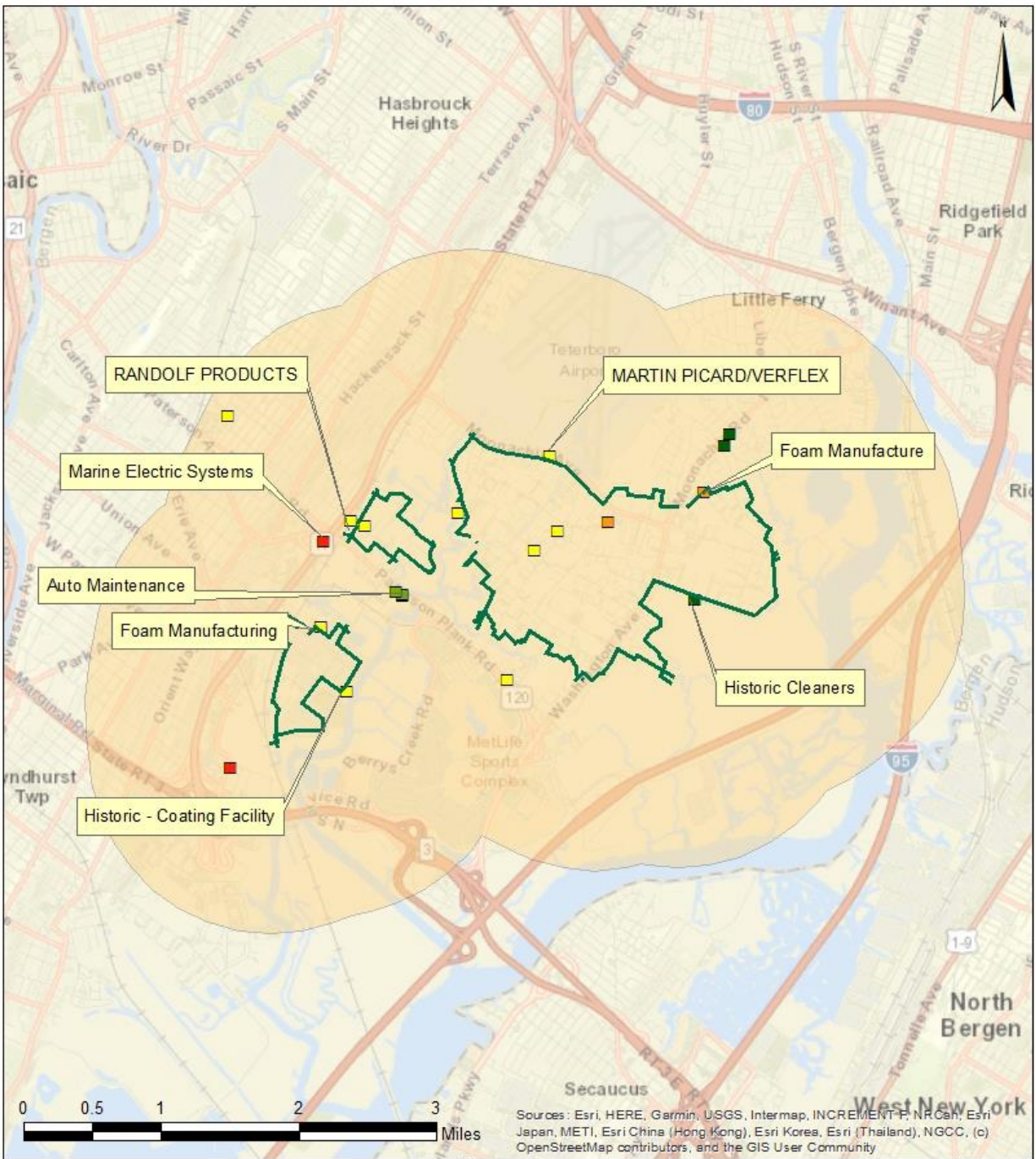


Figure 3-4
Group C Sites
Hackensack Passaic - B Line
NYNJHATS - HTRW Study

Legend	
—	HATS Alternative 2
—	HATS Alternative 3A
—	HATS Alternative 3B
—	HATS Alternative 4
—	HATS Alternative 5
	Hackensack Passaic-B Line - Buffer
■	Dry Cleaners
■	Historic Auto Maintenance
■	HIST MAJOR FACILITIES
■	MAJOR FACILITIES
■	PFAS

Figure 3-5 Hackensack Passaic Region – B Line – Group D

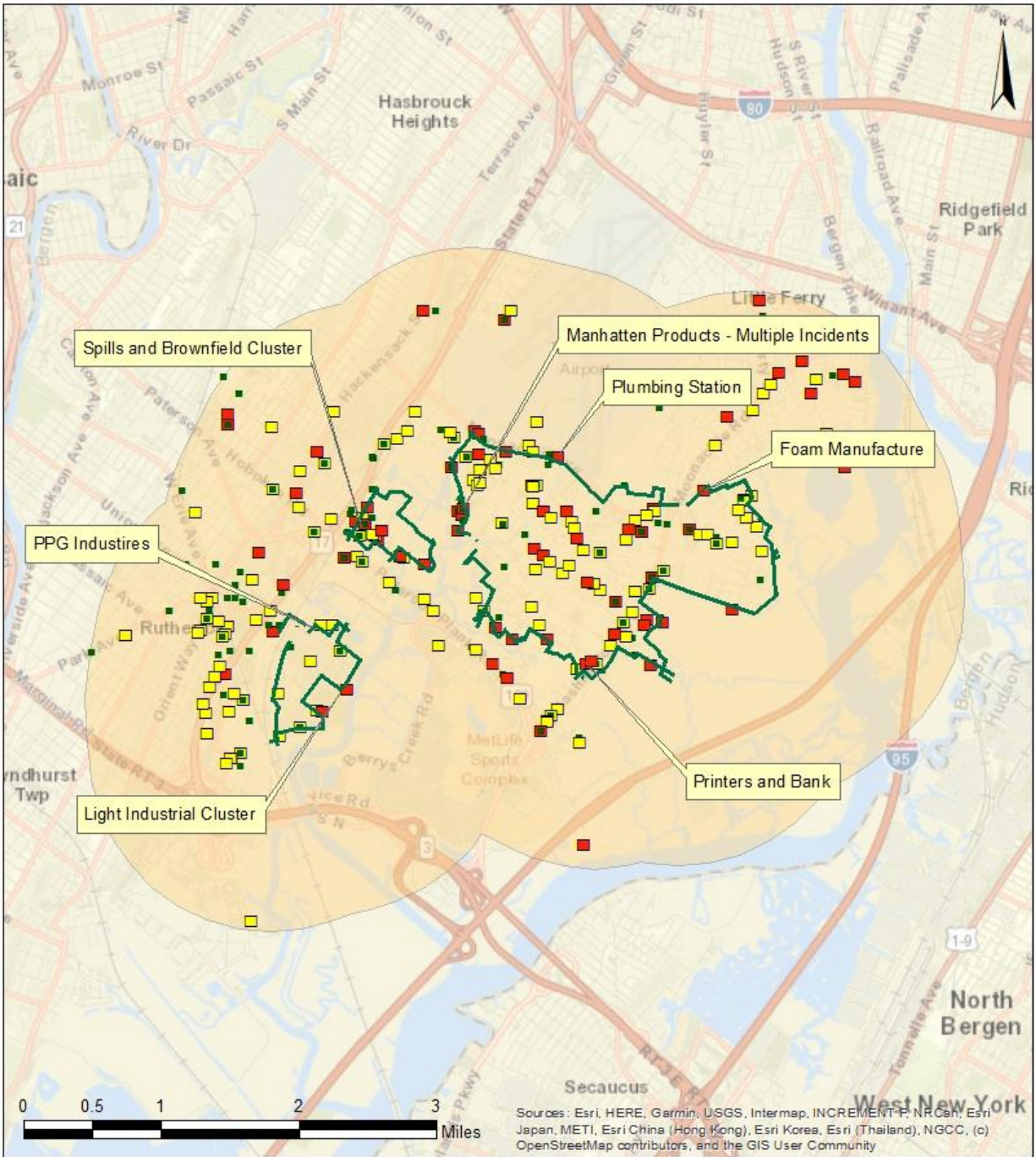


Figure 3-5

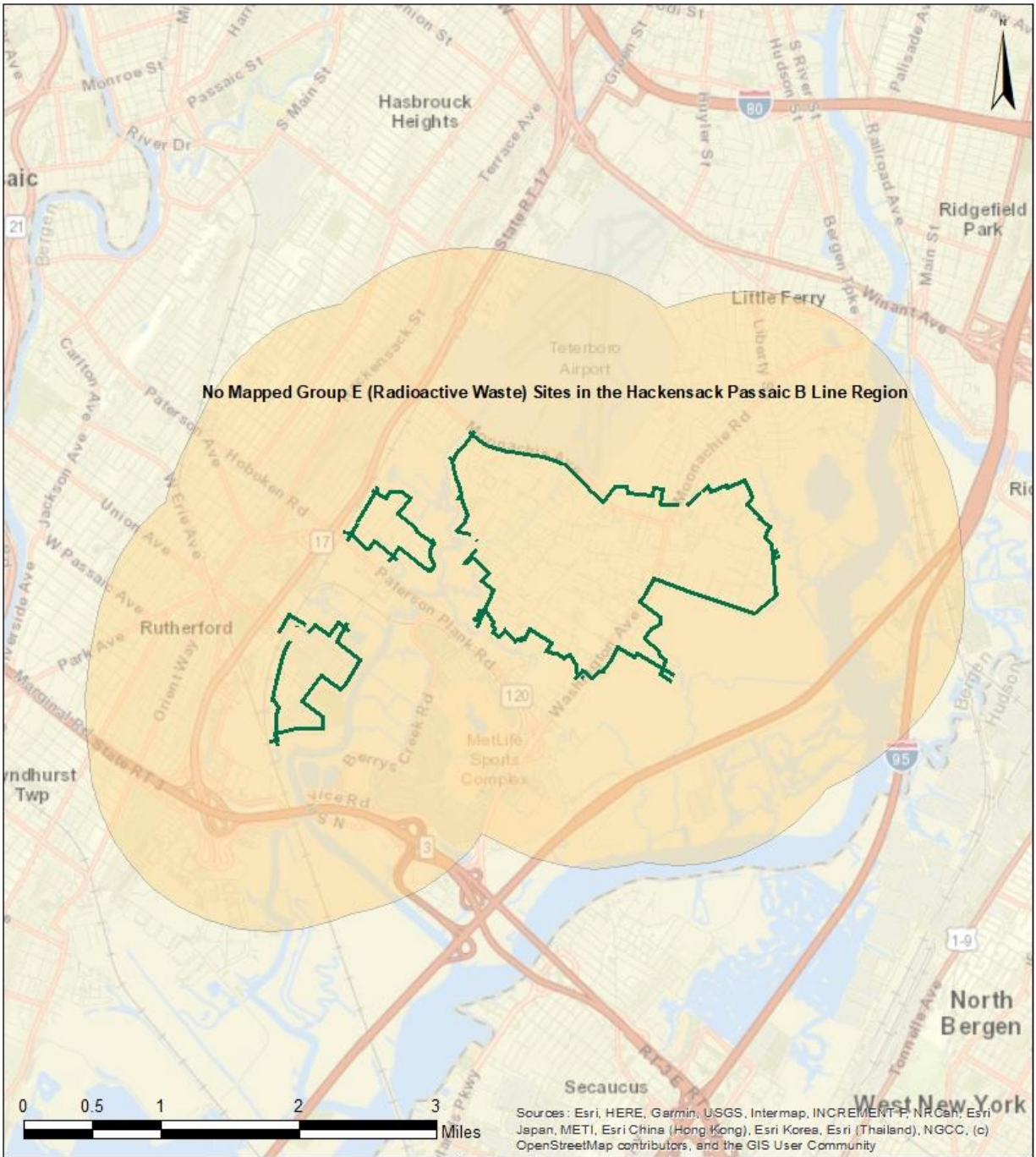
Group D Sites
Hackensack Passaic - B Line

NYNJHATS - HTRW Study

Legend

- | | |
|-----------------------|---------------------------------------|
| — HATS Alternative 2 | Group D Databases |
| — HATS Alternative 3A | ■ UST |
| — HATS Alternative 3B | ■ HIST LUST |
| — HATS Alternative 4 | ■ SPILLS |
| — HATS Alternative 5 | ■ Hackensack Passaic -B Line - Buffer |

Figure 3-6 Hackensack Passaic Region – B Line – Group E



<p>Figure 3-6</p> <p>Group E Sites Hackensack Passaic - B Line</p> <p>NYNJHATS - HTRW Study</p>	<p>Legend</p> <table border="0"> <tr> <td>— HATS Alternative 2</td> <td>Group E Databases</td> </tr> <tr> <td>— HATS Alternative 3A</td> <td>■ FUSRUP</td> </tr> <tr> <td>— HATS Alternative 3B</td> <td>■ Radiological</td> </tr> <tr> <td>— HATS Alternative 4</td> <td> Hackensack Passaic-B Line - Buffer</td> </tr> <tr> <td>— HATS Alternative 5</td> <td></td> </tr> </table>	— HATS Alternative 2	Group E Databases	— HATS Alternative 3A	■ FUSRUP	— HATS Alternative 3B	■ Radiological	— HATS Alternative 4	 Hackensack Passaic-B Line - Buffer	— HATS Alternative 5	
— HATS Alternative 2	Group E Databases										
— HATS Alternative 3A	■ FUSRUP										
— HATS Alternative 3B	■ Radiological										
— HATS Alternative 4	 Hackensack Passaic-B Line - Buffer										
— HATS Alternative 5											

4. Jamaica Bay Region

The Jamaica Bay Region's NYNJHAT Study Alternatives lie primarily along the barrier island facing the New York/New Jersey Bight of the Atlantic Ocean, this area is developed, but not significantly industrialized (Figures 4-2 through 4-6). However, some of the NYNJHAT Study Alternatives lie along the mainland to the northwest of the Barrier Island (Brighton Beach), a highly urbanized light industrial area. This Region also formerly hosted a number of naval shore battery and fire control stations from the World War II Era, these sites are captured under the FUDS program. The Jamaica Bay Region encompasses measure locations observed in Alternatives 2, 3A, 3B, and 4 (Figure 4-1), where Alternatives 3A, 3B, and 4 have nearly identical footprints as compared to Alternative 2, which encompasses a larger footprint alignment that extends across the Lower New York Bay to Sandy Hook, New Jersey. Alternative 5 has no proposed measures within this Region.

4.1. Group A Sites

There were no EPA NPL sites or EPA 2020 Corrective Action (Group A) Sites identified in the Corridor Reports as located within the Jamaica Bay Region; however, Coney Island Creek Superfund Site was identified as a Group A HTRW site (Figure 4-2).

4.1.1. Coney Island Creek

EPA completed a preliminary assessment (PA) in September 2020 of the Coney Island Creek site in response to a request from the community to assess the creek due to the presence of a landfill on the site currently owned by the New York City Department of Parks and Recreation (Calvert Vaux Park) and past industrial activities in and around the channel. Based on the information gathered during the PA, EPA collected fifty sediment and eight surface water samples from Coney Island Creek in April 2021 as part of a site inspection involving the former landfilling and other industrial activities. Outlined in the January 2022 SI, the EPA found that VOCs, semi-volatile organic compounds including PAHs, pesticides, and metals including cyanide were detected in the sediments in Coney Island Creek. In addition, EPA detected iron and cyanide in the surface water samples (EPA, 2022). Coney Island Creek remains under consideration as a Superfund Site but has not yet been added to the system as requiring a full assessment.

There are currently plans to dredge the narrow channel at the mouth of Coney Island Creek (western extent). If completed, the Coney Island Creek Organization is concerned that this will impact a wildlife refuge and release impacted sediment from the former landfill at Calvert Vaux Park (Coney Island Creek Organization, 2022). The impacts of this proposed activity on the proposed measures cannot be determined. No specific data was available on the nature of wastes at the former landfill at Calvert Vaux Park.

4.2. Group B Sites

As this Region is within New York State, the publicly available data for the five collocated sites was available for reviewed to assess the current status and nature of HTRW at the sites (Figure 4-3).

4.2.1. 175 Roger Ave.

This property was identified as a NYSDEC Class 2 site representing a significant threat to human health via soil vapors. The site historically operated as a sheet metal fabrication factory beginning in 1961. During operation, hazardous wastes were improperly stored and disposed of on-site. The site building was demolished in 2018. Cleanup actions for the site are on-going under the Brownfield Cleanup Program. Contaminants of concern include ethylbenzene, tetrachloroethene, toluene, naphthalene, trichloroethene, mercury, and more (NYSDEC, 2021).

4.2.2. Edgemere Landfill

The Edgemere landfill is comprised of 173 acres, 118 of which were used for landfilling. 7,000 55-gallon drums of waste were found and removed during remediation. The landfill operated from 1938 to 1991 and received

approximately 1,200 tons per day of wastes. Hazardous wastes were reportedly dumped at the site between 1975 and 1979. Contaminants of concern included benzene, methyl chloride, xylene, 1,1,1-trichloroethane, toluene, tetrachloroethene, and trichloroethene. Residual contamination in soil and groundwater is currently being managed under a Site Management Plan (NDYDEC, 2022c).

4.2.3. – *London French Cleaners/Dayton Plaza*

London French has been operating since 1986. Sloppy housekeeping practices led to tetrachloroethene contamination at the site. A deed restriction for the site covers that portion of the parcel where an investigation was conducted. The area of the site as defined in the Registry of Inactive Hazardous Waste Sites is a still smaller portion of the plaza immediately around the dry cleaner. Sub-slab depressurization systems have been installed within the building (NDYDEC, 2022d).

4.2.4. *K – Rockaway Park Manufactured Gas Plant (MGP)*

The MGP operated between the 1880's and 1958. By-products from the gas production were released on the site. Wastes present at the site include PAHs, benzene, toluene, xylenes, and ethylbenzene. Remedial actions included the following: excavation of tar from the manufacture of gas to 8-foot bgs, installation of non-aqueous phase liquid (NAPL) migration barriers set at different depths, installation of passive dense-NAPL recovery systems, installation of soil gas vapor control methods at new and existing structures on the site, covering all vegetated areas with clean soil and or paving, develop a site management plan to address residual contamination or any use restrictions, imposition of an environmental easement, and annual certification of the institutional and engineering controls. This plan was implemented in 2008 and scheduled for completion in 2012 (NYSDEC, 2021a).

4.2.5. *K – Former Brooklyn Borough Gas Works*

The former Brooklyn Borough Gas Works facility, a MPG, operated between 1908 and 1966. The MGP by-products disposed of by included coal tar and a contamination of leaks and discharges to the nearby creek led to the contamination of soil, groundwater, and the Coney Island Creek. KeySpan was named the PRP by NYSDEC in 1995 and implemented the remedy selected by the ROD beginning in 2001. The selected remedy included the following: excavation of coal tar source areas down to the groundwater table, off-site transport and disposal of source area materials, installation of a protective coffer dam along the creek, use of temporary construction enclosure along the creek bank when excavating, installation of subsurface steel sheet pile barrier wall around the site to a depth of 25-feet to minimize the migration of NAPL from the site, installation of a NAPL recovery trench, treatment of approximately 72,000 gallons of non-aqueous waste and groundwater per day, passive venting and vapor controls in buildings, and use of institutional controls including deed restrictions, fencing, a health and safety plan, and others. Remedial actions are still on-going (NYSDEC, 2001).

4.2.6. *Fountain Avenue Landfill*

The Fountain Avenue Landfill (FAL) is a 297-acre site that is a properly closed landfill. The site is currently part of the Shirley Chisholm State Park just north of Jamaica Bay. Solid waste disposed of at the site generally consisted of garbage, rubbish, street dirt, commercial waste, construction and demolition debris, incinerator ash, and residue. The method of disposal included filling wastes into tidal wetlands which had been enclosed by dredged sand berms. Liquid wastes reportedly disposed of at the FAL included waste oils, and spent plating baths, sludges, thinners, and lacquers. Asbestos and medical wastes were also reported to have been discarded. FAL was permitted by New York State Department of Environmental Conservation (NYSDEC) to receive asbestos containing waste for disposal. In 1974, ownership of the lands on which the FAL are situated transferred from the City of New York to the United States Department of the Interior, National Park Service, with the understanding that landfill operations could continue at the Site until the end of 1985. On December 16, 1985, and again on April 17, 1990, NYSDEC executed Orders on Consent with DOS to close and remediate the Site. On May 15, 1992, DEP entered into an Order on Consent with the NYSDEC for the remediation of the FAL.

The primary contaminants of concern are acetone and PAHs in soil, volatiles, semi-volatiles, PCBs, and metals in groundwater, and chlorobenzene in surface water/sediments. Remedial actions are preventing contaminants from migrating from the waste mass into the environment. Residual contamination in the soil, groundwater, and surface water/sediment is being managed under a Site Management Plan.

4.2.7. Pennsylvania Avenue Landfill

The Pennsylvania Avenue Landfill (PAL) is a 110-acre site that is a properly closed landfill. The site is currently a part of the Shirley Chisholm State Park just north of Jamaica Bay. The PAL was opened in 1956 and received residential, commercial, and C&D wastes, and waste oil. Disposal of all wastes stopped by 1980; however, the site continued to be used for sanitation vehicle storage until 1985. In 1983 the site classification was changed to a Class 3 site, to reflect one which did not pose a significant threat, and for which action may be deferred. In 1983, oil was observed to be seeping from the landfill along the Fresh Creek shoreline. Sorbent booms were installed in the outbreak area to absorb floating oil and contain oil migration. In 1984 the site classification was changed to a Class 2 to reflect an HTRW site which poses a significant threat to public health or the environment.

The primary contaminants of concern are volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, and polychlorinated biphenyls (PCBs) in soil and sediments and waste oil, VOCs, SVOCs, and PCBs in groundwater. Remedial actions are preventing contaminants from migrating from the waste mass into the environment. Residual contamination in the soil, groundwater, and sediment is being managed under a Site Management Plan.

4.3. Group C Sites

The following historical or potential HTRW sites were mapped in the Jamaica Bay Corridor Report (EDR, 2022c), these sites represent a portion of the potential sites in the Region and the location data in the database is limited to an address or latitude/longitude coordinate making a collocation difficult. Unmapped sites from the Corridor Report are not presented.

4.3.1. Dry Cleaners & Automotive Service Sites

Nine mapped dry cleaners or automotive service centers lie along the Atlantic Ocean coastline and are collocated with the proposed measures (EDR, 2022c). Three additional collocated sites are located on bay side of the barrier island. Approximately twenty sites are located along the Brighton Beach headland.

The current and historical dry cleaner and automotive service stations are expected to be tied to the roadside and away from the actual location of any NYNJHAT Study Alternatives, but any contamination associated with these facilities could enter the groundwater system and potential remain at the saltwater and freshwater interface.

4.3.2. Lead Sites

There is one lead site associated with a release from an auto service center at the eastern terminus of the NYNJHAT Study Alternatives. Lead from automotive service enters is typically limited to near surface soils due to releases from batteries. However, such releases may also include acids discharged from the batteries that can mobilize lead in the subsurface.

An additional seven lead sites were identified as part of Con Edison Facility in Brighton Beach (Figure 4-4). The database did not provide data on volumes or nature of the impacted media, or information on reducing potential for additional incidents in the near future (between the time of the Survey and the implementation of the NYNJHAT Study Alternatives). Likewise, the specific locations of the releases could not be determined within the Con Edison facility and surrounds and the actual collocation potential of the lead in soil and the NYNJHAT Study Alternatives could not be determined.

A cluster of three lead sites were listed in the database in a light industrial area at the northwestern terminus of the NYNJHAT Study Alternatives. The nature and details of these lead sites could not be determined based on the data presented in the databases.

4.3.3. FUDS and UXO

The barrier island coastline contained nine identified and mapped fire control stations (FCS), one of which was also listed as having an UXO report (EDR, 2022c). Coastal UXO may be associated with the FCS's or associated with dredging operations or storm events that bring UXO items from the near shore to the beach. All construction along the beach, especially within 0.25 miles of the former FCS's should be considered UXO to be a potential hazard and utilize clearing operations to assure working areas are clear of potential UXO.

4.4. Group D Sites

Though there are well over 100 mapped and reported leaking USTs in the Corridor Reports (EDR, 2022c), inspection of their location supports the determination that a majority of these are along the roadway, rather than the NYNJHAT Study Alternatives (Figure 4-5). However more than 560 spills are reported in the NY Spill and Spill 90 databases (the Spill 90 database specifically captures any reported releases that are not on other databases), many of which are mapped to collocated positions along the proposed measures and may be associated with releases detected at the land/water boundary. Spills in both databases may be fuel, petroleum, or other chemicals. These detections could be from any event or at any point. A review of the database entries indicates facilities, properties, maintenance holes, and storm drains. Most of the spills are associated with three industrialized/developed areas: Brighton Beach industrial area, Rockaway Beach, and Rockaway town center northeast of Edgewood.

4.5. Group E Sites

The Corridor Report databases reviewed listed one FUSRAP site and no radiological spill sites (Figure 4-6) (EDR, 2022c). The FUSRAP site is listed as Floyd Bennett Field, a former regional airfield that supported military operations and was part of the Manhattan Project. The FUSRAP program assessed the site as part of their survey and eliminated the airfield from further consideration in regard to radioactive materials and wastes. There is no data on the volume of radiological materials handled at the former airfield. Due to the size of the former airfield, it is collocated with a portion of the proposed measures.

4.6. Summary of Jamaica Bay Region

4.6.1. Regional Summary Review

The Jamaica Bay Region is the most ocean facing Region reviewed as part of this survey. The Brighton Beach Area is similar to the Upper Bay and Long Island Sound, with a mixture of urban and light industrial. Construction of NYNJHAT Study Alternatives within the Brighton Bay area will contend with historical contamination from the minor spills and presence of leaking USTs.

The barrier island (Rockaway area) has a significant number of historical spills and leaking tanks, but most of these will be located adjacent the roadways and will not reach directly out toward the beach/shoreline as they do in the Hackensack Passaic A Line and Lower Bay areas of Newark.

4.6.2. Further Considerations

The historical presence of fire control stations and reported UXO on the beach, will require further consideration if NYNJHAT Study Alternatives are selected for in this Region. Unlike other HTRW sites, UXO is present in seemingly clean soils and sediments, and is often placed as part of dredging or storm activities, rather than from a direct release from that location.

Figure 4-1 Jamaica Bay Region – Locations of Measures Within Each Alternative

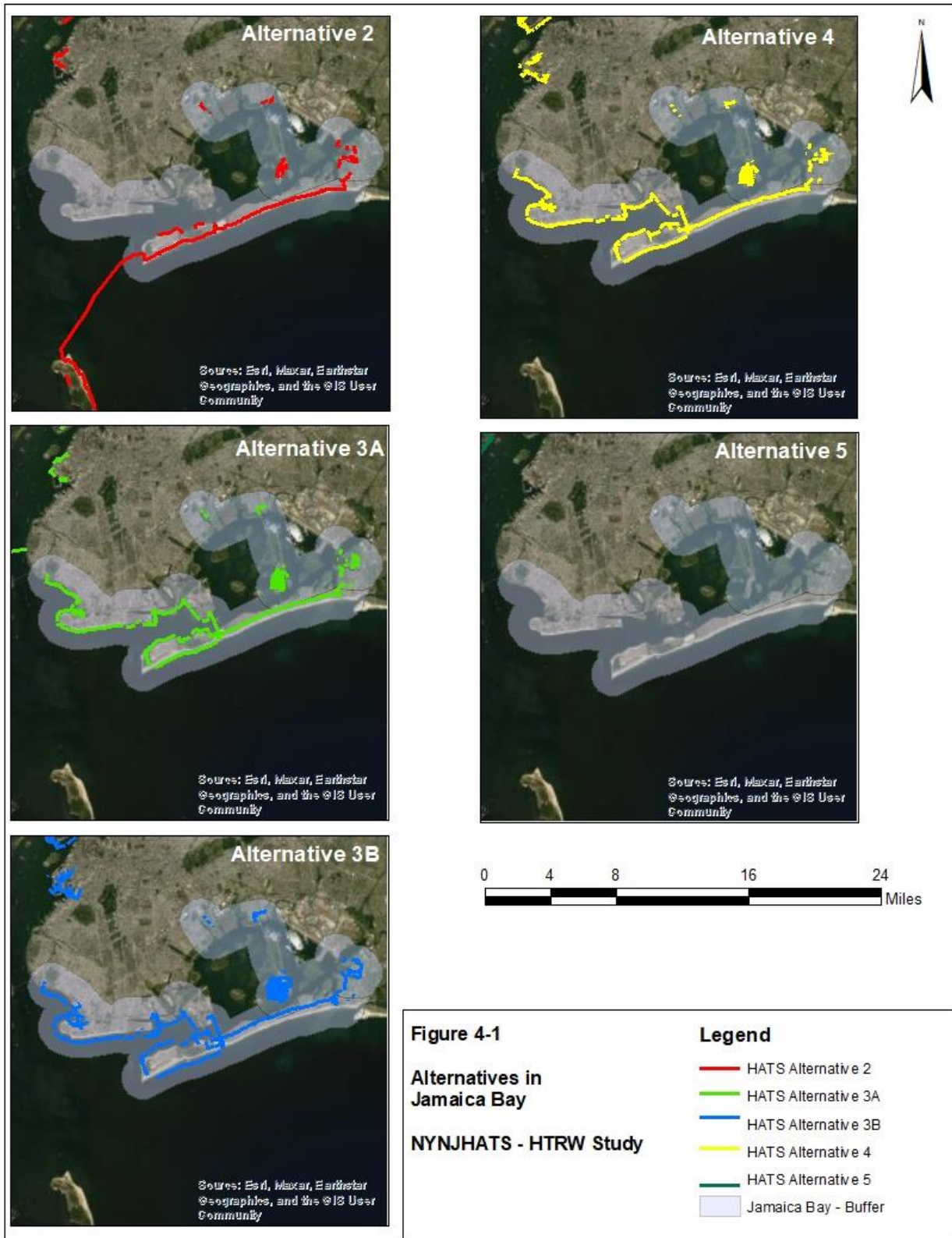


Figure 4-2 Jamaica Bay Region – Group A

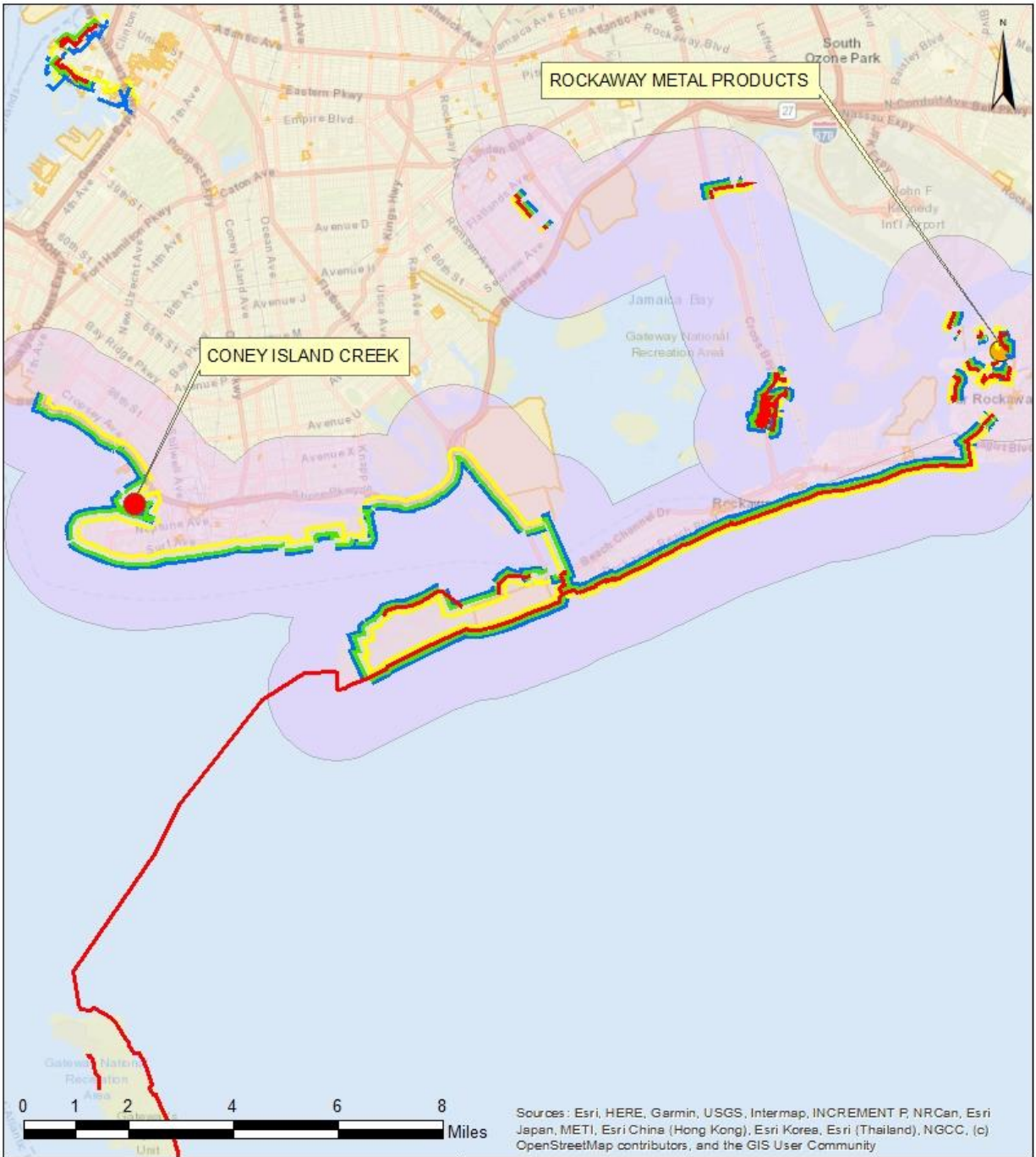


Figure 4-2
Group A Sites
Jamaica Bay
NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- PRP
- NYDEC Class 1 - Immediate Hazard
- CORR ACTION 2020
- NPL
- Jamaica Bay - Buffer

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 4-3 Jamaica Bay Region – Group B

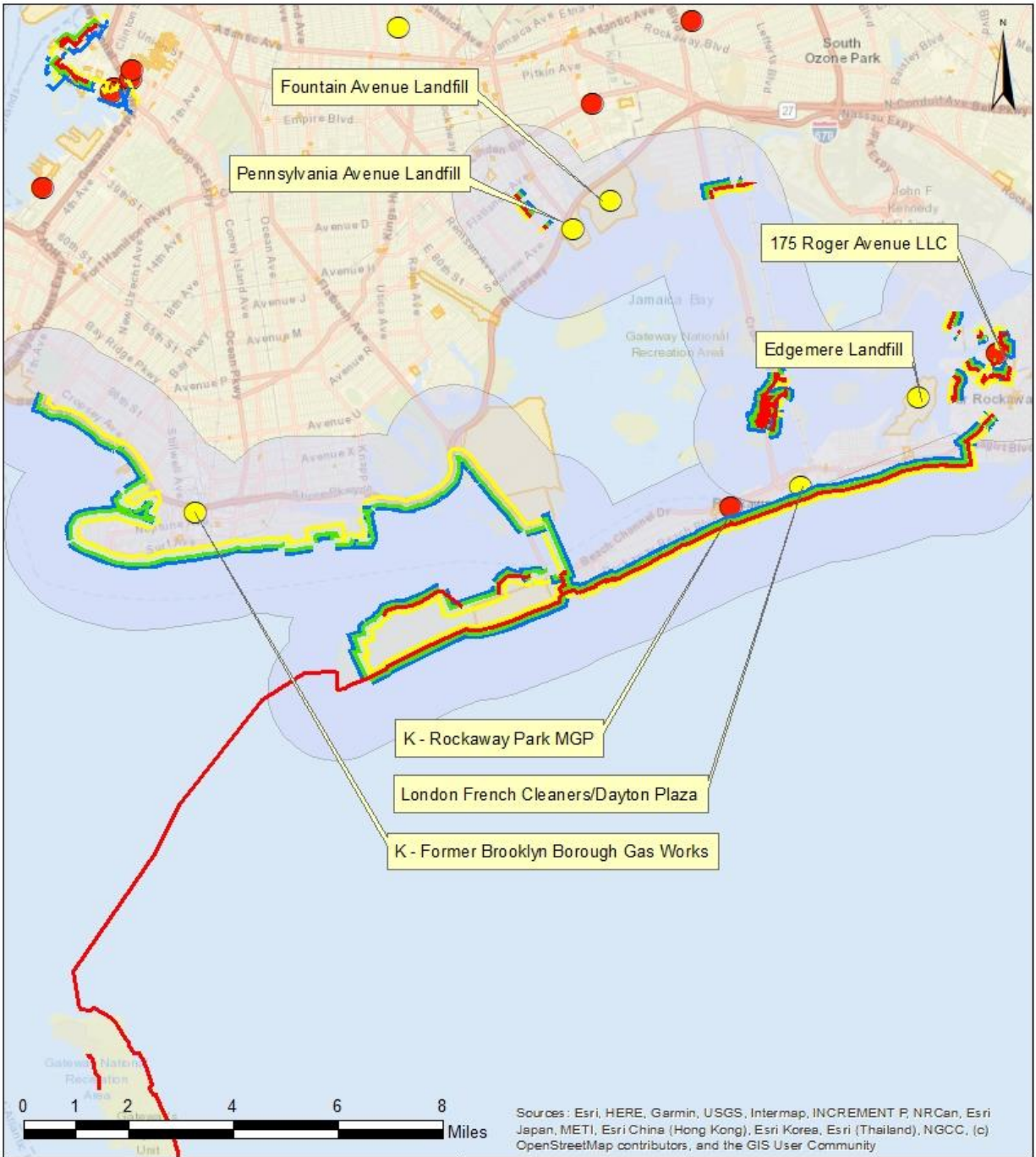


Figure 4-3

**Group B Sites
Jamaica Bay**

NYNJHATS - HTRW Study

Legend

- | | |
|-----------------------|--|
| — HATS Alternative 2 | Remediation Sites |
| — HATS Alternative 3A | NYDEC Classification |
| — HATS Alternative 3B | ● Class 4 - Closed with Ongoing Management |
| — HATS Alternative 4 | ● Class 2 - Significant Threat |
| — HATS Alternative 5 | ■ Jamaica Bay - Buffer |

Figure 4-4 Jamaica Bay Region – Group C

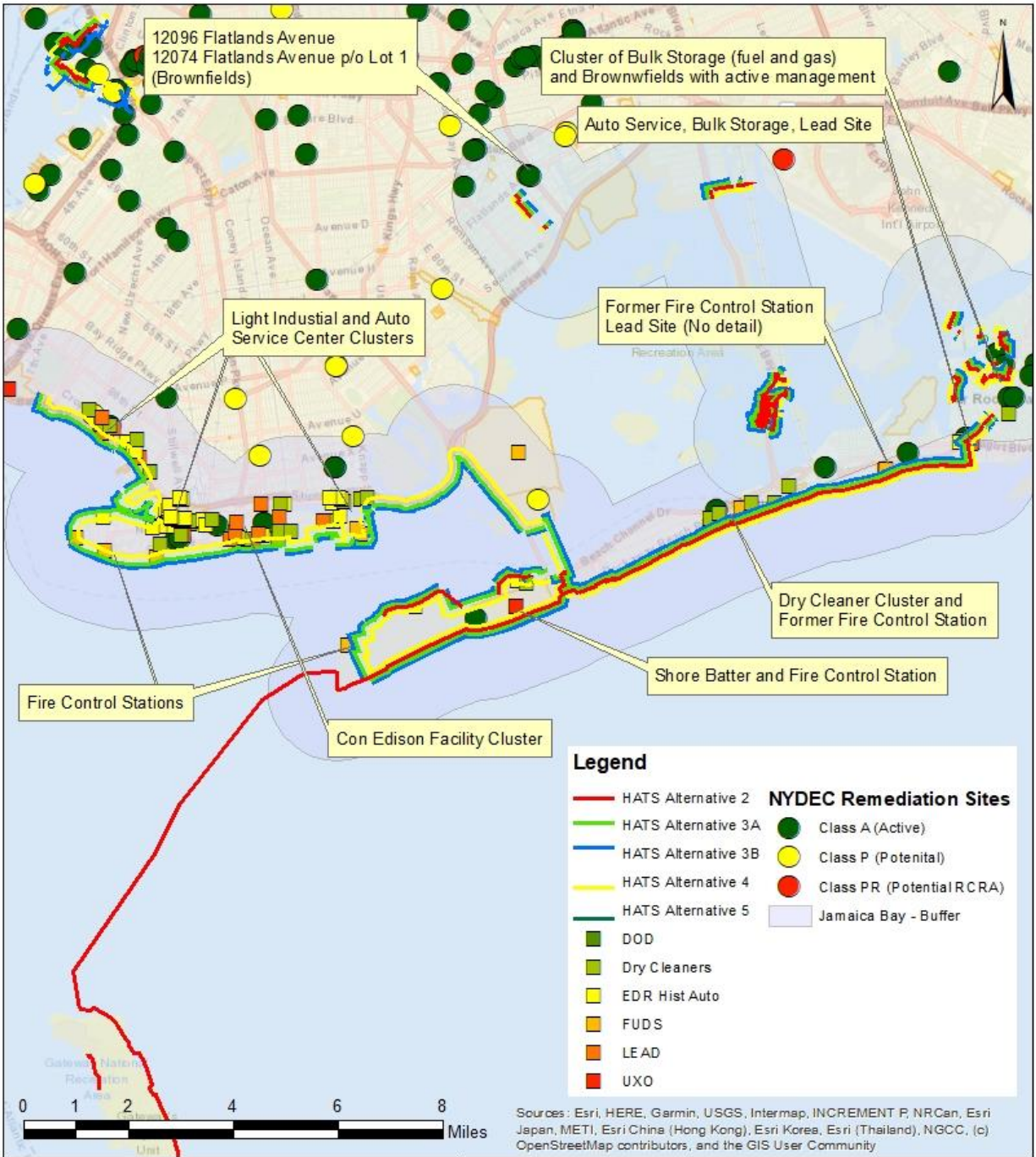
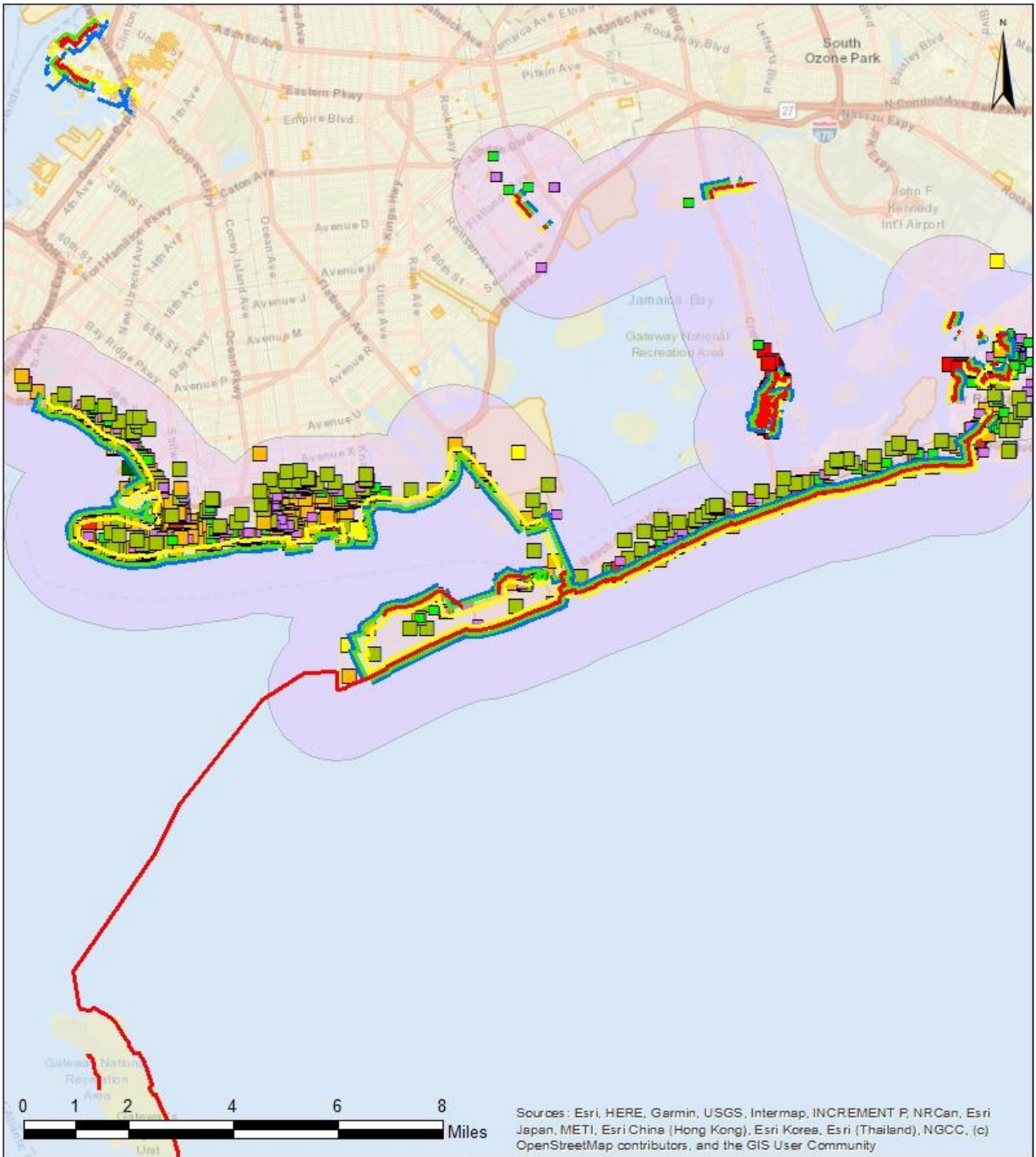


Figure 4-4

Group C Sites
Jamaica Bay

NYNJHATS - HTRW Study

Figure 4-5 Jamaica Bay Region – Group D



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

<p>Figure 4-5</p> <p>Group D Sites</p> <p>Jamaica Bay</p> <p>NYNJHATS - HTRW Study</p>	Legend		
	HATS Alternative 2	AST	FUDS
	HATS Alternative 3A	USTs	NY Spills
	HATS Alternative 3B	FUELS PROGRAM	SPILLS 90
	HATS Alternative 4	LTANKS	Jamaica Bay - Buffer
HATS Alternative 5			

Figure 4-6 Jamaica Bay Region – Group E

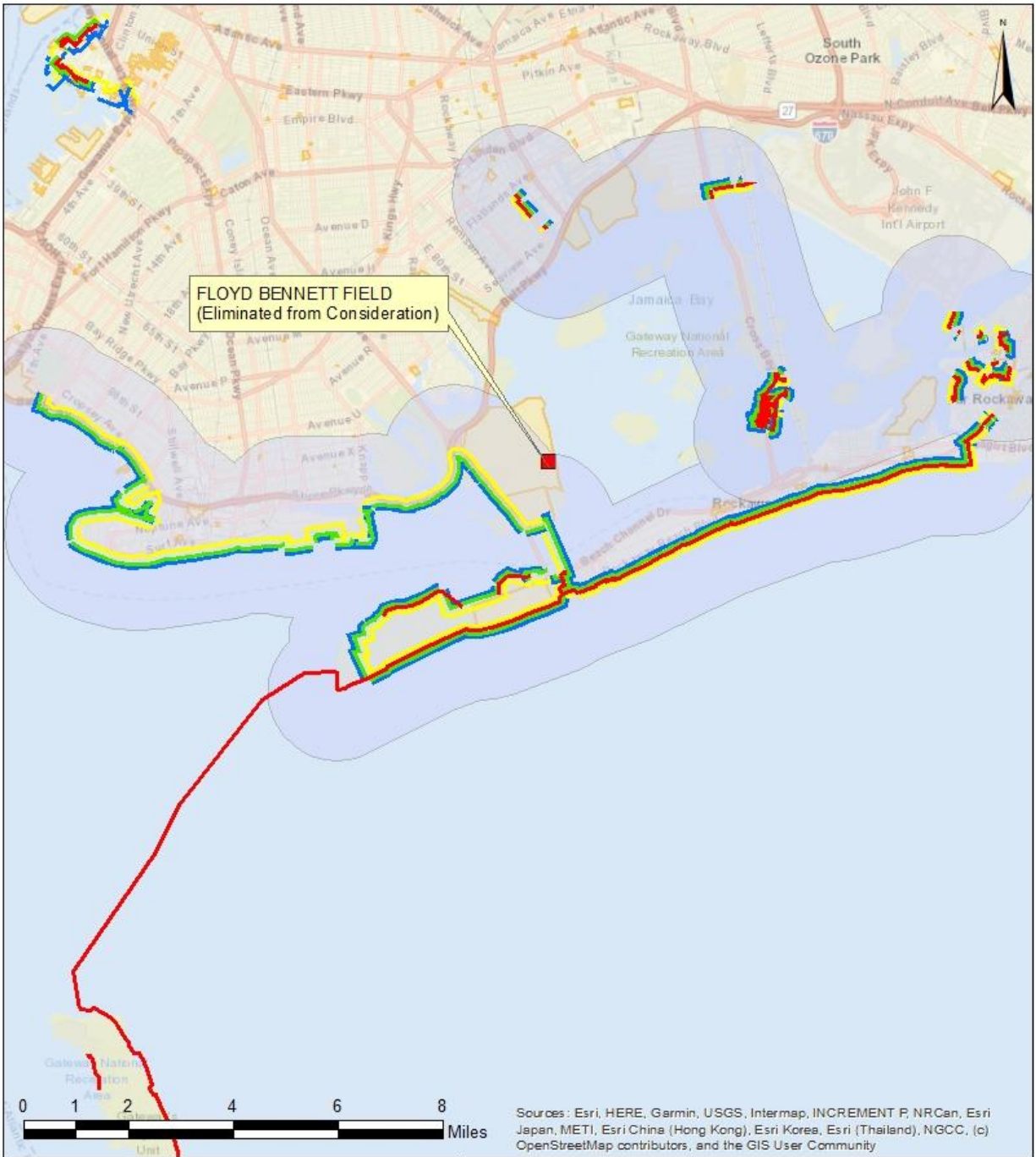


Figure 4-6

**Group E Sites
Jamaica Bay**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- FUSRAP
- Jamaica Bay - Buffer

5. Long Island Sound Region

The Long Island Sound Region included the northern parts of Flushing, NY, and the coastline of Eastchester Bay (Figure 5-2 through 5-6). The Eastchester Bay coastline is primarily residential and has limited HTRW sites, whereas Flushing, NY, and adjacent neighborhoods through which the NYNJHAT Study Alternatives pass though are highly urbanized, but not highly industrialized. Very few heavy industry sites were identified within the Region. The Long Island Sound Region encompasses measure locations observed in Alternatives 2, 3A, 3B, and 4 (Figure 5-1), where Alternatives 2 and 3A have nearly identical footprints in more locations as compared to Alternative 3B and 4, which encompasses a similar footprint alignment with a smaller footprint of NYNJHAT Study Alternatives along this line. Alternative 5 has no proposed measures within this Region.

5.1. Group A Sites

There were no EPA NPL sites or EPA 2020 Corrective Action (Group A) Sites identified in the as located within the Long Island Sound Region (Figure 5-2).

5.2. Group B Sites

As this Region is within New York, the publicly available data on three of the collated sites could be reviewed for the presence of HTRW (Figure 5-3).

5.2.1. Pelham Bay Landfill

The landfill operated from 1963 to 1978 as a disposal side for mixed municipal waste. Between 1974 and 1980, waste oil, sludges, metal plating shavings, lacquer, and solvents were illegally disposed of at several New York City landfills, including the Pelham Bay Landfill. Contaminants included ammonia, metals, pesticides, and VOCs. The landfill was capped. Environmental monitoring of the cap is ongoing. The active landfill gas collection system is operational. Remediation at this site is complete and this project is now in the Site Management Phase.

5.2.2. Fort Totten

The Fort Totten site occupies 7.8 acres of a Coast Guard station on the former military facility. The property is federally owned. This site has been used for a variety of military purposes since 1864, including weapons development and training. Contaminants found on the site include lead, mercury, and benzo(a)pyrene. The RI in 2003 determined mercury was not causing a significant impact. A no further action (NFA) ROD was issued and was reconfirmed with 2006 sampling of the bay. PAHs found in soils are believed to be attributed to fill materials.

5.2.3. College Point Oil Lagoon

During the 1970s, unregulated landfilling took place on-site and several areas were apparently excavated to contain certain liquid wastes waste petroleum products were disposed of in these "lagoons." Contamination encountered included various PCBs- contaminated soil and sludge. Removal actions were conducted under EPA in late 1980. A supplemental investigation in 2018 identified contamination remaining in on-site soils, including VOCs and SVOCs. Several SVOCs and PFAS were detected in groundwater. Due to the construction of a paved parking area atop the former lagoon area, the current potential for exposure is minimal. Exposure to contaminated groundwater is not expected.

5.3. Group C Sites

The following dry cleaner/automotive, FUDS/UXO, and lead HTRW sites were identified in the Long Island Sound Region (Figure 5-4). The site locations are provided by data in the Long Island Sound Region corridor Report (EDR, 2022d).

5.3.1. Dry Cleaners & Automotive Service Sites

One dry cleaner and two previous auto service centers were identified along the Eastchester Bay. Thirty to forty dry cleaners and service centers were located along the line of the NYNJHAT Study Alternatives through Flushing, NY (Figure 5-4). The dry cleaners as expected were mainly located within the mixed use residential/commercial neighborhoods, and the service centers present throughout, but concentrated along the interstate exit locations. Though the image does not show it well, it is likely that any given corridor through these neighborhoods will contain a similar mix of dry cleaners and automotive service centers.

5.3.2. Lead and Lead Smelters

The Department of Education along Interstate-695 was identified as lead site, while no data was provided, the date of the building may have included lead paint.

One lead smelter HTRW site (Neo smelting and Refining) was mapped to a location in Whitestone town center (Figure 5-3), this facility is adjacent to a mapped Con Edison facility (EDR, 2022d). The lead smelter site appears to be significantly inland and not collocated with the proposed measures. However, metals smelting facilities produce significant volumes of dust during operation and during transport of materials, typically impacted soils for miles around. Therefore, lead impacted soils are likely collated with the NYNJHAT Study Alternatives.

5.3.3. PFAS Site

The database search identified one unmapped PFAS site. The database entry provided the site as College Point Oil Lagoon and stated PFAS compounds were detected above the EPA Health Advisory Level. For example, perfluorooctanoic acid was detected up to 128 parts per trillion (compared to the advisory level of 70 parts per trillion).

5.3.4. FUDS and UXO

Three FUDS sites were mapped within the reviewed databases (Figure 5-4). These sites included the Pelham Camp site, which was listed in the database as having no waste associated with its operations and was closed from further consideration. Fort Schuyler, a Second System coastal defense fort located on the grounds of the State University of New York (SUNY) Maritime College campus. No details were provided on Fort Schuyler, but due to the age of the fort (19th century), which predates wide scale industrial manufacturing, no HTRW is expected other than UXO.

A small arms range was located in the database near the Engineering School at Fort Totten, NY. Reviewing the specific location of likely NYNJHAT Study Alternatives in this area indicates that the ranges are likely not collocated. However, small arms range may produce lead in soil impacts above allowable industrial limits.

5.4. Group D Sites

The Corridor Search database identified thirteen leaking USTs that were collocated with the proposed measures, with another 180 leaking tanks located within 0.25 miles of the NYNJHAT Study Alternatives (Figure 5-5). The database includes 46 spills (NYSPILLS database) collocated and 380 located within 0.25 miles (EDR, 2022d). Spills may consist of fuel, petroleum, and/or other chemicals. Leaking USTs and reported spills were present throughout the residential and mixed commercial residential areas, including Fort Totten and the SUNY Campus (Figure 5-5).

5.5. Group E Sites

One FUSRAP site was listed in the database and mapped, no other radioactive waste sites were listed in the database search (Figure 5-6).

5.5.1. SYLVANIA CORNING NUCLEAR CORP., INC., SYLVANIA LAB

The Sylvania facility conducted research and development with radioactive materials, principally, uranium and thorium; conducted carbon reduction of uranium oxide; development of pelletized (ceramic), wire, porous, and

hollow fuel elements; powder metallurgy; uranium wafer and flat plate production; uranium pipe cutting; investigated dimensional stability and nonaqueous separation. Thorium projects included powder metallurgy, reduction, and canning of slugs. The Sylvania site was assessed under FUSRAP and eliminated from further consideration as the radiation levels were below criteria (EDR, 2022d)

5.6. Summary of Long Island Sound

5.6.1. Regional Summary Review

With less heavy and light industrialization, the Long Island Sound Region has less major (e.g., Federal NPL and NYSDEC state registry) sites than other Regions. The three major collocated sites from NYSDEC's registry appear to be well defined (landfill, lagoon, and federal facility), which reduces concerns for identifying nature and extent of contamination prior to construction.

The majority of the non-major sites identified in the databases are urban based risks (dry cleaners and auto service stations) and FUDS, which typically are well documented, and the Federal government is an active responsible party.

The Sylvania Lab requires additional assessment prior to designs that would place NYNJHAT Study Alternatives within the footprint of the laboratory.

5.6.2. Further Considerations

Environmental risks and impacts of working in the urban environment of Whitestone, Long Island need to be considered as the specific location of the collocated historical leaking USTs and spills could not be determined from the limited database search.

Figure 5-1 Long Island Sound Region - Locations of Measures Within Each Alternative

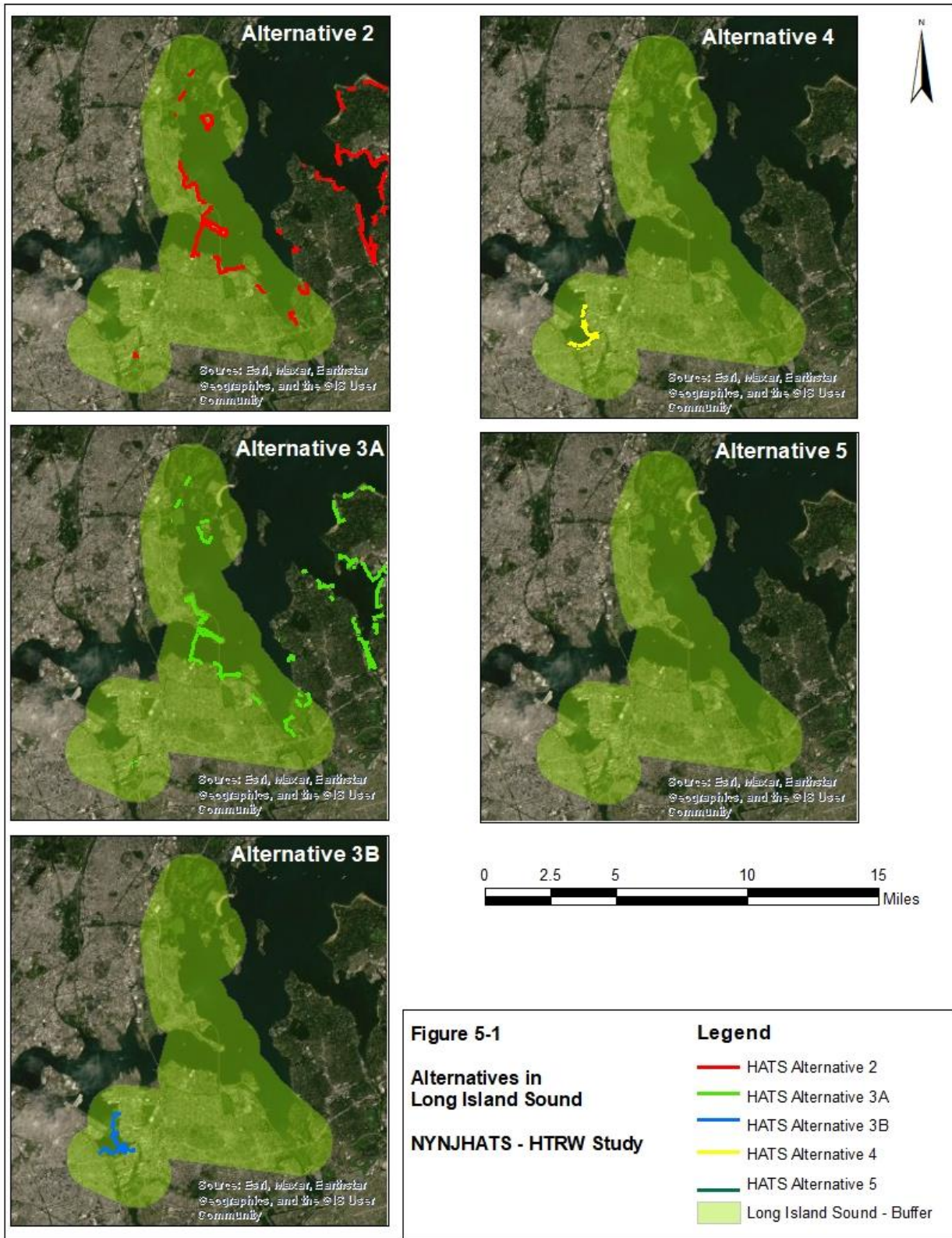
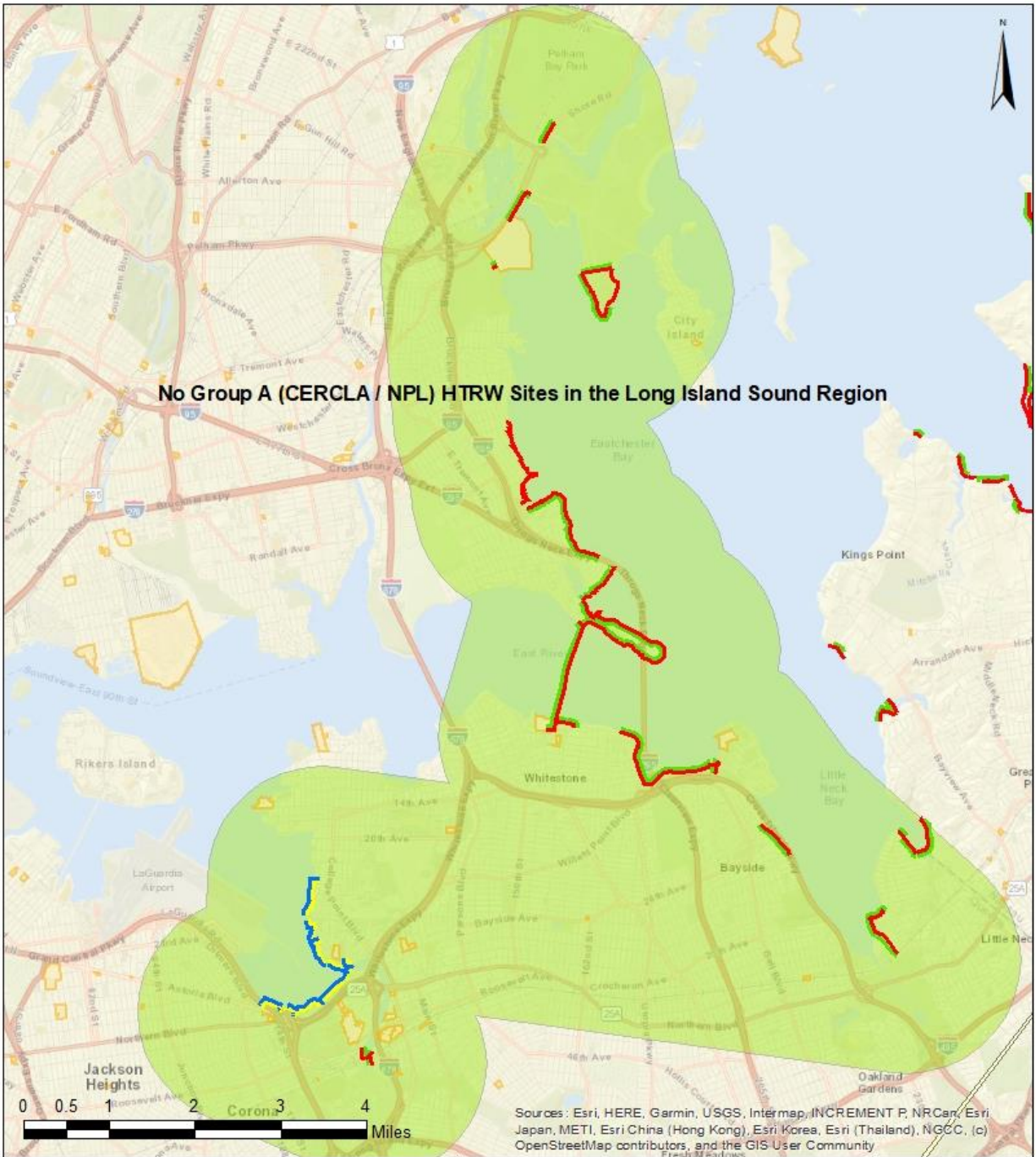


Figure 5-2 Long Island Sound Region - Group A



No Group A (CERCLA / NPL) HTRW Sites in the Long Island Sound Region

Figure 5-2

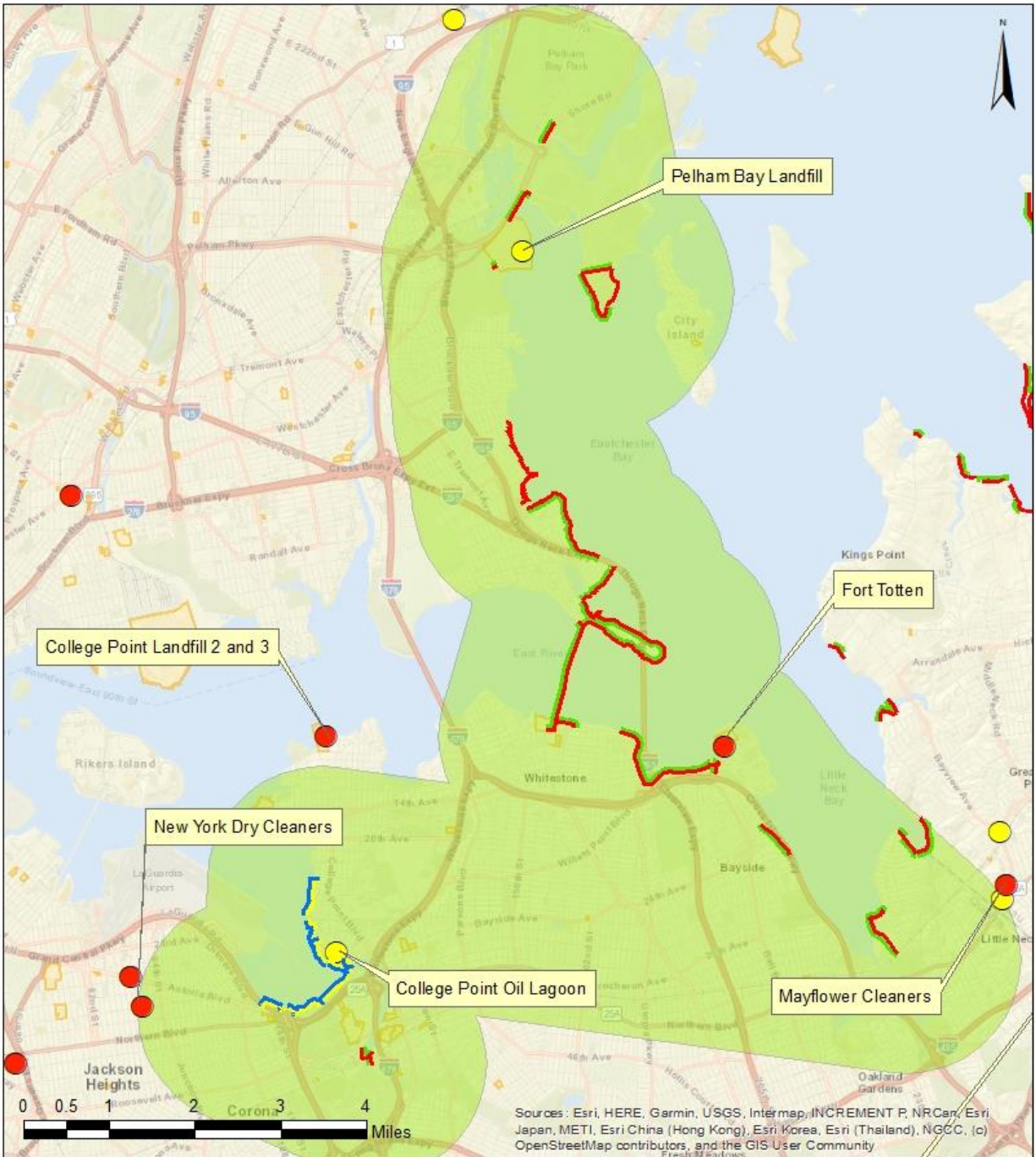
Group A Sites
Long Island Sound

NYNJHATS - HTRW Study

Legend

- | | | | |
|--|---------------------|--|----------------------------------|
| | HATS Alternative 2 | | 2020 COR ACTION |
| | HATS Alternative 3A | | NPL |
| | HATS Alternative 3B | | NYDEC Class 1 - Immediate Hazard |
| | HATS Alternative 4 | | Long Island Sound - Buffer |
| | HATS Alternative 5 | | |

Figure 5-3 Long Island Sound Region - Group B



<p>Figure 5-3</p> <p>Group B Sites</p> <p>Long Island Sound</p> <p>NYNJHATS - HTRW Study</p>	<p>Legend</p> <table border="0"> <tr> <td></td> <td>HATS Alternative 2</td> <td></td> <td>NYDEC Classification</td> </tr> <tr> <td></td> <td>HATS Alternative 3A</td> <td></td> <td>Class 4 - Closed with Ongoing Management</td> </tr> <tr> <td></td> <td>HATS Alternative 3B</td> <td></td> <td>Class 2 - Significant Threat</td> </tr> <tr> <td></td> <td>HATS Alternative 4</td> <td></td> <td>Long Island Sound - Buffer</td> </tr> <tr> <td></td> <td>HATS Alternative 5</td> <td></td> <td></td> </tr> </table>		HATS Alternative 2		NYDEC Classification		HATS Alternative 3A		Class 4 - Closed with Ongoing Management		HATS Alternative 3B		Class 2 - Significant Threat		HATS Alternative 4		Long Island Sound - Buffer		HATS Alternative 5		
	HATS Alternative 2		NYDEC Classification																		
	HATS Alternative 3A		Class 4 - Closed with Ongoing Management																		
	HATS Alternative 3B		Class 2 - Significant Threat																		
	HATS Alternative 4		Long Island Sound - Buffer																		
	HATS Alternative 5																				

Figure 5-4 Long Island Sound Region - Group C

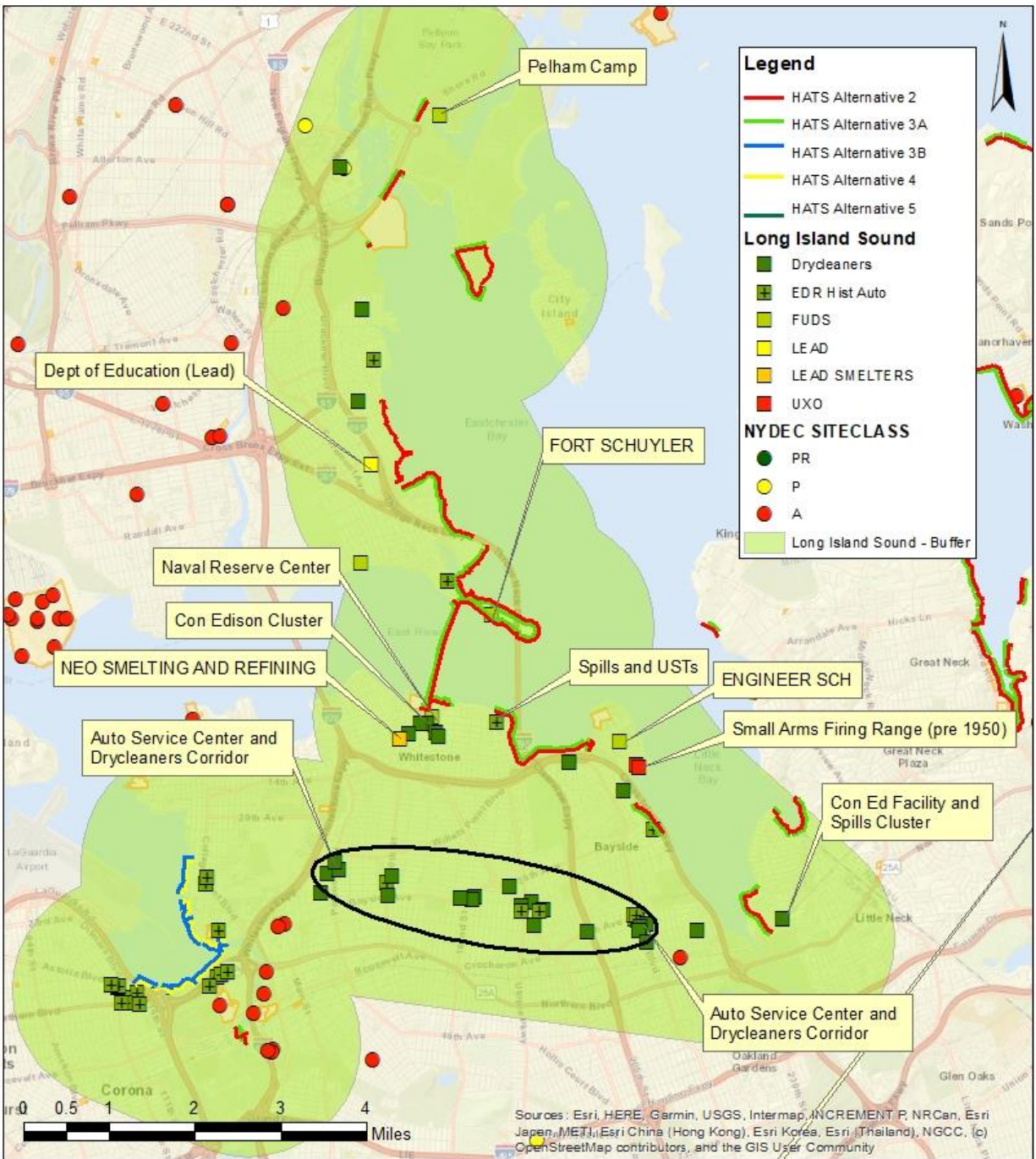
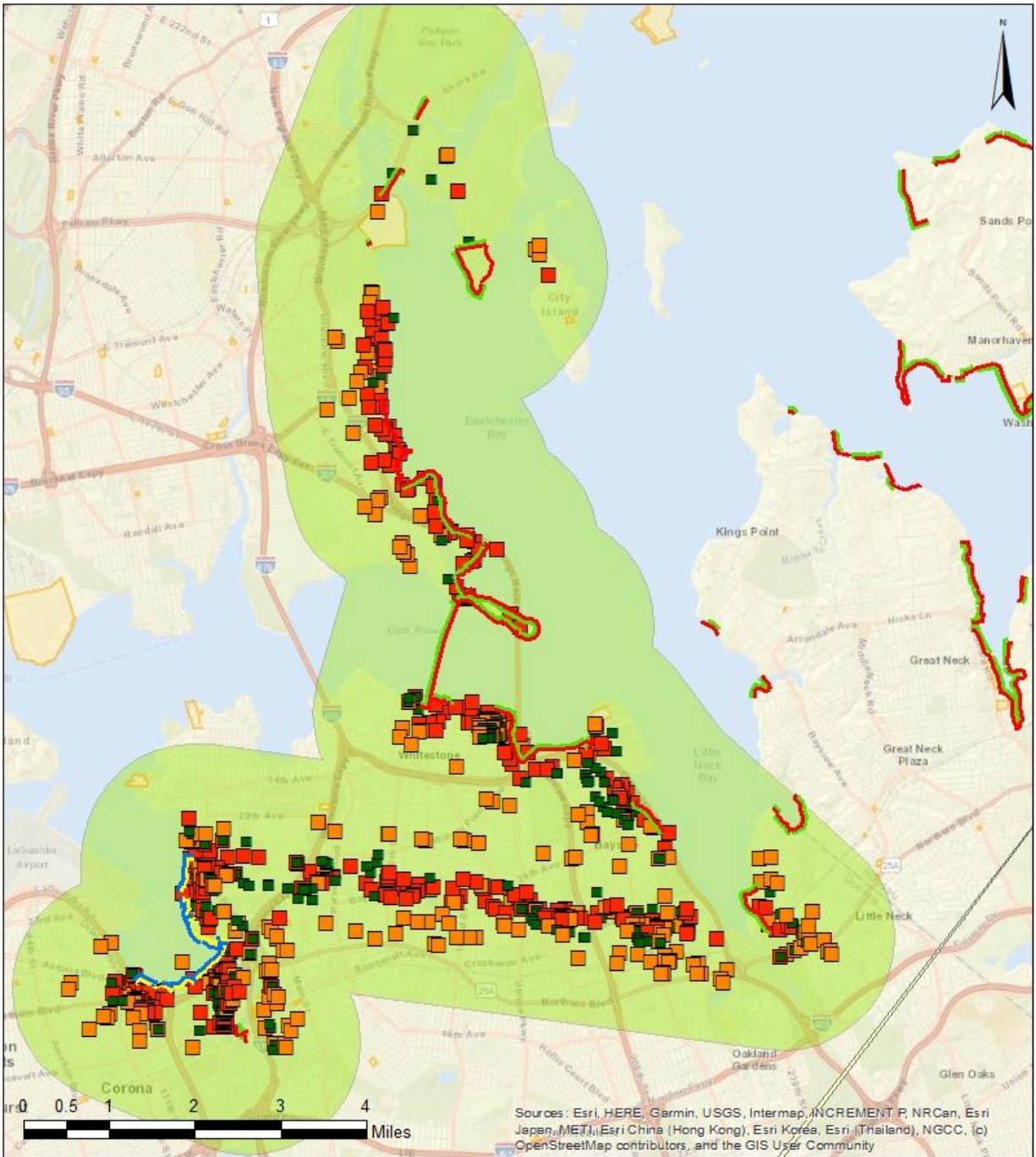


Figure 5-4
Group C Sites
Long Island Sound
NYNJHATS - HTRW Study

Figure 5-5 Figure 5 3 Long Island Sound Region - Group D



<p>Figure 5-5</p> <p>Group D Sites</p> <p>Long Island Sound</p> <p>NYNJHATS - HTRW Study</p>	<p>Legend</p> <table border="0"> <tr> <td></td> <td>HATS Alternative 2</td> <td></td> <td>AST/UST/CBS</td> </tr> <tr> <td></td> <td>HATS Alternative 3A</td> <td></td> <td>FUELS PROGRAM</td> </tr> <tr> <td></td> <td>HATS Alternative 3B</td> <td></td> <td>LTANKS</td> </tr> <tr> <td></td> <td>HATS Alternative 4</td> <td></td> <td>NY Spills</td> </tr> <tr> <td></td> <td>HATS Alternative 5</td> <td></td> <td>Long Island Sound - Buffer</td> </tr> </table>		HATS Alternative 2		AST/UST/CBS		HATS Alternative 3A		FUELS PROGRAM		HATS Alternative 3B		LTANKS		HATS Alternative 4		NY Spills		HATS Alternative 5		Long Island Sound - Buffer
	HATS Alternative 2		AST/UST/CBS																		
	HATS Alternative 3A		FUELS PROGRAM																		
	HATS Alternative 3B		LTANKS																		
	HATS Alternative 4		NY Spills																		
	HATS Alternative 5		Long Island Sound - Buffer																		

Figure 5-6 Long Island Sound Region - Group E

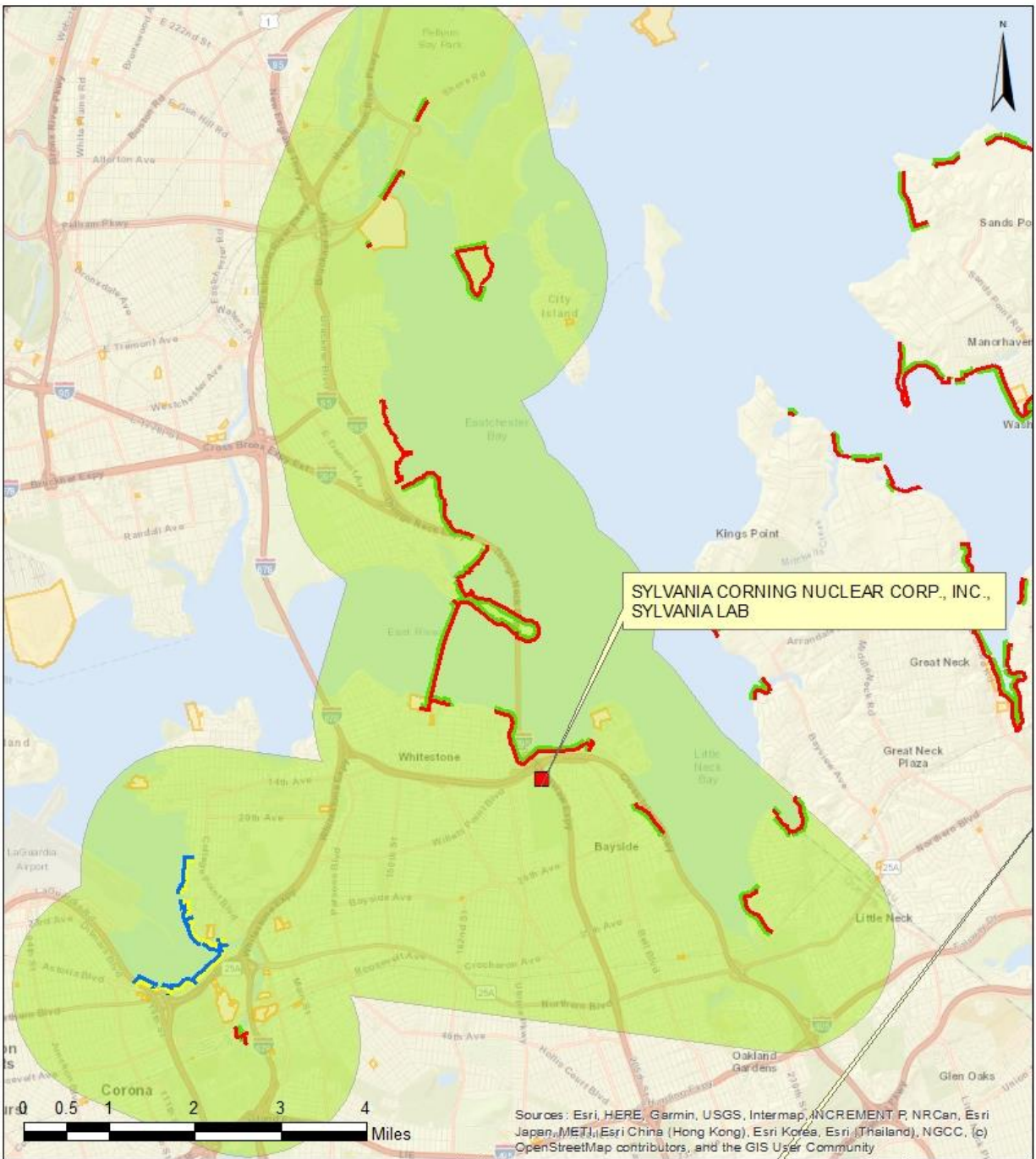


Figure 5-6

**Group E Sites
Long Island Sound**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- Long Island Sound - Buffer
- FUSRAP

6. Lower Bay Region

The Lower Bay Region consists of proposed shoreline measures from Long Branch, NJ to Sandy Hook, NJ, west through Keansburg, NJ, and around the bay to southern Staten Island, NY (Figure 6-2 through 6-6). This Region includes cross bay NYNJHAT Study Alternatives toward the Rockaway barrier island in New York state, just south of Brighton Beach, which was also included in the Jamaica Bay Region's HTRW Survey. The Lower Bay encompasses measure locations observed in Alternatives 2, 3A, 3B, and 4 (Figure 6-1), where Alternatives 3B and 4 have similar footprints in fewer locations as compared to Alternatives 2 and 3A, which both encompass a larger but less identical alignment with a greater footprint of NYNJHAT Study Alternatives along this line. Alternative 5 has no measures within this Region.

6.1. Group A Sites

A total of one Corrective Action 2020 and one NPL/ROD sites were identified in within approximately a mile of the Lower Bay (Figure 6-2). Both identified sites appear to be collocated with the proposed measures.

Table 6-1 Lower Bay - Group A Sites

Site Name	Collocated/Distance
International Flavors and Fragrances, Inc. (Fragrances Ingredients Plant)	Yes
Raritan Bay Slag	Yes
Atlantic Salt	No

6.1.1. International Flavors and Fragrances, Inc.

International Flavors & Fragrances (IFF) manufactured specialty organic flavors and fragrances at this site from 1951 until the plant closed in 1997. It is adjacent to the Raritan Bay. Operations were in a 41-acre fenced-in area within a 105-acre property owned by IFF. The facility had a Resource Conservation and Recovery Act (RCRA) permitted hazardous-waste tank and container storage units. Hazardous constituents were also handled in other areas, including lagoons, tanks, an incinerator, and a railroad transfer area.

In 1979, volatile organics were found to be moving from fill in the northwestern part of the facility into Raritan Bay. Soil and wetland sediments were contaminated with PCBs, as well as organic and inorganic constituents. The facility is being cleaned up by IFF under NJDEP oversight. A groundwater collector trench and slurry wall has been installed to prevent contaminated groundwater from flowing into Raritan Bay. Contaminated soil has been excavated or capped. A deed notice was issued for the property for hazardous constituents remaining at the site above standards for residential use. Excavation and capping of contaminated soil at the site was completed. IFF will continue to conduct groundwater monitoring to assure that the migration of contaminated groundwater is controlled.

6.1.2. Raritan Bay Slag/National Lead

Sea Land Development Corporation, formerly known as National Lead, constructed the Laurence Harbor seawall and the western jetty using slag, which is waste from the bottom of industrial blast furnaces used to smelt metal in the late 1960s to early 1970s.

Waste impacted about 2,500 feet of the seawall. The NJDEP identified elevated concentrations of lead, antimony, arsenic, and copper along the seawall near the area where the processing byproducts were deposited. While NJDEP investigated the site within the seawall area, another area of concern was identified on the Sayreville waterfront. This area consists of the western jetty at the Cheesquake Creek inlet and waterfront area.

EPA received a request from NJDEP in April 2008 to evaluate the Laurence Harbor seawall for a removal action under CERCLA, also known as the Superfund law. EPA collected samples at the site in September 2008 as part of an assessment to determine whether further action under CERCLA was needed. EPA and NJDEP found that the sampling results showed elevated levels of lead and other heavy metals present in the soil, sediment, and surface water in and around both the seawall in Laurence Harbor and the Western Jetty at the Cheesequake Creek Inlet.

At EPA's request, the New Jersey Department of Health and Senior Services (NJDHSS), in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR), evaluated the sampling data of the site. Due to the elevated lead levels, a public health hazard exists at the seawall in Laurence Harbor, the beach between the western end of the seawall and the first jetty, and the Western Jetty at the Cheesequake Creek Inlet.

The EPA completed a detailed investigation of the extent of contamination and did a study to examine cleanup options, called a RI/FS, in June 2011. Based on this information, EPA issued a cleanup plan for the site, in the form of a ROD, in May 2013. EPA completed a full cleanup of the Margaret's Creek sector of the site in September 2018. EPA also restored impacted wetland areas and continues to monitor these areas to ensure that they are viable as wetlands. The Margaret's Creek cleanup included removing approximately 15,775 tons of soil and 1,802 tons of slag from this portion of the site.

In August 2021, EPA took over completing the work in order to complete remediation in a timelier manner. This project is still ongoing.

6.1.3. Atlantic Salt

The cleanup activities consist of two separate sites being address simultaneously: The Atlantic Resources site and the Horseshoe Road site. The Atlantic Resources site is a 4.5-acre property located in Sayreville, New Jersey, near the Raritan River. The Atlantic Resources Corporation facility was a precious metals recovery operation. Gold and silver were recovered by incineration and smelting, or acid etching, from fly ash, x-ray and photographic film, circuit boards, building material and other waste materials. Waste solvents were also accepted for use as fuel in the incinerators. The Atlantic Resources Corporation owned and operated the facility from 1972 until it filed for bankruptcy in 1985. The Atlantic Resource site first came to EPA's attention in 1981, when a brush fire at the adjoining Horseshoe Road site exposed approximately 70 partially filled drums containing acetonitrile, silver cyanide and ethyl acetate. The Atlantic Resources site is being addressed with the neighboring Horseshoe Road site due to their close proximity and intermixing of contaminant plumes. The Horseshoe Road site contained several buildings that were used to process epoxy resins, epoxy pigments and roofing materials as well as other products.

In March 1987, EPA addressed immediate threats to human health and the environment posed by the site. EPA removed acids from leaking vats, cleaned up mercury spills and disposed of 152 drums of hazardous substances, 5,550 gallons of combustible liquids, 70 pounds of mercury, 520 cubic yards of contaminated debris and 15 gas cylinders. In 1996 and 1999, EPA posted warning signs and removed surface debris and ash contaminated with dioxin and metals.

In July 1997, EPA started a remedial investigation to determine the nature and extent of remaining contamination. EPA found that building demolition was a necessary first step; the site's potentially responsible party group completed demolition of all structures on the Atlantic Resources site in May 2003.

In 2014 EPA, working with the site's potentially responsible parties (PRPs), implemented a remedy to remove 57 approximately 120,000 tons of for contaminated surface soil and deeper soils that acted as source material for groundwater contamination.

The EPA implemented a sediment remedy that included hydraulic dredging of contaminated sediments in the Raritan River and capping of the dredged area. The remedy also called for mechanical dredging a marsh adjoining the Raritan River. The dredging project began in the summer of 2015 and the restoration of the marsh and river was completed in November 2017.

In 2017, a five-year review was completed for two Operable Units (OUs). OU2 addresses on-site soil and groundwater and OU3 addresses contaminated sediments in the marsh adjacent to the OU2 areas, and sediment in the Raritan River (EPA, 2017). OU1, which addressed building demolition, was not covered in the FYR. The FYR addresses past soil and sediment remediation outline in the previous two paragraphs.

Due to acid conditions in the soil, plantings in the upper marsh did not succeed and an application of lime was conducted in January of 2020. The upper marsh was replanted in June 2020. After a final inspection in April 2021, the marsh and river restoration was considered complete. EPA continues to monitor the groundwater to ensure levels do not increase.

6.2. Group B Sites

As the Region is located in New Jersey, only limited data is available on the identified collocated active remedial sites in the NJDEP program with engineering controls and deed restrictions (Figure 6-3). A review of the NJDEP's database and a search of publicly available records identified the following collocated sites that may include HTRW remaining in the site media:

- Harborside at Hudson's Ferry
- Atlantic highlands Borough
- Keyport Waterfront Park
- Sanitary Landfill
- Lower Broadway Redevelopment Area
- Gerday Ameristeel
- Cruise Line Facilities
- McWilliam Stadium

6.3. Group C Sites

The following potential HTRW sites were located and mapped in the Lower Bay Corridor Report (EDR, 2022e). The databases contained only limited data on most of the mapped sites.

6.3.1. Mine Sites

The Lower Bay Region is the only Region in the NYNJHAT Study to include a facility (Figure 6-4) in the Mines Database (EDR, 2022e). Based on a review of the database, it is assumed it is identified as a mine due to the sand dredging operations. Due to the presence of UXO in other Regions, there remains a possibility that the dredging operations here could include accidental collection of UXO. Likewise, the material may be impacted with other chemicals present in sediment throughout the greater New York City Region.

6.3.2. Dry Cleaners & Automotive Service Sites

A total of 45 to 50 dry cleaner and auto service center sites were collocated with the proposed measures. With a majority of identified sites lying along the road between Long Branch and Highlands, NJ (Figure 6-4). There are dry cleaners and auto service stations sporadically located along the rest of the NYNJHAT Study Alternatives, with a cluster of sites in Perth Amboy, NJ, with a four additional located along the coastline between Perth Amboy and Staten Island.

6.3.3. PFAS Sites

The database search identified one PFAS site collocated with proposed measures on the south bank of the Raritan River where the Route 35 and Route 9 bridges cross (Figure 6-4). The database entry provided only the name of the facility: former South Amboy Municipal Landfill. No other data was provided in the Corridor Report.

6.3.4. FUDS

Nine FUDS sites were mapped in the database (Figure 6-4). Two were listed as Fire Control Stations, the others include:

- Watson Lab Field Station - The site was used by the Department of the Air Force - Watson Laboratories Field Station for on-site testing of UHF Direction Finder equipment. The database indicated that there were no ongoing field investigations at the facility.
- Fort Hancock – A 1,1063-acre facility north of highlands began as a second series fort (19th century) and utilized throughout the following century as part of harbor defense planning. This includes the placement of a Nike Air Defense Missile site. The database does not list the ongoing projects at the facility.
- Highlands Air Defense Military Reservation – The Department of the Army acquired the 225 acres which make up the entire site in 1922 for the construction of the Highland Army Air Defense site. The U.S. Army originally used the site as a fire detection center for the New York-Philadelphia Defense Area. A portion of the site was subsequently used as a Missile Master Area. The site was vacated by the U.S. Army in two stages between 1976 and 1983. After the DOD vacated the site, several structures on the MCPS property remained abandoned. These structures are continuing to deteriorate and are proposed for demolition since they are unsightly and a hazard to the safety of the general public within the context of the property's designated use. The site is listed in the database as requiring projects to remediate the site, but no data on the nature or extent of hazardous wastes or site conditions is provided.
- Morgan Ordnance Support Depot – The database states that in the early 1920s the site became an ordnance storage depot for munitions from US Government agencies and for munitions intended for foreign governments. Morgan shipped these munitions through the South Amboy Docks. Beginning in the late 1940's and ending in the early 1950's Morgan sold off the land to developers and municipalities. Much of the land has since been developed along commercial and residential lines. There is no data on the presence of hazardous wastes, but the site is listed on the UXO database, indicating that UXO has been found on the site.
- The Reef – The Reef site is listed as having a number of USTs for petroleum (gasoline and waste oil) storage with multiple reported spills. No other data was provided on conditions at the facility or its former military role in the corridor Report (EDR, 2022e).

6.4. Group D Sites

The database listed a 113 spills and releases collocated with the proposed measures as well as 300 previous and current leaking USTs (Figure 6-5) (EDR, 2022f). Starting on the coast near Fort Hancock (Figure 6-5), the USTs, leaking USTs, and spills are present and mapped in the database. There are no spills or releases east of Perth Amboy as the databases for New York State were not available for this Region. Based on a review of the data and the similarities of the New York and New Jersey sites, it is likely that there are additional leaking USTs and spills in the New York section of this Region (Figure 6-5). As demonstrated in the Corridor Report and shown on Figure 6-5, USTs and potential spills may be encountered at any point on the alignment of the NYNJHAT Study Alternatives.

6.5. Group E Sites

The database search identified two radioactive waste sites and no FUSRAP sites (EDR, 2022e). One of the radioactive sites was not mapped (Naval Weapons Station Earle), open mapping the site was significantly southwest of the proposed alignment of the NYNJHAT Study Alternatives and can be removed from consideration (Figure 6-6). The second site was the Steel Raritan Co., which reported the delivery of radioactive scrap from an unknown source. The scrap was removed. Based on the nature of the material it is unlikely that any significant amount remains in the environment following the reported response action (EDR, 2022e).

6.6. Summary of Lower Bay Region

6.6.1. Regional Summary Review

With one corrective action, one site in the ROD phase, and approximately twenty collocated/adjacent state program sites the Lower Bay Region has a relatively low density of major HTRW sites in comparison with Hackensack Passaic A Line (Section 2), and the Upper Bay (Section 9) Regions. However, Perth Amboy and South

Perth Amboy have a number of mapped HTRW sites along the waterfront and with activities along the shoreline that will likely be collocated with the proposed measures.

The Spills, NJ Spills, and leaking UST databases were similar to other Regions with high urbanization but low industrialization. The presence of spills and leaking USTs in comparison with the actual route of the NYNJHAT Study Alternatives in the Region could not be determined based on the database review. However, the majority of the spills and leaking USTs are adjacent to the road, though a number of USTs are present behind buildings. NYNJHAT Study Alternatives placed on the shoreline rather along the roadside are likely to avoid a majority of these HTRW sites.

6.6.2. Further Considerations

Like the Jamaica Bay Region (Section 4), the ocean/bay facing properties have a significant history of military activity with 19th and 20th century fortresses. Based on the presence of these fortifications, it is likely that UXO will remain an issue when working on these coastlines.

Figure 6-1 Lower Bay Region - Locations of Measures Within Each Alternative

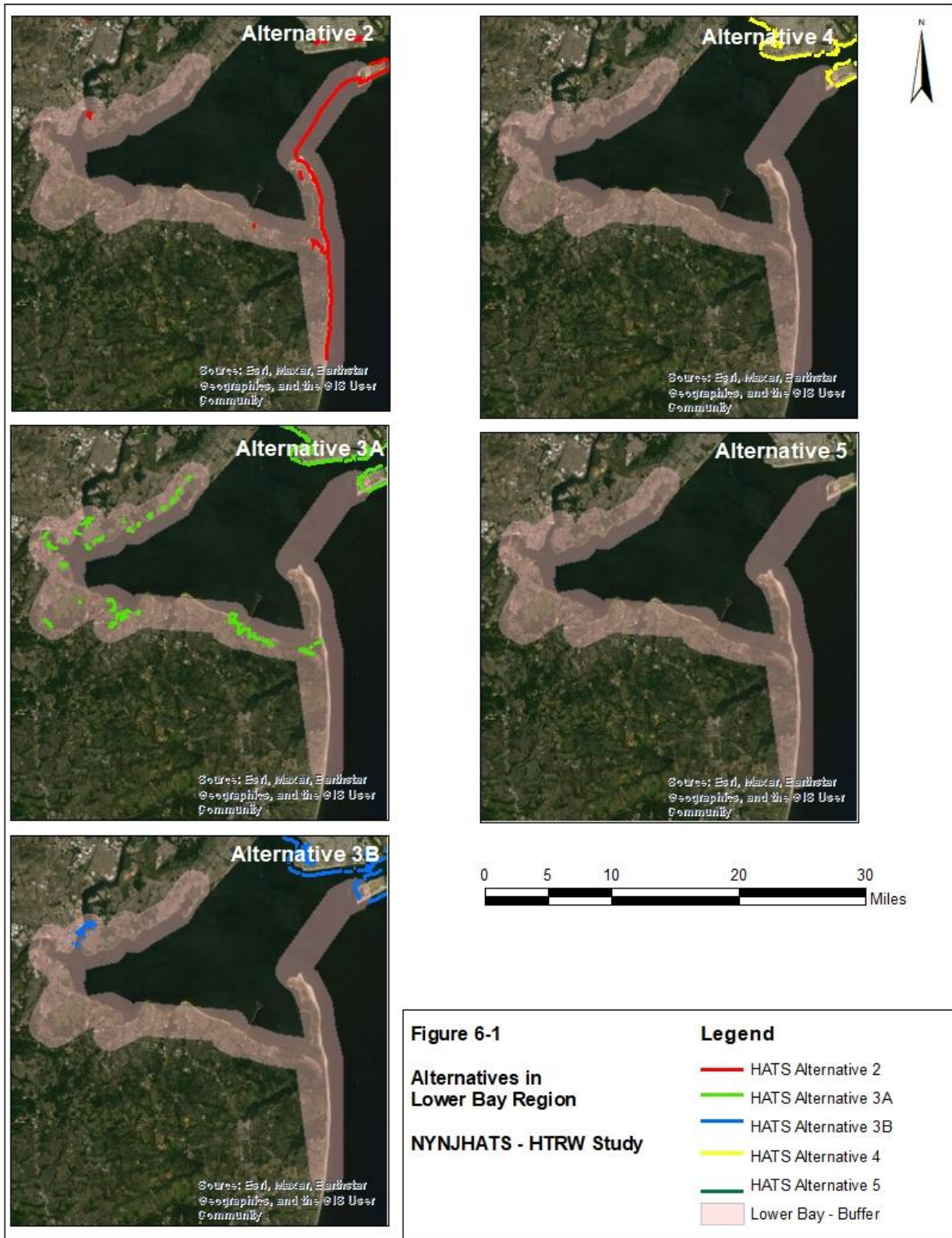


Figure 6-2 Lower Bay Region - Group A

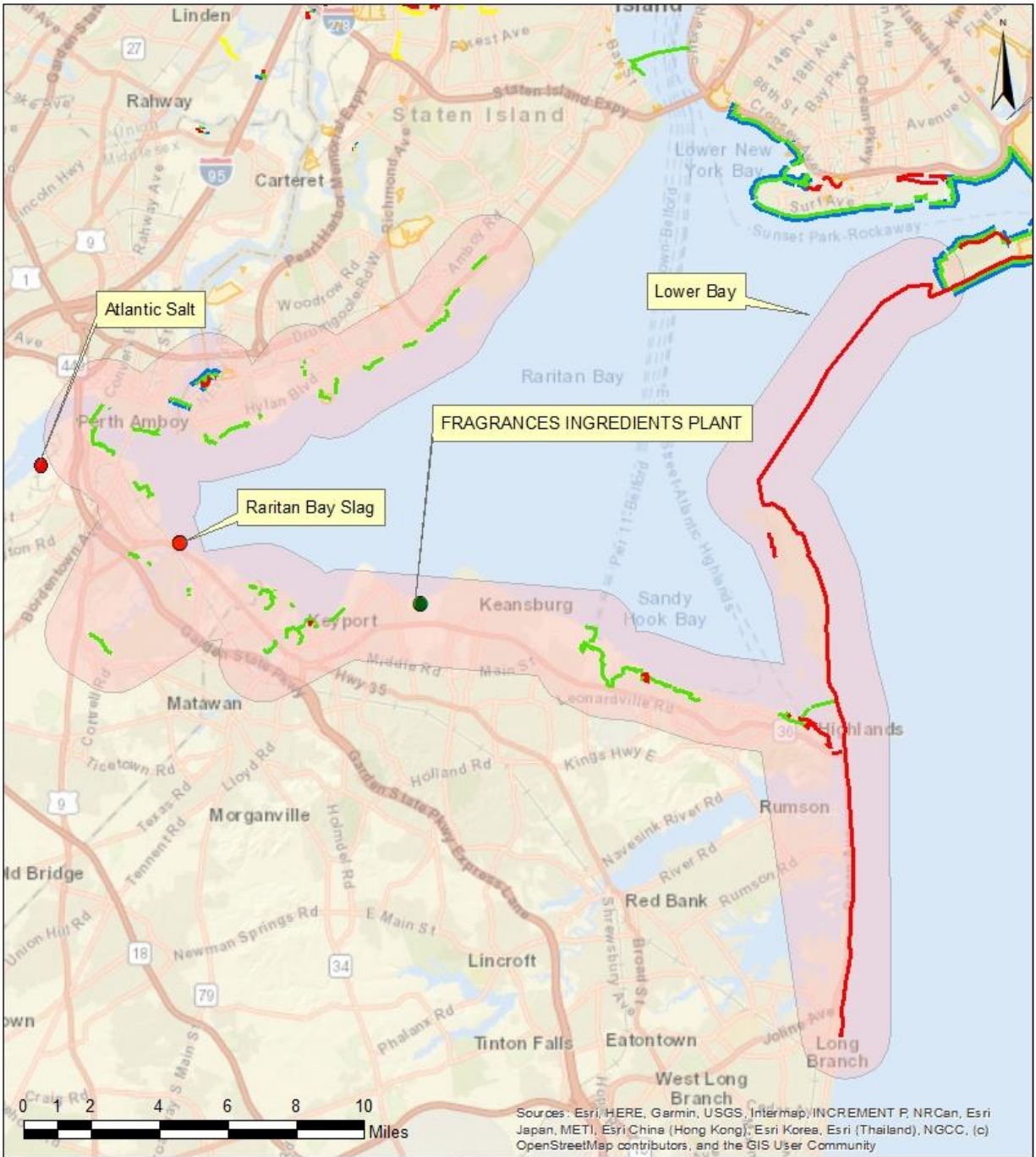


Figure 6-2

**Group A Sites
Lower Bay**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- 2020 COR ACTION
- NPL
- ROD
- NYDEC Class 1 - Immediate Hazard
- Lower Bay - Buffer

Figure 6-3 Lower Bay Region - Group B

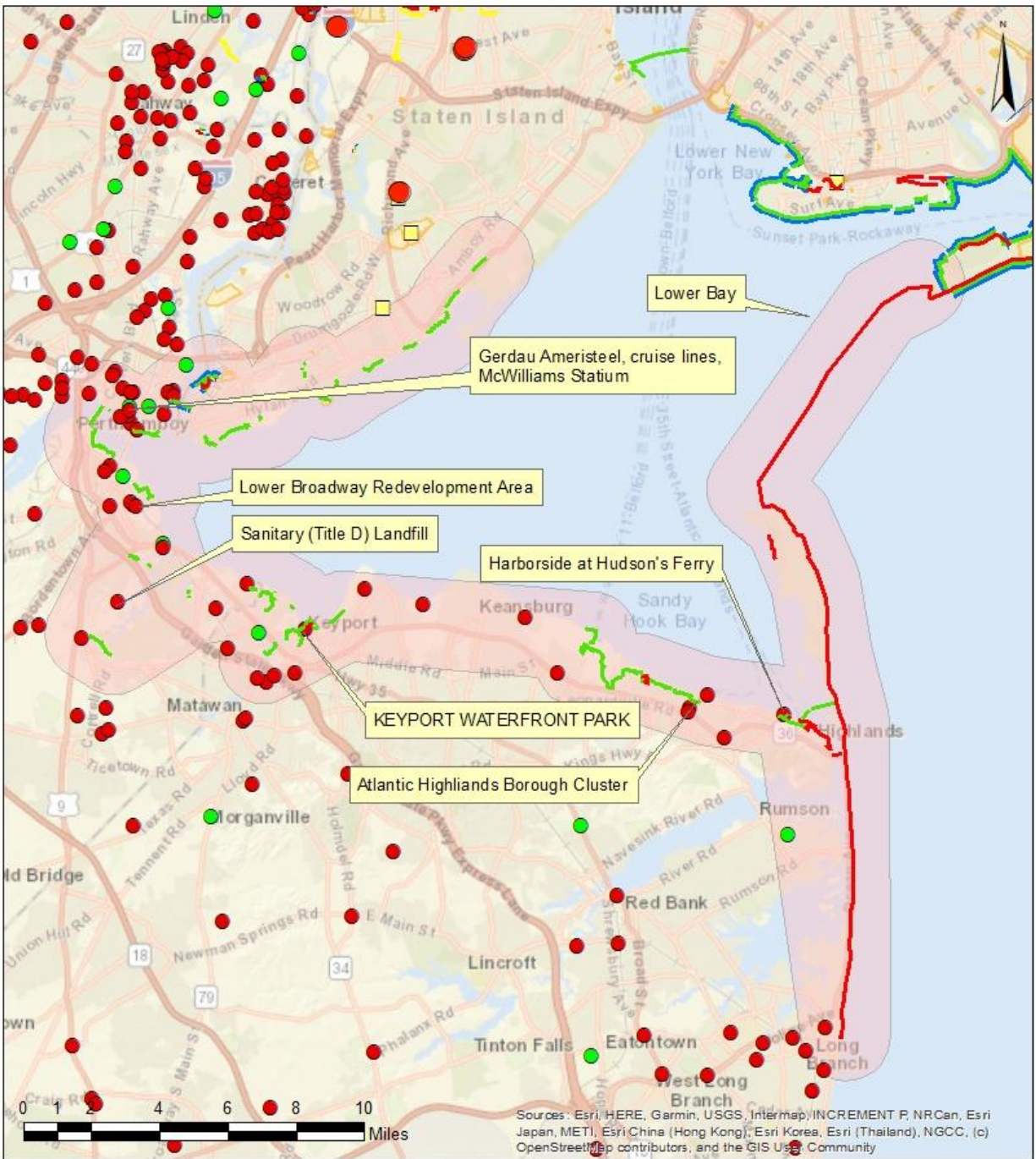


Figure 6-3
Group B Sites
Lower Bay
NYNJHATS - HTRW Study

Legend		NYDEC Classification
—	HATS Alternative 2	 Class 4 - Closed with Ongoing Management
—	HATS Alternative 3A	● Class 2 - Significant Threat
—	HATS Alternative 3B	 Lower Bay - Buffer
—	HATS Alternative 4	
—	HATS Alternative 5	
●	NJ Known Contaminated Sites Ongoing Engineering Controls	
●	Ongoing Deed Notification	
●	Deed Notification and Engineering Controls	

Figure 6-4 Lower Bay Region - Group C

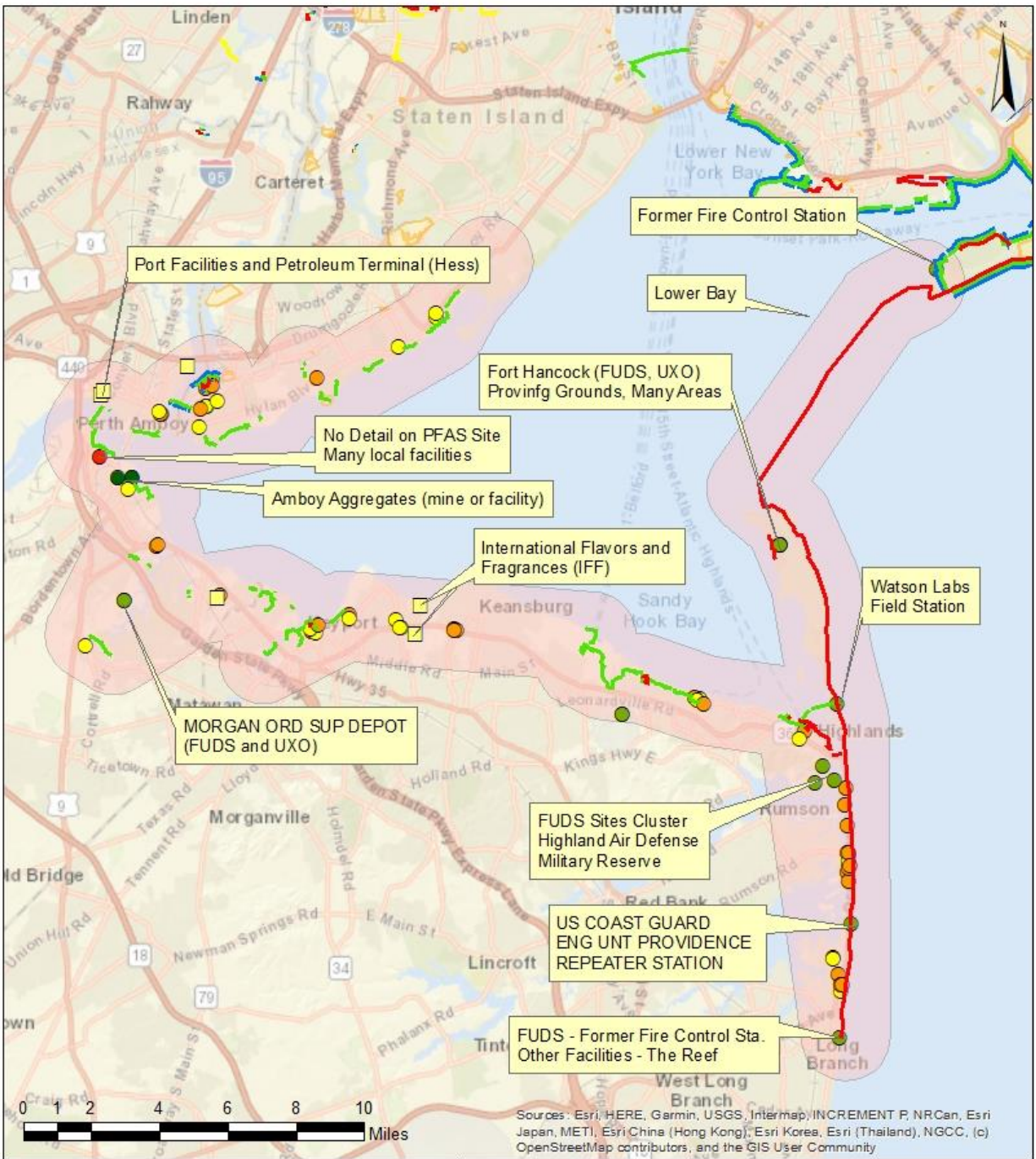


Figure 6-4

**Group C Sites
Lower Bay**

NYNJHATS - HTRW Study

Legend

- | | | |
|---------------------|----------------|--------------------|
| HATS Alternative 2 | Mines | Auto Service |
| HATS Alternative 3A | DOD, FUDS, UXO | PFAS |
| HATS Alternative 3B | Drycleaners | Major Facilities |
| HATS Alternative 4 | | Lower Bay - Buffer |
| HATS Alternative 5 | | |

Table 6-2 Lower Bay Region - Group D

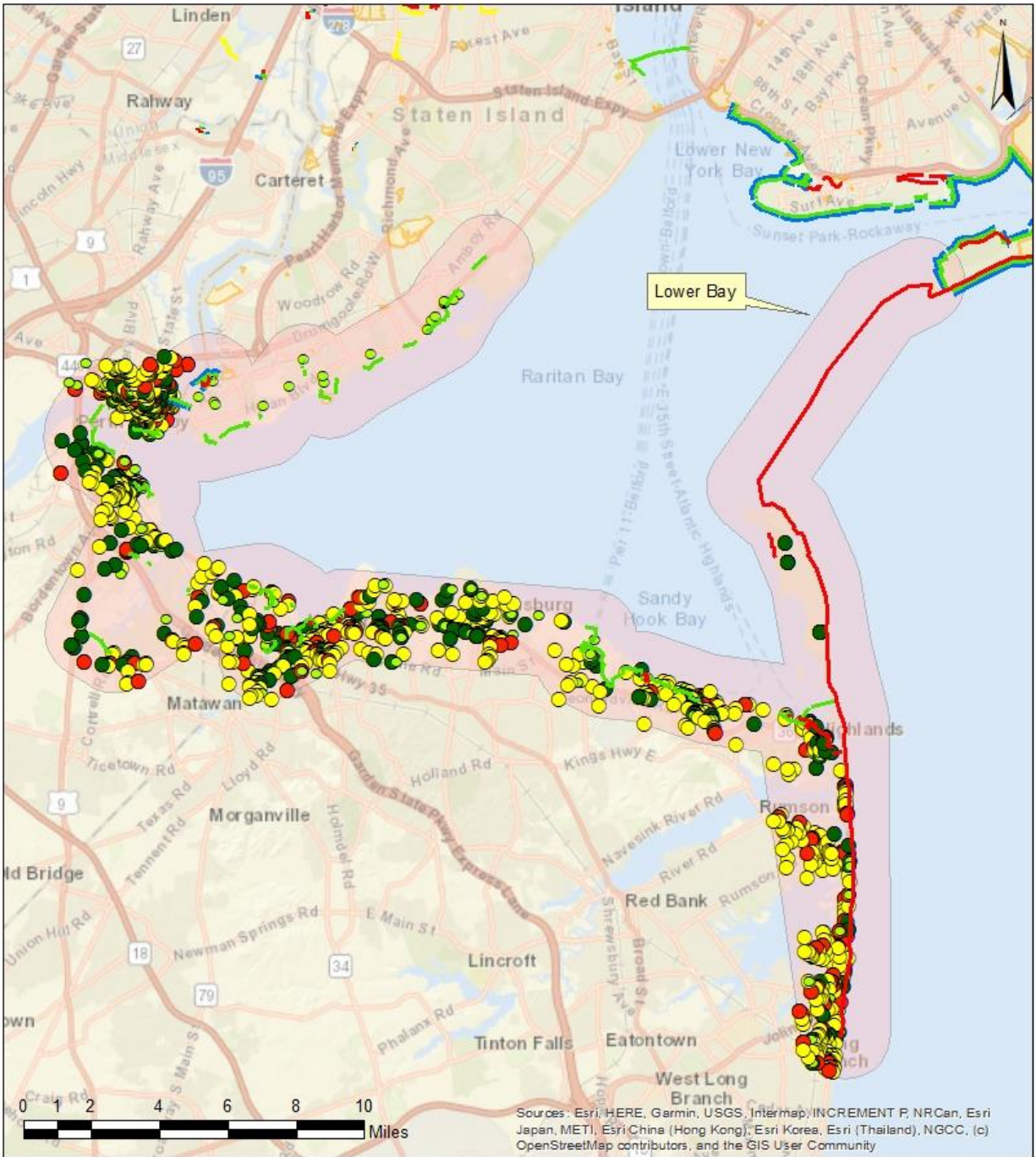


Figure 6-5

**Group D Sites
Lower Bay**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- UST
- LU ST Sites
- NJ Release
- SPILLS
- Lower Bay - Buffer

Figure 6-5 Lower Bay Region - Group E

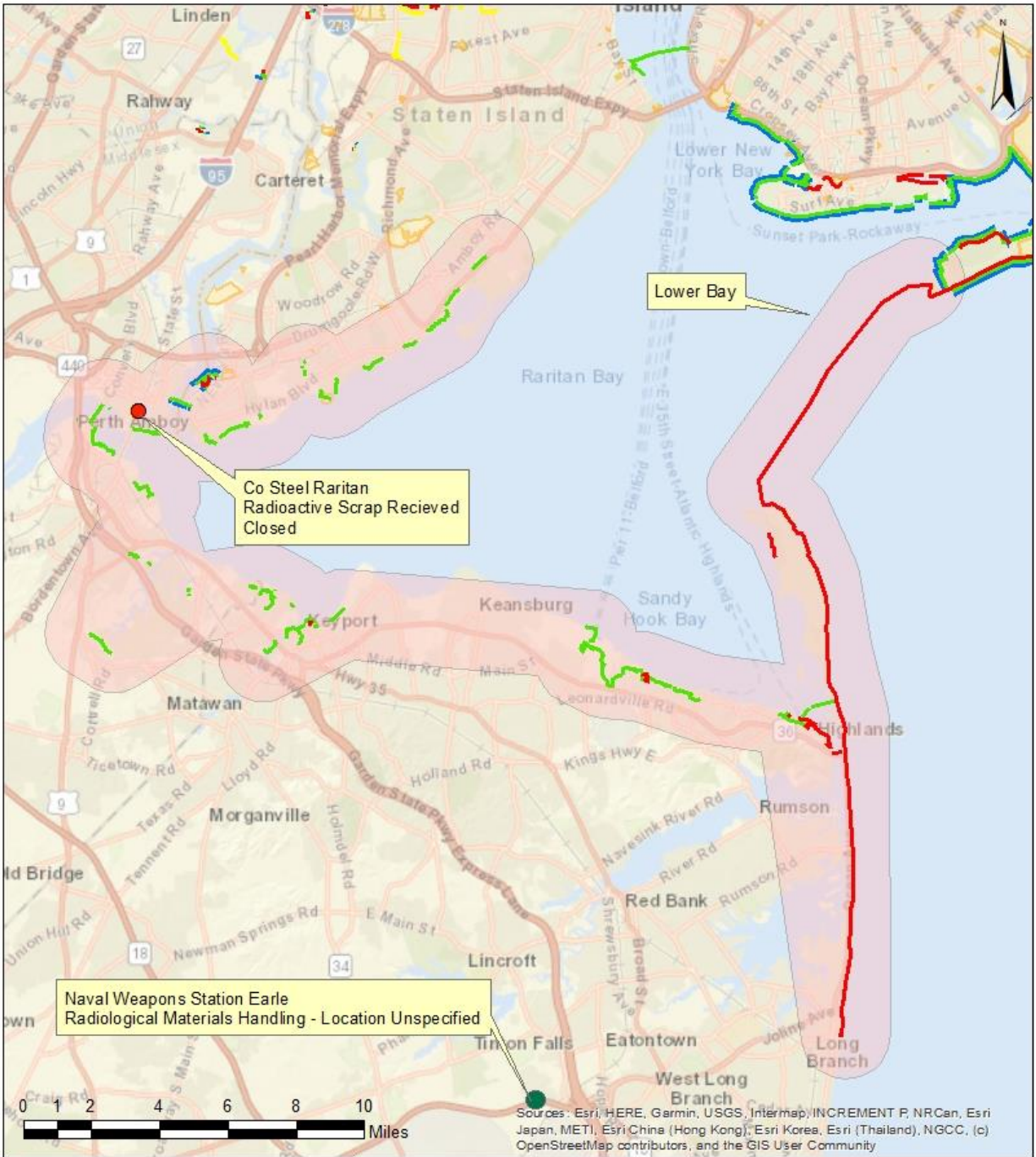


Figure 6-6
Group E Sites
Lower Bay
NYNJHATS - HTRW Study

Legend	
—	HATS Alternative 2
—	HATS Alternative 3A
—	HATS Alternative 3B
—	HATS Alternative 4
—	HATS Alternative 5
●	NAVAL WEAPONS STATION EARLE (SITE A)
●	CO-STEEL RARITAN
	Lower Bay - Buffer

7. Port Washington / Long Island Sound Region

Port Washington is highly urbanized but has limited areas of industrialization; according to the mapped HTRW sites, the majority of the major sites are present on the eastern end of the NYNJHAT Study Alternatives and centered around Glen Cove, NY (Figures 7-2 through 7-6). This Region has an extensive length of NYNJHAT Study Alternatives under consideration, approximately 20 miles of coastal protection. The Port Washington – Long Island Sound Region encompasses measure locations observed in Alternatives 2 and 3A (Figure 7-1), where Alternatives 2, and 3A, and 3B have nearly identical footprints which encompass most of the area adjacent to the Long Island Sound. Alternative 3B, 4, and 5 has no measures within this Region.

7.1. Group A Sites

One Corrective Action 2020 site was identified in within approximately a mile of Port Washington (Figure 7-2). The identified site appeared to be collocated with the proposed measures.

Table 7-1 Port Washington – Long Island Sound - Group A Sites

Site Name	Collocated
Edmos Corporation	Yes
Li Tungsten Corp.	Unmapped
Applied Environmental Services	Unmapped
Mattiace Petrochemical Co., INC. (M&M Drum Cleaning Company)	Unmapped
Town of North Hempstead Solid Waste Management Authority – Port Washington Landfill	Unmapped
Stanton Cleaners Area Ground Water Contamination	Unmapped

7.1.1. Edmos Corporation (Mapped Site)

The Edmos facility occupied part of a 1-story brick building and parking lot area, approximately one acre in size. Edmos manufactured textiles and stored and treated hazardous wastes. The facility closed in the mid-1980s. The Edmos property currently is occupied by several small industrial tenants, including Circle Lubricants.

On October 24, 1990, a 12-foot concrete retaining wall at the adjacent Mattiace Petrochemical facility collapsed, allowing contaminated soils to spill onto a paved parking lot at the Edmos property. Any soil spillage from Mattiace onto the Edmos parking lot subsequently was removed. Contamination at this site originates from the Mattiace Petrochemical Superfund Site. As of 2006, the EPA has stated that the groundwater contamination and human health risks from this site had been controlled (EPA, 2006).

7.1.2. Li Tungsten Corp. (Unmapped Site)

The former Li Tungsten facility is 26 acres and consists of three separate parcels. A four-acre wetland makes up a portion of the Captain's Cove property's southern boundary with the Creek. The Wah Chang Smelting and Refining Company owned the former Li Tungsten facility from the 1940s to about 1984. Operations generally involved the processing of ore and scrap tungsten concentrates to metal tungsten powder and tungsten carbide powder, although other specialty metal products were also produced. Portions of the Captain's Cove property were used as a dumpsite for a variety of wastes, including the disposal of spent ore residuals by the operators of the former Li Tungsten facility (EPA, 2022g).

EPA placed the site on the Superfund program's National Priorities List in October 1992 and performed a second removal action from 1996 to 1998 to address the contents of approximately 270 chemical storage tanks. As part of

the second removal action, EPA razed two buildings that contained large numbers of tanks, due to their structural instability.

EPA selected long-term remedial actions in its 1999 ROD for the site, including excavation and off-site disposal of ore residuals, soil and sediments contaminated with heavy metals and radionuclides. Based on evaluation of the additional soil sampling results, EPA amended the 1999 ROD to address residual contamination on Lower Parcel C and Parcels A and B of the Li Tungsten property. In accordance with the soil cleanup requirements of the 2016 Operable Unit (OU) 1 ROD Amendment, additional Lower Parcel C remedial action by EPA and Parcels A and B pre-construction/development remedial action were completed in December 2016. EPA continues to implement the long-term groundwater monitoring program as part of post-remedial activities (EPA, 2022g).

7.1.3. Applied Environmental Services (Unmapped Site)

The Applied Environmental Services (AES) site, also known as the Shore Realty site, petrochemical facility operations contaminated site soil and groundwater. Short-term cleanups, also known as removal actions, included drum and fencing removal and liquid waste collection (EPA, 2020a).

In 1994, during construction of the remedy, approximately 14 tons of contaminated sludge and 870 tons of building debris were transported off-site for proper disposal; two 700,000-gallon underground tanks containing 3,200 gallons of flammable liquids were removed and transported off-site for proper disposal.

In June 2009, the groundwater treatment system was converted from air stripping to liquid-phase granular activated carbon (GAC) stripping. The soil vapor extraction system was converted from catalytic oxidation to vapor-phase GAC stripping. These changes were made to maximize the system's efficiency and effectiveness. The site's operation and maintenance of the system has been transferred to New York State.

The fifth Five-Year Review for the Site was completed in December 2020. Since New York State has taken over the Site from the PRP's, they have conducted a limited soil investigation to identify any remaining hot spots. It is anticipated that a limited soil excavation will occur in order to remove any soil hot spots on the property to further improve groundwater concentrations (EPA, 2020a).

7.1.4. Mattiace Petrochemical Co., INC. (M&M Drum Cleaning Company) (Unmapped Site)

The Mattiace Petrochemical Co., Inc. site is a 2.5-acre area that was a chemical distribution facility. From the mid-1960s until 1987, Mattiace received chemicals by tank truck and redistributed them to its customers. The company also operated the M&M Drum Cleaning Company on site until 1982. During this time, a Quonset hut, shed, concrete loading dock and about 56 storage tanks were located on site. Primary operations included storing, blending, and repackaging organic solvents. These solvents were stored in above ground and below ground tanks. They were blended and repackaged in 55-gallon drums under a covered section of the concrete loading dock in the northeast corner of the site. The 55-gallon drums were stacked and temporarily stored on the loading dock prior to shipment to various buyers (EPA, 2020b.).

In 1987, Mattiace filed for bankruptcy and the facility closed. After seven years of failed negotiations and litigation regarding various waste-handling and environmental infractions, the State of New York seized the site property. Following emergency actions to protect human health and the environment, and additional site investigations, EPA placed the site on the Superfund program's National Priorities List in March 1989. In 1988, EPA undertook an emergency action to secure the site and remove more than 100,000 gallons of hazardous liquids. Construction of the site's long-term soil and groundwater remedy as described in the 1991 ROD was completed in 1998. The treatment system operated for approximately 16 years before a ROD Amendment was signed in September 2014 changing the remedy. Remedial action implementation of the vertical barrier wall was completed in the summer 2018. In-Situ Thermal Treatment began operations in November 2018 and is anticipated to be documented as complete in 2019. Remedial design investigations for the bioventing remedy began in the summer of 2019, with remedial action implementation anticipated to begin summer 2021 (EPA, 2020b.).

7.1.5. Town of North Hempstead Solid Waste Management Authority – Port Washington Landfill (Unmapped Site)

The Port Washington Landfill site is a 54-acre area is part of a municipal landfill, and whole the Corridor Report stated the site was in the vicinity of the NYNJHATS Regions the site could not be mapped. (EDR, 2022f). The site was used from the 1880s as a sand and gravel mining operation. Subsequent to mining activities, the area became a disposal area for construction debris. The All-American Sand and Gravel Corporation operated the facility (EPA, 2019). Construction debris included concrete, wood, and miscellaneous solid wastes. In 1973, the Town of North Hempstead purchased the property and operated a municipal landfill until closing it in 1983. Operation of the landfill during the 1970s resulted in the generation of an off-site soil gas plume composed of methane and VOCs.

EPA placed the site on the Superfund program's NLP in September 1983. Following immediate actions to protect human health and the environment, the site's remedy was put in place. The L-4 Landfill was properly capped, a landfill gas removal system to protect the adjacent neighborhood was installed, and a groundwater extraction and treatment system to contain the contaminated groundwater was built. Long term groundwater treatment and monitoring are ongoing (EPA, 2019).

7.1.6. Stanton Cleaners Area Ground Water Contamination (Unmapped Site)

The Stanton Cleaners Area Ground Water Contamination site is a quarter-acre area that includes a former dry-cleaning building and an adjacent one-story boiler/storage building. As a result of past disposal practices, PCE, a volatile organic compound (VOC), migrated from the subsurface soils into the indoor air environments of nearby buildings and the groundwater, resulting in a significant threat to human health (EPA, 2019a).

In September 1998, under its removal authority, EPA installed a soil vapor interceptor system to mitigate impacts from PCE vapors to Plaza Tennis, an indoor tennis club. This tennis facility has since been demolished. Additionally, EPA funded and installed An SVE system on the Site to remediate VOC-contaminated soils, thus reducing the indoor air concentrations in the adjacent affected buildings to safe levels. The VOC-contaminated vapors are being treated by a granular activated carbon (GAC) system.

EPA selected a remedy in the Site's March 1999 Record of Decision. It called for: 1) an upgrade of the existing groundwater air stripper; 2) construction of a groundwater extraction and treatment system; 3) continued operation of the SVE system; 4) indoor air monitoring of affected buildings next to the site; 5) long-term groundwater monitoring; and 6) groundwater use restrictions.

The pump and treat system is currently operating and has treated over 200 million gallons of contaminated groundwater. The SVE system continues to operate, in conjunction with the pump and treat system. In December 2003, the construction of the Site's remedy was completed. Operation, maintenance, and monitoring activities are ongoing (EPA, 2019a).

7.2. Group B Sites

A review of the available NYSDEC database identified the following potential HTRW sites potentially collocated with the proposed measures.

7.2.1. Crown Dykman

This site is bordered by the Li Tungsten USEPA superfund site (see section 7.1.2). This site is the former location of Dykman Laundry and cleaners from 1932 through 1975 and Crown Uniform Services (dry cleaners) until 1983. Sampling by the Nassau County Department of Health found PCE, 1,1,1-trichloroethane, toluene, and xylene. In the early 1990s, several underground solvent tanks and a gasoline tank were removed. A preliminary site investigation occurred in 1992. The site was registered as a Class 2 site where hazardous waste presents a significant threat to public health, or the environment and action is required. A RI/FS was completed in 2009. A ROD was signed in 2010 requiring in-situ chemical oxidation in the plume area with the highest concentrations of chlorinated VOCs and the implementation of an LNAPL recovery system. Soil vapor extraction systems/sub-slab depressurization systems continued in on-site buildings (NYSDEC, 2021b).

7.2.2. *Li Tungsten*

This site was also identified on the NPL list, refer to Section 7.1.2, above, for information regarding the release at this site.

7.2.3. *Powers Chemco*

The Powers Chemco site, previously the former Columbia Ribbon and Carbon Manufacturing Company site, and was historically used for the manufacturing of photographic equipment and supplies. Powers Chemco discovered subsurface contamination while excavating in 1983. For an undetermined time period prior to 1979, Columbia had disposed of wastes from the production of printing inks, carbon paper, and typing ribbon in open pits behind the manufacturing buildings. Reportedly, wastes from 55-gallon drums were dumped into the open pits. Wastes were also pumped through a galvanized pipe directly into the pits. Known contaminants included toluene, xylene, ethylbenzene, and ethyl acetate. A ROD was implemented in 1991 that included a groundwater pump and treat system and air sparge/soil vapor extraction system (Remedial Engineering P.C., 2014).

A 2014 Decision Amended Record of Decision (AROD) included a site management plan that was approved in 2017. An environmental easement was imposed on the site. Remedial actions have successfully achieved soil cleanup objectives for restricted residential use and the site will continue to be monitored pursuant to the approved site management plan (Remedial Engineering P.C., 2014).

7.2.4. *Mattiace Petro Chemicals*

This site was also identified on the NPL list, refer to Section 7.1.2, above, for information regarding this release. Though listed on the state superfund site, no additional data or documents were provided by NYSDEC's data repositories (NYSDEC, 2022).

The site has historically been used recreationally for boating, fishing, and swimming. Starting in the 1950s, a portion of the site turned into a community dump. Municipal wastes such as garbage, street debris, yard wastes, incinerator residues, wastewater treatment plant sludges, construction debris, hazardous wastes (spent solvents, printing wastes, drums) were dumped on the site. Disposal continued into the early 1980s. The site was classified as a Class 2 site. A RI/FS was completed, and ROD signed in 1999. The City of Glen Cove completed the remedial action in 2001. Known contaminants detected included arsenic and PAHs (EPA, 2020b).

7.2.5. *Penetrex Processing Company*

A dry cleaner operated on the site from the 1950s until 1984 when the facility was abandoned. Chlorinated VOCs were disposed to the on-site dry wells and subsurface soils. The disposal is believed to have occurred because of negligence and sloppy housekeeping. The drywells were cleaned out and drums removed in 1985. A Phases II Site Investigation was completed in 1989 and a Supplemental Phase II investigation was completed in 1993. The NYSDEC listed the site as a Class 2 site (NYSDEC, 2015).

Remedial actions for the site included installation of sub-slab depressurization system and in-situ chemical oxidation between 2007 and 2009 (NYSDEC, 2015).

7.2.6. *Shore Realty Corporation*

The site was used for the bulk storage of petroleum products from 1939 until 1972. In 1974 a portion of the site was used for storage and distribution of solvents. In 1978, an overturned tank truck released approximately 3000 gallons of toluene onto the western portion of the site. Portions of the soil and groundwater at the site were heavily contaminated with ethylbenzene, toluene, and xylenes, along with lesser concentrations of other chemicals. A product recovery trench is reported to have recovered approximately 500 gallons of liquid chemicals per month during 1981-82. The site was added to the NPL in 1984 (NYSDEC, 2021c).

The NYSDEC completed the removal of approximately 700,000 gallons of hazardous wastes from the site at a cost of over \$3.1 million by the end of September 1986. More than half of this amount was used for the disposal of wastes contaminated with PCBs. Refer to Section 7.1.2 for more information regarding this site (NYSDEC, 2021c).

7.3. Group C Sites

The following potential HTRW sites were located and mapped in the Port Washington Corridor Report (EDR, 2022f). The databases contained only limited data on most of the mapped sites.

7.3.1. Dry Cleaners & Automotive Service Sites

Dry cleaners and auto service centers are sporadically present throughout the Region, with sixteen likely collocated with the proposed measures (Figure 7-4). The majority of the sites (ten of sixteen) are located at Port Washington. The remaining six are located sporadically along the path of the NYNJHAT Study Alternatives.

7.3.2. FUDS

One FUDS site was mapped in the Corridor Report (EDR, 2022f) for the Port Washington – Long Island Sound Region (Figure 7-4).

- US NAV TRG DEVICE CEN – The database states that 191-acre site was located in the Village of Sands Point, Town of Hempstead, New York. The Navy used the site as a training, research, and testing area. Abandoned tanks are present at the site. In addition, hazardous and toxic wastes and ordnance could be present. This property is known or suspected to contain military munitions and explosives of concern (e.g., unexploded ordnance) and therefore may present an explosive hazard. Most of the site is used as a park preserve. Other portions have been developed for commercial and residential use (EDR, 2022g).

7.3.3. NYSDEC Non-Registry Sites

The following non-registry sites were listed in the NYSDEC database, are collocated with the proposed measures, and were identified as worth further consideration in later stages of the NYNJHAT Study.

- Gladsky, Edmos Co., and 1 Garvies Point: These three sites are located at Glen Cloves, among other sites. Gladsky and Edmos co. are RCRA sites potentially requiring unspecified further action, and 1 Garvies Point is in the Brownfields Program indicating environmental contamination in soil above cleanup criteria (NYSDEC, 2022e).
- Prospect Ave & Bryant Ave, Clocktower, Manhasset N10, and Former Thypin Steel Plant – Properties collocated with the NYNJHAT Study Alternatives and in the Brownfields Program (NYSDEC, 2006).

7.4. Group D Sites

The Port Washington – Long Island Sound Region is heavily developed with a wide range of commercial developments (Figure 7-5). As seen in other Regions, high urbanization is limited to the presence of USTs. Approximately 150 leaking USTs were identified within 0.125 miles of the NYNJHAT Study Alternatives in the Fort Washington Corridor Report (EDR, 2022f). Likewise, urbanization has a link to activities that create spills. A total of 384 spill sites were listed within 0.125 miles of the NYNJHAT Study Alternatives.

7.5. Group E Sites

Two sites with radiological wastes were identified in the corridor study databases and are shown on Figure 7-6.

7.5.1. LI TUNGSTEN CORP (Radinfo)

The City of Glen Cove completed the Remedial Action in 2001. During the Title 3 Remedial Investigation of the Captains Cove site, the City of Glen Cove identified radiological and metal contamination associated with the Li Tungsten site. The USEPA issued a Record of Decision for the Li Tungsten Operable Unit 2 in 1999 requiring the excavation of the contamination. The USEPA completed the work at Captain s Cove Condominium site in 2006. In 2009, the City of Glen Cove received Federal Stimulus money to begin the construction of a high-speed ferry

terminal on the eastern portion of the site. Construction of the new ferry terminal began in 2010 and was completed in 2017 (EDR, 2022f).

7.5.2. GLADSKY'S PROPERTY FORMERLY GLADSKY'S MARINE

Located in Glen Cove, a radiological survey conducted on 10/4/06 found no radiation levels above background. PPF - Gladsky Property, 3/19/07 Former Use: The city-owned Gladsky property was leased for use as a marine salvage and recreational fishing operation. The property has been vacant since December 2006 (EDR, 2022f).

7.6. Summary of Port Washington – Long Island Sound

7.6.1. Regional Summary Review

As the proposed NYNJHAT Study Alternatives lie mainly along the shoreline, there are fewer HTRW sites that were mapped as collocated outside of Glen Cove and Port Washington North. However, there remains hundreds of smaller release and leaking USTS in the other areas (EDR, 2022f).

7.6.2. Further Considerations

NYNJHAT Study Alternatives constructed in Glen Cove, Port Washington North will need significant consideration based on the presence of major facilities and HTRW sites in those locations, including one radioactive waste site in Glen Cove listed as a FUSRAP site (EDR, 2022f).

The number of historical spills along the coastline may require additional consideration, as there may be contaminated sediment along the shoreline.

Figure 7-1 Port Washington / Long Island Sound Region - Locations of Measures Within Each Alternative

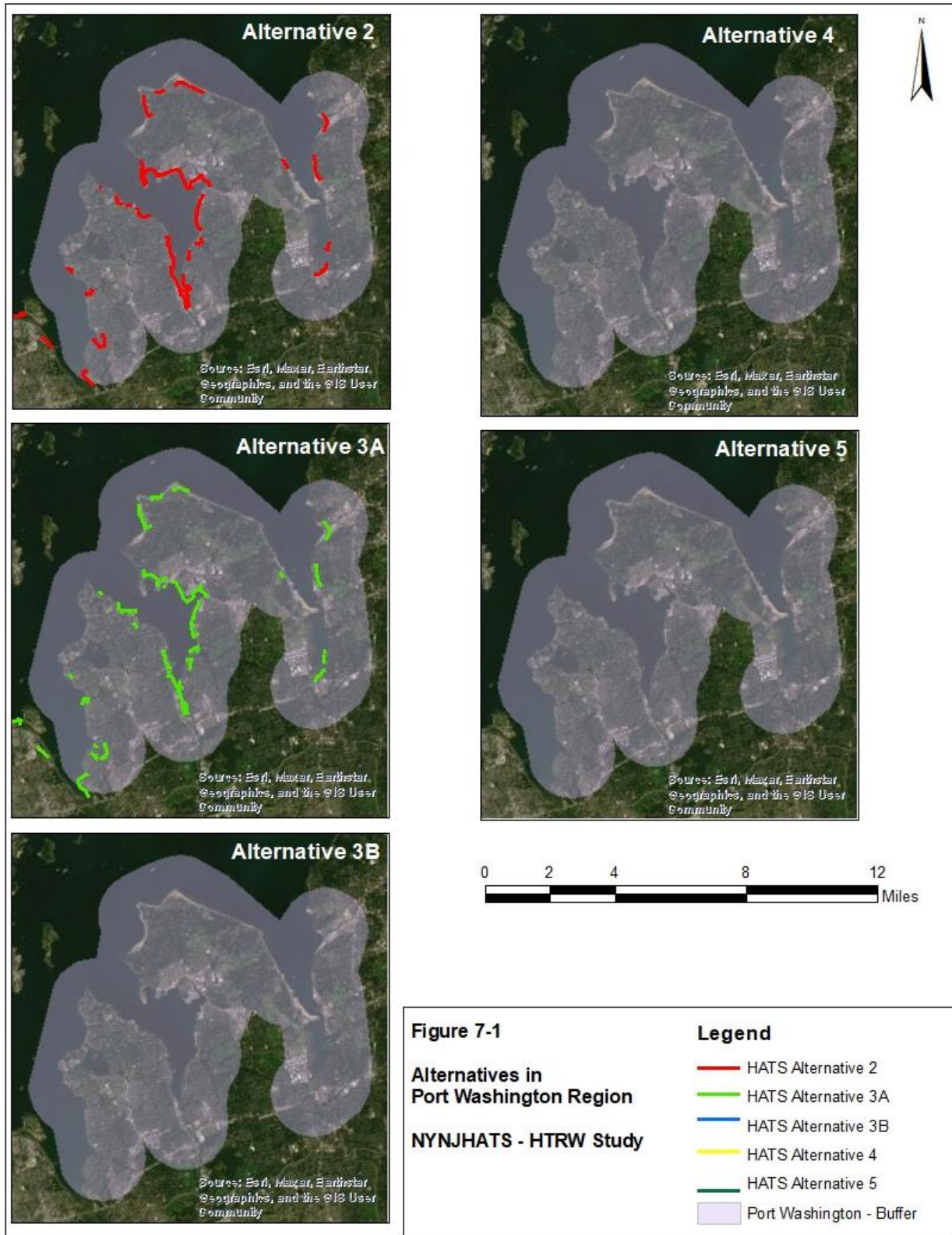


Figure 7-2 Port Washington / Long Island Sound Region - Group A

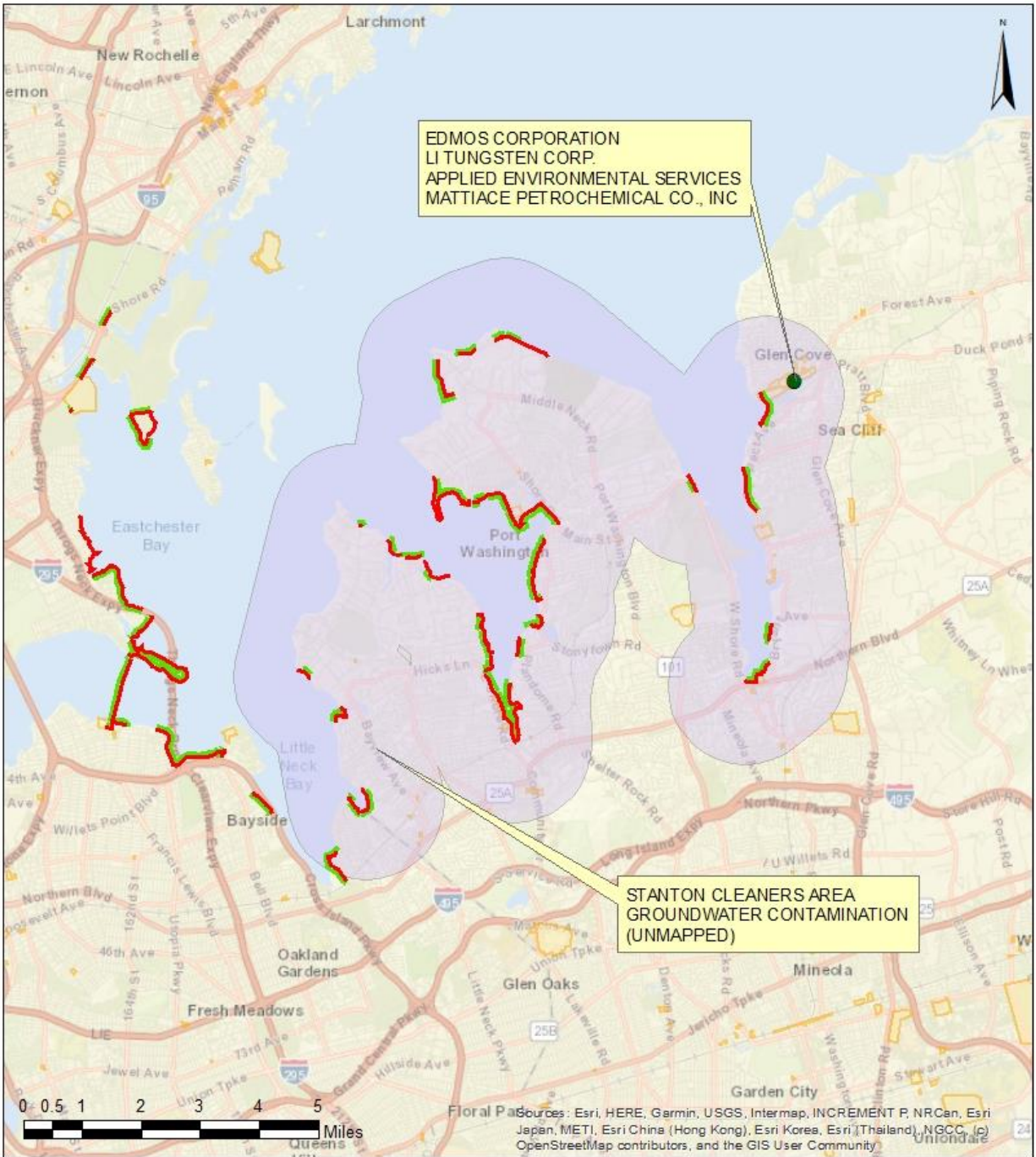


Figure 7-2

**Group A Sites
Port Washington**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- 2020 COR ACTION
- PRP
- ROD
- NPL
- NJ's Listed NPL Sites
- NJ's Listed NPL Subsites
- NYDEC Class 1 - Immediate Hazard
- Port Washington - Buffer

Figure 7-3 Port Washington / Long Island Sound - Group B

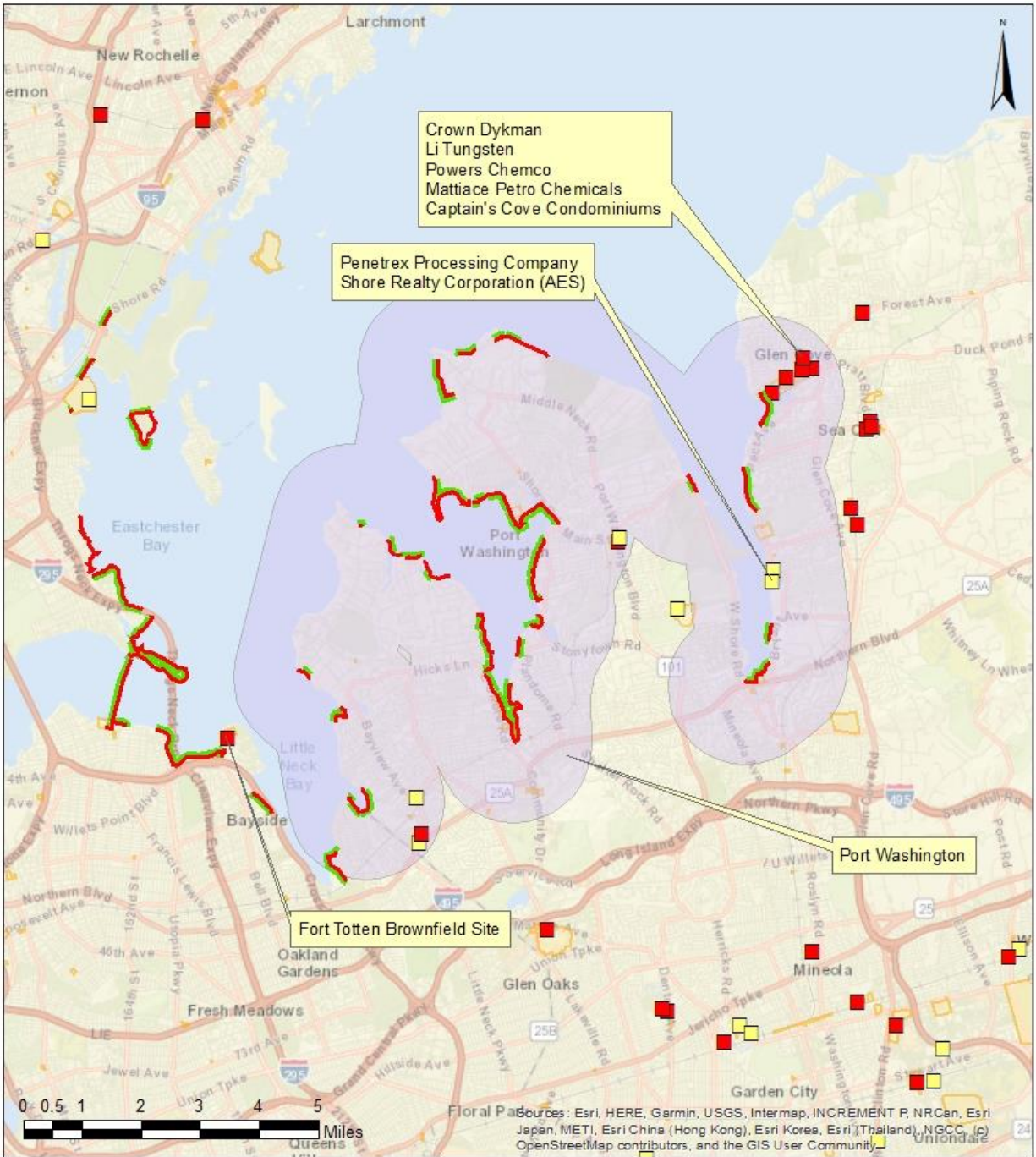


Figure 7-3

Group B Sites
Port Washington

NYNJHATS - HTRW Study

Legend	
—	HATS Alternative 2
—	HATS Alternative 3A
—	HATS Alternative 3B
—	HATS Alternative 4
—	HATS Alternative 5
	Class 4 - Closed with Ongoing Management
	Class 2 - Significant Threat
	Port Washington - Buffer

Floral Patterns: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 7-4 Port Washington / Long Island Sound - Group C

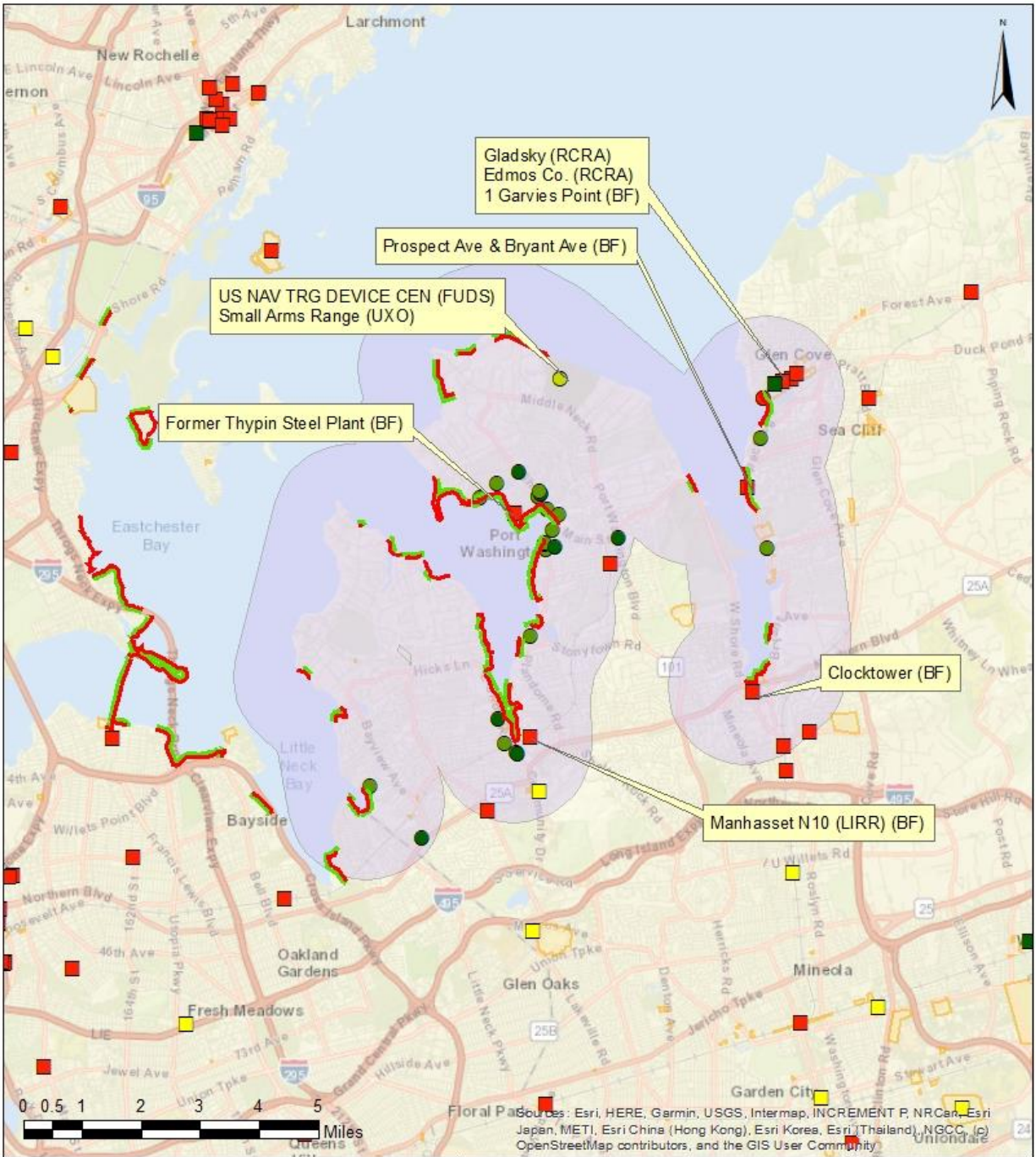
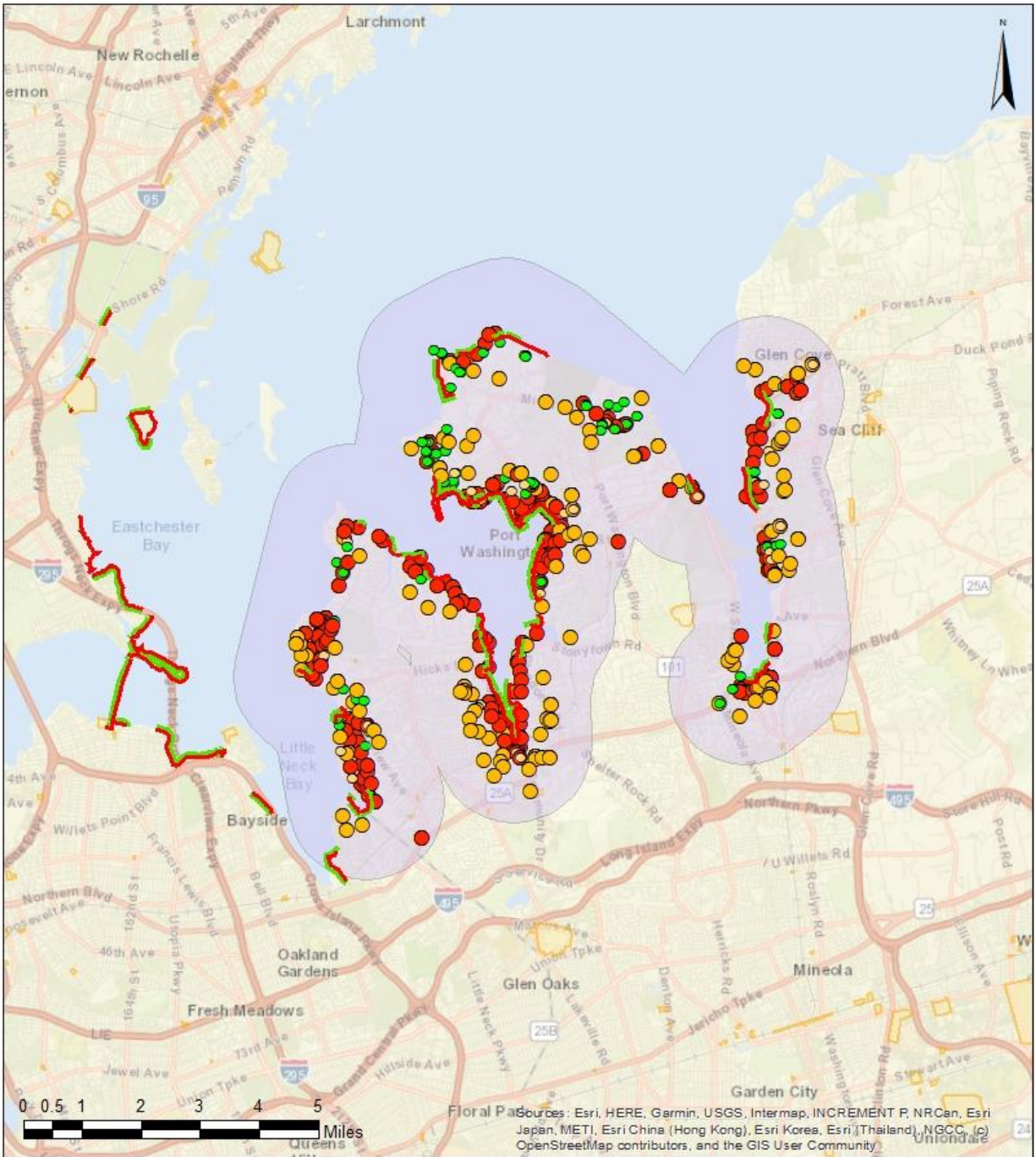


Figure 7-4
Group C Sites
Port Washington
NYNJHATS - HTRW Study

Legend		SITECLASS
Red line	HATS Alternative 2	Potential RCRA (PR)
Green line	HATS Alternative 3A	Potential (P)
Blue line	HATS Alternative 3B	Active (A)
Yellow line	HATS Alternative 4	Port Washington - Buffer
Dark Green line	HATS Alternative 5	
Green circle	Dry Cleaners	
Light Green circle	EDR Hist Auto	
Yellow circle	FUDS	
Orange circle	LEAD SMELTERS	
Red circle	UXO	
Red circle	VAPOR REOPENED	

Floral Patterns: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 7-5 Port Washington / Long Island Sound - Group D



<p>Figure 7-5</p> <p>Group D Sites</p> <p>Port Washington</p> <p>NYNJHATS - HTRW Study</p>	Legend		
	HATS Alternative 2	ASTs	LUST
	HATS Alternative 3A	USTs	Spills
	HATS Alternative 3B	FUELS PROGRAM	Port Washington - Buffer
	HATS Alternative 4		
	HATS Alternative 5		

Figure 7-6 Port Washington / Long Island Sound - Group E

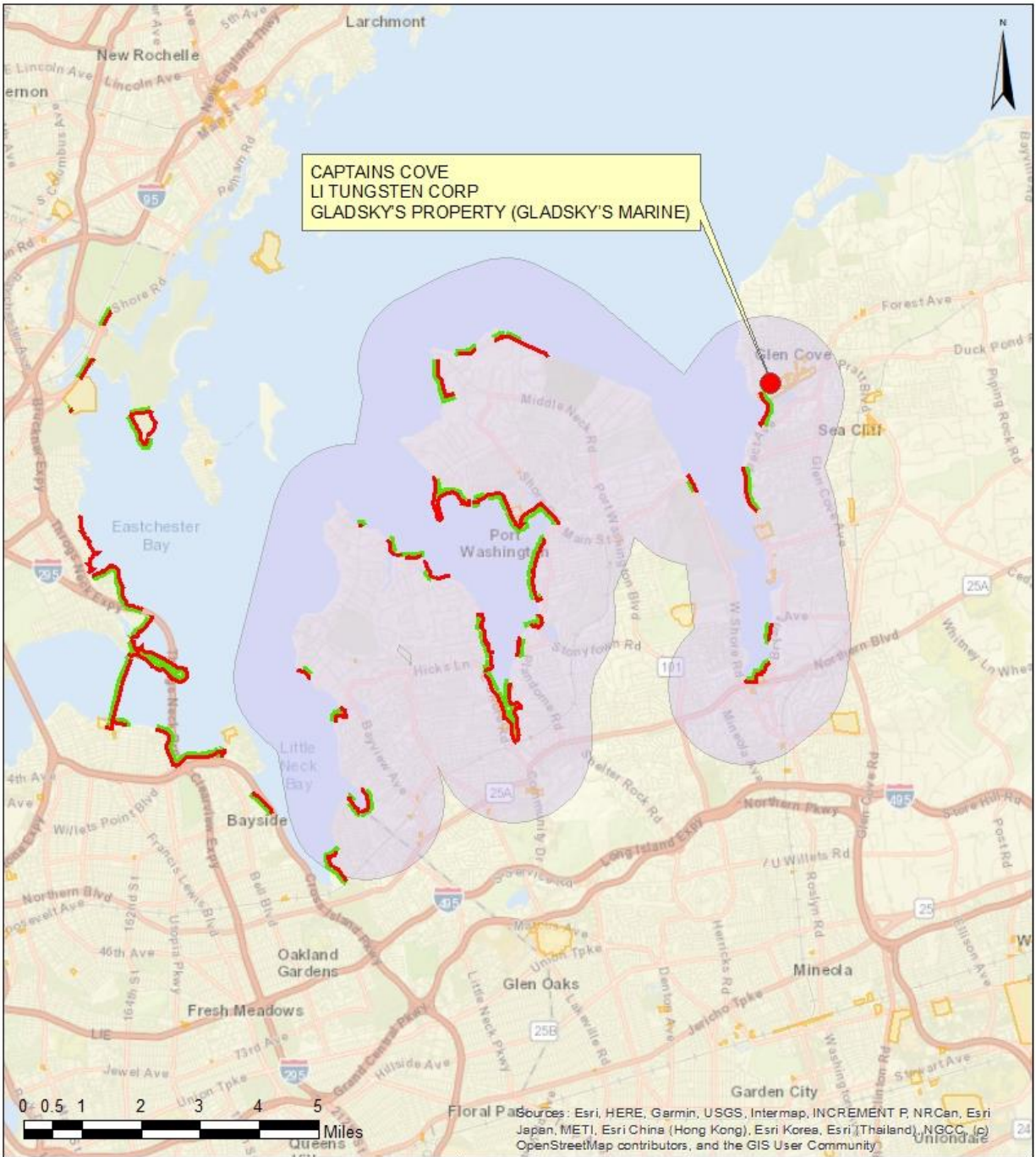


Figure 7-6

**Group E Sites
Port Washington**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- RADINFO
- Port Washington - Buffer

8. Raritan Region

The Raritan Region is relatively small with less than two miles of NYNJHAT Study Alternatives and undeveloped in comparison with other Regions in the NYNJHAT Study. The Raritan NYNJHAT Study Alternatives are limited to less than two miles of proposed measures along the western bank of the Raritan River (Figures 8-2 through 8-6). The Raritan measure locations observed in Alternatives 2 (Figure 8-1), where alternative 2 only covers small portions of the western banks of the Raritan River. Alternative 3A, 3B, 4 and 5 has no measures within this Region.

8.1. Group A Sites

One US Institutional Control/delisted NPL site was identified in within approximately a mile of Raritan (Figure 8-2). The identified site appeared to be collocated with the proposed measures.

Table 8-1 Raritan - Group A Sites

Site Name	Collocated
Sayreville Landfill	Yes

8.1.1. Sayreville Landfill

From 1971 to August 1977, the Borough of Sayreville operated the 35-acre area as a licensed municipal landfill that accepted municipal solid wastes and some light industrial wastes. Hazardous wastes disposed of at the site during and after closure contaminated soil and groundwater with hazardous chemicals. Part of the site is located within the tidal wetlands of the adjacent South River. Phenol, heavy metals including iron and manganese, VOCs, and PAHs were detected on-site in shallow monitoring wells. On-site surface water was found to be contaminated with cadmium and lead and on-site sediments contained toluene and trichloroethylene. Benzene, arsenic, and chloroform were detected in on-site soils. After initial actions to protect human health and the environment, the site's long-term remedy was put in place. EPA placed the site on the Superfund program's NPL in September 1983 (EPA, 2021).

Initial actions were completed to restrict access to the site and to remove drums from the landfill. In accordance with the remedy selected in the 1990 Record of Decision (ROD), the remedial action completed in 1999 included the removal of additional drums, fencing of the site, capping of the landfill, and the installation of a storm water control and a methane collection system. The final ROD was signed in September 1998 included no further action for surface water and sediments, and a five-year ground-water monitoring program to observe changes, if any, in groundwater contamination levels (EPA, 2021).

EPA took the site off the NPL in September 2011. This site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

8.2. Group B Sites

Only two listed sites were identified in the NJDEP database of active sites with engineering controls and/or deed notifications (Figure 8-3). The two sites (Pfizer and AES Red Oak Power Plant) were mapped in the Corridor Report and are not collocated with the proposed measures (EDR, 2022g).

8.3. Group C Sites

Due to the low urbanization and industrialization of the Raritan Region, very few HTRW sites were identified in the databases, when compared to other Regions in this Survey (EDR, 2022g). Though a number of types of sites were present only dry cleaners and automotive service centers were identified as being collocated with the proposed measures (Figure 8-4).

8.3.1. Dry Cleaners & Automotive Service Sites

Of the seven historical auto service stations four to six of them appear to be collocated with the proposed measures (Figure 8-4). The auto service stations are located along the most northern portion of the Raritan Region. Two dry cleaners were also collocated along the last 0.25 miles of the proposed measures.

8.4. Group D Sites

The majority of the USTs, leaking USTs, and reported Spills (Spills and Spills90 databases) are located significantly to the southwest of the Raritan NYNJHAT Study Alternatives (Figure 8-5). However, there are two reported releases collated with the NYNJHAT Study Alternatives along the southeastern portion, as well as six to eight reported spills along the northernmost 0.5 miles of the area of NYNJHAT Study Alternatives.

8.5. Group E Sites

The search for radioactive wastes sites in the databases, including listed FUSRAP sites, did not identify any potential sites in the Raritan Region (Figure 8-6) (EDR, 2022f).

8.6. Summary of Raritan

8.6.1. Regional Summary Review

No major HTRW sites were identified in the Raritan Region. However, a concentration of minor sites, spills, and leaking UST were present in South River NJ.

8.6.2. Further Considerations

Construction in South River will need to consider previous minor spills and the presence of leaking USTs.

Figure 8-1 Raritan Region - Locations of Measures Within Each Alternative

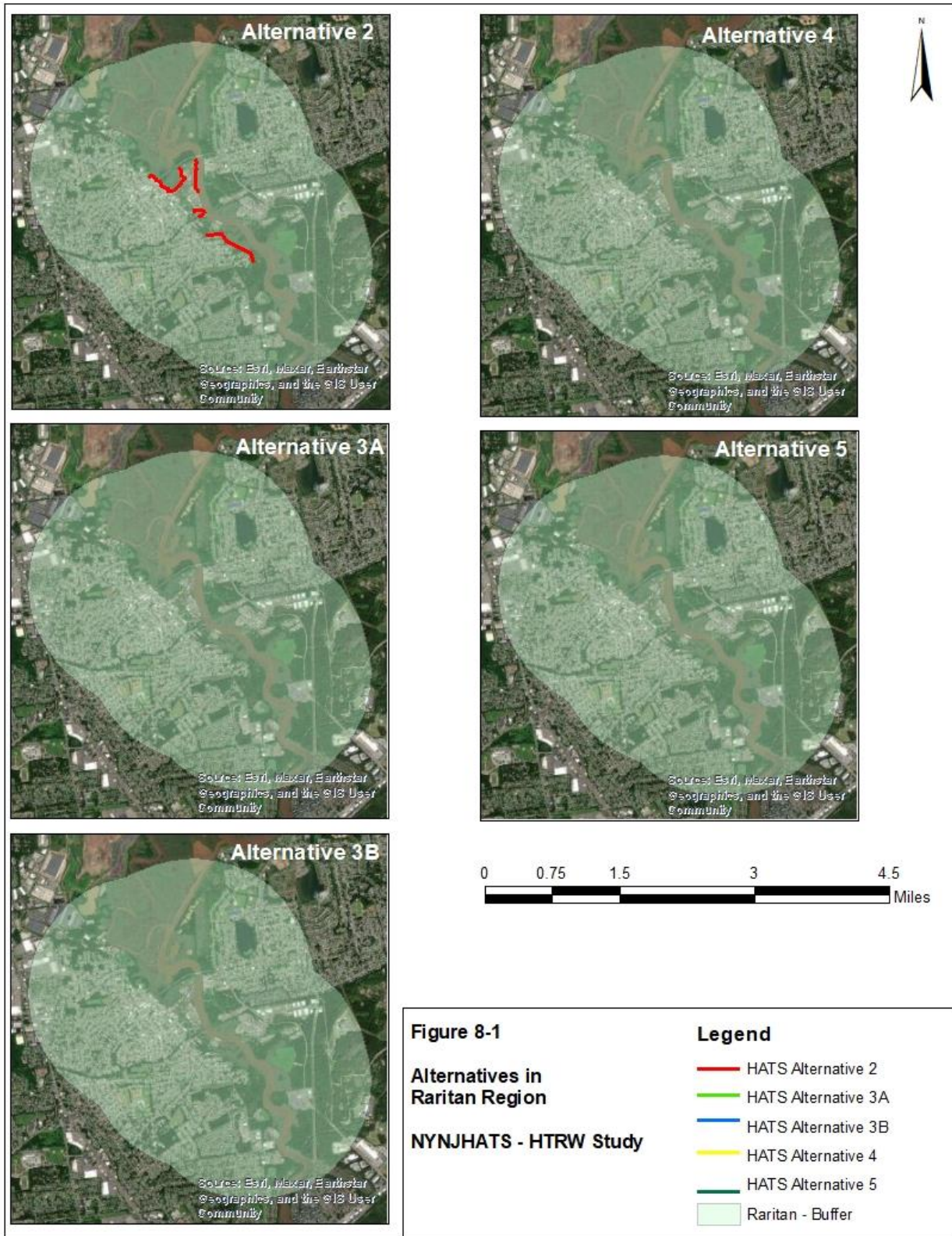
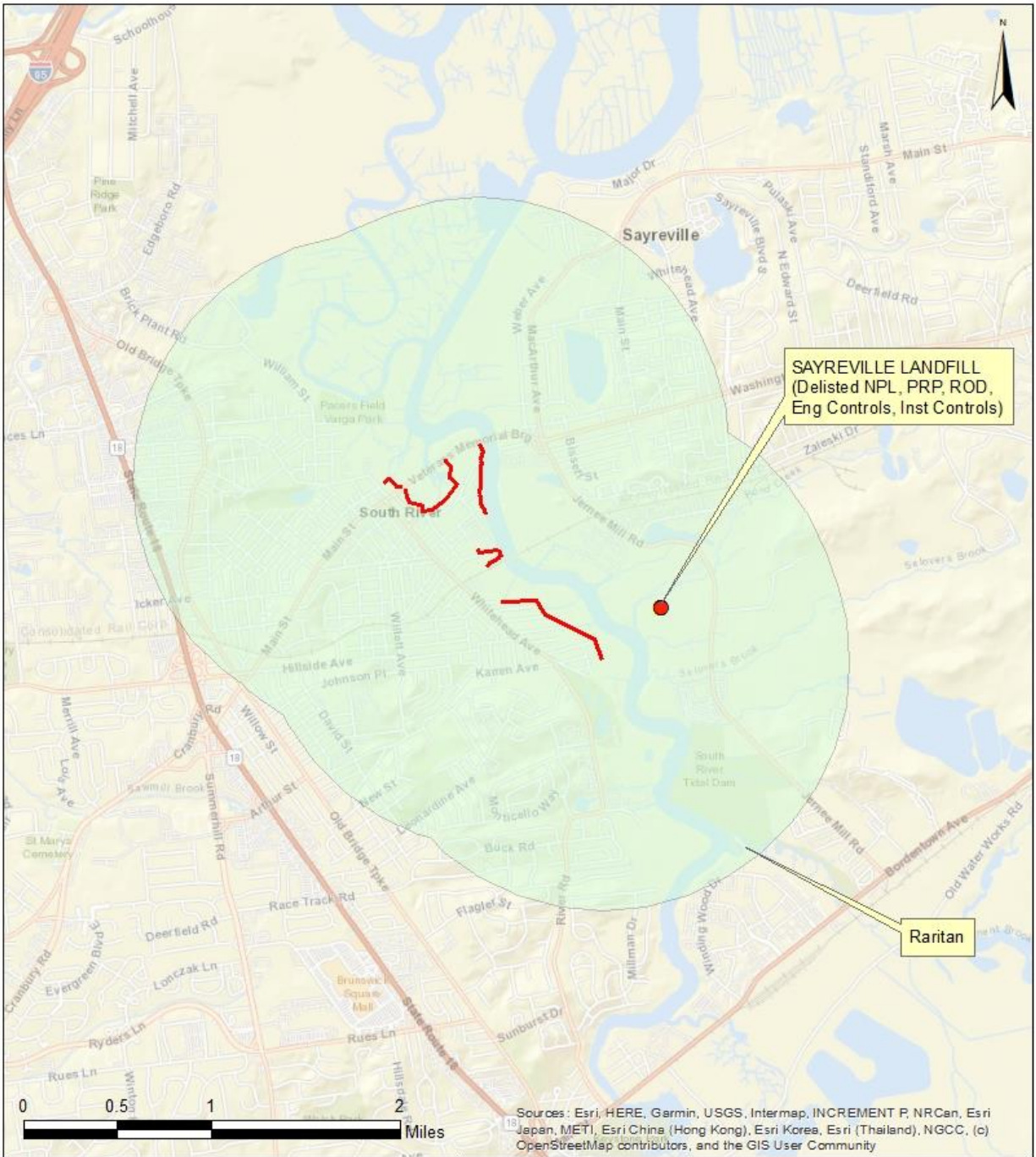


Figure 8-2 Raritan Region - Group A



<p>Figure 8-2</p> <p>Group A Sites</p> <p>Raritan</p> <p>NYNJHATS - HTRW Study</p>	<p>Legend</p>	
	<ul style="list-style-type: none"> — HATS Alternative 2 — HATS Alternative 3A — HATS Alternative 3B — HATS Alternative 4 — HATS Alternative 5 	<p>Raritan</p> <ul style="list-style-type: none"> ● Delisted NPL ● PRP

Figure 8-3 Raritan Region - Group B

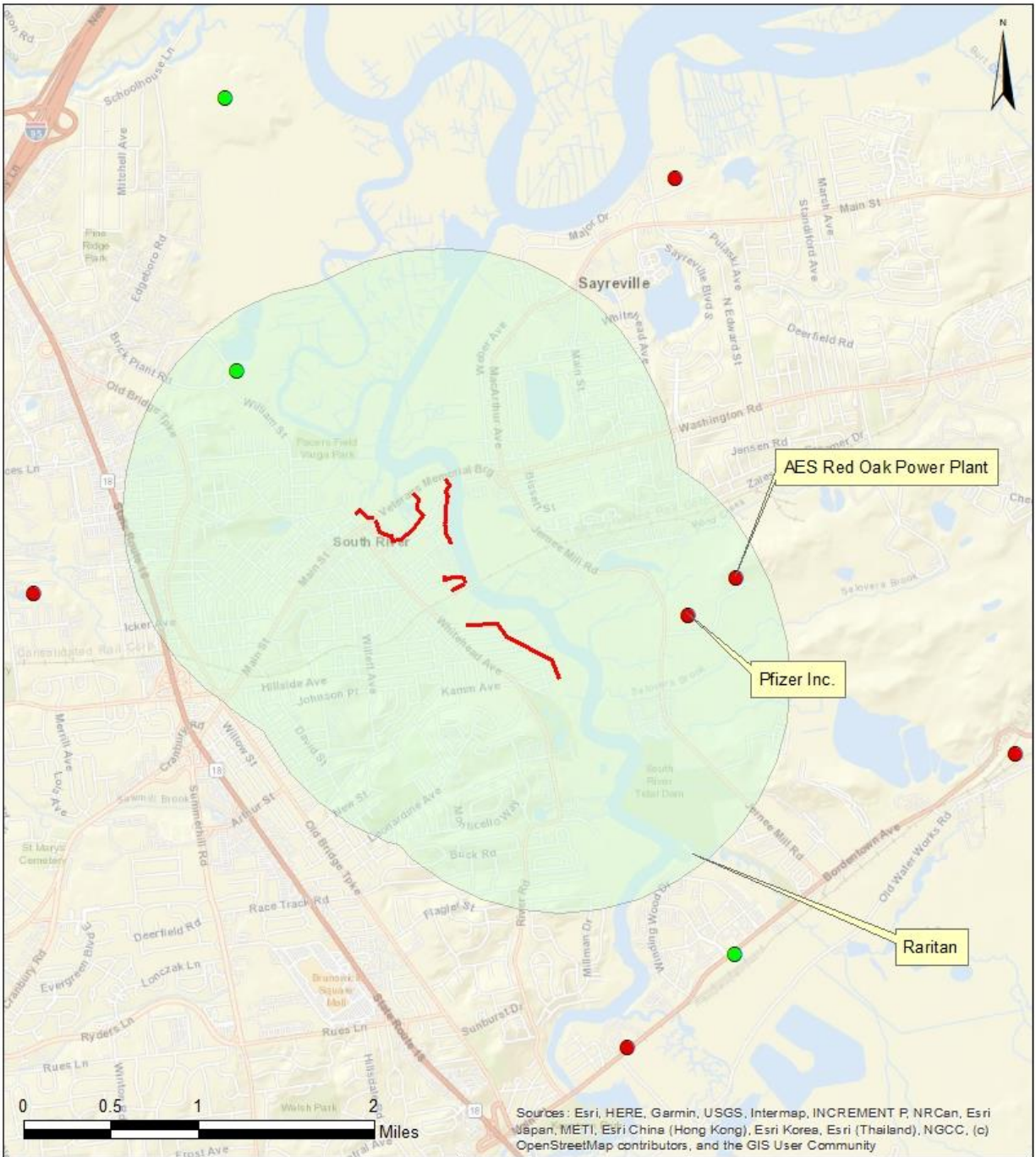


Figure 8-3

Group B Sites
Raritan

NYNJHATS - HTRW Study

Legend

- | | |
|---------------------|--|
| HATS Alternative 2 | NJ Known Contaminated Sites
Ongoing Engineering Controls |
| HATS Alternative 3A | Ongoing Deed Notification |
| HATS Alternative 3B | Deed Notification and Engineering Controls |
| HATS Alternative 4 | Raritan - Buffer |
| HATS Alternative 5 | |

Figure 8-4 Raritan Region - Group C

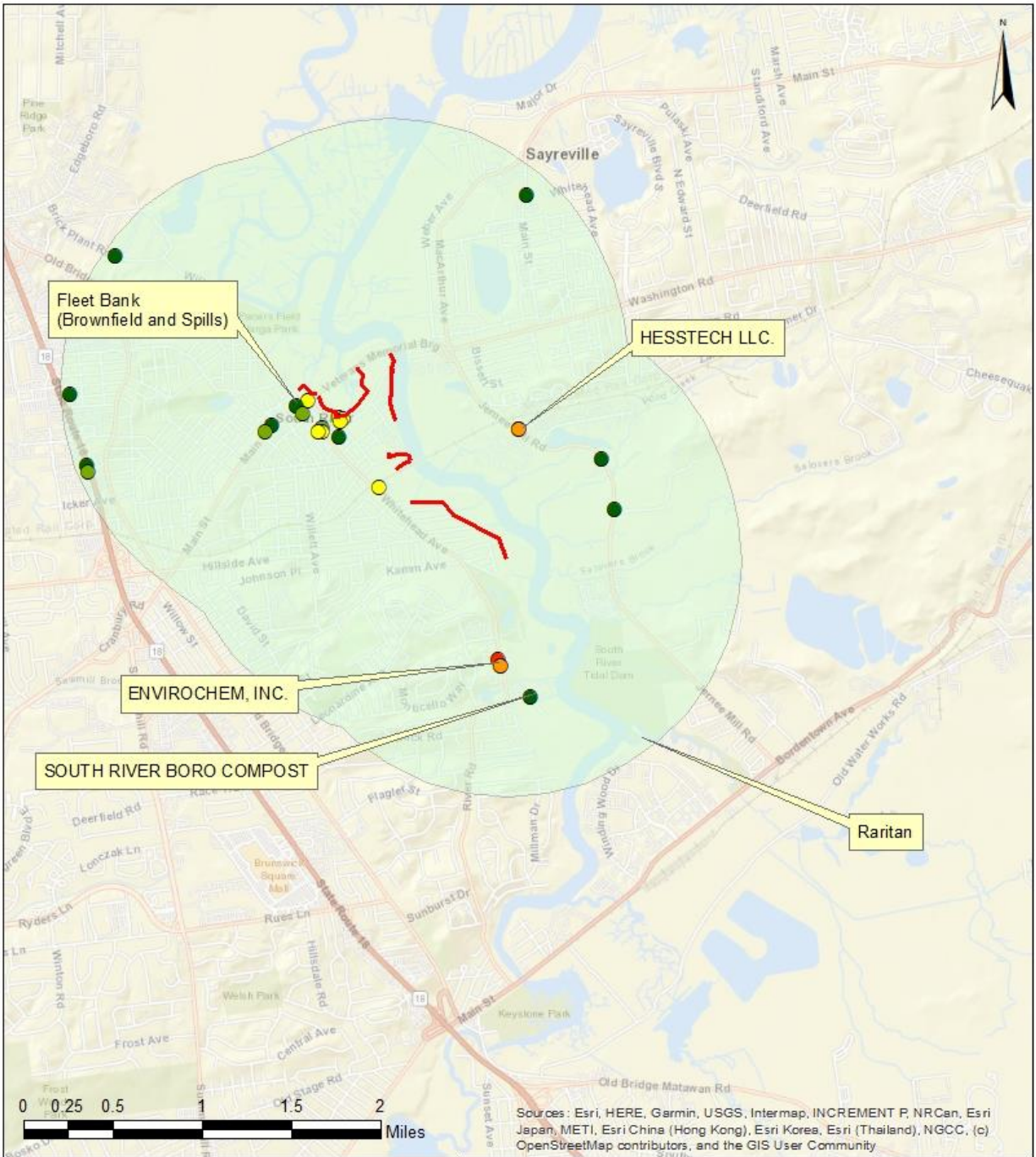


Figure 8-4

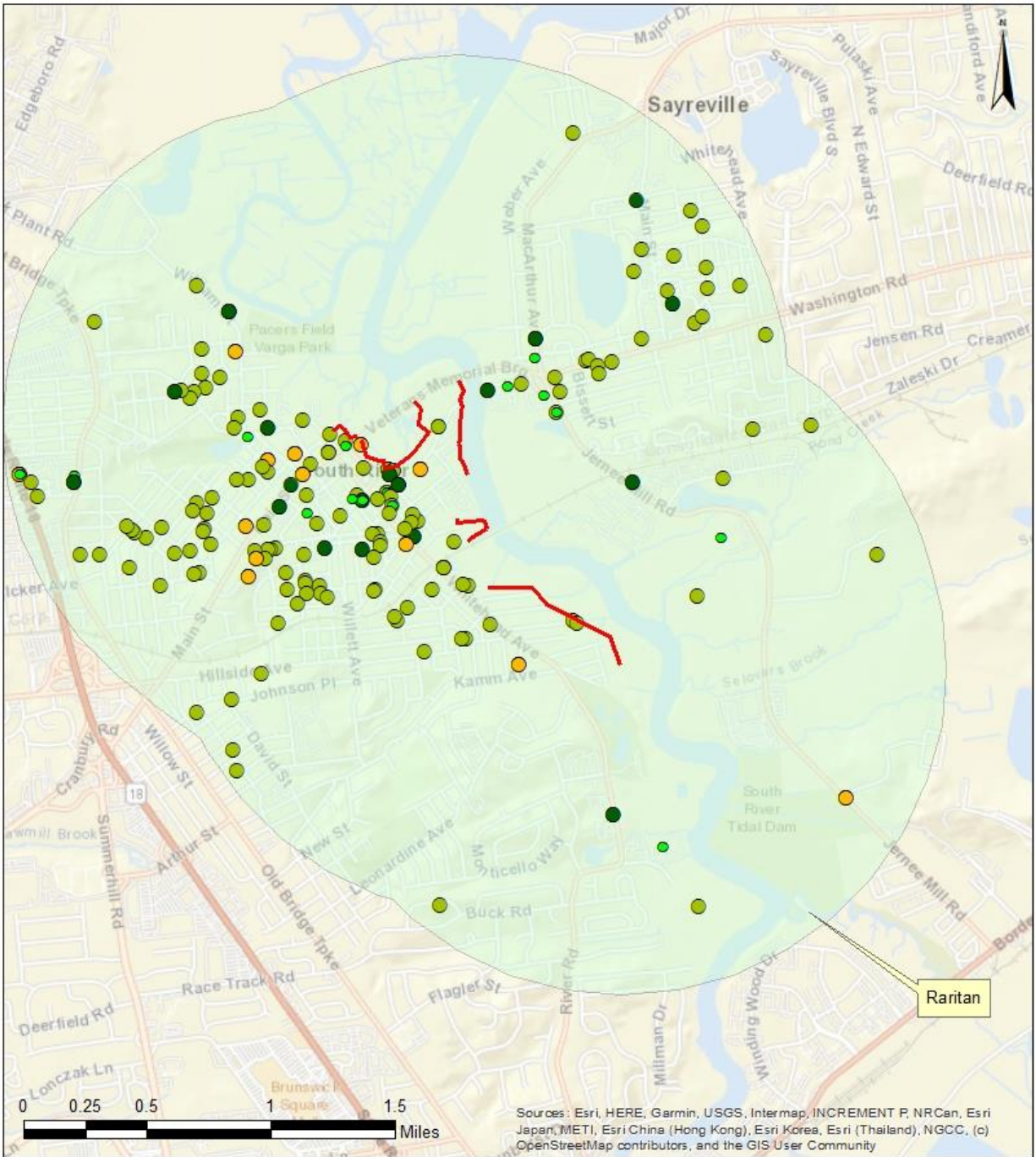
**Group C Sites
Raritan**

NYNJHATS - HTRW Study

Legend

- | | | |
|---------------------|-------------|--------------------|
| HATS Alternative 2 | BROWNFIELDS | EDR Hist Auto |
| HATS Alternative 3A | Drycleaners | Historic Landfills |
| HATS Alternative 3B | | MAJOR FACILITIES |
| HATS Alternative 4 | | Raritan - Buffer |
| HATS Alternative 5 | | |

Figure 8-5 Raritan Region - Group D



<p>Figure 8-5</p> <p>Group D Sites</p> <p>Raritan</p> <p>NYNJHATS - HTRW Study</p>	Legend		
	<ul style="list-style-type: none"> — HATS Alternative 2 — HATS Alternative 3A — HATS Alternative 3B — HATS Alternative 4 — HATS Alternative 5 	<p>Raritan</p> <ul style="list-style-type: none"> ● UST ● LUST 	<ul style="list-style-type: none"> ● NJ Release ● SPILLS ● SPILLS 90 Raritan - Buffer

Figure 8-6 Raritan Region - Group E

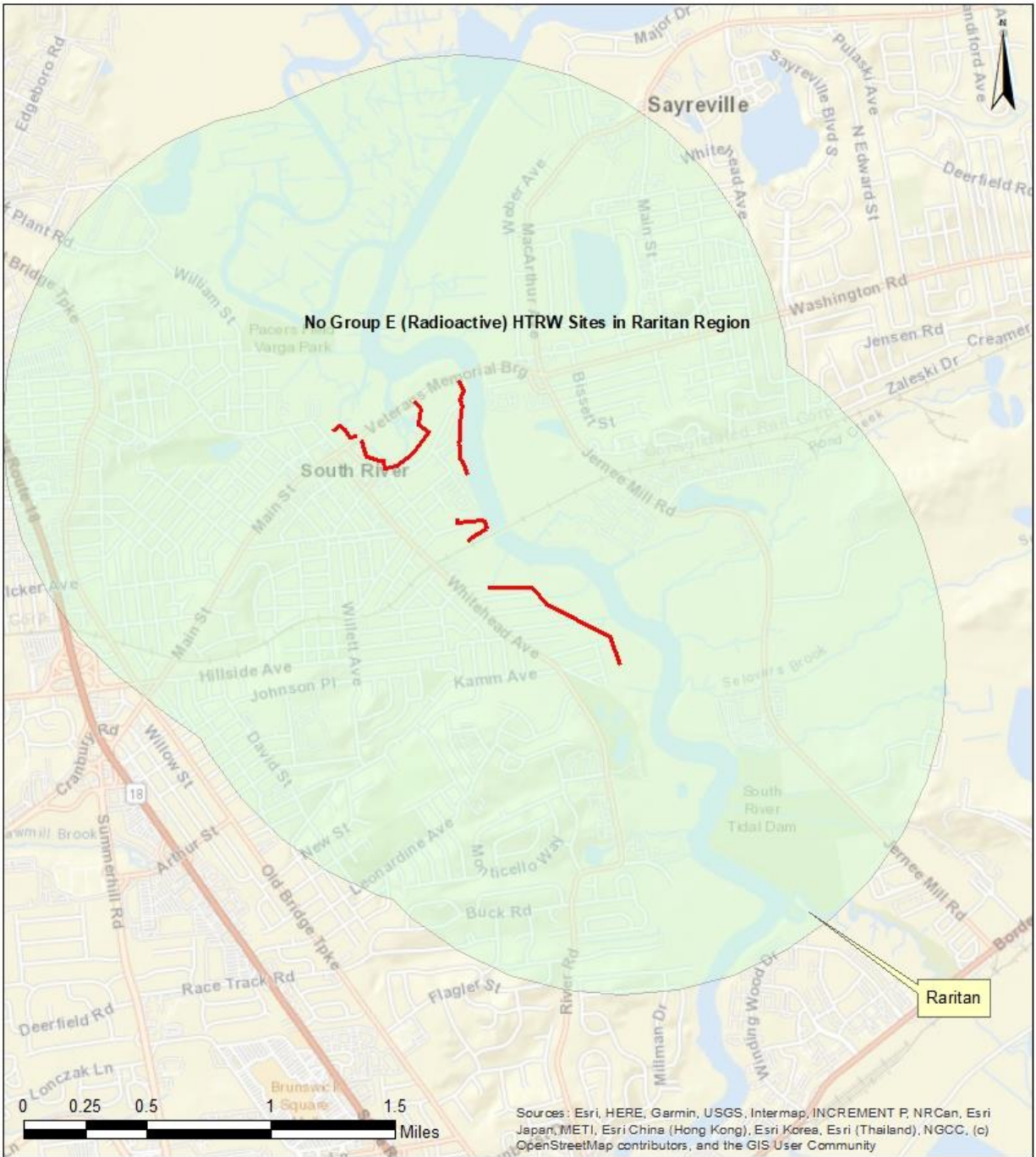


Figure 8-6

**Group E Sites
Raritan**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- Raritan - Buffer

9. Upper Bay / Arthur Kill Region

The Upper Bay / Arthur Kill Region mainly consists of the shorelines north and south of Port Newark on the Newark Bay immediately south of the confluence of the Passaic and Hackensack River (Figures 9-2 through 9-6). It contains NYNJHAT Study Alternatives stretching across approximately sixty (60) miles of New York and New Jersey. This includes northern Staten Island, NY, Elizabeth, NJ, Bayonne, NJ, and the western area of Brookland, NY around Carroll Gardens and Governors Island (Figure 9-2). Upper Bay – Arthur Kill encompasses measure locations observed in Alternatives 2, 3A, 3B, and 4 (Figure 9-1), where Alternatives 3B and 4 covers the largest area and Alternative 2 and 3A covering slightly less than alternative 3B and 4. Alternative 5 only covers eastern portions of Hudson County and the lower west side of Manhattan.

This Region is highly urbanized and includes significant industrial areas. The NYNJHAT Study Alternatives have been placed to avoid some of the major industrial areas in Port Newark, Elizabeth, NJ, and northern Staten Island, NY which reduces some of the potential for HTRW sites to be collocated with the proposed measures.

9.1. Group A Sites

A total of five NPL sites and twelve Corrective Action 2020 Sites were identified within approximately a mile of the Hackensack Passaic Region – B Line (Figure 3-2). Of those sites, eight appear to be collocated with the proposed measures. The remaining NPL and corrective actions sites are in the vicinity of the proposed measures but not collocated. However, groundwater moved contaminants and sites may be comingled. As the proposed measures would be located along the Hudson River and Upper Bay, there is the possibility that contaminated groundwater from an NPL site could be encountered.

Table 9-1 Upper Bay – Arthur Kill - Group A Sites

Site Name	Collocated/Distance
Hudson River PCBs (Sediment)	Yes
Diamond Alkali	No (But see Section 2.1.2)
Pierson's Creek	Yes
White Chemical Co.	Yes
Orbis Products (Nu-Soils Inc.)	Yes
Chemical Control Corp.	Yes
ISP-LCP	No
American Cyanamid Co.	Yes
Cyclechem, Inc.	Yes
Military Ocean Terminal (Landfill)	No
Gowanus Canal	Yes
Hudson County Chromate Sites: (West to East)	(Collated on the west)
Hudson County Chromate 174	Yes
Hudson County Chromate 150	Yes
Hudson County Chromate 138	No
Hudson County Chromate 139	No
Hudson County Chromate 136	No
Hudson County Chromate 146	No
Jewett White Lead	Yes

9.1.1. Hudson River PCBs (Sediment)

200 miles of the Hudson River is classified by EPA as a Superfund site. During a 30-year period ending in 1977, it is estimated that approximately 1.3 million pounds of PCBs were discharged into the Hudson River from two General Electric capacitor manufacturing plants. Once PCBs entered the river, they were deposited and mixed with the sediments at many locations on the river bottom and at some locations along the shoreline in the floodplain. In 1984, 200 miles of river, between Hudson Falls and the Battery in New York City, was placed on EPA's NPL (EPA, 2022h).

In February 2002, the EPA issued a ROD for the Hudson River PCBs Superfund Site that called for targeted environmental dredging of approximately 2.65 million cubic yards of PCB-contaminated sediment from a 40-mile section of the Upper Hudson River. The dredging of river bottom sediment began in 2009 and was completed in fall 2015. The dredging occurred in two phases. The first, year-long phase of dredging occurred between May and November 2009. During Phase 1, approximately 283,000 cubic yards of contaminated sediment was removed from a six-mile stretch of the Upper Hudson River.

Phase 2 began in June 2011 and was conducted at full production to remove the remainder of the contaminated river sediment targeted for dredging. During Phase 2, approximately 2.5 million cubic yards was dredged. In all, over six seasons of dredging, approximately 2.75 million cubic yards of PCB-contaminated sediment was removed from the river bottom. Habitat reconstruction followed the completion of dredging and continued into 2016.

As the dredging project transitions to the long-term monitoring phase, a comprehensive study of the contamination in the floodplains is underway. This remediation remains ongoing (EPA, 2022h).

9.1.2. Pierson's Creek

The Pierson's Creek site is located in an industrial area of Newark, New Jersey. Pierson's Creek discharges to Newark Bay and has several sources of contamination, including the Troy Chemical Corporation facility. The Troy Chemical Corporation facility, which manufactures antimicrobial and antifungal paint additives and related products, is located just upstream of Pierson's Creek. Prior to the facility's current operations, which began in 1956, the facility was occupied by other industrial operators since the late 1800s. Mercury compounds were manufactured at the facility from 1957 until 1987. From 1965 to 1976, the mercury wastewater was treated on-site with sulfide precipitation prior to discharge to the creek. In 1976, an on-site wastewater treatment plant was installed that discharges to the Passaic Valley Sewerage Commission Wastewater Treatment Plant. In addition to the discharge of mercury-contaminated wastewater, there is a history of spills and discharges to the ground surface characterized by puddles of chemicals on the ground, and mercury droplets on the ground and in runoff reaching Pierson's Creek (EPA, 2021b).

The site has been the focus of numerous investigations since the 1970s, but actions to date have not addressed mercury contamination downstream. EPA is currently working on a RI/FS for Operable Unit 1 of the site which consists of the Creek and an upland area where dredge spoils were side cast. An Administrative Order on Consent (AOC) was signed with Troy Chemical Corporation in November 2017 in which they agreed to perform an RI/FS on their property. This RI/FS is being performed as Operable Unit 2 of the Pierson's Creek site and is currently underway.

Currently, fish advisories are in place. Due to the majority of Pierson's Creek now flowing through an underground pipe, only a small portion of the creek is accessible to the public (EPA, 2021b).

9.1.3. White Chemical Co.

White Chemical Corporation historically used to manufacture various acid chlorides and fire-retardant compounds. The property was used for industrial purposes as early as 1951. WCC operated the facility from 1983 until July 1990 and the NJDEP issued several citations for violations and for chemical releases into the soil and groundwater at the

site. After investigating the site in 1990, NJDEP removed approximately 1,000 drums from the site. EPA placed the site on the Superfund program's NPL in September 1991 (EPA, 2021c).

Though EPA completed the groundwater cleanup engineering design in September 2016, funding limitations put the work on hold. This work is expected to resume in late 2022.

9.1.4. Orbis Products (Nu-Soils Inc.)

Orbis Products Corporation began operations at the site in 1922. Orbis's manufacturing operations at the site consisted mainly of aromatic chemicals, pharmaceuticals, organic intermediates, fragrances, and flavors. Manufacturing operations at the site ceased in approximately 1995. The City of Newark, NJ is the current owner of the property, which was acquired through foreclosure due to failure to pay taxes (EPA, 2022i).

Analytical results of surface soil, subsurface soil, and groundwater samples collected from on-site monitoring wells and 21 areas of concern throughout the site indicated VOCs in both the on-site soil and groundwater. The VOCs included benzene, toluene, TCE, PCE, chlorobenzene, and tetrachloride. Semi-volatile organic compounds, pesticides, PCBs, and metals were also detected in on-site soil samples. No cleanup has occurred at this site due to ongoing litigation (EPA, 2022i).

9.1.5. Chemical Control Corp.

From 1970 to 1979, 9.1.5. Chemical Control Co. operated a hazardous waste storage, treatment, and disposal facility, accepting chemicals including acids, arsenic, bases, cyanides, flammable solvents, PCBs, compressed gases, biological agents, and pesticides. Throughout its operations, Chemical Control Co. was cited for discharge and waste storage violations. The facility was closed by the NJDEP in 1979 due to environmental and safety violations (EPA, 2019b).

Construction of the final remedy for the site was completed in December 1993. The final remedy involved the construction of a slurry wall around the site which is anchored into the underlying clay layer. Approximately 25,000 cubic yards (40,000 tons) of contaminated soil was solidified with cement, within the slurry wall. The solidified soils were later covered with clean gravel and graded. An 8-foot-tall chain-linked fence was installed around the site to restrict unauthorized access. Contamination later found in a narrow area along the bank of the Elizabeth River, next to the slurry wall, was bioremediated. The bioremediation reduced, but did not eliminate, all contamination in this area. The most recent five-year review conducted in 2019 concluded the remedy continues to be protective of human health and the environment (EPA, 2019b).

9.1.6. ISP-LCP

LCP Chemicals, Inc. operated the facility between 1972 and 1985. Sludge containing mercury from the chlorine production was discharged to lagoons. In 1972, 1974 and 1979, the State of New Jersey documented releases from the brine sludge lagoon into South Branch Creek. Sampling of soil, sediment, surface water and ground water revealed elevated levels of mercury, and other contaminants. The site was added to the Superfund list in 1998 and EPA issued a final RO for the site in 2014 (EPA, 2014).

In 2016, EPA and the US Army Corps of Engineers began designing the final remedy for the site. The Remedial Design was completed in March 2020. Construction of the remedy is expected to begin in 2021. Remedial actions include capping the site's contaminated soils and to reduce mercury vapor release, conversion of visible mercury to mercuric sulfide if practicable, demolishing site buildings, digging up the highly contaminated sediments from nearby streams, restoring wetlands, and extracting and treating contaminated groundwater (EPA, 2020c).

9.1.7. American Cyanamid Co.

The 575-acre site was historically used for numerous chemical and pharmaceutical manufacturing operations for more than 90 years. As part of the operations, waste was placed in large pound-like structures called impoundments, and soil and groundwater became contaminated with various VOCs, semi-volatile organic compounds, and metals (EPA, 2019c).

EPA added the site to the NPL list in 1983 following the discovery of contamination in impoundments, soil, and groundwater. EPA finalized a site-wide cleanup plan to address site soil, groundwater, and the contents of six impoundments in 2012. The groundwater component of the site-wide cleanup, which includes a pump and treat system constructed and maintained by Wyeth (current owner and PRP) is already in operation and engineering work to complete the rest of the cleanup is underway. The remaining cleanup work includes stabilizing impoundment material, constructing a protective cover, implementing revegetation activities, and additional site-wide cleanup actions. The two most contaminated impoundments, Impoundments 1 and 2, were evaluated by EPA separately due to the highly complex nature of their contamination and their proximity to the Raritan River. A cleanup plan for these impoundments was finalized in 2018 and Wyeth conducted a detailed pilot study to test methods for addressing the contamination in those impoundments. Cleanup of this site remains ongoing (EPA, 2019c).

9.1.8. Cycle Chem Inc.

The site facility recovers spent solvents and treats both hazardous and non-hazardous wastes in containers and tanks. The site comprises two acres in an industrial and commercial area, and within one mile of residences. It is less than 200 feet from the Elizabeth River. Cycle Chem Inc. purchased the property in 1985 from the Perk Chemicals Company. Cycle Chem Inc. accepts commercially generated, as well as on-site generated hazardous waste for storage, treatment, and transfer (EPA, 2022j).

Primary contaminants are volatile organic chemicals in groundwater, including benzene, trichloroethene and tetrachloroethene. The soil and groundwater contamination are due to current and past activities in the storage tank area and former underground storage tanks. Cleanup efforts are ongoing (EPA, 2022j).

9.1.9. Military Ocean Terminal (Landfill)

This site did not qualify for the NPL based on existing information (EPA, 2022k).

9.1.10. Gowanus Canal

The Gowanus Canal is a 100-foot wide, 1.8-mile-long canal in the New York City borough of Brooklyn. The Gowanus Canal was built in the mid-1800s and was used as a major industrial transportation route. MGPs, paper mills, tanneries and chemical plants operated along the Canal and discharged wastes into it. In addition, contamination flows into the Canal from overflows from sewer systems that carry sanitary waste from homes and rainwater from storm drains and industrial pollutants. As a result, the Gowanus Canal has become one of the nation's most seriously contaminated water bodies. More than a dozen contaminants, including PAHs, PCBs, and heavy metals, including mercury, lead, and copper, are found at high levels in the sediment in the Canal (EPA, 2013).

EPA placed the site on the NPL in 2010. A ROD, selecting a remedy for the site, was signed in 2013. Approximately 300,000 cubic yards of highly contaminated sediment will be dredged from the first and second segments. For the third segment, approximately 281,000 cubic yards of contaminated sediment will be dredged. In dredged areas of the Canal where contamination exists in the native sediment, multiple layers of clean material will be placed. The ROD also calls for the construction of two CSO retention tanks in the upper Canal to protect the integrity of the Superfund remedy that will be implemented in the Canal. National Grid completed the design for the Fulton former MGP cutoff wall (to prevent the migration of coal tar to the canal) in March 2019. Construction of the wall began in August 2019. Cleanup efforts remain ongoing (EPA, 2013).

9.1.11. Hudson County Chromate Sites (West to East)

The known chromium contaminated sites are associated with historical fill material originating from three chromite ore-processing plants that operated between 1905 and 1971. The historical fill material generated from these plants was placed in several locations across Hudson County and utilized in the grading and development of over 200 residential, commercial, and industrial sites. Chromium contamination has been investigated under the jurisdiction of the NJDEP and is in the process of cleanup procedures by responsible parties: PPG Industries, Inc.,

AlliedSignal, Inc., and Maxus Energy Corp (NJDEP 2021c). The chromium cleanup program is referred to as the Hudson County Chromate Project. Six of the many chromium contaminated sites are located in the vicinity of the Region along the Kill Van Kull navigation channel

Hudson County Chromate 174, 1st Street, Bayonne, NJ. PPG

Dennis P. Collins Park is located adjacent to the Bayonne Bridge Site and extends east to Lexington Avenue. Based on available public records, a portion of the Site has been undergoing cleanup action for chromium contamination under the name Hudson County Chromate 174 on the south side of 1st Street. According to NJDEP, hexavalent chromium was observed in one sample collected, confirming contamination is limited to one area, however the area of concern is covered with an impermeable liner and asphalt to prevent human exposure (NJDEP 2009). According to the most recent schedule update (July 2021), PPG Industries Inc. completed the installation of two feet of clean soil and replacement of a stone revetment adjacent to the Kill Van Kull. Remaining remedial action tasks include excavation of chromium along the newly replaced revetment that is estimated to be completed in September 2021, and groundwater investigations at the site remain in progress (Riccio 2021).

Hudson County Chromate 150, 5th Street, Bayonne, NJ. Multi-Contaminated Site

Coastal Oil NY Co, also referred to as Hudson County Chromate 150, is located adjacent to the Kill Van Kull channel at the foot of 5th Street East and is listed as closed with a NFA Letter for unrestricted use on the NJDEP database (NJDEP 2021a) indicating that all remedial investigation and remedial action is completed. It appears the site has both a deed notice in place, to restrict human exposure to contaminants in the subsurface, and a classification exception area to restrict potable groundwater use at the site. No other details were observed on the NJDEP database, however, according to the Hudson County Chromate Update 34, issued in September 2009, fieldwork was completed during Summer of 2002 where hexavalent chromium was found along oil pipeline gallery. During the fieldwork, oil product was discovered and reported to NJDEP's Hotline for case assignment. A final report was prepared in September 2003 and based on the fieldwork performed, no further action was anticipated at this site except for recommendation for a deed notice to be placed on this site (NJDEP 2009).

Hudson County Chromate 138, 22nd Street, Bayonne, NJ. Exxon.

The Bayonne Sewage Treatment Plant site underwent remedial action under the name Hudson County Chromate 138. Hexavalent chromium was observed in one sample at approximately 10- 15 feet bgs, although the exceedance of State criteria was found to be marginal therefore the NJDEP determined no additional remedial investigation or remedial action was necessary (NJDEP 2009). The site is registered as closed by the NJDEP with an NFA Letter for unrestricted use (NJDEP 2021a).

Hudson County Chromate 139, East 22nd Street Bayonne, NJ. Multi-Contaminated Site

IMTT, Bayonne Industries, also referred to as Hudson County Chromate 139, is located at the foot of East 22nd Street and is listed on the NJDEP database with a status that remedial investigation and remedial action is still in progress for multiple contaminants, in addition to chromium contamination (NJDEP 2021a). According to the Hudson County Chromate Update 34, the NJDEP performed site-wide surface sampling in November 2001, identifying chromium contamination in several locations throughout the site (NJDEP 2009). It appears the site has a classification exception area to restrict potable groundwater use at the site and remains under the oversight of a Licensed Site Remediation Professional (NJDEP 2021a).

Hudson County Chromate 146, Fish House Road, Kearny, NJ. Occidental Chemical

The Commerce Street Site, identified as Hudson County Chromate 146, is located along the roadway of Commerce Street, starting from south of the intersection of Hook Road extending south to where Commerce Street ends adjacent to the Kill Van Kull channel. According to the Hudson County Chromate Update 34, the site is, or has previously been, paved as a temporary engineering control to prevent human exposure at the site while pending remedial investigation and remedial action (NJDEP 2009). The site status is active under the oversight of a Licensed Site Remediation Professional (LSRP). According to the NJDEP database, remedial action is scheduled to be completed by December 2024 (NJDEP 2021b).

Hudson County Chromate 136, 22nd Street, Bayonne, NJ. Exxon.

Former Exxon Bayonne Terminal, also referred to Hudson County Chromate 136, is located along the south shore of southeast Bayonne at the end of 22nd Street. This site including nine other sites along the south shore of Bayonne are active sites under the oversight of a Licensed Site Remediation Professional. Blue Circle Cement Inc. and Engle Holding Company appear to have active remedial action permits with the NJDEP. Chevron, Pirelli Cable Company, Bayonne Terminals Incorporated, Blue Circle Cement Inc., Engel Holding Company, Amerada Hess Corp, and Bayonne Energy Center appear to have classification exceptions areas beneath all or a portion of each site to restrict potable groundwater use (NJDEP 2021a).

9.1.12. Jewett White Lead

The Site is located on the North Shore of Staten Island in the Port Richmond section. The Site consists of the historical footprint of the former Jewett White Lead Company facility and the extent of contamination which includes a 1.07-acre parcel of land at 2000-2012 Richmond Terrace, which is designated as Block 1006 and Lot 32 on the Richmond County Tax Map, as well as the approximately 4.41-acre parcel of land at 2015 Richmond Terrace designated as Block 185, and Lot 548 on the Richmond County Tax Map. These two parcels are located at the intersection of Park Ave and Richmond Terrace (NYSDEC, 2022f).

The 2000-2012 Richmond Terrace portion of the Site is a vacant lot bordered to the south by an abandoned railroad line, to the west by Park Avenue, and to the north and east by Richmond Terrace. The 2015 Richmond Terrace portion of the Site consists of an active marine towing company and is bordered to the east by a shipyard facility, to the west by Cable Queen, a New York submarine contracting company, to the north by the Kill Van Kull (a body of water which is a tributary of the New York Harbor), and to the south by Richmond Terrace. The two properties are separated by Richmond Terrace, the main roadway running east-west parallel to the Kill Van Kull. Richmond Terrace has been an active roadway since the early nineteenth century.

The Site is situated within an urban mixed use residential neighborhood with concentrations of industrial and manufacturing facilities situated along the waterfront, within the Port Richmond section of the Borough of Staten Island, New York.

John Jewett & Sons White Lead Company operated a white lead manufacturing facility at the 2015 Richmond Terrace property from 1839 until April 3, 1890, when National Lead & Oil Company of New York (National Lead) acquired the Site property. National Lead continued the manufacture of white lead at the Site and extended the operations across the street to include the 2000 Richmond Terrace property. National Lead owned and operated at both properties until approximately 1943. After the industrial lead facilities were abandoned, subsequent industrial activities occurred at the site including an ice cream manufacturing facility which, after a series of fires, was razed in 2001. The site was vacant for several years until it was utilized for staging of construction equipment and materials through 2008.

The depth to groundwater beneath the Site is approximately 10 to 12 ft bgs. Groundwater from the Site flows northeasterly and discharges to the Kill Van Kull. An USEPA removal action has been completed at the 2000-2012 Richmond Terrace property. USEPA investigations were conducted at the 2015 Richmond Terrace property and determined to not be eligible for additional removal actions or nomination to the NPL (NYSDEC, 2022f).

9.2. Group B Sites

A portion of the NYNJHAT Study Alternatives for the Upper Bay Region is located in New York State, which provides some detail on the identified sites (Figure 9-2). However, a majority of the improvement corridor in this Region is in New Jersey, which does not maintain a publicly facing database on sites with remediation excepting statuses. There were more than a hundred active sites with engineering controls and/or deed restrictions within the New Jersey portion of the NYNJHAT Study.

9.2.1. *New Jersey Collocated HTRW Sites*

Though no data is provided in the publicly available databases, the HTRW sites mapped from the NYDEP server included metal finishing sites, chemical manufacturing companies, hotels and transport facilities, warehouses, a transformer site, asphalt companies, and other light and heavy industries (NJDEP, 2022).

9.2.2. *Hudson County Chromate*

From 1905 to 1976, Hudson County was a center for chrome manufacturing and processing chromite ore imported to the US. This manufacturing produced approximately 2 million tons of residue that was later determined to be hazardous materials. In 1986, the PRP PPG Co. signed an administrative consent order with the NJDEP, accepting responsibility for the cleanup of chromate ore processing residue at 61 sites. Thirty-seven residential sites had been cleaned up by 1992. Work on non-residential chromate sites resumed in 1998 following the creation of guidelines by NJDEP for the cleanup of non-residential chromate sites. In 2018, PPG began operating a pump and treat groundwater treatment system. In 2020, a final technical report documenting the soil cleanups at numerous sites in the Garfield Avenue area was approved by NJDEP (NJDEP, 2022a).

9.2.3. *633 Court Street (Chemtura)*

In 1904 the site was owned by Barrett Manufacturing and was used for the manufacturing of tar paper. Barrett Manufacturing Company is a predecessor company to Honeywell International, Inc. Tar tanks, storage tanks, stills, a pitch shed, and an oil house were located on-site. In the 1940s Doran Manganese Bronze Company, Inc. Foundry & Machine Shop occupied the site. In the 1940s to 1950s, Argus Chemical Laboratory, a predecessor company to Chemtura, purchased and operated the site. Argus Chemical Laboratory was subsequently purchased by Witco (also a predecessor company to Chemtura) in the early 1960s. Under Argus and Witco ownership, the plant produced metallic-organic soaps and salts, barium stearates, phosphates, and epoxy plasticizers. During the 1950s and 1960s, aluminum paste was produced in a process on the roof of one of the buildings. This production ceased in the late 1950s to early 1960s and all plant operations were relocated to a parcel of land located to the southwest of the 688 Site (EPA, 2010).

Known contaminants include arsenic, phenanthrene, toluene, chrysene, benzene, mercury, PCBs, vinyl chloride, and others.

9.2.4. *643 Court Street*

This site is in close proximity to the Gowanus Canal and has had several instances over the last decade of tar seeping out of the ground, getting cleaned up, and reappearing sometime later. Further investigation is required to determine the nature and extent of tar beneath the surface (EPA, 2010).

9.2.5. *688-700 Court Street (Chemtura)*

Milliken Brothers Iron Works occupied the southwestern portion of the site in 1904. In 1939 John F. McKenna, Inc. Lumber Yard, Marine Canvas Supply Corporation and John Menton Boiler Maker occupied the site. The site remained a lumberyard and marine canvas supply business until approximately 1958, when manufacturing at the site began. Historic manufacturing processes at the site include production of metallic-organic soaps and salts, phosphates, and epoxy plasticizers. A hot-oil system, which used PCB containing oil, was part of the manufacturing process. Contamination at the site appears related to several historical operations, including materials handling from the chemical manufacturing processes, as well as releases to the environment from the hot oil system (EPA, 2010).

Known contaminants include benzene, xylene, naphthalene, phenol, toluene, acetone, and PCBs.

9.3. **Group C Sites**

The following HTRW, or similar sites were identified in the database search for the Upper Bay Region (EDR, 2022h).

9.3.1. Dry Cleaners & Automotive Service Sites

The database report identified 38 former dry cleaners and 98 auto service stations within 0.125 miles of the NYNJHAT Study Alternatives (EDR, 2022h) (Figure 9-4). The areas with the highest concentration of these sites included northwestern and northeastern Staten Island shoreline roads, central Jersey City near the New Jersey City University, and Brookland (Figure 9-3). However dry cleaners and auto service centers are located throughout the area of proposed construction.

9.3.2. Industrial Hazardous Waste

One industrial hazardous waste facility was identified in the databases and collocated with the proposed measures (Figure 9-3). The facility is Clean Ventures, a hazardous waste transport, disposal, and management company. Clean Ventures appears throughout the database as the waste management firm called to respond to regional spills and releases of petroleum and hazardous waste.

9.3.3. PFAS Sites

Nine PFAS sites were identified in the database (EDR, 2022h), with three of them appearing to be collocated with the proposed measures (Figure 9-4).

- Plantronics – This PFAS site is located in Linden, NJ. Limited data was provided in the database on the nature of the PFAS sampling results, with a total of twelve samples collected and some above the state PFAS standards. The site was listed on other databases as well for chemical bulk storage and USTs. The database stated the site is active with active remediation projects ongoing for groundwater contamination.
- Shamrock Technologies - Located in northern Elizabeth, or southern Newark. No data on the PFAS contamination provided in the database, the facility is a large quantity generator and used a wide selection of solvents and other chemicals.
- Amerada Hess – Listed in the PFAS database, no data was provided on the nature of the site or PFAS release.

9.3.4. FUDS

Seven FUDS properties of twenty identified (EDR, 2022h) were identified as collocated with the proposed measures in the Upper Bay Region (Figure 9-4).

- AM Type Founders Co. – Released from FUDS, no further action, current part of Avant Industries.
- Staten Island Beth Steel – No current remedial projects. Remains in the FUDS program for future consideration, used for naval ship construction.
- NW Kellogg Co - The site was used by the Navy as liquid rocket fuel rest facility, no ongoing projects, but remains eligible.
- United Chemical Co. - The site was used as a railroad spur to the main rail line. Site is closed in the FUDS program.
- Robins Drydock – Military use starting in 1941 for construction of naval vessels, over a 5-acre property. Remains eligible for further investigation under FUDS, no current projects.
- ATL Basin Iron Works - The Navy used the site as a shipyard. Abandoned tanks are present. Vehicles are currently stored on site. A total 10-acre facility, currently owned by New Jersey Port Authority.
- GOLDSBOROUGH HOUSING – The site is part of the Military Ocean Terminal Bayonne, an active DOD installation. Not eligible for further consideration under FUDS.

9.3.5. Lead and Lead Smelters

Four lead and lead smelter sites were identified in the databases (EDR, 2022h). A cluster of lead smelter sites at the northwestern end of the proposed project is the primary area of concern (Figure 9-4).

- Hudsar Inc. – No specific data was presented on this site
- Atlas White Metal Company/Pittsburgh White Metal Co. in Brookland. Lead smelter sites to the north of the terminus of the Upper Bay Region’s NYNJHAT Study Alternatives. Due to the nature of lead smelting facilities the entirety of the Region may be impacted with lead dust from manufacturing, handling, and transport.
- PS 26 – Staten Island -Public school site with lead above child play area limits.
- NYC Dept of Education – PS59R - Public school site with lead above child play area limits.
- Jewett White Lead – Lead smelter site located on the north shore of Staten Island, collocated with the proposed measures detailed in Section 9.1 as it is in the Superfund Program.

9.4. Group D Sites

As can be seen on Figure 9-5, limited leaking UST data was available for New Jersey, though both NY state and EDR data was reviewed. Due to the urbanization of the Region, USTs, leaking USTs, and Spills are present throughout the Region. Due to the difference in the two datasets (New York and New Jersey) it is not possible to tell if any specific areas of the NYNJHAT Study Alternatives have more or less USTs, reported leaks, or reported spills.

9.5. Group E Sites

Four sites were identified in this Region, the two FUSRAP sites were far enough from the corridor of the NYNJHAT Study Alternatives that they are not collocated (Figure 9-6). Two additional sites were identified on the MLTS database, which lists sites that handle radioactive materials and waste. Neither of the MLTS sites were reported to have historical incidents and were removed from consideration as radioactive sites (EDR, 2022h).

9.6. Summary of Upper Bay – Arthur Kill

9.6.1. Regional Summary Review

The highly industrialized South Bay / Arthur Kill Region contains a large number of major HTRW sites that will need to be assessed in detail to assure that construction of the NYNJHAT Study Alternatives either avoid the impacted areas or take the appropriate precautions when conducting work. No stretches of the NYNJHAT Study Alternatives were free of potential historical impacts. These major facilities are present throughout the Region, rather than concentrated in only a few locations or industrial parks. As the data was limited in the databases the extent of the contamination at these facilities could not be determined during this Survey.

9.6.2. Further Considerations

Though the databases were not consistent in their presentation of data across the state lines, the presence of the bulk storage of petroleum and chemicals in USTs and ASTs throughout the site needs further consideration during layout, design, and construction.

Figure 9-1 Upper Bay - Arthur Kill Region - Locations of Measures Within Each Alternative

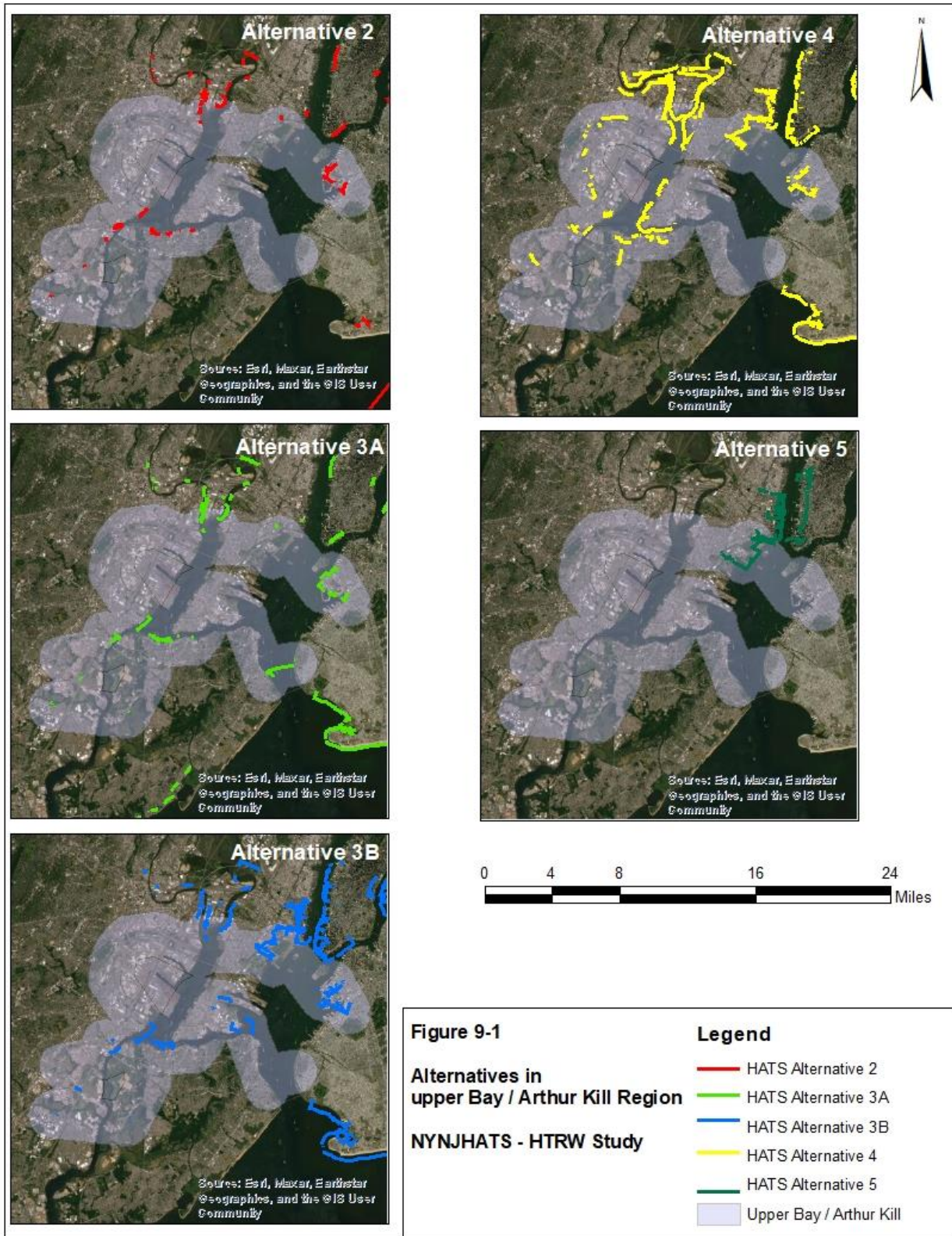


Figure 9-2 Upper Bay - Arthur Kill Region - Group A

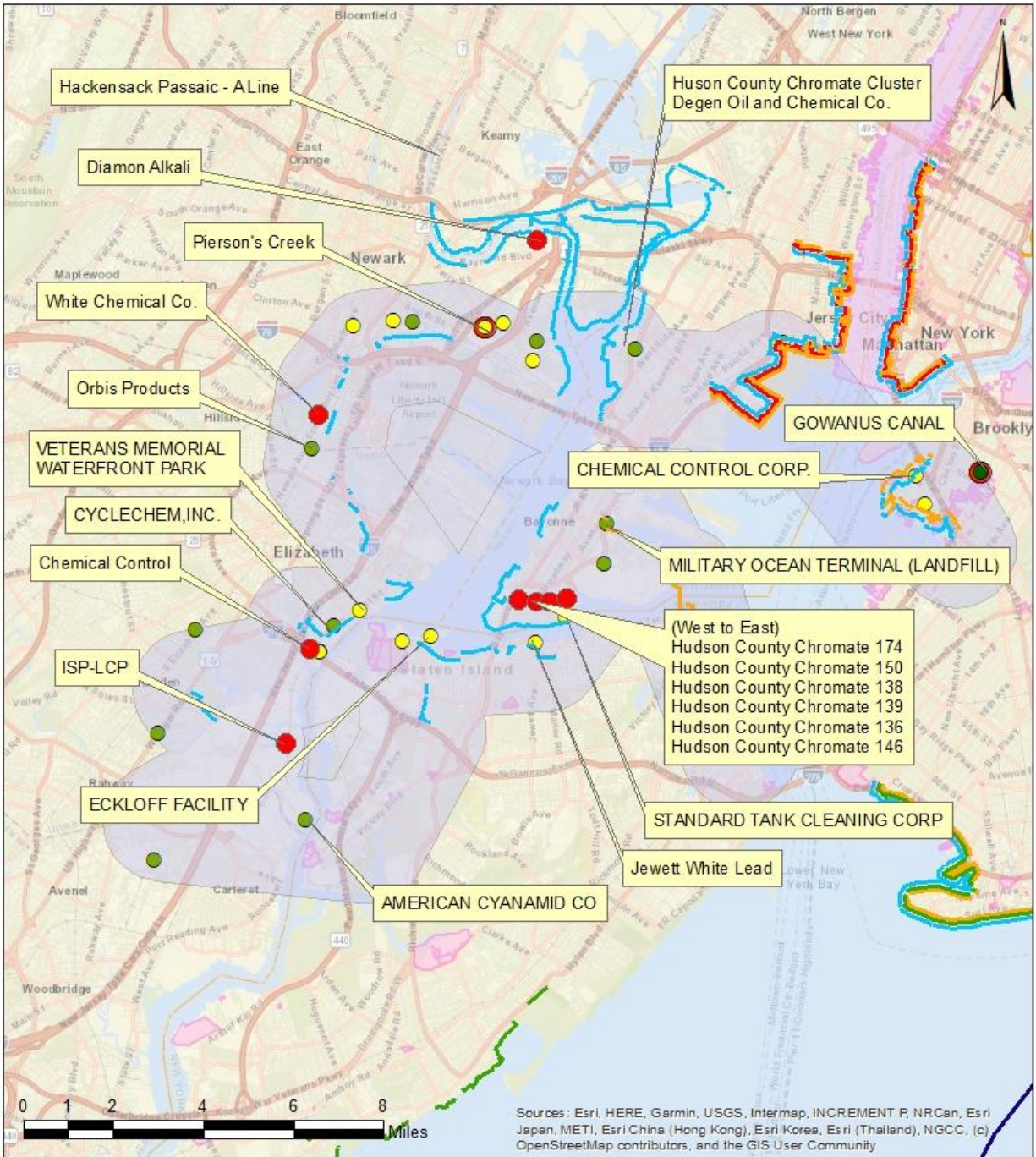


Figure 9-2
Group A Sites
Upper Bay - Arthur Kill
NYNJHATS - HTRW Study

Legend

	Alternative 2		ENG CONTROLS		NYDEC Class 1 - Immediate Hazard
	Alternative 3A		2020 COR ACTION		Upper Bay / Arthur Kill - Buffer
	Alternative 3B		PRP		
	Alternative 4		ROD		
	Alternative 5		NPL		

NOTE:
 For visualization purposes, Alternatives 3A, 3B, 4, and 5 are offset from center.

Figure 9-3 Upper Bay - Arthur Kill Region - Group B

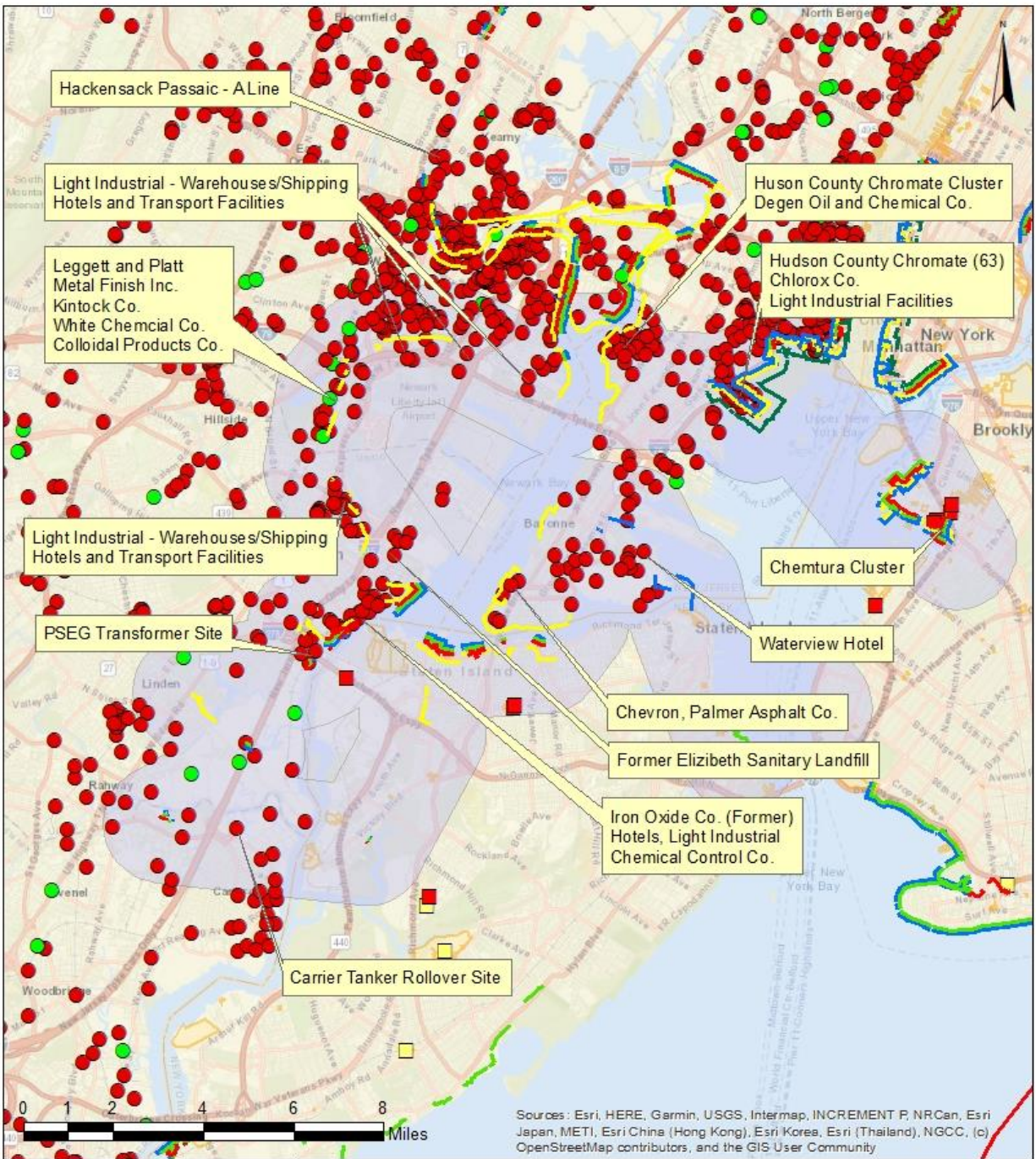
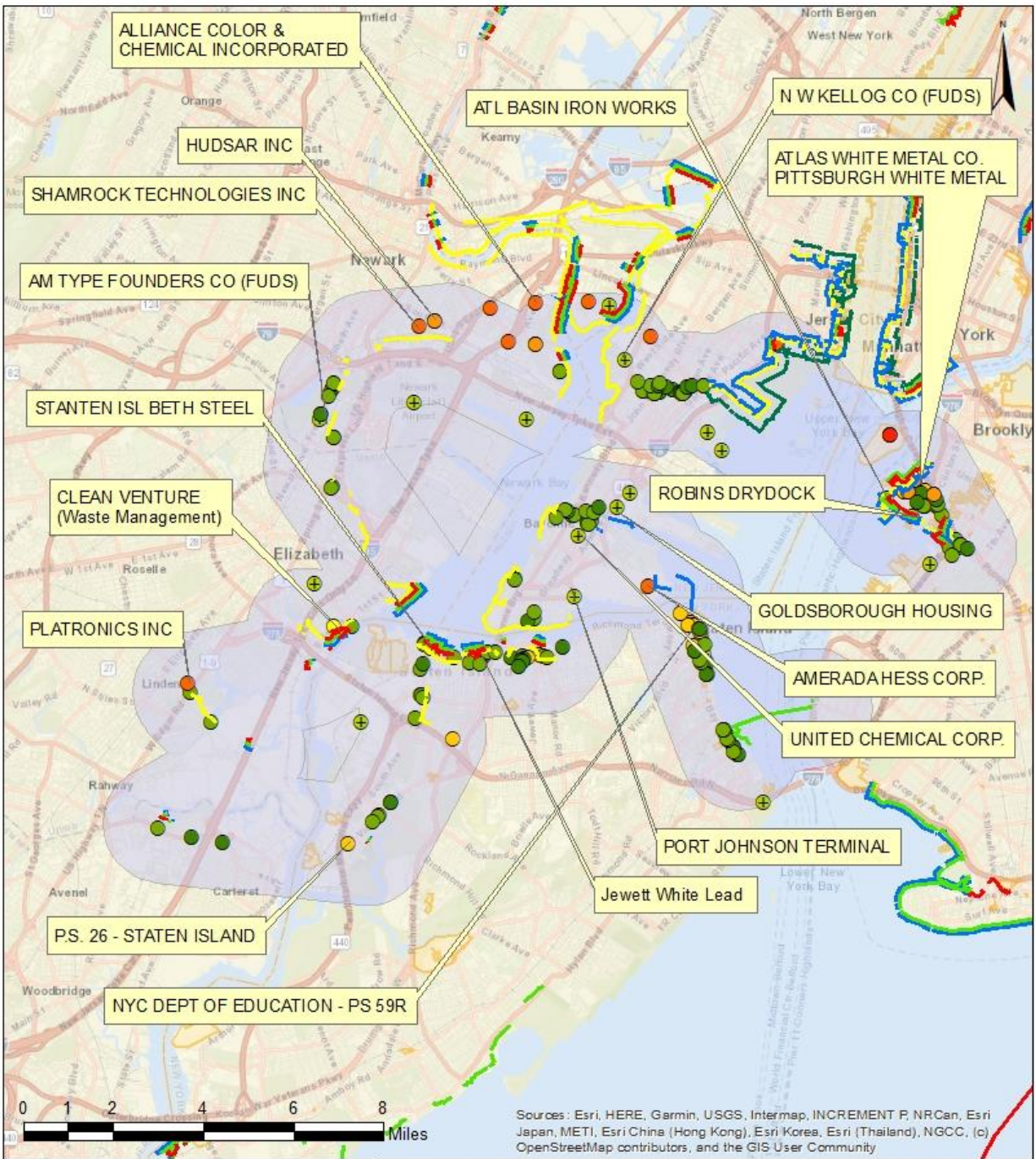
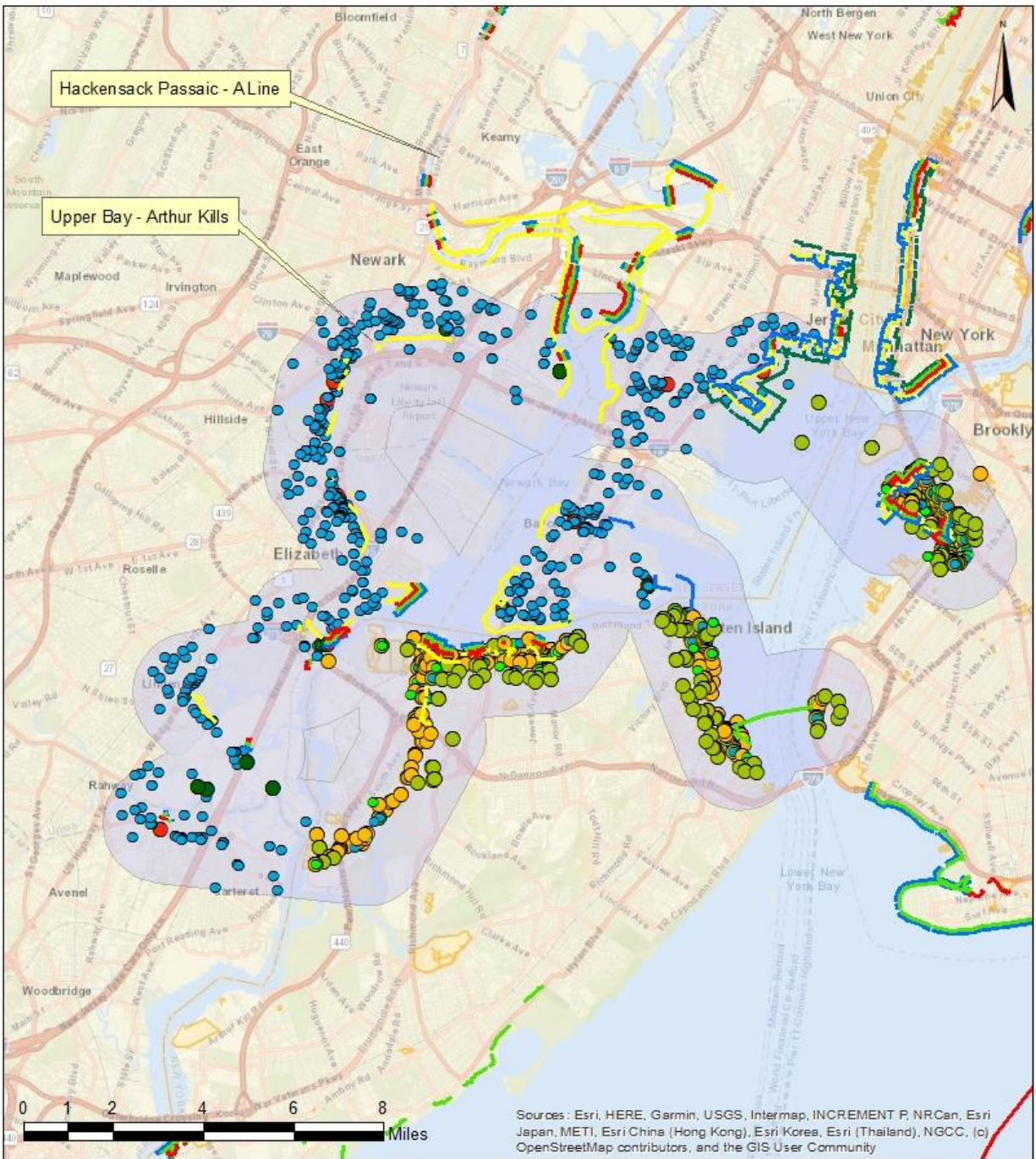


Figure 9-4 Upper Bay - Arthur Kill Region - Group C



<p>Figure 9-4</p> <p>Group C Sites Upper Bay - Arthur Kill</p> <p>NYNJHATS - HTRW Study</p>	<p>Legend</p>		
	<p>— HATS Alternative 2</p> <p>— HATS Alternative 3A</p> <p>— HATS Alternative 3B</p> <p>— HATS Alternative 4</p> <p>— HATS Alternative 5</p>	<p>● Drycleaners</p> <p>● EDR Hist Auto</p> <p>⊕ FUDS</p> <p>● Ind. Haz Waste</p>	<p>● LEAD</p> <p>● LEAD SMELTERS</p> <p>● PFAS</p> <p>● UXO</p> <p>■ Upper Bay / Arthur Kill - Buffer</p>

Figure 9-5 Upper Bay - Arthur Kill Region - Group D



<p>Figure 9-5</p> <p>Group D Sites</p> <p>Upper Bay - Arthur Kill</p> <p>NYNJHATS - HTRW Study</p>	Legend		
	HATS Alternative 2	ASTs	LTANKS
	HATS Alternative 3A	USTs	NY Spills
	HATS Alternative 3B	FUELS PROGRAM	SPILLS 90
	HATS Alternative 4	Upper Bay / Arthur Kill - Buffer	
HATS Alternative 5			

Figure 9-6 Upper Bay - Arthur Kill Region - Group E

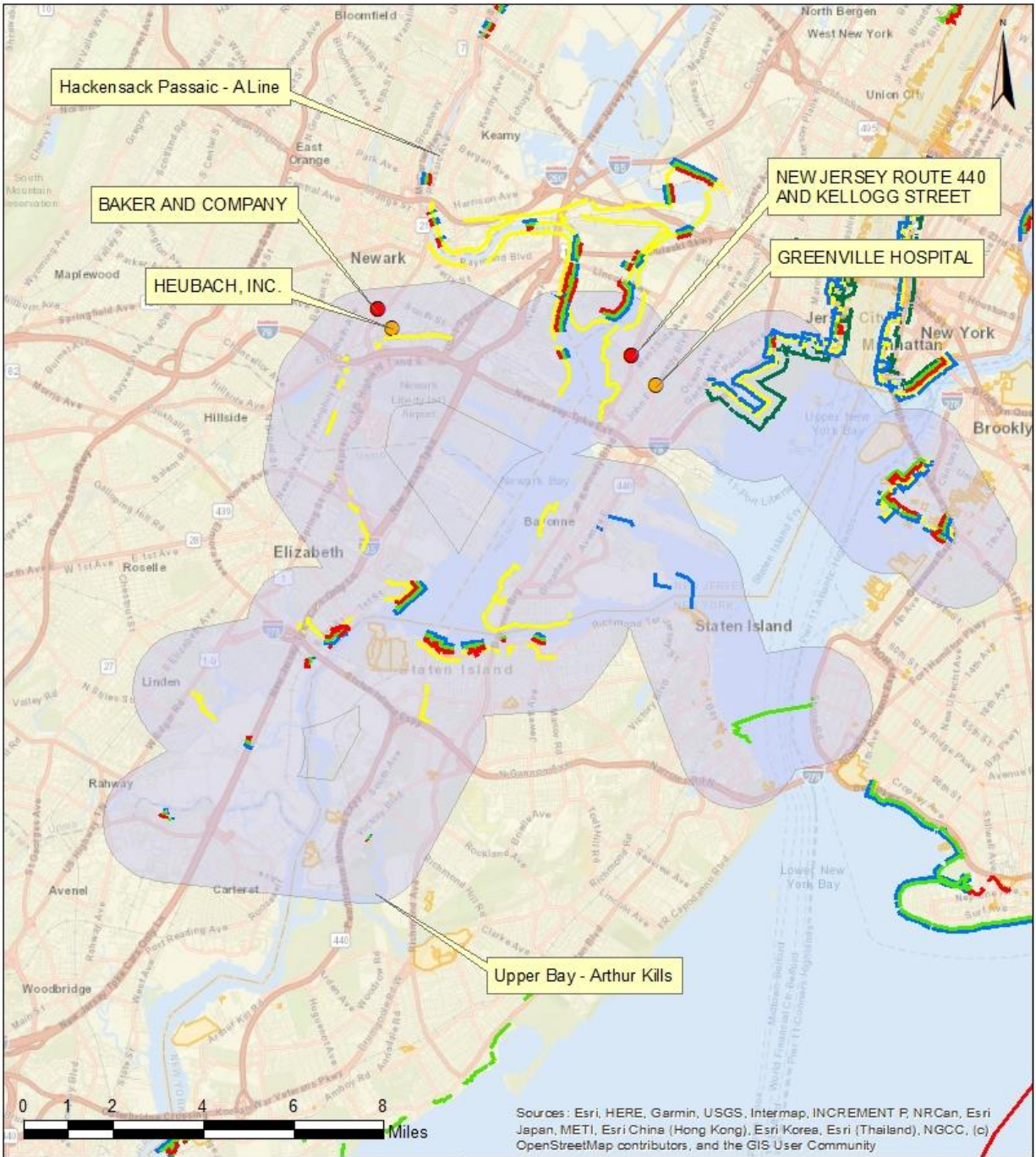


Figure 9-6

Group E Sites
Upper Bay - Arthur Kill
NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- FUSRAP
- MLTS
- Upper Bay / Arthur Kill - Buffer

10. Manhattan (Lower Hudson / East River) Region

The Manhattan (Lower Hudson /East River) Region includes the Borough of Manhattan, South Bronx, Brooklyn, Queens, and Hudson County New Jersey. The borough of Manhattan and the surrounding areas are extremely urbanized with large areas of residential, commercial, and industrial properties (Figure 10-2 through 10-6). The majority of the major sites are located in Manhattan, Western portions of Brooklyn and Queens, and across the Hudson River into New Jersey. The Manhattan Region encompasses measure locations observed in Alternatives 2, 3A, 3B, 4, and 5 (Figure 10-1), where Alternatives 3B and 4 have similar footprints in more locations as compared to the other three Alternatives whose footprints are smaller along this line. Alternative 5 is the only alternative with measures northwest of the Hackensack River.

10.1. Group A Sites

One Corrective Action 2020 Sites, three ROD sites, eleven PRPs were identified in within a mile radius of the borough of Manhattan (Figure 10-2). The identified site appeared to be collocated with the proposed measures.

Table 10-1 Manhattan (Lower Hudson / East River) - Group A Sites

Site Name	Collocated
I. Park Edgewater, LLC	Yes
All County Environmental Service Corp.	Yes
Radiac Research Corp.	Yes
Grand Street Mercury	Yes
Hoboken Auto Body, Inc.	Yes
City Chemical Corp.	Yes
Con Edison NYC Stream Explosion	Yes
Con-ED Farragut Substation PCB Spill	Yes
Federated Metals Corporation	Yes
Contract Pharmacal Corporation	Yes
Starloid Plastic Corp	Yes
Asarco Inc.	Yes
Federated Metals Corp	Yes
Great Neck Saw Manufacturing Inc.	Yes
Quanta Resources	Unmapped
Hudson River PCBs	Unmapped

10.1.1. iPark Edgewater, LLC (Mapped Site)

iPark – Edgewater is a 26-acre redevelopment located on the Hudson River across from downtown Manhattan. The site is currently in redevelopment and is anticipated to include twelve buildings including residential, retail, municipal offices, and parking structures as well as continuous public access along the Hudson waterfront.

10.1.2. All County Environmental Service Corp. (Mapped Site)

Various companies manufactured coal tar, paving and roofing materials on site from about 1876 to 1967. Allied Chemical Corporation's Asphalt Division (now Honeywell) took over operations in 1930. Allied Chemical sold the property, and the new owners leased the property in 1977 to E.R.P. Corporation for the storage and recycling of oil. Shortly thereafter, E.R.P. assigned its lease to Edgewater Terminals, Incorporated. Quanta Resources Corporation began operating at the property after a transfer of the lease from Edgewater Terminals.

Quanta Resources operated a waste oil processing facility at the site from 1979 to 1981. The site housed 61 above-ground storage tanks with a total capacity of over 9 million gallons, an unknown number of underground storage tanks, and numerous underground pipes. Quanta stored oil, tar, asphalt, sludge, process water and other unknown liquids in the tanks. The New Jersey Department of Environmental Protection (NJDEP) closed the Quanta Resources facility in 1981 after it discovered large quantities of polychlorinated biphenyl (PCB)-laden oil in storage tanks. EPA placed the site on the Superfund program's National Priorities List in September 2002, after initial actions to address risks to human health and the environment and site investigations. Under EPA oversight, Honeywell is addressing the site in two distinct areas called Operable Units (OUs). Operable Unit 1 (OU1) addresses the land and groundwater and Operable Unit 2 (OU2) addresses sediments and the nearby Hudson River.

10.1.3. Radiac Research Corp. (Mapped Site)

The site is located at 33 South 1st Street, Brooklyn, NY and is owned by Radiac Research Corp. which was founded in 1969. The company's line of business includes the collection and disposal of refuse systems. The Site is roughly 1 acre in area. Cleanup at the site has been completed and the USEPA considered the site Ready for Anticipated use (RAU) on September 17, 2013.

10.1.4. Grand Street Mercury (Mapped Site)

The Grand Street Mercury site is located at 720 and 722-732 Grand Street in Hoboken, New Jersey. The site included two buildings and an asphalt-covered parking area. One of the buildings was a five-story industrial building later converted into 16 residential studio spaces. A four-story adjoining townhouse was slated for residential conversion as well but was never converted. Both buildings were demolished as part of the site's cleanup. Mercury, believed to be associated with the use of vacuum pumps containing mercury and the manufacture of mercury vapor lamps and mercury-containing switches, was prevalent throughout the buildings and the parking lot. Mercury vapor lamps and numerous other types of lamps requiring lesser amounts of mercury in the manufacturing process were made at a facility on site from 1910 to about 1965.

Free flowing liquid elemental mercury was observed between flooring layers throughout the former industrial building. Mercury vapors were detected throughout both on-site buildings above health-based concentrations. Mercury was also observed to have adsorbed to porous wood, brick, and tar surfaces throughout the former industrial building. A site study determined that mercury was widespread, and the buildings could not be remediated for residential use.

After initial actions to protect human health and the environment, and additional investigations, EPA placed the site on the Superfund program's National Priorities List in September 1997. Following cleanup, EPA took the site off the National Priorities List in August 2007.

10.1.5. Hoboken Auto Body (Mapped Site)

The site is located at 600-632 Jackson Street, Hoboken, NJ. The site currently has several apartment buildings and condominiums as well as the Hoboken Housing Authority. It is unknown when Hoboken Auto Body occupied the site.

10.1.6. City Chemical Corp. (Mapped Site)

City Chemical Corporation Site was a chemical repackaging facility, located at 100 Hoboken Avenue, Jersey City, NJ. The facility consisted of a three-story main building, two storage sheds, a boiler house, a flammable liquid building,

and a garage. The site has experienced several fires involving major structural damage to on-site buildings and has also been involved with a number of chemical releases. This put the facility under investigation by the Jersey City Fire Department, the Hudson County Health Department, and the NJDEP. Following a fire in January 1992, the facility was ordered to cease operations as a result of fire code violations by the Jersey City Fire Department. Following this fire City Chemical contracted a cleanup of the areas damaged by the fire. The NJDEP issued an Administrative Order to City Chemical Corporation requiring them to segregate all incompatible materials and to remove or stabilize all highly hazardous materials. However, City Chemical had been negligent in responding to this order in a timely manner. The NJDEP referred the site to EPA in 1992. In November 1992, the EPA and the Technical Assistance Team (TAT) mobilized to the site to continue the assessment of the potential health hazards associated with the site. In October 1995, the EPA, Superfund Technical Assessment and Response Team (START), and the Environmental Response Cleanup Services (ERCS) contractor mobilized to the site to begin a removal action of the chemicals involved in the fire.

10.1.7. Con Edison NYC Steam Explosion (Mapped Site)

Con Edison NYC Steam Explosion is a superfund site located at Lexington Avenue Between 42nd And 41st, New York, NY 10017. The EPA identifies sites such as Con Edison NYC Steam Explosion because they pose or had once posed a potential risk to human health and/or the environment due to contamination by one or more hazardous wastes. Con Edison NYC Steam Explosion is currently registered as an Active superfund site by the EPA. However, it is not on the NPL (National Priorities List), which means the EPA does not consider it one of the nation's most hazardous waste sites.

On July 18, 2007, A steam pipe explosion beneath a street near Grand Central Terminal propelled a giant scalding jet of brownish steam toward the sky. The explosion sent up clouds of high-temperature steam mixed with mud and chunks of pavement. An official from the city's Office of Emergency Management said the steam was believed to contain asbestos. the explosion had been caused by the introduction of cold water into the 24-inch pipe, which dated back to 1924.

An emergency cleanup was conducted the evening of July 18th. The cleanup included removal of debris around the Incident Site (Lexington Avenue from 40th to 42nd streets and 41st Street from Third to Park avenues), cleaning of the cross streets to remove glass from window boarding operations, exterior cleaning of buildings in the cross streets by the FDNY and EPA with assistance from Con Edison contractors. Following the cleanup, an asbestos abatement was completed at the incident site.

10.1.8. Con-ED Farragut Substation PCB Spill (Mapped Site)

On Sunday, May 7, 2017, A Con Edison transformer at the Farragut substation located on the Brooklyn waterfront at John Street failed on Sunday, May 7, leaking approximately 30,000 gallons of fuel on and around the property, with an unknown amount seeping into the East River. The transformer contained 37,000 gallons of insulating fuel that is used to prevent electric sparks and protect the cables within the transformer. The fuel contained PCBs which is toxic to aquatic life and humans who consume the contaminated fish. Following the spill, a cleanup of the oil in the East River and on the surrounding land occurred. Currently the site is not on the NPL List, and no site assessment work is needed.

10.1.9. 180 Maiden Lane (Mapped Site)

The following sites are located at 180 Maiden Lane, New York, NY;

- Federated metals corporation
- Contract pharmacal corporation
- Starloid plastic corp.
- Asarco Inc.
- Federated metals corp.
- Great neck saw manufacturing inc.

The building on 180 Maiden Lane is located in the Financial District neighborhood in Manhattan, NY. 180 Maiden Lane was built in 1982 and has 41 stories and 50 units housing commercial tenants and is adjacent to the East River and the Seaport District.

Several spills occurred at the site. On April 3, 2003, 50 gallons of #2 fuel oil was spilled in the sewer. On April 15, 2002, 2 gallons of #2 fuel oil was spilled which affected the nearby soil. The soil was immediately removed and taken offsite.

10.1.10. Quanta Resources (Unmapped)

The Quanta Resources Corporation site is in the Borough of Edgewater, NJ. Various companies manufactured coal tar, paving, and roofing materials at the site starting in the late 1800s. Quanta Resources operated a waste oil processing facility at the site from 1979 to 1981. The site housed 61 above-ground storage tanks with a total capacity of over 9 million gallons, an unknown number of underground storage tanks, and numerous underground pipes. Quanta stored oil, tar, asphalt, sludge, process water and other unknown liquids in the tanks. The NJDEP closed the Quanta Resources facility in 1981 after it discovered large quantities of polychlorinated biphenyl (PCB)-laden oil in storage tanks. EPA placed the site on the Superfund program's National Priorities List in September 2002, after initial actions to address risks to human health and the environment and site investigations.

10.1.11. Hudson River PCBs (Unmapped)

The Hudson River PCBs is an NPL site that includes the approximately 200-mile stretch of the Hudson River from Hudson Falls to lower Manhattan. The Upper Hudson River, an approximately 40-mile reach of the river from Hudson Falls to Troy, in Washington, Saratoga and Rensselaer Counties, is the reach that has been selected for remediation. The General Electric Company discharged between 209,000 and 1.3 million pounds of polychlorinated biphenyls (PCBs) into the river from two capacitor manufacturing plants located in Hudson Falls and Fort Edward. The PCBs from these discharges contaminated the sediments of the Upper Hudson River.

Because of the disposal of PCBs in the Hudson River, surface water, sediment, and fish from the Upper and Lower Hudson River are contaminated with elevated concentrations of PCBs. The site is of potential public health concern because of the risk to human health resulting from possible exposure to hazardous substances at concentrations that may result in adverse health effects. Human exposure to PCB-contaminated fish or other consumable aquatic organisms from the Hudson River may occur and/or may be occurring via ingestion. Possible inhalation of volatilized PCBs, airborne PCB-contaminated dusts, as well as dermal contact with PCB-contaminated sediment are also of potential concern to human health.

10.2. Group B Sites

10.2.1. 2350 Fifth Avenue (Mapped Site)

The site is located in the Harlem section of Manhattan and is 100 to 200 feet to the east of the Harlem River. The site is occupied by a building comprising three connected sections: a two-story section along Fifth Avenue, a three-story section in the center of the site, and a one-story section to the west. The site and most of the surrounding area was vacant in 1893. The existing building was originally constructed as an ice cream factory by the Bordens Ice Cream Company. The three-story section was built in 1923; the two-story section was built in 1932; and the one-story section was built in 1950. The floor slab at the western end of the building (in the one-story section built in 1950) was constructed with various layers of insulating materials related to the original use of the building as a refrigerated ice cream plant.

Following its use as an ice cream factory, the building was occupied by a commercial laundry from 1970 to 1994. The laundry operated under a variety of names including Budge-Wood Service, Bluebird Laundry, and Swiss-American Laundry. The facility included a dry-cleaning operation utilizing tetrachloroethene (PCE) as a cleaning solvent. The dry-cleaning operation was located near the northern side of the one-story portion of the building, just west of the West 142nd Street loading dock. PCE was stored in the same area. The operations initially used

first generation machines with separate washers and dryers. Around 1984, these were replaced by second-generation machines, which were single units that perform all of the washing, extraction, and drying operations. It

was likely that most of the on-site leaks and spills of PCE were associated with the use of the first-generation machines, which involved more handling of PCE than the later machines.

In 1995-1996, most of the ground floor of the building, with the exception of the far western portion, was renovated for use as a New York City public school. This portion of the building was occupied as a school for a period in the fall of 1997 and was later used by a church for services, offices, and classes. The church left the building in December 2004. The remainder of the building was renovated in 2001 for use as a self-storage facility. An office was constructed next to the West 141st Street loading docks and storage units were constructed in the western portion of the ground floor and on the second and third floors. In February 2006, the self-storage facility expanded into the former school portion of the building. However, the self-storage facility is currently not using this space.

10.2.2. 21-16 44th Road, LIC (Mapped Site)

A spill occurred on January 20, 1989, at 21-16 44th Road in Long Island City, Queens, NY; roughly one mile east of Manhattan. #6 Fuel Oil was spilled by an unknown commercial/industrial cause and affected the surrounding groundwater.

The site was formerly occupied by a four story, 30,000 square foot warehouse and its courtyard. It was historically operated as a cloth manufacturing factory, a metal plating factory, and a 5,000 square foot parking lot. The site has been redeveloped as an Information and Technology High School. Contaminated soils beneath the building have been removed and disposed of off-site. Human exposure to residual contaminated soil is unlikely as the site is covered by the on-site building and pavement. Ingestion of groundwater as a potable drinking water source is not expected since the area is served by public water supply. Potential exposure via soil vapor intrusion into the school has been mitigated by the installation and operation of sub-slab depressurization system, a vapor barrier, an eight-inch-thick competent concrete slab, and the building's positive-pressure heating and ventilation system. Monthly sampling of soil vapor and quarterly sampling of groundwater will ensure that remedial systems are working properly.

10.2.3. 49 Dupont Street (Mapped Site)

The site is located in the Greenpoint section of Brooklyn in a mixed industrial/commercial/ residential area. The site has been in existence since 1887. It has been used for manufacturing, as an office, as storage, and for shipping and receiving. Prior to 1950, the site was used as a boiler shop for Logan Ironworks, two stables, a gas and light fixture factory, a sheet metal works, a soap factory, a waterproofing factory, and a scrap metal facility. From 1983 to 2004, NuHart & Company made vinyl siding and sheeting at the site. After 2004, NuHart & Company removed all of their equipment and offices. The site is now used for the storage of plastic wrapping and many large (36 cu. ft.) fabric bags containing pellets of resin.

The plasticizers bis(2-ethylhexyl)phthalate and di-n-octylphthalate, as well as #4 fuel oil have been found in groundwater (both as non-aqueous phase liquid and in the dissolved phase) and in soil. From 1983 to 2004 NuHart & Company (the tenant) manufactured vinyl siding and sheeting at the factory. After manufacturing ceased in 2004, environmental investigations were performed. The investigations identified soil and groundwater contamination consisting of liquid plasticizers and petroleum. The amount of each material that was released is unknown. A large plume of plasticizer NAPL was identified under the western end of the factory where the plasticizer USTs were located. This plume had migrated off-site in a northwesterly direction. A small plume of mostly #4 oil NAPL was identified under the northeast corner of the factory and had migrated a short distance off site. The environmental remediation which followed involved cleaning the floors of the factory, cleaning out the

underground storage tanks, cleaning all sumps and pipe gallery wells, installing monitoring wells, and installing NAPL collection wells and equipment.

The NAPL plumes have now been reduced in size and consist of three separate plumes. All of the plumes are contained under the sidewalks bounding the factory and under the footprint of the building. The smallest plume is under the northeast corner of the site. The former large plume under the western end of the factory is now two separate plumes (according to the November 26, 2008, gauging event) and consist solely of plasticizers. The thickness of the NAPL ranges from 0.16 feet to 1.38 feet. Product collection from these two plumes is continuing and, as of December 2008, has recovered a total of 8,356 gallons of NAPL.

10.2.4. 105 Hudson Street (Mapped Site)

Colgate & Company began operations at the site back in 1847. The later site of the city's first commercial core, and of the Colgate plant, was originally part of a sixty-five-acre sandy upland on the Hudson River. The plant began expanding in 1947 and purchased the adjacent building near the waterfront. From 1847 to 1988, the plant made mechanically-finished kettle soap products, including laundry and toilet soaps; spray-dried products, including synthetic cleansers, and dry or liquid detergents; dental creams, powders, and pastes; face and talc powders; shaving creams; and shampoos or other hair care products. 30 Hudson is currently the Goldman Sachs office tower in Jersey City, New Jersey.

10.2.5. 99 Hudson Street LLC – 108 Greene St. (Mapped Site)

108 Greene Street is currently a Condominium complex in Jersey City. The remediated and redeveloped land is associated with past activities associated with the Colgate & Company plant that made soaps, detergents, powders, and other household cleaning and bathing items.

10.2.6. Central Parking 70 Greene St. (Mapped Site)

Central Parking is a parking garage and apartment complex located at 70 Greene Street, Jersey City, NJ. The remediated and redeveloped land was associated with past activities by the Colgate & Company Plant.

10.2.7. Bright Horizons Children Center – 8 Columbus Drive. (Mapped Site)

Bright Horizons Children's Center is a day care located at 101 Hudson Street, Jersey City, NJ within the Harborside Financial Center. The remediated and redeveloped land was associated with past activities by the Colgate & Company Plant.

10.2.8. Mandalay on the Hudson. (Mapped Site)

Mandalay on the Hudson is a Condominium complex located on 20 2nd street, Jersey City, NJ. The remediated and redeveloped land may have associated with past activities by the Colgate & Company Plant or other by industrial operations by unknown origins.

10.2.9. Crystal Point Condos (Mapped Site)

Crystal Point Condos is a Condominium complex located on 2 2nd street, Jersey City, NJ, adjacent to the Mandalay on the Hudson Condominiums. The remediated and redeveloped land may have associated with past activities by the Colgate & Company Plant or other by industrial operations by unknown origins.

10.2.10. Lane Northeast (Mapped Site)

Lane Northeast is located at 7601 River Road, North Bergen, NJ and is owned by Diabes Enterprises River Road development. No other data can be found for this site

10.2.11. US Army Corps of Engineers Metro NY (Mapped Site)

The site at 7800 River Road, North Bergen, NJ currently is occupied by a single structure currently occupied by a daycare and several offices. The entity associated with the property is the US Army Corps of Engineers Metro NY. The status of the site is listed as closed

10.2.12. 7701 Marine Road Proposed Child Care (Mapped Site)

The site is located at 7701 Marine Road, North Bergen, NJ and is occupied by a single building with multiple commercial tenants and is surrounded by a parking lot. The status of the site is listed as closed.

10.2.13. 7009 7101 River Road (Mapped Site)

The site is located at 7009 and 7101 River Road, North Bergen, NJ. The site consists of a five story, 59-unit residential tower. The building resides 20 feet from a high-pressure gas line owned by Williams Gas Pipeline. The status of the site is active.

10.2.14. The Watermark (Mapped Site)

The site is located at 8100 River Road, North Bergen, NJ. The consists of a condominium complex adjacent to the Hudson River. The site as approved effective air permits for their Boilers, Heaters, and Emergency Generators. The site is listed as active.

10.2.15. Palisade General Hospital (Mapped Site)

The site, Palisade General Hospital, is located at 7600 River Road, North Bergen, NJ. The site is adjacent to the Hudson River. It is listed as an active Brownfield site.

10.2.16. Kingston Pointe (Mapped Site)

The site is located at 7706 and 7700 Marine Road, North Bergen, NJ. The site consists of apartment complexes and condominiums. The site is an active Brownfield site.

10.3. Group C Sites

The following HTRW, or similar sites, were identified in the database search for the Manhattan Region (EDR, 2022i). These sites and the relevant proposed alternative alignments are provided on Figure 10-4.

10.3.1. Abandoned Mines and Former Mines

Two abandoned mine sites were identified, the first was located to the south of the improvement alignment near East 79th Street in Manhattan, NY. The site was identified as a former aggregate facility (dredged sand and gravel). The second abandoned mine site was also identified on the former mine site database, and also identified as an aggregate facility was located at the western end of Canal Street along the alignments of Alternatives 3B, 4, and 5.

10.3.2. FUDS

Seven FUDS sites were identified and mapped in the Manhattan Region along the alignment of one or more of the NYNJHAT Study Alternatives (Figure 10-4).

- NMCRTC - JERSEY CITY – Used as a training center from 1948 to 1976. The site has no active projects but remains active for additional investigation and assessment.
- PIER 2 STORAGE/BERTHIN - A receiving station for refurbishing and disposal of Naval garbage and ashes. Remains eligible for additional assessment.
- HOBOKEN TERMINAL – Active for receiving passenger and steaming ships from 1917 and 1975. The site was initially used by the U.S. Government as a major shipping port for U.S. troops and military supplies during World War I and World War II. Between the wars, the site was leased to government subsidized transatlantic shipping companies. Remains eligible for additional assessment.

- NAVY FIRE FIGHTING SCH - The Department of the Navy used the site as a training facility to instruct Naval personnel to fight ship-board fires. Remains eligible for additional assessment. Fire training sites may contain firefighting foam which contains PFAS depending on the years of operation. The dates of operation for this site are not documented in the available databases.
- BRONX CITY HSPTL ANNEX - The Navy used the site as a hospital facility to treat sick and wounded personnel from approximately 1942-43 until approximately 1949-50. Remains eligible for additional assessment.
- PIER 42 STORAGE/BERTHN - The Navy used Pier 42 as a receiving station for refurbishing and disposal of Naval garbage and ashes. The City of New York was contracted by the US Government to make daily collection (garbage, ashes) along all of the piers leased and used by the Navy. The Department of Navy also used Pier 42 as a receiving and transporting station for Armed Forces personnel.
- PIER 45 STORAGE/BERTHN – No data provided in the available databases.

10.3.3. PFAS

GALAXY RECYCLING – No data is provided in the database on the conditions of the Galaxy Recycling facility located within NYNJHAT Study Alternatives 3B, 4, and 5 on Palisade Avenue in New Jersey. Waste management facilities may contain PFAS in the processed wastes, or to address fires at the facility.

10.3.4. Lead and Lead Smelters

The following eight lead containing sites were mapped within the NYNJHAT Study Alternatives in the Manhattan Region (EDR, 2022i) and are presented on Figure 10-4. Four of the sites were identified on the lead site directory (EDR, 2022i). These sites include a school and three Con Edison Manholes or service boxes and are likely not capable of impacting the sites around them.

Four lead smelters were also identified in the database. Lead smelters were located in both north and south Manhattan (Figure 10-3) and have the potential of impacting large areas with lead dust. There is a strong possibility that lead-impacted soils have been carried over urban infrastructure and fill materials. Soil disturbance in support of the NYNJHAT Study Alternatives should consider lead impacts when near a former, or current, lead smelter. No specific lead in environmental media data was available for review.

- Collocated Lead Sites
 - PRE-K @ 2-26 WASHINGTON ST – MANHATTAN (Lead) – School with reported lead containing paint.
 - CON EDISON MANHOLE 48682
 - CON EDISON SERVICE BOX: 38255
 - CON EDISON 2911 Frederick Douglass and 216 BRADHURST AVE and 2113 AMSTERDAM AVE & 164TH ST
- Collocated Lead Smelter Sites
 - CASWELL, STRAUSS & CO.
 - CITY METAL SMELTING & REFINING CO.
 - NASSAU SMELTING & REFINING CO.
 - MAGNOLIA METAL CO.

10.4. Group D Sites

There are approximately 2,071 AST and 105 CBS Tank locations mapped as potentially collocated with the proposed measures in this Region (Figure 10-5). The majority of the AST and CBS locations are located in the Borough of Manhattan with a large group of ASTs in the boroughs of Queens and Brooklyn and another large in the south Bronx. The grouping of locations appears to concentrate near commercial and industrial populations.

There are approximately 840 UST locations mapped as potentially collocated with the proposed measures in this Region (Figure 10-4). USTs can be found in the boroughs of Brooklyn, Queens, the Bronx, and Manhattan as well as

Hudson County, New Jersey. Due to the small size of USTs, it cannot be determined to what extent the USTs are specifically collocated with the proposed measures. However, as leaks and releases are only discovered upon exploration each UST poses a risk to site workers.

There are approximately 1,442 Leaking Tanks (LTANKS) mapped as potentially collocated with the proposed measures in this Region (Figure 10-5). The majority of the UST locations are located in the Borough of Manhattan with a large group of ASTs in the boroughs of Queens and Brooklyn and another large in the south Bronx. The grouping of locations appears to concentrate near commercial and industrial populations.

The Corridor Search database identified over 34 LTANKS that were collocated with the proposed measures, with another 1,408 leaking tanks located within 0.25 miles of the NYNJHAT Study Alternatives (Figure 5-4). The database includes 263 spills (NYSPILLS database) collocated and 1,948 located within 0.25 miles (EDR, 2022d). Spills may consist of fuel, petroleum, and/or other chemicals. LTANKS and reported spills were present throughout the commercial and industrial areas of the boroughs of Manhattan, Brooklyn, the Bronx, and Queens. Spills were also reported in parts of Hudson County New Jersey. (Figure 5-4).

An estimated 25 to 30 spills as defined and mapped in the Corridor Report databases (EDR, 2022b) were identified as being collocated, or directly adjacent, to the NYNJHAT Study Alternatives (Figure 3-4). The majority of the spills appeared to be associated with previously identified light industrial facilities (foam manufactures, plating shops, large scale printing facilities, and automotive service centers. Manhattan produces, a manufacture collocated with the proposed measures, was notable as having multiple spills in the database (Figure 3-4).

A total of 25-35 historically identified leaking USTs were identified as collocated, or likely collocated with the proposed measures. No release volume or material data was presented for the spills or leaking USTs. Several the identified facilities potentially contain other-than-petroleum projects.

it is not possible to tell if any specific areas of the NYNJHAT Study Alternatives have more or less USTs, reported leaks, or reported spills.

10.5. Group E Sites

Nine sites were identified in this Region, including six FUSRAP sites were identified in this Region (Figure 10-6). The following six sites are located within the borough of Manhattan and have been eliminated from consideration under FUSRAP;

- Lucius Pitkin, 47 Fulton Street
- Ferro Metal & Chemical, 50 Broad Street
- African Metals, 41 Broad Street
- Ledoux and Co., 155 Avenue of the Americas
- Radiation Application, 307 Lexington Avenue
- Markite Co., 155 Waverly Place

Two additional sites were identified on the MLTS database, which lists sites that handle radioactive materials and waste;

- Camelot Cove, 7400 River Road, North Bergen, NJ
- 193 Palisade Avenue, Jersey City, NJ

Neither of the MLTS sites were reported to have historical incidents and were removed from consideration as radioactive sites (EDR, 2022h).

An Other Radionuclide Waste Facility, American Radio Industries, is located at the southeast end of Manhattan. No more information is available.

10.6. Summary of Manhattan

10.6.1. Regional Summary Review

This Region is the most populated Region reviewed as part of this survey. Similar to the South Bay / Arthur Kill Region, The Manhattan Region contains a large number of major HTRW sites that will need to be assessed in detail to assure that construction of the NYNJHAT Study Alternatives either avoid the impacted areas or take the appropriate precautions when conducting work. No stretches of the NYNJHAT Study Alternatives were free of potential historical impacts. These major facilities are present throughout the Region, rather than concentrated in only a few locations or industrial parks. As the data was limited in the databases the extent of the contamination at these facilities could not be determined during this Survey. Most of the fourteen mapped Group A sites (NPL, PRP, and corrective action) are located close to the proposed NYNJHAT Study Alternatives.

10.6.2. Further Considerations

Though the databases were not consistent in their presentation of data for NY and NJ, the presence of the bulk storage of petroleum and chemicals in USTs and ASTs throughout the Region needs further consideration during layout, design, and construction.

Figure 10-1 Manhattan Region Locations of Measures Within Each Alternative

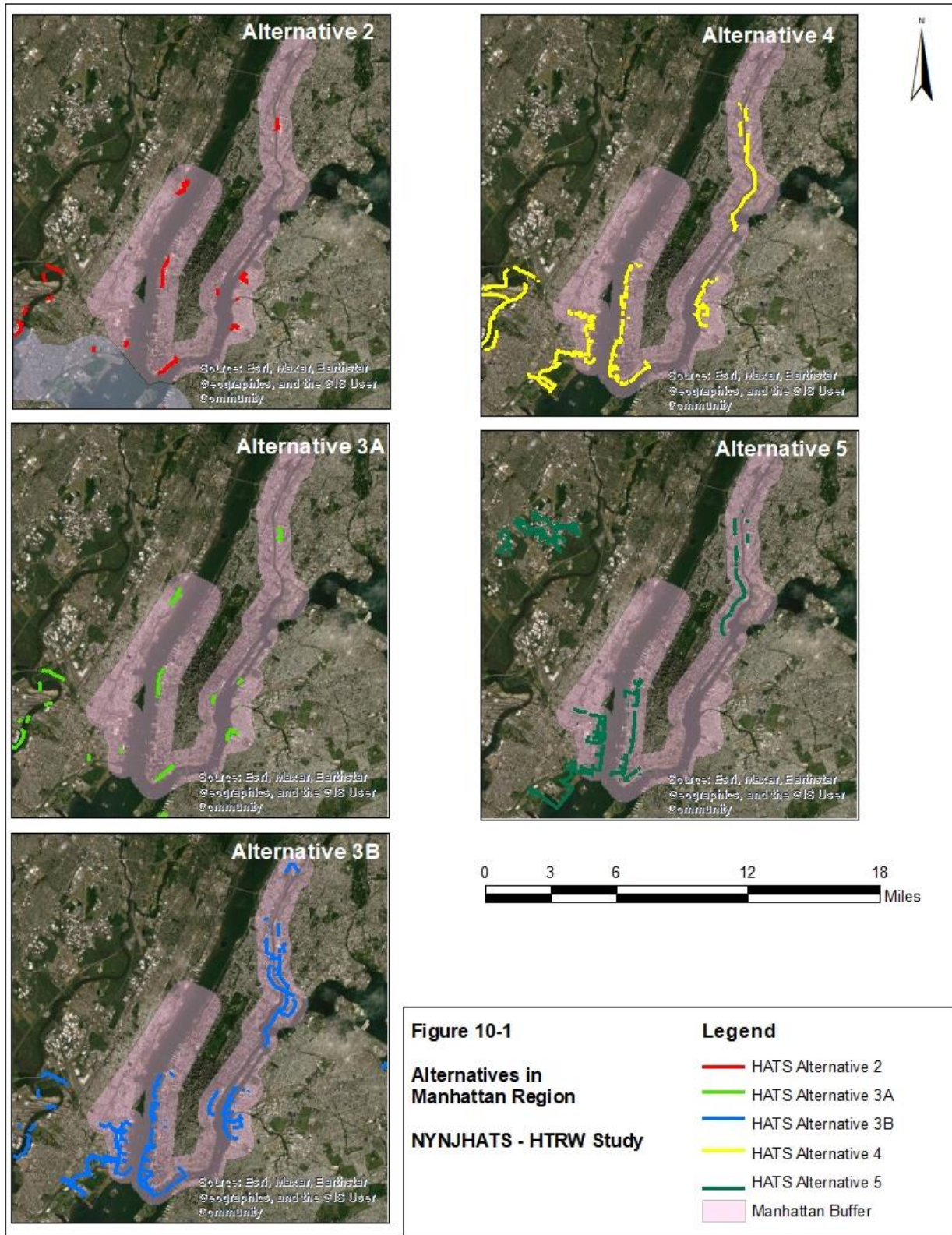


Figure 10-2 Manhattan Region - Group A

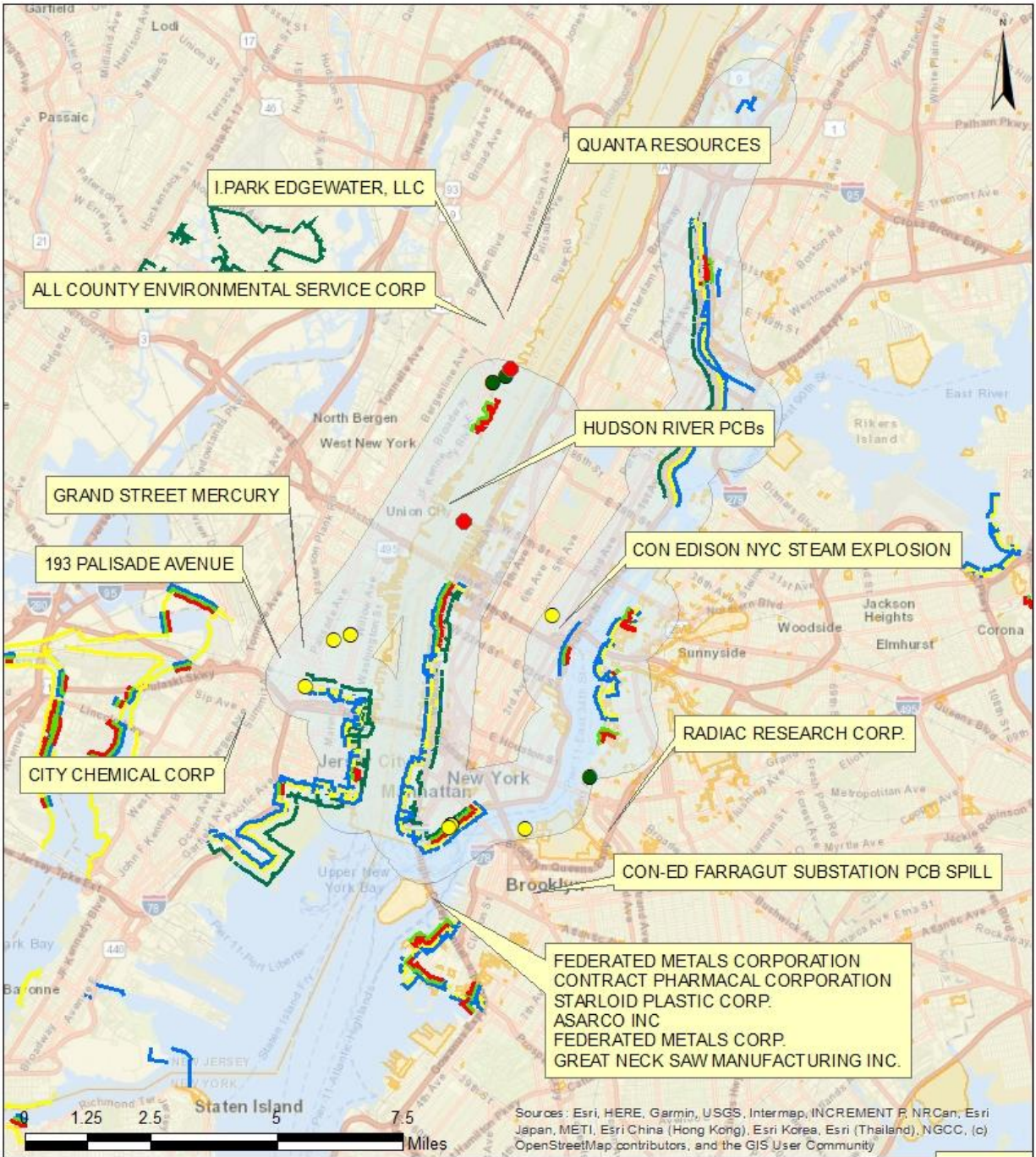


Figure 10-2

**Group A Sites
Manhattan**

NYNJHATS - HTRW Study

Legend

- 2020 COR ACTION
- PRP
- ROD
- NPL
- Manhattan Region
- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5

Figure 10-3 Manhattan Region - Group B

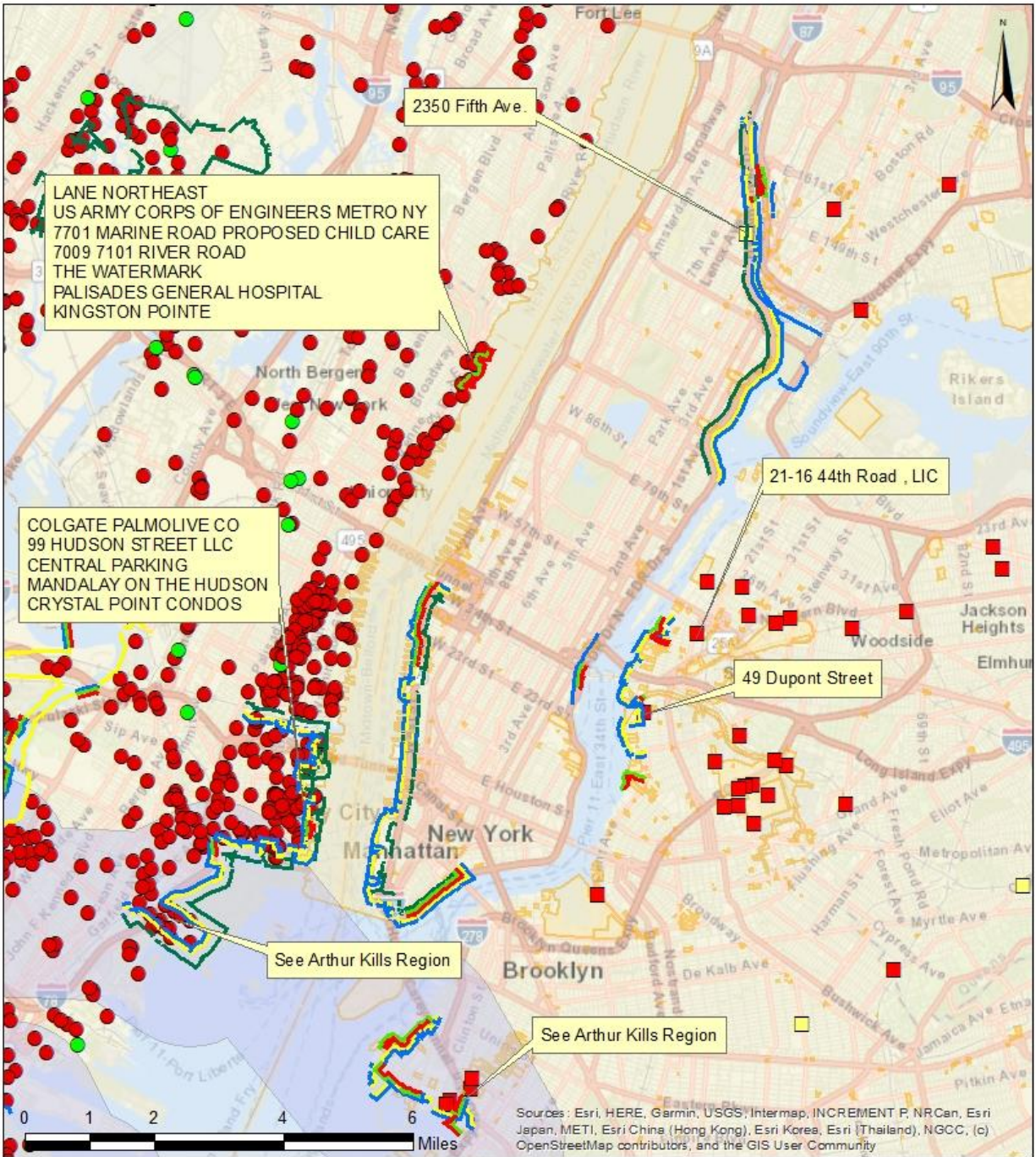


Figure 10-3

**Group B Sites
Manhattan**

NYNJHATS - HTRW Study

Legend

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> — HATS Alternative 2 — HATS Alternative 3A — HATS Alternative 3B — HATS Alternative 4 — HATS Alternative 5 | <p>NJ Known Contaminated Sites</p> <ul style="list-style-type: none"> ● Ongoing Engineering Controls ● Ongoing Deed Notification ● Deed Notification and Engineering Controls | <p>NYDEC Classification</p> <ul style="list-style-type: none"> ■ Class 4 - Closed with Ongoing Management ■ Class 2 - Significant Threat Upper Bay / Arthur Kill - Buffer |
|---|---|--|

Figure 10-4 Manhattan Region - Group C

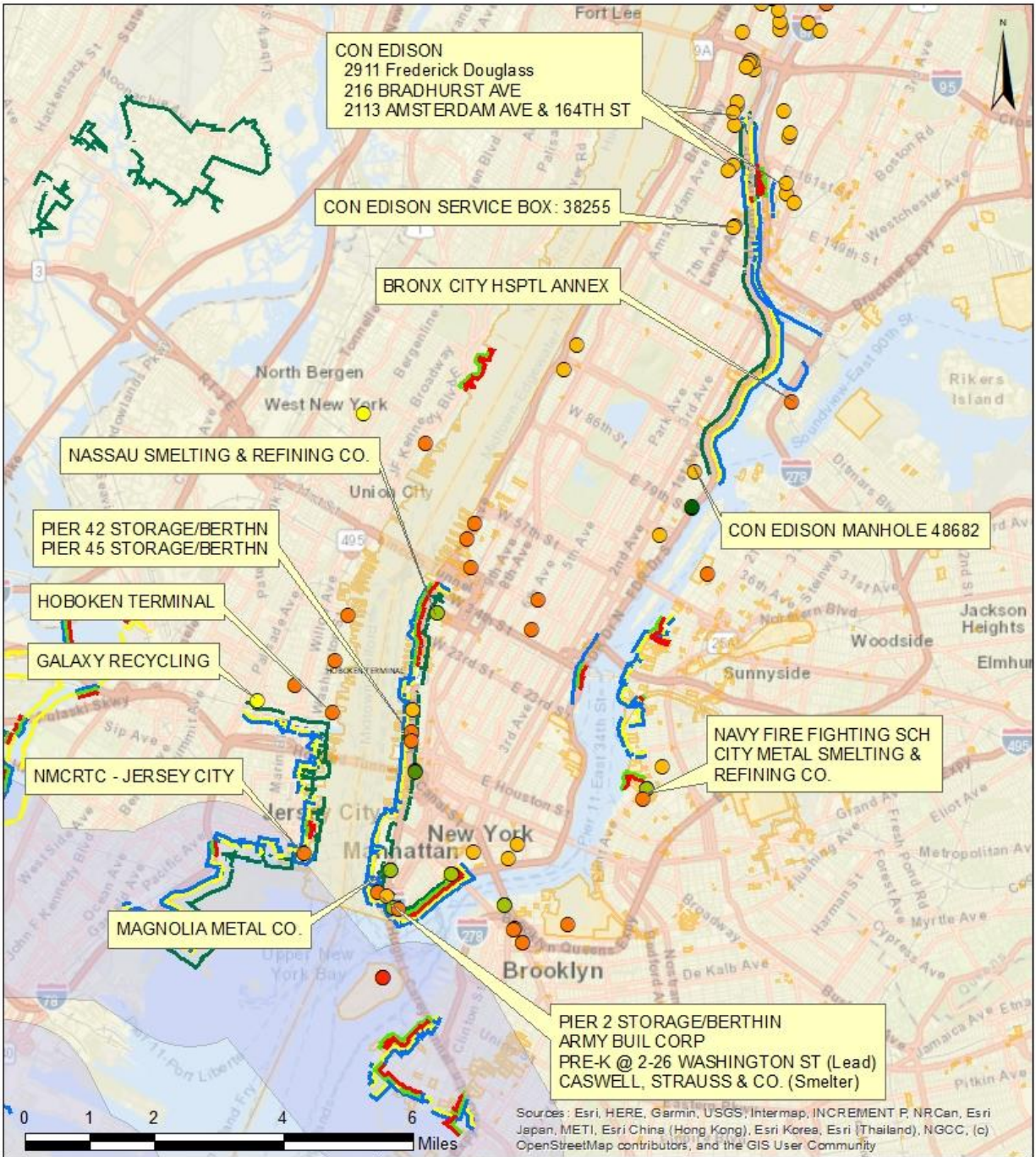


Figure 10-4

**Group C Sites
Manhattan**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- ABANDONED MINES
- US MINES
- LEAD SMELTERS
- PFAS
- LEAD
- FU DS
- UXO
- Upper Bay / Arthur Kill - Buffer

Figure 10-5 Manhattan Region - Group D

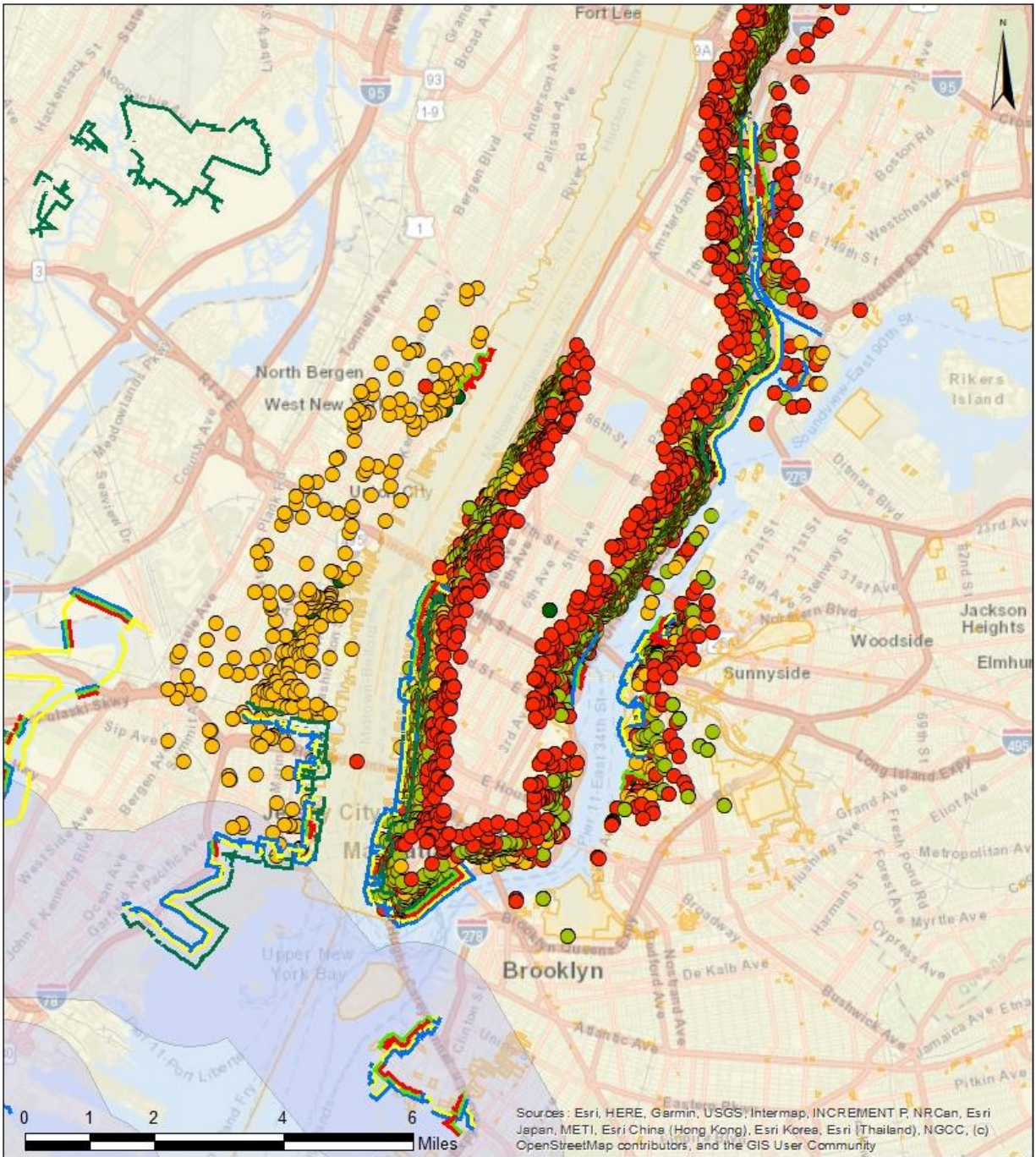


Figure 10-5

**Group D Sites
Manhattan**

NYNJHATS - HTRW Study

Legend

- HATS Alternative 2
- HATS Alternative 3A
- HATS Alternative 3B
- HATS Alternative 4
- HATS Alternative 5
- SPILLS and FUELS
- AST and CBS
- UST
- LTANKS
- Upper Bay / Arthur Kill - Buffer

Figure 10-6 Manhattan Region - Group E

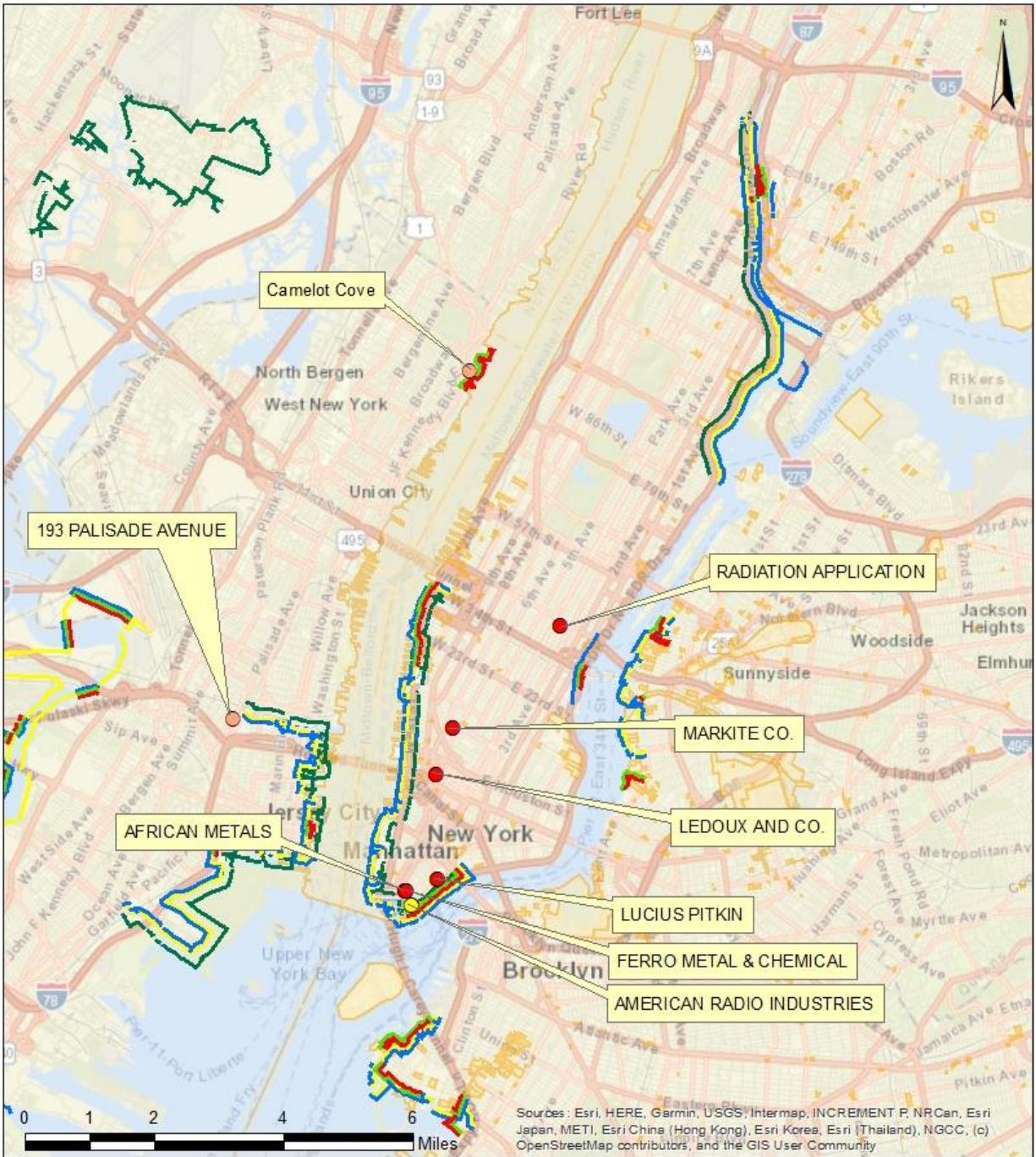


Figure 10-6

**Group E Sites
Manhattan**

NYNJHATS - HTRW Study

Legend

- | | |
|---|---|
| — HATS Alternative 2 | ● Other Radionuclide Waste Facilities |
| — HATS Alternative 3A | ● FUSRAP |
| — HATS Alternative 3B | ● MLTS |
| — HATS Alternative 4 | |
| — HATS Alternative 5 | |

11. Summary and Next Steps

11.1. Summary of Findings

Table 11-1 HTRW Sites by Region and Alternative

Approximate Number of HTRW Sites ¹ by Region and Alternative					
REGION	ALTERNATIVE				
	2	3A	3B	4	5
Hackensack Passaic - Line A	24	20	42	40	20
Hackensack Passaic - Line B	0	0	0	0	15
Jamaica Bay	12	30	35	35	2
Long Island Sound	30	30	5	5	0
Lower Bay	10	50	20	15	0
Port Washington / Long Island Sound	30	30	0	0	0
Raritan	4	0	0	0	0
Upper Bay	40	40	60	60	20
Manhattan (Lower Hudson / East River)	15	17	50	40	40
TOTAL HTRW Sites²	165	217	212	195	97
<p><i>Notes:</i></p> <p>1. Only HTRW sites from Groups A, B, C and E are included here.</p> <p>2. Because Alternatives can span more than one Region, the same HTRW site may be counted here as being collocated with more than one Alternative. For this reason, the approximate total number of HTRW sites in a Region is not represented in this table.</p>					

11.2. Summary of Potential Impacts

The NYNJHAT Study Regions located in the NYC Metropolitan Area are predominantly urban and most have many known contaminated sites collocated with the proposed measures in New Jersey and New York. Many other HTRW sites are adjacent to the NYNJHAT Study Alternatives, so slight location modifications may not avoid all HTRWs. Though the specific NYNJHAT Study Alternatives within each Region are still in development and five alternatives have been developed, there is likely no alternative that avoids all major and minor contaminated HTRW sites. The areas historically selected for industrial activities were intentionally located at or near the waterfront to allow for use of the New York and/or New Jersey port complexes.

11.3. Summary of Potential Benefits

Storm damage to HTRW sites can cause new releases of petroleum and/or hazardous substances, further spread historical contaminated soils and sediment, increase potential risk of exposure, and extend time and increase costs for addressing HTRW sites. Benefits of the NYNJHAT Study Alternatives would occur following construction of the measures, which would reduce the potential impacts from storm damage, including flooding, on HTRW sites.

If the alignment of proposed measure is collocated on an HTRW site, that portion of the HTRW site would be proposed for remediation by the non-federal sponsor(s). This would incur additional beneficial effects to the HTRW site, local community, and nearby ecological receptors, because the contamination at that portion of the HTRW site would be remediated at an expedited rate.

11.4. Next Steps

To address the finding of HTRW sites in the NYNJHAT Regions, USACE will continue to coordinate with USEPA, NJDEP, and NYSDEC as necessary in order to not interfere with ongoing investigation and remediation efforts. Active HTRW sites will be avoided as much as feasibly possible; however, in locations where avoidance may not be possible, additional coordination with the non-federal sponsors will be necessary to provide a clean site for measure placement, at 100% non-federal non-project cost, in accordance with ER-1165-2-132 *Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects*.

USACE will perform a more detailed and updated HTRW Survey, in accordance with ER 1165-2-132 guidance, during the future phases of the Study, including Tier 2 and PED. Management programs to address contaminated sediment, soil, and groundwater will be designed for all HTRW sites that cannot be avoided during the implementation of the NYNJHAT Study, in coordination with the non-federal sponsors. All HTRW sites will be monitored, and best management practices will be employed during construction to reduce impacts to nearby HTRW sites not in the footprint of the measure.

In accordance with ER 1165-2-132, dredged materials will be tested under dredged material placement criteria for their suitability for beneficial use in accordance with the appropriate guidelines and regulations including, but not limited to, Section 404 of the Clean Water Act and/or Section 103 of the Marine Protection Research and Sanctuaries Act and supplemented by the Corps of Engineers Management Strategy for Disposal of Dredge Material: Containment Testing and Controls. Dredge materials testing will additionally be compared to NYSDEC and NJDEP dredge material placement criteria.

There are schedule and costs associated with alternatives with higher numbers of HTRW sites, as the sites require assessment and remediation within the proposed activity area prior to start of construction. Likewise, the NYNJHAT Study Alternatives may make other portions of the sites inaccessible, or more costly to remedy. Non-federal sponsors capability to address specific sites and conditions depends on the location and number of HTRW sites requiring response. Moderate to large HTRW sites typically take years to complete even when well understood. Overall, impacts to cost and schedule will be reduced where there are fewer HTRW sites that have to be remediated. The specific impacts to the cost and schedule can not be determined based on the completed survey of HTRW sites.

The current schedule for the NYNJHAT Study estimates completion of the Final Tier 1 FR/EIS by January 2024 with a signed Chief's Report by June 2024, following state and agency reviews. The Tier 2 and subsequently the PED phase is not anticipated to begin until after the signing of the Chief's Report, with construction estimated to begin in approximately 2030.

During this period, ongoing remedial investigations, remedial design development, and remedial actions are expected to continue at each of the HTRW sites by respective responsible parties within the NYNJHATS Regions. It is expected that minor incidents and leaking USTs will continue to be discovered during this period. It is likely new and/or updated status of HTRW sites may be identified between this Tier 1 FR/EIS, the Tier 2, PED, and Construction. Future storm/flood events could create new major incidents prior to, and possibly during, construction requiring additional review and coordination with the USEPA, and state and local partners as needed.

The schedules of the NYNJHAT Study, construction, remedial investigations, and actions at the collocated HTRW sites are subject to change based on a variety of field and project advancement conditions. Therefore, information regarding any future plans for the responsible parties and project stakeholders will need to be updated at each new phase of the NYNJHAT Study. Design and construction activities will be coordinated with the USEPA, NJDEP, and NYSDEC, as necessary, to ensure ongoing remedial actions and activities being conducted at the HTRW sites do not interfere with the construction of the NYNJHAT Study Alternatives, and vice versa.

12. References

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Attachment A

EDR Corridor Reports

Hackensack Passaic Region – A Line
Hackensack Passaic Region – B Line
Jamaica Bay Region
Long Island Sound Region
Lower Bay Region
Port Washington / Long Island Sound Region
Raritan Region
Upper Bay / Arthur Kill Region
Manhattan (Lower Hudson / East River) Region
Jamacia Bay Extended Region

Due to the large file size, these reports will be made available upon request.