SCOPING DOCUMENT

Green Brook Upper Basin
Flood Risk Management General Reevaluation Study
Somerset & Union Counties, NJ

December 2023

Prepared by:

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US ARMY CORPS
OF ENGINEERS
NEW YORK DISTRICT

NEW JERSEY
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION

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LIST OF ACRONYMS

Acronym	Title
AEP	Annual Exceedance Probability
APE	Area of Potential Effect
BCR	Benefit Cost Ratio
CFR	Code of Federal Regulation
Corps	United States Army Corps of Engineers
CWA	Clean Water Act
District	United States Army Corps of Engineers, New York District
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FRM	Flood Risk Management
GRR	General Reevaluation Report
HTRW	Hazardous, Toxic and Radioactive Waste
KCS	Known Contaminated Sites
LPP	Locally Preferred Plan
LTS	Less Than Significant
LTSM	Less Than Significant with Mitigation
NE	No Effect
NED	National Economic Development
NEPA	National Environmental Policy Act
NGO	Non-Government Organizations
NJDEP	New Jersey Department of Environmental Protection
NJHPO	New Jersey Preservation Office
NJSM	New Jersey State Museum
NNBF	Natural and Nature-Based Features
NRHP	National Register of Historic Places
P&G	Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies
SU	Significant and Unavoidable
TSP	Tentatively Selected Plan
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION AND PROJECT BACKGROUND

The U.S. Army Corps of Engineers (USACE), New York District (District), in partnership with the New Jersey Department of Environmental Protection, is conducting a General Reevaluation Study to reevaluate the feasibility of implementing flood risk management (FRM) measures within the Green Brook Upper Basin in the municipalities of Plainfield City, North Plainfield Township, Scotch Plains Township, and Watchung Borough in Somerset and Union Counties, New Jersey.

The Green Brook Upper Basin is part of the overall Green Brook Flood Risk Management Project (Green Brook FRM Project), which also consists of the Lower Basin and the Stony Brook Basin (Figure 1). The larger Green Brook Flood Risk Management Project was authorized in 1986, and initiated construction within the Lower Basin in 1999. In a letter dated April 6, 2015, the NJDEP requested that the USACE initiate a reevaluation of the deferred Upper Basin.

The USACE completed a Validation Study in 2021 concluding that the recommended plan for the Upper Basin was no longer economically justified and that a general reevaluation report (GRR) should be completed. A Feasibility Cost Sharing Agreement with NJDEP was executed on September 28, 2022 to initiate the General Reevaluation Study. The goal of the GRR is to effectively re-study the Upper Basin to identify other FRM measures that could be economically justified and reaffirm federal interest.

The project is authorized by Public Law (P.L.) 99-162 Section 401.

In accordance with the National Environmental Policy Act (NEPA), the District will prepare either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS); to document the proposed action, alternatives formulated and evaluated, environmental effects, and any necessary mitigation to compensate for adverse effects from the proposed action. The District is initiating public scoping to in part, assist in determining the appropriate NEPA document type. This Scoping Document was prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's *Guidance Regarding NEPA Regulations*, and the USACE's *Procedures for Implementing NEPA* (Engineer Regulations [ER]-200-2-2) for distribution to local, county, state, and Federal agencies that may have an interest in the effects and benefits derived from implementation of flood risk management measures.

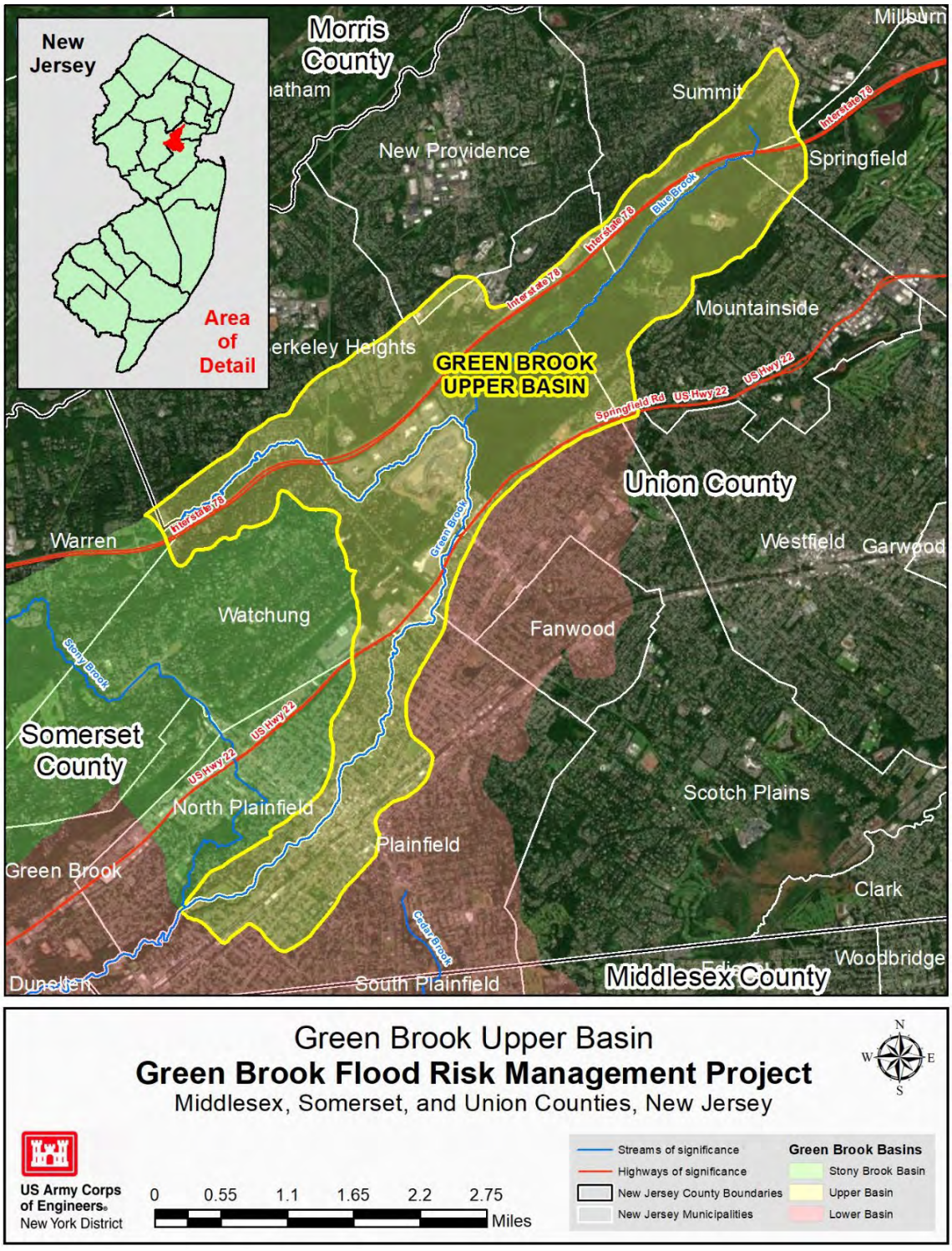

Figure 1: Green Brook Upper Basin Study Area

1.1 SCOPING

Scoping is the process used to identify issues, concerns, and opportunities for enhancement or mitigation associated with a proposed action. The purpose of the scoping process is as follows:

- Invite the participation of federal, state and local resource agencies, Indian tribes, non-governmental organizations (NGOs), and the public to identify significant environmental and socioeconomic issues related to three bases for significance of resources identified in the basin and defined in the U.S. Army Corps of Engineers' water resources project planning guidance (ER 1105-2-100, 2000):
- Institutional – Significance of an environmental resource is acknowledged in the laws, adopted plans, and other policy statements of public agencies, tribes, or private groups;
- Public – Significance of resource is recognized by the general public or segment of the public;
- Technical – Significance of an environmental resource is based on scientific or technical knowledge or judgment of critical resource characteristics.

Specifically:

- Determine the depth of analysis and significance of issues to be addressed in the NEPA document;

- Identify how the project would or would not contribute to cumulative effects in the Green Brook Basin. This includes the identification of any federal, state, or local resource plans, and any future project proposals in the affected resource area and implementation schedules and any existing information and any data that would help to describe the past and present actions and effects of the project and other developmental activities on environmental and socioeconomic resources;

- Information, quantitative data, or professional opinions that may help define the geographic and temporal scope of the analysis (both site-specific and cumulative effects), and that helps identify significant environmental issues;

- Solicit, from participants, available information on the resources at issue, including existing information and study needs;

- Identify any information sources that might be available to characterize the existing environmental conditions and analyze and evaluate effects;

- Publishing and announcing public scoping meetings in the local newspaper and/or Federal Register;

- Holding an interagency scoping meeting with Federal agencies to provide background on the proposed action and obtain their agencies issues or concerns to be considered as well as any data sources and analytical tools they might

recommend to assist in evaluating the alternatives and analyzing potential effects and;

- Preparing a website that describes the NEPA process and all the public involvement activities.

1.2 STUDY WEBPAGE AND CONTACT INFORMATION

Additional information and updates as the Feasibility Study progresses is located at:

https://www.nan.usace.army.mil/GRR

Questions about the overall Green Brook Upper Basin Flood Risk Management General Reevaluation Study should be directed to:

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The District will be accepting comments, concerns and information related to the Scoping process through 19 January 2024.

Written comments and suggestions concerning the scope of issues to be evaluated within the NEPA document to:
GreenBrookFRMProject@usace.army.mil

2.0 USACE CIVIL WORKS PLANNING PROCESS

2.1 USACE CIVIL WORKS PLANNING PROCESS

The USACE planning process follows the six-step process defined in the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" (often called the "Principles and Guidelines", or P&G). The Principles and Guidelines define the Federal objective of Corps project planning, which is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. The alternative with the greatest net economic benefit, often called the National Economic Development (NED) Plan, must be identified.

The six-step process is a structured approach to problem solving which provides a rational framework for sound decision making and is used for all planning studies conducted by the USACE. Below further describes each step in the process.

Step 1: Identifying Problems and Opportunities: Define the study area, problems and opportunities, as well as study constraints, goals, and objectives. Because this is a flood risk management study, problems and opportunities are developed to address the Federal objective of National Economic Development (NED). Goals, objectives, and constraints are developed to provide potential solutions to reduce flood risk and achieve the opportunities within the confines of legislative authority, policies, and other restrictions.

Step 2: Inventory and Forecast Conditions: Develop an inventory and forecast of critical resources (physical, economic, social, environmental, etc.) relevant to the problems and opportunities under consideration in the study. This step also involves forecasting to predict what changes will occur to resources throughout the 50-year period of analysis, assuming no actions are taken to address the problems in the study area.

Step 3: Formulate alternative solutions (e.g. Flood Risk Management Alternatives). Alternative plans are formulated across a range of potential scales to demonstrate the relative effectiveness of various approaches at varying scales.

Step 4: Evaluate Effects of Alternative Plans: Alternative plans are evaluated for their potential results in addressing the specific problems, needs, and objectives of the study (e.g. flood risk management) compliance with environmental protection requirements, the P&G's four evaluation criteria (completeness, effectiveness, efficiency and acceptability) and other criteria deemed significant by participating stakeholders. Evaluation of the beneficial and adverse effects of the alternatives will provide a basis to determine which plans should be considered further, dropped or reformulated.

Step 5: Compare Alternative Plans: Alternative plans are compared to each other in terms of benefits (damages avoided), costs and net benefits of alternatives. Beneficial and adverse effects of each plan must be compared. These include monetary and non-monetary benefits and costs.

As part of the analysis, a Benefit Cost Ratio (BCR) is developed for each alternative. A BCR is based on estimated benefits, including damages prevented during modeled storm events, and estimated costs, including cost of initial construction and long-term operations and maintenance. This ratio is critical to determining whether a project would be economically justified and be implementable.

The plan that maximizes net benefits relative to other plans is identified as the National Economic Plan or NED Plan. A Locally Preferred Plan (LPP) may be

requested by the non-Federal sponsor if they favor another plan over the NED Plan.

Step 6: Select Recommended Plan: Select the plan, (referred to as the Tentatively Selected Plan [TSP]) that best meets the study objectives and the four evaluation criteria in the P&G (completeness, effectiveness, efficiency, and acceptability). In the absence of a LPP, the TSP is identified as the NED Plan. A TSP, whether the NED Plan or a LPP, must have a Benefit Cost Ratio greater than one to be economically justified for Federal participation.

The Benefit-to-Cost Ratio is based on estimated benefits, including damages prevented during modeled storm events, and estimated costs, including cost of initial construction and long-term operations and maintenance. This ratio is critical to determining whether a project would be economically justified and be implementable. No action could be recommended if all alternatives have a BCR of less than one.

2.2 ALTERNATIVES

In total, six flood risk management alternatives to address flooding within the Green Brook Upper Basin were developed and underwent preliminary screening. Table 1 lists the alternatives and their screening status.

Table 1: Preliminary Alternatives

Alternative	Status
Alternative 0: No Action	Carried forward for further consideration
Alternative 1: Floodwalls and Levees	Screened out due not being cost effective
Alternative 2a: Upstream detention with channel modification and bridge raising	Carried forward at request of non-federal sponsor and study stakeholders
Alternative 3: Diversion Tunnels	Screened out due to not being cost effective
Alternative 4: Nonstructural	Carried forward for further consideration
Alternative 5a: Combination Plan 1	Carried forward for further consideration
Alternative 5b: Combination Plan 2	Carried forward for further consideration

2.3 CONSIDERATION OF NATURAL AND NATURE BASED FEATURES

Natural and nature-based features (NNBFs) are habitats or features that may reduce flood risk while providing ecosystem benefits.

Examples of NNBF measures for fluvial type flooding:

- Stream Restoration
- Smaller Detention Ponds

- Wetland Restoration
- Green Infrastructure

NNBFs typically require a larger and more contiguous amount of real estate to achieve the desired level of flood risk management than structural measures such as levees and floodwalls. As a result, they often are not cost effective or practical in being the sole flood risk management measure in urban areas where development occurs within close proximity to streams or rivers. However, as they could improve the function and efficiency of other measures, they are sometimes combined with alternatives consisting of structural measures as deemed practicable during the formulation and evaluation process.

2.4 STUDY SCHEDULE

Table 2: Study Schedule

Milestone	Date
NEPA Scoping	**04 December – 19 January**
Tentatively Selected Plan	February 2024
Release Draft Report/NEPA Document to Public	April 2024
Final Feasibility Report/NEPA Document	May 2025
Chiefs Report (for Congress)	September 2025

3.0 ENVIRONMENTAL RESOURCES AND COMPLIANCE

This section briefly characterizes select environmental resources within the Study Area and summarizes the major federal and state environmental laws, and federal executive orders (Tables 7-9) typically included as part of the NEPA document. The environmental resources presented in this section are not exhaustive and are those subject to regulation through existing Federal and/or state laws and are commonly affected by the implementation of flood risk management measures.

Additional environmental resources and specific environmental resource issues to be evaluated will be refined based on feedback from the Scoping Meeting, additional agency and public coordination and as alternative formulation and selection progresses.

3.1 Water Resources

Two water bodies are located within the overall Upper Basin project area: the Green Brook and the Blue Brook. The Green Brook originates in the southwestern portion of the Township of Berkeley Heights and flows in a southwesterly direction for approximately 14 miles before discharging into the Raritan River. The Blue Brook originates within the Watchung Reservation in the Town of Summit and is a tributary to the Green Brook. Blue Brook flows in a southwest direction for approximately 3.5 miles before it's confluence with the Green Brook just below Seeley's Pond.

The majority of the Green Brook and the portion of the Blue Brook within the Study Area are designated as FW2-NT the portion of the Green Brook that is designated as FW2-NT (Figure 6). By definition, designated uses for FW2 waters include: 1) maintenance, migration and propagation of the natural and established biota; 2) primary contact recreation; 3) industrial and agricultural water supply; 4) public potable water supply after conventional filtration treatment and disinfection; and 5) any other reasonable uses. Non-trout (NT) waters are those “not generally suitable for trout because of their physical, chemical, or biological characteristics but are suitable for a wide variety of other fishes” (NJDEP, 2023).

The portion of the Green Brook in the northern portion of the Study Area is designated as FW2-Trout Maintenance. Waters with the Trout Maintenance designation are those supportive of trout throughout the year (Figure 2).

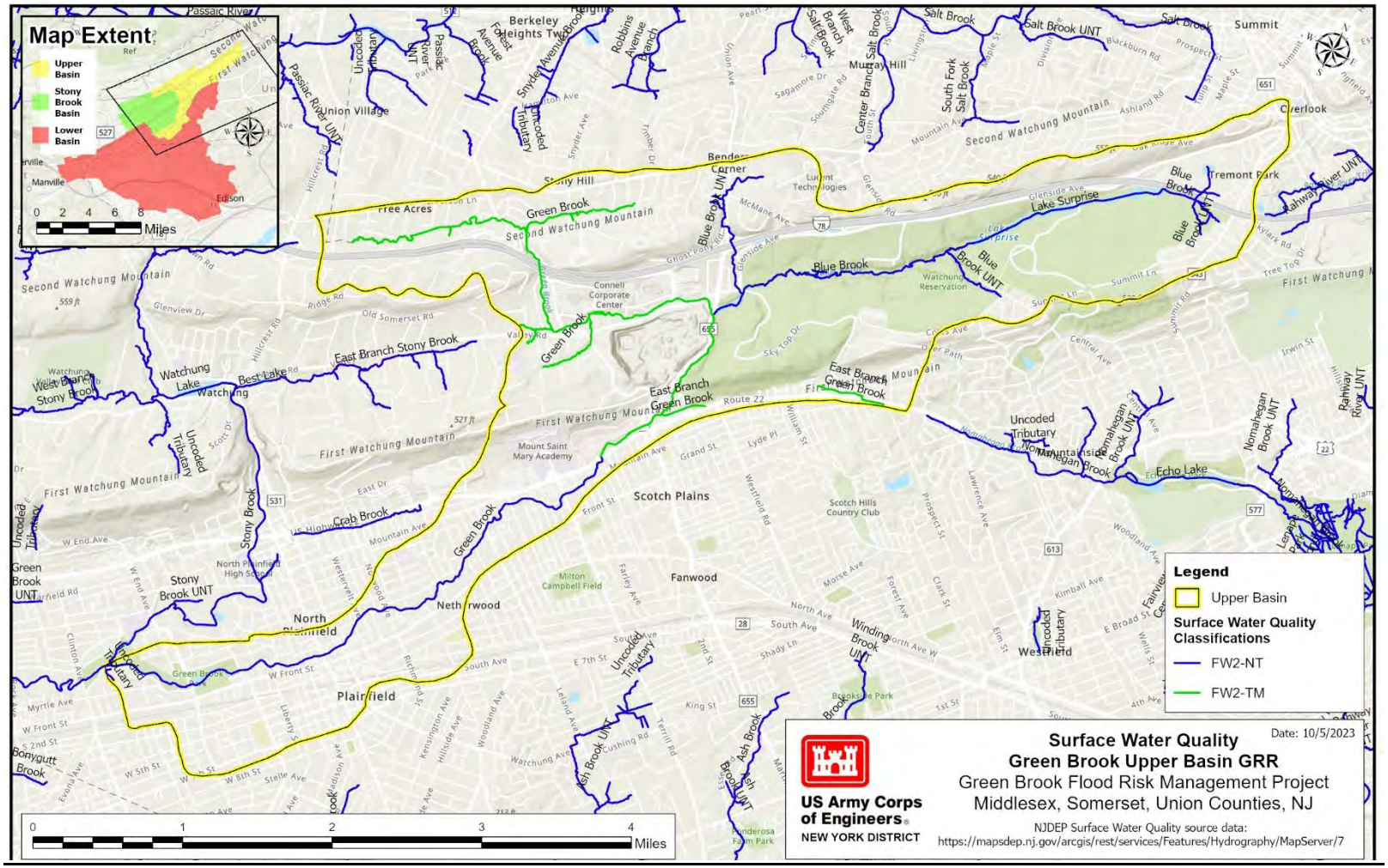


Figure 1: NJDEP Surface Water Quality Standards

3.2 Wetlands and Riparian Zone

Wetlands

Federal (33 CFR 328.3(b); EO 11990) and State (N.J.A.C. 7:7A1.4) definitions of wetlands are similar, identifying wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” As defined above, wetlands generally include swamps, marshes, bogs, and similar areas.

The initial identification of wetlands within the Study Area is based on the use of the NJ Geoweb (Figure 3) and U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory maps (Figure 4). Based on the review, the Study Area contains multiple wetland complexes consisting of forested, emergent, disturbed and scrub shrub wetlands along the banks of the Green Brook and within the Watchung Reservation (Figure 3).

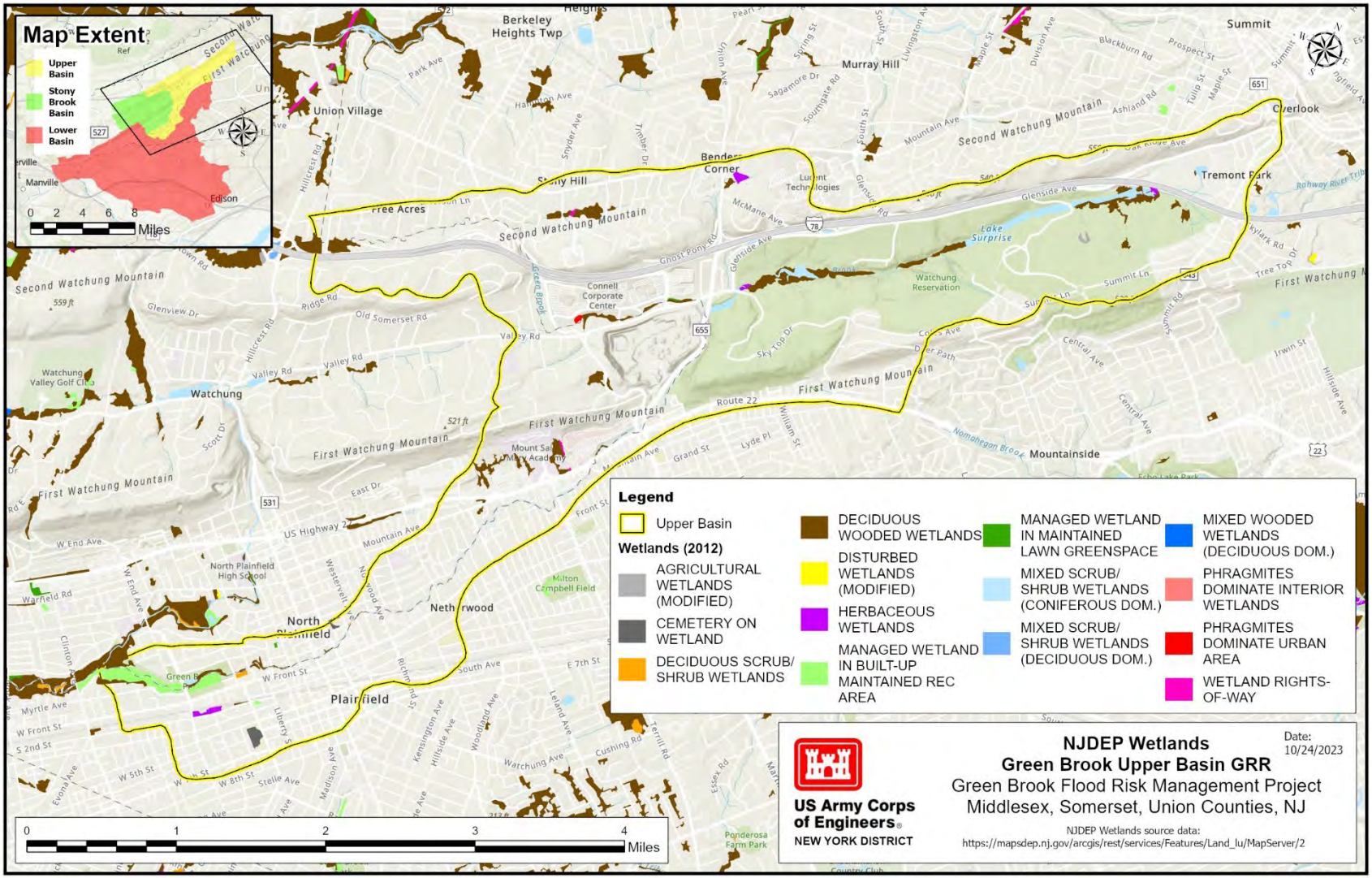


Figure 2: NJDEP Mapped Wetlands within Study Area

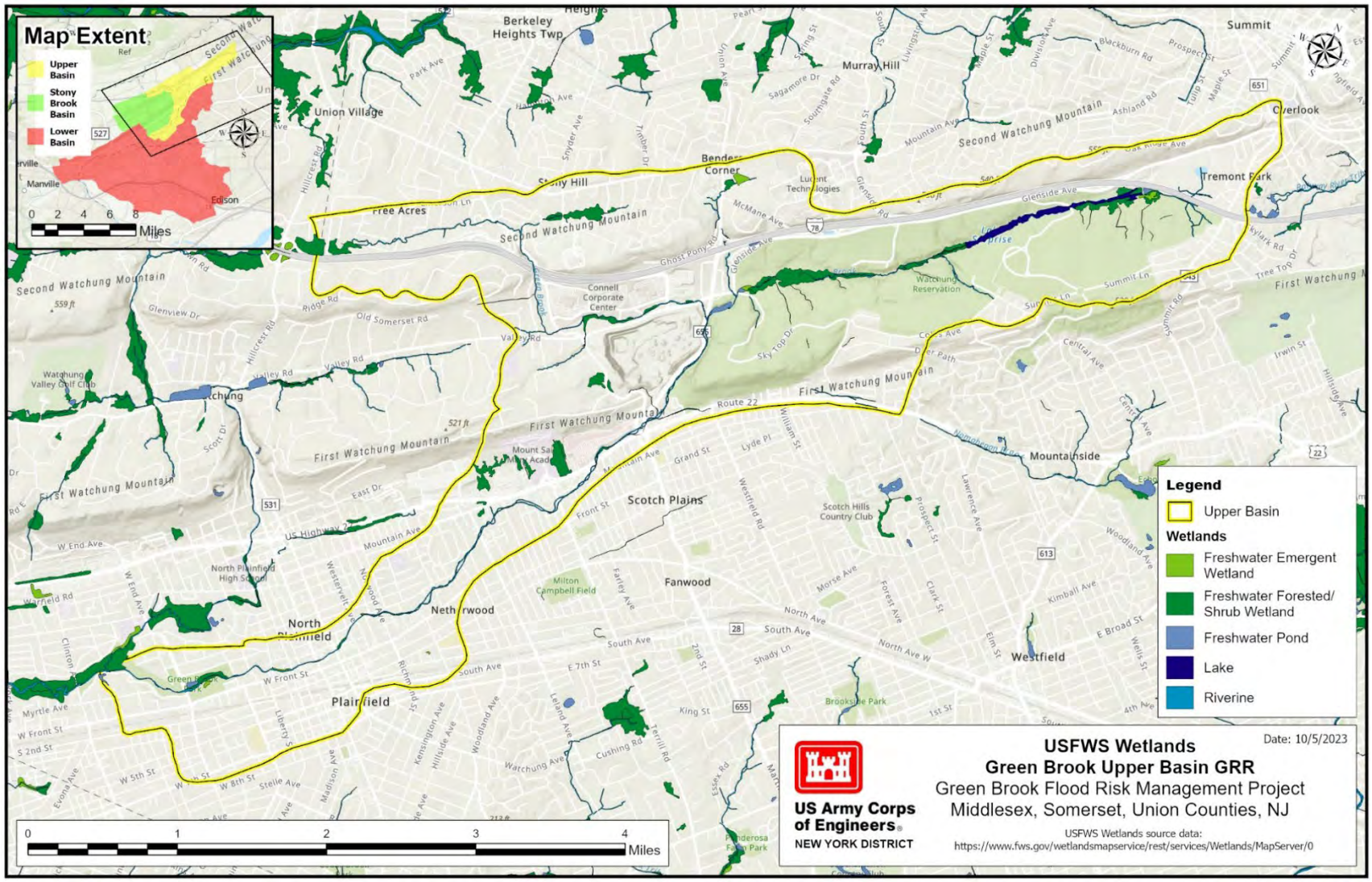


Figure 3: USFWS National Wetland Inventory Mapped Wetlands

Riparian Zone

The riparian zone is regulated by NJDEP the New Jersey Flood Hazard Area Control Act Rules, N.J.A.C. 13 establishes and requires the preservation of riparian zones. The width of the established riparian zone is based on the environmental resources being protected and can range from 50, 150 or 300 feet as measured from the top of bank of surface waters.

Within the more developed regions of the Study Area, the riparian zone ranges from a few feet to 25 feet. In the northern portions of the Study Area, particularly within the Watchung Reservation, the riparian zone exceeds 150 feet.

3.3 Endangered and Threatened Species

Federal

Section 7 of the Endangered Species Act (ESA) requires a Federal agency to ensure that any action authorized, funded or carried out by the agency does not jeopardize the continued existence of federally listed endangered and threatened species or result in the destruction or adverse modification of designated critical habitat of the Federally-listed species.

Based on a Planning Aid Report prepared by the U.S. Fish and Wildlife Service (USFWS) for the study, federally listed species that could potentially occur within the project areas include Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*) and bog turtle (*Glyptemys muhlenbergii*). The District also consulted the "New Jersey Municipalities with Hibernation or Maternity Occurrence of Indiana bat or Northern long-eared bat" list (USFWS Bat Municipality List) to supplement the official list. Based on a review of the list, North Plainfield has known maternity colony of northern long-eared bat and known Indiana bat and northern long-eared maternity colonies exist in Berkeley Heights, New Providence Borough and Mountainside Borough (USFWS, 2020).

Regarding bog turtle, the District also referenced the NJDEP "Freshwater Wetlands Attachment D, Known Locations of Bog Turtles in New Jersey". Based on the list, bog turtle have been known to occur in Watchung Township, Berkeley Heights, Mountainside Borough, Scotch Plains Township (NJDEP, 2008). In addition, based on a review of NJ-Geoweb, the Watchung Reservation is known to have historically occupied bog turtle habitat.

In addition, the USFWS has proposed the tricolored bat (*Perimyotis subflavus*) for listing status as endangered and is evaluating little brown bat (*Myotis lucifugus*), wood turtle (*Glyptemys insculpta*) and spotted turtle (*Clemmys guttata*) to determine if listing under ESA is warranted. The monarch butterfly (*Danaus plexippus*) was added to the list of candidate species.

Although the bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal List of Endangered and Threatened Wildlife in 2007, it remains protected through the Bald and Golden Eagle Protection Act of 1940, and the Migratory Bird Treaty Act of 1918. Studies conducted by the NJDEP Division of Fish and Wildlife in 2018 identified four

active American bald eagle nests within 13 miles of the Study Area (Smith and Clark, 2022).

State

State listed endangered, threatened and special concern species are protected under the New Jersey Endangered Species Conservation Act of 1973.

State listed species known to occur in the Study Area include American bald eagle (endangered), bog turtle (endangered), long-tailed salamander (*Eurycea longicauda longicauada*)(threatened), wood turtle (threatened), barred owl (*Strix varia*)(threatened), great blue heron (*Ardea Herodias*)(Special Concern) and wood thrush (*Hylocichla mustelina*) (Special Concern).

3.3.1 NEW JERSEY NATURAL HERITAGE PROGRAM

The New Jersey Natural Heritage Program classifies significant natural areas within the state through inventory and database management of rare plant and animal species and representative ecological communities. A Natural Heritage Site is located immediately within the Watchung Reservation.

Table 3 lists the species that have been documented within the site. State listing status and state ranking are based on the NJDEP List of Endangered Plant Species and Plant Species of Concern (NJDEP, 2022). Species designated as S1 are those that are "critically imperiled in New Jersey because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres)". Species designated as S2 are those that are "imperiled in New Jersey because of rarity (six to 20 occurrences) primarily because of habitat destruction." Species designated as S3 are those that are "rare in state with 21 to 100 occurrences." This includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant (NJDEP, 2019).

Table 3: Potential Species Occurrence within the Natural Heritage Site

Latin Name	Common Name	State Listing Status	State Ranking
Asclepsias verticillata	Whorled milkweed	N/A	S2
Muhlenbergia capillaris	Long-awn smoke grass	Endangered	S1
Stachys tenuifolia	Smooth Hedge nettle	N/A	S3
Violata rostrata	Long-spur violet	Endangered	S2

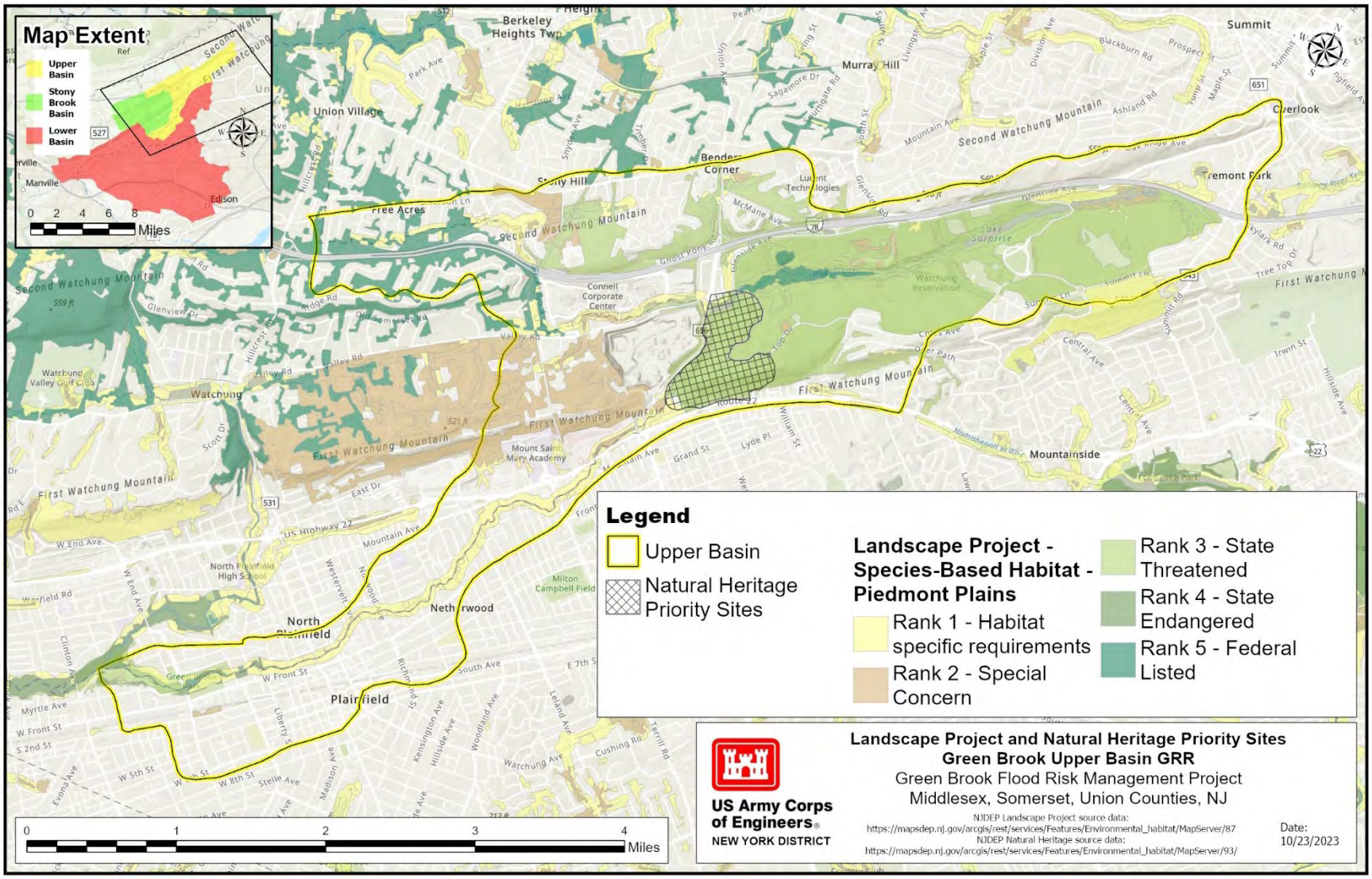


Figure 4: Natural Heritage Priority Site

3.4 Cultural Resources

The District has conducted preliminary investigations to identify potentially significant cultural resources within the study area of the proposed Green Brook Upper Basin Flood Risk Management Study, with a focus on the Area of Potential Effect (APE) for alternatives proposed for the City of Plainfield, North Plainfield Township, Scotch Plains Township, and Borough of Watchung.

As part of a 1997 GRR and Supplemental EIS for the overall Green Brook FRM project, the Upper Basin study area and its vicinity were subjected to several cultural resources surveys and investigations to identify historic properties, evaluate their eligibility for listing on the National Register of Historic Places (NRHP), and assess whether the proposed project will result in adverse effects to cultural resources. Previous USACE cultural resources survey reports on file at the District were consulted for this study.

The District conducted a Phase I-level cultural resources investigation of the Upper Basin Study Area that evaluated previously proposed features for the study and assessed their potential impacts (Cinquino et. al 1997). At the time, proposed plans included two dam sites, the Oak Way and Sky Top dry detention structures, in the Watchung Reservation and the investigation focused mainly on the archaeological sensitivity of the detention basin APE. The study identified seven archaeological sites, two small Pre-Contact campsites and five historic sites consisting of eighteenth and nineteenth century remains. Six of the sites were determined to be potentially eligible for inclusion in the National Register, and Phase II archaeological investigations were recommended (Cinquino et. al 1997).

A review of previous survey reports, site forms, historic maps, and historic property data provided by the New Jersey Historic Preservation Office (NJHPO) and the New Jersey State Museum (NJSM) was undertaken for the current study. At this time, records indicate that nine archaeological sites have been identified in the Study Area (Table 4). There are 14 NRHP historic districts in the Study Area – 6 that are NRHP-listed, 5 that are NRHP-eligible, and 3 that have yet to be evaluated for eligibility (Table 5). There are 494 known historic properties within the Study Area, 9 of which are NRHP-listed, 11 of which are NRHP-eligible, and 6 that are designated Local Landmarks (Table 6).

As the project advances, a comprehensive assessment is currently being conducted to further identify additional resources, evaluate potential impacts to any new or existing resources, and consult with stakeholders regarding those potential impacts in accordance with applicable laws and regulations.

Table 4: Archaeological Sites in the Study Area

Archaeological Site	Proximity to Area of Potential Effect	NRHP Status
28-UN-22 (Fountain Site)	Outside APE	Undetermined
28-UN-24 (Drake Farm)	Within APE	Potentially Eligible
28-UN-25	Within APE	Potentially Eligible
28-UN-26	Within APE	Potentially Eligible
28-UN-27	Outside APE	Undetermined
28-UN-28	Outside APE	Undetermined
28-UN-36 (Stites Farmstead)	Outside APE	Eligible
28-UN-52 (Stony Hill)	Outside APE	Eligible
Unknown Pre-contact Period Archaeological Site	Adjacent to APE	Undetermined

Table 5: Historic District in the Study Area

Historic District (HD)	Proximity to Area of Potential Effect	NRHP Status
Central Railroad of New Jersey Main Line Corridor HD	Adjacent to APE	Eligible
Feltville HD	Outside APE	Listed
Front Street Commercial Streetscape	Adjacent to APE	Eligible
Green Brook Park	Within APE	Listed
Mount Saint Mary Academy	Adjacent to APE	Eligible
North Avenue Commercial HD	Adjacent to APE	Listed
Park Avenue Streetscape	Outside APE	Undetermined
Plainfield Civic HD	Outside APE	Listed
Public Service Electric and Gas (PSE&G) Company Northern Inner Ring Transmission Line	Adjacent to APE	Eligible
St. Mary's Area	Outside APE	Undetermined
Union County Park System HD	Within APE	Eligible
Van Wyck Brooks HD	Outside APE	Listed/Locally Designated
Washington Park HD	Adjacent to APE	Listed/Locally Designated
Watchung Avenue Streetscape	Outside APE	Undetermined

Table 6: Significant Historic Properties in the Study Area

Property Name	Proximity to Area of Potential Effect	NRHP Status
139 Seventh Street	Outside APE	Eligible
All Souls Church (First Unitarian Church)	Outside APE	Listed
Badgley House and Site	Outside APE	Listed
Bell Labs	Outside APE	Eligible
Central Fire Headquarters	Outside APE	Listed
Clawson House	Outside APE	Local Landmark
Diamond Hill Road Schoolhouse	Outside APE	Eligible
First German Reformed Church	Adjacent to APE	Eligible
Freight Station	Outside APE	Eligible
Gate House to the John Taylor Johnston Estate	Outside APE	Local Landmark
Grace Episcopal Church	Outside APE	Listed
Grant Avenue/Plainfield South Station and North Shelter	Adjacent to APE	Eligible
H.C. Fuller House	Outside APE	Local Landmark
Harper, Hollingsworth and Darby Company Mill Complex	Adjacent to APE	Eligible
Littell-Lord Farmstead	Outside APE	Listed
Monney/Sockwell House	Adjacent to APE	Eligible
Nathaniel Drake House	Within APE	Listed
Plainfield Masonic Temple, Jerusalem Lodge No. 26 F & AM	Outside APE	Eligible
Plainfield Railroad Station	Outside APE	Listed
Plainfield Seventh Day Baptist Church	Outside APE	Local Landmark
Plainfield Seventh Day Baptist Church (now Plainfield Board of Education Administrative Offices)	Outside APE	Local Landmark
Saint Mary's Catholic Church Complex	Outside APE	Listed
Spencer / Hollingsworth House	Adjacent to APE	Eligible
Titsworth-Sutphen House	Outside APE	Local Landmark
Union Avenue Bridge (SI&A #2016059)	Within APE	Eligible
YWCA of Plainfield/North Plainfield	Adjacent to APE	Listed

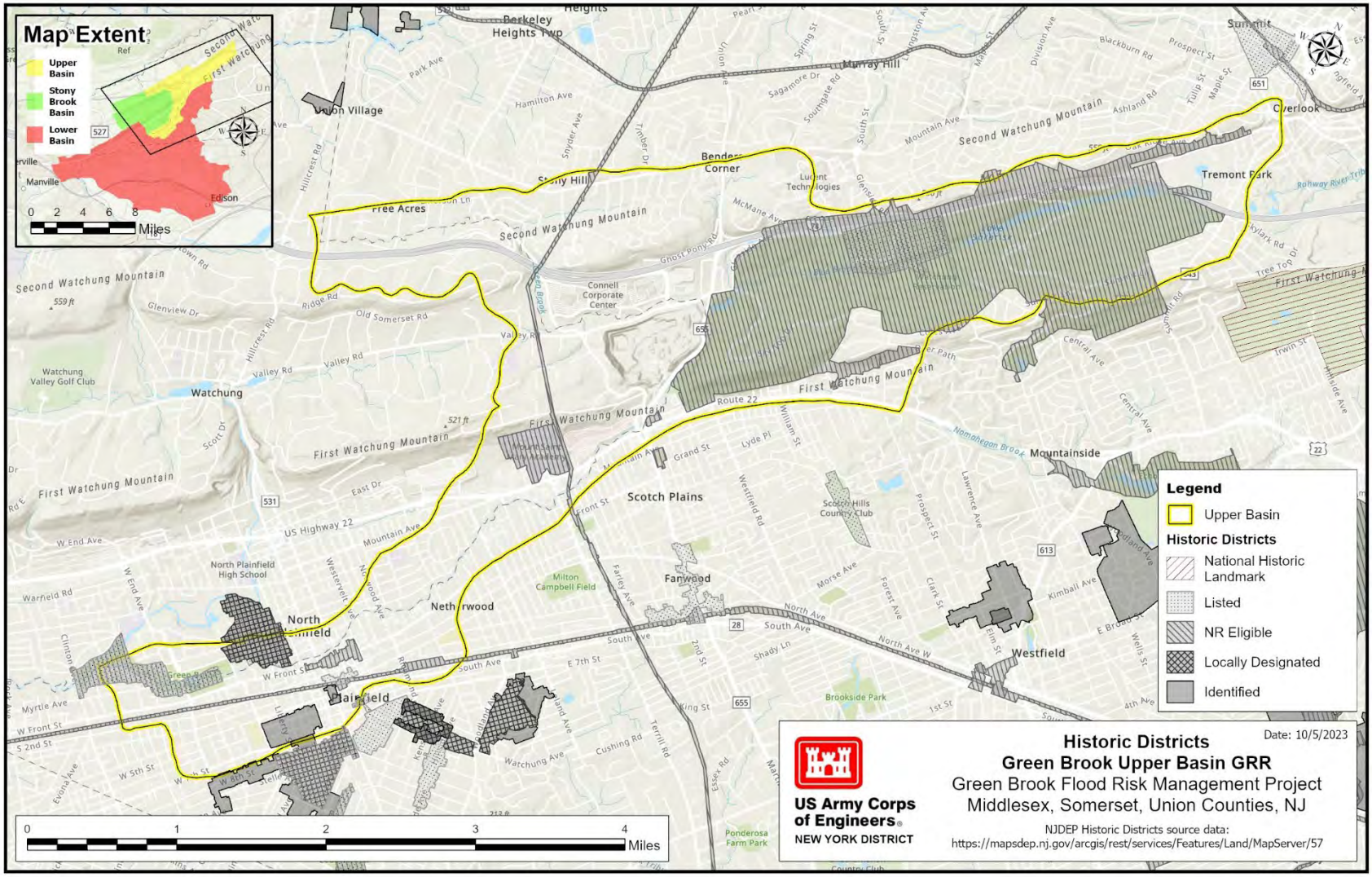


Figure 6: Historic Districts

3.5 Environmental Contamination

As required by the Corps Engineering Regulation 1165-2-132 (Hazardous, Toxic and Radioactive Waste Guidance for Civil Works, 26 June 1992), an assessment of hazardous, toxic, and radioactive waste (HTRW) has been conducted in the project area. HTRW are defined as any "hazardous substance" regulated under Comprehensive, Environmental Response, Compensation, Liability Act, 42 U.S.C. 9601 et seq, including "hazardous wastes" under Section 3001 of the Resources Conservation and Recovery Act, 42 U.S.C. 6921 et seq.

The District will conduct a file search utilizing the NJDEP "Known Contaminated Sites" list and US Environmental Protection Agency data bases, including the National Priority List, the Comprehensive Environmental Response, the Compensation and Liability Information System, the Toxic Release Inventory System, and the Resource Conservation and Recovery Information System. Field investigations may be conducted once the NED plan is identified.

3.6 New Jersey Green Acres Lands

The Green Acres Program, created in 1961 and administered by the New Jersey Department of Environmental Protection, provides funds for the State or local municipalities through financial assistance by the State, to acquire and maintain lands for the purposes of recreation.

Under the Green Acres program, lands obtained or developed with Green Acres funding and lands held by a local government for recreation and conservation purposes must permanently remain in use for recreation and conservation purposes. In general, lands subject to the rules of the program cannot be disposed of or diverted unless it can be demonstrated to the State that the modification will protect or enhance the use of the area. By definition, land that is used for purposes other than recreation and conservation is considered a "diversion" while a "disposal" is the selling, donating, or some other form of permanent transfer of possession of parkland.

Construction of flood risk management measures within Green Acres encumbered property may constitute as a diversion and could require some form of compensation in the form of replacement land, parkland improvements or compensatory funding.

A review of the Green Acres Program Open Space Inventory Database indicates the following locations within the Study Area of which all or portions were acquired with Green Acres Program funding and could potentially be affected by flood risk management alternatives being evaluated:

- Watchung Reservation
- Green Brook Park
- Nathanial Drake House Property

Table 7: Federal Laws

Legislative Title	U.S. Code/Other	Compliance
Clean Air Act (CAA)	42 U.S.C. §§ 7401-7671g	The General Conformity Rule of the CAA requires federal agencies to ensure that any federal actions occurring in areas designated as nonattainment or maintenance for any of the National Ambient Air Quality Standards do not interfere with a state's plans to meet national standards for air quality. As the Project Area is located in a region that is in non-attainment for ozone and carbon monoxide, an air quality analysis will be conducted to determine the level of project air emissions. Based upon the completed analysis, either a Record of Non-Applicability demonstrating that project emissions are considered to have an insignificant impact on the regional air quality, or a General Conformity Statement will be prepared. The analysis and corresponding document demonstrating compliance with the Clean Air Act will be included as an appendix to the NEPA document.
Clean Water Act	33 U.S.C. §§ 1251 et seq.	The Clean Water Act (CWA) is the principal law governing pollution control and water quality of the Nations' waterways, including wetlands. The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nations' waters. Sections of the CWA applicable to USACE Civil Works Projects include Sections 401 and 404. Compliance with this law includes preparation of a 404(b)(1) Evaluation which will be included as an appendix to the NEPA document.
Endangered Species Act of 1973 (ESA)	16 U.S.C. §§ 1531 et seq.	Species protected by the ESA that may occur within the study area include Indiana bat, northern long-eared bat, tri-colored bat (proposed listing) and bog turtle. The District will continue informal coordination with the U.S. Fish and Wildlife Service to comply with ESA requirements. Typical measures to protect endangered bat species that may use the area includes implementing a tree clearing restriction of 1 April through 30 September. As historical bog turtle habitat is located within the Watchung Reservation, presence/absence surveys may be required in the Preconstruction Engineering Design Phase.
Fish and Wildlife Coordination Act (FWCA)	16 U.S.C. § 661 et seq.	The FWCA requires Federal agencies to consult with the U.S. Fish and Wildlife Services and relevant state wildlife resources agencies whenever the waters of any stream or body of water are proposed or authorized to be modified (e.g. impounded, diverted, deepened, etc.). Alternative 4 will not require coordination with the USFWS under the FWCA as no waterways or wetlands are expected to be impacted. However, Alternatives 2 and 5 will require the preparation of a FWCA Report due to potential adverse effects to wetlands along with the Green and Blue

Legislative Title U.S. Code/Other		Compliance
		Brooks. The District will request the USFWS to prepare a FWCA Report to serve as compliance for this law once the TSP is identified. The document and associated correspondence will be included in an appendix in the NEPA document.
National Environmental Policy Act of 1969	42 U.S.C. §§ 4321-4347	The circulation of the NEPA document will fulfill the requirements of this act. Should an EA be prepared, the comment period for the draft EA will be 30 days. Should an EIS be prepared, the comment period for the draft EIS will be 45 days.
National Historic Preservation Act of 1966	16 U.S.C. §§ 470 et seq.	Federal agencies are required to evaluate the effects of a proposed action on cultural and historic resources. The District will coordinate with the State Historic Preservation Office and consult with local and/or regional historical societies and federally recognized Tribes to fulfill requirements of this act. All correspondence and associated documents will be included as an appendix to the NEPA document.

Table 8: Federal Executive Orders

Executive Order Title	Date Executed	Compliance
Executive Order 11990, Protection of Wetlands	May 24, 1977	Federal agencies are required to minimize adverse effects to wetlands and provide public disclosure of actions proposed in wetlands. Circulation of the EIS for public and agency review will fulfill the requirements of this order. Compliance with this EO including any mitigation requirements will be assessed and documented in the NEPA document.
Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	February 11, 1994	Federal agencies are required to identify and address the potential for disproportionately high and adverse environmental and human health effects on minority and low-income populations resulting from the agencies' programs, policies, and activities. Based on a review of Federal and State environmental justice web resources, Plainfield and North Plainfield are considered communities with EJ concerns. Therefore, further analysis of Environmental Justice and additional coordination with these municipalities will be conducted and documented in the NEPA document.
Executive Order 13175 Consultation and Coordination with Indian Tribal Governments	November 6, 2000	Federal agencies are required to establish regular and meaningful consultation and collaboration with federally-recognized Tribes and recognizes a government-to-government relationship with federally-recognized Tribes.

Table 9: State Laws

State Law Title		Compliance
Water Quality Certification (WQC)	33 USC §1341; N.J.A.C. 7:13 (N.J.S.A 58:16A)052	Water Quality Certification (Section 401 of the CWA) is delegated to the State for review and approval of compliance with State water quality standards. Although a permit will not be applied for until project construction, compliance with this law including any mitigation requirements will be assessed and documented in the NEPA document.
Flood Hazard Area Control Act (FHACA)	N.J.S.A. 58:16A-50 (N.J.S.A. 13:8A	The FHACA regulates activity in flood hazard areas and includes the requirement of providing compensatory mitigation for removing woody vegetation within the riparian zone at a 2:1 ratio. In the area where the Green Brook is designated as FW2-NT waters, the regulated riparian zone width is 50 feet while the riparian zone within the portion of the Green Brook designated as TM is 150 feet. Although a permit will not be applied for until project construction, compliance with this law including riparian mitigation requirements will be assessed and documented in the NEPA document.
Freshwater Wetlands Protection Act	N.J.A.C. 7:7A (N.J.S.A. 13:9B)	Regulates activities in state wetlands and surface waters (e.g. streams) and is associated with CWA Section 404. Although a permit will not be applied for until project construction, compliance with this law including any mitigation requirements will be assessed and documented in the NEPA document.
New Jersey Green Acres	N.J.A.C. 7:36	The Green Acres Program, provides funds for the State or local municipalities through financial assistance by the State, to acquire and maintain lands for the purposes of recreation. Compliance with this law including any mitigation requirements will be assessed and documented in the NEPA document.

4.0 ALTERNATIVES TO BE SCOPED AND POTENTIAL EFFECTS ON ENVIRONMENTAL and CULTURAL RESOURCES

For the purposes of the NEPA Scoping Document, this section will only describe the No Action Plan, Alternative 2a Detention Basin, Alternative 4 Nonstructural FRM Measures, , Alternative 5A Combination Plan 1, Alternative 5B Combination Plan 2, and Alternative 6 Critical Infrastructure Plan in detail. The other alternatives formulated and evaluated (Alternatives 1 & 3) are no longer in consideration as indicated on Table 1.

For the purposes of the preliminary screening of Alternatives 2, 4 5A, 5B and 6, the magnitude of effects to environmental and cultural resources are categorized as:

- No Effect (NE): no noticeable adverse effect on the environment would occur.

- Less Than Significant (LTS): The effects of the project do reach or exceed the defined threshold/criteria of significance, or the effects are not adverse. No mitigation measures are required for a LTS effect.

  This effect type is assumed when the area being affected by the action has undergone such significant anthropological modifications that the effect of the proposed action would not further decrease the function of the resource to a level where mitigation is necessary.

- Less Than Significant with Mitigation (LTSM): Mitigation measures in the form of avoidance, minimization, reducing the impact over time, and/or compensation are identified to reduce the potentially significant impact to less than significant level.

  An example of a LTSM impact is moving a floodwall/levee further out of wetlands to avoid or minimize adverse effects or compensating for the effects through the purchase of wetland mitigation credits or by creating, restoring, or enhancing wetlands either on site or off site.

- Significant and Unavoidable (SU): SU is applied to actions that cause substantial permanent adverse changes to any of the physical conditions within the area affected by the proposed action. Although implementation of mitigation measures may reduce the significance of the effects, they will not reduce the effect to a less than significant level. Unavoidable is defined as the impact is necessary in order for the proposed action to achieve its stated goal, in this case flood risk management.

4.1 No Action

The option of “No Action” must be considered as one of the alternatives in order to comply with the requirements of the NEPA. With the No Action Plan, it is assumed that no project would be implemented and forms the basis against which all other alternatives are measured. The No Action Plan would be selected in the event that no federal interest is determined.

4.2 Alternative 2a: Detention Basin, Channel Modification, and Bridge Raising

This alternative consists of: a) a detention basin along New Providence Road and the Green Brook in Watchung Borough and Berkeley Heights; b) approximately 12,400 feet of modifications to the Green Brook in Watchung Borough, Scotch Plains Township, North Plainfield Township and Plainfield City; and c) the removal and replacement of one bridge in downtown Plainfield (exact bridge to be determined) to reduce flow constriction (Figure5).

The proposed detention basin would consist of a 200-foot wide and 60 feet cast concrete dam and have an impoundment area ranging from 581 to 590-acre feet. The detention basin would manage flood risk up to the 1% annual exceedance probability (AEP) storm event (100-year storm). To facilitate fish passage, a rock ramp would be included in the dam design.

As the detention dam and impoundment area are within the current alignment of the New Providence Road, the District is evaluating realigning and elevating the road in order to maintain through traffic once the dam is constructed. Additionally, approximately 10 – 25 structures are located within the impoundment area. These structures would require measures to mitigate for flood impacts.

As per USACE Engineering Pamphlet 1110-2-18, *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment dams and Appurtenant Structures,* a minimum of 50 feet from the dam/embankment toe on either side of said dam/embankment must only consist of maintained lawn.

The degree to which the Green Brook will be modified will be determined later in the study should this alternative be identified as the TSP. However, modifications could include deepening and reshaping the channel into a trapezoidal configuration in order to increase flow capacity during storm events. Typically, with trapezoidal channel modifications, the stream banks are graded back to a slope of one vertical on two and a half horizontal (1:2.5). Existing substrate may be retained and used to reestablish the new channel bottom, and native vegetation may be installed along the upper portion of the stream bank. In certain locations where velocities may cause erosion and/or scour, installation of

riprap along the channel bottom and banks may be required. Native vegetation would be restored at the top of the bank where feasible after construction.

The removal and one bridge will be removed and replaced in order to prevent a constriction of flow that contributes to flooding. The specific bridge to be removed and replaced will be determined through additional hydrologic and hydraulic analyses should this alternative be selected as the TSP. The channel and bridge modification will provide flood risk management for a 4% AEP storm event (25-year storm).

Potential effects of Alternative 2a on select environmental resources are summarized in Table 10.

Table 10: Potential Effects of Alternative 2a

Resource	Potential Effect*	Explanation
Water Resources	SU	1. The proposed dam within the Green Brook will impede fish passage; a rock ramp to mitigate for this impact will be included in the design should this alternative be selected as the TSP. 2. Channel modifications would direct impact the Green Brook although adverse effects are expected to be mostly temporary. Natural features utilizing existing substrate, native vegetation and maintaining low flows comparable to existing conditions will be incorporated into the design to the greatest extent feasible.3. Adverse effects to water quality in the form of increased sedimentation and temperatures may result due to the loss of riparian vegetation and hydrological modifications caused by the detention dam. Mitigation to compensate for the filling of open water resources will be required.
Wetlands & Riparian Zone	SU	1. Proposed dam and channel modifications will result in a direct loss of riparian vegetation and wetlands requiring compensatory mitigation either through the purchase of credits from an approved state mitigation bank and/or creation/restoration or enhancement of wetlands and/or riparian zone elsewhere in the Study Area.

Fish & Wildlife/E&T Species	SU	1. Historically known occupied bog turtle habitat may be adversely affected by hydrological changes caused by detention dam impoundment area; surveys confirming habitat and potential presence of bog turtle may be required to determine potential conservation requirements. 2. A portion of the detention dam structure is located within the Natural Heritage Priority Area; surveys may be required to confirm the presence/absence of known endangered plant species to determine the extent of direct and indirect effects and potential mitigation requirements; 3. A tree clearing restriction from 15 March through 30 September will be implemented during construction to protect E&T bat species and migratory birds.
Cultural Resources	SU	1. The Watchung Reservation is archaeologically sensitive and several identified archaeological sites are located in the detention basin APE and will be adversely affected. It is likely that several unidentified resources are also located in the APE, for which mitigation may be required.
Green Acres/Recreation	SU	1. A portion of the detention basin is located within the Watchung Reservation resulting in direct impacts to Green Acres encumbered lands. Compensatory mitigation in the form of land replacement may be required.
Traffic	SU	1. Significant and unavoidable effects to traffic within the project area are currently assumed during construction of the detention dam and bridge removal/replacement should this alternative be selected as the TSP. The Draft NEPA document will include a traffic analysis to describe the extent of effects and mitigation measures taken (e.g. potential detours, phased construction, etc.) to minimize any adverse effects. 2. Traffic patterns and usage are anticipated to return to normal after construction with the exception of during flood events in which case the portions of Valley Road, Sky Top Road and New Providence Road within the impoundment area would be closed. The Draft NEPA document will include a traffic analysis to

		describe the extent of effects and mitigation measures taken (e.g. potential detours) to minimize any adverse effects.

* Potential environmental effects designations are preliminary in nature and subject to change as the additional analysis, field studies and public and agency coordination is conducted during the study.

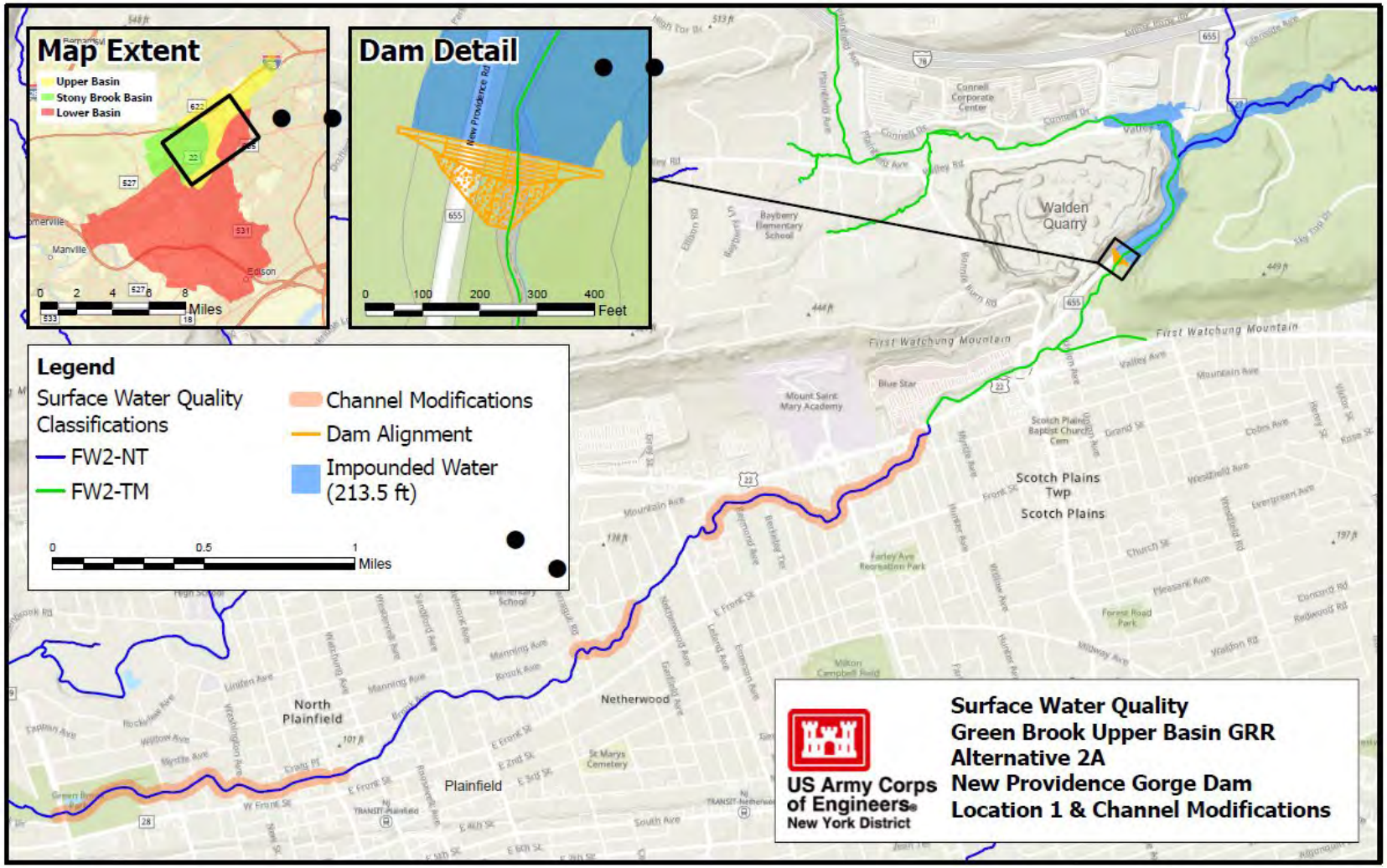


Figure 5: Alternative 2a Detention Basin, Channel Modification

4.3 Alternative 4: Nonstructural

Nonstructural features reduce flood risk by modifying the characteristics of the buildings and structures that are subject to floods or modifying the behavior of people living in or near floodplains. In general, nonstructural features do not modify the characteristics of floods nor do they induce development in a floodplain that is inconsistent with reducing flood risk. Some measures include removing buildings from floodplains by relocation or acquisition; floodproofing buildings; implementing flood warning and preparedness activities; and implementing floodplain regulation. The District is required to develop and present at least one action that is primarily nonstructural in nature. Nonstructural measures will also be considered for integration with structural features to maximize effectiveness of all alternatives.

Acquisition

Acquisition involves purchase and elimination of flood damageable structures, allowing for inhabitants to relocate to locations away from flood hazards. Lands can then be preserved for open space, recreation, or other uses. USACE policy requires that acquisition recommendations become mandatory and include the potential use of condemnation if necessary.

Elevation

Elevation is the process of raising a structure so that the main living area (main floor) will be above design flood elevation (Figure 5). In most cases, the process involves separating a structure from its foundation, raising it on hydraulic jacks, and holding it in place with temporary supports while a new or extended foundation is constructed below. The result is the living area is raised and only the foundation remains exposed to flooding. The new or extended foundation may consist of continuous walls or separate piers, posts, columns or pilings.

Figure 6: Example of Structure Elevation

Floodproofing

Floodproofing is the process of making any combination of structural or nonstructural changes or adjustments incorporated in the design, construction, or alteration of individual buildings or properties, with the purpose of reducing flood damages. There are two categories of floodproofing: wet floodproofing and dry floodproofing.

Wet floodproofing refers to the protection of a building in a manner that allows floodwaters to enter and exit freely, in such a way that internal and external hydrostatic pressures are equalized (Figure 8). This equalization of pressures reduces the loads imposed on a structure and reduces the probability of structural damage or failure. Basement utilities subjected to flooding may be relocated to an above-grade utility room, where space permits, otherwise, the basement utilities may be surrounded by a watertight barrier. Wet floodproofing is applicable to structures in areas with low flood velocities and flood heights that do not exceed three feet and may be limited in some structures based on the type or foundation of the structure.

Figure 7: Example of Wet Floodproofing

Dry floodproofing is the process of protecting a building by sealing its exterior walls and by providing removable flood shields at structure openings to prevent the entry of floodwaters (Figure 9). Dry floodproofing is practical only for buildings with structurally sound walls and only where flood depths are low: no more than 2 to 3 feet for wood frame structures, or 3 to 4 feet for brick with masonry foundation walls. USACE generally recommends dry floodproofing only on non-residential structures that will be evacuated prior to a storm event due to concerns associated with residual flood risk and safety in floodproofed structures.

Figure 8: Example of Dry Floodproofing

Surface Periphery Floodwalls or Ringwalls:

For structures that are too large to elevate (generally in excess of a 2,000 square-foot footprint), a concrete wall or levee (ringwall) may be considered around the structure's property, where space and aesthetics permit (Figure 10). Ringwalls are considered structural measures by Planning Bulletin 2016-01, but are considered and evaluated on a structure by structure basis similar to nonstructural measures and are therefore included in Alternative 4.

Figure 9: Example of Ringwalls

Potential effects of Alternative 4 on select environmental resources are summarized in Table 11.

Table 11: Potential Environmental Effects on Alternative #4

Resource	Potential Effect*	Explanation
Water Resources	NE	Non-structural measures are not implemented within a waterbody.
Wetlands & Riparian Zone	LTSM	No adverse effects are expected for wetlands. Depending on the nonstructural measure proposed and the proximity of the structure to the Green Brook, riparian vegetation may need to be cleared. Compensatory mitigation in the form of a purchase of credits from a state approved mitigation bank or the enhancement/restoration/creation of riparian zone off-site.
Fish & Wildlife/E&T Species	LTSM	Depending on the nonstructural measure proposed and the proximity of the structure to the Green Brook, vegetation may need to be cleared. To protect E&T bat species and migratory birds, a tree clearing restriction from 15 March through 30

		September will be implemented during construction.
Cultural Resources	LTSM	1. There are several NRHP historic districts and properties within the nonstructural APE that may be adversely affected by Alternative 4. Structures selected for nonstructural measures will need to be evaluated for NRHP eligibility. Mitigation may be required for structures determined potentially significant.
Green Acres/Recreation	NE	There are no structures within Green Acres properties that would be subject to nonstructural measures.
Traffic	LTS	A negligible increase in local traffic could occur during construction resulting from transportation of construction equipment and workers commuting to the project area. A traffic management plan would be developed as part of Planning Engineering Design Phase.

* Potential environmental effects designations are preliminary in nature and subject to change as the additional analysis, field studies and public and agency coordination is conducted during the study.

4.4 Alternative 5a: Combination Plan 1: Floodwalls & Levees, Channel Modification, Nonstructural Measures and Natural and Nature Based Features (NNBF)

This alternative consists of: a) Increasing storage capacity of Seeleys Pond located in the Watchung Reservation through dredging; b) approximately 2,664 feet of levees in Watchung Borough and Scotch Plains Township, c) approximately 20,370 feet of floodwalls in Scotch Plains Township, Plainfield City and North Plainfield Township; e) approximately 5,300 feet of modifications to the Green Brook channel through North Plainfield Township and City of Plainfield; f) wetland restoration and creation of a dry detention basin in the Green Brook Park in North Plainfield Township; and g) non-structural measures consisting of structure elevation, wet floodproofing and acquisition of properties and structural measures for individual structures including ringwalls in North Plainfield Township and Plainfield City (Figure 10).

The height of the floodwalls and levees will be determined later in the study should this alternative be identified as the TSP. In order to enhance aesthetics to the floodwalls, the concrete may be tinted and textured (Figure 11). Levees typically consist of an asphalt top to allow for maintenance vehicles with turfed side slopes (Figure 12). In accordance with EP Engineering Pamphlet 1110-2-18, *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment dams and Appurtenant Structures,* a minimum of 25 feet from either side of the floodwall/levee toe must only consist of maintained lawn in order to maintain and inspect the structure. It should also be noted that permanent structures such as sheds, garages, swimming pools are not permitted within the 25-foot zone.

The purpose of both the wetland restoration and dry detention basin is to enhance storage capacity of the floodplain. The dry detention basin within Green Brook Park is proposed in an area that is currently used as a soccer field. Passive recreational activities can be maintained within the dry detention basin. The proposed wetland restoration within Green Brook Park would involve restoring a currently degraded wetland that is managed through mowing. Restoring/creating wetlands would enhance park aesthetics and passive recreational activities such bird watching.

Channel modifications to the Green Brook would be similar to those modifications described in Section 4.2 for Alternative 2a. Non-structural measures would be similar to those described in Section 4.3 for Alternative 4.

Potential effects of Alternative 5a on select environmental resources are summarized in Table 12.

Table 12: Potential Effects of Alternative 5a

Resource	Potential Effect*	Explanation
Water Resources	LTSM	1. Channel modifications would cause direct impacts to the Green Brook although adverse effects are expected to be mostly temporary. Natural features utilizing existing substrate, native vegetation and maintaining low flows comparable to existing conditions will be incorporated into the design to the greatest extent feasible. 2. The dredging of Seeley's Pond will mostly cause temporary adverse effects which will be minimized through the implementation of best management practices.
Wetlands & Riparian Zone	LTSM	1.Permanent wetlands and riparian zone impacts requiring compensatory mitigation may result from construction of levees/floodwalls. 2. Enhancing/restoring currently degraded wetlands to provide flood storage will result in positive benefits.
Fish & Wildlife/E&T Species	LTSM	1.Adverse effects from channel modifications are anticipated to be temporary in nature. Natural features incorporated into the design are expected to minimize long term adverse effects. 2.Dredging Seeleys Pond is expected to have minimal effects. Fish will be relocated prior to initiating dredging activities.3. A tree clearing restriction from 15 March through 30 September will be implemented during construction to protect

		E&T bat species and migratory birds. 4. Enhancement/restoration of existing degraded wetlands is expected to have positive benefits to these resources.
Cultural Resources	LTSM	1. The Seeley's Pond APE is archaeologically sensitive and unidentified archaeological deposits may potentially be adversely affected. The levee and floodwall measures may potentially impact NRHP properties in the APE. Mitigation measures are anticipated.
Green Acres/Recreation	LTS	1.Proposed detention basin and enhanced wetlands within Green Brook Park are not expected to change its use. The enhanced wetlands could improve aesthetics and recreational use. 2. Restricted use of Seeley's Pond to park patrons is expected during dredging operations; however long-term effects are not expected. Dredging may enhance the recreational use of Seeley's Pond.
Traffic	LTS	A negligible increase in local traffic could occur during construction resulting from transportation of construction equipment and workers commuting to the project area. A traffic management plan would be developed as part of Planning Engineering Design Phase. A long-term positive effect could be the reduction in road closures resulting from flood events.

* Potential environmental effects designations are preliminary in nature and subject to change as the additional analysis, field studies and public and agency coordination is conducted during the study.

Figure 10: Alternative 5a: Combination Plan 1

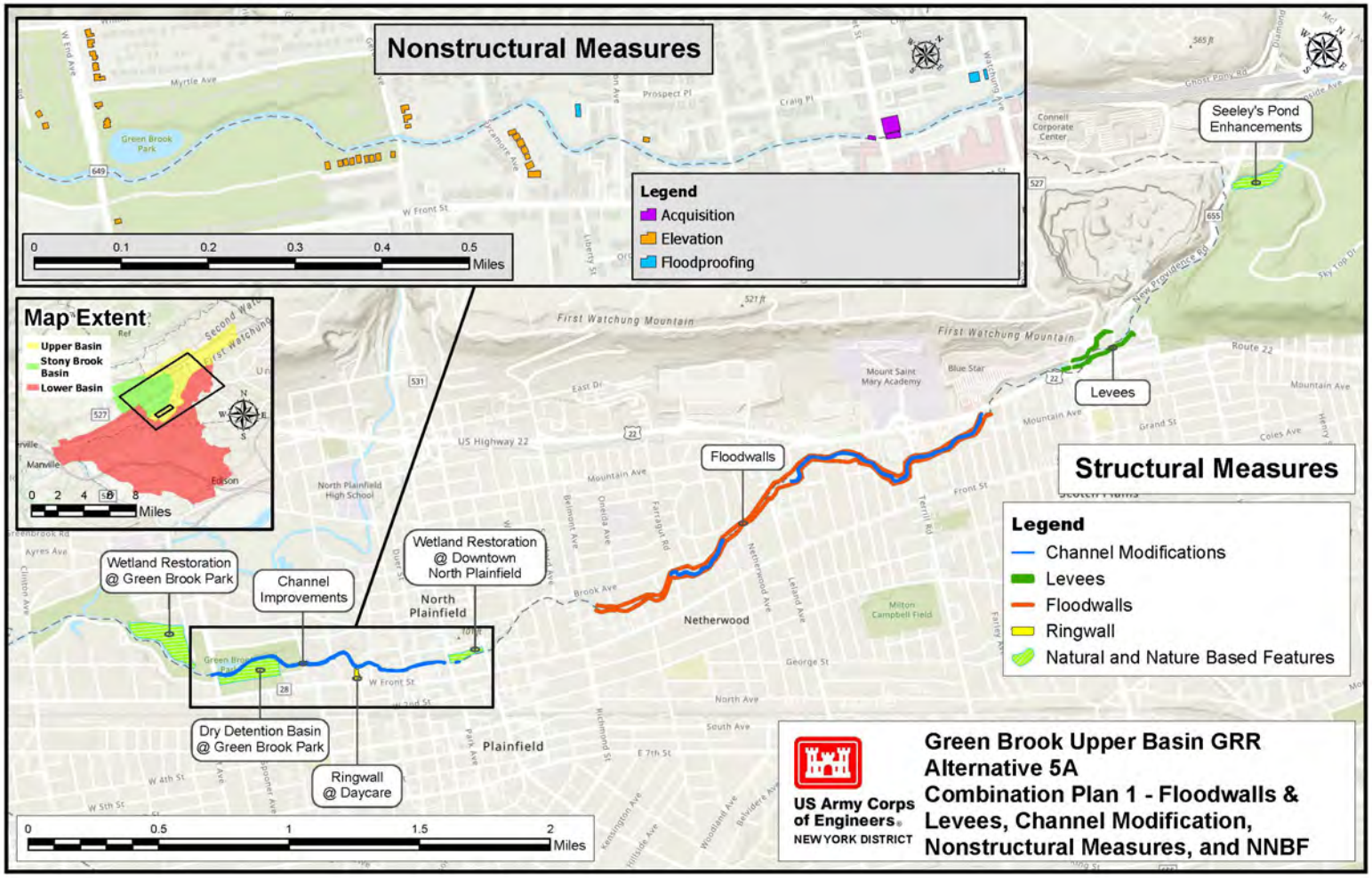


Figure 11: Floodwall, Middlesex Borough, NJ

Figure 12: Levee, Bound Brook Borough, NJ

4.5 Alternative 5b: Combination Plan 2: Channel Modification, Nonstructural, and NNBF

This plan consists of: a) increasing storage capacity of Seeleys Pond located in the Watchung Reservation through dredging; b) approximately 12,400 feet of channel modifications along the Green Brook in Watchung Borough, Berkeley Heights, Scotch Plains, North Plainfield, and Plainfield; c) wetland restoration and creation of a dry detention basin in the Green Brook Park in North Plainfield Township; and d) non-structural measures consisting of structure elevation, wet floodproofing and acquisition of properties and structural measures for individual structures including ringwalls in North Plainfield Township and Plainfield City (Figure 12). Potential effects of Alternative 5b on select environmental resources are summarized in Table 13.

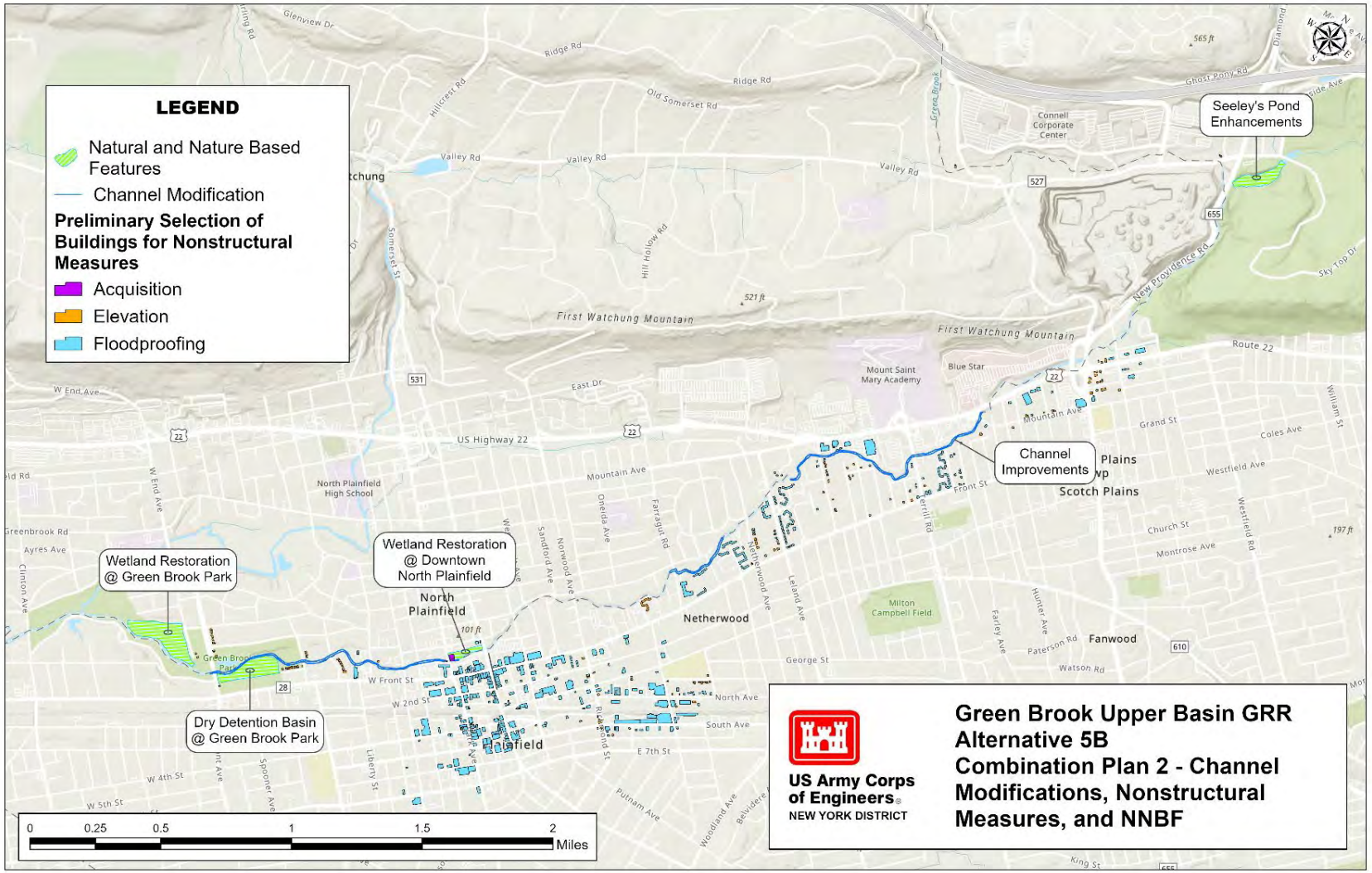
Table 13: Potential Environmental Effects of Alternative 5b

Resource	Potential Effect*	Explanation
Water Resources	LTSM	1. Channel modifications would cause direct impacts to the Green Brook although adverse effects are expected to be mostly temporary. Natural features utilizing existing substrate, native vegetation and maintaining low flows comparable to existing conditions will be incorporated into the design to the greatest extent feasible. 2. The dredging of Seeley's Pond will mostly cause temporary adverse effects which will be minimized through the implementation of best management practices.
Wetlands & Riparian Zone	LTSM	1.Permanent wetlands and riparian zone impacts requiring compensatory mitigation may result from construction of levees/floodwalls. 2. Enhancing/restoring currently degraded wetlands to provide flood storage will result in positive benefits.
Fish & Wildlife/E&T Species	LTSM	1.Adverse effects from channel modifications are anticipated to be temporary in nature. Natural features incorporated into the design are expected to minimize long term adverse effects. 2.Dredging Seeleys Pond is expected to have minimal effects. Fish will be relocated prior to initiating dredging activities.3. A tree clearing restriction from 15 March through 30 September will be implemented during construction to protect E&T bat species and migratory birds. 4. Enhancement/restoration of existing degraded

		wetlands is expected to have positive benefits to these resources.
Cultural Resources	LTSM	1. The Seeley's Pond APE is archaeologically sensitive and unidentified archaeological deposits may potentially be adversely affected. The channel modifications may potentially impact NRHP properties in the APE. Mitigation measures are anticipated.
Green Acres/Recreation		1.Proposed detention basin and enhanced wetlands within Green Brook Park are not expected to change its use. The enhanced wetlands could improve aesthetics and recreational use. 2. Restricted use of Seeley's Pond to park patrons is expected during dredging operations; however long-term effects are not expected. Dredging may enhance the recreational use of Seeley's Pond.
Traffic	LTS	A negligible increase in local traffic could occur during construction resulting from transportation of construction equipment and workers commuting to the project area. A traffic management plan would be developed as part of Planning Engineering Design Phase. A long-term positive effect could be the reduction in road closures resulting from flood events.

* Potential environmental effect designations are preliminary in nature and subject to change as additional analysis, field studies and public and agency coordination is conducted during the study.

Figure 13: Alternative 5b: Combination Plan 2



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