Environmental Assessment

Neptune Basin Expansion Project

DR-4574-NJ-002

Township of Stafford, Ocean County, New Jersey

February 2024

FEMA

Federal Emergency Management Agency
Region 2
U.S. Department of Homeland Security
26 Federal Plaza, New York, NY 10278

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ACRONYMS AND ABBREVIATIONS

AA	Action Area
AC	American Chaffseed
APE	Area of Potential Effect
BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
FWPA	Freshwater Wetlands Protection Act
HMGP	Hazard Mitigation Grant Program
KBR	Knieskern's Beaked-rush
NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NJAC	New Jersey Administrative Code

NJDEP	New Jersey Department of Environmental Protection
NJSA	New Jersey Statutes Annotated
NLEB	Northern Long-eared Bat
NPDES	New Jersey Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PM	Particulate Matter
RGA	Richard Grubb and Associates, Inc.
SHPO	State Historic Preservation Officer
SP	Swamp Pink
TCB	Tricolored Bat
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Authority

On August 2, 2020, Tropical Storm Isaias caused storm damage to several areas across the State of New Jersey. On December 11, 2020, Tropical Storm Isaias was declared a major disaster. The declaration authorized the U.S. Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) to aid the State of New Jersey according to federal disaster declaration DR-4574-NJ. Stafford Township applied to the FEMA Hazard Mitigation Grant Program (HMGP) through the New Jersey Office of Emergency Management. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Office of Emergency Management is the direct recipient of the grant, and Stafford Township is the subrecipient.

The proposed project consists of flood risk reduction activities at the intersection of Route 72 and Neptune Drive in Stafford Township, Ocean County, New Jersey (**Figure 1-1**). Flood risk reduction activities include expansion of the stormwater storage by constructing a new stormwater basin across Route 72 and upgrading the current stormwater basin adjacent to where the new basin would be located. The proposed project will reduce flood risk and property damage by increasing stormwater storage capacity within the existing drainage system.

FEMA prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and FEMA guidance for implementing NEPA (DHS Instruction 023-01-001 and FEMA Instruction 108-01-1). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of the EA is to analyze the potential environmental impacts of the Proposed Action. FEMA used the findings in this EA to determine whether to prepare an environmental impact statement or to issue a finding of no significant impact.

1.2 Background

The proposed project is located in Stafford Township in Ocean County, New Jersey. The project area is within and adjacent to the Ocean Acres subdivision along Route 72 and Neptune Drive. Route 72 is a coastal evacuation route for Stafford Township and the coastal communities that border the township to the east.

The existing Neptune Basin services the western portion of the Ocean Acres neighborhood and has a drainage area of 350 acres with more than 1,500 existing residential dwellings that drain to this area. Flooding impacts approximately 105 acres of the drainage area (**Figure 1-2**). Stafford Township states that the basin cannot currently meet the stormwater needs of the area because the project area flooded five times in 2019, with the frequency of flooding increasing compared

to before 2019. The floods caused property damage to more than 250 properties and posed public safety concerns. Flood waters submerged vehicles, required the extraction of people from their homes and vehicles, and uncovered stormwater inlets in the street. Flood waters damaged utilities, requiring electric and gas line shutoff. In addition, flooding resulted in inundation of Route 72, the coastal evacuation route for Stafford Township, and coastal communities that border the township to the east.

During the 5-year storm event, water elevations reached 1.6 feet above the elevation of stormwater inlet structures. The largest flooding event occurred on July 6, 2019, when almost 6 inches of rain fell in 1 to 2 hours. During this event, up to 4 feet of water was observed on streets. Cars were flooding and found floating in the streets; two individuals required rescuing; multiple properties were damaged, including utility damage.

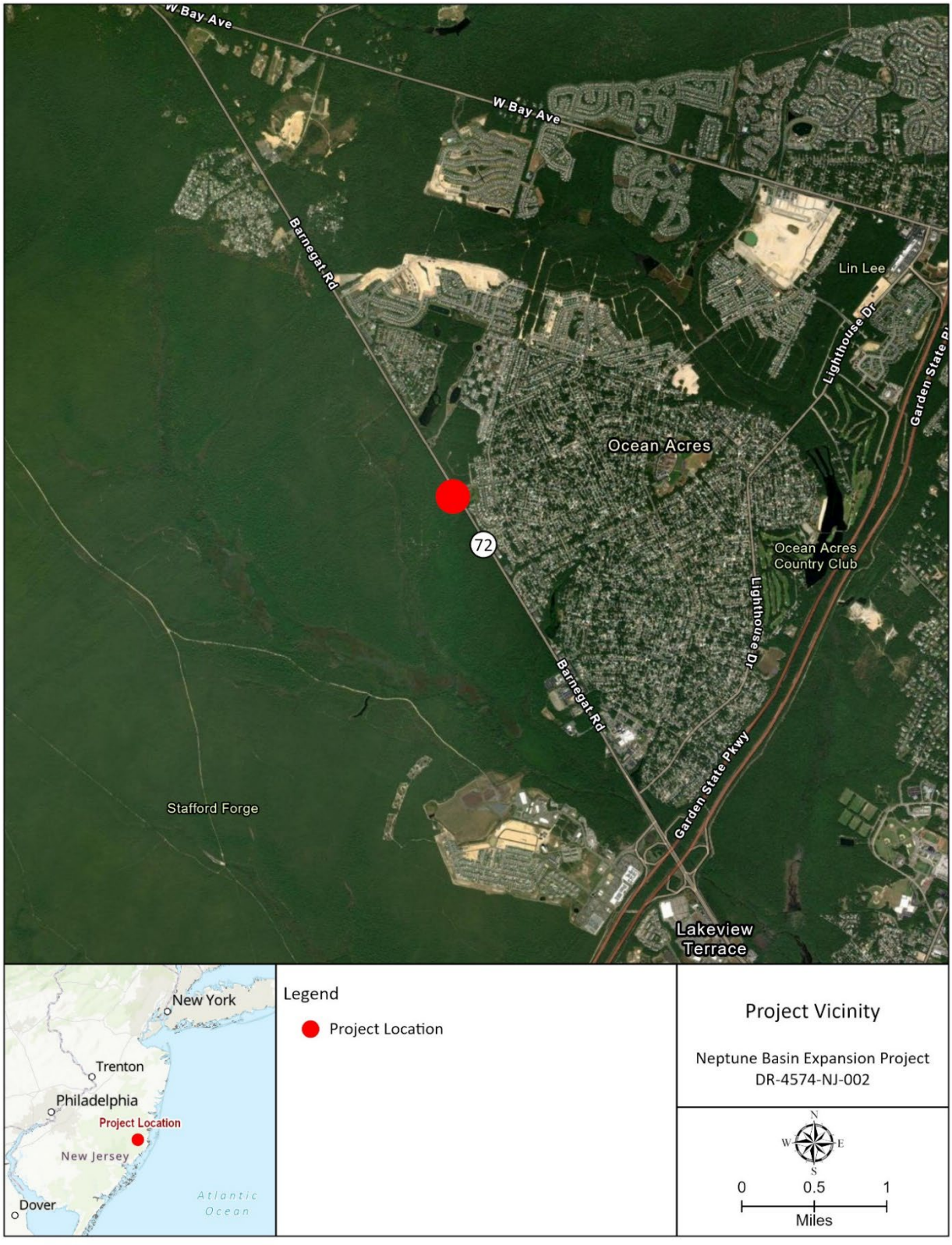

Figure 1-1. Project Vicinity

Figure 1-2. Project Impact Area

2.0 PURPOSE AND NEED

The objective of FEMA's HMGP is to provide technical and financial assistance to state, local and tribal governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. This grant funding is available after a presidentially declared disaster.

The purpose of the Proposed Action is to reduce flood risk from stormwater runoff within the western part of the Ocean Acres section of Stafford Township due to insufficient stormwater drainage capacity. Floodwaters repeatedly inundated buildings and roadways, impacting access to buildings, emergency services, and utilities. The project is needed to reduce damage to structures within the Ocean Acres neighborhood, aiding in the prevention of loss of life and property. It is also required to reduce flooding and closure of Route 72 which is an evacuation route for the coastal area of Stafford Township, ensuring the safety of residents of the Township and surrounding areas.

3.0 ALTERNATIVES

This section describes the No Action alternative, the Proposed Action and alternatives that were considered but dismissed.

3.1 No Action Alternative

Under the No Action alternative, there would be no federal financial assistance provided for the construction of a new stormwater basin and associated infrastructure. The existing Neptune Basin would continue to lack the necessary stormwater storage, resulting in the continued flooding of the Ocean Acres neighborhood during storm events. The consequences of continued flooding would include possible closures of Route 72, which serves as an emergency evacuation route, damage to structures and property within the Ocean Acres neighborhood, and an increased threat to the safety of Township residents. This alternative would not meet the overall purpose and need.

3.2 Proposed Action

Under the Proposed Action, Stafford Township would increase stormwater storage an additional 1.5 million cubic feet by improving and expanding Neptune Basin through the construction of a new stormwater infiltration basin and storm drain structures to alleviate flooding. This includes the construction of a new stormwater basin, a trench drain for the current basin, and new box culverts that provides water flow between the current and new basin. The total area of disturbance for construction of the Proposed Action is approximately 9.64 acres. **Figure 3-1** depicts the proposed project elements and staging area.

The new stormwater basin would be constructed across Route 72 from the existing Neptune Basin. The new basin would be 12 feet deep with an area of approximately 6.6 acres, located within Township owned Pinelands designated forest. The east side of the new basin would function as a 240-foot emergency auxiliary spillway, with an elevation of 81.2 feet. The site of the new basin would be cleared of vegetation, which consists of deciduous trees, conifers, and shrubs. Twelve planting islands, or isolated areas of trees, totaling 1.3 acres would be installed within the new basin. Herbaceous plantings would be installed around the basin on the slopes (approximately 1.6 acres) and would consist of approximately 15 pounds per acre of an herbaceous "no mow" seed mixture. The remainder of the cleared area (approximately 3.6 acres) would not be revegetated and would be laid with K-5 sand, a sand commonly used in drainage projects because of its high percolation rate, allowing for greater drainage to allow excess storm water to filter into the ground quicker. **Figure 3-2** provides the proposed vegetation layout.

The new basin would be connected to the existing basin beneath State Route 72 via the construction of double box culverts under Route 72. The two 4-foot by 9-foot box culverts would have a total length of 148 feet and a vertical disturbance of approximately 20 feet. In the existing basin, the proposed double inlet structure of the box culverts would be fitted with a trash rack to block floating debris from entering the culverts. On the new basin side of State Route 72, the box culverts would have a junction chamber with two maintenance holes for maintenance access located just before the outlet structure. The outlet structure in the new basin would be fitted with a trash rack and sluice gate, a hydraulic device that controls flow. A riprap-lined, preformed scour hole would be constructed on the other side of the sluice gate to dissipate stormwater flows entering the new basin.

A gravel access drive for the basin would be located at the intersection of Route 72 and Neptune Drive along the new basin and ending at the proposed box culvert. On the west side of the access drive, a stormwater drainage system would be installed at the edge of Route 72. The stormwater drain would connect to 155 feet of 15-inch-diameter reinforced concrete piping running east, which then would connect to a maintenance hole on the west side of the proposed box culverts. From the maintenance hole, the drainage system would consist of 44 feet of 15-inch reinforced concrete pipe that would run south and discharge into the new basin at the proposed outlet structure. See **Figure 3-3** for details.

The project also includes several pieces of supporting infrastructure to assist with the increase in stormwater capacity. An existing stormwater drain, located near the intersection of Gaff Road and Neptune Drive, would be replaced with a 50-foot-long, 2-foot-wide concrete trench drain that would connect to a 49-foot-long, 48-inch-diameter reinforced concrete pipe. This pipe would discharge into a riprap apron within the existing Neptune Basin. A separate, new, stormwater drain would be installed on the southern side of the intersection of Leeward Road and Neptune Drive. The new drain would connect to the existing stormwater chamber below Neptune Drive via a 15-foot, 24-inch-diameter reinforced concrete pipe.

3.2.1 Equipment, Staging and Access

Construction of the Proposed Action would require the use of vehicles and heavy machinery. Equipment and materials would be staged in the southeast corner of the new basin as outlined in **Figure 3-1.** Access routes to the project area include State Route 72 and Neptune Drive.

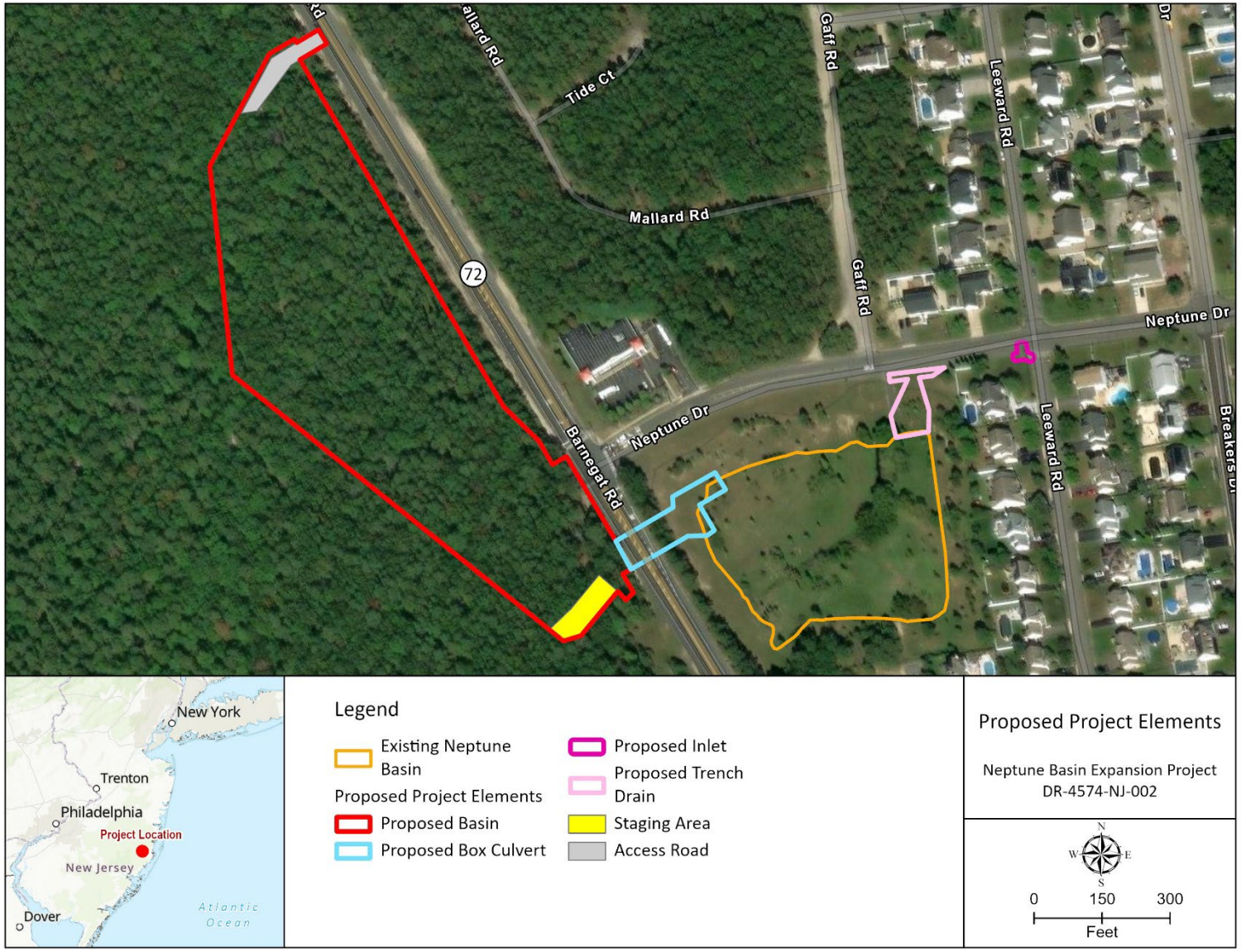

Figure 3-1 Proposed Project Elements

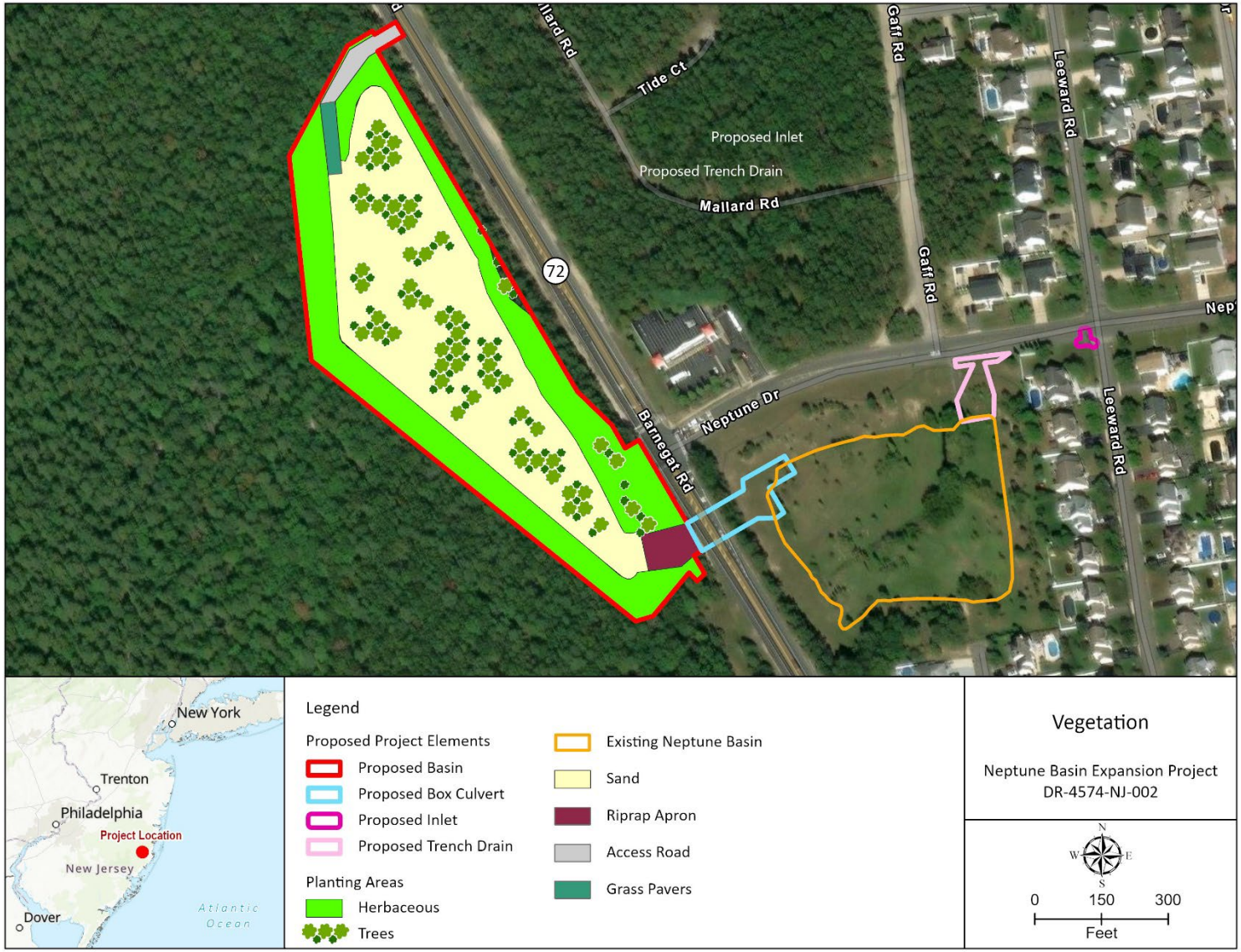

Figure 3-2 Project Area Plantings

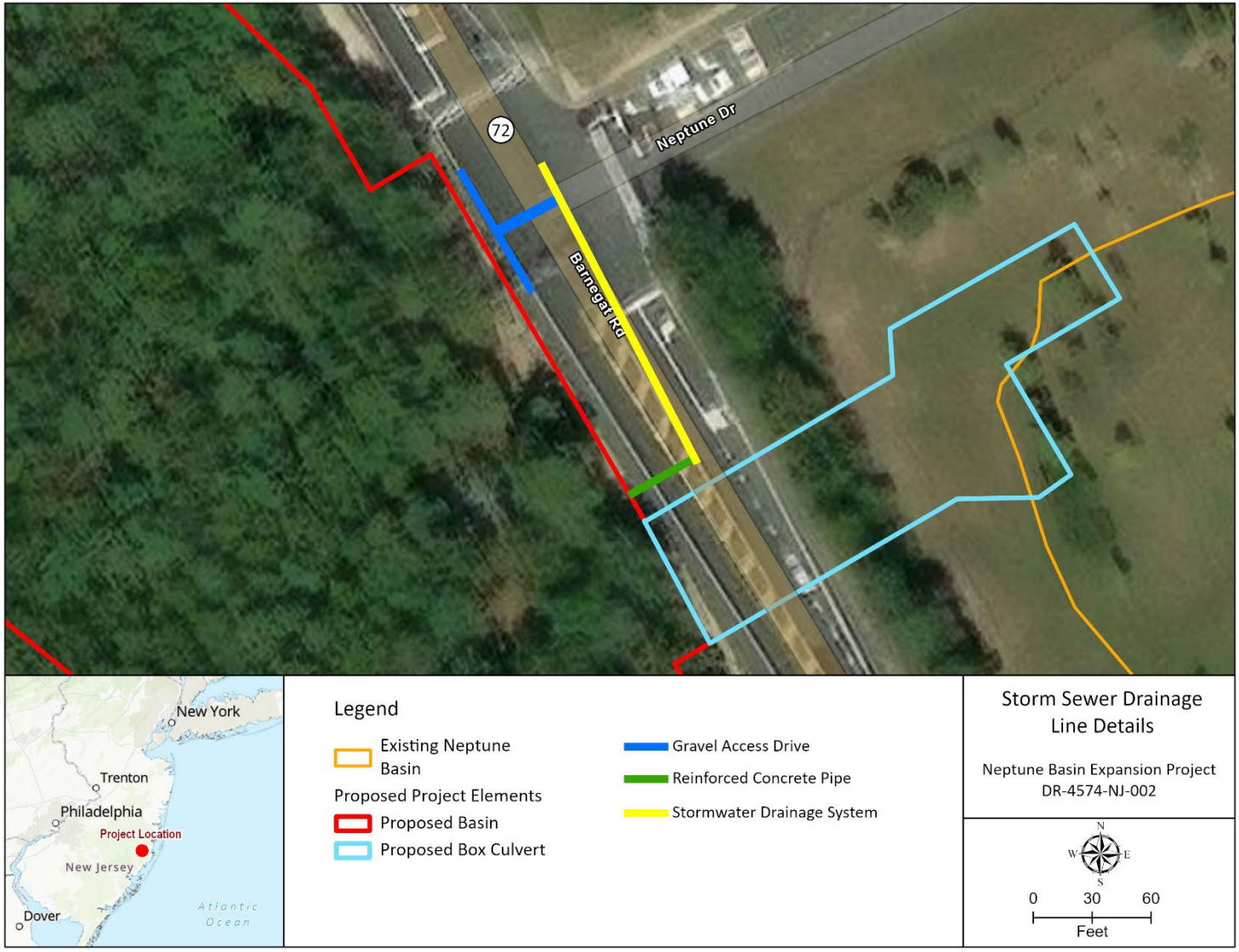

Figure 3-3 Storm Sewer Drainage Line Details

3.3 Additional Action Alternatives Considered and Dismissed

3.3.1 Acquiring Land northwest of Neptune Basin – with pumps

Under this alternative, Stafford Township would acquire and construct a stormwater basin on approximately 8 acres of vacant lands to the immediate northwest of Neptune Basin. The land is approximately 10 to 20 feet higher in elevation than the existing Neptune Basin and would require a pump station and piping to transfer collected stormwater to the alternative basin. This alternative was dismissed because of the complexity and cost of constructing new pump stations. The acquisition of privately owned land for this alternative could require protracted negotiations with no guaranteed success and no cost controls. As such, this alternative would achieve similar results to the Proposed Action at a substantially greater cost and unknown outcome of property acquisitions. Therefore, this alternative was dismissed from further consideration.

3.3.2 Acquiring Land Northwest of Neptune Basin – Gravity Fed

Under this alternative, the same 8 acres discussed in the previous section would be acquired by Stafford Township. However, this alternative would rely solely on capturing overland stormwater runoff without installing piping or a pump station to deliver stormwater from Neptune Basin to the alternative basin. This basin would only intercept about 16 percent of the stormwater runoff from the drainage area, and Neptune Basin would continue to exceed stormwater capacity. This alternative would not meet the purpose and need. Therefore, this alternative was dismissed from further consideration.

3.3.3 Increasing Infiltration at Ocean Acres

Under this alternative, Stafford Township would increase infiltration in the Ocean Acres residential development via installation of perforated recharge pipes in existing roads. To create the equivalent storage of the Proposed Action, the Township would need to install 200,000 linear feet of 36-inch perforated piping. The cost of the pipe alone would not be cost-effective. The alternative would achieve similar results to the Proposed Action at a substantially greater cost. Therefore, this alternative was dismissed from further consideration.

3.3.4 Adopting Additional Ordinances

Stafford Township would adopt additional ordinances regulating impervious coverage and stormwater runoff to address flooding. Such ordinances would only reduce the volume of future stormwater runoff and would not address the volume of stormwater runoff currently flooding Neptune Basin. The alternative would not address existing stormwater capacity issues and thus would not adequately meet the purpose and need. Therefore, this alternative was dismissed from further consideration.

3.3.5 Basin Expansion via Adjacent Acquisition

This alternative would expand Neptune Basin through the acquisition of adjacent land on Leeward Road. This would require acquiring six existing residentially developed lots immediately adjacent to the basin. This alternative would enlarge the basin, increasing the storage capacity by 300,000 cubic feet. This increase is approximately 30 percent of the storage provided by the Proposed Action. Additionally, the acquisition of the privately owned land for this alternative could require protracted negotiations with no guaranteed success and no cost controls. The alternative would achieve less than the Proposed Action at a substantially higher cost. Therefore, this alternative was dismissed from further consideration.

3.3.6 Redirecting runoff to Ocean Acres

Under this alternative, stormwater runoff would be redirected to the Ocean Acres residential development in Barnegat Township. The Ocean Acres Barnegat portion of the 350-acre drainage area that flows into Neptune Basin is at the highest point of the drainage area. Based on topography and minimum pipe slope requirements, redirecting an appreciable amount of stormwater runoff across the drainage ridge line would require burying the pipe 40 feet underground. The required depth would be unsafe and would not be considered good engineering practice. Therefore, the alternative is not considered technically feasible and is dismissed from further consideration.

3.3.7 Multiple Small Stormwater Basins

Under this alternative, Stafford Township would site several smaller stormwater basins through Ocean Acres. The Township identified 25 vacant lots upstream of Neptune Basin, most of which are privately owned. Stafford Township estimated the 25 individual basins could provide approximately 68 percent of the storage that the Proposed Action would provide. Additionally, the acquisition of privately owned land for this alternative could require protracted negotiations with no guaranteed success and no cost controls, which could be costly. The alternative would not fully meet the purpose and need and would achieve less than the Proposed Action at a greater cost. Therefore, this alternative was dismissed from further consideration.

3.4 Summary of Alternatives

The subrecipient has dismissed the following alternatives from further consideration because they do not meet cost-effectiveness or technical feasibility or would not adequately address existing flooding concerns.

- Acquiring land northwest of Neptune Basin with pumps
- Acquiring land northwest of Neptune Basin with gravity fed drainage

- Increasing infiltration at Ocean Acres
- Adopting Additional Ordinances
- Basin Expansion through acquisition of adjacent land
- Redirecting runoff to Ocean Acres
- Multiple small stormwater basins

FEMA and the subrecipient are carrying forward the no action and the proposed action alternatives for further evaluation in this document.

4.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION

This section describes the environment potentially affected by the alternatives, evaluates potential environmental impacts and recommends measures to avoid or reduce those impacts. When possible, quantitative information is provided to establish potential impacts; the significance of potential impacts is based on the criteria listed in **Table 4.1**. The study area generally includes the project area and access and staging areas needed for the alternatives. If the study area for a particular resource category is different from the project area, the appropriate subsection will provide descriptions of the differences.

Table 4-1. Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
No Impact	The resource area would not be affected and there would be no impact.
None/Negligible	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, though the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional-scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary to reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

4.1 Resources Not Affected and Not Considered Further

The No Action alternative or the Proposed Action would not affect the following resources (**Table 4-2**) because they do not exist within the project area or the alternatives would have no effect on the resource. These resources have been removed from further consideration in this EA.

Table 4-2. Resources Eliminated from Further Consideration

Resource Topic	Criteria
Geology	Excavation associated with the project would not reach the depth of geology or bedrock (New Jersey Department of Environmental Protection [NJDEP] 2016).
Wild and Scenic Rivers Act	According to the National Wild and Scenic River System database (U.S. Forest Service 2023), the closest National Wild and Scenic River is the Great Egg Harbor Wild and Scenic River, which is approximately 25 miles southwest of the proposed project area. Thus, the alternatives would have no effect on wild and scenic rivers.
Coastal Resources	The project is not located within the New Jersey coastal zone set forth in the Coastal Area Facility Review Act New Jersey Administrative Code (NJSA) 13:19-1. Therefore, there would be no impact on coastal resources.
Coastal Barrier Resources Act	The project is not within or near a coastal barrier resource system or otherwise protected area; therefore, there would be no impact on Coastal Barrier Resource Act areas.
Essential Fish Habitat	According to the National Oceanic and Atmospheric Administration Inland Essential Fish Habitat mapper, the project and impact area are not located in or near Essential Fish Habitat (National Oceanic and Atmospheric Administration 2023).
Cumulative Effects	There are no other mitigation or construction activity beyond maintenance activities planned within or near the project area. All other proposed mitigation plans are east of the Garden State Parkway and the Proposed Action would have no effect on these projects (Stafford Township 2023a).

4.2 Topography, Soils, and Farmland Soils

The New Jersey Soil Erosion and Sediment Control Act of 1975 was established to protect the environment from land disturbances associated with urban development in the State (New Jersey Statutes Annotated [NJSA] 4:24-39 et seq.). The act establishes standards for the control of erosion and sedimentation that must be followed during any project disturbing 5,000 square feet or more, including the preparation of a Soil Erosion and Sediment Control Plan.

The topography of the project area is generally flat with 0 to 5 percent slopes ranging from approximately 81 to 91 North American Vertical Datum of 1988 (NAVD88) (U.S. Department of Agriculture [USDA] 2023). Soils include unconsolidated sediments that are sandy, droughty, and lack nutrients, specifically, downer loamy sands (USDA 2023) (**Figure 4-1**).

The Farmland Protection Policy Act (FPPA) requires federal agencies to minimize the unnecessary conversion of farmland into nonagricultural uses. The portion of the project area north of Route 72 is considered an Urban Area by the U.S. Census Bureau; therefore, the FPPA does not apply there. The portion of the project area south of Route 72 is just outside of the Urban Area boundary, and soils (downer loamy sands) have been identified as farmland of statewide importance (USDA 2023). Although identified as farmland of statewide importance, the project area is adjacent to an Urban Area and downer loamy sands are characterized by lack of nutrients (USDA 2023).

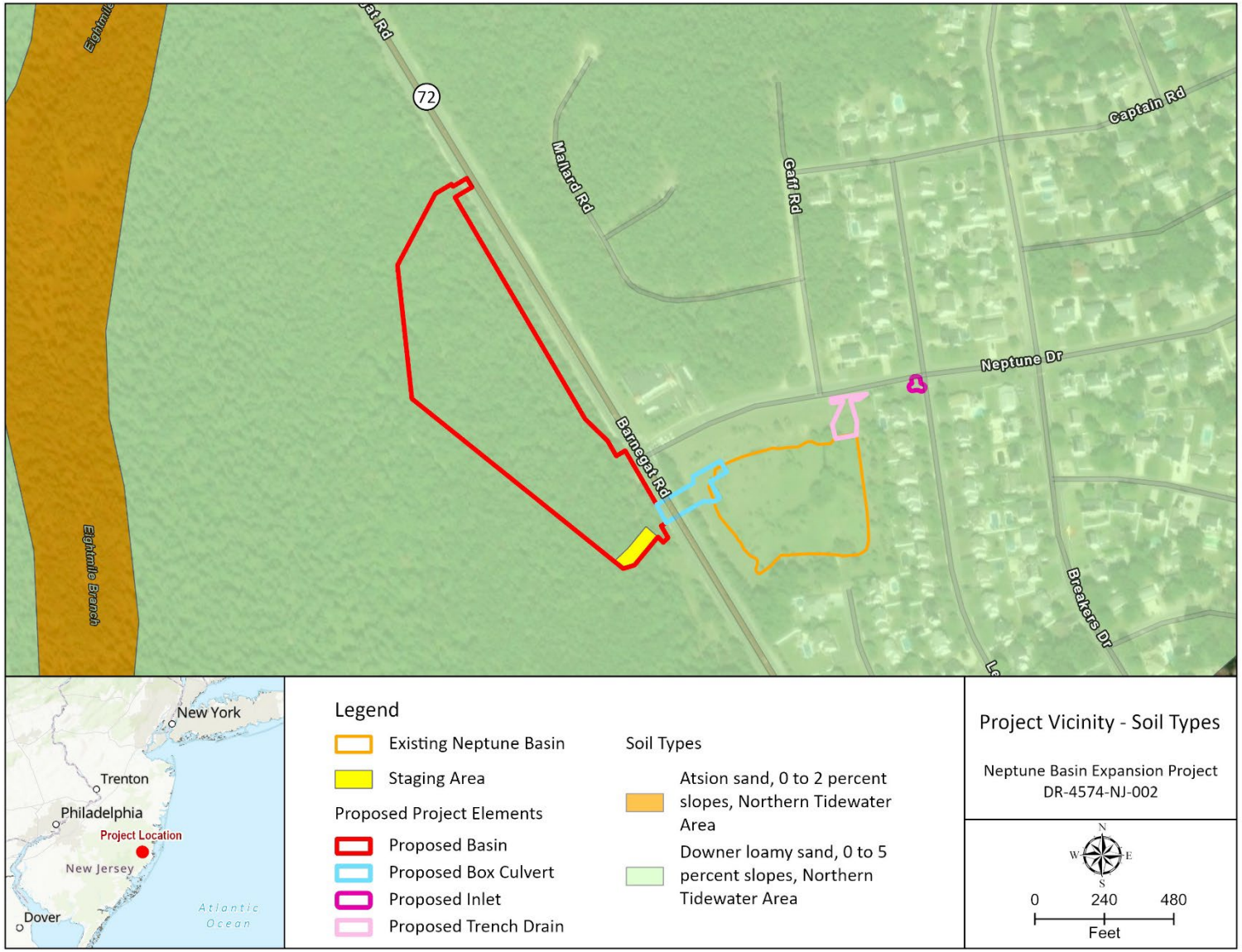

Figure 4-1 Soil Map

4.2.1 No Action Alternative

Under the No Action alternative, no changes to topography or soil disturbance would occur, including farmland soils. Therefore, there would be no short-term adverse effect on topography, soils, or farmland soils. In the long-term, the risk of flooding would not be reduced. Receding floodwaters can disturb soils, including farmland soils; however, the receding floodwaters likely would not cause topographic changes. Therefore, there would be no long-term adverse effect on topography from soil disturbance associated with continued flooding. There would be a minor long-term adverse effect on soils, including farmland soils, from soil disturbance associated with continued flooding.

4.2.2 Proposed Action

Under the Proposed Action, topography would be altered by excavating existing soils for the existing Neptune Basin improvements and the new basin. A total of 9.6 acres of soil disturbance would occur; excess soils would be disposed of off-site. Soil erosion associated with construction, including farmland soils, would be minimized by using silt fencing and the development of a Soil Erosion and Sediment Control Plan in accordance with the New Jersey Soil Erosion and Sediment Control Act of 1975. The project area would be partially revegetated with seed mix and native plants; islands within the basin would be planted with trees; and riprap would be placed by outlet structures to mitigate erosion and scour. Therefore, there would be a minor short-term adverse effect on topography and soils from excavation and other ground-disturbing activities. In the long-term, the reduced risk of flooding would minimize flood waters disrupting and eroding soils; replanting and riprap near outlet structures would stabilize topography and soils. There would be an approximate loss of 6.6 acres of farmland of statewide importance because of the construction of the new basin. The Farmland Conversation Impact Ration form was submitted to USDA on 10/13/2023 and they responded with a No Impact response on 10/16/2023. Therefore, there would be a minor long-term beneficial effect from the reduced risk of flooding and associated soil disturbance and no impact on FPPA soils.

4.3 Air Quality

The Clean Air Act, as amended, requires the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for six pollutants harmful to human and environmental health, including ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead and particulate matter (PM) (including PM that is less than 10 micrometers in diameter and fine particulate matter less than 2.5 micrometers in diameter) (EPA 2016a). Fugitive dust, which is considered a component of PM, can also affect air quality. Fugitive dust is released into the air by wind or human activities, such as construction, and can have human and environmental health impacts. Federally funded actions in nonattainment and maintenance areas for these pollutants are subject to conformity regulations (40 CFR Parts 51 and 93) to ensure that emissions of air

pollutants from planned federally funded activities would not cause any violations of the NAAQS, increase the frequency or severity of NAAQS violations or delay timely attainment of the NAAQS or any interim milestone. According to the EPA Green Book (2023a), Ocean County is currently not in attainment for 8-hour ozone 2008 and 2015 (EPA 2023a).

4.3.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in emissions from the use of gas- and diesel-powered equipment. Fugitive dust would not be created from construction-related ground disturbance. Therefore, there would be no short-term impact from the No Action alternative. Flood waters inundation on Route 72 likely would continue, requiring detours that could increase vehicle emissions, because vehicles would be traveling further to reach their destination. Repair activities for damage to Route 72 and nearby residences could require the temporary use of gas- and diesel-powered equipment that would result in emissions. Ground-disturbing activities may be required for the repairs that could result in fugitive dust. Therefore, there would be a negligible, recurring, long-term, and adverse effect on air quality from vehicle and equipment emissions resulting from flood-related repairs and additional vehicle emissions generated by road detours. There would be no new permanent air emissions sources.

4.3.2 Proposed Action

Under the Proposed Action, construction activity could generate fugitive dust, a source of PM, from ground-disturbing activities, as well as temporary air pollutants from the use of gas and diesel-powered equipment (EPA 2022). Vehicular delays associated with lane closures on Route 72 could increase vehicle emissions. PM, nitrogen dioxide, and carbon monoxide would be the primary air pollutants of concern during construction from the use of equipment, which could worsen ozone if the pollutants react with sunlight (EPA 2023b). The operation of construction equipment would follow local, state, and federal regulations. All construction equipment would be required to meet current EPA emissions standards (EPA 2016a). Therefore, the Proposed Action would have minor short-term adverse effects on air quality from temporary equipment and vehicle use. In the long-term, the risk of flooding and associated air pollutant emissions from the closure of Route 72 and flood-related repair would be reduced. Therefore, there would be a minor long-term beneficial effect on air quality from the reduction of emissions associated with road inundation and repair equipment.

A general conformity applicability analysis would be completed by the subrecipient for the Proposed Action to determine the potential levels of nonattainment criteria pollution that may be emissions from the project. The general conformity analysis would ensure the Proposed Action would not exceed the annual de minimis levels for criteria pollutants under general conformity regulations.

4.4 Climate Change

Climate change refers to changes in the Earth's climate caused by a general warming of the atmosphere. Its primary cause is emissions of greenhouse gases, including carbon dioxide and methane. Climate change can affect species distribution, temperature fluctuations, and weather patterns. EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, directed federal agencies to review and address regulations that conflict with national objectives, such as reducing greenhouse gas emissions, strengthening climate resilience, and prioritizing environmental justice and public health.

Climate change in New Jersey is expected to result in shifting rainfall patterns that would likely increase the intensity of floods (EPA 2016b). Annual precipitation in New Jersey has increased by 5 percent to 10 percent in the last century; annual precipitation and the frequency of heavy rain events are expected to continue increasing (EPA 2016b).

4.4.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could increase greenhouse gas emissions from the use of gas- and diesel-powered equipment. Therefore, there would be no impact on climate change in the short-term. In the long-term, the risk of flooding would not be reduced. Climate change could increase adverse flood-related effects on people and property located within the floodplain, depending on the extent of increased precipitation. The use of gas and diesel equipment for flood-related repairs would increase greenhouse gas emissions during repair activities. Flood-related detours of State Route 72 would temporarily increase emissions because travel distance would increase. However, no permanent sources of emissions would be created. Therefore, there would be a minor reoccurring long-term adverse effect on climate change from the use of emissions-producing equipment for flood-related repairs and detours. There could be a minor long-term adverse effect on people and property from climate-related increases in flooding and associated damage, depending on the extent of increased precipitation.

4.4.2 Proposed Action Alternative

Under the Proposed Action, the use of gas and diesel equipment for construction would increase greenhouse gas emissions temporarily. Given that climate change is a global issue, emissions associated with the construction of the Proposed Action would be negligible at the global scale. Therefore, these emissions would have a negligible adverse effect on climate change in the short-term. No permanent sources of emissions would be created as part of the Proposed Action. In the long-term, the risk of flooding and associated damage to people and property would be reduced. Thus, emissions from flood-related repair activities and detours would be reduced. Therefore, there would be a negligible long-term beneficial effect from reduced emission increases

associated with flood-related repair activities and road detours. Because the Proposed Action would be designed to the current 10-year storm, future increases in storm-related water runoff may cause the new drainage system to become over-capacitated again.

4.5 Surface Waters and Water Quality

The Clean Water Act (CWA) of 1977, as amended, regulates the discharge of pollutants into water, with sections falling under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into Waters of the United States. Under the National Pollutant Discharge Elimination System, EPA regulates both point and nonpoint pollutant sources, including stormwater and stormwater runoff, via a permitting system. Activities that disturb one or more acres of ground are required to apply for a New Jersey Pollutant Discharge Elimination System (NPDES) permit through NJDEP, as authorized by EPA.

CWA Section 303(d) requires states to identify waters that do not or are not expected to meet applicable water quality standards with current pollution control technologies alone. Under Section 303(d), states must develop Total Maximum Daily Loads (TMDLs) for impaired waterbodies. A TMDL establishes the maximum amount of a pollutant or contaminant allowed in a water body and serves as a planning tool for restoring water quality. NJDEP is responsible for compliance with Section 303(d) of the CWA.

Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93–523) authorizes EPA to designate an aquifer for special protection under the sole source aquifer program if the aquifer is the sole or principal drinking water resource for an area and if its contamination would create a significant hazard to public health. The sole or principal source is defined as supplying 50 percent or more of the drinking water for a particular area. No commitment for federal financial assistance may be provided for any project that EPA determines may contaminate a sole source aquifer such that a significant hazard to public health is created.

Relevant state regulations include the New Jersey Ground Water Quality Standards (New Jersey Administrative Code [NJAC] 7:9C), New Jersey Surface Water Quality Standards (NJAC 7:9B), New Jersey Water Pollution Control Act (NJSA 58: 10A-1 et seq.), New Jersey Stormwater Management Rules (NJAC 7:8), Pollutant Discharge Elimination System Rules (NJAC 7:14A) and New Jersey Stormwater Management Rules (NJAC 7:8). These regulations maintain the quality of ground and surface water by controlling pollution and ensuring that new developments meet stormwater management design standards.

The closest waterway to the project area is the Eightmile Branch Tributary, an intermittent stream bed that conveys water to Mill Creek (hydrologic unit code HUC02040301130020). The Eightmile Branch Tributary is not a waterway monitored for water quality; however, Mill Creek

is listed as an impaired water body in the New Jersey 2020 303(d) list because of altered pH (EPA 2020). The U.S. Geological Survey (USGS), National Water Information System has collected groundwater data approximately 0.5 miles from the project area (Site Number 394415074174301); groundwater has been identified approximately 35 feet below the ground surface (U.S Geological Survey [USGS] 2022). The project is located in the New Jersey Coastal Plain Aquifer System, a sole source aquifer (EPA 2023c).

4.5.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in the discharge of pollutants, such as oil leaks or spills from equipment, or erosion of soils into surface waters or groundwater. Therefore, there would be no short-term adverse effect on water quality because there would be no risk of pollutant or sediment discharge. In the long-term, the risk of flooding would not be reduced. Receding flood waters could transport debris and pollutants from Route 72 and adjacent property into the Eightmile Branch Tributary. Equipment used for flood-related repairs could result in the accidental release of pollutants or sedimentation from equipment-related ground disturbance. The potential transport or release of pollutants or sediments could adversely affect conformance with TMDLs in Mill Creek or the New Jersey Coastal Plain Aquifer System. Therefore, there could be negligible to minor long-term adverse effects on water quality, depending on the frequency and extent of flooding and associated repairs.

4.5.2 Proposed Action

Under the Proposed Action, no work would occur in waterways; excavation would not reach the depth of groundwater. Construction activities have the potential to temporarily disrupt sediment and release contaminants. Potentially released contaminants from construction activity could enter into the Eightmile Branch tributary and connected waterways, which would result in difficulty reaching TMDL standards in Mills Creek. Contaminants could impact the New Jersey Coastal Plain Aquifer System through spills peculating through the soil. However, given the distance of the project site from Mills Creek and the depth of the sole source aquifer, adverse effects are not expected. A Soil Erosion and Sediment Control Plan would be developed to minimize the potential mobilization of sediment. Construction best management practices (BMPs) associated with the NPDES permitting requirements and NJDEP Flood Hazard Area Individual Permit (1530-13-0005.2 LUP230001) would be implemented to minimize potential impacts. CWA permits are not expected; however, the subrecipient would coordinate with NJDEP to confirm. Therefore, the Proposed Action would have a negligible short-term adverse effect on water quality with the implementation of the Soil Erosion and Sediment Control Plan, BMPs, and following NPDES permit conditions. In the long-term, the risk of flooding, and associated water quality impacts from debris and pollutants transported via receding flood waters, would be reduced. Therefore, there would be a minor long-term beneficial effect on

water quality from the reduced risk of receding floodwaters transporting pollutants to nearby waterways.

4.6 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to consider alternatives to work in wetlands and limits potential impacts on wetlands if there are no practicable alternatives. FEMA regulation 44 CFR Part 9, Floodplain Management and Protection of Wetlands, sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding activities in a wetland unless no practicable alternatives are available. Activities that disturb wetlands also may require a permit from USACE under Section 404 of the CWA.

The Freshwater Wetlands Protection Act (FWPA) (NJSA Code 13:9B-1 et seq.) protects wetlands from development but authorizes disturbances under certain circumstances. The FWPA establishes the procedures by which the Department of Environmental Protection reviews applications for permits to conduct regulated activities in wetlands and/or their associated transition areas (a transition area is a "buffer" area of up to 150 feet wide adjacent to a freshwater wetland). The FWPA and the FWPA rules (NJAC 7:7A-3) also provide that a person or organization proposing to engage in a regulated activity in a freshwater wetland or transition area may request a letter of interpretation from the Department of Environmental Protection that states the official determination of whether there are any freshwater wetlands, transition areas, and/or State open waters present on a site or part of a site.

According to a review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory, there are no wetlands or riverine features within the project area (USFWS 2023b). The nearest wetland feature is a freshwater forested/shrub wetland that is fed from the existing Neptune Basin, approximately 550 feet to the south of the proposed project area (**Figure 4-2**).

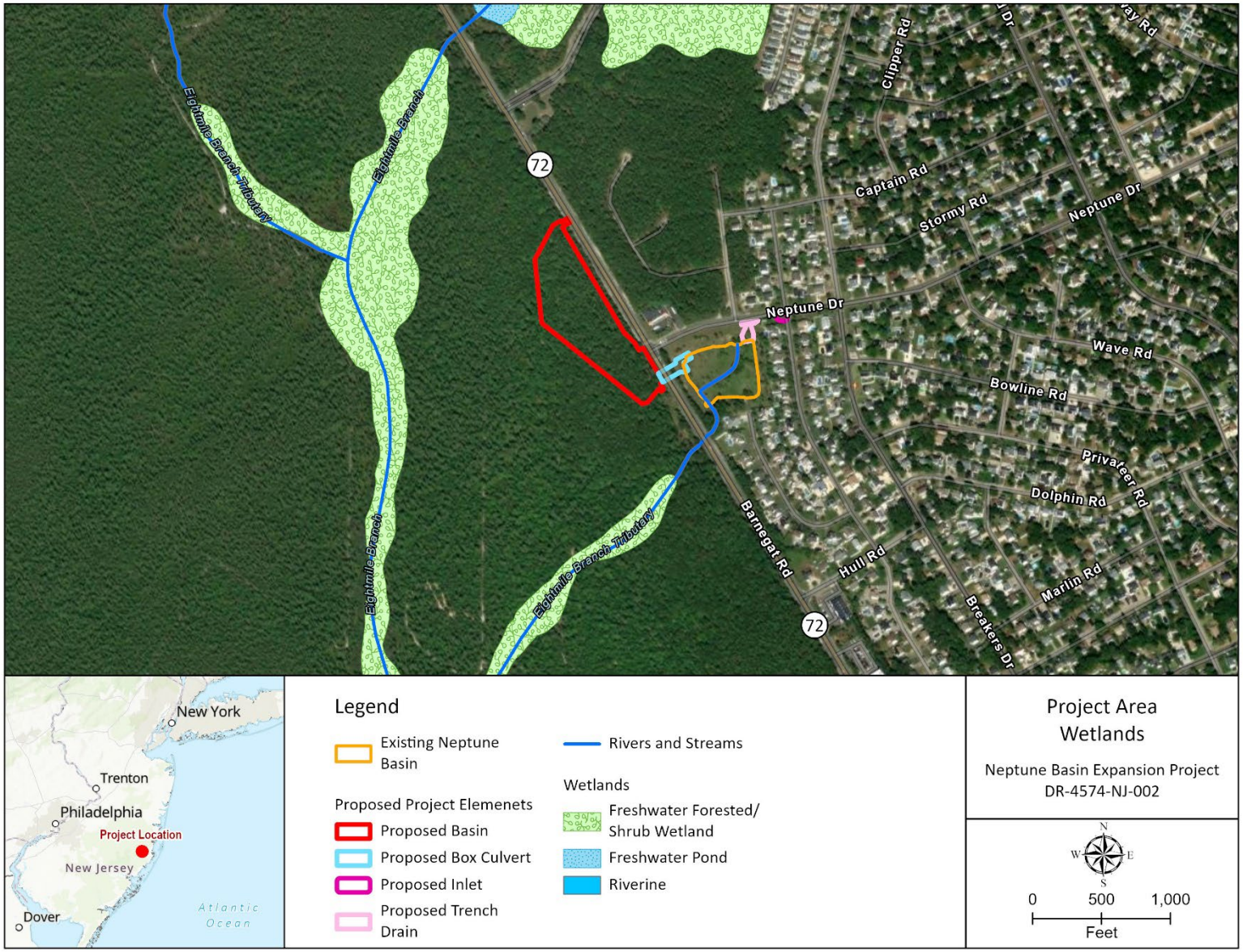

Figure 4-2. Wetlands

4.6.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in the discharge of pollutants, such as oil leaks or spills from equipment, into wetlands. Therefore, there would be no short-term adverse effect on wetlands. In the long-term, receding flood waters could transport debris and pollutants from Route 72 and adjacent property into nearby wetlands. In addition, stormwater from the existing Neptune Basin that is discharged into an unnamed tributary of Mill Creek and its adjacent wetlands would continue to cause erosion and sedimentation along the tributary when the existing basin west of Route 72 is above capacity and stormwater flows are high. Therefore, the No Action alternative would have a minor adverse impact on wetlands in the long-term caused by flood-related sedimentation and pollution.

4.6.2 Proposed Action

Construction of the Proposed Action could adversely impact adjacent wetlands through increased sedimentation from erosion during construction activities. However, the NJDEP Flood Hazard Area Individual permit (permit number 1530-13-0005.2 LUP230001) has conditioned that, before the commencement of site clearing, grading, or construction on-site, the subrecipient would install a sediment barrier at the limits of disturbance. All sediment barriers and soil erosion control measures would be kept in place and maintained throughout the duration of construction, until such time that the site is stabilized. Therefore, there would be no short-term impact on wetlands from the implementation of the Proposed Action. In the long-term, the Proposed Action would reduce the high-flow stormwater surge that is currently discharged from Neptune Basin through the two existing discharge pipes under State Route 72 to the unnamed tributary and the resulting soil erosion and sedimentation. By providing temporary storage and detention of stormwater, the Proposed Action would reduce the transport of contaminants to the unnamed tributary and improve surface water quality in the tributary and its connected wetlands. Therefore, the Proposed Action would have long-term minor beneficial impacts on wetlands.

4.7 Floodplains

EO 11988, Floodplain Management requires federal agencies to avoid, to the extent possible, short- and long-term, adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. FEMA regulations (44 CFR Part 9.7) use the 1-percent-annual-chance flood as the minimal area for floodplain impact evaluation. FEMA follows an eight-step decision-making process to ensure compliance with EO 11988, which requires the evaluation of alternatives to the use of a floodplain before funding the action.

According to FEMA’s flood insurance rate map 34029C0485G (dated December 15, 2021), the project area is located in Zone X, an area of minimal flood hazard.

4.7.1 No Action Alternative

The project is not located within a floodplain; therefore, there would be no short-term or long-term impact on floodplains.

4.7.2 Proposed Action

The project is not located within a floodplain; therefore, there would be no short-term or long-term impact on floodplains.

4.8 Vegetation

The project area is in the State-designated Pinelands Forest Area, protected under the Pinelands Protection Act of 1979 administered by the New Jersey Pinelands Commission. The Pineland Protection Act required the development of a Comprehensive Management Plan for the New Jersey Pine Barrens. The New Jersey Pine Barrens is a 1.1-million-acre area that covers portions of seven counties and occupies 22 percent of New Jersey's land area. The pine barrens comprise pine-oak forests, cedar swamps, and surface and groundwater resources that provide a unique habitat for a wide array of rare, threatened, and endangered plant and animal species (NJDEP 2023).

The project area comprises vegetated upland coniferous forests with greater than 50 percent crown closure and upland mixed forest with more than 50 percent deciduous trees and 10 to 50 percent crown closure (NJDEP 2023). Pitch pine (*Pinus rigida*) generally dominate the coniferous and mixed forests in the Pinelands Area, but the area also includes shortleaf pine (*Pinus echinata*), blackjack oak (*Quercus marilandica*), black oak (*Quercus velutina*), chestnut oak (*Quercus prinus*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*) and post oak (*Quercus stallata*). Common understory shrubs in the Pinelands Area include lowbush blueberry (*Vaccinium vacillans*) and black huckleberry (*Gaylussacia bacata*) (State of New Jersey Pinelands Commission 1980).

Section 4.10 discusses the federally listed plant species that may occur near the proposed project areas**.**

Invasive Species

EO 13112 requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. The New Jersey Invasive Species Strike Team, a nonprofit organization works to protect natural lands, with their full abundance and diversity of native plants and animals, from future damage through coordinated strategic invasive species management. The strike team lists 50 widespread invasive plants and 99 emerging invasive plants as occurring within the state.

Examples of widespread invasive plants include tree-of-Heaven (*Ailanthus altissima*), Japanese barberry (*Berberis thunbergia*), Japanese honeysuckle (*Lonicera japonica*), and garlic mustard (*Alliaria petiolate*) (New Jersey Invasive Species Strike Team 2022).

4.8.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in impacts on vegetation; therefore, there would be no short-term effect on vegetation. However, the risk of flooding within the project area would not be comprehensively reduced, and anticipated future flood events would result in varying degrees of erosion and/or sediment deposition in vegetated areas along existing watercourses. Existing vegetation in areas subject to substantial erosion and/or sediment deposition would be killed or damaged and likely replaced by rapidly colonizing species, which are often invasive. Therefore, the No Action alternative would have long-term, negligible to minor impacts on vegetation within the project area.

4.8.2 Proposed Action

Under the Proposed Action, approximately 6.6 acres of mature forests and associated vegetation would be removed to construct the new basin. Approximately 50 percent of the trees slated for removal at the site are greater than 4 inches in diameter at breast height. Therefore, there would be a short-term moderate adverse impact due to vegetation loss in the project area.

In the long-term, the site would be revegetated with seed mix and native plants. The planting islands within the new basin would be planted with tree species listed in **Table 4.3.** The herbaceous plantings would be made up of species listed in **Table 4-4**. **Figure 3-2** provides the vegetation layout**.** Because approximately 3.6 acres of vegetation would be removed and not replanted, there would be a minor long-term adverse impact on vegetation. However, the Proposed Action would reduce flooding within the project area, subsequently reducing erosion and/or sedimentation deposition in vegetated areas that allow invasive species to colonize. Therefore, the Proposed Action would have a minor long-term beneficial impact on invasive species.

Table 4-3. Tree Plantings

Common Name	**Scientific Name**	**Size**	**Quantity**
Shade Trees			
Sweetgum	Liquidambar styraciflua	2–2½ inches	10
		1¼–1¾ inches	5
		1–1¼ inches	13

Common Name	Scientific Name	Size	Quantity
Black gum	Nyssa sylvatica	2–2½ inches	5
		1¼–1¾ inches	5
		1–1¼ inches	11
White Oak	Quercus alba	2–2½ inches	8
		1¼–1¾ inches	5
		1–1¼ inches	17
Scarlet Oak	Quercus coccinea	2–2½ inches	15
		1¼–1¾ inches	5
		1–1¼ inches	25
Black Birch	Betula lenta	1¼–1¾ inches	10
		1–1¼ inches	15
Southern Red Oak	Quercus falcata	1¼–1¾ inches	5
Black Oak	Quercus velutina	1¼–1¾ inches	10
Evergreen Trees			
Atlantic White Cedar	Chamoecyparis thyoides	5–6 feet	10
American Holly	Ilex opaca	5–6 feet	26
Eastern Red Cedar	Juniperus virginiana	4–5 feet	15
Pitch Pine	Pinus rigida	4–5 feet	25
Ornamental Trees			
River Birch	Betula nigra	7–8 feet	32
White Dogwood	Cornus florida	5–6 feet	16
Sweetbay Magnolia	Magnolia virginiana	5–6 feet	20

Note – Shade tree sizes are denoted in calipered measurements 6 inches above the soil line. Evergreen and oriental tree sizes are denoted in height above the soil line.

Table 4-4. Herbaceous No Mow Seeding Mixture

Common Name	Scientific Name	Percentage of Mixture
Little Bluestem	Schizachyrium scoparium	15%
Autumn Bentgrass	Agrostis perennans	15%

Common Name	Scientific Name	Percentage of Mixture
Shelter Switch Grass	Panicum virgatum	15%
Virginia Wild Rye	Elymus virginicus	10%
Deertongue	Panicum clandestinum	10%
Partridge Pea	Chamaecrista fasciluta	10%
Black Eyed Susan	Rudbeckis hirta	9%
Spotted Beebalm	Monarda punctuate	5%
Purple Top	Tridens flavus	5%
Indian Grass	Sorghastrum nutans	5%
Showy Aster	Aster spectabilis	1%

4.9 Fish and Wildlife

Fish and wildlife include the species that occupy, breed, forage, rear, rest, hibernate, or migrate through the project areas. Regulations relevant to fish and wildlife include the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Threatened and endangered fish and wildlife species are evaluated separately in Section 4.10.

The project area is in the State-designated Pinelands Forest Area. The Pinelands Forest Area is home to 39 species of mammals, 299 bird species, 59 reptile and amphibian species, and 91 fish species. The project area comprises upland forest habitats and does not support suitable habitat for fish or aquatic species; however, floodwaters could impact nearby aquatic habitats within Eightmile Creek and other downstream waterways; therefore, impacts on fish and aquatic habitats are analyzed in this EA. Species that may occur in upland forests in the Pinelands Area and therefore within the project area include the white-tailed deer (*Odocoileus virginianus*), woodland vole (*Microtus pinetorum*), eastern kingbird (*Tyrannus Tyrannus*), eastern screech owl (*Megascops asio*), hairy woodpecker (*Dendrocopos villosus*), tufted titmouse (*Baeolophus bicolor*), northern pinesnake (*Pituophis melanoleucus melanolecus*), timber rattlesnake (*Crotalus horridus*) and eastern fence lizard (*Sceloporus undulatus*) (State of New Jersey Pinelands Commission 2023).

The Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703–711), provides protection for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions, except under the terms of a valid permit issued pursuant to federal regulations. The Migratory Bird Treaty Act protects all native birds, and existing habitat in the project area has the potential to support a variety of native bird species. Several migratory bird species could occur in the project area, including species such as blue-winged warbler (*Vermivora pinus*), Canada warbler (*Cardellina canadensis*) and red-headed woodpecker (*Melanerpes*

erthrocephalus). The nesting season for migratory birds is generally March through August, depending on the species (USFWS 2023a).

The Bald and Golden Eagle Protection Act of 1940 prohibits the take, possession, sale, or other harmful action on any golden or bald eagle, alive or dead, including any part, nest, or egg (16 U.S.C. 668[a]). Bald eagles (*Haliaeetus leucoephalus*) typically nest near water in trees taller than the surrounding forest canopy (New Jersey Division of Fish and Wildlife 2015). The New Jersey Bald Eagle Project 2022 did not document any bald eagle nests within 5 miles of the project area; the nearest documented nests are approximately 5.2 miles east of the project area near Fresh Creek and the Gunning River (NJDEP Fish and Wildlife 2022). The project area does not support suitable nesting or aquatic habitats that bald eagles use; therefore, bald eagles are not anticipated to occur within the project area. Golden eagles (*Aquila chrysaetos*) are uncommon in New Jersey, but if present, nest sites would typically be found on cliff edges or possibly in large trees, and golden eagles usually hunt over marshes or along rivers (Audubon n.d.). The project area does not provide suitable habitat for golden eagles; therefore, golden eagles are not anticipated to occur within the project area.

4.9.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in impacts on individual fish or wildlife species or their habitats. Therefore, the No Action alternative would have no effect on fish or wildlife in the short-term. In the long-term, the risk of flooding would not be reduced, and flood waters could transport debris and pollutants from State Route 72 and adjacent property into nearby waterways having an adverse impact on fish and aquatic species. In addition, equipment used for flood-related repairs could result in the accidental release of pollutants that could harm fish and wildlife species and equipment-related noise disturbances could cause wildlife species to relocate to other areas. Therefore, there could be a minor adverse effect on fish and wildlife in the long-term, depending on the frequency and extent of flooding and associated repairs.

4.9.2 Proposed Action

Under the Proposed Action, no work would occur in waterways, but construction activities have the potential to temporarily mobilize sediment and contaminants to nearby waterways. However, BMPs described in Section 4.5.2 to protect water quality would be implemented and impacts on water quality would be negligible; therefore, there may be a negligible adverse effect on fish and aquatic species in the short-term. In the upland area where construction activities would occur, approximately 6.6 acres of mature forests and associated vegetation that provide habitat for wildlife species would be removed, and construction-related noise could disturb wildlife that inhabits the adjacent forests. In addition, heavy equipment that would be used during construction has the potential to crush individuals who may be present in the project area.

However, because most of the adjacent forests provide the same habitat characteristics as the proposed project area, it is anticipated that most wildlife species could be relocated to nearby suitable habitats. Therefore, the Proposed Action would have a minor adverse effect on wildlife in the short-term.

In the long-term, the Proposed Action would reduce the risk of floodwaters transporting pollutants to nearby waterways and water quality downstream would be slightly improved. Therefore, there would be a minor beneficial effect on fish and their habitats from improved water quality. The project area would be partially revegetated, as described in Section 4.8.2. The revegetation activities would provide some habitat for wildlife species; however, not all areas would be revegetated and there would be gaps between vegetated areas in the new basin. Therefore, there would be a minor adverse effect on wildlife and their habitats in the long-term from the reduction in wildlife habitat in the project area.

4.10 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act (ESA) of 1973 gives USFWS and the National Marine Fisheries Service authority for the protection of threatened and endangered species. This protection includes a prohibition on direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat).

The ESA defines the action area (AA) as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR 402.02). Therefore, the AA where effects on listed species must be evaluated may be larger than the project area where project activities would occur. The AA extends beyond the project area to encompass potential effects of noise generated during construction from the use of heavy equipment, including an excavator, bulldozers, backhoes, trenchers, dump trucks, road pavers and compactors and generators. To account for potential noise impacts, the AA includes a 0.25-mile buffer extending from the project area. This distance was based on buffer requirements for known northern long-eared bat hibernacula (USFWS 2016) and to include potential flooding impacts on the Eightmile Branch and other downstream waterways and wetlands that may support swamp pink (*Helonias bullata*). The AA is approximately 149 acres comprised of approximately 113 acres of mature upland coniferous forests with greater than 50 percent crown closure, and upland mixed forest with more than 50 percent deciduous trees and 10 to 50 percent crown closure (NJDEP 2023). The additional approximately 36 acres within the AA is disturbed and includes State Route 72, the existing Neptune Basin, a gas station, and residential housing.

The USFWS Information for Planning and Consultation system was used to identify proposed, threatened and endangered species that potentially may occur in the AA. **Table 4.5** provides a list of all ESA-listed species that may be near the AA (USFWS 2023a). Discussion follows.

There are no species under the jurisdiction of the National Marine Fisheries Service within an area where they may be affected by the Proposed Action.

Table 4-5 Federally Listed Species with the Potential to Occur Within or Near the Project Area

Common Name	Scientific Name	Status
Mammals		
Northern Long-Eared Bat	Myotis sepentronalis	Endangered
Tricolored Bat	Perimyotis subflavus	Proposed Endangered
Flowering Plants		
American Chaffseed	Schwalbea americana	Endangered
Knieskern's Beaked-Rush	Rhynochospora knieskernii	Threatened
Swamp Pink	Helonias bullata	Threatened

Source: USFWS 2023a

There is no designated critical habitat for any ESA-listed species within 10 miles of the project area. The nearest designated critical habitat is for the Maryland Darter, approximately 100 miles west of the project area.

Northern Long-Eared Bat (NLEB): NLEB may be found roosting singly or in colonies underneath bark, in cavities or crevices of both live and dead trees during the summer and portions of the fall and spring. The species also uses forested areas for foraging and commuting between summer and winter habitats, which consist of caves or mines, called hibernacula (USFWS 2022). The AA occurs within potential summer habitat range of NLEB, and the USFWS has listed maternity colony occurrences for NLEB in Stafford Township (USFWS 2023c); therefore, NLEBs are considered to be present within the AA.

Tricolored Bat (TCB): TCB usually roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees during the spring, summer, and fall. During this time, they also may be found roosting among pine needles, in eastern red cedar, and within artificial roosts (e.g., barns, beneath porch roofs, bridges, etc.). TCB are the first species to enter hibernation in the fall and the last to emerge in the spring (Massachusetts Division of Fisheries and Wildlife 2015). In the winter, tricolored bats hibernate in caves and mines (hibernacula). Tricolored bats primarily forage over waterways and forest edges and are opportunistic feeders that consume small insects (USFWS 2021). The AA occurs within potential summer habitat range of TCB. Tree removal could impact TCB by killing, injuring, or disturbing breeding and roosting behaviors. Tree removal activities should be limited to October 1 through March 30.

American Chaffseed (AC): AC occurs in areas maintained in an open to partially open condition and requires sandy, acidic, seasonally moist to dry soils. Habitats where AC occur generally can be described as pine flatwoods, fire-maintained savannas, transitional areas between peaty wetlands, dry sandy soils, and other open grass-sedge system. Specifically in New Jersey, AC tends to occur in open, mowed areas within pitch pine (*Pinus rigida*) communities (USFWS 1995). The AA does not provide the habitats that support AC; therefore, AC is not anticipated to occur within the AA.

Knieskern's Beaked-rush (KBR): KBR is an obligate hydrophyte (a species found in wetland habitats) that is intolerant of competition. KBR occurs in groundwater-influenced, constantly fluctuating, successional habitats with sparse vegetation and limited duff. KBR is generally found on fairly bare, continually moist to wet substrates with combinations of sand, clay, bog ore, gravel and peat, clayey sand mixed with gravel (USFWS 1993). The AA does not provide the habitats that support KBR; therefore, KBR is not anticipated to occur within AA.

Swamp Pink (SP): SP is an obligate hydrophyte that occurs along streams and seepage areas in freshwater swamps in a variety of palustrine forested wetlands including red-maple (*Acer rubrum*)–dominated or white cedar (*Thuja occidentalis*)–dominated swamps. Specific hydrological requirements of SP limit its occurrence within forested wetlands to areas with lateral groundwater movement that are perennial-saturated, but not inundated by floodwaters (USFWS 1991). There are several hundred occurrences of SP within 1 mile and immediately downstream of the project area (USFWS 2014, NJDEP Bureau of GIS 2023). The project area does not provide suitable habitat for SP; however, suitable habitat is present within the eastern portion of the AA and there are numerous occurrences nearby. Therefore, SP is considered to be present within the AA.

4.10.1 No Action Alternative

Under the No Action alternative, no construction activity would occur that could result in impacts on ESA-listed species or their habitats. Therefore, the No Action alternative would have no effect on ESA-listed species in the short-term. In the long-term, the risk of flooding would not be reduced, and flood waters that discharge into wetlands that support SP can increase the frequency, duration, and volume of flooding in these wetlands and adversely affect SP. Floodwaters could also transport debris and pollutants from State Route 72 and adjacent property into waterways that could adversely affect downstream populations of SP. In addition, equipment used for flood-related repairs could result in the accidental release of pollutants that could adversely affect SP. Noise disturbances could cause NLEB and TCB to abandon roosts and relocate to other areas. Therefore, there could be a minor adverse effect on ESA-listed species in the long-term, depending on the frequency and extent of flooding and associated repairs.

4.10.2 Proposed Action

Under the Proposed Action, in the short-term, approximately 6.6 acres of mature forests and associated vegetation that provide suitable summer roosting habitat for NLEB and TCB would be removed. This action could kill, injure, or disturb breeding or roosting bats if they were to be present in the AA. To mitigate impacts from tree removal, tree removal should be limited to October 1 through March 30. In addition, sediments and pollutants from construction activities could move downstream and degrade habitats that support SP. Therefore, the Proposed Action could have a minor adverse impact on ESA-listed species in the short-term. In the long-term, approximately 1.3 acres would be replanted with tree species that could provide suitable summer roosting habitats for NLEB and TCB; therefore, there would be a net loss of approximately 5.3 acres of suitable summer roosting habitat, which would have a minor adverse effect on NLEB and TCB in the long-term. The Proposed Action would provide increased recharge of runoff and aid in the removal of suspended solids entering the waterway that supports the downstream population of SP. Therefore, there would be a minor to moderate benefit on SP in the long-term.

Because the Proposed Action may affect, but is not likely to adversely affect, listed species, FEMA initiated informal consultation with USFWS on October 30, 2023, and USFWS concurred with this determination on December 15, 2023 (**Appendix A**).

4.11 Cultural Resources

This section provides an overview of potential environmental effects on cultural resources. Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f), requires that activities using federal funds undergo fa review process to consider potential effects on historic properties that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) (54 U.S.C. § 300308) defines a historic property (or historic resource) as any "prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource," collectively referred to as cultural resources. Under NHPA (54 U.S.C. § 302706), properties of traditional religious or cultural importance to a Tribal Nation may be determined eligible for inclusion on the NRHP, and federal agencies will consult with any Indian tribe that attaches religious and cultural significance to a property.

Pursuant to 36 CFR § 800.4(a)(1), the Area of Potential Effects (APE) is the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts on cultural resources are evaluated for both historic structures (aboveground cultural resources) and archaeology (belowground cultural resources).

The APE for Neptune Basin includes the limits of proposed construction defined in the Proposed Action (**Figure 3-1**). This includes subterranean disturbances associated with the proposed construction of the new stormwater basin and upgrading the other stormwater basin, including two box culverts and associated infrastructure, adjacent to the new basin at the intersection of Route 72 and Neptune Drive. The total APE is approximately 9.64 acres. The New Jersey State Historic Preservation Officer (SHPO) determined that all proposed construction have potential to impact subterranean archaeological resources. There are no aboveground cultural resources located within the APE.

In 2013 Richard Grubb and Associates, Inc. (RGA) conducted a cultural resources survey in the APE for the Proposed Action (Richard Grubb and Associates, Inc. 2013). The survey included background historical research, pedestrian walk-over survey, and implementation of archaeological shovel testing across the APE. The research revealed no previously identified archaeological sites recorded in or adjacent to the APE, and there are no listed or eligible historic buildings, structures, or districts within or adjacent to the APE. In addition, there are no buildings or structures over 45 years of age within the APE that could be potentially eligible for listing in the NRHP. Therefore, there are no above ground cultural resources located within the APE and, as such, no historic viewsheds would be affected by the proposed project. The shovel testing and pedestrian survey also identified no archaeological resources or cultural resources within the APE. Therefore, the proposed project would have no effect on archaeological or historic resources within or near the APE. No further cultural resources work was recommended (RGA 2013).

In accordance with Section 106 of the NHPA and with the *Statewide Programmatic Agreement among FEMA, the New Jersey SHPO, the New Jersey State Office of Emergency Management and Participating Tribes*, executed on November 9, 2022, as amended, FEMA consulted with the SHPO on June 13, 2023, on the Proposed Action. FEMA reviewed the findings presented in the previous cultural resource studies, confirmed the scope of work and concurred with the findings. In consultation with the SHPO, as lead federal agency, FEMA determined that the proposed project would result in a determination of no historic properties affected. The SHPO concurred with FEMA's determination on July 18, 2023. No tribal consultation was conducted for the project.

4.11.1 No Action Alternative

The No Action alternative would have no short- and long-term impact on archaeological resources and historic structures because no construction or ground disturbance activities would occur, and no buildings, structures, archaeological sites, objects, or historic districts on or eligible for listing on the NRHP were identified in the APE or project area.

4.11.2 Proposed Action

The Proposed Action alternative would have no impact on any archaeological sites or historic structures because no properties listed in or eligible for listing in the NRHP were identified in the APE. The proposed action would decrease the risk of flooding and soil erosion, which would provide protection for any unknown archaeological resources outside the limits of the APE and surrounding project area. Therefore, the Proposed Action would have no short- and long-term impact on any archaeological sites or historic structures.

4.12 Environmental Justice

Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All, defines environmental justice (EJ) as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, tribal affiliation, or disability, in agency decision-making and other federal activities that affect human health and the environment. EO 14096 builds upon EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which requires agencies to identify and address any disproportionately high and adverse human health or environmental effects its activities may have on minority or low-income populations.

In accordance with the FEMA EO 12898, Environmental Justice: Interim Guidance for FEMA EHP Reviewers, environmental justice populations are defined as meeting either or both of the following criteria:

- Populations within the project benefit area contain a minority or low-income population that is equal to or exceeds 50 percent of the population.
- One or more EJ Index (e.g., air quality pollutants, traffic proximity and volume, proximity to hazardous waste sites) equals or exceeds the 80th percentile compared to the average of the state.

The Council on Environmental Quality (1997) defines the term “minority” as persons from any of the following groups: Black, Asian or Pacific Islander, American Indian or Alaskan Native, and Hispanic. Residents of areas with a high percentage of people living below the federal poverty level may be considered low-income populations. The EJ Indices combine environmental indicators with socioeconomic indicators to identify areas where there may be a disproportionate exposure to environmental pollution.

The study area includes the project area and the impact area to the northeast of the project area. The benefit area is approximately 105 acres and includes a portion of the Neptune Drive neighborhood (**Figure 1-2**). **Table 4.6** depicts the percentages of minority and low-income populations for the benefit area and the county for comparison. **Table 4.7** depicts the EJ Indices for the benefit area and the State.

Table 4-6. Environmental Justice Population Demographic Indicators

Demographic Indicator	Percentage of Affected Environment	Percentage in Ocean County	Environmental Justice Population Present
Low Income	4	25	No
Minority	6	16	No

Source: EPA 2023d

Table 4-7. Environmental Justice Indexes

EJ Index	Percentile of Project Benefit Area Compared to State	EJ Population Present
PM	0	No
Ozone	4	No
Diesel PM	0	No
Air Toxics Cancer Risk	3	No
Air Toxics Respiratory Risk	0	No
Traffic Proximity	6	No
Lead Paint	0	No
Superfund Proximity	2	No
Risk Management Plan Facility Proximity	2	No
Hazardous Waste Proximity	3	No
Underground Storage Tanks	0	No
Wastewater Discharge	5	No

Source: EPA 2023d

The project benefit area comprises 6 percent minority persons and 4 percent low-income persons (EPA 2023d). Therefore, the project benefit area is not considered to contain an EJ minority or low-income population when compared to the parish. Environmental indices for the population within the project benefit area are all below the 80th percentile for the EJ indices. Therefore, the population within the project benefit area is not considered an EJ population.

4.12.1 No Action Alternative

Under the No Action alternative, there would be no effect on overburdened populations because there are no EJ populations in or near the project and impact area.

4.12.2 Proposed Action

Under the Proposed Action alternative, there would be no effect on overburdened populations because there are no EJ populations in or near the project and impact area.

4.13 Hazardous Materials

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act. The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste amendments, defines hazardous wastes. In general, both hazardous materials and waste include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or to the environment when released or otherwise improperly managed.

Hazardous materials may be encountered during a project, or they may be generated by the project activities. To determine whether any hazardous waste facilities exist in the vicinity or upgradient of the proposed project area, or whether there is a known and documented environmental issue or concern that could affect the proposed project area, a search for Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous facilities or sites and multiactivity sites was conducted using EPA's NEPA Assist website (EPA 2023f). According to the database, three water dischargers and one hazardous waste facility are present within a 0.5-mile radius of the project area.

4.13.1 No Action Alternative

Under the No Action alternative, there would be no construction of flood reduction measures that could generate construction-related hazardous materials, such as equipment fuel, oils, and lubricants or expose contaminated materials through ground-disturbing activities. Therefore, there would be no short-term impact from hazardous materials.

In the long-term, flood risks would not be reduced. Equipment used for flood-related repairs could result in accidental leaks of fuels and oils. Floodwaters could inundate or damage hazardous material sites in the project benefit area, increasing the potential for exposure to toxic substances. Receding floodwaters could carry pollutants into nearby surface waters. Therefore,

there would be a minor long-term adverse impact on hazardous materials from the continued risk of flooding.

4.13.2 Proposed Action

The Proposed Action would require the use of construction equipment and vehicles that could release fuels, oils, and lubricants through accidental leaks and spills. However, the equipment used would be in good condition and project activities would adhere to state and local regulations to reduce the risk of hazardous leaks and spills. Excavation activities could expose or otherwise affect previously undetected subsurface hazardous materials or wastes. Contractors would stop work and comply with relevant regulations if they were to discover unanticipated site contamination. Therefore, there would be negligible short-term adverse impacts from the use of vehicles and equipment and from potential exposure to previously unknown hazardous materials.

In the long-term, the Proposed Action would reduce the risk of flooding and associated risk that pollutants and hazardous materials could be transported by floodwaters or generated from flood-related repairs. Therefore, the Proposed Acton would result in a negligible long-term benefit related to hazardous materials.

4.14 Noise

EPA developed federal noise emission standards in accordance with the Noise Control Act of 1972. EPA identified major sources of noise and determined appropriate noise levels for activities that would infringe on public health and welfare in accordance with the law. EPA identifies a 24-hour exposure level of 70 decibels as the level of environmental noise that would prevent any measurable hearing loss over a lifetime (EPA 1974). Noise levels of 55 decibels outdoors and 45 decibels indoors are identified as “preventing activity interference and annoyance” (EPA 1974). The Federal Highway Administration (FHWA) identified typical noise levels and ranges for construction equipment (FHWA 2006), and the Occupational Safety and Health Administration established thresholds for occupational noise exposure to protect the health and safety of workers (29 CFR 1926.52).

According to § 142-6C(3) of the municipal code of the Stafford Township, construction and demolition is limited to 7 a.m. through 6 p.m. on weekdays and 9 a.m. through 6 p.m. on weekends and federal holidays, unless the activity can meet the limits on impulsive sound, or sounds that have a single burst that has a duration of less than 1 second. The municipal code also requires motorized equipment used in construction and demolition activity to be operated with a muffler.

Assessment of noise impacts includes consideration of the proximity of the Proposed Action to sensitive receptors. A sensitive receptor is an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches,

hospitals, nursing homes, and libraries. The project benefit area is primarily a residential area, with some homes located immediately adjacent to project activities (i.e., within 50 feet). No schools, churches, hospitals, nursing homes, or libraries are located within the project benefit area.

4.14.1 No Action Alternative

No construction would occur under the No Action alternative. Therefore, this alternative would have no short-term noise impacts. The No Action alternative would not include a permanent source for noise; thus, no long-term noise impacts would occur. The risk of flooding would not be reduced in the long-term. Vehicles and equipment used for flood-related repairs would temporarily increase noise levels in the immediate vicinity, but would comply with federal, state, and local regulations, including time-of-day restrictions. Therefore, there would be a negligible long-term recurring impact due to flood-related repair work.

4.14.2 Proposed Action

Under the Proposed Action, construction activities would increase noise levels in the project vicinity but would not exceed EPA standards or thresholds established by the Occupational Safety and Health Administration and Strafford Township. Adherence with these standards would minimize sound exposure and ensure noise levels would not cause hearing impairment or permanent hearing damage to workers. Furthermore, equipment use would be limited to daytime hours as regulated by the Stafford Township Noise Ordinance and run times would be kept to a minimum. With these measures in place, construction of the Proposed Action would have a minor, short-term impact on noise. In the long-term, flooding in the area would be reduced as would flood-related repairs that would temporarily increase noise levels in the immediate vicinity. Therefore, there would be a minor long-term benefit from the reduction of recurring flood-related repair work.

4.15 Transportation

The project is located at the intersection of State Route 72 and Neptune Drive. State Route 72 runs northwest and southeast, making up the southern border of Ocean Acres before running through Stafford Township and continuing to Long Beach Island to the east. State Route 72 is the only access road to the island and is a critical coastal evacuation route. State Route 72 is crossed by the Garden State Parkway and U.S. Route 9, which run northeast and southwest through Stafford Township, both east of the project area. West Bay Avenue (County Route 554) runs east to west through Barnegat Township connecting State Route 72 to Garden State Parkway. The Stafford Township Transportation Division's Dial-A-Ride bus, available to Stafford Township residents by appointment, provides transportation in the area (Stafford Township 2023b).

4.15.1 No Action Alternative

Under this alternative, construction would not occur, and Neptune Basin would not be expanded. There would be no construction-related traffic impacts or reroutes. Therefore, there would be no short-term impacts on transportation. In the long-term, flooding would not be reduced. During 10-year storm events, roads in the area, including State Route 72, would continue to experience flooding. The flooding would prevent vehicles from accessing a critical evacuation route and flood related repairs to the roads would increase traffic levels in the area. Therefore, this alternative would have a major negative impact on transportation in the area.

4.15.2 Proposed Action

Under the Proposed Action, construction activities would require temporary shoulder and lane closures. The box culvert connecting Neptune Basin to the new basin site would require alternating lane and shoulder closures in four progressive stages that would last 2 weeks. The left turn lane from State Route 72 to Neptune Drive would be closed, requiring a detour down Hull Drive and Leeward Drive for access to Neptune Drive (**Figure 4-5**). Construction of the trench drain on Neptune Drive across from Hoff Road would require temporary closure of the shoulder and lane. Construction of the new maintenance hole and inlet on the corner of Neptune Drive and Leeward Drive would require temporary lane width reductions and shifts to allow traffic to bypass the work area. While there would be some additional construction traffic on the roadways surrounding the project area, these impacts would be temporary and localized, affecting only the roadways offering immediate project area access. The Proposed Action would have a minor short-term impact on transportation in the area from detours and increased construction-related traffic.

Under the Proposed Action, by creating additional stormwater storage, the flooding of local roadways and State Route 72 would be reduced, and the coastal evacuation route would be protected. Upon completion, the Proposed Action would have a moderate long-term beneficial impact on transportation because roads would not be closed as frequently, potentially cutting off evacuation routes.

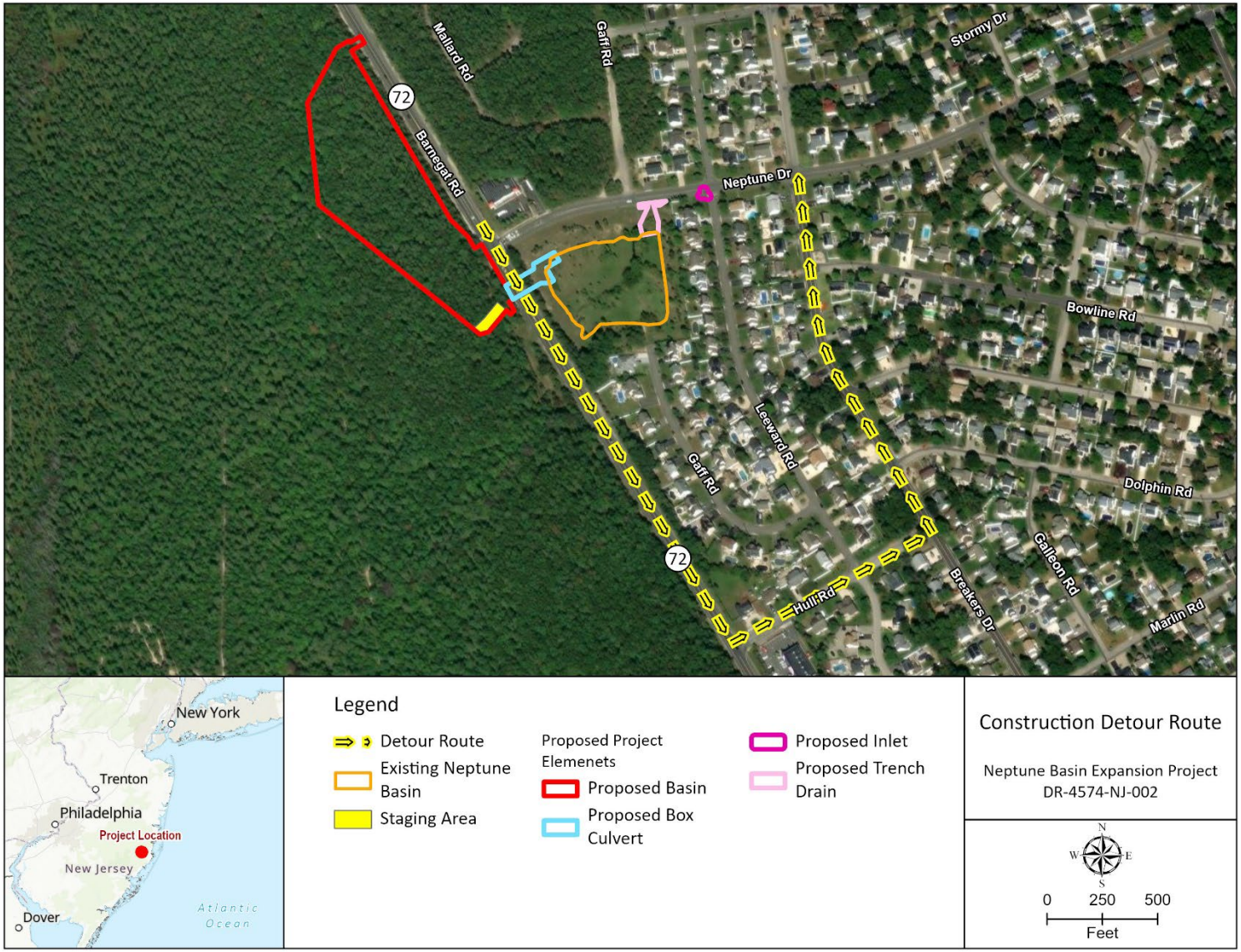

Figure 4-3 Construction Detour Route

4.16 Land Use

The impact area northeast of Route 71 consists of residential and community commercial zoned areas (New Jersey Office of Planning Advocacy 2009). The location of the new basin southwest of Route 27 is zoned as municipal land and is located within the Pinelands Forest Preservation Area District (See Section 4.8). The Pinelands Forest Preservation Area District is considered a critical ecological region which is a large, contiguous wilderness-like area of forest that supports diverse plant and animal communities (New Jersey Pinelands Commission 2023).

4.16.1 No Action Alternative

There would be no change to land use with the No Action alternative, therefore having no impact.

4.16.2 Proposed Action

The Proposed Action would not change the residential and community commercial land use, having no impacts on these zones. The construction of the new basin would convert approximately 7 acres of Pinelands Forest Preservation Area District, which is not a permitted land use in the Pinelands Forest Area (NJAC 7:50-5.23). The subrecipient applied for a waiver with the New Jersey Pinelands Commission and the commission found that the Proposed Action would result in the overall improvement of the resources of the Pinelands Area, granting a waiver for the project on March 21, 2016. Therefore, the Proposed Action would have a minor beneficial effect on the Pinelands Forest Preservation Area District.

4.17 Public Services and Utilities

The project is located in an urban area with utilities and public services provided via both overhead and underground infrastructure. The Stafford Township Water and Sewer Department manages the Township's water supply and provides sewer and stormwater management services to residents. The Sanitation and Recycling Division of Stafford Township's Public Works Department provides waste collection services and support for emergency operations (Stafford Township 2023c). Atlantic City Power Company provides electricity and natural gas services are provided by the New Jersey Natural Gas Company to Stafford Township (Stafford Township 2023d).

The closest public recreation facilities are at 489 Nautilus Drive, approximately 1.3 miles from the project area, and include the Ocean Acres Community Center, Planet Playground, and Nautilus Park next to Ocean Acres Elementary School. Because of the distance from the project and impact areas, recreation facilities would not be impacted by any of the alternatives and will not be discussed further.

4.17.1 No Action Alternative

Under the No Action alternative, there would be no short-term construction-related impacts on public services and utilities. In the long-term, floodwaters could damage water and wastewater infrastructure and damage overhead electrical facilities, resulting in short-term interruptions in services. Floodwaters could damage homes, increasing the need for waste removal and emergency services from the Sanitation and Recycling Division. Therefore, over the long-term, there would be minor, recurring short-term adverse effects on utilities.

4.17.2 Proposed Action

Under the Proposed Action, shutoffs or disruptions of service of utilities are not expected. Therefore, there would be no impact on public services and utilities in the short-term. The project would allow the stormwater system to withstand 10-year storm events and reduce flooding, which would result in reduced flood-related impacts on utility services in the project benefit area. Reduced flooding would also reduce the need for waste removal and emergency operations from the Sanitation and Recycling Division. Therefore, the Proposed Action would have a minor long-term benefit on public services and utilities.

4.18 Public Health and Safety

Stafford Police Department, located at 260 East Bay Avenue, approximately 5 miles from the project, provides police services in the area. The Stafford Township Volunteer Fire Company provides fire and medical services at two stations. The closest fire station to the project area is Station 1 at 344 Nautilus Drive, at a distance of approximately 1.8 miles. Station 47 is located at 133 Stafford Avenue, approximately 4.5 miles from the project area. Additional emergency medical services are provided by the Stafford Township Emergency Medical Services, located at 365 East Bay Avenue, approximately 5 miles from the project area. The closest hospital to the project area, at a distance of 1.8 miles, is Hackensack Meridian Health Southern Ocean Medical Center.

Stafford Township has emergency evacuation procedures for hurricane and flood events. Several local TV and radio stations are used in conjunction with the Code Red emergency notification system to report on hurricane conditions and evacuate those in the coastal zone. Stafford Township is partnered with the New Jersey Office of Emergency Management and the New Jersey Office of Homeland Security and Preparedness to create “Register Ready – New Jersey’s Special Needs Registry for Disasters.” This service assists people with special needs who may have difficulty evacuating in emergency situations (Stafford Township 2023e).

4.18.1 No Action Alternative

Under the No Action alternative, no construction would occur that would require construction detours and traffic that could impact emergency response times. In the long-term, roadways would continue to be blocked by floodwaters during flood events. Flooding and recovery-related construction would result in detours or lane closures that could reduce emergency response times and inhibit people's ability to evacuate. Recovery-related repairs and flooding detours could result in increased emissions impacting air quality and human health in the area. Flooding could cause power outages, reduce water quality from the backup of sewage lines, and transport hazardous pollutants, exposing people to health hazards. Therefore, there would be a minor recurring adverse effect on public health and safety from periodic flooding over the long-term.

4.18.2 Proposed Action

Under the Proposed Action, there would be construction traffic, lane and shoulder closures, and detours as discussed in Section 4.15, that could increase emergency response times. Police may also be required to help assist in traffic management during construction. Therefore, there would be a minor short-term adverse impact on emergency services.

The proposed action would reduce the flooding of State Route 72, keeping the route open for coastal evacuation. Critical services, such as fire, police, and first responders, would experience improved accessibility and emergency response times during storm events compared to existing conditions as roadway flooding would be reduced. Therefore, there would be a minor, long-term, beneficial effect from the reduced flooding and associated public health and safety concerns.

4.19 Summary of Effects and Mitigation

Table 4-8 provides a summary of the potential environmental effects of implementing the Proposed Action, any required agency coordination efforts or permits, and any applicable proposed mitigation or BMPs.

Table 4-8. Summary of Impacts and Mitigation

Resource	Potential Impacts	Agency Coordination or Permits	Mitigation/BMPs
Topography, Soils and Farmland Soils	Topography, Soils, and Farmland Soils – minor short-term impact; minor long-term benefit. No long-term impact on FPPA.	Coordination with Natural Resources Conservation Services; Farmland Conversion Impact Rating Form.	• Erosion control BMPs including silt fencing. • Development of a Soil Erosion and Sediment Control Plan in accordance with the New Jersey Soil Erosion and Sediment Control Act.
Air Quality	Minor short-term impact; minor long-term benefit.	General conformity applicability analysis.	• Operation of construction equipment would follow local, state, and federal regulations. • All construction equipment would be required to meet current EPA emissions standards.
Climate Change	Negligible short-term impact; negligible long-term benefit.	N/A	N/A
Surface Waters and Water Quality	Negligible short-term impact; minor long-term benefit.	Coordinate with NJDEP for potential permitting needs. Comply with NJDEP Flood Hazard Area Individual Permit conditions (1530-13-0005.2 LUP230001).	• A Soil Erosion and Sediment Control Plan would be developed to minimize the potential mobilization of sediment. • BMPs associated with the NPDES permitting requirements and NJDEP Flood Hazard Area Individual Permit (1530-13-0005.2 LUP230001).
Wetlands	No short-term impacts on wetlands. Long-term minor beneficial impacts on wetlands from reduced transport of contaminants.	Comply with NJDEP Flood Hazard Area Individual Permit conditions (1530-13-0005.2 LUP230001).	• Erosion control measures including a sediment barrier at the limits of disturbance.

Resource	Potential Impacts	Agency Coordination or Permits	Mitigation/BMPs
Floodplains	No short- or long-term impact on floodplains.	N/A	N/A
Vegetation	Short-term moderate adverse impact caused by vegetation loss in the project area. Minor long-term adverse impact from the loss of approximately 3.6 acres of vegetation. Minor long-term beneficial impact on invasive species from reduced impacts of flooding.	N/A	N/A
Fish and Wildlife	Negligible short-term adverse impact on fish and aquatic species from water quality changes. Minor short-term adverse impact on wildlife from vegetation removal and construction-related disturbance. Long-term minor beneficial impact on fish and aquatic species from reduced flood impacts. Minor long-term adverse impact on wildlife from the reduction of wildlife habitat in the project area.	N/A	• Erosion control BMPs would be installed to prevent sediments from entering downstream water bodies.
Threatened and Endangered Species	Minor adverse impact on ESA-listed species from habitat removal and the potential for downstream construction-related impacts to water quality. Minor long-term adverse impact on NLEB and TCB from the loss of suitable habitat. Minor to moderate beneficial impact on SP from increased recharge of runoff and decreased suspended solids.	USFWS Informal Consultation.	• Limit tree removal to October 1 through March 30 to avoid the bat summer roosting season. • Erosion control BMPs would be installed to prevent sediments from entering downstream waterbodies that could impact SP.

Resource	Potential Impacts	Agency Coordination or Permits	Mitigation/BMPs
Cultural Resources	No short- or long-term impact on cultural resources	N/A	• No impact on historic properties.
EJ	The Proposed Action would have no effect on EJ populations because there is no such population in the project impact area.	N/A	N/A
Hazardous Materials	The Proposed Action would have a negligible short-term adverse impact. The Proposed Action would have a negligible long-term beneficial impact.	N/A	• Equipment would be kept in good condition. • Any spills or leaks from equipment would be contained and cleaned up right away. • All equipment and project activities would adhere to local regulations to reduce the risk of hazardous leaks and spills.
Noise	Minor short-term noise impacts; minor long-term benefit.	N/A	• Noise-producing equipment use would occur during daytime hours (7 a.m. to 6 p.m. weekdays; 9 a.m. to 6 p.m. weekends and holidays). • Vehicle and equipment runtimes would be kept to a minimum.
Transportation	Minor short-term impacts. Moderate long-term benefits.	N/A	N/A
Land Use	No short-term impacts. Minor long-term benefits.	N/A	N/A
Utilities	The Proposed Action would have no short-term impact. The Proposed Action would have a minor long-term beneficial effect.	N/A	N/A
Public Health and Safety	Minor short-term adverse impact. Minor long-term benefit.	N/A	N/A

5.0 AGENCY COORDINATION, PUBLIC INVOLVEMENT, AND PERMITS

This section provides a summary of the agency coordination efforts and public involvement process for the proposed Neptune Basin Expansion Project. In addition, an overview of the permits required under the Proposed Action is included in Section 5.3.

5.1 Agency Coordination

FEMA submitted a Farmland Conversion Impact Rating form to USDA on October 13, 2023, USDA responded on October 16, 2023 that activities in the project area is except from FPPA.

FEMA initiated an informal consultation with USFWS on **October 30, 2023**. FEMA determined that the Proposed Action may affect, but is not likely to adversely affect, listed species. USFWS concurred with this determination on **December 15, 2023**.

FEMA consulted with the SHPO on June 13, 2023, and determined that the proposed project would result in a determination of no historic properties affected. The SHPO concurred with FEMA's determination on July 18, 2023.

5.2 Public Participation

In accordance with FEMA's NEPA procedures, FEMA is releasing this draft EA to the public and resource agencies for a 30-day public review and comment period. Comments on this draft EA will be incorporated into the final EA, as appropriate. This draft EA reflects the evaluation and assessment of the federal government, the decision-maker for the federal action; however, FEMA will take into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. If no substantive comments are received from the public and/or agency reviewers, this draft EA will be assumed to be final and a Finding of No Significant Impact will be issued by FEMA.

Stafford Township will make the draft EA available on its website at www.staffordnj.gov. The draft EA also will be available on FEMA's website at https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository. Hard copies of the draft EA will be made available at Town Hall, 206 East Bay Avenue, Manahawking, NJ and Township Community Center Bulletin Board 775 E. Bay Avenue Manahawkin, NJ. The comment period for the draft EA will start when the public notice of EA availability is published and will extend for 30 days. Comments on the draft EA may be submitted to FEMAR2COMMENT@fema.dhs.gov (include "Neptune Basin Expansion Project" in the subject line). Comments also may be submitted via mail to:

Federal Emergency Management Agency Region 2
Environmental Planning and Historic Preservation
26 Federal Plaza, Suite 1802
New York, NY 10278
Attn: Neptune Basin Expansion Project EA Comments

5.3 Permits

Stafford Township will be responsible for obtaining any necessary local, state, or federal permits needed to conduct the proposed work.

- Obtain an NPDES for Stormwater Discharges from Construction Actively permit from NJDEP and comply with all permit conditions.
- Comply with all permitting requirements within the NJDEP Flood Hazard Area Individual Permit (1530-13-0005.2 LUP230001).

6.0 LIST OF PREPARERS

The following is a list of preparers who contributed to the development of the Neptune Basin Expansion Project draft EA for FEMA. The following individuals had principal roles in the preparation of this document. Many others contributed, including senior managers, administrative support personnel, and technical staff, and their efforts in developing this Programmatic Environmental Assessment are appreciated.

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CDM Smith prepared this document under Contract No.: 70FA6020D00000002, Task Order: 70FA6020F00000038.

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Appendix A

Biological Assessment

Biological Assessment

Neptune Basin Expansion Project

Township of Stafford, Ocean County, New Jersey

DR-4574-NJ-002

October 2023

Federal Emergency Management Agency
Department of Homeland Security
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Acronyms

AA	Action Area
AMM	avoidance and minimization measure
BA	biological assessment
BMP	best management practice
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FR	*Federal Register*
NJDEP	New Jersey Department of Environmental Protection
NLEB	northern long-eared bat
SP	swamp pink
SS	species specific
TCB	tricolored bat
USFWS	U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to provide federal financial assistance, through the New Jersey Office of Emergency Management, for construction of a stormwater storage basin and upgrades to the existing Neptune Basin in Stafford Township, New Jersey.

FEMA has prepared this biological assessment (BA) to evaluate the potential effects of the Proposed Action on species that are listed or proposed for listing under the Endangered Species Act of 1973 (ESA). Potential effects on federally listed and proposed species have been evaluated in accordance with Section 7 of the ESA. Measures to avoid and/or minimize take or disturbance to potentially affected species are included in this BA.

Summary of Proposed Action

Stafford Township proposes to construct a new stormwater basin and upgrade a stormwater basin adjacent to the new basin at the intersection of Route 72 and Neptune Drive in Stafford Township, Ocean County, New Jersey (Appendix A, Figure 1). This area is at risk of flooding because of inadequate stormwater infrastructure. The project would involve constructing a new stormwater basin on the southwest side of Route 72. The basin would be approximately 6.6 acres and approximately 12 feet deep. The upgrades to the existing Neptune Basin would include installing 50 feet of trench drain, an additional 49 feet of 48-inch reinforced concrete pipe to the upstream section of the existing basin, two 4-foot by 9-foot box culverts (148 feet long in total) under Route 72 to transport stormwater from the existing basin to the new basin, and trash racks and a scour hole for the culverts.

Potentially Affected Federally Listed Species, Critical Habitat, and Essential Fish Habitat

Based on a search of federal and state databases, four federally listed species and one species proposed for listing were identified as having a potential to occur near the Action Area (AA) (Appendix B). Based on an in-depth desktop review and a review of the project area and species life histories, the following two federally listed and one proposed species have potential to occur within the AA and are therefore evaluated in this BA:

- Northern long-eared bat (NLEB) (*Myotis sepentronalis*) – Endangered
- Tricolored bat (TCB) (*Perimyotis subflavus*) – Proposed Endangered
- Swamp pink (SP) (*Helonias bullata*) – Threatened

Species considered and excluded from the BA are described in Appendix C.

There is no critical habitat within or near the AA.

Summary of Effects to Federally Listed Species and Critical Habitat

The Proposed Action would occur within or adjacent to potentially suitable habitat for one listed and one proposed wildlife species and one listed plant species. Based on the presence of potentially suitable habitat, the NLEB, TCB, and SP are assumed to be present within the AA.

Table ES-1. Effects Determinations for Listed Species and Critical Habitat

Species Name	Status	Potential Effects on Species	Potential Effects on Designated Critical Habitat
Mammals			
Northern long-eared bat *Myotis sepentronalis*	Endangered	May affect, but is not likely to adversely affect	No effect
Tricolored bat *Perimyotis subflavus*	Proposed Endangered	Not likely to jeopardize the continued existence, May affect, but is not likely to adversely affect[1]	No effect
Plants			
Swamp pink *Helonias bullata*	Threatened	May affect, but is not likely to adversely affect	No effect

Note: The "May affect, but is not likely to adversely affect" determination only applies if the species becomes listed prior to the completion of the Proposed Action.

SECTION 1. INTRODUCTION

1.1 Purpose and Need

The objective of FEMA's Hazard Mitigation Grant Program is to provide technical and financial assistance to tribal, state, and local governments so they can develop hazard mitigation plans and rebuild in a way that reduces or mitigates future disaster losses in their communities. This grant funding is available after a presidentially declared disaster. The purpose of the Proposed Action is to reduce flooding from stormwater runoff within the western part of the Ocean Acres section of Stafford Township (Appendix A, Figure 1).

The project is needed because there is insufficient stormwater drainage capacity within the current basin and drainage system. Floodwaters have repeatedly inundated buildings and roadways, impacting access to buildings, emergency services, and utilities. During 5-year storm events, water elevations have reached 1.6 feet above the elevation of stormwater inlet structures. In 2019, five major floods occurred in the area, with property damage to over 250 properties and associated public safety concerns. Flood waters have submerged vehicles, required extraction of people from their homes and vehicles, and uncovered stormwater inlets in the street. Flood waters have damaged homes and utilities, and required electric and gas line shutoff. In addition, flooding has resulted in the inundation of Route 72, the coastal evacuation route for Stafford Township and coastal communities that border the township to the east.

1.2 Federal Nexus

FEMA's financial assistance would be provided through the Hazard Mitigation Grant Program. Under Section 7 of the ESA, federal agencies are required to evaluate the potential for effects on federally listed species and their habitats. The purpose of this BA is to review the Proposed Action (i.e., federal action) in sufficient detail to determine whether it may affect any federally listed or proposed species or designated critical habitat.

All federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service, in accordance with Section 7(a)(2) of the ESA, regarding potential effects on federally listed or proposed species. The federal agency initiating or funding the action in question must ensure that any federal action is not likely to (1) jeopardize the continued existence of a federally listed or proposed species or (2) result in the destruction or adverse modification of designated or proposed critical habitat.

1.3 Project Location

The project area is within and adjacent to the Ocean Acres subdivision along Route 72 and Neptune Drive in Stafford Township, Ocean County, New Jersey. The new basin would be constructed west of Route 72 on an undeveloped 7.19-acre property known as Block 26, Lot 10, owned by the Township of Stafford (Appendix A, Figure 1).

1.4 Consultation History

Consultation with USFWS on constructing the approximate 7-acre stormwater basin was conducted in January of 2014 for the NLEB and SP (Appendix D). The USFWS did not offer a

determination for NLEB because it was proposed for ESA listing at the time; however, the USFWS recommended prohibiting any tree removal activities between April 1 and September 30 to avoid effects on roosting bats. USFWS determined that the project would not adversely affect SP and recommended that during construction, the Applicant implement soil erosion control measures and best management practices to avoid any downstream impacts.

SECTION 2. PROPOSED ACTION

2.1 Project Description

Stafford Township proposes to increase stormwater storage by an additional 1.5 million cubic feet by improving and expanding Neptune Basin through constructing a new stormwater infiltration basin and new storm drain structures to alleviate flooding in the Ocean Acres area. Appendix A, Figure 2 and Appendix E depict the proposed project elements and staging area.

2.1.1 Proposed Basin

Stafford Township would construct a new infiltration stormwater basin across State Route 72 from the existing Neptune Basin. The new basin would be approximately 6.6 acres and approximately 12 feet deep. The east side of the new basin would function as a 240-foot emergency auxiliary spillway with an elevation of 81.2 feet. The site of the new basin would be cleared of vegetation consisting of deciduous trees, conifers, and shrubs. Twelve planting islands totaling 1.3 acres would be installed within the new basin. Herbaceous plantings would be installed around the basin on the slopes (approximately 1.6 acres) and would consist of approximately 15 pounds per acre of an herbaceous "no mow" seed mixture of native vegetation. The remainder of the cleared area (approximately 3.6 acres) would not be revegetated and would be overlain with K-5 sand, a sand commonly used in drainage projects because of its high percolation rate. Appendix A, Figure 3 provides the proposed vegetation layout.

A gravel access drive for the basin would be located at the intersection of State Route 72 and Neptune Drive along the new basin. On the west side of the access drive, a stormwater drainage system would be installed at the edge of State Route 72. The stormwater drain would connect to 155 feet of 15-inch-diameter reinforced concrete piping running east, which then would connect to a maintenance manhole on the west side of the proposed box culverts. From the maintenance manhole, the drainage system would consist of 44 feet of 15-inch reinforced concrete pipe that would run south and discharge into the new basin at the proposed outlet structure.

2.1.2 Proposed Trench Drain

There is an existing stormwater drain across from Gaff Road and adjacent to Neptune Drive where it drains into riprap on the north slope of the existing basin. This drainage system would be replaced with a higher-capacity drainage system. The new drainage system on the edge of Neptune Drive would consist of a 50-foot-long, 2-foot-wide concrete trench drain that would connect to a 49-foot-long, 48-inch-diameter reinforced concrete pipe. The pipe would have a flared end section that would discharge into a riprap apron within the existing basin. The existing slope of the basin would be excavated and regraded to install the riprap apron. The riprap would be 28 inches thick with two layers of 14-inch-diameter stones. The area of disturbance for the drain, pipe, and apron would be approximately 0.16 acres.

2.1.3 Proposed Inlet

A new stormwater drain and maintenance hole would be installed on the south side of Neptune Drive near the corner of its intersection with Leeward Road. The new drain would connect to the existing stormwater chamber below Neptune Drive via a 15-foot, 24-inch-diameter reinforced concrete pipe.

2.1.4 Proposed Box Culverts

The new basin would be connected to the existing basin beneath State Route 72 via the construction of double box culverts. The double box culverts would replace the existing 21-inch-diameter culvert that conveys water from the existing basin into the area of the proposed basin during times of high water. The two 4-foot by 9-foot box culverts would have a total length of 148 feet and a vertical disturbance of approximately 20 feet. In the existing basin, the proposed double inlet structure of the box culverts would be fitted with a trash rack to block floating debris from entering the culverts. On the new basin side of State Route 72, the box culverts would have a junction chamber with two maintenance holes for maintenance Access just before the outlet structure. The outlet structure in the new basin would be fitted with a trash rack and sluice gate, a hydraulic device that controls flow. A riprap-lined, preformed scour hole would be constructed on the other side of the sluice gate to dissipate stormwater flows entering the new basin.

2.2 Project Duration

The proposed project is anticipated to take 24 months. Tree removal activities would be limited to October 1 through March 30.

2.3 Equipment

Construction would require the use of vehicles and heavy machinery such as bulldozers, masticators, excavators, compactors, and asphalt pavers.

2.4 Best Management Practices

Pursuant to the New Jersey Department of Environmental Protection (NJDEP) Permit issued June 29, 2023, the County Soil Conservation District best management practices (BMPs) for preventing sediment movement must be implemented and maintained throughout the duration of the project. In addition, a soil erosion and sediment control plan would be developed to minimize the potential for mobilizing sediment. Construction BMPs associated with the National Pollutant Discharge Elimination System permitting requirements and the NJDEP Flood Hazard Area Individual Permit (1530-13-0005.2 LUP230001) would be implemented to minimize potential impacts.

2.5 Avoidance and Minimization Measures

2.5.1 Species-Specific Avoidance and Minimization Measures

The Proposed Action would implement the following species-specific (SS) avoidance and minimization measures (AMMs) for NLEB, TCB, and SP.

2.5.1.1 Northern Long-Eared Bat and Tricolored Bat – Specific Avoidance and Minimization Measures

AMMs specific to the Indiana bat and NLEB, as presented in the USFWS Range-wide Programmatic Consultation for Indiana bat and NLEB issued by the USFWS (USFWS 2018), will be implemented during construction activities. These AMMs have been modified to include considerations for the TCB and are expected to reduce the potential impacts of the Proposed Action on both the NLEB and the TCB. Where noted, these AMMs have been modified to

improve clarity and eliminate elements that are not applicable to the Proposed Action. To avoid or minimize effects on NLEB and TCB, the following AMMs will be implemented:

NLEB and TCB Roosting Habitat AMM 2. Ensure all operators, employees, and contractors working in areas of known or presumed bat roosting habitat are aware of all applicable AMMs.

NLEB and TCB Tree Removal AMM 1. Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to the extent practicable to avoid removing more trees than required to implement the project safely.

NLEB and TCB Tree Removal AMM 2. Apply time-of-year restrictions for tree removal when bats are not likely to be present (October 1 through March 30).

NLEB and TCB Tree Removal AMM 3. Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how the limits are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).

2.5.1.2 Swamp Pink – Specific Avoidance and Minimization Measures

The following SP-specific AMMs have been adapted from the AMMs specific to the wetland and vernal pool species presented in the USFWS programmatic biological opinion issued by the Sacramento Fish and Wildlife Office (USFWS 2019).

SP AMM 1. Pre-Construction Survey and Exclusion Areas: Prior to any construction activities, a USFWS-approved biologist will conduct protocol-level bloom-season plant surveys within the AA. If SP is found within the AA, then the USFWS-approved biologist will delineate a 50-foot avoidance buffer around all SP individuals or their suitable habitat. The nondisturbance exclusion zones will be established, maintained, and monitored by the USFWS-approved biologist to ensure that loss of SP or destruction of suitable SP habitat does not occur.

SP AMM 2. **Erosion Control:** All wetlands will be protected from siltation and contaminant runoff by using erosion control. Erosion control measures will be placed between the outer edge of the wetland and the activity area.

SP AMM 3. **Suitable Erosion Control Materials:** Erosion control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No microfilament netting will be used. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.

SP AMM 4. **Dust Control:** Dust control measures will be implemented to prevent the transport of soil from exposed surfaces to wetland habitat. Sprinkling with water will not be done in excess to minimize the potential for non-stormwater discharge.

SP AMM 5. **Site Restrictions:** Routine maintenance activities within 250 feet of wetland habitat will be avoided to the maximum extent possible.

SP AMM 6. Use of Native Plants for Revegetation: When revegetating upland areas to pre-project conditions, native plants will be used to the maximum extent practicable.

2.6 Action Area

A project AA is identified for the analysis of potential effects of the Proposed Action on listed and proposed species. The AA includes areas where project activities could result in effects on federally listed and proposed species. The ESA defines effects of the action as all consequences to listed or proposed species or critical habitat that are caused by the Proposed Action, including the consequences of other activities that are caused by the Proposed Action. A consequence is caused by the Proposed Action if it would not occur but for the Proposed Action and it is reasonably certain to occur. Effects of the action may occur later and may include consequences occurring outside of the immediate area involved in the action (50 Code of Federal Regulations §402.02). Thus, consequences may include direct harm to species within the project footprint, which includes work areas, staging areas, and access routes, and disturbance from project-related noise and human presence.

The AA is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 Code of Federal Regulations §402.02). Therefore, observable or measurable effects of the project are not expected beyond the boundaries of the AA. The AA extends beyond the project area to encompass the potential effects of noise generated during construction by heavy equipment including excavators, bulldozers, backhoes, trenchers, dump trucks, road pavers and compactors, and generators. To account for potential noise impacts, the AA includes a 0.25-mile buffer extending from the project area (Appendix A, Figure 4). This distance was based on buffer requirements for active roost trees for the Indiana bat (U.S. Forest Service 2014) and to include potential construction-related water quality impacts to the Eightmile Branch and other downstream waterways and wetlands that may support SP. The AA is approximately 149 acres comprising approximately 113 acres of mature upland coniferous forests with greater than 50 percent crown closure, and upland mixed forest with more than 50 percent deciduous trees and 10 to 50 percent crown closure (NJDEP 2023). The additional approximately 36 acres within the AA is disturbed and includes State Route 72, the existing Neptune Basin, a gas station, and residential housing.

SECTION 3. ENVIRONMENTAL SETTING

3.1 Location

The project area is within and adjacent to the Ocean Acres subdivision along Route 72 and Neptune Drive in Stafford Township, Ocean County, New Jersey. The new basin would be constructed west of Route 72 on an undeveloped 7.19-acre property known as Block 26, Lot 10, owned by the Township of Stafford (Appendix A, Figure 1).

3.2 Land Use Type/Vegetation Communities

The project area for the proposed basin is in the State-designated Pinelands Area, and the Coastal Plain Province The AA is approximately 149 acres comprising approximately 113 acres of mature upland coniferous forests with greater than 50 percent crown closure and upland mixed forest with more than 50 percent deciduous trees and 10 to 50 percent crown closure (Appendix A, Figure 6) (NJDEP 2023). These forests extend for several miles to the west of the project area. The additional approximately 36 acres within the AA is disturbed and includes State Route 72, the existing Neptune Basin (Appendix A, Figure 7), a gas station, and residential housing. Coniferous and mixed forests in the Pinelands Area are generally dominated by pitch pine (*Pinus rigida*) but may also include shortleaf pine (*Pinus echinata*) blackjack oak (*Quercus marilandica*), black oak (*Quercus velutina*), chestnut oak (*Quercus prinus*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), and post oak (*Quercus stallata*). Common understory shrubs in the Pinelands Area include lowbush blueberry (*Vaccinium vacillans*) and black huckleberry (*Gaylussacia bacata*) (State of New Jersey Pinelands Commission 1980). Eightmile Branch is an intermittent stream downslope from the proposed project area and is influenced by runoff from the proposed project area.

3.3 Federally Listed Species with Potential to Occur in the Action Area

Based on a search of federal and state databases, five federally listed or proposed wildlife species were identified as having the potential to occur near the AA. Based on an in-depth desktop review and review of recent field surveys, three federally listed or proposed species have the potential to occur in the AA and are therefore evaluated in this BA:

- NLEB
- TCB
- SP

3.4 Wildlife Species

One federally listed and one federally proposed wildlife species are assumed present within the AA, based on the desktop review of the potential project area. Each of these species is described in the subsections that follow.

3.4.1 Northern Long-Eared Bat

USFWS listed the NLEB as a threatened species on April 2, 2015 (80 *Federal Register* [FR] 17974) and issued a species-specific 4(d) rule on January 14, 2016 (81 FR 1900). On April 27, 2016. The USFWS reclassified the NLEB as an endangered species on November 30, 2022, effective on March 31, 2023.

The NLEB is a medium-sized bat with adults averaging 0.2 to 0.3 ounces and females usually being slightly larger than males. The average body length ranges from 3.0 to 3.7 inches and the wingspan averages 8.9 to 10.2 inches. The NLEB has medium to dark brown fur on its back, dark brown ears and wing membranes, and tawny to pale-brown fur on the underside. The NLEB's relatively large ears average 0.7 inches and can help distinguish NLEBs from other *Myotis* species (USFWS 2022).

NLEBs typically overwinter in hibernacula that include caves and abandoned mines. NLEBs predominantly hibernate singly or in small groups, using small crevices or cracks in caves or mine walls or ceilings. During the summer, NLEBs may roost singly or in maternity colonies, and are generally found in cavities or crevices of both live trees and snags or underneath exfoliating bark. Nonreproductive females and males may also roost in cooler locations in the summer, including in caves and mines. During summer roosting, maternity colonies made up of juveniles and females are generally small, averaging from approximately 30 to 60 individuals. NLEBs give birth to a single pup. Birthing may occur as early as late May and through mid-July. Juvenile NLEBs begin to fly and leave the roost as early as 18 days after birth, but typically at 21 days. Between the summer and winter seasons (July to early October), NLEBs will swarm around winter hibernacula to introduce juveniles to potential hibernacula, for copulation, and while stopping over during migration from summer and winter locations. Spring migration typically occurs between mid-March and mid-May, while fall migration typically occurs between mid-August and mid-October (USFWS 2022).

During spring, fall, and summer, NLEBs are nocturnal foragers that have a diverse diet primarily of moths, arachnids, and beetles but may also include flies, leafhoppers, and caddisflies. Most NLEB foraging occurs approximately 3 to 10 feet above the ground, above the understory but below the canopy. NLEBs generally avoid riparian areas for foraging and focus primarily on forested hillsides and ridges, but may also use small forest clearings, water, and roadsides. NLEBs tend to prefer intact mixed-type forests with sparse or medium vegetation rather than fragmented habitats or areas that have been clear-cut (USFWS 2022).

3.4.1.1 Potential To Occur in The Action Area

The Coastal Plain Province largely consists of unconsolidated sediments with two karst features reported throughout the province, both of which are over 40 miles from the project area (NJDEP Geological Survey 1976); therefore, there is no potential NLEB hibernacula within the AA. However, portions of the AA consist of vegetated upland coniferous forests and upland mixed forest that provide suitable summer roosting and foraging habitat for NLEB. Additionally, the existing Neptune Basin east of Route 72 provides suitable foraging and commuting habitat. The USFWS has listed Stafford Township as having maternity colonies present within approximately 5 miles of the AA (USFWS 2023a). Therefore, without current summer roosting surveys to

determine presence or absence within the AA, NLEBs are considered to have the potential to occur within the AA during spring, summer, and fall. There are no caves or mines within the AA (NJDEP Geological Survey 1976, NJDEP Division of Water Supply and Geoscience 2011) that could provide hibernacula and no hibernacula occurrences are listed within Stafford Township or Ocean County (USFWS 2023a); therefore, NLEB are not considered to have the potential to occur within the AA during the winter season (October – March).

3.4.1.2 Critical Habitat for the Northern Long-Eared Bat

Critical habitat has not been designated for the NLEB.

3.4.2 Tricolored Bat

The USFWS published a proposal in the FR on September 14, 2022, to list the TCB as endangered under the ESA. The USFWS has up to 12 months from the date the proposal was published to make a final determination whether to list the TCB under the ESA or to withdraw the proposal.

The TCB is one of the smallest bats in eastern North America, averaging 22.5 ounces, 3 to 3.5 inches in length (USFWS 2023b). The TCB can be distinguished by its unique tricolored fur that is dark at the top and base and lighter in the middle, and often appears yellowish, but may also look black, chocolate brown, or silvery gray. Juvenile TCBs are much darker and grayer than adults (USFWS 2021).

TCBs are the first species to enter hibernation in the fall and the last to emerge in the spring (Massachusetts Division of Fisheries and Wildlife 2015). During the winter season, TCBs show high site fidelity, generally hibernating in caves and mines Where these habitats are sparce, they may also hibernate in road-associated culverts (greater than 24 inches in diameter), tree cavities, and abandoned water wells (USFWS 2023b, Missouri Department of Transportation 2023). TCB hibernation does not peak in caves and mines until December or later, which suggests that some TCBs stay on the landscape or in alternate hibernacula until it gets colder. Hibernating TCBs commonly roost singly, but sometimes in pairs or in small clusters away from other bats. TCBs migrate from winter hibernacula to summer roosting habitat in the spring (USFWS 2021). During the spring, summer, and fall, TCBs generally roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. Female TCBs roost in maternity colonies and show high site fidelity, generally returning year after year to the same summer roosting locations but switching roosting trees regularly. During this time, they may also be found roosting among pine needles, in eastern red cedar (*Juniperus virginiana*), and within artificial roosts (e.g., barns, beneath porch roofs, bridges, etc.) (USFWS 2023b). TCB maternity colonies generally consist of more than one female and colonies have been documented as having up to 19 adult females and 37 young. Females generally give birth to two pups at a time between May and July. Juveniles begin to fly at around three weeks of age and achieve adult-like flight and foraging ability at 4 weeks.

TCBs primarily forage over waterways and forest edges. They usually emerge early in the evening to forage at treetop level or above, but may forage closer to the ground later in the

evening. TCBs are opportunistic feeders that consume small insects including caddisflies, moths, small beetles, small wasps, flying ants, true bugs, and flies (USFWS 2021).

3.4.2.1 Potential to Occur in the Action Area

The Coastal Plain Province largely consists of unconsolidated sediments, with two karst features reported throughout the province, both of which are over 40 miles from the project area (NJDEP Geological Survey 1976). There is therefore no potential TCB hibernacula within the AA. However, portions of the AA consist of vegetated upland coniferous forests and upland mixed forests that provide suitable summer roosting and foraging habitat for TCBs. Additionally, the existing Neptune Basin east of Route 72 provides suitable foraging and commuting habitat. According to summertime model predictions for the TCB from acoustic and mist net data collected from 2010 to 2019, there is an approximate 60 percent chance of TCB being present within the AA during spring, summer, and fall (Irvine and Stratton 2021).

The existing culvert that conveys stormwater from the Neptune Basin underneath State Route 72 is 21 inches in diameter, which is below the 24-inch culvert diameter threshold for TCB to roost and conveys high flows of stormwater that would wash any roosting TCB out of the culvert. Consequently, the existing culvert to be replaced by the Proposed Action is not considered to be a possible summer roosting area for TCB.

Therefore, without current summer roosting surveys to determine presence or absence within the AA, TCBs are considered to have the potential to occur within the AA during spring, summer, and fall. There are no caves or mines within the AA (NJDEP Geological Survey 1976, NJDEP Division of Water Supply and Geoscience 2011) that could provide hibernacula; therefore, TCB are not considered to have the potential to occur within the AA during winter (October through March).

3.4.2.2 Critical Habitat for the Tricolored Bat

Critical habitat has not been designated for TCB.

3.5 Plant Species

One federally listed wildlife species is assumed present within the AA, based on the desktop review of potential work area. SP is described below.

3.5.1 Swamp Pink

USFWS listed the SP as a threatened species on September 9, 1988 (83 FR 35076).

SP is a smooth, perennial herb with evergreen, oblong-spatulate or oblanceolate parallel-veined leaves that range from 2.5 to 10 inches long and 0.8 to 1.6 inches wide, and form a basal rosette. SP has stocky rhizomes and a stout hollow stem that arises from the rosette and ranges in height from about 8 to 35 inches at the time of flowering. The inflorescence consists of approximately 30 to 50 individual flowers that are each approximately 0.3 inches wide. The perianth is composed of six spatulate-oblong segments that are pink to lavender and range from approximately 0.2 to 0.35 inches long and 0.04 to 0.08 inches wide (USFWS 1991).

SP is an obligate wetland species that occurs along streams and seepage areas in freshwater swamps in a variety of palustrine forested wetlands including swamps dominated by red-maple (*Acer rubrum*) or white cedar (*Thuja occidentalis*). Specific hydrological requirements of SP limit its occurrence within forested wetlands to areas with lateral groundwater movement that are perennial saturated but not inundated by floodwaters (USFWS 1991).

3.5.1.1 Potential to Occur in the Action Area

There are several hundred occurrences of SP within 1 mile and immediately downstream of the project area along Eightmile Branch and within wetlands adjacent to Eightmile Branch (USFWS 2014, NJDEP Bureau of GIS 2021). The project area does not provide suitable habitat for SP; however, suitable habitat is present downslope of the project area within the western portion of the AA along Eightmile Branch and adjacent wetlands (Appendix A, Figure 5), and there are numerous occurrences nearby. Therefore, SP is considered to be present within the AA.

3.5.1.2 Critical Habitat for the Swamp Pink

Critical habitat has not been designated for SP.

SECTION 4. EFFECTS ANALYSIS

4.1 Potential Effects on the Northern Long-Eared Bat and Tricolored Bat

As discussed in Sections 3.4.1.1 and 3.4.2.1, the project area is within the current range of the NLEB and the TCB. There are no hibernacula within or near the project area; however, the project area does provide suitable summer roosting and foraging habitat. Effects on NLEB and TCB from tree removal during the active season include potential injury or mortality of individuals roosting in trees that are removed. Individuals may be injured or killed while fleeing disturbance during daylight hours because of an increased likelihood of predation. If a roost tree were to be cut during the active season, as long as alternate roosts remain in the project vicinity, impacts associated with the loss of individual roost trees are likely to be short-term as additional energy is expended traveling to the alternate roost tree. However, removing a primary roost tree might disrupt colony cohesion, increase stress, and increase energy demands through searching for a new roost, which might decrease reproductive success. Effects on NLEB and TCB from tree removal outside of the active season include loss of foraging, commuting, and roosting habitat. However, the site is adjacent to a large forested area that also provides suitable summer habitat, and replanting of trees on the site would help restore foraging, commuting, and roosting habitat for NLEB and TCB. To minimize potential effects on NLEB and TCB, all tree and vegetation removal will take place outside of the active season as described in the NLEB and TCB Tree Removal AMM 2. Therefore, the potential for project activities to adversely affect NLEB and TCB is considered low.

There would be no effect on designated critical habitat for NLEB or TCB because none has been designated.

4.2 Potential Effects on the Swamp Pink

As discussed in Section 3.5.1.1, portions of the proposed AA have the potential to support SP. Effects on SP from construction of the Proposed Action include loss of habitat because of wetland filling, clearing, and draining; degradation of habitat because of sediment from off-site construction activities; and subtle changes in groundwater and surface water hydrology because of upslope developments. Additionally, stormwater outfalls discharging into wetlands that support SP can increase the frequency, duration, and volume of flooding in these wetlands and adversely affect SP. However, the stated purpose of the project will provide for increased recharge of runoff and preventing suspended solids from entering Eightmile Branch and adjacent wetlands that support the large downstream population of SP. Therefore, with the implementation of the AMMs described in Section 2.5.1.2 to avoid impacts, the potential for project activities to adversely affect SP is considered low.

There would be no effect on designated critical habitat for SP because none has been designated.

SECTION 5. EFFECTS DETERMINATIONS

As described in Section 3.4.1.1, the proposed AA supports potential suitable summer roosting habitat for the NLEB. The NLEB has the potential to occur within the AA during the active season (April 1 to September 30). With the implementation of the AMMs described in Section 2.5.1.1, vegetation removal would be limited to the nonactive season (October 1 through March 30). Therefore, FEMA has determined that this project ***may affect, but is not likely to adversely affect*** the NLEB.

As described in Section 3.4.2.1, the proposed AA supports potential suitable summer roosting habitat for the TCB. The TCB has the potential to occur within the AA during the active season (April 1 to September 30). With the implementation of the AMMs described in Section 2.5.1.1, vegetation removal would be limited to the nonactive season (October 1 through March 30). Therefore, FEMA has determined that this project ***is not likely to jeopardize the continued existence of the*** TCB. If the TCB were to become listed prior to completion of the project, then the project ***may affect, but is not likely to adversely affect*** the TCB.

As described in Section 3.5.1.1, portions of the proposed AA support potential suitable habitat for SP. However, with the implementation of the AMMs descried in Section 2.5.1.2, including pre-construction surveys, FEMA has determined that this project ***may affect, but is not likely to adversely affect*** SP.

SECTION 6. REFERENCES

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SECTION 7. LIST OF PREPARERS

Name, Organization	Education	Experience
Wilson Fogler, CDM Smith	BS, Forestry (Wildlife Habitat Management and Conservation Concentration)	Seven years of experience in threatened and endangered species surveys, National Environmental Policy Act documentation, wetland science, regulatory compliance, and permitting