Finding of No Significant Impact
Environmental Assessment for Segment B1 Levee and Floodwall Construction
Green Brook Flood Damage Reduction Project
Middlesex Borough, Middlesex County, NJ

The U.S. Army Corps of Engineers, New York District (District) and the New Jersey Department of Environmental Protection (NJDEP) are proposing to construct approximately 1,900 feet of floodwall and 1,000 feet of levee along the Green Brook, raise the Sebring’s Mills Bridge, flood proof ten business structures, and buy-out one residential structure. The project is being referred to as Segment B1 and is part of the overall Green Brook Flood Damage Reduction Project (GBFDRP). The levee, floodwall and structure buyout is located in Middlesex Borough in Middlesex County. The floodproofing component is located in the Green Brook Township, Somerset County. The bridge straddles the two municipalities.

The evaluation of potential environmental impacts were previously addressed in the U.S. Army Corps of Engineers (Corps), New York District, Final Environmental Impact Statement (FEIS) for the Proposed Plan for the Green Brook Flood Control in the Green Brook Sub-Basin, Somerset, Middlesex and Union Counties, New Jersey, filed August, 1980 and the Final Supplemental Environmental Impact Statement (FSEIS) for the Proposed Plan for the Green Brook Flood Control in the Green Brook Sub-Basin, Somerset, Middlesex and Union Counties, New Jersey, filed in May 1997.

The Environmental Assessment associated with this Finding of No Significant Impact (FONSI) was prepared specifically to address the significance of potential impacts the construction of the levee and floodwall will have on Indiana bat (Myotis sodalis), a federal and state endangered species, and the potential impacts the construction of all elements of Segment B1 will have on General Conformity of the Clean Air Act. At the time the 1980 FEIS and 1997 FSEIS were filed, Indiana bat was not identified as an endangered species within the GBFDR project area. The U.S. Environmental Protection Agency revised the General Conformity rules of the Clean Air Act in April 2010, requiring an updated General Conformity analysis for the project.

No Indiana bats were captured during a mist net survey conducted in June 2010. The General Conformity analysis performed for the project demonstrated that construction emissions are below the thresholds of 100 tons/year for NOx, 50 tons/year for VOC, and below 100 tons/year for PM 2.5. Therefore, based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that the proposed project is not a major Federal action significantly affecting the quality of the human environment and does not warrant the preparation of a supplemental environmental impact statement.

18 Aug 2010

Date

John R. Boulé II
Colonel, U.S. Army
District Commander
ENVIRONMENTAL ASSESSMENT

Segment B1 Levee and Floodwall Construction
Green Brook Flood Damage Reduction Project
Middlesex Borough, Middlesex County, NJ

August 2010

Prepared By:

US Army Corps of Engineers
New York District
APPENDICES:
Appendix A: Section 404(b)(1) Evaluation
Appendix B: Fish and Wildlife Coordination Act Report
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LIST OF ACRONYMS
Acronym  Title
ARRA  American Reinvestment and Recovery Act
AMP  Adaptive Management Plan
APE  Area of Potential Effect
ASTM  American Standards of Testing and Materials
CEQ  Council of Environmental Quality
CFR  Code of Federal Regulation
CRRNJ  Central Railroad of New Jersey
Corps  United States Army Corps of Engineers
EA  Environmental Assessment
District  U.S. Army Corps of Engineers, New York District
EPA  United States Environmental Protection Agency
FEIS  Final Environmental Impact Statement
FHACAR  New Jersey Flood Hazard Area Control Act Rules
FSEIS  Final Supplemental Environmental Impact Statement
FONSI  Finding of No Significant Impact
GBFDRP  Green Brook Flood Damage Reduction Project
HTRW  Hazardous, Toxic and Radioactive Waste
MBTA  Migratory Bird Treaty Act
NAAQS  National Ambient Air Quality Standards
NEPA  National Environmental Policy Act
N.J.A.C.  New Jersey Administrative Code
NJDEP  New Jersey Department of Environmental Protection
NJHPO  NJDEP, Division of Parks, and Forestry, Historic Preservation Office
NRHP  National Register of Historic Places
PCE  Perchloroethylene
PM  Particulate Matter
PPB  Parts per Billion
PPM  Part per Million
RCRA  Resources Conservation and Recovery Act
TCE  Trichloroethylene
UST  Underground Storage Tank
USFWS  United States Fish and Wildlife Service
1.0 Introduction
The U.S. Army Corps of Engineers, New York District (District) and the New Jersey Department of Environmental Protection (NJDEP) are proposing to construct approximately 1,900 feet of floodwall and 1,000 feet of levee along the Green Brook, raise the Sebring’s Mills Bridge, flood proof ten business structures, and buy-out one residential structure. The project is being referred to as Segment B1 and is part of the overall Green Brook Flood Damage Reduction Project (GBFDRP). The levee, floodwall and structure buyout is located in Middlesex Borough in Middlesex County. The floodproofing component is located in the Green Brook Township, Somerset County. The bridge straddles the two municipalities.

The purpose of this environmental assessment is to supplement the evaluation of potential environmental impacts that were previously addressed in the U.S. Army Corps of Engineers (Corps), New York District, Final Environmental Impact Statement (FEIS) for the Proposed Plan for the Green Brook Flood Control in the Green Brook Sub-Basin, Somerset, Middlesex and Union Counties, New Jersey, filed August, 1980 and the Final Supplemental Environmental Impact Statement (FSEIS) for the Proposed Plan for the Green Brook Flood Control in the Green Brook Sub-Basin, Somerset, Middlesex and Union Counties, New Jersey, filed in May 1997.

Specifically, this Environmental Assessment is being prepared specifically to address the significance of potential impacts the construction of the levee and floodwall will have on Indiana bat (Myotis sodalis), a federal and state endangered species, and the potential impacts the construction of all elements of Segment B1 will have on General Conformity of the Clean Air Act. At the time the 1980 FEIS and 1997 FSEIS were filed, Indiana bat was not identified as an endangered species within the GBFDR project area. The U.S. Environmental Protection Agency revised the General Conformity rules of the Clean Air Act in April 2010, requiring an updated General Conformity analysis for the project. The evaluation of impacts will determine if the proposed changed conditions warrants the preparation of a supplemental environmental impact statement to the FSEIS and FEIS.

2.0 Green Brook Flood Control Project Background
The overall Green Brook basin encompasses sixty-five square miles within the State of New Jersey in the counties of Somerset, Middlesex and Union, and incorporates the Green Brook sub-basin of the Raritan River Basin, a short reach of the Raritan River along the border of the Borough of Bound Brook and the Middle Brook tributary to the Raritan River (Figure 1).

Flooding has been a longstanding problem in the Green Brook Sub-Basin. In September of 1999, Tropical Storm Floyd caused significant flood damages throughout the Sub-Basin, with the most extreme damages experienced in the Borough of Bound Brook. More recently, the April 2007 nor’easter caused significant flooding in Bound Brook and approximately $200,000 in damages to the Segment T pump station.

The Green Brook Flood Control Project was authorized for construction in Section 401a of the Water Resources Development Act of 1986 and involves the construction of seven different elements. Each element consists typically of multiple construction segments or contract reaches.
Two of the elements in the Upper Basin have been deferred for reanalysis, but the other elements will be constructed as federal and state partnered funding becomes available.
FIGURE 1: Proposed Green Brook Flood Damage Reduction Project
The recommended plan for the GBFDRP will provide flood protection to the lower portion of the basin and the Stony Brook portion of the basin through various structural and non-structural flood control elements including approximately 14 miles of levees and floodwalls along Green Brook with supporting pump stations and closure structures, bridge replacements and removals, approximately 1 mile of channel modification in the Stony Brook portion of the project, and various levels of flood proofing including buy-outs. Plans for the upper portion of the basin have been deferred for reevaluation at a later time.

**Element No. 1 - Bound Brook**

Element No. 1 is comprised of Segments A, N, R, T, and U. Segment R was subdivided into several construction contracts: Segment R-1 which includes the Talmadge Avenue Bridge Replacement, and Segment R-2. Construction of Element No. 1 started in 2001, and has continued with implementation of levees, floodwalls and associated pump stations and drainage features at Segments T, U, R-2, floodproofing of 500 Union Avenue residences and buy-outs at Prospect Place in Middlesex Borough. An additional component involving the removal of an abandoned Conrail Bridge over the Raritan River was included in Element 1 to reduce the potential of flooding during the completion of Segment R2. Segment R2, the last remaining segment to be completed, is currently under construction and is scheduled to be completed by the end of 2012.

**Element No. 2- Green Brook and Middlesex**

Element No. 2 is comprised of Segments B, C, H, and D (Figure 2) and is located in Green Brook Township and the Borough of Middlesex. Proposed flood damage reduction measures for Element No. 2 include approximately 6,750 feet of floodwall, 24,100 feet of levee, a total of six buy-outs of residential structures, floodproofing of 26 commercial structures and the raising of the Sebrings Mills Road, South Lincoln Avenue, and Union Avenue bridges.

Segment B is further broken down into Segments B-1, B-2, and B-3 (Figure 3). Segment B1 is the first segment to be constructed and is being funded with American Recovery and Reinvestment Act (ARRA) funds. Construction is scheduled to begin in the fall of 2010. The remaining two segments are not anticipated to be constructed until 2012 or 2013.

**Mitigation**

The Finderne Farms Mitigation Site, located in Bridgewater Township, serves as off-site wetland and habitat mitigation acreage for the environmental impacts of the Bound Brook construction segments that could not be mitigated for on-site, including the construction of future structural project elements in Middlesex County.

The total property size is 179 acres, with the mitigation project focused on approximately 130 acres of the floodplain portion of the site. Habitats created, restored, enhanced or preserved as part of the mitigation effort include 35 acres of forested wetland, six acres of scrub-shrub wetland, five acres of emergent wetland enhancement, preservation of six acres of palustrine emergent wetland, six acres of upland forest, 27 acres of riparian forest, and 800 linear feet of stream restoration. In addition, 12 acres of active and passive recreation including two soccer fields and trails that will become part of the Raritan River Greenway have been created. Construction of the mitigation site and recreational fields began in Fall 2005, and was completed...
in June 2006. Monitoring to evaluate the success of the mitigation site has been on-going since 2006 and an Adaptive Management Plan (AMP) was developed in 2009 in response to areas of the mitigation site which are not trending toward the permitted success. The AMP identified and described potential limiting conditions and suggested adaptive management strategies that may be employed to investigate and correct limiting conditions. Components of the AMP were initiated in 2009. The AMP will be updated with results of the field investigation and will include additional recommendations or plans of action.

Additional Project Background Information can be viewed online at the District project website: http://www.nan.usace.army.mil/business/prjlinks/flooding/greenbk/index.htm.
FIGURE 2: Element No. 2 of the Green Brook Flood Damage Reduction Project
3.0 Proposed Action
Segment B1 includes the construction of floodwall, levee and pump station, the raising of the Sebrings Mills Bridge and the buyout of one residential structure (see Figure 3). A more detailed description of the various components is provided below:

Levee and Floodwall Alignment with Pump Station
Approximately 1,000 linear feet of earthen levee will be constructed along the south bank of Green Brook east of Green Brook road (See Figure 3). The levee’s average height will be 15 feet and an average footprint width of 110 linear feet. The levee will be paved on top for flood control public works vehicular access during flood events and for maintenance. A pump station, capable of pumping 100 cubic feet per second, is located adjacent to Green Brook road. A temporary tie-off will be constructed along the levee to provide a 10-year flood protection level until Segments B2 and B3 are constructed, which will increase the flood protection level to the 150 year flood event.

A floodwall approximately 1,900 linear feet in length will be constructed west of the Green Brook road within the residential area along the south bank of Green Brook. The height of the floodwall will range from 16 feet at the most easterly direction to 3 feet high near the terminus of the floodwall. A one foot high wall to tie off floodwall is proposed. The floodwall type will be cast-in place concrete T-Wall except where space constraints are extreme, in which case, concrete-capped sheet pile walls will be employed.

Five outfall structures to convey the discharge from pre-existing gravity storm drainage systems through the flood wall and levee system will be installed. These outfall structures will be equipped with check valves and manually operated sluice gate valves to prevent flood stage river water intrusion.

Reconstruction of the Sebrings Mill Road Bridge
The Sebrings Mill Road Bridge will be reconstructed in order to provide adequate freeboard and to provide an elevation closure to the proposed levee and flood walls. The re-construction of the bridge will utilize the existing abutments and wingwalls. Additional scour protection will be provided by rock placed below the river bottom adjacent to the abutment footings to protect the footings from being undermined.

Structure Buy-out and Flood-proofing
Parking lot flood walls and building flood-proofing is proposed to protect businesses on the north bank of Green Brook where there will be no continuous levee and floodwall system. The structure buy-out involves the acquisition and demolition of one single-family residential home located on Green Brook Road. The buy-out is being performed as a result of the Sebrings Mills Road Bridge raising.

4.0 Alternatives Analysis
A complete alternative analysis was performed in the 1989 FEIS and 1997 FSEIS. In general, the alignment of the levee and wall at Segment B1 was selected in order to accommodate a ponding area to the east of Sebring Mills Road on the interior of the levee, which would be inundated during flood events. This area is a logical location for the pump station for several reasons:
1) it is at the existing low point in the drainage area; 2) it is the only large tract of land available; 3) the area is flat and capable of storing storm water; and, 4) the area is an existing wetland where inundation with water will maintain the existing hydrologic and hydraulic regime.

There were no other feasible alternatives to the proposed levee and floodwall system. The existing residential area is fully developed and constrains the river bank corridor except at the location of the existing water company property to the east of Sebrings Mills Road Bridge. The existing drainage patterns are constrained by local topography. The interior drainage area is unusual due to the fact that the low point in the local topography and hence the hydraulic discharge to the river is located at the upstream end of this drainage area. This drainage area forms an enclosed basin once the levee and floodwall are installed. Virtually the entire interior drainage area ultimately drains to the pump station pond area.

5.0 Affected Environment

5.1 Soils
The dominant soil in the project area is Bowmansville silt loam. The Bowmansville series consists of very deep, poorly and somewhat poorly drained soils. The soils are found on floodplains with slopes of 0 to 3 percent and are formed in recent alluvial deposits derived from weathered red and brown shale and sandstone or dolerite or basalt (USDA, 2008). Bowmansville soils are frequently flooded and are included on the list of hydric soils for New Jersey developed by the Natural Resources Conservation Service (USDA, NRCS 2010). Soils with this classification are those saturated through natural or artificial means sufficiently enough to support the growth and regeneration of hydrophytic vegetation (USDA, NRCS 2010).

5.2 Water Resources
The project area is bounded by the Green Brook to the north and east which is classified as a FW-2 NT or freshwater river not supporting trout spawning or maintenance (N.J.A.C. 7:9B 2008). Green Brook, a tributary of the Raritan River, originates in the Watchung Mountains and has a drainage area of approximately 65.4 square miles. The Green Brook flows in a southwesterly direction for 17.3 miles before converging with the Raritan River near the Borough of Bound Brook.

The width of the brook in the project area ranges from 35 to 60 feet with an average depth of one foot. The substrate is comprised of silt, sand, mud. The stream banks are vegetated with mature trees along the north and south bank although severe erosion is occurring along the south bank in the westernmost portion of the project area. Tributaries to the Green Brook within the project area include Bound Brook which joins with Green Brook approximately 200 feet south of the Segment B1 project area.

5.3 Vegetation
Vegetation within the project area of the proposed floodwall varies from maintained lawn and ornamental shrubs and trees to mature deciduous forest located behind the residences and along the Green Brook. The proposed levee is located in mature deciduous forest.

The New Jersey Flood Hazard Area Control Act Rules, N.J.A.C. 13 (FHACAR) establishes and requires the preservation of riparian zones. The width of the established riparian zone is based on
the environmental resources being protected and can range from 50, 150 or 300 feet as measured from the side of surface waters. The Green Brook is designated FW2-NT and does not support habitat for any threatened or endangered species; therefore, the riparian zone is 50 feet as described in N.J.A.C. 7:13-4.1(c) 3.

A wetland delineation was conducted within the project area in March and April 2010. Freshwater wetlands were identified and delineated within the Project site using the method described in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee on Wetland Delineation, January 1989). Four wetlands ranging from 0.53 acres to 8.35 acres were identified within the project area and further described in Section 5.3.1.

5.3.1 Wetlands

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

Four separate palustrine forested wetlands were found within the project area and are further described below.

Wetland 1 (South of Green Brook, East of Sebrings Mills Road)

Wetland 1 is located within the levee footprint and is approximately 8.25 acres in size. The dominant vegetative species includes: pin oak (Quercus palustris), box elder (Acer negundo), silver maple (Acer saccharinum), American elm (Ulmus Americana), green ash (Fraxinus pennsylvanica), and red maple (Acer rubrum), along with species multiflora rose, (Rose multiflora), and greenbrier (Smilax rotundifolia).

Wetland 2 (North of Green Brook, East of Sebrings Road)

Wetland 2 is located on the opposite bank of Green Brook from Wetland 1 and is approximately 0.53 acres in size. Dominant hydrophytic vegetation species in the wetland includes: pin oak, box elder, silver maple, American elm, green ash, and red maple, along with species multiflora rose, and greenbrier.

Wetland 3 (South of Green Brook West of Sebrings Road)

Wetland 3 is located within the area of the proposed floodwall and is approximately 2.35 acres in size. Generally the floodplain is a flat topographic feature above Green Brook’s primary bank where, it varies from very narrow with steep banks to wide flat or gentle slopes before a steeper slope and the high water mark. This wetland is similar to the other wetland areas, in that it contained a variety of vegetation including: scrub-shrub such as multiflora rose and honey suckle (Lonicera sp.), small trees species including box elder, pin oaks with a limited number of sycamore (Platanus occidentalis) and shagbark hickory (Carya ovata).
Wetland 4 (North of Green Brook, West of Sebrings Road)

Wetland 4 is located on a property containing a strip mall on the corner of Sebrings Road and Route 22 E and is approximately 0.60 acres in size. Species identified in the area include black locust (*Robina pseudoacacia*), red maple, silver maple were found along with red-osier dogwood (*Cornus stolonifera*), black cherry (*Prunus serotina*), multiflora rose; (*Rosa multiflora*), spring beauty (*Claytonia virginica*), wormwood (*Artemesia biennis*), wood sorrel and wild onion (*Allium sp.*). Closer to the stream several mature tree species such as pin oak (*Quercus palustris*), American elm, silver maple and red maple dominate the vegetation, and to a lesser extent some shrub and understory species such as multiflora rose, black locust (*Robina pseudoacacia*) tartarian honeysuckle (*Lonicera tartarica*), along with troutlily (*Erythronium americanum*) and other just emerging herbaceous vegetation.

In addition, as per State regulations, a 50-foot transition area was delineated from the boundary of the four wetlands. By definition, a transition area is “an area of upland adjacent to a freshwater wetland which minimizes adverse impacts on the wetland or serves as an integral component of the wetlands ecosystem.”

5.4 Wildlife and Fisheries Resources

Green Brook supports fish species such as spottail shiner (*Notropis hudsonius*), American eel (*Anguilla rostrata*), tessellated darter (*Etheostoma olmstedi*), white sucker (*Catostomus commersoni*), longnose dace (*Rhinichthys cataractae*), redbreast sunfish (*Lepomis auritus*), fallfish (*Seminotilus corporalis*), banded killifish (*Fundulus diaphanus*), creek chub (*Seminotilus atromaculatus*), common shiner (*Notropis cornutus*), satinfin shiner (*Notropis analostanus*), golden shiner (*Notemigonus crysoleucas*), green sunfish (*Lepomis cyanellus*), blacknose dace (*Rhinichthys atratus*), brown bullhead (*Ameiurus nebulosus*), yellow bullhead (*Ameiurus natalis*) (NJDEP 2006).

Mammals within the project area include squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus foridanus*), white-tailed deer (*Odocoileus virginianus*) and other species. Bird species tolerant of urban-suburban areas, such as American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), northern cardinal (*Baeolophus bicolor*), and gray catbird (*Dumetella carolinensis*), utilize the riparian habitat of the project area.

5.4.1 Federal and State Endangered, Threatened and Special Concern Species

**Indiana bat** (Federal and State Endangered)

Indiana bats spend the winter hibernating in caves and mines. The Hibernia Mine located in Hibernia, NJ, is a known Indiana bat hibernaculum. Female Indiana bats occupy summer maternity roosts under the loose bark of dead or dying trees within riparian, floodplain, and upland forests. Tree species commonly used as roost sites include American elm, slippery elm (*Ulmus rubra*), shagbark hickory, silver maple, and green ash. Adult males usually roost in trees near maternity roosts, but some remain near the hibernaculum.

Preferred foraging areas are streams, associated floodplain forests, and impounded bodies of water such as ponds and reservoirs. However, they have been observed in upland forests; pastures and clearings with early successional vegetation; cropland borders; and wooded fencerows (USFWS 2007).
Due to the proximity of the project area to Hibernia Mine and known maternity roosts, the U.S. Fish and Wildlife Service (USFWS) required the District to evaluate the project area to determine the presence of habitat supportive of Indiana bat. The District hired a bat specialist who conducted a site visit in April 2010 and found potential Indiana bat habitat primarily within the property where the proposed levee will be constructed.

Other than the Indiana bat and an occasional transient bald eagle (*Haliaeetus leucocephalus*) that may be observed in the project vicinity, no other Federal or state endangered, threatened or special concern species is known to utilize the project area.

**Bald Eagle (State Threatened)**
The designation of the bald eagle foraging habitat is part of New Jersey’s “Landscape Project” developed by the NJ Division of Fish and Wildlife’s Endangered and Nongame Species Program which delineates and identifies critical habitat for the states threatened and endangered species. The bald eagle foraging habitat is defined as the “amount of habitat required to support a nesting pair of eagles throughout the year.”

### 5.5 Environmental Contamination

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

A database search on possible environmental concerns for the project area was completed. No significant findings were discovered during the database research. However, underground storage tanks (UST) containing heating oil were discovered to be located within 300 feet of the Site. The database research indicated that there were no leaking USTs within 300 feet of the Site.

The property on which the proposed levee is located is a former well field currently owned by the New Jersey American Water Company. The previous owner was Elizabethtown Water Company. Two HTRW reports completed in 1994 and 1996 as part of the GBFDRP Feasibility Study discussed a supply well identified as the Sebrings Mill Well No. 6 (Well #6) located on the property.

The 1996 HTRW Feasibility Study Report indicates Well #6 was contaminated with trichloroethylene (TCE) and perchloroethylene (PCE) at levels measuring at 6 ppb, which exceeds the EPA drinking water standards of 5 ppb and NJDEP drinking standards of 1 ppb. The 1996 report further discusses an air stripper was employed to decontaminate the water from Well #6. According to a NJDEP Well Abandonment Report prepared in 2005, Well #6 was abandoned for the reason of “No longer in use” (NJDEP Well Abandonment Report, 2005). As part of the abandonment, Well #6 was sealed with cement slurry.
5.6 Cultural Resources

A Programmatic Agreement for the Green Brook Flood Damage Reduction Project was signed in 1998. The agreement was based on the results of a cultural resources survey conducted by Hunter Research Inc. in 1988/89 and an evaluation of structures conducted by Panamerican Consultants in 1997 (with supplemental work conducted in 1999) (Hunter Research 1988, 1989) (Panamerican Consultants, 1997). Archaeological work associated with Segment B1; Sebrings Mill Road Bridge replacement and adjacent floodwall and levee construction, was documented in the Hunter Research study. Shovel testing along the alignment of the floodwall and levee yielded no significant artifacts and no sites were identified. No further work was recommended. The structures proposed for buy-out were surveyed and documented in the two Panamerican reports. Sebrings Mill Road Bridge, built in 1974, is not a historic resource. The New Jersey Historic Preservation Office (NJHPO) reviewed the previous reports and concurred with the recommendations.

The replacement of Sebrings Mills Road Bridge was of concern due to the fact that, as suggested by the name, a mill once stood near this crossing. Research indicated that the mill was likely in use by the mid-18th century. A 1923 map depicts a mill and its raceways on the northwest side of the bridge. Comparison with the modern landscape indicated that the road was widened and about one third of the mill building is under the present roadway. Three test trenches were excavated but were located considerably west of the bridge due to concern with undermining the bridge.

Based on archaeological evidence the Hunter report states “substantial and informative remains are unlikely to survive” due to extensive changes to the landscape except perhaps beneath the bridge embankments. Acknowledging that the mill complex was historically important the recommendation however was for no further work as any remains encountered would form just a part of the mill complex and therefore not be eligible for the National Register of Historic Places (NRHP). The bridge was designed with the knowledge that in time the flood control measures would be constructed so the existing bridge abutment could be raised to the needed height and reused. At present, it is assumed that the existing abutments will be reused. The District’s opinion is that no further archaeological work will be undertaken at the Sebrings Mill Road Bridge. If the plans change as detailed engineering and design proceeds the Corps may revisit the need for further archaeological work. However, borings taken in March 2010 through each of the four corners of the bridge did not encounter any stone or timber or other indications of mill remains.

The architectural survey conducted by Panamerican Consultants surveyed 14 of the 17 structures proposed for flood proofing or buy-out. All were residential or commercial/industrial structures dating from 1950 to 1996. None of the structures were determined significant. Due to an apparent oversight three structures in this area were not surveyed. They were evaluated in 1999 and were determined not eligible. No further cultural resources studies will be conducted for the structures proposed to be flood proofed or bought out. The District evaluated the possibility of buying out two additional structures on Green Brook Road. These two dwellings are similar to the other houses in the neighborhood dating to circa 1960 and are not considered eligible for the NRHP.
The levee runs through the well field of American Water. This property that was not previously evaluated for historic significance although was subject to archaeological testing and no significant artifacts were recovered. The Watchung Water Company first operated a well field here in 1897. The area is presently a wooded floodplain. Several wells exist on the site, which were until recently in use. American Water demolished all standing structures on the property as evidenced by the debris piles in the locations of mapped structures observed in March 2010 by the project archaeologist. Given that there is little evidence remaining of the historic operation and little to be gained from the site on the technology of historic water supply the property is not considered eligible for the NRHP. No further work is recommended for this property.

5.7 Air Quality
In accordance with the Clean Air Act of 1977, as amended, the Environmental Protection Agency (EPA) developed National Ambient Air Quality Standards (NAAQS) to establish the maximum allowable atmospheric concentrations of pollutants that may occur while ensuring protection of public health and welfare with a reasonable margin of safety.

The USEPA measures community-wide air quality based on daily measured concentrations of six criteria air pollutants; carbon monoxide, sulfur dioxide, respirable particulate matter, lead, nitrogen dioxide, and ozone. Based on these measurements of air quality, the USEPA designates attainment areas and non-attainment areas nationwide. Non-attainment areas are designated in areas where air pollution levels persistently exceed the national ambient air quality standards.

Somerset and Middlesex Counties are located in the New York-New Jersey-Long Island Air Quality Control Region. Similar to most urban industrial areas, emissions from automobiles, manufacturing processes, utility plants, and refineries have impacted air quality in the Project area. Based on the National Ambient Air Quality Standards (NAAQS) six primary pollutants, Somerset County is designated as a non-attainment area for ozone and particulate matter (PM2.5) and an attainment area for sulfur dioxide, carbon dioxide, particulate matter (PM10), lead and nitrogen oxide.

5.8 Socioeconomics
Green Brook Township has a population of 5,654 with 1,234.66 persons/square mile. The population is comprised of 88% White, 4% Hispanic, and 1.7% African American. The median age is 39 and the median per capita income is $37,290. Approximately 1.7% of families and 2.4% of individuals live below the poverty line. 46% of the residents are occupied in the management and professional sector. 84% of the residential structures are detached, single family homes; 32% of which were built from 1940 to 1959 (2000 U.S. Census Bureau).

Middlesex Borough has a population of 13,717 with 3,921.15 persons/square mile. The population is comprised of 87% White, 9% Hispanic, and 3.4% African American. The median age is 38 and the median per capita income is $27,834 (U.S. Census Bureau 2000). Approximately 2.4% of families and 3.6% of individuals live below the poverty line. 39.4% of the residents are occupied in the management and professional sector. 73% of the residential structures are detached, single family homes; 37% of which were built from 1940 to 1959 (U.S. Census Bureau 2000).
6.0 Environmental Impacts

6.1 Soils
The in-situ soil does not meet the geotechnical specifications for levee construction, therefore soil that meets the specifications will be imported from off-site. Although the importation of soil will constitute a change in the existing soil type within the immediate vicinity of the levee, no changes to the soil beyond the levee footprint are proposed. Soil may also need to be imported to use as backfill when constructing the floodwall but as with the levee, the change in soil type will not extend beyond the immediate footprint of the floodwall. The floodwall will provide some long term protection against the soil erosion occurring along the western most portion of the project area.

6.2 Water Quality
The full range of impacts to water resources were evaluated in 1980 FEIS and 1997 SEIS. The proposed action may increase turbidity to surface waters during construction as a result of earth disturbance. The turbidity impacts are anticipated to be minor and will be controlled to the extent practicable through use of best management practices identified in the soil and sedimentation erosion control plan. The District will be applying for Soil and Sedimentation Erosion Control and Request for Authorization permits from the Freehold and Somerset Soil Conservation Districts prior to construction.

A review of the NJDEP GIS database indicated that there are two public community water supply wells within the levee project area. The District has coordinated with the property owner, New Jersey American Water Company, to verify that the wells are no longer in service and were sealed in 2006. Therefore, the proposed activity will not have any temporary or permanent impacts to public water supplies.

6.3 Vegetation
Approximately 4.5 acres of vegetation will be removed in order to construct the levee and floodwall; with the majority of the impacts occurring in wetlands. The limits of construction have been minimized to greatest extent possible to reduce loss of vegetation. Upon completion of the levee and the house demolition, shrubs and trees will be planted and the area will be reseeded with native grasses and wildflowers. The floodwall area will be reseeded with native grasses and wildflowers.

Approximately 1.24 acres of riparian zone will be permanently impacted through the construction of the levee and floodwall. The FHACAR allow for a maximum 3,000 square feet of riparian zone disturbance for flood damage reduction projects before requiring an application for a Hardship Exception and compensating the impact through mitigation at a 2:1 ratio. Given that the impact acreage exceeds the maximum limit, the District and NJDEP have included a Hardship Exception as part of the Flood Hazard Area Individual Permit application and have demonstrated in the application that public safety cannot be adequately ensured without exceeding this limit. A 2.52 acre mitigation credit will be applied at the Finderne Mitigation site to compensate for the impacts to the riparian zone.
6.3.1 Wetlands
Approximately 4.38 acres of forested wetland and 0.88 acres of transition area will be permanently impacted as a result of project implementation. In addition, 0.38 acres of wetland and 0.033 acres of transition area will be temporarily impacted as a result of the construction equipment access. The temporary impacts from the levee construction will be mitigated on-site through landscape restoration plans that involve both seeding and planting of native shrubs and trees aside the levee alignment. Plant species to be utilized for on-site mitigation are included on the proposed planting plan located in Appendix C. The wetland floodplain areas will be seeded with a grass and wildflower mix of native and naturalized species. The levee itself will receive turf grass mix for maintenance requirements. Due to space constraints, the permanent impacts will be mitigated through credits generated by the Finderne Wetland Mitigation Site.

6.4 Wildlife and Fisheries Resources
The full range of impacts to fish and wildlife resources were evaluated in 1980 FEIS and 1997 SEIS. In general, the removal of mature trees to construct the floodwall and levee will result in a permanent reduction of cover, nesting and food sources for wildlife. Construction activities will temporarily displace animals that utilize the forest such as birds, squirrels, raccoons, etc., but they are anticipated to return to the area post-construction. To comply with the Migratory Bird Treaty Act (MBTA), trees and shrubs will be cleared outside of a 15 March through 31 July window to avoid adverse impacts to any potential nesting birds that are covered under this act. The Sebrings Mills Road bridge replacement is not expected to adversely impact fish and wildlife resources.

The floodwall and levee were set back to the greatest extent possible to retain as much mature vegetation along the banks. Erosion and sediment control best management practices will be implemented to reduce the introduction of sediment into open water surfaces.

6.4.1 Federal and State Endangered, Threatened and Special Concern Species

*Indiana bat*
A survey was performed over the course of two nights in June 2010 to verify the presence or absence of Indiana bat. A total of four nets were set in two locations; two nets along the Middle Brook and two nets along a gravel access road located on the property where the levee will be constructed. No Indiana bats were captured, thus satisfying the Endangered and Threatened species coordination with the U.S. Fish and Wildlife Service.

*Bald Eagle*
Based on coordination with staff from NJDEP Land Use Resource Program and Division of Fish and Wildlife’s Endangered and Nongame Species Program, due to the urbanized nature of the project area and the relatively small width of Green Brook, the project area was determined to not provide suitable bald eagle foraging habitat. Therefore, no adverse impacts to the bald eagle or its supportive habitat are anticipated from the implementation of the project. See Appendix D for additional documentation from NJDEP regarding this matter.
6.5 Environmental Contamination
As mentioned in Section 5.5 of the EA, none of the USTs located within 300 feet of the project area were found to be leaking. Therefore, the presence of the USTs near the project area will not impact construction.

In regards to the TCE and PCE contamination of Well #6, both are volatile organic compounds (VOC’s) typically used as industrial cleaners although they can also be found in common household products such as paint remover, and electronic equipment cleaners. Additionally, PCE is commonly used in dry cleaning. The primary exposure pathway for humans of TCE and PCE is through inhalation with ingestion as a secondary pathway. As VOC’s such as TCE and PCE quickly evaporate upon contact with air, health risks associated with TCE and PCE is typically associated with inhalation in closed, confined areas or long term exposure (e.g. directly working with the chemicals). Neither significantly bioaccumulates in plants or animals.

The 2005 NJDEP Well Abandonment Report noted that Well #6 was installed to a depth of 412 feet below grade and a distance of 500 feet from Green Brook Road. Excavation for levee construction will extend to a maximum of 5 feet below grade. Due to the fact that the well has been capped and the location and depth of the well in relation to the location of the levee footprint and proposed excavation depth, it is unlikely that the contaminated water will be encountered during construction.

Exposure risk to residents is considered to be minimal given that the levee is setback from residences, and is located on private property. To reduce health risks, the construction contractor will be required to develop a Health and Safety Work Plan to be followed during all construction activities to minimize any release of contaminated materials, and also to protect workers’ health. Additional information regarding the contamination of Well #6 is located in Appendix F of this document.

6.6 Cultural Resources
As such a long time has elapsed since the Hunter Research and Panamerican studies were conducted and reviewed by the NJHPO and as several new items were under consideration, a letter was sent by the District in March 2010 to update the NJHPO on the project and provide them with additional information on Segment B1. It is the District’s opinion that no NRHP eligible resources are present within the Segment B1 Area of Potential Effect and no further cultural resources work will be undertaken. NJHPO concurred with this determination (Appendix E).

6.7 Air Quality and Noise
6.7.1 Air Quality
Construction emissions for the proposed project have been estimated to be below the Federal de minimis thresholds in accordance with the Clean Air Act. The emissions will be below the thresholds of 100 tons/year for NOx, 50 tons/year for VOC, and below 100 tons/year for PM 2.5. The emissions from the project are considered to have an insignificant impact on the regional air quality, and according to 40 CFR 93.153 (f) and (g), the proposed project is presumed to conform to the State Implementation Plan. A General Conformity, Record of
Non-Applicability (RONA) and associated air emissions calculations are included in Appendix C of this document.

6.7.2 Noise
The proximity of the project area to residences will increase noise levels due to operation of construction equipment. The impacts of noise will be mitigated to the extent possible through restriction of the work hours within normal operating hours and by coordinating with the local communities to comply with any locally enforced noise ordinances or work periods. Wildlife in the area may be temporarily displaced during active construction, but would be expected to return to the project area post-construction.

6.8 Socioeconomics
During construction of the floodwall, some of the residents within this project area will be unable to fully utilize their property and it will be required for them to move or disassemble structures such as sheds and above ground swimming pools to accommodate construction. In addition, setting the floodwall back from the Green Brook will fragment the properties and will result in the loss of direct access to the portion of property between the brook and floodwall. This loss will be offset through the acquisition of permanent easements for the operation and maintenance of the floodwall and compensating the property owner at its fair market value for the effect on the property.

The proposed levee is located on property owned by the NJ-American Water Company and is being acquired in its entirety. The temporary levee tie off that will provide a 10 year level of protection until the entire Segment B is constructed will require obtaining easements from two homeowners along Starlit Drive. As with the floodwall construction, the two property owners will not have full utilization of the rear of their property during construction.

The bridge replacement will require detours and/or traffic restrictions. This will be minimized to the greatest extent possible and will be coordinated with the municipalities and counties to determine road closures/traffic restriction schedules and durations.

Long term benefits achieved by the project include flood damage reduction benefits that include reduced damage to property, protection of business and residential structures, improved public health and safety, reduced traffic delays, and emergency access for the fire department, medical personnel and police protection. The proposed action is not expected to adversely impact the socioeconomic environment of the area.

6.8.1 Environmental Justice
Executive Order 12898, Federal Actions to address Environmental Justice in Minority and Low Income Populations mandates that each federal agency will identify and address potential disproportionately high and adverse human health or environmental effects of its activities on minority populations and low income populations.

No significant environmental impacts on the human population are anticipated as a result of the proposed action. The proposed project is not located in a low income area and is intended to protect the surrounding community from flood related damages. Therefore, a disproportionate
negative impact on minority or low-income groups in the community is not anticipated and a full evaluation of Environmental Justice issues is not required for this EA.

6.9 Cumulative Impacts
Cumulative impacts refer to one or more individual impacts, which when considered together, are considerable or which compound or increase the other’s impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the selected plan when added to other closely related past, present or reasonably foreseeable future projects.

Past and current actions that need to be considered against the proposed action include construction of Element No. 1 of the GBFDRP. The proposed construction may overlap with the on-going Segment R2 construction in Bound Brook. However, the overlap of the construction activities is not anticipated to result in any unanticipated adverse environmental (e.g. air quality, wetlands) or socioeconomic impacts.

The total wetland impacts resulting from the construction of Element No. 1 of the GBFDRP and Segment B1 includes 11.98 acres of forested wetland, 0.13 acres of wetlands associated with drainage ditches or swales and 0.26 acres of scrub shrub wetlands. These impacts have been mitigated through the use of credits generated by the Finderne Farms mitigation site.

Future actions to be considered include the construction of the remaining Segment B and the implementation of C, H and D. Upon its completion, Segment B will provide a flood protection level for a 150 year event. Overall, the construction of future segments of the GBFDRP will provide comprehensive flood damage reduction within the Green Brook sub-basin.

Adverse cumulative impacts to wetlands will be assessed as project design for each segment are developed and if necessary, additional mitigation sites will be identified and created to compensate for such impacts. Emissions analyses will be conducted for each segment to ensure compliance with General Conformity and if needed, construction operations will be scheduled in a manner to stay below the yearly de minimis levels for the applicable NAAQS. Continued coordination will occur with the USFWS to identify the need for field surveys to ensure Indiana bat will not be adversely impacted. Coordination with the SHPO will be on-going to ensure significant cultural resources will not be adversely impacted or identify mitigation requirements for any cultural resource impacts.

7.0 Public and Agency Coordination
The Draft Environmental Assessment is being coordinated with the public and involved agencies through targeted mailings, placement of the report in public repositories such as the local library and by advertisement of the documents availability on the New York District’s website.

Coordination with the public includes meetings with affected property owners in February and June of this year to discuss the project features. The affected residents were also notified of the Flood Hazard and Freshwater Regulations Individual permit applications. Additionally, the proposed action has been coordinated with the State and local partners of the Green Brook Flood...
Damage Reduction Project, including NJDEP, Somerset and Middlesex Counties as well as with the Green Brook Flood Control Commission.

The proposed project has been coordinated with the NJDEP Land Use Regulation Program Office via a pre-application meeting held in April 2010 and submission of the Flood Hazard Area and Freshwater Wetlands Individual Permit applications. Correspondence documenting coordination between the District and the State Historic Preservation Office Correspondence pertaining to cultural resources is located in Appendix E. The Corps is in continuing coordination with the U.S. Fish and Wildlife Service, who has prepared a Fish and Wildlife Coordination Act Report (FWCAR). The FWCAR and the District response is included in Appendix B of this document.

The circulation of this Environmental Assessment for public comment fulfills public coordination requirements in accordance with the National Environmental Policy Act of 1970. The District will prepare a final NEPA document to address all received comments.

8.0 Conclusion

In summary, the implementation of Segment B1 is not anticipated to have significant adverse impacts on the environment, cultural resources or socioeconomics and is therefore proposed to be documented with a Finding of No Significant Impact (FONSI). The proposed action is necessary to ultimately provide flood damage reduction for the Borough of Middlesex that will benefit the economics, health and safety of the residents. Temporary disturbance to floodplain and wetland habitat will be mitigated on-site through site landscaping and permanent floodplain and wetland impacts will be mitigated offsite at the Finderne Farms mitigation site. Therefore, a supplemental EIS is not required. Applicable laws and regulations related to federal actions are summarized in Table 1.
Table 1. Summary of Primary Federal and State Laws and Regulations Applicable to the Proposed Action

<table>
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<th>Compliance</th>
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</thead>
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<td><strong>Legislative Title U.S. Code/Other</strong></td>
<td>An air quality analysis was completed for the project. Based upon the completed analysis, the emissions from the project are considered to have an insignificant impact on the regional air quality, and according to 40 CFR 93.153 (f) and (g) the proposed project is presumed to conform to the SIP. A Record of Non-Applicability is located in Appendix C.</td>
</tr>
<tr>
<td>Clean Air Act</td>
<td>42 U.S.C. §§ 7401-7671g</td>
</tr>
<tr>
<td>Fish and Wildlife Coordination Act</td>
<td>16 U.S.C. § 661 et seq.</td>
</tr>
<tr>
<td>Executive Order 11990, Protection of Wetlands</td>
<td>May 24, 1977</td>
</tr>
<tr>
<td>Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks</td>
<td>April 21, 1997</td>
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<th>State</th>
<th>Compliance</th>
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<tr>
<td><strong>Legislative Title and code/date</strong></td>
<td>Permit has been received. Refer to Appendix E.</td>
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<tr>
<td>NJDEP Rules and Regulations – Flood Hazard Area</td>
<td>N.J.A.C. 7:13 (N.J.S.A 58:16A)</td>
</tr>
</tbody>
</table>

Segment B1, GBFDRP
Middlesex Borough, New Jersey

Environmental Assessment
August 2010

21
9.0 References

Hunter Research, Inc. 1990. A Cultural Resource Survey for the Green Brook Flood Control Project in the City of Plainfield, the Boroughs of Bound Brook, Middlesex, Dunellen, North Plainfield and South Plainfield and the Townships of Green Brook and Bridgewater, Middlesex, Somerset and Union Counties, New Jersey.


10.0 List of Preparers
Kimberly Rightler, Project Biologist, U.S. Army Corps of Engineers, NY District
Lynn Rakos, Project Archaeologist, U.S. Army Corps of Engineers, NY District
Angela Sabet, Physical Scientist, U.S. Army Corps of Engineers, NY District
Appendix A

Section 404 (b)(1) Evaluation
I. PROJECT DESCRIPTION

a. Location: Borough of Middlesex, Middlesex County, New Jersey.

b. General Description: Installation of 1,000 feet of levee and 1,900 feet of floodwall along the southern bank of the Green Brook.

c. Authority and Purpose:
The study has been authorized under Section 401a of the Flood Control Act of 1986 as amended, to study and construct flood damage reduction measures for public works and non-profit public services. The purpose of the project is to provide flood damage reduction measures to the community of the Borough of Middlesex.

d. General Description of Fill Material
1.) Characteristics of Material: Material used to construct the levee will be clean fill that meets Corps specifications for levee construction. Other materials used in association of levee construction includes rip rap around discharge outlets to reduce discharge velocities and prevent scouring and soil erosion. The floodwall will be constructed of concrete.
2.) Quantity of Material: Levee: 33,960 cy of soil and 300 cy of stone; Floodwall 24,349 cy of soil and 4,378 cy of concrete.
3.) Source of Material: The rock will be obtained from a local quarry. Soil fill will be clean material and will be acquired at an adequate site.

e. Description of the Proposed Discharge Sites
1.) Location: The discharge site is located on along the southern bank of the Green Brook in the Borough of Middlesex Brook, New Jersey.
2.) Size: Approximately 1,900 ft of floodwall and 1,000 levee will be constructed.
3.) Type of Site: The project is located in a residential area.
4.) Types of Habitat: The floodwall is located in a combination of forested wetland, some of which has been disturbed through the conversion to lawns. The levee is located in forested wetland. The aquatic habitat consists nontidal freshwater classified as FW2-NT (general fresh surface water, non-trout) by NJDEP.
5.) Time and Duration of Disposal: Construction of levee and floodwall system will take approximately eighteen months.

f. Description of Disposal Method: Land based construction equipment will be used to excavate and construct the flood damage reduction measures.
II. FACTUAL DETERMINATION

a. Physical Substrate Determinations
   1) Substrate Evaluation and Slope: The project area is generally flat with the dominant soil in the project area being the Bowmansville Series.
   2) Sediment Type: The sediment is primarily alluvial soils.
   3) Dredged/Fill Material Movement: As the levees and floodwalls are set back from the Green Brook, no fill will be directly placed in open water. Fill activities will occur in freshwater wetlands. Placement and grading of fill, riprap and concrete will result in the temporary disturbance of 0.38 acres of forested wetlands and the permanent loss of 4.38 acres of forested wetlands. Temporary wetland impacts will be mitigated through on-site restoration following completion of construction activities. Permanent wetland impacts will be mitigated by utilizing credits generated from the construction of the Finderne Farms mitigation site located in Bridgewater Township, approximately six miles from the Segment B1 project area.
   4) Physical Effects on Stream Bottom: The project is not expected to change the existing substrate or characteristics of Green Brook given that the levee and floodwalls are setback from the streambank.
   5) Other Effects: No unique or other effects are anticipated from this project.
   6) Actions Taken to Minimize Impacts: Best management practices, include but not limited to silt fencing and straw bales, will be utilized during construction. Additionally, work will be limited to that which can be completed and stabilized in one day.

b. Water Circulation, Fluctuation and Salinity Determinations
   1) Water, Consider Effects on:
      a. Salinity- No effect
      b. Water Chemistry- No effect
      c. Clarity- Water clarity may be slightly impacted during construction activities; No long-term effect is anticipated.
      d. Color- No effect
      e. Odor- No effect
      f. Taste – No effect
      g. Dissolved Gas Levels- No effect
      h. Nutrients- No effects
      i. Eutrophication- No effect
      j. Others as Appropriate- No other adverse impacts are anticipated from the project.
   2) Current Patterns and Circulation:
      a. Current Patterns and Flow- The project will not impact normal flows.
      b. Velocity- The project will not impact velocities of the Green Brook.
      c. Stratification- No effect.
      d. Hydrologic Regime- No effect.
3) Normal Water Level Fluctuations: The project will not cause any change in normal water levels.

4) Salinity Gradients: Not applicable.

5) Actions Taken to Minimize Impacts: Erosion and sediment control practices will be utilized during construction.

c. Suspended Particulate/Turbidity Determinations.

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites: Effects of the proposed project on turbidity and suspended sediment concentrations will be minimal.

2) Effects on Chemical/Physical Properties of the Water Column:
   a. Light Penetration- No effect.
   b. Dissolved Oxygen- No effect.
   c. Toxic Metals and Organics- No effect.
   d. Pathogens- The project will not cause any change in pathogen levels as no sewage or animal waste use or treatment is involved.
   e. Aesthetics- The aesthetics of the project area will be somewhat compromised as the majority of the project area behind the residences is forested. Restoration of grass and shrub and tree species will be implemented to restore the vegetation.
   f. Others as Appropriate- Not applicable

3) Effects on Biota:
   a. Primary Production, Photosynthesis- Not applicable
   b. Suspension/Filter Feeders- No impact is expected. Erosion and sediment control best management practices will be implemented during construction to reduce sedimentation to Green Brook.
   c. Sight Feeders- No impact is expected.

4) Actions Taken to Minimize Impacts: Erosion and sediment controls will be implemented during construction.

d. Contaminant Determinations: All fill material will be clean and will not pose a risk.

e. Aquatic Ecosystem and Organism Determinations.
   1) Effects on Plankton: No effect.
   2) Effects on Benthos: No effect.
   3) Effects on Nekton: No effect.
   4) Effects on Aquatic Food Web: No effect. Setting the floodwall and levee back from the stream bank will preserve the vegetation immediately along the bank.
   5) Effects on Special Aquatic Sites:
      a. Sanctuaries and Refuges- Non applicable
b. Wetlands- 4.38 acres of forested wetland will be permanently impacted by construction of the levee and floodwall with 0.38 acres of forested wetland being temporarily impacted during construction.

c. Mudflats- Non applicable.

d. Vegetated Shallows- Not applicable.

e. Coral Reefs- Not applicable.

f. Riffle and Pool Complexes- No effect.

6) Threatened and Endangered Species: The U.S. Fish and Wildlife Service deemed the site as potentially having Indiana bat habitat and required a survey to determine the presence or absence of Indiana bat. The survey was performed in June 2010 resulting in no Indiana bat captures therefore concluding the Endangered and Threatened species consultation. With the exception of transient bald eagle, no other state or Federally Threatened, Endangered species are known to inhabit the project area and will therefore not be adversely impacted from project implementation.

7) Other Wildlife: The project is not expected to have significant long-term impacts on the waterfowl, upland birds or mammals in the project area.

8) Actions to Minimize Impacts: Best management practices including but not limited to silt fence, cofferdams and turbidity curtains will be utilized during construction.

f. Proposed Disposal Site Determinations

1) Mixing Zone: Not applicable

2) Determination of Compliance with Applicable Water Quality Standards: Fill will be clean construction material and will meet water quality standards.

3) Potential Effects on Human Use Characteristic:
   a. Municipal and Private Water Supply - The Green Brook is not used as a water supply so no direct or indirect adverse impacts to the municipal water supply form project implementation are expected.
   b. Recreational and Commercial Fisheries - The project is not expected to have any adverse impacts to recreational or commercial fisheries.
   c. Water Related Recreation- The Green Brook is not used for recreational purposes within the project area; therefore no permanent or temporary adverse impacts are expected as a result of project implementation.
   d. Aesthetics - Removal of mature trees to construct the levee will reduce the aesthetics of the project area. However, the need for flood protection to homes within Middlesex Borough outweighs the loss. The floodwall will receive a decorative façade to minimize the impact. The levee is set back from residential homes will minimize the direct impacts the levee will have on views.
   e. Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves - Not Applicable
   f. Determination of Cumulative Effects on the Aquatic Ecosystem.
The Segment B1 project is a component of the larger Green Brook Flood Damage Reduction Project. Other components comprising of levees, buyouts and floodwalls have been implemented throughout 3 miles west of the project area in the Borough of Bound Brook. The majority of the cumulative impacts have been through the temporary disturbance and permanent loss of freshwater wetlands. The Finderne Farms mitigation area is serving as mitigation for the impacts to wetlands.

g. Determination of Secondary Effects on the Aquatic Ecosystem.
   No secondary effects on the aquatic ecosystem are expected from this project.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE.

   a. No significant adaptation of the Section 404(b)(1) guidelines was made relative to this evaluation.
   b. The objective of protecting Middlesex Borough from catastrophic flood damages necessitates the implementation of the floodwalls and levees.
   c. The proposed activity will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
   d. The proposed disposal operations will not harm any Federal or state endangered species or its critical habitat under the Endangered Species Act of 1973.
   e. The proposed discharge of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, fish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values are not expected to occur.
   f. Appropriate steps to minimize potential adverse impacts of the discharge of fill material include the implementation of an erosion and sediment control plan and judicious engineering practices.
Appendix B

U.S. Fish and Wildlife Service Correspondence
Leonard Houston, Chief
Environmental Analysis Branch
U.S. Army Corps of Engineers, New York District
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Houston:

The U.S. Fish and Wildlife Service (Service) has reviewed project information for the U.S. Army Corps of Engineers, New York District’s (Corps) Green Brook Flood Damage Reduction Project: Segment B1 of the Green Brook Element (Project), Borough of Middlesex, Middlesex County and Township of Green Brook, Somerset County, New Jersey. The Service provides this draft Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) Section 2(b) report in accordance with our Fiscal Year-2010 Scope-of-Work agreement. Our report is based on plans and information provided by the Corps. This report has been coordinated with the New Jersey Division of Fish and Wildlife (NJDFW); a copy has been forwarded to the NJDFW for review and comments.

AUTHORITY

The following comments are provided pursuant to Section 2(b) of the FWCA. Comments are also provided under the authority of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Migratory Bird Treaty Act of 1918 (MBTA) (40 Stat. 775, as amended; 16 U.S.C. 703-712), and are consistent with the intent of the Service’s Mitigation Policy (Federal Register, Vol. 46, No. 15, Jan. 23, 1981).

PROJECT DESCRIPTION

The Corps is engaged in a flood damage reduction project for the Green Brook sub-basin, which is located within the Raritan River Basin in north-central New Jersey in the counties of Middlesex, Somerset, and Union. The Green Brook Flood Damage Reduction Project includes approximately 14 miles of levees and floodwalls along Green Brook and its tributaries, and flood...
proofing in the lower portion of the project area. Due to its size, the project is broken into Construction Elements, which are further divided into segments. Funds were received as part of the American Recovery and Reinvestment Act (Pub. L. 111-5) to initiate design and construction of a portion of Segment B of the Green Brook Element. The 11-acre Segment B1 (hereafter referred to as "the Project") involves raising the Sebrings Mills Road Bridge crossing the Green Brook, installing approximately 950 linear feet of earthen levee and approximately 1,950 linear feet of floodwall, including tie-off and a pump station. Following installation of the levee, floodwall, tie-off, pump station, and raised bridge, the banks of the river would be restored to provide habitats for wildlife and to aid in flood-water storage.

The Project is located in northwestern Middlesex County, immediately adjacent to Somerset County (Enclosures I & 2). Green Brook separates the two counties (Somerset and Middlesex), and the Project is located along the southern bank of Green Brook. The floodwall and levee will be located within the floodplain of Green Brook: the floodwall at the south of Green Brook, west of Sebrings Mills Road bridge and the levee at the south of Green Brook, east of Sebrings Mills Road bridge. The Project area and the Township of Green Brook are primarily commercial. Dense residential areas abut the Project site to the south in the Borough of Middlesex.

Project construction activities would include the use of large equipment such as hydraulic and mechanical cranes, hydraulic excavators, backhoe loaders, paving breakers, vibratory rollers, tandem powered scrapers, crawler tractors, and a variety of loading and dumping trucks (Enclosure 3). This equipment would aid the construction of the floodwall, levee, tie-off, pump station, nine outfall structures, right bank flood-proofing, and landscaping. For the levee, 4,398 cubic yards of material would be excavated and 33,960 cubic yards of fill would be placed. The levee will be constructed with a variable elevation from 51.5 NGVD at the upstream and 49.1 NGVD at the downstream end with an average footprint with of 110 linear feet. For the floodwall, 28,400 cubic yards of material would be excavated and 24,349 cubic yards of fill would be placed. The concrete T-Wall and concrete-capped sheet pile floodwall will be constructed with an average top elevation of 49.1 NGVD at the upstream end to an elevation 44.9 NGVD at the downstream end. A pump station, capable of pumping 100 cubic feet per second, is located at River Station 47, adjacent to Sebrings Mills Road. Nine outfall structures to convey the discharge from pre-existing gravity storm drainage systems and local drainage through the floodwall and levee system. These outfall structures will be equipped with check valves and manually operated sluice gate valves to prevent flood stage river water intrusion.

Only a small portion of the Project would involve flood-proofing. Parking lot floodwalls and building flood-proofing is proposed to protect homes and business on the north bank of Green Brook, opposite bank of proposed levee location, where there will be no continuous levee or floodwall system.

The Corps proposes to utilize off-site mitigation credits available from the Finderne Farm Wetland Mitigation Site (Finderne Site) to compensate for 4.38 acres of unavoidable permanent adverse impacts to forested wetland from levee and floodwall construction, including tie-off,
pump station, and regrading (Table 1). In addition, 0.88 acre of unavoidable permanent impact to wetland transition area cannot be compensated onsite due to space constraints. The Finderne Site is located at Finderne Farms in Bridgewater, Somerset County, New Jersey, approximately 5 miles from the Project. The Service provided a separate FWCA report to the Corps on September 12, 2006 regarding the proposed Finderne Site.

Table 1. Permanent and Temporary Impacts from the Green Brook Segment B1 Project, Borough of Middlesex, Middlesex County and Township of Green Brook, Somerset County, New Jersey.

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<tr>
<th>Wetland Impact</th>
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<td>Floodwall</td>
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<tr>
<td>Total Impact (acres)</td>
<td>4.38</td>
<td>0.38</td>
<td>0.88</td>
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</table>

Additionally, the Project includes on-site landscaping plans to compensated for 0.03 acre of temporary impacts to transition areas and 0.38 acre of temporary impacts to forested wetlands. The landscaping plans include replanting native trees in the forested wetland of the proposed levee and applying a seed mix in the forested wetland of the proposed floodwall.

The Service strongly prefers non-structural flood control measures such as floodplain acquisition and restoration, floodplain zoning restrictions, early flood warning systems, and flood-proofing of buildings to structural solutions.

METHODS

The draft report is based on review of information provided by the Corps, the Service's files and library, and field notes prepared by URS. The Service has coordinated this review with the New Jersey Department of Environmental Protection (NJDEP), including NJDFW. Further, we have searched our Geographic Information System (GIS) database for known locations of federally listed species, wetlands, and other important habitat types within or near the project area. We also searched for State-listed species and State priority species in the project area using available GIS database information.

NATURAL RESOURCES

Green Brook Sub-basin (Green Brook – Bound Brook) Water Quality

The Green Brook sub-basin of the Raritan River Basin is within Watershed Management Area 9 and drains an area of 65 square miles, entering the main stem of the Raritan River in Bound Brook at river mile 20.4 (Rutkosky 1990, 1992; Corps 1997). The NJDFW classifies the basin
waters by their ability to support species of trout (Salmonidae) (New Jersey Division of Fish and Wildlife 2004). Currently, all Green Brook sub-basin waters are classified as FW-2-Non-Trout (New Jersey Division of Fish and Wildlife 2004).

Water quality problems in Green Brook are likely related to a high percent urban land use (71%) of the surrounding watershed. In addition to urban impacts, the Green Brook received a sub-optimal habitat rating and lacks stream habitat diversity, as the site is comprised mainly of pool habitat (60%). Evidence of water quality impacts includes turbid water clarity, high conductivity, high fine sediment composition, and heavy periphyton growth. Heavy algal growth may have contributed to a depleted dissolved oxygen concentration at the time of sampling in August 2004. Erosion was evident on both banks, which can add to sediment load, sediment deposition, and the degree of embeddedness (BFBM 2006).

Wetlands

The Green Brook sub-basin is characterized as largely suburban and industrialized. Because of the highly developed nature of the Green Brook sub-basin, wildlife resources are limited except for palustrine forested/scrub-shrub wetland floodplain within the riparian corridor. The 11-acre Project site is dominated by forested/scrub-shrub-scrub within the Green Brook floodplain. Greenbrook Road and commercial development along U.S. Route 22 border the site to the north and west. Green Brook and some undeveloped floodplain exist to the east and west, and a residential area in Middlesex Borough borders the Project to the south. The width of undeveloped floodplain varies along the length of the Project area. Where residential properties abut Green Brook to the southwest, the understory has been cleared and manicured lawns are maintained.

The Project site is primarily wooded, and best described as a small, bottomland, floodplain hardwood forest, with tree species and canopy structure typical of periodic flooding and poorly drained soil. The majority of soils at the Project area are classified and mapped as Bowmansville silt loam series along the south bank. The easternmost portion of the Project area contains Fluvaquents (loamy) soil (URS 2010). Most of the wetlands (Wetlands 1-3, see Enclosure 4) in the Project area contain soils that are Bowmansville silt loam. Evidence of hydrology within wetlands includes water marks, drift lines, and sediment deposits. Sources of hydrology include groundwater, surface runoff and flooding.

Wetland 1 (South of Green Brook, East of Sebrings Road) – Levee Area

Wetland 1 area is located within the south bank floodplain of the Green Brook, generally encompassing the entire floodplain up to the high water mark (Enclosure 4). The general vegetation of the area varies from maintained lawns to scrub-shrub, over-grown vines, and matures trees (including healthy, stressed and dead specimens); other areas are ponded or unvegetated area (URS 2010).

The dominant hydrophytic plant species in the wetland includes the following: pin oak (Quercus palustris), box elder (Acer negundo), silver maple (Acer saccharinum), red maple (A. rubrum), American elm (Ulmus americana), and green ash (Fraxinus pennsylvanica), along with scrub-
shrub and vine vegetation such as multiflora rose (*Rosa multiflora*), green brier (*Smilax rotundifolia*), poison ivy (*Toxicodendron radicans*), and Japanese honey suckle (*Lonicera japonica*) (URS 2010). Other species that were observed include shagbark hickory (*Carya ovata*), black locust (*Robinia pseudoacacia*), American sycamore (*Platanus occidentalis*), swamp white oak (*Q. bicolor*), black cherry (*Prunus serotina*), and black walnut (*Juglans nigra*).

**Wetland 2 (North of Green Brook, East of Sebrings Road)**

This wetland area is located within the north bank floodplain on the opposite bank of Green Brook from Wetland 1 (described above) (Enclosure 4), between Green Brook and Green Brook Road. Dominant hydrophytic plant species includes the following: pin oak, box elder, silver maple, red maple, American elm, and green ash and along with multiflora rose, green brier, poison ivy, and Japanese honey suckle (URS 2010).

**Wetland 3 (South of Green Brook, West of Sebrings Road) – Floodwall Area**

This wetland area is located within the south bank floodplain of Green Brook (Enclosure 4). Generally, the floodplain is a flat topographic feature above Green Brook’s primary bank, where it varies from very narrow with steep banks to wide and flat or gentle-sloping before a steeper slope at the high water mark. This wetland is similar to the other wetland areas, in that it contained a variety of vegetation including the following: scrub-shrub such as multiflora rose and Japanese honey suckle, small tree species including box elder, pin oak, and limited numbers of American sycamore and shagbark hickory.

**Wetland 4 (North of Green Brook, West of Sebrings Road)**

This quadrant of the project site contains a strip mall on the corner of Sebrings Road and Route 22 E (Enclosure 4). The area extending from the edge of pavement to the stream’s edge was investigated. The investigation revealed that the entire area has recently undergone scouring followed by deposition of alluvial deposits after storm events. Near the western boundary of the project area and continuing beyond is a low topographic “bowl.” Flood waters appear to have slowed and ponded in this area. Most of the vegetation closest to the parking lot and back building appear to have been cleared in recent years. Mature trees near the brook have remained intact.

Within the bowl area saplings such as black locust, red maple, and silver maple were found along with red-oiser dogwood (*Cornus stolonifera*), black cherry, multiflora rose, Virginia spring beauty (*Claytonia virginica*), wormwood (*Artemisia biennis*), wood sorrel (*Oxalis acetosella*), and wild onion (*Allium ascalonicum*). Closer to the stream, mature trees of several species such as pin oak, American elm, silver maple, and red maple dominate the vegetation. In this area, there are also some shrub and understory species such as multiflora rose, black locust, and tartarian honeysuckle (*Lonicera tartarica*), along with troutlily (*Erythronium americanum*) and other herbaceous vegetation.
Of the vegetation species found within Project area, the Service has identified at least three plant species that are invasive: multiflora rose, Japanese honey suckle, and common reed. Control of these invasive exotic plants is recommended, as discussed below.

**Environmental Contaminants**

The Corps’ Hazardous Toxic Radioactive Waste (HTRW) investigation did not yield any concern, given that it is a residential area. The property where the levee is being constructed is owned by New Jersey-American Water and had several wells located on it. These wells were decommissioned and sealed years ago. At this time, the HTRW report is not completed and the Service requests a copy prior to providing the final FWCA report.

**Federally Listed Species**

**Indiana bat**

The project site is located within the geographic range of the Indiana bat (*Myotis sodalis*), which is federally listed as endangered pursuant to the ESA. Indiana bats hibernate in caves and abandoned mine shafts from October through April. Between April and August, Indiana bats inhabit floodplain, riparian, and upland forests, roosting under loose tree bark during the day, and foraging for flying insects in and around the tree canopy at night. During these summer months, numerous females roost together in maternity colonies. Maternity colonies use multiple roost in both living and dead trees. From late August to mid-November, Indiana bats congregate in the vicinity of their hibernacula, building up fat reserves for hibernation (Harvey 1992). Protection of Indiana bats during all phases of their annual life cycle is essential to the long term conservation of this species. Threats to the Indiana bat include disturbance or killing of hibernating and maternity colonies; vandalism and improper gating of hibernacula; fragmentation, degradation, and destruction of forested summer habitats; and use of pesticides and other environmental contaminants. More recently, white-nosed syndrome has affected Indiana bats, as well as several other bat species.

The Service previously identified the Project area as potential habitat for Indiana bat. On May 3, 2010, the Corps submitted Indiana bat survey work plan for our review and approval. On May 6, 2010, the Service approved the work plan. The Corps contracted with Tetra Tech, Inc. (Tetra Tech) in association with Bat Conservation and Management Inc. (BCM), to perform an Indiana bat survey within Wetland 1 of the Project area. On June 2 and 3, 2010, staff from Tetra Tech and BCM conducted surveys for Indiana bats within Wetland 1. On June 16, 2010, the Service received Indiana bat survey report (Corps 2010).

The Indiana bat survey reported that a total of six (6) individual bats comprising two species were captured throughout the survey in Wetland 1 area. Five big brown bats (*Eptesicus fuscus*) were captured. The one other species captured was the little brown myotis (*Myotis lucifugus*). The little brown myotis was banded per the New Jersey State Scientific Collecting Permit Special Condition #7.
Because Indiana bats were not found to occur on the project site, tree clearing may proceed with no seasonal restriction if tree clearing is completed within a 2-year period.

Except for the Indiana bat, no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the project area. If Indiana bats or any other federally listed species or their habitats are documented in the project area during project planning or implementation, the Corps must reinitiate consultation under Section 7 of the ESA. Current information regarding federally listed and candidate species occurring in New Jersey is enclosed (Enclosure 5).

**State-listed Species**

The New Jersey’s Landscape Project mapping identifies the Project area within State-listed (threatened) bald eagle (*Haliaeetus leucocephalus*) foraging habitat. The NJDEP has determined that the Project area is not a suitable foraging area for bald eagle.

Coordination with the NJDFW Endangered and Nongame Species Program and New Jersey Division of Parks and Forestry (NJDPF) Natural Heritage Program is ongoing to determine if any additional State-listed wildlife or plants are known to occur in the Project area. A list of State endangered and threatened wildlife species is enclosed (Enclosure 6).

**Fish**

The Project area within Green Brook is classified as a non-trout production and non-trout maintenance river by the NJDFW, but the river supports other freshwater fish species. During early 2000, the NJDEP’s Bureau of Freshwater and Biological Monitoring (BFBM) began monitoring Green Brook with a fish index of biotic integrity (FIBI). A FIBI assesses the health of a stream based on multiple attributes of the resident fish assemblage. Each site sampled is scored based on its deviation from reference conditions (i.e., what would be found in an unimpacted stream) and classified as “poor,” “fair,” “good,” or “excellent.” In addition, habitat is evaluated at each site and classified as “poor,” “marginal,” suboptimal,” or “optimal” (BFBM 2006). During the summer of 2004, BFBM conducted FIBI at Green Brook (091) and identified a total of 16 fish species (n = 604) with order of abundance: spottail shiner (*Notropis hudsonius*) (n = 223), American eel (*Anguilla rostrata*) (n = 155), tessellated darter (*Etheostoma olmstedi*) (n = 82), white sucker (*Catostomus commersoni*) (n = 62), longnose dace (*Rhinichthys cataractae*) (n = 21), redbreast sunfish (*Lepomis auritus*) (n = 21), and fallfish (*Semotilus corporalis*) (n = 16) (BFBM 2006). The FIBI score was 36 out of 50, which is classified as “fair,” and the habitat assessment score was 152 out of 200, classified as sub-optimal.

The overall fish abundance and species richness were high, but the species diversity was relatively low. The fish community lacked native species, which may be a result of habitat and water quality degradation. The high fine sediment load in the stream may be impacting the local fish community, as lithophilic spawning species are susceptible to siltation (BFBM 2006).
Mammals

The floodplain of the project area supports habitat for small mammals. Wildlife species that may be found in the Project area are those tolerant of urban to suburban land uses. Eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), meadow vole (*Microtus pennsylvanicus*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphia virginiana*), woodchuck (*Marmota monax*), and white-tailed deer (*Odocoileus virginianus*) are likely to occur in the Project area.

Migratory Birds

Common bird species in the Project area include American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), northern Cardinal (*Cardinalis cardinalis*), tufted titmouse (*Baeolophus bicolor*), gray catbird (*Dumetella carolinensis*), and American crow (*Corvus brachyrhynchos*).

Migratory birds are a Federal trust resource responsibility of the Service pursuant to the MBTA. Many species of migratory birds have experienced population declines in recent decades, largely due to direct and indirect destruction and fragmentation of their habitats (Dunne 1989).

The MBTA prohibits taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. Unlike the ESA, neither the MBTA nor its implementing regulations at 50 CFR Part 21 provide for permitting of “incidental take” of migratory birds. According to the *New Jersey Division of Fish and Wildlife Guidance Manual for the Protection of Fish and Wildlife Resources* dated June 2006, the appropriate timing restriction to protect nesting migratory birds from tree to shrub-scrub removal is March 15 to July 31.

SELECTED ALTERNATIVES

Of all alternatives studied in detail, the selected Plan E provides the least adverse impacts to the environment. With this Plan there is no upstream detention, which would be detrimental to wildlife habitat. Plan E provides protection to the Lower Basin which experiences the worst flood damages when considered on an average annual basis. Plan E, however, would have the least detrimental impact to environmental quality of the structural plans.

PROPOSED MITIGATION

As described in the mitigation plans, the Green Brook Flood Damage Reduction Project will utilize on-site and off-site mitigation for impacts to intermediate resource value, forested freshwater wetlands, and transition areas. Mitigation is proposed on-site within the Project area, but due to space limitations, additional mitigation off-site will be necessary. Removal of debris and eradication of invasive exotic plants is recommended on-site.
Temporary impacts to transition areas and forested wetland areas are mainly associated with temporary access areas. Temporary impacts are proposed to be mitigated on-site through landscape restoration plans that involve both seeding and planting native shrubs and trees along the levee alignment. The Project includes on-site landscaping to mitigate for 0.38 acres of temporary impacts to forested wetland and 0.03 acres of temporary impacts to transition areas. The Service recommends monitoring bank erosion and for survival of planted vegetation on-site for 5 years. Contingency plans are also recommended to provide corrective actions if necessary.

Off-site wetland and habitat mitigation are required for the Green Brook Flood Damage Reduction Project due to permanent impacts resulting from construction of levees and floodwalls, including the tie-off and levee pump station. Consistent with the Service’s Mitigation Policy, compensatory mitigation, through creation of wetlands or restoration of existing wetlands, is recommended when minimization and avoidance of impacts are exhausted as alternatives.

The Corps’ mitigation plans would implement the 2:1 mitigation ratio per the NJDEP Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:8A-15.8). Specifically, the Corps plans to mitigate for unavoidable permanent adverse impacts to 3.11 acres of forested wetlands from the levee structure, 1.23 acres of forested wetlands from the floodwall structure, and 0.04 acres of forested wetlands from regrading (a total of 4.38 acres).

The forested wetlands at Finderne Site are generated through a combination of creation at a 2:1 ratio and enhancement at a 3:1 ratio. For this Project, the 4.38 acres of permanent wetland impacts were broken down to fit within the enhancement and creation ratio credits:

- 3.7 acres of the 4.38 will utilize creation at a 2:1 ratio = 7.40 acres
- 0.68 acres of the 4.38 acres will utilize enhancement at a 3:1 ratio = 2.04 acres

The Service is generally in agreement with the mitigation plan.

**SERVICE RECOMMENDATIONS**

1. Eradicate or control exotic, invasive species on the Green Brook flood plain, as project activities may introduce and/or facilitate the spread of invasive vegetation. The Corps should coordinate with NJDEP to ensure that regular surveys are conducted to identify and remove any undesirable plants (e.g., multiflora rose, Japanese honeysuckle, and common reed) beginning to re-colonize during or after Project construction activities. A variety of measures exist for removing undesirable species. For sites with few invasive plants, physical removal may be the least expensive method if the entire plant (including root system) can be extracted and if there are sufficient number of personnel to carry out the task. In cases where undesirable species have gained a substantial foothold, a glyphosate-based herbicide engineered for wetland sites, such as *Rodeo* or *Gly-Pro*, is appropriate. Either of the above techniques would be effective at the Project sites.

2. Provide documentation of the applicability of and adherence to the Corps’ HTRW Guidance for Civil Works Projects as part of the Project plan.
3. Continue to coordinate with the NJDFW’s Endangered and Nongame Species program for current information regarding State-listed wildlife species in the Project area.

4. Continue to coordinate with the NJDPF’s Natural Heritage Program for current information regarding State-listed plant species in the Project area.

5. Conform to a standard State seasonal restriction and best management practices on in-stream work between April 1 and June 30 to protect aquatic resources, including anadromous fish.

6. Implement tree and shrub removal seasonal restriction from March 15 to July 31 to ensure compliance with MBTA.

7. Remove trash, abandoned materials, or other human-generated debris as part of the clearing process.

8. Remove the introduced species, meadow foxtail (*Alopecurus pratensis*), from the floodplain mix for the landscape seeding plan for the mitigation project.

9. Conduct monitoring for potential bank erosion during earthwork activities and post-project for 5 years.

10. Monitor the survival of vegetation planted in the on-site mitigation/restoration areas for 5 years and take corrective actions if vegetation does not develop as expected.

11. Specific recommendations for the Fiderne Farm Mitigation Site have been provided to the Corps in our FWCA report dated September 12, 2006. Please use the FWCA report as a reference.
CONCLUDING REMARKS

The Service recognizes the need to reduce temporary flooding along the Raritan River that may occur during the interim build-out period of the Green Brook Flood Control Project. The Service recommends that the Corps continue to coordinate with the non-Federal sponsor, landowners, and other interested stakeholders to implement the recommendations provided above.

The Service appreciates the opportunity to comment on the proposed plan and is pleased to submit this draft FWCA Section 2(b) report as technical input to the Green Brook Flood Control Project: BI Segment. Should you have any questions, please contact Ron Popowski at Ron_Popowski@fws.gov.

Sincerely,

J. Eric Davis Jr.
Supervisor
REFERENCES

Literature Cited


Figure 1. Survey Location for Indiana Bat Survey, Green Brook Flood Damage Reduction Project, Middlesex County, New Jersey.

Prepared By: US Army Corps of Engineers New York District

Date: 4/10

Legend
- Floodwall
- Levee
- County Boundary
- Net Locations
  - NET 1A - Stream
  - NET 1B - Stream
  - NET 2A - Forest
  - NET 2B - Forest

Source: USGS 7.5' Topographic Digital Raster Graphic (DRG)
Downloaded from: http://data.geocomm.com/April 2010. DRG
used Bound Brook, New Jersey 1978. Net location data, Tetra Tech
Figure 2. Mist Net Locations for Indiana Bat Survey, Green Brook Construction Element, Segment B1, Green Brook Flood Damage Reduction Project, Middlesex County, New Jersey.
List of Equipment used to construct levee, floodwall, pump station and landscaping activities. Green Brook Flood Damage Reduction Project, Middlesex and Somerset County, New Jersey.

Equipment Description

AIR COMPRESSOR, 250 CFM (7 CMM), 100 PSI (689 KPA)
AIR HOSE, 1.5" (38 MM) DIA x 100' (31 M) LENGTH, HARDROCK (USE AS DRILLING ACCESSORY)
ASPHALT DISTRIBUTOR, 3,000 GAL (11,355 L) (ADD 45,000 LB (20,412 KG) GVW TRUCK)
ASPHALT FINISHER, 10' WIDE SCREED, WHEEL, W/19' 6" SCREED EXTENSION, 215 CF HOPPER
BUCKET, CONCRETE, GENERAL PURPOSE, 1.0 CY (0.8 M3)
BUCKET, DRAGLINE, 0.8 CY (0.6 M3) MEDIUM WEIGHT
CHAINSAW, 16" - 24" (406-610 MM) BAR
CONCRETE FINISHER, ROTO TROWEL, 46" (1,168 MM) DIA, 4 BLADE
CONCRETE MIXER, PLASTER/MORTAR, 12 CF (0.3 M3), W/TRAILER
CONCRETE PUMP, 117 CY/HR, 75' BOOM, TRUCK MTD
CONCRETE SAW, 13" (330 MM) DEPTH, SELF PROPELLED
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR
CRANE, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 20 TON (18 MT), 70' (21.3 M) BOOM, 4X4
CRANE, MECHANICAL, LATTICE BOOM, CRAWLER, DRAGLINE/CLAMSHELL, 0.75 CY (0.6 M3), 25 TON (23 MT), 100' (30.5 M) BOOM
CRANE, MECHANICAL, LATTICE BOOM, TRUCK MOUNTED, 125 TON (113 MT), 240' (73.2 M) BOOM
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 30 TON, 95' BOOM, 4X4
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 10 TON, 30' BOOM, 4X4, NON-ROTATING OPERATOR'S CAB

CRANES, HYDRAULIC, TRUCK MTD, 70 TON, 115' BOOM, 8X4
CRANES, HYDRAULIC, TRUCK MTD, ALL TERRAIN, 25 TON, 94' BOOM, 6X4X2
DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2
DUMP TRUCK, HIGHWAY, 16 - 20 CY (12.2 - 15.3 M3) DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 6X4
GRADER, MOTOR, ARTICULATED, 135 HP (101 KW), 12' (3.6 M) BLADE WIDTH
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/17 TEETH SCARIFIERS
HYDRAULIC EXCAVATOR, CRAWLER, 24,640 LBS, 0.60 CY BUCKET, 16.50' MAX DIGGING DEPTH
LOADER / BACKHOE, WHEEL, 0.80 CY FRONT END BUCKET, 24" DIP, 4.3 CF, 12' DIGGING DEPTH, 4X4
LOADER, FRONT END, CRAWLER, 1.30 CY BUCKET
LOADER, FRONT END, WHEEL, SKID-STEER, 14.3 CF, 60" BUCKET
LOADER, FRONT END, WHEEL, SKID-STEER, 9-11 CF (0.2-0.3 M3), 60" (1.5 M) BUCKET {BOBCAT}, 13 CWT (590 KG)
LOADER/BACKHOE, WHEEL, 0.80 CY (0.6 M3) FRONT END BUCKET, 9.8' (3.0 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4
LOADER/BACKHOE, WHEEL, 1.25 CY (0.9 M3) FRONT END BUCKET, 12.0' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, (0.2 M3), 4X2 11.06
PAVING BREAKER, 66 LB (30 KG) (ADD 100 CFM (2.8 CMM) COMPRESSOR)
PUMP, WATER, CENTRIFUGAL, TRASH, HOSE, SUCTION/DISCH, 2" (50 MM) DIA X 50' (15 M) WITH COUPLING (PER SECTION)
PUMP, WATER, CENTRIFUGAL, TRASH, HOSE, SUCTION/DISCH, 2" (51 MM) DIA x 20' (6.1 M) LENGTH, W/COUPLING/SECTION
PUMP, WATER, DIAPHRAGM, SKID MTD, ENGINE DRIVE, 2" (51 MM) DIA, 2,000 GPH (7,571 LPH) @ 25' (7.6 M) HEAD
(ADD HOSES)

RIPPER, 3-SHANKS & BEAM, HYDRAULIC (ADD TO 341-440 HP (254-328 KW) DOZER & COST FOR POINT WEAR)
RIPPER, SHANK, EACH (ADD TO 340-440 HP (254-328 KW) DOZER & COST FOR POINT WEAR)
ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 14.25 TON, 68" WIDE, 9 TIRE, ASPHALT COMPACTOR
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 2.9 TON, 47.2" WIDE, 2X1, ASPHALT COMPACTOR
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 7.8 TON, 66.1" WIDE, 2X1, ASPHALT COMPACTOR
ROLLER, VIBRATORY, TOWED, SINGLE DRUM, SHEEPSFOOT, 25.5 TON, 72" WIDE (ADD 180 HP TOWING UNIT)
SCRAPER, TANDEM POWERED, STANDARD LOADING, 21 CY, 24 TON, 4X4, D-9 ASSISTED LOADING
SCRAPER, TANDEM POWERED, STANDARD LOADING, 34 CY, 37.5 TON, 4X4, D-10 ASSISTED LOADING
SCRAPER, TOWED, 12-18 CY (9-14 M3), 18 TON (16.3 MT) (ADD 285 HP (213 KW) TRACTOR)
TRACTOR, CRAWLER (DOZER), 240 HP, LOW GROUND PRESSURE, W/7.70 CY STRAIGHT BLADE
TRACTOR, CRAWLER (DOZER), 300-340 HP (224-254 KW), POWERSHIFT, W/UNIVERSAL BLADE
TRACTOR, CRAWLER (DOZER), 310 HP, POWERSHIFT, W/15.3 CY SEMI-U BLADE
TRACTOR, CRAWLER (DOZER), 341-440 HP (254-328 KW), POWERSHIFT, W/UNIVERSAL BLADE
TRUCK OPTION, DUMP BODY, REAR, 10.0 CY (7.7 M3) (ADD 35,000 LB (15,876 KG) GVW TRUCK)
TRUCK OPTION, DUMP BODY, REAR, 12 CY (9.2 M3) (ADD 45,000 LB (20,412 KG) GVW TRUCK)
TRUCK OPTION, FLATBED, 8' (2.4 M) x 20' (6.1 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)
TRUCK OPTION, FLATBED, 8' (2.4M) x 12' (3.7 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)
TRUCK, HIGHWAY, 20,000 LBS (9,000 KG) GVW, 2 AXLE, 4X2 WITH FLATBED

TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)
TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)
TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)
### FEDERALLY LISTED AND CANDIDATE SPECIES IN NEW JERSEY

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<td><em>Charadrius melodus</em></td>
<td>T</td>
</tr>
<tr>
<td>Red knot</td>
<td><em>Calidris canutus rufa</em></td>
<td>C</td>
</tr>
<tr>
<td>Roseate tern</td>
<td><em>Sterna dougallii dougallii</em></td>
<td>E</td>
</tr>
<tr>
<td>Red-cockaded woodpecker</td>
<td><em>Picoides borealis</em></td>
<td>E+</td>
</tr>
<tr>
<td><strong>MAMMALS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern cougar</td>
<td><em>Puma concolor couguar</em></td>
<td>E+</td>
</tr>
<tr>
<td>Indiana bat</td>
<td><em>Myotis sodalis</em></td>
<td>E</td>
</tr>
<tr>
<td>Gray wolf</td>
<td><em>Canis lupus</em></td>
<td>E+</td>
</tr>
<tr>
<td>Delmarva fox squirrel</td>
<td><em>Sciurus niger cinereus</em></td>
<td>E+</td>
</tr>
<tr>
<td><strong>INVERTEBRATES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf wedgemussel</td>
<td><em>Alasmidonta heterodon</em></td>
<td>E</td>
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<tr>
<td>Northeastern beach tiger beetle</td>
<td><em>Cicindela dorsalis dorsalis</em></td>
<td>T</td>
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<tr>
<td>Karner blue butterfly</td>
<td><em>Lycaeides melissa samuelis</em></td>
<td>E+</td>
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<tr>
<td>Mitchell’s satyr butterfly</td>
<td><em>Neonympha m. mitchelli</em></td>
<td>E+</td>
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<tr>
<td>American burying beetle</td>
<td><em>Nicrophorus americanus</em></td>
<td>E+</td>
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<td><strong>PLANTS</strong></td>
<td></td>
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<tr>
<td>Small whorled pogonia</td>
<td><em>Isotria medeoloides</em></td>
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<tr>
<td>Swamp pink</td>
<td><em>Helonias bullata</em></td>
<td>T</td>
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<tr>
<td>Bog asphodel</td>
<td><em>Narthecium americanum</em></td>
<td>C</td>
</tr>
<tr>
<td>Knieskern's beaked-rush</td>
<td><em>Rhynechospora knieskernii</em></td>
<td>T</td>
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<tr>
<td>Hirsts' panic grass</td>
<td><em>Dichanthelium hirstii</em></td>
<td>C</td>
</tr>
<tr>
<td>American chaffseed</td>
<td><em>Schwalbea americana</em></td>
<td>E</td>
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<tr>
<td>Sensitive joint-vetch</td>
<td><em>Aeschynomene virginica</em></td>
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<tr>
<td>Seabeach amaranth</td>
<td><em>Amaranthus pumilus</em></td>
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## STATUS:

<table>
<thead>
<tr>
<th>Code</th>
<th>Status Type</th>
<th>Definition</th>
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<tbody>
<tr>
<td>E</td>
<td>Endangered Species</td>
<td>Any species that is in danger of extinction throughout all or a significant portion of its range</td>
</tr>
<tr>
<td>T</td>
<td>Threatened Species</td>
<td>Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range</td>
</tr>
<tr>
<td>C</td>
<td>Candidate Species</td>
<td>Species that appear to warrant listing. Although these species receive no substantive or procedural protection under the Endangered Species Act, Federal agencies and other planners are encouraged to consider these species in environmental planning.</td>
</tr>
<tr>
<td>*</td>
<td></td>
<td>Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service</td>
</tr>
<tr>
<td>+</td>
<td></td>
<td>Presumed extirpated from New Jersey</td>
</tr>
</tbody>
</table>

### Note:
For a complete listing of Endangered and Threatened Wildlife and Plants, refer to 50 CFR 17.11 and 17.12. For complete listings of taxa under review as candidate species, refer to Federal Register Vol. 72, No. 234, December 6, 2007 (Endangered and Threatened Wildlife and Plants; Review of Native Species that are Candidates or Proposed for Listing as Endangered or Threatened).

For further information, please visit our website at: 
http://www.fws.gov/northeast/njfieldoffice/Endangered/

or contact:

U.S. Fish and Wildlife Service  
New Jersey Field Office  
927 N. Main Street, Building D  
Pleasantville, New Jersey 08232  
Phone: (609) 646-9310  
Fax: (609) 646-0352

Revised 04/02/2008
New Jersey's Endangered and Threatened Wildlife

**Endangered Species** are those whose prospects for survival in New Jersey are in immediate danger because of a loss or change in habitat, over-exploitation, predation, competition, disease, disturbance or contamination. Assistance is needed to prevent future extinction in New Jersey.

**Threatened Species** are those who may become endangered if conditions surrounding them begin to or continue to deteriorate.

There are other classifications for wildlife as well, including Stable, Species of Special Concern Special Concern and Undertermined.

Species names in the below tables link to PDF documents containing identification, habitat and status and conservation information. Additionally, in 2003 twelve species were highlighted as part of the celebration of the 30th anniversary of the NJ Endangered Species Conservation Act. See the "2003 Species of the Month" page for more information.

### BIRDS

<table>
<thead>
<tr>
<th>Endangered</th>
<th>Threatened</th>
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</thead>
<tbody>
<tr>
<td>Bittern, American</td>
<td>Bobolink</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td>Haliaeetus leucocephalus BR **</td>
</tr>
<tr>
<td>Falcon, peregrine</td>
<td>Falco peregrinus</td>
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<tr>
<td>Osprey, northern</td>
<td>Accipiter gentilis BR</td>
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<tr>
<td>Osprey, pied-billed</td>
<td>Pandion haliaetus</td>
</tr>
<tr>
<td>Harrier, northern</td>
<td>Circus cyaneus BR</td>
</tr>
<tr>
<td>Hawk, red-shouldered</td>
<td>Buteo lineatus BR</td>
</tr>
<tr>
<td>Owl, short-eared</td>
<td>Asio flammeus BR</td>
</tr>
<tr>
<td>Plover, piping</td>
<td>Charadrius melodus **</td>
</tr>
<tr>
<td>Sandpiper, upland</td>
<td>Batraca longicauda</td>
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<tr>
<td>Shrike, loggerhead</td>
<td>Lanius ludovicianus</td>
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<tr>
<td>Skimmer, black</td>
<td>Rynchops riger BR</td>
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<tr>
<td>Sparrow, Henslow's</td>
<td>Ammodramus henslowii</td>
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<tr>
<td>Sparrow, vesper</td>
<td>Poeciletes gramineus BR</td>
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<td>Tern, least</td>
<td>Sterna antillarum</td>
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<tr>
<td>Tern, roseate</td>
<td>Sterna dougallii **</td>
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<tr>
<td>Wren, serice</td>
<td>Cistothorus platensis</td>
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**Federally endangered or threatened**

BR - Breeding population only; NB - non-breeding population only

### REPTILES

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<tbody>
<tr>
<td>Rattlesnake, timber</td>
<td>Crotalus h. horridus</td>
</tr>
<tr>
<td>Snake, corn</td>
<td>Elaphe g. guttata</td>
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<tr>
<td>Snakes, queen</td>
<td>Regina septentrivittata</td>
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<tr>
<td>Turtle, bog</td>
<td>Clemmys muhlenbergii **</td>
</tr>
<tr>
<td>Atlantic hawksbill</td>
<td>Eremochelys imbricata **</td>
</tr>
<tr>
<td>Atlantic leatherback</td>
<td>Dermochelys coroacea **</td>
</tr>
<tr>
<td>Atlantic loggerhead</td>
<td>Caretta caretta **</td>
</tr>
<tr>
<td>Atlantic Ridley</td>
<td>Lepidochelys kempi **</td>
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**Federally endangered or threatened**
### AMPHIBIANS

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Salamander, blue-spotted</td>
<td>Ambystoma laterale</td>
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<tr>
<td>Salamander, eastern tiger</td>
<td>Ambystoma tigrinum</td>
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<tr>
<td>Treefrog, southern gray</td>
<td>Hyla chrysocelis</td>
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### INVERTEBRATES

<table>
<thead>
<tr>
<th>Endangered</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Beetle, American burying</td>
<td>Nicrophorus mericanus**</td>
</tr>
<tr>
<td>Beetle, northeastern beach tiger</td>
<td>Cincinella d. dorsalis**</td>
</tr>
<tr>
<td>Copper, bronze</td>
<td>Lycaena hylas</td>
</tr>
<tr>
<td>Floater, brook (mussel)</td>
<td>Alasmidonta varicosa</td>
</tr>
<tr>
<td>Floater, green (mussel)</td>
<td>Lasmigona subviridis</td>
</tr>
<tr>
<td>Sabry, Mitchell’s (butterfly)</td>
<td>Neonympha m. mitchelli**</td>
</tr>
<tr>
<td>Skipper, aragos (butterfly)</td>
<td>Attyone aragos aragos</td>
</tr>
<tr>
<td>Skipper, Appalachian grizzled (butterfly)</td>
<td>Pyrgus wyandot</td>
</tr>
<tr>
<td>Wedgemussel, dwarf</td>
<td>Alasmidonta heterodon**</td>
</tr>
<tr>
<td>Efin, frosted (butterfly)</td>
<td>Callophrys inus</td>
</tr>
<tr>
<td>Floater, triangle (mussel)</td>
<td>Alasmidonta undulata</td>
</tr>
<tr>
<td>Fritillary, silver-bordered (butterfly)</td>
<td>Botaria selene myrina</td>
</tr>
<tr>
<td>Lamppussel, eastern (mussel)</td>
<td>Lamphila radiata</td>
</tr>
<tr>
<td>Lamppussel, yellow (mussel)</td>
<td>Lampilla cariosa</td>
</tr>
<tr>
<td>Muckel, tidewater (mussel)</td>
<td>Leptodaea ochracea</td>
</tr>
<tr>
<td>Pondmussel, eastern (mussel)</td>
<td>Ligumia nasuta</td>
</tr>
<tr>
<td>White, checkered (butterfly)</td>
<td>Pontia protodice</td>
</tr>
</tbody>
</table>

**Federally endangered or threatened

### MAMMALS

<table>
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<tr>
<th>Endangered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bat, Indiana</td>
</tr>
<tr>
<td>Bobcat</td>
</tr>
<tr>
<td>Whale, black right</td>
</tr>
<tr>
<td>Whale, blue</td>
</tr>
<tr>
<td>Whale, fin</td>
</tr>
<tr>
<td>Whale, humpback</td>
</tr>
<tr>
<td>Whale, sei</td>
</tr>
<tr>
<td>Whale sperm</td>
</tr>
<tr>
<td>Woodrat, Allegheny</td>
</tr>
</tbody>
</table>

**Federally Endangered

### FISH

<table>
<thead>
<tr>
<th>Endangered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgeon, shortnose</td>
</tr>
</tbody>
</table>

**Federally Endangered

List updated 3/1/94
DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090
August 18, 2010

REPLY TO
ATTENTION OF
Environmental Analysis Branch

Mr. J. Eric Davis Jr.
Field Supervisor
U.S. Fish and Wildlife Service
New Jersey Field Office
927 N. Main St.
Building D
Pleasantville, NJ 08232

Dear Mr. Davis:

This letter serves as a response to your 21 July 2010 Draft Fish and Wildlife Coordination Act Report (FWCAR) (Enclosure 1) for the proposed Sebrings Mills project as part of the Green Brook Flood Control Project Middlesex Borough, Middlesex County, New Jersey.

The following are responses to your recommendations:

1) Recommendation 1, Eradicate or control exotic, invasive species on the Green Brook flood plain.

The Corps will implement invasive species management as needed to ensure the success of the on-site mitigation during construction. Once completed, the non-federal sponsor is responsible for the operations and maintenance of the flood damage reduction structures, including mitigation sites. A component of the maintenance will include general vegetation management within 15 feet from the toe and the levee in order to comply with the Corps Engineering Technical Letter 1110-2-571 Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams and Appurtenant Structures.

Any invasive species management will be conducted in compliance with New Jersey state regulations and will utilize the most appropriate and effective measures. To assist the non-federal sponsor in their maintenance obligations, language can be placed in the Operations and Maintenance Manual detailing the types of management measures specific to the invasive species found on site and permits that may potentially be obtained.
2) Recommendation 2, Provide documentation of the applicability of and adherence to the Corps' HTRW Guidance for Civil Works Projects as part of the Project plan.

Investigations conducted by the Corps indicate that underground storage tanks (UST) containing heating oil are located within 300 feet of the Project area, however none were leaking.

Additionally, the proposed levee is located on property owned by the New Jersey American Water Company. A 1994 HTRW report completed as part of the Green Brook Flood Control Project Feasibility Study discussed that a supply well located on this property, designated the Sebrings Mill Well No. 6 (Well #6), is contaminated with the volatile organic compounds trichloroethylene and perchloroethylene (Enclosure 2).

A subsequent report prepared by the Corps in 1996 documented that the well underwent an unspecified level of air stripping (Enclosure 3). Further, the Corps has verified with the New Jersey American Water Company that the wells were decommissioned and sealed with concrete. Based on the New Jersey Department of Environmental Protection (NJDEP), Well Abandonment Report prepared in 2005 obtained by the Corps, Well # 6 was abandoned in July of 2005 with the reason “No longer in use” (Enclosure 4).

The 2005 NJDEP Well Abandonment Report noted that Well #6 was installed to a depth of 412 feet below grade and a distance of 500 feet from Green Brook Road. Excavation of the levee will be to a maximum of 5 feet below grade. Due to the location and depth of the well in relation to the depth and location of the levee footprint, it is unlikely that if the well is still contaminated, that construction would expose contaminated water.

Therefore, the Corps does not anticipate any exposure or release of contaminants during construction. In addition, the contractor will be required to prepare an Environmental Protection Plan that outlines how the contractor will address any contaminants encountered during construction.

3) Recommendations 3 and 4, Continue to coordinate with NJDFW's Endangered and Nongame Species program for current information regarding State-listed wildlife species and the NJDPF's Natural Heritage Program for current information regarding State-listed plant species in the Project area.

The District will continue coordination with two programs as necessary.

4) Recommendation 5, Conform to a standard State seasonal restriction and best management practices on in-stream work between April 1 and June 30 to protect aquatic resources, including anadromous fish.

The Corps will comply with any seasonal restrictions imposed by the State within the Freshwater Wetlands or Flood Hazard Area Control Act permits.
5) Recommendation 6, *Implement tree and shrub removal seasonal restriction from March 15 to July 31 to ensure compliance with MBTA.*

The Corps has included this window in the construction specifications due to the time constraints associated with obligating the American Reinvestment and Recovery Act monies through which this project is funded. However, as this is the first time we have been made aware of this window and we have concerns about how it may impact construction of other civil works projects, we would like to coordinate further with your office to better understand the aspects of the seasonal restrictions.

6) Recommendation 7, *Remove trash, abandoned materials, or other human-generated debris as part of the clearing process.*

Any trash or debris found during clearing and construction activities within the project footprint will be removed as necessary.

7) Recommendation 8, *Remove meadow foxtail from proposed flood plain mix in Section 02450.*

Meadow foxtail will be removed from the seed mix.

8) Recommendation 9, *Conduct monitoring for potential bank erosion during earthwork activities and post-project.*

The Corps concurs.

9) Recommendation 10, *Monitor the survival of vegetation planted in the on-site mitigation/restoration areas for 5 years and take corrective actions if vegetation does not develop as expected.*

The Corps will monitor the on-site mitigation for five years as per Corps regulations and in compliance with the permits issued by NJDEP. An adaptive management plan will be developed if it is determined that the onsite mitigation is failing. The Corps will coordinate this plan with your office, should you so desire.

10) Recommendation 11, *Refer to FWCA report dated September 12, 2006 for specific recommendations for the Finderne Farm Mitigation Site.*

The Corps reviewed the cited FWCA. Construction of the mitigation site was completed in June 2006 and monitoring has been on-going since 2006. An Adaptive Management Plan (AMP) was developed in 2009 in response to areas of the mitigation site which are not trending toward the permitted success.

To date, the Corps has conducted herbicide treatments of areas infested with Japanese hops, purple loosestrife, common reed and lesser celadine and has initiated field investigations to evaluate the hydrologic conditions of the site. A report documenting the results of the field
investigations and recommending adaptive management measures based on the results are expected to be completed this winter.


Recommendations from the September 12, 2006 FWCA report that will be incorporated into adaptive management measures include:

a) Recommendation 1, *Avoid clearing of trees 6 inches dbh or greater between April 1 and September 30*;

b) Recommendation 2: *Plant species used by Indiana bats*; and

c) Recommendation 3, *Re-establish forest understory cover to improve wildlife habitats*.

We look forward to continued coordination your office on this project. Should any questions arise, or additional information is needed, please contact Ms. Kimberly Rightler at (917) 790-8722.

Sincerely,

Nancy Brighton
Chief, Watershed Section

Enclosures
Appendix C

Air Emissions Analysis
and
Record of Non-Applicability
# Equipment Specifications and Hours of Operation

## Nominal Vehicles - Equipment Description

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Hours</th>
<th>Horsepower</th>
<th>Fuel Type</th>
<th>Sources and Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 25,000 LBS (11.34 TON) GVW, 2 AXLE</td>
<td>2,500</td>
<td>360</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 16 - 20 CY (11.3 - 15.3 M3) DUMP BODY, 50,000 LBS (22.68 TON) GVW, 2 AXLE</td>
<td>3,000</td>
<td>420</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
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<tr>
<td>TRUCK, HIGHWAY, 20 - 25 CY (15.6 - 18.7 M3) DUMP BODY, 75,000 LBS (34.04 TON) GVW, 4 AXLE</td>
<td>3,500</td>
<td>500</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
</tr>
<tr>
<td>TRUCK, DUMP BODY, 12 CY (9.2 M3) (ADD 40,000 LB (18,144 KG) GVW TRUCK)</td>
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<td>450</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
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<tr>
<td>TRUCK, DUMP BODY, FLATBED, 12 CY (9.2 M3) (ADD 50,000 LB (22,680 KG) GVW TRUCK)</td>
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<td>500</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
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<tr>
<td>TRUCK, DUMP BODY, FLATBED, 12 CY (9.2 M3) (ADD 75,000 LB (34,040 KG) GVW TRUCK)</td>
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<tr>
<td>TRUCK, HIGHWAY, 20 - 25 CY (15.6 - 18.7 M3) DUMP BODY, 75,000 LBS (34.04 TON) GVW, 2 AXLE</td>
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<td>Diesel</td>
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<tr>
<td>TRUCK, HIGHWAY, 30 - 35 CY (24.1 - 30.5 M3) DUMP BODY, 100,000 LBS (45.36 TON) GVW, 4 AXLE</td>
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## Highway Vehicles - Equipment Description

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Hours</th>
<th>Horsepower</th>
<th>Fuel Type</th>
<th>Sources and Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY</td>
<td>2,000</td>
<td>260</td>
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<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
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<tr>
<td>DUMP TRUCK, HIGHWAY, 16 - 20 CY (11.3 - 15.3 M3) DUMP BODY</td>
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<td>300</td>
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<tr>
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<td>3,500</td>
<td>400</td>
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Green Brook Flood Damage Reduction Project

<table>
<thead>
<tr>
<th>Equipment Description</th>
<th>Hours</th>
<th>Horsepower</th>
<th>Fuel Type</th>
<th>Sources and Assumptions</th>
</tr>
</thead>
<tbody>
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<td>TRUCK, HIGHWAY, 25,000 LBS (11,340 KG) GVW, 2 AXLE</td>
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<td>320</td>
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<td>TRUCK, HIGHWAY, 40,000 LBS (18,144 KG) GVW, 2 AXLE</td>
<td>9,000</td>
<td>400</td>
<td>Diesel</td>
<td>USACE Construction Equipment Ownership and Operating Expense Schedule EP 1110-1-8</td>
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## Green Brook Flood Damage Reduction Project

### Total Project Emissions

#### Equipment Description

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<th>Equipment</th>
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<th>NOx (lbs)</th>
<th>PM-10 (lbs)</th>
<th>PM-2.5 (lbs)</th>
<th>CO (lbs)</th>
<th>SO2 (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR COMPRESSOR, 250 CFM (7 CMM), 100 PS (689 KPA) (ADD HOSE)</td>
<td>1.49</td>
<td>24.82</td>
<td>2.48</td>
<td>2.40</td>
<td>19.61</td>
<td>0.00</td>
</tr>
<tr>
<td>HYDRAULIC EXCAVATOR, CRAWLER, 24,640 LBS, 0.60 CY BUCKET, 16.50 MAX DIGGING DEPTH</td>
<td>28.90</td>
<td>476.13</td>
<td>66.93</td>
<td>651.34</td>
<td>550.68</td>
<td>0.83</td>
</tr>
<tr>
<td>ADD, TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)</td>
<td>0.28</td>
<td>3.53</td>
<td>0.10</td>
<td>0.08</td>
<td>1.53</td>
<td>0.005</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)</td>
<td>0.28</td>
<td>3.53</td>
<td>0.10</td>
<td>0.08</td>
<td>1.53</td>
<td>0.005</td>
</tr>
<tr>
<td>DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2</td>
<td>0.07</td>
<td>0.69</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 20 - 200 CY (12.2 - 15.3 M3) DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 4X2</td>
<td>11.83</td>
<td>133.78</td>
<td>34.86</td>
<td>27.40</td>
<td>622.96</td>
<td>2.08</td>
</tr>
<tr>
<td>TRUCK OPTION, DUMP BODY, REAR, 10.0 CY (7.7 M3) (ADD 35,000 LB (15,876 KG) GVW TRUCK)</td>
<td>0.28</td>
<td>3.53</td>
<td>0.10</td>
<td>0.08</td>
<td>1.53</td>
<td>0.005</td>
</tr>
<tr>
<td>TRUCK OPTION, DUMP BODY, REAR, 12 CY (9.2 M3) (ADD 45,000 LB (20,412 KG) GVW TRUCK)</td>
<td>0.11</td>
<td>1.34</td>
<td>0.04</td>
<td>0.03</td>
<td>0.08</td>
<td>0.002</td>
</tr>
<tr>
<td>TRUCK OPTION, FLATTBED, 8 (2.4 M) x 20' (6.1 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)</td>
<td>0.17</td>
<td>1.68</td>
<td>0.04</td>
<td>0.03</td>
<td>0.35</td>
<td>0.007</td>
</tr>
<tr>
<td>TRUCK OPTION, FLATTBED, 12 (3.6 M) x 20' (6.1 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)</td>
<td>0.10</td>
<td>1.00</td>
<td>0.03</td>
<td>0.02</td>
<td>0.38</td>
<td>0.002</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 20,000 LBS (9,000 KG) GVW, 2 AXLE, 4X2 WITH FLATBED</td>
<td>0.01</td>
<td>0.05</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
<td>0.000</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 25,000 LBS (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)</td>
<td>0.01</td>
<td>0.30</td>
<td>0.03</td>
<td>0.02</td>
<td>0.18</td>
<td>0.000</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)</td>
<td>0.28</td>
<td>3.53</td>
<td>0.10</td>
<td>0.08</td>
<td>1.53</td>
<td>0.005</td>
</tr>
<tr>
<td>TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)</td>
<td>0.24</td>
<td>3.04</td>
<td>0.10</td>
<td>0.08</td>
<td>1.53</td>
<td>0.005</td>
</tr>
</tbody>
</table>

#### Total Project Emissions (lbs)

819.43 | 9,609.69 | 780.15 | 741.70 | 7,802.53 | 17.45

#### Total Project Emissions (tons)

0.41 | 4.80 | 0.39 | 0.37 | 3.90 | 0.01
GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY

Project/Action Name: Segment B2 Green Brook Flood Damage Reduction Project
Project/Action Identification Number: N/A
Project/Action Point of Contact: Kimberly Righler, (917) 790-8722
Begin Date: To Be Determined
End Date: To Be Determined

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

_____ The project/action is an exempt action under 40 CFR 93.153(c) or (d), (SPECIFY APPLICABLE EXEMPTION CATEGORY AND REGULATORY CITATION)

OR

____ X Total direct and indirect emission from this project/action have been estimated at 3.90 tons CO, 0.41 tons VOC, 4.80 tons NOx and 0.37 tons PM, and are below the conformity threshold value established at 40 CFR 93.153(b) of 100 tons CO, 100 tons NOx, 100 tons PM and 50 tons VOC.

AND

The project/action is not considered regionally significant under 40 CFR 93.153(i).

Supporting documentation and emissions estimates are

(____ ) ATTACHED

(____ ) APPEAR IN THE NEPA DOCUMENTATION (PROVIDE REFERENCE)

(____ ) OTHER

Signed

Leonard Houston, Chief, Environmental Branch, Planning Division
Appendix D

Project Plans
Appendix E

Pertinent Correspondence
Environmental Assessment Section
Environmental Analysis Branch

Mr. Daniel Saunders
Deputy State Historic Preservation Officer
Historic Preservation Office
New Jersey Department of Environmental Protection
PO Box 404
Trenton, New Jersey 08625-0404

Dear Mr. Saunders:

The U.S. Army Corps of Engineers, New York District (Corps) in partnership with NJDEP Division of Engineering and Construction, is proceeding with the Green Brook Flood Damage Reduction Project (GBFDRP). A Programmatic Agreement for the project was signed in 1998. The agreement was based on the results of a cultural resources survey conducted by Hunter Research Inc. in 1988/89 and an evaluation of structures conducted by Panamerican Consultants in 1997 and 1999. To date, construction has concentrated on segments in the Borough of Bound Brook. Design for those segments is largely complete and construction is anticipated to be finished there in 2013. Detailed design and engineering is starting for protection measures on Segments C, H, B and D just upstream of Bound Brook in the Green Brook sub-basin in the Borough of Middlesex, Middlesex County and Township of Green Brook, Somerset County (Enclosure 1). The first element of work is on Segment B, in the northwest (upper left) of the enclosed map. Sebring's Mill Road Bridge, built in 1974, will be replaced. The floodwall northwest of the bridge and the levee to the southwest of the bridge will be constructed. The option of floodproofing or buy-out will be made available to the owners of 17 structures along Green Brook Road and US Route 22 (circled and in yellow on the map). The flood wall and levee along the Bound Brook, also shown as part of Segment B, will not be part of this next phase of work. As such a long time has elapsed since the previous studies were reviewed by your office this letter is to update you on the project and provide your staff with information on the next segment of the GBFDRP work.

Archaeological work associated with the bridge and adjacent floodwall and levee was documented in the Hunter Research study. Shovel testing along the alignment of the floodwall and levee yielded no significant artifacts and no sites were identified. No further work was recommended.

The levee however runs through the well field of American Water. This property that was not previously evaluated for historic significance although was subject to archaeological testing. The testing was limited due to standing water on the property at the time of the survey. The Watchung Water Company first operated a well field here in 1897. The area is presently a wooded floodplain. Several wells exist on the site that were until recently in use (Enclosure 2). American Water demolished all standing structures on the property as evidenced by the debris piles in the locations of mapped structures observed on 11 March by the project archaeologist. Given that there is little evidence remaining of the historic operation and little to be gained from the site on the technology of historic water supply the property is not considered eligible for the National Register of Historic Places (NRHP). No further work is recommended for this property.
The replacement of Sebring’s Mills Road Bridge was of concern due to the fact that, as suggested by the name, a mill once stood near this crossing. Research indicated that the mill was likely in use by the mid-18th century. A 1923 map depicts a mill and its raceways on the northwest side of the bridge. Comparison with the modern landscape indicated that the road was widened and about one third of the mill building is under the present roadway. Three test trenches were excavated but were located considerably west of the bridge due to concern with undermining the bridge (Enclosure 3).

Based on archaeological evidence the Hunter report states “substantial and informative remains are unlikely to survive” due to extensive changes to the landscape except perhaps beneath the bridge embankments. Acknowledging that the mill complex was historically important the recommendation however was for no further work as any remains encountered would form just a part of the mill complex and therefore not be eligible for the NRHP. The bridge was designed with the knowledge that in time the flood control measures would be constructed so the existing bridge abutment could be raised to the needed height and reused. At present, it is assumed that the existing abutments will be reused. The Corps’ opinion is that no further archaeological work will be undertaken at the Sebring’s Mill Road Bridge. If the plans change as detailed engineering and design proceeds the Corps may revisit with your office the need for further archaeological work. However, recent borings taken through each of the four corners of the bridge did not encounter any stone or timber or other indications of mill remains (Enclosure 4).

The architectural survey conducted by Panamerican consultants surveyed 14 of the 17 structures proposed for flood proofing or buy-out (Enclosure 5; Structure Nos. 33 - 44). All were residential or commercial/industrial structures dating from 1950 to 1996. None of the structures were determined significant. Due to an apparent oversight three structures in this area were not surveyed. They were evaluated in 1999 by Panamerican and were determined not eligible (Enclosure 6; Structure Nos. 165 - 167). No further cultural resources studies will be conducted for the structures proposed to be flood proofed or bought out. Following a recent public meeting, the Corps is evaluating the possibility of buying out two additional structures on Green Brook Road (adjacent to structure No. 167). These two dwellings are similar to the other houses in the neighborhood dating to circa 1960 and are not considered eligible for the NRHP.

Please review the enclosed attachments and provide Section 106 comments, pursuant to 36 CFR 800.5. If you or your staff require additional information or have any questions, please contact Lynn Rakos, Project Archaeologist, at (917) 790-8629.

Sincerely,

Leonard Houston
Chief, Environmental Analysis Branch

Enclosures

CC (w/ enclosures)
D’Amico, SCCHC
REPORTS

Hunter Research, Inc

Panamerican Consultants, Inc.

May 5, 2010

Leonard Houston
Chief, Environmental Analysis Branch
Department of the Army
Corps of Engineers, New York District
Jacob K. Javits Federal Building
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Houston:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the Federal Register on December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing continuing consultation comments for the following proposed undertaking:

**Somerset County, Bound Brook Borough**

**Green Brook Flood Control Project**

I concur with the finding that the homes proposed for flood-proofing or buy-out are not eligible for listing on the New Jersey or National Register of Historic Places. I also concur that no further archaeological work is required for Segment B of the project. The project elements, as discussed in the submission, will have **no adverse effect** on historic properties.

If you have any questions regarding this letter please contact Michelle Hughes at (609) 984-6018 regarding architecture and Vincent Maresca at (609) 633-2395 regarding archaeology. Thank you.

Sincerely,

[Signature]

Daniel D. Saunders
Deputy State Historic Preservation Officer

CC: Tom D’Amico, Somerset County Cultural and Heritage Commission
May 26, 2010

Mr. Dennis Contois, Supervisor
NJDEP – Land Use Regulation
PO Box 439
Trenton, NJ 08625

RE: Application submitted by: NJDEP
Green Brook Flood Damage Reduction Project – Segment B-1
Middlesex Borough, Middlesex County &
Green Brook Township, Somerset County

Dear Mr. Contois:

Please find enclosed a complete application for both a Flood Hazard Area Individual Permit and a Freshwater Wetlands Individual Permit for the above referenced project. All technical items have been addressed as set forth by the regulations (N.J.A.C. 7:13 and 7:7A) as well as the guidance provided by NJDEP at the pre-application meeting held on April 28, 2010.

As you are aware, Mr. John Moyle, of NJDEP Dam Safety and Flood Control is the applicant in this matter. Please contact Mr. Moyle or myself for any comments you may have. We look forward to working with you and your staff during the application review process.

Sincerely,

URS Group Inc

Thomas C. MacAllen

Thomas C. MacAllen, P.E.
Vice President
Agent for the Applicant

Copy to: J. Moyle (NJDEP)
S. Rice-Mc Donnell (USACE)
K. Rightler (USACE)
Ms. Kimberly Rightler  
U.S. Army Corps of Engineers  
New York District  
Environmental Analysis Branch  
Jacob K. Javits Federal Building  
New York, New York 10278-0090  
Fax Number: (212) 264-0961

Reference: Indiana Bat Survey, Green Brook Flood Damage Reduction Project,  
Sebrings Mills Road, Middlesex County, New Jersey

The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced proposed project pursuant to the  
Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) (ESA) to ensure the protection of  
federally listed endangered and threatened species. The following comments do not address all Service concerns for  
fish and wildlife resources and do not preclude separate review and comment by the Service as afforded by other  
applicable environmental legislation.

A known occurrence or potential habitat for the following federally listed or candidate species is located on or near the  
project’s impact area. However, the Service concurs that the proposed project is not likely to adversely affect federally  
listed or candidate species for the reasons listed below.

<table>
<thead>
<tr>
<th>Species</th>
<th>Basis for Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana bat (Myotis sodalis), endangered</td>
<td>June 2010 Indiana bat survey report – no Indiana bats were captured on site; loss of potential roosting and foraging habitat from project implementation is insignificant.</td>
</tr>
</tbody>
</table>

Except for the above-mentioned species, no other federally listed or proposed threatened or endangered flora or fauna  
under Service jurisdiction are known to occur within the proposed project’s impact area. Therefore, no further  
consultation pursuant to the ESA is required. If additional information on federally listed species becomes available, or  
if project plans change, this determination may be reconsidered.

Please refer to this office’s web site at http://www.fws.gov/northeast/njfieldoffice/Endangered/ for further information  
including federally listed and candidate species lists, procedures for requesting ESA review, the National Bald Eagle  
Management Guidelines, and contacts for obtaining information from the New Jersey Natural Heritage and Endangered  
and Nongame Species Programs regarding State-listed and other species of concern.

Reviewing Biologist: Annette Scherer

Authorizing Supervisor: Ron Popowski
STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF LAND USE REGULATION  
501 East State Street, Station Plaza 5, 2nd Floor  
P.O. Box 439, Trenton, New Jersey 08625-0439  
Fax: (609) 777-3656 or (609) 292-8115  
www.state.nj.us/dep/landuse

PERMIT

In accordance with the laws and regulations of the State of New Jersey, the Department of Environmental Protection hereby grants this permit to perform the activities described below. This permit is revocable with due cause and is subject to the limitations, terms and conditions listed below and on the attached pages. For the purpose of this document, “permit” means “approval, certification, registration, authorization, waiver, etc.” Violation of any term, condition or limitation of this permit is a violation of the implementing rules and may subject the permittee to enforcement action.

<table>
<thead>
<tr>
<th>Permit Number/s</th>
<th>Type of Approval/s</th>
<th>Enabling Statutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000-10-0044.1</td>
<td>Flood Hazard Area Individual Permit</td>
<td>NJSA 58:10A</td>
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<tr>
<td>FHA 100001</td>
<td>Freshwater Wetlands Individual Permit</td>
<td>NJSA 13:9B</td>
</tr>
<tr>
<td>0000-10-0044.1</td>
<td></td>
<td>NJSA13:1D-1</td>
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<tr>
<td>FW 100003</td>
<td></td>
<td>NJSA 58:16A-50</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Site Location</th>
</tr>
</thead>
</table>
| New Jersey Department of Environmental Protection Engineering and Construction  
501 East State Street  
Trenton, NJ 08625 | Green Brook Flood Control Project, Segment B-1  
Borough of Green Brook, Somerset County  
Borough of Middlesex, Middlesex County  
New Jersey |

The applicant, New Jersey Department of Environmental Protection (NJDEP), is proposing structural flood protection (levee system and floodwall), along the Green Brook in the Borough of Middlesex in Middlesex County on both the east and west sides of Sebring Mills Road. The project is known as Segment B-1 of the Green Brook Flood Control Project.

The levee system will consist of 950 linear foot earthen levee, a 100 CFS pumping station and construction of nine outfall structures, 1950 linear feet of cast in place concrete T-wall floodwall and reconstruction of Sebring Mills Road Bridge in order to provide an elevation closure for the proposed levee and flood walls. The levee height in the project location ranges from 51.5 NVGD at the upstream end to 49.1 NGVD at the downstream end, with 2.5:1 side slopes, a 110 foot wide footprint, and a 10 foot wide access way on top of the levee in order to provide maintenance and inspection access. The overall purpose of this project is to protect homes along the Green Brook in Middlesex Borough and Green Brook Borough.

The floodwall and levee system will result in disturbances of the following: the temporary disturbance of 0.38 of an acre of freshwater wetlands, and 0.033 of an acre of wetland transition areas. The permanent disturbance of 4.38 acres of freshwater wetlands, and 0.88 acres of transition area. **The permittee must mitigate for the temporary loss of 0.38 acres forested wetlands through an on-site restoration project and the permanent loss of 4.38 acres of palustrine forested wetlands through use of the Finderne Farm Wetland Mitigation Project as detailed below.**

Prepared by

Andrew Clark  
Supervising Specialist

THIS PERMIT IS NOT EFFECTIVE AND NO CONSTRUCTION APPROVED BY THIS PERMIT, OR OTHER REGULATED ACTIVITY, MAY BE UNDERTAKEN UNTIL THE APPLICANT HAS SATISFIED ALL PRE-CONSTRUCTION CONDITIONS AS SET FORTH IN THIS PERMIT.

This permit is not valid unless authorizing signature appears on the last page.
STANDARD CONDITIONS:

1. **Extent of approval:**
   a. This document grants permission to perform certain activities that are regulated by the State of New Jersey. The approved work is described by the text of this permit and is further detailed by the approved drawings listed herein. All work must conform to the requirements, conditions and limitations of this permit and all approved drawings.

   b. If you alter the project without prior approval, or expand work beyond the description of this permit, you may be in violation of State law and may be subject to fines and penalties. Approved work may be altered only with the prior written approval of the Department.

   c. You must keep a copy of this permit and all approved drawings readily available for inspection at the work site.

2. **Acceptance of permit:** If you begin any activity approved by this permit, you thereby accept this document in its entirety, and the responsibility to comply with the terms and conditions. If you do not accept or agree with this document in its entirety, *do not begin* construction. You are entitled to request an appeal within a limited time as detailed on the *Administrative Hearing Request Checklist and Tracking Form* which can be found at www.nj.gov/dep/landuse/forms/index.html.

3. **Recording with County Clerk:** You must record this permit in the Office of the County Clerk for each county involved in this project. You must also mail or fax a copy of the front page of this permit to the Department showing the received stamp from each County Clerk within 30 days of the issuance date of the permit.

4. **Notice of Construction:** You must notify the Department in writing at least 7 days before you begin any work approved by this permit by submitting a construction report. The Construction Reports are also available at www.nj.gov/dep/landuse/forms/index.html.

5. **Expiration date:** All activities authorized by this permit must be completed by the expiration date shown on the first page unless otherwise extended by the Division. At that time, this permit will automatically become invalid and none of the approved work may begin or continue until a replacement permit is granted. (Some permits may qualify for an extension of the expiration date. Please contact the Department for further information.)

6. **Rights of the State:**
   a. This permit is revocable and subject to modification by the State with due cause.

   b. Representatives from the State have the statutory authority to enter and inspect this site to confirm compliance with this permit and may suspend construction or initiate enforcement action if work does not comply with this permit.

   c. This permit does not grant property rights. The issuance of this permit shall not affect any action by the State on future applications, nor affect the title or ownership of property, nor make the State a party in any suit or question of ownership.

7. **Other responsibilities:** You must obtain all necessary local, Federal and other State approvals before you begin work. All work must be stabilized in accordance with the *Standards for Soil Erosion and Sediment Control in New Jersey,* and all fill material must be free of toxic pollutants in toxic amounts as defined in section 307 of the Federal Act.
SPECIAL CONDITIONS IN ADDITION TO THE STANDARD CONDITIONS:

8. The permittee shall immediately inform the Department of any unanticipated adverse effects on the environment not described in the application or in the conditions of this permit.

9. Any regulated activities undertaken on the site before a copy of this recorded permit is submitted to the Department will be considered in violation of the implementing rules and this permit.

10. Consistency with the Areawide Water Quality Management Plan

The Division of Land Use Regulation has not reviewed this application for consistency with the Areawide Water Quality Management Plan and the issuance of this permit shall not be construed as an approval of any wastewater management plan for this project or site. There shall be no construction of any sewage generating structures unless and until the proposed development has been found to be consistent with the appropriate areawide water quality management plan.

11. Any discharge of fill material shall consist of suitable material free from toxic pollutants and shall be maintained in accordance with the Soil Conservation Service’s approved plan.

12. The applicant shall be responsible for preserving and minimizing vegetation disturbances within wetlands, transition areas and along streams. All temporary disturbances shall be replanted with native herbaceous and woody vegetation.

13. In order to protect the general fishery resources within the Green Brook, any proposed grading or construction activities within the banks of these or any other watercourses on site are prohibited between May 1st and July 31st of each year. In addition, any activity within the 100-year flood plain or flood hazard area of this watercourse that could introduce sediment into said watercourse or that could cause an increase in the natural level of turbidity is also prohibited during this period. The Department reserves the right to suspend all regulated activities on site should it be determined that the applicant has not taken proper precautions to ensure continuous compliance with this condition.

14. FRESHWATER MITIGATION PERMIT CONDITIONS:

Failure to comply with the standards herein constitutes a violation of the Freshwater Wetlands Protection Act and subjects the permittee to appropriate enforcement action and/or suspension or revocation of the permit.

15. In accordance with N.J.A.C. 7:7A-15 et seq, mitigate for the **permanent impact to 4.38 acres of forested freshwater wetlands through** use of the off-site advance mitigation project designed and implemented by the U. S. Army Corps of Engineers for impacts associated with the Green Brook Flood Control project titled Findere Farm (NJDEP Permit No. 1806-02-0013.1 FHA 050001). The approved Findere Farm Advance Mitigation Project approved a plan to create approximately 22.6 acres of forested wetlands, enhance 12.65 acres to forested wetlands, enhance 6.1 acres to scrub-shrub wetlands, enhance 4.69 acres to emergent wetlands and preserve 5.56 acres of existing emergent wetlands and State open waters. In addition, the plan approved the restoration of 800 linear feet of stream and 26.98 acres of riparian forest along the Raritan River to be restored and enhanced with trees. Additionally, 6.2 acres of upland forest were approved to
be enhanced through invasive removal and planting and 39.3 acres of grassland bird habitat were approved to be enhanced.

16. In accordance with N.J.A.C. 7:7A 15.3 (a)(1), the mitigation project must be conducted prior to or concurrent with the construction of the approved project. The Division acknowledges the Finderne Farm Advance Mitigation Project was constructed in 2006 in anticipation of permanent impacts associated with the full implementation of the Greenbrook Flood Control Project.

17. In accordance with N.J.A.C. 7:7A-15 et seq, mitigate for the temporary impact to 0.38 acres of forested freshwater wetlands and 0.02 acres of State open waters. In accordance with N.J.A.C. 7:7A 15.11 (a) (1) at least 90 days prior to the initiation of regulated activities authorized by this permit, for the on-site restoration of temporary impacts the permittee must submit a revised mitigation proposal to the Division of Land Use Regulation (Division) for review and approval. Prior to commencement of regulated activities authorized by this permit, the Division must approve the proposed temporary restoration project in writing.

a. Please remove Agrostis gigantea, Elymus villosus and Alopecurus pratensis from the proposed seed mixes.

b. Please submit revised plans showing all the proposed restoration for all temporary impacts. The plans currently only include the restoration of a 0.16 acres wetlands area.

c. The permittee must submit a final design of the mitigation project and include all the items listed on the checklist entitled Checklist for Completeness: Creation, Restoration or Enhancement for a Freshwater Wetland Mitigation Proposal located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html.

18. At least thirty (30) days in advance of the start of construction of the wetland mitigation project, the permittee shall notify the Division, in writing, for an on-site pre-construction meeting between the permittee, the contractor, the consultant and the Division.

19. The mitigation designer must be present on-site during critical stages of construction of the mitigation project. The mitigation project includes the mitigation site for permanent impacts as well as temporarily impacted restoration areas. Critical stages of construction includes but is not limited to herbicide applications, commencement of construction through completion of all earthmoving activities, sub-grade inspection, final grade inspection, and planting inspection to ensure the intent of the mitigation design and its predicted wetland hydrology is realized in the landscape. This is specifically to ensure that highly invasive plants, if present, are carefully managed through the construction process so that these plants are not spread into new areas. Applicants should reference the Invasive Plants Atlas for a list of plants considered to be invasive at: http://www.invasiveplantatlas.org/index.html. This is to ensure the success of the mitigation project by preventing invasive plant colonization rather than trying to eradicate the invasive plants after the mitigation projects have been completed. To ensure that this is done successfully will require an extra level of construction oversight. It is imperative that all equipment, especially tracks and tires, be thoroughly cleaned each time equipment or vehicles move from an area.
containing invasives or from off-site to the mitigation area. In addition, the soil containing root fragments and above-ground vegetative material from invasive plants must be carefully managed during earthmoving activities and disposed of off-site rather than mulched and reused or stockpiled elsewhere on the site.

20. Mitigation designs are not static documents and changes may be necessary to ensure success of the project. Should the mitigation designer determine that the mitigation plan as designed and approved by the Division will not achieve the proposed wetland condition due to the actual conditions encountered during construction, the mitigation designer must immediately notify the Division. The mitigation designer must propose an alternative plan to achieve the proposed wetland condition that must be approved by the Division in writing. If the Division provides the mitigation designer with comments on the alternative plan, the mitigation designer shall revise the plan to conform to the Division’s comments. Solely the Division shall make the determination as to whether or not the alternative plan as submitted conforms to the Divisions comments. Any modifications to the plan that are approved by the Division must be shown on a signed and sealed revised plan. The As-Built plans required as a part of the Construction Completion Report may serve as the signed and sealed revised plans required to be submitted as part of the construction modification process described above if time constraints warrant such action and have been approved by the Division in writing.

21. Following the final grading of the mitigation site and prior to planting, the permittee shall notify the Division for a post-grading construction meeting between the permittee, contractor, consultant and the Division. The permittee must give the Division at least thirty (30) days notice prior to the date of this meeting.

22. In accordance with N.J.A.C. 7:7A 15.16, within 30 days following the final planting of the mitigation project, the permittee shall submit a Construction Completion Report to the Division detailing as-built conditions (see below) and any changes to the approved mitigation plan that were made during construction. The Construction Completion Report shall contain, at a minimum, the following information:

1. A completed Wetland Mitigation Project Completion of Construction Form. This form is located on the Internet at http://www.nj.gov/dep/landuse/forms/index.html and certifies that the mitigation project has been constructed as designed and that the proposed area of wetland creation, restoration or enhancement has been accomplished;

2. As-Built plans which depict final grade elevations at one foot contours and include a table of the species and quantities of vegetation that were planted including any grasses that may have been used for soil stabilization purposes;

3. Photos of the constructed wetland mitigation project with a photo location map as well as the GPS waypoints in NJ state plane coordinates NAD 1983;

4. The permittee shall post the mitigation area with permanent sign(s), which identify the site as a wetland mitigation project and that all-terrain vehicle use, motorbike use, mowing, dumping, draining, cutting and/or removal of
plant materials of the property is prohibited and that violators shall be
prosecuted and fined to the fullest extent under the law;

5. The signs must also state the name of the permittee, Department’s permit
number along with a contact name and phone number.

23. The permittee shall monitor the mitigation project for 5 full growing seasons if it
is a proposed forested or scrub/shrub wetland and 3 full growing seasons for an
emergent wetland or State open water beginning the year after the mitigation
project has been completed. The permittee shall submit monitoring reports to the
Division of Land Use Regulation no later than December 31st of each full
monitoring year. All monitoring reports must include the standard items identified
in the checklists entitled Wetland Mitigation Monitoring Project Checklist and
Tidal Wetland Mitigation Monitoring Checklist and the information requested
below. The Wetland Mitigation Monitoring Project Checklist and Tidal Wetland
Mitigation Monitoring Checklist are located on the Internet at

24. Once the required monitoring period has expired and the permittee has submitted
the final monitoring report, the Division will make the finding that the mitigation
project is either a success or a failure. This mitigation project will be considered
successful if the permittee demonstrates all of the following:

1. That the goals of the wetland mitigation project including acreage and the
required transition area, as stated in the approved wetland mitigation
proposal and the permit, has been satisfied. The permittee must submit a
field wetland delineation of the wetland mitigation project based on the
Federal Manual for Identifying and Delineating Jurisdictional Wetlands
(1989) which shows the exact acreage of State open waters, emergent,
scrub/shrub and/or forested wetlands in the mitigation area;

2. The site has an 85 percent survival and 85 percent area coverage of the
mitigation plantings or target hydrophytes which are species native to the
area and similar to ones identified on the mitigation planting plan. All plant
species in the mitigation area are healthy and thriving. All trees are at least
five feet in height;

3. The final monitoring report must include documentation demonstrating the
site is less than 10 percent occupied by invasive or noxious species.

4. The site contains hydric soils or there is evidence of reduction occurring in
the soil; and,

5. The proposed hydrologic regime as specified in the mitigation proposal has
been satisfied. This criteria must be satisfied to prove the mitigation site is
a wetland.

25. In accordance with N.J.A.C. 7:7A 15.16 (f) the permittee shall assume all liability
for accomplishing corrective work should the Division determine that the
compensatory mitigation has not been 100% successful. If the mitigation project is
considered a failure, the permittee is required to submit a revised mitigation plan in
order to meet the success criteria identified in Condition No. 13 above. The plan
shall be submitted within 30 days of receipt of the letter from the Division
indicating the wetland mitigation project was a failure. The financial surety, if
required, will not be released by the Division until such time that the permittee
satisfies the success criteria as stipulated in condition number 13.

26. If the permittee fails to perform mitigation within the applicable time period the
acreage of mitigation required shall be increased by 20% each year after the date
mitigation was to begin.

RIPARIAN ZONE COMPENSATION CONDITIONS

27. Compensate for the loss of 0.83 acres of forested riparian zone at a ratio of at least
2:1 through the use of the off-site advance mitigation project designed and
implemented by the U. S. Army Corps of Engineers for impacts associated with
the Green Brook Flood Control project titled Fiderne Farm (NJDEP Permit No.
1806-02-0013.1 FHA 050001). The approved Finderne Farm Advance Mitigation
Project approved a plan to create approximately 22.6 acres of forested wetlands, en
hance 12.65 acres to forested wetlands, enhance 6.1 acres to scrub-shrub
wetlands, enhance 4.69 acres to emergent wetlands and preserve 5.56 acres of
existing emergent wetlands and State open waters. In addition, the plan approved
the restoration of 800 linear feet of stream and 26.98 acres of riparian forest along
the Raritan River to be restored and enhanced with trees. Additionally, 6.2 acres of
upland forest were approved to be enhanced through invasive removal and
planting and 39.3 acres of grassland bird habitat were approved to be enhanced.

28. Compensate for the temporary impact to 0.05 of an acres of forested riparian zone.
The compensation proposal must be submitted to the Division for review and
approval 90 days prior to the initiation of regulated activities authorized by
this permit. Activities authorized by this permit shall not begin until the
compensation proposal is approved and the compensation has begun.

29. The compensation project must be conducted prior to or concurrent with the
construction of the approved project. The Division acknowledges the Finderne
Farm Advance Mitigation Project was constructed in 2006 in anticipation of
permanent impacts associated with the full implementation of the Greenbrook
Flood Control Project.

30. All replanting of vegetation shall be accomplished in accordance with the Flood

31. As per N.J.A.C. 7:13-10.2, all riparian zone compensation must be deed restricted
against future development that would remove the vegetation being planted. The
conservation restriction shall conform to the format and content of the Riparian
Zone Compensation Area model conservation restriction located at
http://www.nj.gov/dep/landuse/forms/index.html. The restriction shall be included
on the deed, and recorded in the office of the County Clerk (the Registrar of Deeds
and Mortgages in some counties), in the county wherein the lands of the
compensation project are located, within 10 days of completion of construction of
the compensation project. Within 10 days of filing the conservation restriction, the
permittee must send a copy of the conservation restriction to the Department for
verification.

32. In the event that there is a conflict between the permit conditions and the approved
riparian zone compensation plans and proposal, the permit conditions take
precedent.
33. If the riparian compensation project is considered a failure, the permittee is required to submit a revised riparian compensation plan in order to meet the success criteria identified in Condition No. 4 above. The plan shall be submitted within 60 days of receipt of notification from the Division indicating the riparian compensation project was a failure.

34. If the Division determines that the riparian zone compensation project is not constructed in conformance with the approved plan, the permittee will be notified in writing and will have 60 days to submit a proposal to indicate how the project will be corrected.

35. As per N.J.A.C. 7:13-10.2, the permittee shall monitor the riparian project for at least three (3) years beginning the year after the riparian zone compensation project has been completed. The permittee shall submit monitoring reports to the Division of Land Use Regulation, project manager no later than December 31st of each full monitoring year.

a. All monitoring reports except the final one must include documentation that it is anticipated, based on field data, that the goals of the riparian zone compensation project, as stated in the approved riparian zone compensation proposal and the permit will be satisfied. If the permittee is finding problems with the compensation project and does not anticipate the site will be a full success, then recommendations on how to rectify the problems must be included in the report with a time frame in which they will be completed.

b. The final monitoring report must document the following:

1. That the goals of the riparian zone compensation project including acreage as stated in the approved riparian zone compensation proposal and the permit has been satisfied.

2. The site has an 85 percent survival and 85 percent area coverage of the compensation planting which are species native to the area and similar to ones identified on the compensation planting plan. All plant species in the compensation area are healthy and thriving. All trees are at least 5 feet in height;

3. Documentation demonstrating the site is less than 10 percent occupied by invasive or noxious species.

36. The drawings hereby approved are ninety four (94) drawings prepared by the URS Group, Inc., dated May 2, 2010, last revised June 30, 2010, unless otherwise noted, entitled: "GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT – SEGEMENT B-1 FLOOD HAZARD AREA INDIVIDUAL PERMIT APPLICATION (MIDDLESEX & GREEN BROOK, NJ)"

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Rick Reilly, Manager
Bureau of Inland Regulation

8/5/2010

Date
Individual Freshwater Wetland Permit
DLUR File No. 1800-10-0044.1
New Jersey Department of Environmental Protection
Project: Green Brook Flood Control Project – Segment B-1
Page 8

**Water Quality Certificate**

This letter of authorization to conduct a regulated activity in a wetland or open water includes a Water Quality Certificate for these activities.

Prepared by:

\[Signature\]
Andrew Clark
Supervisiong Specialist
Bureau of Inland Regulation

Approved by:

\[Signature\]
Richard L. Langbein
Section Chief
Bureau of Inland Regulation
Appendix F

Hazardous, Toxic and Radioactive Waste Documentation
Elizabethtown Water Company Green Brook Wellfield

The Elizabethtown Water Company Green Brook Well Field is situated between Washington Avenue, Jefferson Street, Greenbrook Road, and the Green Brook. The well field currently produces 4 million gallons of water per day. The wells are approximately 350 feet deep and the pumps are set at 211 feet below ground surface. There is a TCE and PCE contamination problem so the water is treated by an air stripper prior to distribution. A representative from the Elizabethtown Water Company indicated that neither the source, extent, nor the migratory path of the contamination is known. However, contaminant levels in the water range from non-detect to 6 ppb.

Proposed FCP-related work in the vicinity of the Green Brook Well Field includes stream realignment and the construction of levees immediately to the east and south. The groundwater problem will not affect the FCP because the contaminated groundwater is in the deep aquifer which is at least 200 feet below ground surface.

F&M Tire (Sheet Number 27)

F&M Tire is located at 925 Route 22, approximately ½ mile north of the FCP. Due to the distance of this site from the FCP, the potential to impact the FCP is considered to be low and no additional information regarding this site was obtained during this investigation.

Getty Service Station (aka John's Getty) (Sheet Number 27)

The Getty Service Station (aka John's Getty), located at 58-62 Greenbrook Road, is approximately 300 feet northeast and across Stony Brook from the FCP. This site is a known contaminated site due to two incidents of LUSTs. Contaminated soil and groundwater (petroleum hydrocarbons, arsenic, and lead) have been detected. The NJDEP issued a letter, dated February 8, 1994, to request that additional investigation be conducted. Due to the fact that this site is separated from the FCP by Stony Brook, no impact to the FCP is anticipated.
Meeting With: Dr. Ronald Cohen  
Middlebrook Regional Health Commission

Meeting By: Andrew Leong

Date: October 5, 1992

Subject: Green Brook Flood Control Project  
Reconnaissance Level Hazardous, Toxic and Radioactive Waste Assessment

The meeting of October 5, 1992 at Middlesex Boro Hall proceeded with Dr. Cohen reviewing hazardous sites town by town while using 4000’ scale map as a mark-up (see attached):

**Bound Brook**

- Chips Amoco near Middle Brook and Route 28, 8000 gallon gasoline spill, site has been remediated. However future excavation may potentially reveal previously undetected contamination.

- Municipal landfill near GB Pond GR2, closed 1971. The landfill extends approximately from GB Sec G14 downstream to Main Street bridge and from the Green Brook eastward towards East Street and High Street.

- TIFA (Blue Spruce) Co. pesticide leak in Pond RL1 near Main Street and Columbus Place. Monitor wells continue with on-going monitoring.

- Department of Energy (DOE) low level radioactive waste at confluence of Green Brook and GT2 near GB Sections G19-G20 (FUSRAP site (?)). Currently being remediated, completion pending. DOE contacts for follow-up:
  
  - Susan Cange, Site Manager  
  Oak Ridge, TN 37831, 615-576-5724

  - Steven Liedle, Project Manager  
  Bechtel Environmental, Inc.  
  Oak Ridge, TN 37831, 615-576-3997

This is one of five sites in NJ. URS will contact DOE to inquire where other 4 sites are.
Middlesex

- Nuclear waste site at Marine Base located on Mountain Avenue near Egel and Wood Avenue, south of NJ Central and Lehigh Valley Railroad contains 65,000 CY low level radioactive contaminated soil.

- Note: Chipman Chemical a.k.a. Rhone Poulenc located on 5 Factory Lane/Lincoln Blvd. Cleanup contracted to Woodward Clyde.

- Note: All along RR berm a french drain exists designed to maintain water table along RR. Has been used for illegal dumping in the past. Pipe drains into Green Brook at confluence with Raritan R. Potential impact if required to excavate RR berm.

- Getty Oil has abandoned oil pipeline (PA to Linden) crossing the Green Brook and Bound Brook in Middlesex (also other towns in the study area?). URS will follow up to determine locations and status.

- Note: Piscataway Sewer line parallel to Ambrose Brook conducts industrial waste.

- Ambrose Brook upper limits (outside project area) runs thru most heavily industrialized parts of Piscataway and South Plainfield. Great potential for problems in lower limits i.e. at confluence with Green Brook, if there are future spills upstream.

Green Brook

- Getty gas station at Route 22 and Rock Avenue. Gasoline leak into Municipal Brook contaminating Elizabethtown Water Wellfields. Wellfields are located near Municipal Brook's confluence with Green Brook (bet. Jefferson and Washington Avenue). Elizabethtown Water subsequently installed air strippers to remove volatiles from supply.

Plainfield

- National Starch has abandoned sewer outfall to Green Brook along Rock Avenue.

Watchung

- Watchung Lake has abandoned lake chlorination system. Previously used for swim club.

- Township has mostly isolated coliform pollution problems from package sewage treatment plants or septic system overflows.
Dr. Cohen emphasized that chronologic files are on record at Middlesex Department of Health. Since files are large, reproduction should be limited to those that most severely impact the project. Case digests of most files are smaller and may be more easily reproduced if their level of detail is adequate.

cc: Ronald Cohen  
    Thomas MacAllen  
    Werner Mueller  
    Jennifer Phelan  
    Central Files
New Jersey Department of Environmental Protection  
Division of Water Supply - Bureau of Water Systems & Well Permitting  

WELL ABANDONMENT REPORT  

MAIL TO:  Bureau of Water Systems & Well Permitting  
PO Box 426  
Trenton, NJ 08625-0426

PROPERTY OWNER:  New Jersey American Water Company

ADDRESS:  1341 North Avenue, Plainfield, NJ 07061

WELL LOCATION:  Greenbrook Road, Middlesex Borough, Middlesex County

WELL NO.:  6  
LOT NO.:  19  
BLOCK NO.:  70F

USE OF WELL PRIOR TO ABANDONMENT:  Public Community

REASON FOR ABANDONMENT:  No longer in use

WAS A NEW WELL DRILLED?  □ YES  □ NO

TOTAL DEPTH OF WELL:  412'
DIAMETER:  15'
CASING LENGTH:  22'
SCREEN LENGTH:  7'
NUMBER OF CASINGS:  1

MATERIAL USED TO DECOMMISSION WELL:

- 1848 Gallons of Water
- 28952 Lbs. of Cement
- 4 Lbs. of Bentonite
- 0 Lbs. of Sand/Gravel

(form none if well is contaminated)

FORMATION:  % Consolidated  % Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE?  □ YES  □ NO  
CASING MATERIAL:  Steel

WERE OTHER OBSTRUCTIONS LEFT IN WELL?  □ YES  □ NO  WHAT WERE THE OBSTRUCTIONS:

IF "YES", AUTHORIZATION GRANTED BY:  (NJDEP Official)
DATE:  (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official?  □ YES  □ NO

Permission to seal well without a permit number:

IF "YES", authorization granted by:  (NJDEP Official)
DATE:  7/25/06

I certify that this well was sealed in accordance with NJAC 7:9D-3 seq:

DENNIS WENH/SAMUEL STOTHOFF CO INC PO BOX 308, FLEMINGTON, NJ 08822 8/11/06

Performing Work (Print or Type)
Name of NJ Licensed Well Driller

Address
Mailin Date

Signature of NJ Licensed Well Driller Performing Work
Registration #

COPIES:  White - Water Allocation  Yellow - Owner  Pink - Health Dept.  Goldenrod - Driller
July 19, 2006

Mr. Steve Reya
NJ Dept. of Environmental Protection
Bureau of Water Allocation
PO Box 426
Trenton, NJ 08625-0426

Ref: NJ American Water Company
    Block 70F, Lot 19, Middlesex Boro.
    Greenbrook Road & Starlit Drive
    WELL #6

Dear Steve:

On June 30, 2006 our driller Dennis Vannt drilled our well number 6 to a depth of 412' to match the permit number 45-00043 however even though the record shows it as well number 6, the diameter of the well is actually 12" not 10". We plan on abandoning this well by pumping a cement slurry through a tremie line from the bottom of the well to ground surface. Please let me know if we have permission and if we should use that permit number.

Thank you,

Laurie M. Wille
Office Manager

Approval to Seal Granted
7/25/06

REFERENCE WELL AS WELL #6
ON ABANDONMENT REPORT.
CORRECT PERMIT # AND MATCHING WELL RECORD NOT AVAILABLE