

# ENVIRONMENTAL ASSESSMENT

## Segment R2 Levee and Floodwall Construction Green Brook Flood Damage Reduction Project Bound Brook, Somerset County, NJ

October 2008

Prepared By:



US Army Corps of Engineers  
New York District

**Finding of No Significant Impact**  
Environmental Assessment for Segment R2 Levee and Floodwall Construction  
Green Brook Flood Damage Reduction Project  
Bound Brook, Somerset 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 a levee, floodwall and pump station along Middle Brook and Raritan River south of West Main Street in the Borough of Bound Brook in Somerset County, NJ. The project is referred to as Segment R2 and is the remaining component to be constructed in the Bound Brook Element of the Green Brook Flood Damage Reduction Project.

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. Following the final action of the 1997 FEIS, new information obtained from the May 2007 Brook Industrial Park Superfund Site Removal Action Completion Report indicated the presence of arsenic and chromium in the Segment R2 project area. This Environmental Assessment addresses the findings with respect to their potential to significantly affect the environment and the need to prepare a supplemental Environmental Impact Statement.

The Segment R2 project area is located adjacent to and along the southern boundary of the Brook Industrial Park Superfund Site (BIPSS). During the BIPSS remediation action, soil samples were taken in a wooded area west of the BIPSS, which is also within the proposed location of the Segment R2 levee, and tested for contaminants. Results indicated levels of arsenic and chromium exceeding the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria (NJDEP criteria). The District coordinated with the Environmental Protection Agency (EPA) to verify that the BIPSS will not be extended to include the wooded area as a result of the soil sampling. The EPA confirmed that the wooded area will not be part of BIPSS and although arsenic and chromium levels exceed the NJDEP criteria, the levels are not considered to be hazardous. Further, based on EPA's investigation, the contamination of the wooded area is predominantly a result from upstream and downstream contributors rather than the BIPSS.

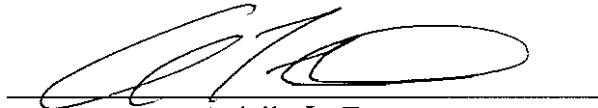
The sediment type found within project area is unsuitable for levee construction and will be removed and new material will be brought to the site for levee construction. The contractor will take composite soil samples within the levee footprint, test them for all contaminant parameters and coordinate the results with the NJDEP to determine the proper off-site disposal method. In the event the contractor encounters ground water during construction, the water will be tested for contaminants and should levels exceed allowable levels established by the NJDEP, recharge pits will be excavated within the levee footprint and water will be pumped into the pits and allowed to seep back into the ground. The recharge pits will then be backfilled with the material used to construct the levee. The pits will be opened and closed in increments that minimize exposure risk to humans and wildlife. In addition, the contractor will be required to prepare an Environmental

Protection Plan to address minimizing contaminant exposure and soil erosion during construction. The District coordinated with and obtained concurrence from the EPA and NJDEP with the District's strategy of handling the contaminated material.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that the proposed project modification is not a major Federal action significantly affecting the quality of the human environment. I have reviewed the proposed action in terms of overall public interest and have found the proposed action does not warrant the preparation of a supplemental environmental impact statement.

29 SEP 2008

Date

A handwritten signature in black ink, appearing to read 'A. Tortora', written over a horizontal line.

Aniello L. Tortora  
Colonel, U.S. Army  
District Engineer

Environmental Assessment,  
Segment R2 Levee and Floodwall Construction  
Green Brook Flood Damage Reduction Project  
Bound Brook Borough, Somerset County, NJ

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**LIST OF ACRONYMS**

## Acronym Title

APE	Area of Potential Effect
ASTM	American Standards of Testing and Materials
BIPSS	Brook Industrial Park Superfund Site
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
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
LVRR	Lehigh Valley Railroad
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
PA	Programmatic Agreement
PM	Particulate Matter
PPM	Part per Million
PRRR	Port Reading Railroad
RCRA	Resources Conservation and Recovery Act
U.S.C.	United States Code
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 a levee, floodwall and pump station along Middle Brook and Raritan River south of West Main Street in the Borough of Bound Brook in Somerset County, NJ. The project is referred to as Segment R2 and is the remaining component to be constructed in the Bound Brook Element of the Green Brook Flood Damage Reduction Project (GBFDRP).

This environmental assessment serves to supplement information known about site conditions along the Segment R2 project area resulting from new information obtained from the May 2007 Brook Industrial Park Superfund Site Removal Action Completion Report. Specifically, this Environmental Assessment will address the presence of arsenic and chromium in the western portion of the Segment R2 project area identified in soil samples taken in 2001 and 2006 during the remediation action.

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. This Environmental Assessment is being prepared to evaluate the significance of potential environmental impacts of the proposed action and determine if the proposed project change 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 in September 1999 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 (7) 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.

The recommended plan for the Green Brook Flood Control Project 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 (Figure 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 and residency 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. With the exception of the Talmadge Avenue bridge replacement and Segment R2, construction of all remaining Segments and the Conrail bridge removal have been completed.

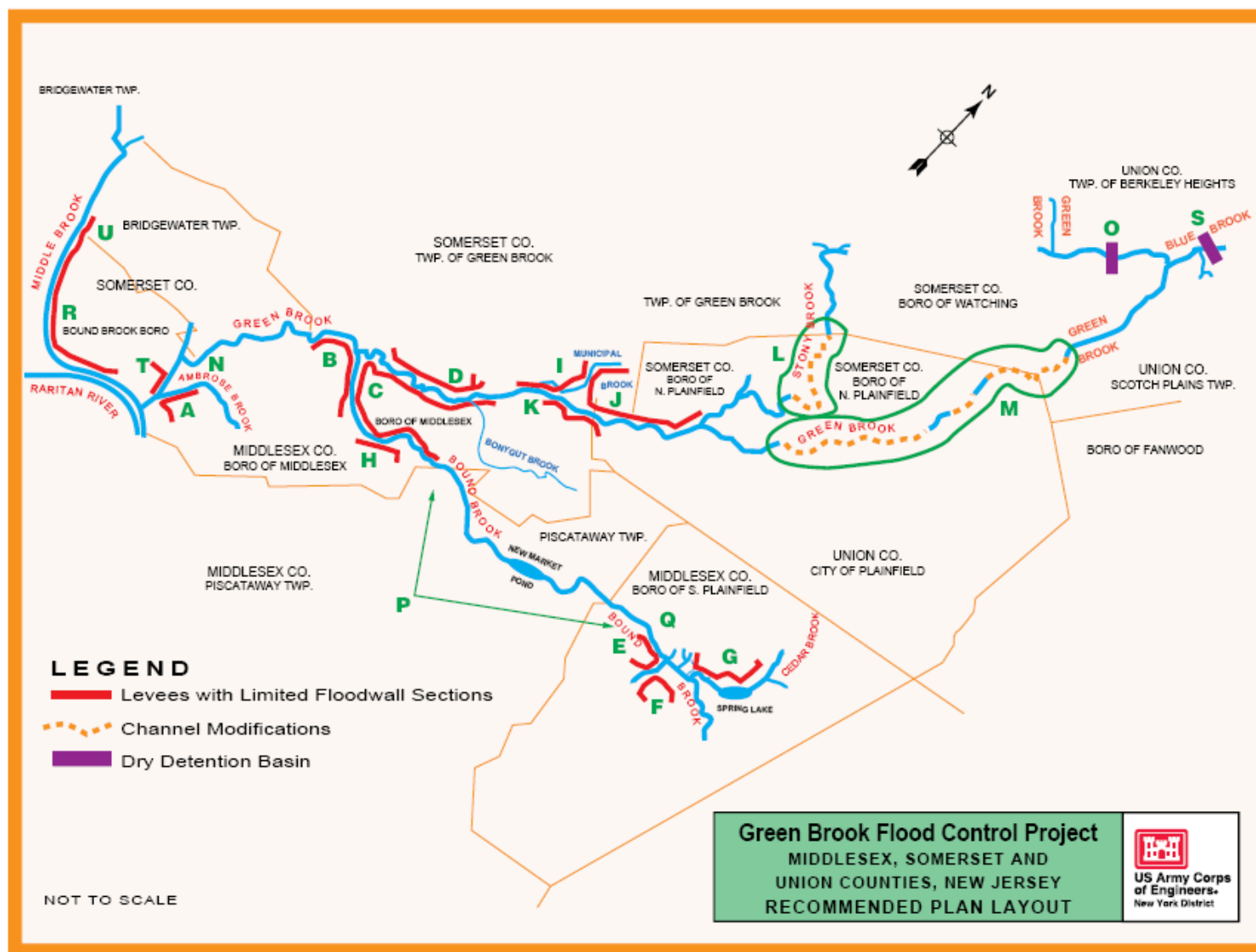
#### *Mitigation*

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

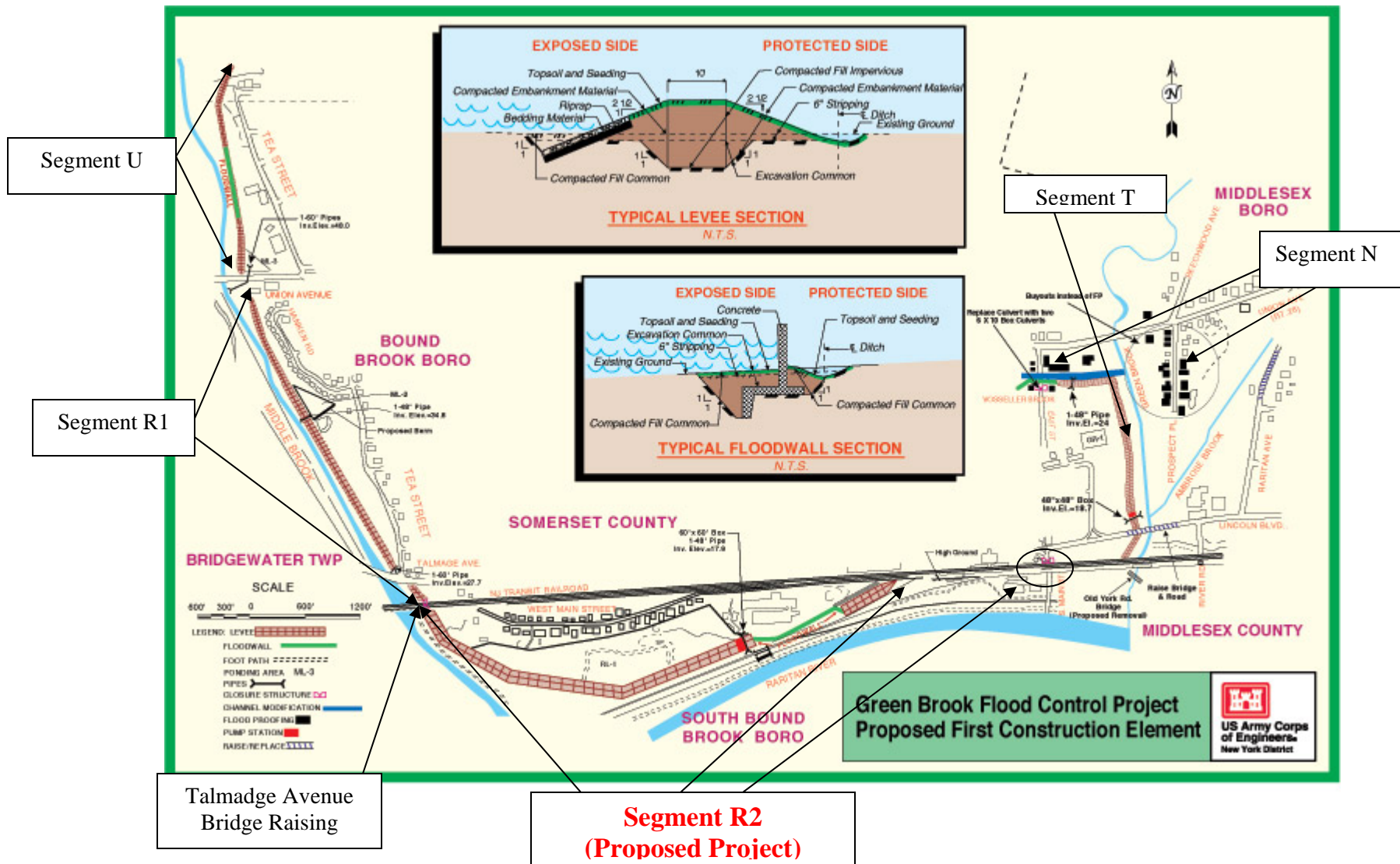
The total property size is 179 acres, with the mitigation project focused on approximately 130 acres of the floodplain portion of the site. Habitats created, restored, enhanced or preserved as part of the mitigation effort include 35 acres of forested wetland, 8.5 acres of scrub-shrub wetland, five acres of emergent wetland enhancement, preservation of six acres of palustrine emergent wetland, seven acres of upland forest, 25 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.

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 1: Proposed Green Brook Flood Damage Reduction Project**



**FIGURE 2: Element No. 1 of the Green Brook Flood Damage Reduction Project**



### 3.0 Proposed Action

Segment R2 of the Green Brook Flood Damage Reduction Project is the last remaining structural flood damage reduction measure of Element No. 1. Segment R2 features include the continuation of the levee alignment south from Segment R1, parallel to the Middle Brook, and eastward to the Segment R2 Pump Station (RL-1 Pump Station), parallel to the Raritan River (Figure 3). A floodwall will be constructed east of the pump station due to space constraints at the Brook Industrial Park. The eastern extent of the R2 alignment consists of a low height embankment that ties the alignment into high ground at the Bound Brook NJ Transit Station. In addition to the levee and floodwall alignment, Segment R2 includes the raising of Talmadge Avenue Bridge, the construction of two closure structures, and the installation of diversion culvert pipes to handle interior drainage. Segment R-2 has been subdivided into several separate construction contracts for implementation of the South Main Street Closure Structure, the NJ Transit Closure Structure, the R-2 Levee, the R-2 Pump Station, the R-2 Floodwall, and Diversion Culvert Pipes.

### 4.0 Alternatives Analysis

The alignment of the levee at Segment R2 was selected in order to accommodate a ponding area to the north, interior of the levee, which would be inundated during flood events. The final alignment also took into consideration redevelopment plans for the Borough of Bound Brook to the north along West Main Street.

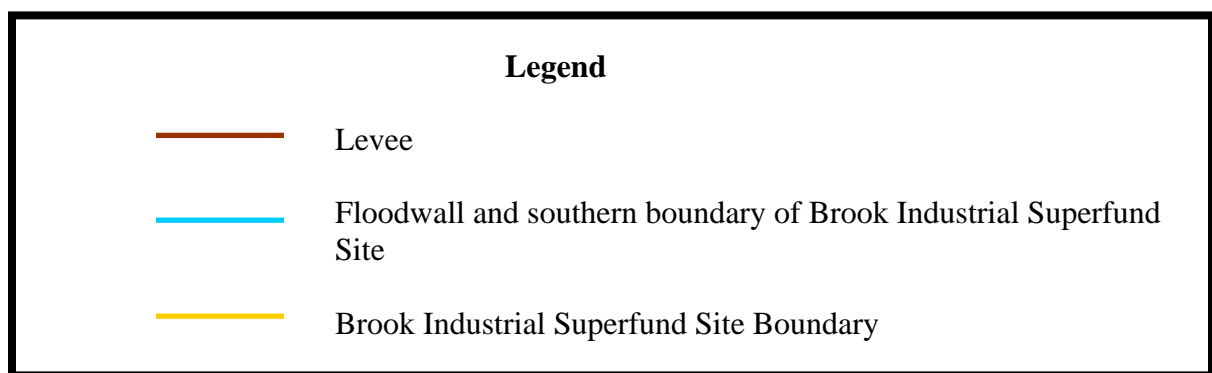
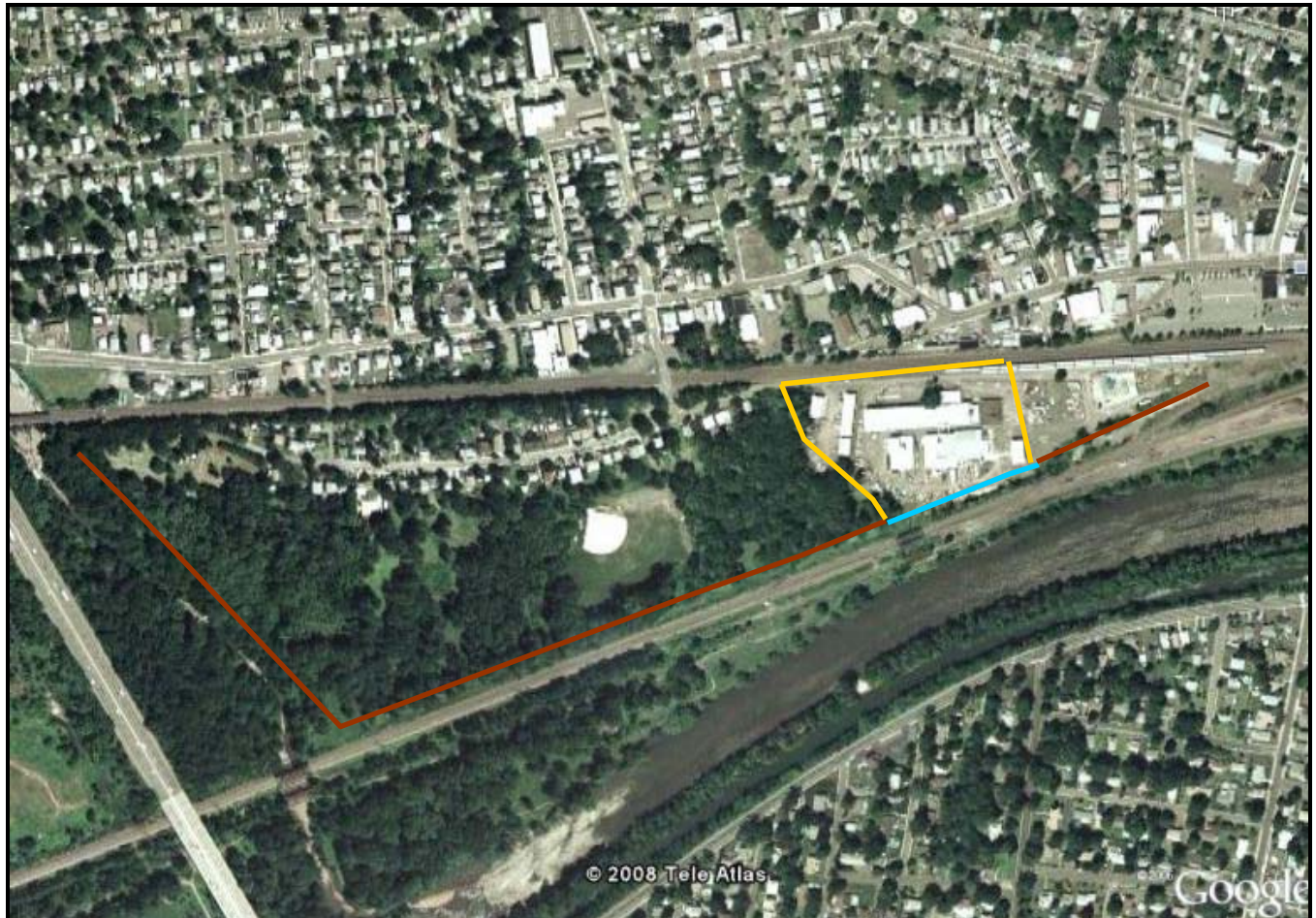
An analysis was conducted in 2000 to focus on structure alternatives for the selected Segment R2 levee alignment. The analysis investigated measures to maintain the wetland hydrology on the protected side of the levee-post construction, and thereby avoid advanced adverse drainage of the interior wetland area. The alternatives considered included Alternative 1: Raise Invert Elevations of Interior Drainage Outlets/Maintain Levee Toe Ditches; Alternative 2: Develop a Containment Weir in the vicinity of the RL-1 Pump Station/maintain levee toe ditches; Alternative 3 Reconfiguration of Drainage ditches.

Alternative 3: Reconfiguration of drainage ditches was determined to be the most cost-effective alternative to avoid drainage impacts to existing wetlands located interior of the proposed levee. Wetland hydrology would be maintained on the protected side of the levee through removal of the levee toe ditch. To achieve this objective, the currently proposed toe ditch ends at approximately station 40+00. As a result, non-wetland areas to the west would drain into drainage structure No. 14. Wetland areas between the levee stations 40+00 to 63+26 to the east would be left without any new drainage paths that may possibly impact the wetland hydrology. The invert for drainage structure No. 15 was raised to the invert elevation of the existing ditch that currently drains the area.

Without the levee, under existing conditions, the water surface needs to rise to approximately 24 feet to drain positively towards the Raritan River. The proposed levee will cut off this path and force surface water to rise only approximately one foot before it begins to discharge to the interior drainage outlets which will reduce flooding of West Main Street. Alternative 3 will



FIGURE 3: Segment R2 Levee and Floodwall Layout



therefore generate more surface water in the forested wetland on the protected side of the levee. It is believed that the interior forested wetland functions and values will not be diminished with this increased inundation depth and duration. If the increased water is determined to be unsuitable, a partial toe ditch along the levee can be added to generate a positive drainage path.

The alternative analysis also led to the removal of a drainage ditch connected to the outfall location of diversion pipes number 4 and 5. The construction of a drainage ditch was expected to accelerate drainage from the existing surrounding forested wetland area, causing a detrimental impact to supporting hydrology. A ditch liner was considered, as well as a ditch perimeter berm; however, it was ultimately determined that the ditch could be removed. Flow from the outfall location will not be directed through a man-made feature, but will be allowed instead to flow overland and positively drain towards the Segment R-2 pump station.

## 5.0 Affected Environment

### 5.1 Soils

The majority of soils at the Segment R2 project area are classified and mapped as Rowland silt loam (Ro) series along the north bank. The eastern portion of the project area contains Urban land (Um). The Ro series soil is found along the banks of the major drainage features of the site as well as in large floodplain areas and is considered partially hydric. The organic matter content is medium to high. Runoff is slow and the erosion hazard is slight (Corps 2000).

### 5.2 Water Quality

The project area is bounded by the Raritan River to the south and by the Middle Brook to the west. The Green Brook sub-basin of the Raritan River Basin drains an area of 65 miles entering the mainstem of the Raritan River at Bound Brook. Middle Brook is a tributary of the Raritan River that is not within the Green Brook sub-basin. Both the Raritan and Middle Brook are classified as a FW-2 NT or freshwater river not supporting trout spawning or maintenance (USFWS 2006). The river is suitable for a wide variety of warm water fisheries species.

### 5.3 Vegetation

Undeveloped portions of the project area primarily wooded, with a patchy distribution of small clearings that are overgrown with herbaceous ground cover. The project area is best described as a small, bottomland, floodplain hardwood forest, with tree species and canopy structure typical of bottomland hardwood systems, that experiences periodic flooding and contains poorly drained soil. Dominant overstory trees within the project area include silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), balsam poplar (*Populus balsamifera*), and pin oak (*Quercus palustris*), with fewer numbers of black cherry (*Prunus serotina*), American elm (*Ulmus americana*), boxelder (*Acer negundo*), eastern sycamore (*Platanus occidentalis*), and shagbark hickory (*Carya ovata*). The understory is relatively dense and although seedlings from the aforementioned trees are present, the understory is dominated by invasive and/or undesirable species that include poison ivy (*Rhus radicans*), reed canarygrass (*Phalaris arundinaceae*), Japanese knotweed (*Polygonum cuspidatum*), and rose (*Rosa multiflora*). Ground cover in forested areas includes grasses (*Poa* spp.), pokeweed, (*Phytolacca Americana*), goldenrods (*Solidago* spp.), vines, and various fern species. Reed canarygrass and dense grasses dominate ground cover in open areas.



Vegetation in the developed portions of the project area range from managed lawn and ornamental plants within the residential and the Rock Machine Park sections to essentially no vegetation in the far eastern end of the project area located along the Brook Industrial Site and former railyard.

### **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.

Wetland delineations were conducted in the project area in 1998 and then again in 2005 in accordance with the New Jersey Department of Environmental Protection Freshwater Wetlands Protection Act Rules N.J.A.C. 7:7A-2.3 and with the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands.

A forested wetland approximately 8.3 acres in size was identified in the project area (Corps 2000). Per NJDEP Freshwater Regulations, the wetlands are classified as intermediate resource value meaning the quality of the wetlands is degraded due to their proximity to existing industrial operations. In addition as per State regulations, a fifty foot transition area was delineated from the boundary of the forested wetland. 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**

The habitat of the project area includes state open water of the Raritan River, as well as floodplain forested and scrub-shrub habitat on the riverbanks.

The freshwater, non-trout production and non-trout maintenance classified river supports fish species such as common carp (*Cyprinus carpio*), white perch (*Morone Americana*), channel catfish (*Ictalurus punctatus*), eastern silvery minnow (*Hybognathus regius*) and other warm water fisheries species and anadromous fish. The floodplain habitat of the project area exists in a disturbed state, but does support habitat for mammals such as squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), 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 (*Geothlypis trichas*), and gray catbird (*Dumetella carolinensis*), utilize the riparian habitat of the project area, as does the occasional great egret (*Casmerodius albus*), snowy egret (*Egretta thula*) or great blue heron (*Ardea herodias*). Further information on fisheries and wildlife resources is included in the U.S. Fish and Wildlife Service (Service), Fish and Wildlife Coordination Act Section 2(b) Report included in Appendix B.

#### **5.4.1 Federal and State Endangered, Threatened and Special Concern Species**

The District coordinated with the Service in 2006 to evaluate the site's habitat, and to identify if any Federally listed threatened or endangered species utilized the project area. During a site visit, the Service identified potential roosting trees or foraging habitat for Indiana bat, a Federally and State listed endangered species.

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 (*Ulmus Americana*), slippery elm (*Ulmus rubra*), shagbark hickory (*Carya ovata*) silver maple (*Acer saccharinum*), and green ash (*Fraxinus pennsylvanica*). Adult males usually roost in trees near maternity roosts, but some remain near the hibernaculum.

Preferred foraging areas are streams, associated flood plain forests, and impounded bodies of water such as ponds and reservoirs. However, they have been observed upland forests; pastures and clearings with early successional vegetation; cropland borders; and wooded fencerows (USFWS 2006).

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.

#### **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.

An ASTM Phase 1 database search of available environmental records was conducted for the project area during preparation of the 1997 General Reevaluation Report and identified the Brook Industrial Park Superfund Site (BIPSS) as a site in the vicinity of the proposed Segment R2 (URS/Kupper 1996). Located on the northeastern end of the project area, the BIPSS is 4.5 acres in size and was included on the National Priorities List in 1989. In June 1994, a Remedial Investigation/Feasibility Study (RI/FS) was completed and in September 1994, a Record of Decision (ROD) was issued.

The RI, which focused on the industrial properties within the industrial park, recommended that specific areas be targeted for remediation. These areas included interior surfaces of buildings, soil collected from the building's basement and subsurface pits and sediment from a drainage ditch and tributary located behind the buildings. Remediation activities were completed in 2006 and a letter from the Environmental Protection Agency (EPA) stating that the remediation objectives were achieved was signed on September 17, 2007 (Appendix E).

As part of the remediation action, surficial (down to six inches) sediment samples were taken in 2001 and 2006 in the wooded area directly west of the area delineated as Superfund to determine the extent of contamination attributed to the BIPSS. The test results indicated levels of arsenic and chromium were above the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria allowable limit of 19 ppm and 20 ppm respectively. In the 2001 sampling effort, forty soil samples taken in the area had chromium levels ranging from 24 to 101 ppm. Twenty-five of the forty samples had arsenic levels ranging from 21 to 205 ppm. Eight additional soil samples were taken in 2006 with chromium levels in the eight samples ranging from 48 to 90 ppm and four of the eight samples with arsenic levels ranging from 20.9 to 52.9 (CAPE 2007). Based on its investigations, the EPA concluded that the levels were not associated with the BIPSS but rather contaminated with sediment from other sources upstream and downstream of the project area. Correspondence stating to this effect is located in Appendix E.

## 5.6 Cultural Resources

As an agency of the federal government, the U.S. Army Corps of Engineers (Corps) has certain responsibilities concerning the protection and preservation of cultural resources within a project area. The federal statutes regarding these responsibilities include Section 106 of the National Historic Preservation Act of 1966, as amended, Executive Order 11593, and the Advisory Council on Historic Preservation Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800).

The Segment R-2 alignment was investigated in 1989/90 during the cultural resources reconnaissance survey for the larger Green Brook Flood Damage Reduction Project (GBFDRP) (Hunter Research 1990). No archaeological resources were identified in the R-2 vicinity. In 1998 a Programmatic Agreement (PA) for the overall GBFDRP was signed by the Corps, New Jersey Historic Preservation Office (NJHPO) and the Advisory Council on Historic Preservation. A number of structures and archeological sites within the larger project's area of potential effect (APE) were identified in the PA as eligible for the National Register of Historic Places (NRHP). Among those properties were the Lehigh Valley Railroad (LVRR) and Port Reading Railroad (PRRR) Bridges in Bound Brook and the Central Railroad of New Jersey (CRRNJ) Main Line Corridor Historic District (now New Jersey Transit's Raritan Valley Line); all of which are within the APE for Segment R-2. All construction elements associated with segment R-2 were part of the original APE as defined in the PA but for the drainage feature proposed beneath the LVRR/PRRR bridges. Since the PA was signed the eastern end of R-2, near the Bound Brook Passenger Station of the former CRRNJ, has been redesigned to avoid impacts to this NRHP-listed property. The redesigned levee will run along the alignment of three abandoned parallel railroad spurs and tie into the former CRRNJ rail line.

As per initial consultation with NJHPO staff, these abandoned spurs were likely part of Bound Brook Junction, the interchange between the former Lehigh Valley Railroad and the Central Railroad of New Jersey and would have been an important link in the rail system prior to railroad consolidation. One of the spurs may have served the former Bound Brook Woolen Mills. Portions of the woolen mills complex are extant but heavily altered. The mill complex was determined not significant in the initial survey for the GBFDRP. A railroad round house was located immediately east of the woolen mills but based on historic maps and photos it appears that the spurs did not service the round house. The spurs may be significant in that they serviced two NRHP eligible railroads and are contributing elements. The integrity of the spurs however has been compromised and now just segments of the spurs remain. It is the District's opinion that the spurs are not eligible.

## 5.7 Air Quality

In accordance with the Clean Air Act of 1977, as amended, the EPA developed criteria 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. Areas where the criteria pollutant level exceeds National Ambient Air Quality Standards are designated as "nonattainment". The project area is located within a moderate nonattainment zone for 8-hour ozone, and a nonattainment zone for particulate matter (PM 2.5).

The EPA 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 County is 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 carbon monoxide and an attainment area for sulfur dioxide, respirable particulate matter (PM10 & PM2.5), lead and nitrogen oxide.

### **5.8 Socioeconomics**

The Borough of Bound Brook has a population of 10,155 with 5,953 persons/square mile. The population is comprised of 64% White, 34% Hispanic, and 2.5% African American. The median household income is \$46,858 (2000 U.S. Census Bureau). Approximately 10% of the population is below the poverty line.

## **6.0 Environmental Impacts**

### **6.1 Soils**

A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil. Due to space constraints and existing wetlands, the soil will be disposed of 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. A review of the soil description for the Rowland silt loam series developed by the United States Department of Agriculture has indicated limited use in respect to farming, and road and structure construction due to flooding and frost action; therefore, no significant impacts to the overall soil characteristics are expected.

### **6.2 Water Quality**

The proposed action may have minor turbidity increases 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 Somerset Soil Conservation District prior to construction. Construction fence will be utilized to delineate the construction work area. The proposed project has been permitted by the NJDEP in accordance with the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A) and Flood Hazard Control Act Rules (N.J.A.C. 7:13).

### 6.3 Vegetation

Approximately three acres of upland vegetation will be removed in order to construct the levee, predominantly along the westernmost portion of the project area where the levee parallels the Middle Brook. The limits of construction have been minimized to greatest extent possible to reduce. Upon completion of the levee, shrubs and trees will be planted and the area will be reseeded with native or naturalized grasses and wildflowers. In addition to tree and shrub species identified in Tables 1 and 2, eastern redcedar (*Juniperus virginiana*), white pine (*Pinus strobus*), and hawthorn (*Crataegus crusgalli inermis*) will be planted to provide some screening from the view of the levee for the westernmost residence on West Main street.

#### 6.3.1 Wetlands

Approximately 7.287 acres of forested wetland and 1.835 acres of transition area will be permanently impacted as a result of project implementation. In addition, 0.954 acres of wetland and 0.881 acres of transition area will be temporarily impacted as a result of the construction equipment access. The temporary impacts 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 in Tables 1 and 2. The floodplain area to be planted will also be seeded with a grass and wildflower mix of native and naturalized species. The levee itself will receive turf grass mix for maintenance requirements. Design modifications were made to ensure the hydrology of the project area was maintained in an effort to sustain the wetlands. Due to space constraints, the permanent impacts will be mitigated by the construction of wetlands at the FINDERNE Wetland Mitigation Site. No additional wetland impacts will occur as a result of the District's strategy in dealing with the contaminated soil as described in Section 6.5.

**Table 1: On-Site Mitigation Shrub Species**

Scientific Name	Common Name
<i>Aronia melonocarpa</i>	Black chokeberry
<i>Cornus sericea</i>	Redosier dogwood
<i>Salix discolor</i>	Pussy willow
<i>Sambucus canadensis</i>	Elderberry
<i>Aronia melonocarpa</i>	Black chokeberry
<i>Spirea corymbosa</i>	Corymed spirea
<i>Viburnum dentatum</i>	Arrowwood
<i>Viburnum lentago</i>	Nannyberry
<i>Cornus racemosa</i>	Gray dogwood
<i>Juniperus virginiana</i>	Eastern redcedar
<i>Rhus glabra</i>	Smooth sumac
<i>Vaccinium angustifolium</i>	Highbush blueberry
<i>Viburnum acerifolium</i>	Mapleleaf viburnum
<i>Aronia melonocarpa</i>	Black chokeberry
<i>Clethra alnifolia</i>	Summersweet
<i>Hamamelis virginiana</i>	Witchhazel
<i>Viburnum dentatum</i>	Arrowwood
<i>Viburnum lentago</i>	Nannyberry
<i>Alnus rugosa</i>	Speckled alder

<i>Cornus amomum</i>	Silky dogwood
<i>Salix discolor</i>	Pussy willow
<i>Spirea tomentosa</i>	Steeplebush spirea
<i>Viburnum dentatum</i>	Arrowwood

**Table 2: On-Site Mitigation Tree Species**

Scientific Name	Common Name
<i>Cercis canadensis</i>	Eastern redbud
<i>Betula populifolia</i>	Gray birch
<i>Carya ovata</i>	Shagbark hickory
<i>Celtis occidentalis</i>	Hackberry
<i>Fraxinus americanus</i>	White ash
<i>Acer rubrum</i>	Red maple
<i>Acer negundo</i>	Box elder
<i>Amelanchier canadensis</i>	Shadbush
<i>Nyssa sylvatica</i>	Black gum
<i>Quercus phellos</i>	Willow oak
<i>Acer saccharinum</i>	Silver maple
<i>Betula nigra</i>	River birch
<i>Fraxinus pennsylvanica</i>	Green ash
<i>Lindera benzoin</i>	Spicebush
<i>Quercus palustris</i>	Pin oak
Scientific Name	Common Name
<i>Acer rubrum</i>	Red maple
<i>Acer saccharinum</i>	Silver maple
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Quercus palustris</i>	Pin oak
<i>Salix nigra</i>	Black willow

## 6.4 Wildlife and Fisheries Resources

The proposed project is not anticipated to significantly affect wildlife and fisheries resources. 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. The removal of mature trees to construct the levee will result in a semi-permanent loss of potential roosting and nesting sites until the shrub and tree species planted after levee construction mature.

The contaminant exposure risk to wildlife resources is considered minimal since construction activities will cause resident species to leave the area. Additionally, material will be excavated and disposed off-site, further reducing exposure risk. Areas disturbed for temporary access during construction will be reseeded upon completion so the long term exposure risk is minimal. To protect aquatic resources, 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

A survey was performed over the course of two nights in August 2007 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 wooded trail parallel to the railroad tracks. No Indiana bats were captured, thus satisfying the Endangered and Threatened species coordination with the U.S. Fish and Wildlife Service.

## **6.5 Environmental Contamination**

Arsenic and chromium naturally occur in soils in levels that vary with the geologic characteristics of the parent material. Although the levels of arsenic and chromium found in portions of the western area exceed the NJDEP Non-Residential Direct Contact Soil Clean Up Criteria, they are not considered hazardous.

As mentioned in Section 6.1 Soils, the soil has been deemed inadequate to use for levee construction and will be excavated and disposed of off-site. During construction, the contractor shall be responsible for taking composite soil samples within the levee footprint, testing them for all contaminant parameters and coordinating the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed close to the Raritan River and that excavation will extend down six feet, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed the criteria established by NJDEP, the water will be pumped to open pits and allowed to seep back into the ground. Since the recharge pits will be excavated within the levee footprint, they will be backfilled with the material used to construct the levee. The pits will be opened and closed in small increments to reduce exposure risk to humans and wildlife.

The District has coordinated with and has obtained concurrence from the EPA Remediation Project Manager and the NJDEP Site Remediation Officer assigned to the BIPSS to use this approach. Further, the EPA Remediation Project Manager has verified that the wooded area to the west of the BIPSS is not nor will be part of the BIPSS. The District will continue to coordinate with the EPA Remediation Project Manager and the NJDEP Site Remediation Officer during construction. The District will continue to coordinate with the NJDEP Site Remediation case worker to implement proper safety and environmental measures in the event additional site testing indicates contaminated groundwater.

In regards to the floodwall, the EPA conducted aggressive remediation within the foot print of the proposed floodwall and extended remediation activities down into the water table to ensure that the floodwall construction would not expose any remaining contaminants. Given that the floodwall will not extend down to the water table, no exposure to contaminants is expected.

The primary exposure pathway for humans of arsenic and chromium is through ingestion. Exposure to arsenic and chromium would be greatest during excavation of soil for the levee. 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. Exposure risk to residents is considered to be minimal given that the levee is setback from residences and is in an isolated area rarely used by the local community.



## 6.6 Cultural Resources

Segment R-2 was re-designed to avoid any adverse effects associated with tying a levee into the east-bound shed and platform of the Bound Brook Passenger Station on the former CRRNJ as was originally proposed. As per the PA, treatment plans were to be developed to mitigate for effects to the station. These plans are no longer required due to avoidance through re-design. The redesigned levee will run along the alignment of three abandoned parallel railroad spurs and tie into the former CRRNJ rail line. It is the District's opinion that the spurs are not eligible for the NRHP.

A pump station will be built into the earthen levee adjacent to the historic railroad bridges. The structure will be visible from the historic LVRR/PRRR corridors as the working floor of the building is designed to be six inches higher than the top elevation of the levee. The roof of the pump house will be 15 feet above the top of the rail embankment. Drainage from the pump station will be through a pipe that debouches into the Raritan River. The pipe will run under the LVRR and PRRR bridges. The bridges and abutments will not be impacted by construction and the District will conduct a pre-construction survey, periodic inspections and a post-construction survey of the bridges to monitor their condition during construction. An open stone-lined swale was originally proposed to carry the outflow but the design has since been changed to a buried pipe. It is the District's opinion that the construction will have a temporary impact on the bridge that will be mitigated through the proposed monitoring plan. The final design, employing a buried pipe to channel flow, will have no effect on the historic railroad bridges or corridors.

Presently, NJHPO is reviewing the final plans for the pump house and the drainage pipe to be constructed under the historic railroad bridges. Also under review is the District's determination that the abandoned railroad spurs are not eligible for the NRHP (Appendix E). Pending NJHPO concurrence the construction of Segment R-2 will have no effect on cultural resources.

## 6.7 Air Quality and Noise

### 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 NO<sub>x</sub>, 50 tons/year for VOC, and below 100 tons/year for PM<sub>2.5</sub>. 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.

### Noise

The proposed action would increase noise levels in the immediate vicinity due to operation of construction equipment. Due to the surrounding industrial uses and the active railroad, the project is not anticipated to significantly adversely impact any residential communities. Wildlife in the area may be temporarily displaced during active construction, but would be expected to return to the project area post-construction. The impacts of noise will be mitigated to the extent possible through restriction of the work hours within normal operating hours (7 a.m. to 7 p.m.), and by coordinating with the local communities to comply with any locally enforced noise ordinances or work periods.

## **6.8 Socioeconomics**

The proposed action will not adversely impact the socioeconomic environment of the area. Rather, the completion of Segment R2 signifies the overall completion of the Bound Brook Element which will result in providing flood damage reduction benefits that include reduced flood insurance costs, 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.

### **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 selected plan, including actions proposed to handle the contaminated soil, will not result in any significant adverse impacts to the surrounding community, 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 are 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 actions that need to be considered against the proposed action include construction of other segments of Element No. 1. The proposed construction may overlap with the Talmadge Avenue Bridge construction. However, the overlap of the construction activities is not anticipated to result in any adverse environmental impacts.

In regards to natural resources, the construction of the Bound Brook Element will permanently impact a total of 7.6 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 will be mitigated through the use of mitigation credits generated by the Finderne Farms mitigation site.

There are no known future development plans in the immediate Segment R2 project area; therefore no cumulative impacts resulting from further land disturbance are expected. However, the completion of Segment R2 will provide a cumulative benefit of flood damage reduction to the entire community of Bound Brook. The data provided in the May 2007 BIPSS Removal Action report does not alter this conclusion.

## 7.0 Public and Agency Coordination

The Draft Environmental Assessment was 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.

The Notice of Availability of the Draft Environmental Assessment was issued on September 12, 2008 and had an 18-day public comment period, ending on September 29, 2008. The District did not receive correspondence from. The mailing list and public notices can be found in Appendix E.

The proposed Segment R2 has been coordinated with the NJDEP Land Use Regulation Program Office. A Stream Encroachment and Freshwater Wetlands Permit have been issued for the project (Appendix F). The District has coordinated with the EPA and the NJDEP Site Remediation Office to address contaminant concerns in accordance with applicable agency regulations. The Corps has coordinated with the State Historic Preservation Office on the plans for the pump house and drainage pipe and is currently awaiting concurrence with the District's opinion of no impact. Correspondence pertaining to Cultural Resources is located in Appendix C. The Corps has coordinated the proposed action with the U.S. Fish and Wildlife Service (Appendix B). The circulation of this Environmental Assessment for public comment fulfills public coordination requirements in accordance with the National Environmental Policy Act of 1970. The action has been coordinated with the State and local partners of the Green Brook Flood Damage Reduction Project, including NJDEP, Somerset County as well as with the Green Brook Flood Control Commission.

## 8.0 Conclusion

In summary, the levels of arsenic and chromium occurring in the Segment R2 project area and the strategy the District will employ to deal with the contaminated soil is not anticipated to have significant adverse impacts on the environment, and is therefore documented with a Finding of No Significant Impact (FONSI). The requirements for the contractor to conduct additional soil sampling and coordinate the appropriate disposal method with NJDEP sufficiently address the new information regarding project site conditions. The proposed project is necessary to complete Element No. 1 of the Green Brook Flood Damage Reduction Project and ultimately provide flood damage reduction for the Borough of Bound Brook 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.

**Table 3. Summary of Primary Federal and State Laws and Regulations Applicable to the Proposed Project**

<b>Federal</b>		
Legislative Title U.S. Code/Other		Compliance
Clean Air Act	42 U.S.C. §§ 7401-7671g	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
Clean Water Act	33 U.S.C. §§ 1251 et seq.	The Corps has received a water quality permit from NJDEP to fulfill the requirements of Section 404 of this act. The cover letter to the permit is provided in Appendix F. A 404(b) Review is also included in this report in Appendix A.
Endangered Species Act of 1973	16 U.S.C. §§ 1531 et seq.	Information provided by the U.S. Fish and Wildlife Service indicates that the proposed project will not have adverse impacts to any endangered or threatened species.
Fish and Wildlife Coordination Act	16 U.S.C. § 661 et seq.	The Corps has coordinated with the U.S. Fish and Wildlife Service. See Appendix B.
National Environmental Policy Act of 1969	42 U.S.C. §§ 4321-4347	The circulation of the Finding of No Significant Impact fulfills requirements of this act.
National Historic Preservation Act of 1966	16 U.S.C. §§ 470 et seq.	The Corps has continued to coordinate with the State Historic Preservation Office to fulfill requirements of this act. Correspondence indicating SHPO's non objection to the project is located in Appendix E.
Executive Order 11990, Protection of Wetlands	May 24, 1977	Circulation of this report for public and agency review fulfills the requirements of this order.
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	April 21, 1997	Implementation of this project will reduce environmental health risks. Circulation of this report for public and agency review fulfills the requirements of this order.
<b>State</b>		
Legislative Title and code/date		Compliance
NJDEP Rules and Regulations – Stream Encroachment	N.J.A.C. 7:13 (N.J.S.A 58:16A)	Received Permit. Refer to Appendix E.
NJDEP Rules and Regulations – Freshwater Wetlands Permit	N.J.A.C. 7:7A (N.J.S.A. 13:9B)	Received Permit. Refer to Appendix E.

## 8.0 References

CAPE. May 2007. Final Removal Action Completion Action for Brook Industrial Park Superfund Site, Bound Brook, New Jersey.

United States Census Bureau. 2000. Bound Brook Fact Sheet. Available at:  
[http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en)

United States Fish and Wildlife Service (USFWS). October 11, 2006. Fish and Wildlife Coordination Act Section 2(b) Report, Green Brook Flood Control Project: Proposed Segment R2 Levee, Bound Brook Borough, Somerset County, New Jersey.

United States Army Corps of Engineers (Corps). Marcy 2000. Green Brook Flood Control Project Wetland Delineation Report.

URS/Kupper Joint Venture. April 1996. Green Brook Flood Control Project, Hazardous, Toxic and Radioactive Waste Feasibility Study, HTRW Data Interpretation /Response Plan.

## 9.0 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

Richard Dabal, HTRW Specialist, U.S. Army Corps of Engineers, NY District

## **Appendix A**

### **Section 404 (b)(1) Evaluation**

Segment R2 Levee and Floodwall Construction, Bound Brook, Somerset County, NJ  
Green Brook Flood Damage Reduction Project  
Section 404 (b)(1) Evaluation

I. PROJECT DESCRIPTION

- a. Location: Borough of Bound Brook, Somerset County, New Jersey.
- b. General Description: Installation of 3,000 feet of levee and 740 feet of floodwall along the northern bank of the Raritan River and 1,000 feet of levee along the west bank of Middle 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 Bound Brook.
- 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: 34,000cy soil and 500 cy of stone
  - 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 northern riverbank of the Raritan River and the eastern streambank of the Middle Brook in the Borough of Bound Brook, New Jersey.
  - 2.) Size: Approximately 3,740 ft of floodwall and levee will be installed along the northern riverbank of the Raritan River and 1,000 feet of earthen levee will be installed along the eastern streambank of Middle Brook.
  - 3.) Type of Site: The project area is a mix of residential and industrial uses and forested upland and wetland.
  - 4.) Types of Habitat: The project area is predominantly located in upland forest and forested wetland. The eastern portion of the project area is developed for industrial uses and has minimal habitat. 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 two years.

- f. Description of Disposal Method: Land based construction equipment will be used to excavate and

## II. FACTUAL DETERMINATION

### a. Physical Substrate Determinations

- 1) Substrate Evaluation and Slope: Soils in the project area include Urban Land, and Rowland silt loam series. The project area is generally flat.
- 2) Sediment Type: The channel bottom substrate consists mainly of cobble and gravel.
- 3) Dredged/Fill Material Movement: As the levees and floodwalls are set back from the Raritan and Middle 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 0.954 acres of forested wetlands and the permanent loss of 7.287 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 three miles from the R2 project area.
- 4) Physical Effects on Stream Bottom: The project is not expected to change the existing substrate or characteristics of either the Raritan River or Middle Brook given that the levee and floodwalls are setback from the immediate streambanks.
- 5) Other Effects: Due to the small size of the project, no unique or other effects are anticipated from this project.
- 6) Actions Taken to Minimize Impacts: Best management practices, include but not limited to cofferdams, 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 Raritan River or the Middle Brook
- c. Stratification- The project will not impact stratification.
- d. Hydrologic Regime- No effect.

3) Normal Water Level Fluctuations: The project will not cause any change in normal water levels within the project area.

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- Levels exceeding the NJDEP soil clean up criteria for arsenic and chromium have been documented in the project area. In areas requiring excavation to construct the levee, the soil will be tested and disposed of at a disposal facility permitted to accept contaminated non hazardous material. Erosion and sediment controls will be employed to minimize the introduction of contaminated soil into the Raritan River and Middle Brook.
- 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 the Raritan River and Middle 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: Levels exceeding the NJDEP soil clean up criteria for arsenic and chromium have been documented in the project area. In areas requiring excavation to construct the levee, the soil will be tested and disposed of at a facility permitted to accept contaminated material. Erosion and sediment controls will be employed to minimize the introduction of contaminated soil into the Raritan River and Middle Brook. 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.
  - 5) Effects on Special Aquatic Sites:
    - a. Sanctuaries and Refuges- Non applicable
    - b. Wetlands- 7.287 acres of forested wetland will be permanently impacted by construction of the levee and floodwall with 0.954 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 October 2006 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 Raritan River and Middle Brook are not used as a water supply so no direct or indirect adverse impacts to the municipal water supply from 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 Raritan River and Middle Brook are 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 and businesses within Bound Brook Borough outweighs these. The limits of disturbance of the project area have been minimized to the greatest extent possible and setting back the levee from residential homes will minimize the direct impacts the levee will have on views. In addition native shrubs and trees will be planted once construction has been completed.
- e. Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves - Not Applicable
- g. Determination of Cumulative Effects on the Aquatic Ecosystem.  
The Segment R2 project is a component of the larger Bound Brook Element of the Green Brook Flood Damage Reduction Project. Other components comprising of levees, buyouts and floodwalls have been implemented throughout the Borough of Bound Brook and within the vicinity of the R2 project area. 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. Cumulative impacts to the river system are not considered significant as most of the flood damage reduction measures are set back from the river bank
- h. 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 Bound Brook 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 Coordination Act Report**



In Reply Refer to:

FA0054

# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

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JAN 16 2008

Leonard Houston, Chief  
Environmental Analysis Branch  
U.S. Army Corps of Engineers, New York District  
21<sup>st</sup> Floor  
26 Federal Plaza  
New York, New York 10278-0090

Dear Mr. Houston:

The U.S. Fish and Wildlife Service (Service) has reviewed your responses to our October 11, 2006 recommendations for the U.S. Army Corps of Engineers, New York District's (Corps) *Green Brook Flood Control Project: Proposed Segment R2 Levee, Bound Brook Borough, Somerset County, New Jersey*. The Service provides this final 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-2005 Scope-of-Work agreement. This final FWCA report is based on plans and information provided by the Corps. Responses to the Corps' October 2, 2007 comments on our draft FWCA report are incorporated. Our final FWCA report has been coordinated with the New Jersey Division of Fish and Wildlife (NJDFW).

### **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**

As described in various project materials, communications from Corps staff, and our draft FWCA report, the proposed Segment R2 project includes construction of the remaining structural flood damage reduction features of Element No. 1 of the Green Brook Flood Control Project located in Bound Brook, Somerset County, New Jersey. The features include the continuation of the levee alignment south from Segment R1, parallel to the Middle Brook, and

eastward to the Segment R2 Pump Station (RL-1 Pump Station), parallel to the Raritan River (Enclosure 1). A floodwall will be constructed east of the pump station due to space constraints at the Brook Industrial Park. The eastern extent of the R2 alignment consists of a low-height embankment that ties into high ground at the Bound Brook New Jersey Transit Rail Station. In addition to the levee and floodwall alignment, Segment R2 includes the raising of Talmadge Avenue Bridge, the construction of two closure structures, and the installation of diversion culvert pipes to address potential interior drainage from the proposed project. Talmadge Avenue Bridge is anticipated to be the first funded construction feature of Segment R2, scheduled for fiscal year 2007. The objective of these project features is to reduce potential temporary flooding along the Raritan River that may occur during the build-out period of the Green Brook Flood Control Project. Upon installation of levee, floodwall, and closure structures and raising the bridge, the banks of the river would be restored to provide habitats for wildlife and to aid in flood-water storage.

The Segment R2 project can be further described as:

- construction of approximately 3,030 linear feet of levee south of the NJ Transit Northeast Corridor Railroad Line from Station 32+07 to 62+38.35;
- construction of the RL-1 Pump Station at Station 63+62 with the capability to pump flood water at approximately 180 cubic feet per second (cfs);
- construction of approximately 730 linear feet of floodwall from Station 65+35 to Station 72+63, and 665 linear feet of impervious embankment from Station 72+63 to 79+28;
- construction of two 90-foot roller-gate closure structures at South Main Street and at the New Jersey Transit Northeast Corridor Railroad Line in the vicinity of Talmadge Avenue;
- recreational enhancement (grading, fill, re-vegetating) of a baseball field referred to as Rock Machine Park in the vicinity of the RL-1 Pump Station;
- construction of diversion culvert pipes interior to the levee alignment for drainage; and
- reconstruction of Talmadge Avenue Bridge to raise the bridge deck.

The Segment R2 will utilize off-site mitigation credits available from the Finderne Farm Mitigation Site to mitigate for 7.287 acres of unavoidable permanent adverse impacts to forested floodplain wetland, and 1.835 acres of unavoidable permanent impacts to transition areas. The Service provided a separate FWCA report on the proposed Finderne Farm Mitigation Site to the Corps on September 12, 2006. Temporary impacts to 0.954 acres of wetland and 0.881 acres of transition area will be mitigated on-site in Bound Brook through landscape restoration that involves both seeding and planting of native shrubs and trees.

## **METHODS**

The draft report is based on review of information provided by the Corps, Service files and library, and field notes gathered during a site visit on August 17, 2006. The Service has coordinated this review with the New Jersey Department of Environmental Protection (NJDEP), including the 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

### Landscape

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 some patchy palustrine forested wetland floodplains (PFO) within riparian corridors. The north bank of floodplain within the Segment R2 project area contains a sparse understory and many large, mature trees that form a significant forest canopy within the floodplain, but the majority of the site has been disturbed and is open to sunlight. The dominant trees found in riparian corridors in suburban areas include red maples (*Acer rubrum*), silver maple (*A. saccharinum*), pin oak (*Quercus palustris*), honey locust (*Gleditsia triacanthos*), green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), American elm (*Ulmus americana*), and American sycamore (*Platanus occidentalis*). The understory consists of small trees such as box elder (*A. negundo*), gray birch (*Betula populifolia*), and American hornbeam (*Carpinus carolina*) (Louis Berger & Associates, Inc. 1998; 2000). A variety of shrubs, grasses, and exotic and invasive species cover the forested floodplain floor, including tree-of-heaven (*Ailanthus altissima*), multiflora rose (*Rosa multiflora*), Japanese honeysuckle (*Lonicera japonica*), and common reed (*Phragmites australis*).

### Green Brook Sub-basin (Middle Brook/Raritan River)

The Green Brook sub-basin of the Raritan River Basin drains an area of 65 square miles entering the mainstem of the Raritan River at Bound Brook at river mile 20.4 (Rutkosky 1992; U.S. Army Corps of Engineers 1997; 2006). Middle Brook is a tributary of the Raritan River that is not within the Green Brook sub-basin (Rutkosky 1993). The NJDFW classifies the basin waters by their ability to support species of trout (Salmonidae) (New Jersey Division of Fish and Wildlife 2004). In 1976, waters of the Green Brook sub-basin were classified by the NJDFW as FW-3, suitable for maintenance, migration, and propagation of natural established biota. By 1990, Green Brook sub-basin water quality was classified by NJDFW as FW-2 (Rutkosky 1990). Currently, all Green Brook sub-basin waters are classified as FW-2-Non-Trout (New Jersey Division of Fish and Wildlife 2004).

### Soils

The majority of soils at the Segment R2 project area are classified and mapped as Rowland silt loam (Ro) series along the north bank. The eastern portion of project area contains Urban Land (Um) (Louis Berger & Associates, Inc. 1998; 2000). The Ro series soil is found along the banks of the major drainage features of the site as well as in large floodplain areas. The organic matter content is medium to high. Runoff is slow and the hazard of erosion is slight. Included with Ro soil in mapping are areas of sandy loam, loam, and gravelly loam soils.

## Environmental Contaminants

The Service understands that property adjacent to the proposed floodwall and levee contains the Brook Industrial Park Superfund Site (BIPSS). Examination of BIPSS remedial documents indicate the presence of 2, 3, 7, 8-tetrachlorodibenzo-*p*-dioxin, heavy metals, and organochlorine pesticides at the BIPSS. Remedial actions are currently being conducted at the BIPSS under the direction of the U.S. Environmental Protection Agency (EPA). In September 2006, the Service in discussion with the EPA's BIPSS Remedial Project Manager (RPM), understood that the soils/sediment on the riverside of the proposed floodwall and levee contain contaminants at concentrations above regulatory limits. The RPM has advised the Service that two analytical datasets are being prepared: the first delineating the nature and extent of soil/sediment contamination and the second being post-excavation validation samples in the area of the proposed floodwall and levee. In the absence of these datasets, there is insufficient information for the Service to comment on contaminant issues that could potentially adversely affect trust resources under Service jurisdiction. The Service requests copies of the datasets when available for review.

Should examination of the aforementioned contaminant datasets indicate soil/sediment contamination at levels that could adversely affect trust resources under Service jurisdiction, the Service would require additional information about the Corps's contingency plans to avoid and/or minimize contaminant transport during floodwall and levee installation or through riverbank scouring after installation. Moreover, the Service could not support installation of the proposed floodwall and levee if such action forfeits the selection of any effective remedial alternative for BIPSS-related contamination.

The Service is concerned that the proposed installation of a 48-inch pipe through the levee on the western end of the proposed floodwall could provide a conduit for contaminants between the BIPSS and the Raritan River. Therefore, the Service requests that information documenting that BIPSS-related contamination in the drainage area being served by the proposed 48-inch drain pipe has been remediated prior to project construction to a condition (*i.e.*, capped, excavated) such that contaminants cannot be transported off-site through the proposed 48-inch drain pipe. If the BIPSS property contamination has not been fully remediated or post-remedial conditions exist where residual contamination could be transport off-site via the proposed 48-inch drain pipe, the Service requests a copy of the Corps contingency plan for avoiding or minimizing BIPSS-related contamination for review.

The Rock Machine Park is listed in the NJDEP's Known Contaminated Sites in NJ Report 7<sup>th</sup> Edition (Spring 2006) as C1. The C1 designation signifies that remediation does not require a formal design, that the source of the contamination is known or has been identified, and there is a potential for groundwater contamination. The Service requests the Corps to provide the following information: the nature and extent of contamination; the status of remedial action(s); information regarding potential or documented transport of site-related contaminants off-site; proposed or implemented remedies; and post-remedial monitoring data if available.

The Service also recommends that the Corps provide documentation of the applicability and adherence to the Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects (Regulation No. 1165-2-132) as part of the project plan.

### **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 summer months, numerous females roost together in maternity colonies. Maternity colonies use multiple roosts 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 (U.S. Fish and Wildlife Service 1999).

During the August 17, 2006 site visit, the Service identified potential roosting trees or foraging habitat for the Indiana bat within the planned footprint of disturbance. Based on the presence of potential habitat (floodplain and upland forest) on the project site, and the proximity to known and potential hibernacula, Indiana bats may forage and roost on the project site before and after hibernation. Breeding female Indiana bats have been found in the vicinity, and may also be present on the project site during the summer months. Land clearing on the project site, especially of forested areas, could adversely affect Indiana bats, if present, by killing, injuring or disturbing breeding or roosting bats, and by removing or reducing the quality of maternity, roosting, and foraging habitats. Due to the size (approximately 10 acres of forested land to be affected) and proximity of the project site to known occurrences of the Indiana bat, the Service requested surveys for summering Indiana bats in all suitable habitats in and adjacent to areas proposed for development.

In our draft FWCA report, we requested that Indiana bat surveys be conducted between May 15 and August 15 by a qualified, Service-approved biologist according to the enclosed Indiana bat survey guidelines (Enclosure 2). In addition, we requested that a proposed survey workplan be submitted for our review and concurrence prior to initiation of Indiana bat surveys. In July 2007, the Corps provided a survey workplan and the Service subsequently concurred with the workplan.

The Indiana bat survey results reported that a total of 29 individual bats comprising three species were captured throughout the survey. The dominant species in the survey area was the big brown bat (*Eptesicus fuscus*). Nineteen big brown bats were captured, representing 65% of the bats captured. The two other captured species were the little brown myotis (*Myotis lucifugus*)

with eight captures (28%) and the eastern red bat (*Lasiurus borealis*) with two captures (7%). One bat (adult male) was identified as a potential Indiana bat because of its coloration and weakly-keeled calcar. The bat was processed as an Indiana bat, a radio transmitter was attached, and tissue and hair samples were submitted to Western Michigan State University for species confirmation. The DNA analyses determined that the bat was a little brown myotis.

Because Indiana bats are not found to occur on the project site, tree clearing may proceed with no seasonal restriction for a 2-year period. If tree clearing is not completed within this time frame, summer surveys must be repeated.

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 bat or any other federally listed species or their habitats are documented in the project area during project planning, this determination may be reconsidered. Current information regarding federally listed species and candidate species occurring in New Jersey is enclosed (Enclosure 3).

### **State-listed Species**

The bald eagle (*Haliaeetus leucocephalus*), a possible transient to the project area, was removed from the Federal list of Endangered and Threatened Wildlife effective August 8, 2007. The bald eagle continues to be protected under the Federal Bald and Golden Eagle Protection Act (54 Stat. 250; 16 U.S.C. 668-668d) and MBTA. The bald eagle also remains a State-listed species under the New Jersey Endangered and Nongame Species Conservation Act (N.J.S.A 23:2A *et seq.*), which carries protections under the State land use regulation program. These Federal and State laws prohibit take of bald eagles. For the continued protection of bald eagles, and to ensure compliance with Federal and State laws, the Service recommends managing bald eagles in accordance with the National Bald Eagle Management Guidelines and all applicable State regulations. Links to the Guidelines and additional information about the delisting of the bald eagle are available on the New Jersey Field Office website at <http://www.fws.gov/northeast/njfieldoffice/>.

Review of the Service's GIS database indicates that no other State-listed species occur on or in the vicinity of the project area. The Service notes that information on State-listed species contained in our GIS database is limited and further consultation with the NJDFW Endangered and Nongame Species Program<sup>1</sup>, and New Jersey Division of Parks and Forestry (NJDPF) Natural Heritage Program<sup>2</sup> may be required. Since the NJDEP is the permit applicant for the project, any State-listed wildlife would be addressed during the permit application process. A list of State-listed wildlife species is enclosed (Enclosure 4).

### **Other Fish and Wildlife Resources**

The Raritan River in the project area is classified as non-trout production and non-trout maintenance river by the NJDFW and supports freshwater fish species such as common carp

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<sup>1</sup> NJDFW, Endangered and Nongame Species Program, P.O. Box Trenton, NJ 08625-0400 (609) 292-9400

<sup>2</sup> NJDPF, Natural Heritage Program, P.O. Box 404, Trenton, NJ 08625 (609) 984-1339

(*Cyprinus carpio*), white perch (*Morone americana*), channel catfish (*Ictalurus punctatus*), eastern silvery minnow (*Hybognathus regius*), and other warm-water fisheries species and anadromous fish (U.S. Army Corps of Engineers, 2006). Best management practices and seasonal restrictions (April 1 to June 30) should be implemented to protect aquatic resources, including anadromous fish.

The floodplain of the project area exists in a disturbed state, but does support habitat for mammals and birds. Wildlife species that may be found in the project area are those tolerant of urban-suburban areas. Bird species likely include American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), northern cardinal (*Cardinalis cardinalis*), black-capped chickadee (*Parus atricapillus*), tufted titmouse (*Baeolophus bicolor*), gray catbird (*Dumetella carolinensis*), and American crow (*Corvus brachyrhynchos*). White-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), and gray squirrel (*Sciurus carolinensis*) are also likely to occur in the project area.

### **Proposed Mitigation**

As described in the plans, the Green Brook Flood Control 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 of the flood control project, 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 wetland/upland floodplain areas are mainly associated with temporary construction access areas. Temporary impacts are mitigated on-site through landscape restoration plans that involve both seeding and planting of native shrubs and trees aside the levee alignment. The Segment R2 project includes on-site landscaping to mitigate for 0.954 acres of temporary impacts to wetland and 0.881 acres of temporary impacts to transition areas. The Service recommends eliminating foxtail from the planting plan and monitoring for bank erosion and for survival of planted vegetation on-site. Contingency plans are also recommended to provide corrective actions if necessary.

Off-site wetlands and habitat mitigation are required for the Green Brook Flood Control Project due to permanent impacts to the environment resulting from construction of levees, floodwalls, and associated structures within floodplain areas such as drainage features and pump stations. Consistent with the Service's Mitigation Policy, compensatory mitigation, through creation of wetlands or restoration of existing wetlands, is required when minimization and avoidance of impacts are exhausted as alternatives.

The Corps's mitigation plans would implement the 2:1 mitigation ratio per NJDEP Freshwater Wetlands Protection Act Rule (N.J.A.C. 7:27A-15.8). Specifically, the Corps plans to mitigate for the 7.287 acres of forested wetland impacts at Segment R2 with 14.574 acres of the forested wetland creation area at the Finderne Farm Mitigation Site. In addition, a ratio of 1:1 for 1.835 acres of the transition area to the forested wetland creation area at the mitigation site would be used to compensate for permanent impacts to the transition area at Segment R2. The Service is in general agreement with the mitigation plan.

## SERVICE COMMENTS AND RECOMMENDATIONS

General recommendations for project activities are as follows:

1. Submit copies of two analytical datasets of BIPSS for Service review.

*Corps Comment: The EPA should be contacted as it has the lead on site remediation.*

Service Response: Pursuant to the Corps' response, a Service Environmental Contaminants Specialist contacted the EPA's RPM. The Service was advised that soil sampling had been conducted as part of a remedial action by Cape Environmental for the Corps. According to the EPA RPM, sampling results indicated that soils that would remain beneath the levee met the predesigned New Jersey-non-residential cleanup criteria for arsenic and chromium. The EPA RPM also stated that a copy of the analytical data generated as part of the remedial action by Cape Environmental should be obtained from the Corps (the agency through which they were contracted). The Service would appreciate a copy of the Cape Environmental report for our records pertaining to this site.

2. Allow for completion of ongoing remedial actions for environmental contaminants within the project area at the BIPSS.

*Corps Comments: For background information, the selected remedy plan for BIPSS documented in the Record of Decision signed by the EPA on 30 September 1994 included excavation and disposal of contaminated soil in the area of the Segment R2 floodwall and levee in part to allow for its construction. This plan was selected in part, to allow for the construction of the flood damage reduction project. This soil excavation was completed in October 2006.*

*Corps regulations prevent the Corps – New York District from proceeding with construction until the site has been successfully remediated as determined by the regulatory agency authorized to oversee the remediation activities. Additionally, Corps regulations require the non-federal sponsor to obtain all lands, easements and rights of way for the project and ensure that the areas affected by the construction of project are free from HTRW. If these sources are present on the site, the non-federal sponsor would be responsible for remediation activities and would be required to provide documentation to the Corps from the regulatory agency overseeing the remediation action that the site has been successfully remediated.*

Service Response: The Service concurs.

3. Provide a copy of contingency plans to avoid or minimize contaminant transport during floodwall and levee installation or through riverbank scouring after installation if analytical datasets indicate soil/sediment contaminant at level that could adversely affect trust resources under Service jurisdiction.

Corps Comments: Regarding your concern that the 48" pipe serving as the outlet to the pump station located on the eastern end of the levee as it transitions to the floodwall, the aforementioned remediation plan included excavating the area on the landside of the levee and floodwall. In addition, scour protection in the form of rip rap with an underlayment of filter fabric will be installed from the outlet discharge point to the Raritan River. Therefore contamination to the Raritan River as a result of the outlet will not be an issue.

Service Response: The Service concurs.

4. Incorporate site remediation for environmental contaminants within the project area at Rock Machine Park. The Service requests information on the source and extent of contamination, status of remediation, potential for off-site transport, and proposed remedies and monitoring. The Service would likely support any actions the State may require of the Corps or its contractors for identifying, removing, and storing contaminated sediment and debris. Additionally, the Service recommends the Corps and its contractors continue coordination with this office, the State, and the landowner during clean-up of the contaminated sites. The Service would be available for additional technical assistance if necessary via an Interagency Agreement.

Corps Comment: Per coordination between the Corps's HTRW specialist and the NJDEP's Northern Field Office, Division of Remediation and Management and Response, the site was contaminated with metals. The site has been remediated, but because the owner has not submitted a draft document indicating a deed modification, the file remains open.

Service Response: The Service concurs.

5. Provide documentation of the applicability and adherence to HTRW Guidance for Civil Works Projects as part of the project plan for both BIPSS and Rock Machine Park.

Corps Comment: In this case, since the remediation activities occurring at the BIPSS are under the jurisdiction of the EPA, the non-federal sponsor will be responsible for obtaining the documentation from EPA indicating that the remedial action has been approved. Consequently, barring any new contradictory data and notwithstanding any other project constraint, the Corps can begin construction once the non-federal sponsor provides such assurances regarding the non-existence of HTRW materials on the areas affected by the project's construction.

Service Response: The Service concurs.

6. Prepare a proposed Indiana bat survey workplan for Service review and concurrence prior to initiation of Indiana bat surveys.

Corps Comment: In July 2007 prior to survey effort, the Corps provided the Service a copy of the survey workplan for review.

Service Response: The Service reviewed and concurred with the Indiana bat survey workplan prior to initiation of the August surveys.

7. Conduct Indiana bat surveys between May 15 and August 15 by a qualified, Service-approved biologist (Enclosure 2). Avoid tree clearing until surveys have been completed and reviewed by the Service.

*Corps Comment:* A survey to determine the presence or absence of Indiana bat was conducted on August 8 and 9, 2007. A bat was caught that although exhibited characteristics more indicative of the little brown bat (*Myotis lucifugus*), tissue samples were taken and a DNA test was performed to verify the species. Based on the test results received on September 19, 2007, the bat was *Myotis lucifugus*. A report detailing the survey results is pending and will be submitted to the Service shortly.

Service Response: On December 3, 2007, the Service received and reviewed a copy of survey report. The report provides detailed survey activities and the Service concurs in its results.

8. Provide 150-foot buffers around exceptional resource value wetlands consistent with State Regulation (N.J.A.S. 13:9B-1 *et seq.*) if Indiana bats are found in the project area.

*Corps Comment:* N/A

Service Response: Not applicable since the Indiana bat survey report indicated absence of Indiana bat within the project area.

9. Continue to coordinate with the NJDPF's Natural Heritage Program for current information regarding State-listed plant species in the project area.

*Corps Comment:* The Corps will continue coordination NJDPF's Natural Heritage Program as necessary.

Service Response: None

10. Continue to coordinate with the NJDFW's Endangered and Nongame Species Program for current information regarding State-listed wildlife species in the project area.

*Corps Comment:* The Corps will continue coordination with NJDFW's ENSP as necessary.

Service Response: None

11. Implement timing restrictions on demolition activities (*i.e.*, reconstruction of Talmadge Avenue Bridge) and use best management practices (*e.g.*, hay bales, silt curtains) during demolition and on-site restoration work to avoid adverse impacts to terrestrial and aquatic



species at proposed sites. The State's requirements regarding sediment management and erosion control for the project are supported by the Service.

Corps Comment: *The Corps concurs to implement timing restrictions on demolition activities and use best management practices.*

Service Response: The Service reiterates our recommendation to follow State requirements for sediment management and erosion control.

12. Conform to a standard State seasonal restriction on in-stream work between April 1 and June 30 to protect anadromous fish.

Corps Comment: *The Corps concurs to conform to seasonal in-stream work between April 1 and June 30.*

Service Response: None

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

Corps Comment: *The Corps concurs to remove trash and debris found during clearing and construction activities within the project footprint.*

Service Response: None

14. Eradicate or control exotic, invasive species on the levee and the surrounding workspace to enhance wildlife habitats and improve up to 300 linear feet of Middle Brook stream bank stability in the vicinity of Talmadge Avenue bridge and water storage capacity at the project areas. The Corps should coordinate with NJDEP to ensure that regular surveys are conducted to identify and remove any undesirable plants (e.g., tree-of-heaven, multiflora rose, Japanese honeysuckle and common reed) beginning to re-colonize during environmental contaminant remediation of the area surrounding the project. 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 a 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.

Corps Comment: *The Corps will monitor the on-site mitigation for five years per Corps regulations and in compliance with the permits issued by NJDEP. During the monitoring, invasive species removal may be conducted to ensure the success of the on-site mitigation. Subsequent of the five year monitoring period, the NJDEP will be responsible for operations and maintenance of the site. Other than vegetation management on the levee, additional invasive species removal will be at their discretion.*

Service Response: None

15. Remove the introduced species, meadow foxtail (*Alopecurus pratensis*), from the floodplain mix for the Section 02450 topsoil and seeding plan for this project.

Corps Comment: *The Corps concurs to remove meadow foxtail from proposed floodplain mix in Section 02450.*

Service Response: None

16. Conduct monitoring for potential bank erosion during earthwork activities and post-project.

Corps Comment: *The Corps concurs to conduct monitoring for potential bank erosion during earthwork activities and post-project.*

Service Response: None

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

Corps Comment: *The Corps will monitor the on-site mitigation for five years per Corps regulations and in compliance with the permits issued by NJDEP. During the monitoring, invasive species removal may be conducted to ensure the success of the on-site mitigation. Subsequent of the five year monitoring period, the NJDEP will be responsible for operations and maintenance of the site. Other than vegetation management on the levee, additional invasive species removal will be at their discretion.*

Service Response: None

18. Complete a contingency plan for on-site restoration for temporary impacts that would provide for further Corps action during the post-construction monitoring period if necessary, as part of an adaptive management strategy to be carried out in concert with both the Green Brook Flood Control Commission and the project's non-Federal sponsor, NJDEP (which will be responsible for operations and management, as the local sponsor). Corps interventions may include re-grading, replanting, or other actions to correct for unexpected conditions, including deposition, erosion, failure of revegetation to become established, and/or invasion of *Phragmites* beyond pre-defined acceptable limits.

Corps Comment: *The Corps concurs to develop an action/site specific plan if it is determined that the post project restoration is failing and adaptive management techniques are necessary. The Corps will coordinate with the Service should one be developed.*

Service Response: None

19. Specific recommendations for the Finderne Farm Mitigation Site have been provided to the Corps in our FWCA report dated September 12, 2006. Please use the FWCA report as reference.

## CONCLUDING REMARKS

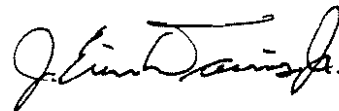
The Service recognizes the need for the proposed Segment R2 project components to reduce any temporary flooding along the Raritan River that may occur during the interim build-out period of the Green Brook Flood Control Project. The Service recommends that the Corps continue to coordinate with the non-Federal sponsor, landowners, and other interested stakeholders in implementing the recommendations provided above to restore the project area.

To summarize, fish and wildlife will benefit from the creation of 14.574 acres of forested wetland at the Finderne Farm Mitigation Site and from retaining mature trees and restoring the floodplain to a forested wetland cover type. To benefit native wildlife at the project site and at the Finderne Farm Mitigation Site, the Service recommends that the Corps remove exotic invasive plants and revegetate using native canopy and understory species that provide food and cover for wildlife. For example, shagbark hickory (*Carya ovata*), when mature, will provide potential roosting sites for the Indiana bat. Fish and wildlife will benefit further from use of bioengineering for any necessary erosion control and from follow-up monitoring and long-term management to ensure stream bank stabilization and successful establishment of a native plant community.

Based on the Indiana bat survey report, the Service concludes that the *Green Brook Flood Control Project: Proposed Segment R2* is not likely to adversely affect Indiana bats, pursuant to Section 7 of the ESA.

The Service appreciates the opportunity to comment on the proposed plan and is pleased to submit this final FWCA Section 2(b) report as technical input to the *Green Brook Flood Control Project: Segment R2*. Should you have any questions, please contact Ron Popowski. Mr. Popowski is deaf and uses video relay service. He can be reached at (877) 467-4877, extension 42421 or e-mail at [Ron\\_Popowski@fws.gov](mailto:Ron_Popowski@fws.gov).

Sincerely,



J. Eric Davis Jr.  
Supervisor

Enclosures:

- 1) Project Area Map
- 2) Indiana bat Survey Guidelines
- 3) Federally Listed Species in New Jersey
- 4) State Listed Species in New Jersey

## REFERENCES

### Literature Cited

- Harvey, M.J. 1992. Bats of the Eastern United States. Arkansas Game and Fish Commission, Little Rock, Arkansas. 46 pp.
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## MIST NETTING GUIDELINES

### RATIONALE

Following these guidelines will standardize procedures for mist netting. It will help maximize the potential for capture of Indiana bats at a minimum acceptable level of effort. Although the capture of bats confirms their presence, failure to catch bats does not absolutely confirm their absence. There are many instances in which the netting effort was as extensive as outlined below and Indiana bats were caught only with additional effort.

A typical mist net survey provides insufficient data to determine population size or structure. It is an attempt to determine presence or probable absence of the species.

### NETTING SEASON

May 15 - August 15

These dates define acceptable limits for documenting the presence of summer populations of Indiana bats. Netting efforts outside these dates rely far more heavily upon positive results (*i.e.*, captures) than negative results (*i.e.*, failure to catch bats). If Indiana bats are not caught, it is unlikely that one can conclude that the bats do not use the area during the summer. Even when bats are caught, capture should be carefully interpreted. If only a single bat is captured, it may be a transient or migratory individual. Several captures, including adult females and young of the year, indicate that a summer nursery colony is active in the area. At the very least it indicates that the site is an important habitat for transient bats.

### EQUIPMENT

Mist nets - Use the finest, lowest visibility mesh commercially available:

1. In the past, this was 1 ply, 40 denier monofilament - denoted 40/1.
2. Currently, monofilament is not available and the finest on the market is 2 ply, 50 denier nylon - denoted 50/2.
3. Mesh of approximately 1 2 (1 1/4 - 1 3/4) inch.

Hardware - No specific hardware is required. There are many suitable systems of ropes and/or poles to hold the nets. See NET PLACEMENT below for minimum net heights, habitats, and other netting requirements that affect the choice of hardware. The system of Gardner, et al. (1989) has met the test of time.

### NET PLACEMENT

Potential travel corridors, such as streams or logging trails, typically are the most effective places to net. Place the nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side and from stream (or ground) level up to the canopy. A typical set is 7

meters high (3 nets "stacked" on top one another) and up to 20 meters long. Occasionally it may be desirable to net where there is no good corridor. Take caution to get the nets up into the canopy. The typical equipment described in the section above may be inadequate for some situations, requiring innovation on the part of the surveyors.

## **LEVEL OF EFFORT**

Stream corridors - 1 net site per km of stream.

Non-corridor land tracts - 2 net sites per square km (247 acres) of forested habitat.

Netting at each site should consist of:

At least 4 net nights (unless bats are caught sooner) (1 net set for 1 night = 1 net night)

A minimum of 2 net locations at each site (preferably no closer than 30 meters)

A minimum of 2 nights of netting

Sample Period:

Begin at sunset; net for at least 5 hours

Each net should be checked approximately every 20 minutes

No disturbance near the nets, other than to check nets and remove bats

## **WEATHER CONDITIONS**

Severe weather adversely affects capture of bats. If Indiana bats are caught during weather extremes, it is probably because they are at the site and active despite inclement weather. In contrast, if bats are not caught, it may be that there are no bats at the site or they may be inactive to avoid the weather. Negative results combined with any of the following weather conditions throughout all or most of a sampling period are likely to require additional netting:

Precipitation

Temperatures below 10°C

Strong winds (Use good judgment: moving nets are more likely to be detected by bats.)

## **MOONLIGHT**

There is some evidence that small myotome bats avoid brightly lit areas, perhaps as predator avoidance. It is typically best to set nets under the canopy where they are out of the moon light, particularly when the moon is 2-full or greater.

## **REFERENCES**

Gardner, J.E., J.D. Garner, and J.E. Hofmann. 1989. A portable mist netting system for capturing bats with emphasis on *Myotis sodalis* (Indiana bat). *Bat Research News* 30(1):1-8.

Revised 2/13/06





## FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN NEW JERSEY



An **ENDANGERED** species is any species that is in danger of extinction throughout all or a significant portion of its range.

A **THREATENED** species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

	COMMON NAME	SCIENTIFIC NAME	STATUS
FISHES	Shortnose sturgeon*	<i>Acipenser brevirostrum</i>	E
REPTILES	Bog turtle	<i>Clemmys muhlenbergii</i>	T
	Kemps's Ridley turtle*	<i>Lepidochelys kempii</i>	E
	Green turtle*	<i>Chelonia mydas</i>	T
	Hawksbill turtle*	<i>Eretmochelys imbricata</i>	E
	Leatherback turtle*	<i>Dermochelys coriacea</i>	E
	Loggerhead turtle*	<i>Caretta caretta</i>	T
BIRDS	Bald eagle	<i>Haliaeetus leucocephalus</i>	T
	Piping plover	<i>Charadrius melodus</i>	T
	Roseate tern	<i>Sterna dougallii dougallii</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E+
MAMMALS	Eastern cougar	<i>Felis concolor cougar</i>	E+
	Indiana bat	<i>Myotis sodalis</i>	E
	Gray wolf	<i>Canis lupus</i>	E+
	Delmarva fox squirrel	<i>Sciurus niger cinereus</i>	E+
	Blue whale*	<i>Balaenoptera musculus</i>	E
	Finback whale*	<i>Balaenoptera physalus</i>	E
	Humpback whale*	<i>Megaptera novaeangliae</i>	E
	Right whale*	<i>Balaena glacialis</i>	E
	Sei whale*	<i>Balaenoptera borealis</i>	E
	Sperm whale*	<i>Physeter macrocephalus</i>	E

	COMMON NAME	SCIENTIFIC NAME	STATUS
INVERTEBRATES	Dwarf wedgemussel	<i>Alasmidonta heterodon</i>	E
	Northeastern beach tiger beetle	<i>Cicindela dorsalis dorsalis</i>	T
	Karner blue butterfly	<i>Lycaeides melissa samuelis</i> )	E+
	Mitchell's satyr butterfly	<i>Neonympha m. mitchellii</i>	E+
	American burying beetle	<i>Nicrophorus americanus</i>	E+
PLANTS	Small whorled pogonia	<i>Isotria medeoloides</i>	T
	Swamp pink	<i>Helonias bullata</i>	T
	Knieskern's beaked-rush	<i>Rhynchospora knieskernii</i>	T
	American chaffseed	<i>Schwalbea americana</i>	E
	Sensitive joint-vetch	<i>Aeschynomene virginica</i>	T
	Seabeach amaranth	<i>Amaranthus pumilus</i>	T

STATUS:			
E	endangered species	PE	proposed endangered
T	threatened species	PT	proposed threatened
+	presumed extirpated**		

\* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.

\*\* Current records indicate the species does not presently occur in New Jersey, although the species did occur in the State historically.

*Note: For a complete listing of Endangered and Threatened Wildlife and Plants, refer to 50 CFR 17.11 and 17.12.*

For further information, please 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 09/28/06



## 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 Undetermined.

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			
Endangered		Threatened	
<a href="#">Bittern, American</a>	<i>Botaurus lentiginosus</i> BR	<a href="#">Bobolink</a>	<i>Dolichonyx oryzivorus</i> BR
<a href="#">Eagle, bald</a>	<i>Haliaeetus leucocephalus</i> BR **	<a href="#">Eagle, bald</a>	<i>Haliaeetus leucocephalus</i> NB **
<a href="#">Falcon, peregrine</a>	<i>Falco peregrinus</i>	<a href="#">Hawk, Cooper's</a>	<i>Accipiter cooperii</i>
<a href="#">Goshawk, northern</a>	<i>Accipiter gentilis</i> BR	<a href="#">Hawk, red-shouldered</a>	<i>Buteo lineatus</i> NB
<a href="#">Grebe, pied-billed</a>	<i>Podilymbus podiceps</i>	<a href="#">Night-heron, black-crowned</a>	<i>Nycticorax nycticorax</i> BR
<a href="#">Hamer, northern</a>	<i>Circus cyaneus</i> BR	<a href="#">Night-heron, yellow-crowned</a>	<i>Nyctanassa violaceus</i>
<a href="#">Hawk, red-shouldered</a>	<i>Buteo lineatus</i> BR	<a href="#">Knol, red</a>	<i>Calidris canutus</i> BR
<a href="#">Owl, short-eared</a>	<i>Asio flammeus</i> BR	<a href="#">Osprey</a>	<i>Pandion haliaetus</i> BR
<a href="#">Plover, piping</a>	<i>Charadrius melodus</i> **	<a href="#">Owl, barred</a>	<i>Strix varia</i>
<a href="#">Sandpiper, upland</a>	<i>Bartramia longicauda</i>	<a href="#">Owl, long-eared</a>	<i>Asio otus</i>
<a href="#">Shrike, loggerhead</a>	<i>Lanius ludovicianus</i>	<a href="#">Rail, black</a>	<i>Lateralus jamaicensis</i>
<a href="#">Skimmer, black</a>	<i>Rynchops nigra</i> BR	<a href="#">Skimmer, black</a>	<i>Rynchops nigra</i> NB
<a href="#">Sparrow, Henslow's</a>	<i>Ammodramus henslowii</i>	<a href="#">Sparrow, grasshopper</a>	<i>Ammodramus saviannarum</i> BR
<a href="#">Sparrow, vesper</a>	<i>Pooecetes gramineus</i> BR	<a href="#">Sparrow, Savanah</a>	<i>Passerculus sandwichensis</i> BR
<a href="#">Tern, least</a>	<i>Sterna antillarum</i>	<a href="#">Sparrow, vesper</a>	<i>Pooecetes gramineus</i> NB
<a href="#">Tern, roseate</a>	<i>Sterna dougalli</i> **	<a href="#">Woodpecker, red-headed</a>	<i>Metanerpes erythrocephalus</i>
<a href="#">Wren, seede</a>	<i>Cistothorus platensis</i>		
**Federally endangered or threatened			
BR - Breeding population only; NB - non-breeding population only			

REPTILES			
Endangered		Threatened	
<a href="#">Rattlesnake, timber</a>	<i>Crotalus t. horridus</i>	<a href="#">Snake, northern pine</a>	<i>Phocophis m. melanoleucus</i>
<a href="#">Snake, corn</a>	<i>Elaphe g. guttata</i>	<a href="#">Turtle, Atlantic green</a>	<i>Chelonia mydas</i> **
<a href="#">Snake, queen</a>	<i>Regina septemvittata</i>	<a href="#">Turtle, wood</a>	<i>Clemmys insculpta</i>
<a href="#">Turtle, bog</a>	<i>Clemmys mühlenbergii</i> **		
<a href="#">Atlantic hawksbill</a>	<i>Eretmochelys imbricata</i> **		
<a href="#">Atlantic leatherback</a>	<i>Dermochelys coriacea</i> **		
<a href="#">Atlantic loggerhead</a>	<i>Caretta caretta</i> **		
<a href="#">Atlantic Ridley</a>	<i>Lepidochelys kempi</i> **		
**Federally endangered or threatened			

AMPHIBIANS			
Endangered		Threatened	
<u>Salamander, blue-spotted</u>	<i>Ambystoma laterale</i>	<u>Salamander, eastern mud</u>	<i>Pseudotriton montianus</i>
<u>Salamander, eastern tiger</u>	<i>Ambystoma tigrinum</i>	<u>Salamander, long-tailed</u>	<i>Eurycea longicauda</i>
<u>Treefrog, southern gray</u>	<i>Hyla chrysocelis</i>	<u>Treefrog, pine barrens</u>	<i>Hyla anderssonii</i>

INVERTEBRATES			
Endangered		Threatened	
<u>Beetle, American burying</u>	<i>Nicrophorus americanus</i> **	<u>Elfin, frosted (butterfly)</u>	<i>Callophrys irus</i>
<u>Beetle, northeastern beach tiger</u>	<i>Cincindela d. dorsalis</i> **	<u>Floater, triangle (mussel)</u>	<i>Atasmodonta undulata</i>
<u>Copper, bronze</u>	<i>Lycaena hylus</i>	<u>Fritillary, silver-bordered (butterfly)</u>	<i>Boloria selene myrna</i>
<u>Floater, brook (mussel)</u>	<i>Atasmodonta varicosa</i>	<u>Lampmussel, eastern (mussel)</u>	<i>Lampsilis radiata</i>
<u>Floater, green (mussel)</u>	<i>Lasmigona subvincta</i>	<u>Lampmussel, yellow (mussel)</u>	<i>Lampsilis cariosa</i>
<u>Salv, Mitchell's (butterfly)</u>	<i>Neonympha m. mitchellii</i> **	<u>Mucket, tidewater (mussel)</u>	<i>Leptodea ochracea</i>
<u>Skipper, arogos (butterfly)</u>	<i>Atrytone arogos arogos</i>	<u>Pondmussel, eastern (mussel)</u>	<i>Ligumia nasuta</i>
<u>Skipper, Appalachian grizzled (butterfly)</u>	<i>Pyrgus wyandoti</i>	<u>White, checkered (butterfly)</u>	<i>Pontia protodice</i>
<u>Wedgemussel, dwarf</u>	<i>Atasmodonta heterodon</i> **		
**Federally endangered or threatened			

MAMMALS	
Endangered	
<u>Bat, Indiana</u>	<i>Myotis sodalis</i> **
<u>Bobcat</u>	<i>Lynx rufus</i>
<u>Whale, black right</u>	<i>Balaena glacialis</i> **
<u>Whale, blue</u>	<i>Balaenoptera musculus</i> **
<u>Whale, fin</u>	<i>Balaenoptera physalus</i> **
<u>Whale, humpback</u>	<i>Megaptera novaeangliae</i> **
<u>Whale, sei</u>	<i>Balaenoptera borealis</i> **
<u>Whale, sperm</u>	<i>Physeter macrocephalus</i> **
<u>Woodrat, Allegheny</u>	<i>Nectoma floridana magister</i>
**Federally Endangered	

FISH	
Endangered	
<u>Sturgeon, shortnose</u>	<i>Acipenser brevirostrum</i> **
**Federally Endangered	



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF

Environmental Analysis Branch

October 2, 2007

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 11 October 2006 Fish and Wildlife Coordination Act Report (FWCAR) for the Green Brook Flood Control Project: Proposed Segment R2 Levee, Bound Brook Borough, Somerset County, New Jersey.

The following are responses to your recommendations:

- 1) General Recommendation 1, *Submit copies of two analytical datasets of BIPSS for Service review* and General Recommendation 2, *Allow for completion of ongoing remedial actions for environmental contaminants*, General Recommendation 3, *Provide contingency plans to avoid contaminant transport during project construction based on BIPSS analytical datasets* and General Recommendation 5, *Provide documentation of applicability and adherence to the HTRW Guidance for Civil Works projects as part of project plan for both BIPPS and Rock Machine Park*

For background information, the selected remedy plan for Brook Industrial Site documented in the Record of Decision signed by the Environmental Protection Agency (EPA) on 30 September 1994 included excavation and disposal of contaminated soil in the area of the Segment R2 floodwall and levee in part to allow for its construction. This plan was selected in part, to allow for the construction of the flood damage reduction project. This soil excavation was completed in October 2006.

Corps regulations prevent the District from proceeding with construction until the site has been successfully remediated as determined by the regulatory agency authorized to oversee the remediation activities. Additionally, Corps regulations require the non-federal sponsor to obtain all lands, easements and rights of way for the project and ensure that the areas affected by construction of project are free from hazardous, toxic and radioactive wastes. If these sources are present on the site, the non-federal sponsor would be responsible for remediation activities and would be required to provide documentation to the Corps from the regulatory agency overseeing the remediation action that the site has been successfully remediated.

In this case, since the remediation activities occurring at the Brook Industrial site are under the jurisdiction of the EPA, the non-federal sponsor will be responsible for obtaining the documentation from EPA indicating that the remedial action has been approved. Consequently, barring any new contradictory data and notwithstanding any other project constraint, the District can begin construction once the non-federal sponsor provides such assurances regarding the non-existence of HTRW materials on the areas affected by the project's construction.

The Service should coordinate directly with Pietro Mannino, the assigned Remediation Project Manager from EPA at (212) 637-4398, email [mannino.pietro@epa.gov](mailto:mannino.pietro@epa.gov) if they wish to review the data. We would like to note that the contact information was provided to Ron Popowski by Kimberly Rightler in an email dated 24 July 2007.

Regarding your concern that the 48" pipe serving as the outlet to the pump station located on the eastern end of the levee as it transitions to the floodwall, the aforementioned remediation plan included excavating the area on the landside of the levee and floodwall. In addition, scour protection in the form of rip rap with an underlayment of filter fabric will be installed from the outlet discharge point to the Raritan River. Therefore contamination to the Raritan River as a result of the outlet will not be an issue.

- 2) General Recommendation 4, *Incorporate site remediation for contamination at Rock Machine Park*:  
Per coordination between the District's HTRW specialist and Gary Greulich from the Northern Field Office, Division of Remediation and Management and Response, NJDEP, the site was contaminated with metals. The site has been remediated, but because the owner has not submitted a draft document indicating a deed modification, the file remains opened.
- 4) General Recommendations 6-8, regarding the Indiana bat:  
A survey to determine the presence or absence of Indiana bat was conducted on August 8 and 9 2007. A bat was caught that although exhibited characteristics more indicative of the little brown bat (*Myotis lucifugus*), tissue samples were taken and a DNA test was performed to verify the species. Based on the test results received on 19 September 2007, the bat was *Myotis lucifugus*. A report detailing the survey results is pending and will be submitted to the Service shortly.
- 5) General Recommendation 9 and 10, *Continue to coordinate with NJDPF's Natural Heritage Program and Endangered and Nongame Species Program*.  
The District will continue coordination with two programs as necessary.
- 6) General Recommendation 11, *Implement timing restrictions on demolition activities and use best management practices* and General Recommendation 12, *Conform to seasonal in-stream work between April 1 and June 30*.  
The District concurs.
- 7) General Recommendation 13, *Remove trash and other human-generated debris as part of clearing process*.  
Any trash or debris found during clearing and construction activities within the project footprint will be removed as necessary.

- 8) General Recommendation 14 *Invasive species control on levee and surrounding workspace and General Recommendation 17, Monitor survival of vegetation planted for on-site mitigation.*

The District will monitor the on-site mitigation for five years as per Corps regulations and in compliance with the permits issued by NJDEP. During this monitoring, invasive species removal may be conducted to ensure the success of the on-site mitigation. Subsequent of the five year monitoring period, the NJDEP will be responsible for operations and maintenance of the site. Other than vegetation management on the levee, additional invasive species removal will be at their discretion.

- 9) General Recommendation 15, *Remove meadow foxtail from proposed flood plain mix in Section 02450.*

Meadow foxtail will be removed from the seed mix.

- 10) General Recommendation 16, *Conduct monitoring for potential bank erosion during earthwork activities and post-project.*

The Corps concurs.

- 11) General Recommendation 18, *Prepare a contingency plan for on-site restoration for temporary impacts related to the implementation of adaptive management techniques should it be necessary to ensure the success of post construction site restoration.*

An action/site specific plan will be developed if it is determined that the post project restoration is failing and adaptive management techniques are necessary. The District will coordinate this plan with the U.S. Fish and Wildlife Service should one be developed.

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,



Leonard Houston,

Chief, Environmental Analysis Branch

Cc:

J. Legg, NJDEP

## **Appendix C**

### **General Conformity Record of Non-Applicability**



## GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY

Project/Action Name: *Segment R2 Green Brook Flood Damage Reduction Project*

Project/Action Identification Number: *N/A*

Project/Action Point of Contact: *Kimberly Rightler, (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**

\_\_\_\_\_ Total direct and indirect emission from this project/action have been estimated at 5.44 tons CO, 16.14 tons VOC, 20.14 NOx and 2.26 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**

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 \_\_\_\_\_.

(*Frank Santomauro, Chief, Planning Division*)

**SUMMARY OF ESTIMATED CONSTRUCTION AIR EMISSIONS  
GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT, BOUND BROOK, NEW JERSEY  
U.S.A.C.E NEW YORK DISTRICT**

Equipment	Emissions (lbs)				
	VOC	CO	NOx	PM	SOx
AIR COMPRESSOR, 250 CFM, 100 PSI	29.5	79.0	366.6	26.1	
ASPHALT FINISHER, 10"WIDE SCREENED, WHEEL	2.3	12.3	39.5	3.4	3.6
CONCRETE FINISHER, ROTO TROWL, 46"	3,775	8,011	5.8	21.7	10
CONCRETE MIXER, 12 CF, W/TRAILER	2,307	4,896	3.5	13.3	5.9
CONCRETE PUMP, 117 CY/HR, 75' BOOM, TRK MTD	534	1,445	6,705	477	444
CONCRETE SAW, 13" DPTH, S/P	298	632	0.5	1.7	0.8
CONCRETE VIBRATOR, 2.5"	20.9	55.9	260	18.5	
CRANE, HYD, SP, 20 TON	15.1	50.2	123	17.2	11
CRANE, MECH, CRWL, 0.75 CY, 25 TON	29.0	96.6	237	33.1	21
CRANE, MECH, TRK MNT, 125 TON	7.5	25.1	61.5	8.6	5.6
CRANE, HYD, SP, 30 TON	7.0	23.5	57.5	8.0	5.2
CRANE, HYD, SP, 10 TON	1.5	5.1	12.5	1.7	1.1
CRANE, HYD, TRK MNT, 70 TON	7.0	23.3	57.0	8.0	5.1
CRANE, HYD, TRUCK MTD, 25T	17.8	59.4	146	20.4	13
GRADER, MOTOR, 135 HP (101KW)	264	650	1,643	171	149
GRADER, MOTOR, 12' BLADE	2.5	6.2	15.7	1.6	1.4
HYDRAULIC EXCAVATOR, CRWL, 24,640 LBS	169	1,254	2,593	347	224
LOADER/BCK-HOE,WH, 0.80CY	131	637	947	98	80
LOADER/FE, CRWL, 1.30 CY	0.4	2.0	2.9	0.3	0.2
LOADER/FE, WHL, SKID-STEER, 14.3 CF	8.2	40.0	59.4	6.2	5.0
LOADER/FE, WHL, SKID-STEER, 9-11 CF	6.4	31.3	46.5	4.8	3.9
LOADER/BCK-HOE,WH, 0.80CY	0.6	2.9	4.3	0.5	0.4
LOADER/BCK-HOE,WH, 1.25 CY	1.5	7.4	10.9	1.1	0.9
PAVING BREAKER 66 LB; 100 CFM COMPRESSOR	39.0	104	485	34.5	0
PUMP, WATER, CENTRIFUGAL, 2" (50MM)	0.7	2.0	9.2	0.7	0.6
PUMP, WATER, CENTRIFUGAL, 2" (51MM)	0.4	1.0	4.6	0.3	0.3
PUMP, WATER, DIAPHRAGM, SKD MTD (51MM)	1.6	4.4	20.2	1.4	1.3
ROLLER, STATIC, SELF-PROP, 14.25 TON	1.7	6.5	19.5	1.6	2.1
ROLLER, VIB, SELF PROP, DD, 2.9 TON	0.8	3.1	9.3	0.8	1.0
ROLLER, VIB, SELP PROP, DD, 7.8 TON	0.1	0.4	1.1	0.1	0.1
ROLLER, STATIC, SELF-PROP, 25.25 TON	6.6	25.5	76.6	6.4	8.2
SCRAPER, TANDEM POWERED, 21 CY	997	7,410	15,318	2,052	1,325
SCRAPER, TANDEM POWERED, 34 CY	75	557	1,151	154	100
DOZER, CRAWLER (DOZER), 240HP	679	2,263	5,550	598	458
DOZER, CRAWLER (DOZER), 300-340HP	0.5	1.8	4.4	0.5	0.4
TRACTOR, CRAWLER (DOZER), 310 HP	216	1,154	3,713	324	335
TRATOR, CRAWLER (DOZER) 341-440 HP	23	121	389	34	35
TRUCK OPTION 10.0 CY	4.1	13.6	46.7	3.9	4.3
TRUCK OPTION 12 CY	0.8	2.6	9.0	0.8	0.8
TRUCK OPTION, FLATBED 8'X20'	3.7	12.4	42.4	3.5	3.9
TRUCK OPTION, FLATBED8'X12'	2.2	7.4	25.5	2.1	2.4
CHAINSAW, 24" - 42" LONG BAR	1200	2,547	1.8	6.9	3.1
Total, lbs	10,887	32,282	40,273	4,516	3,273
Total, tons	5.44	16.14	20.14	2.26	1.64

**BACKUP DATA FOR EMISSION CALCULATIONS**  
**LIST OF EQUIPMENT**  
**GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT, BOUND BROOK, NEW JERSEY**  
**U.S.A.C.E NEW YORK DISTRICT**

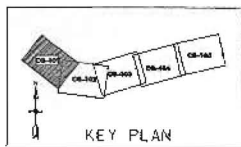
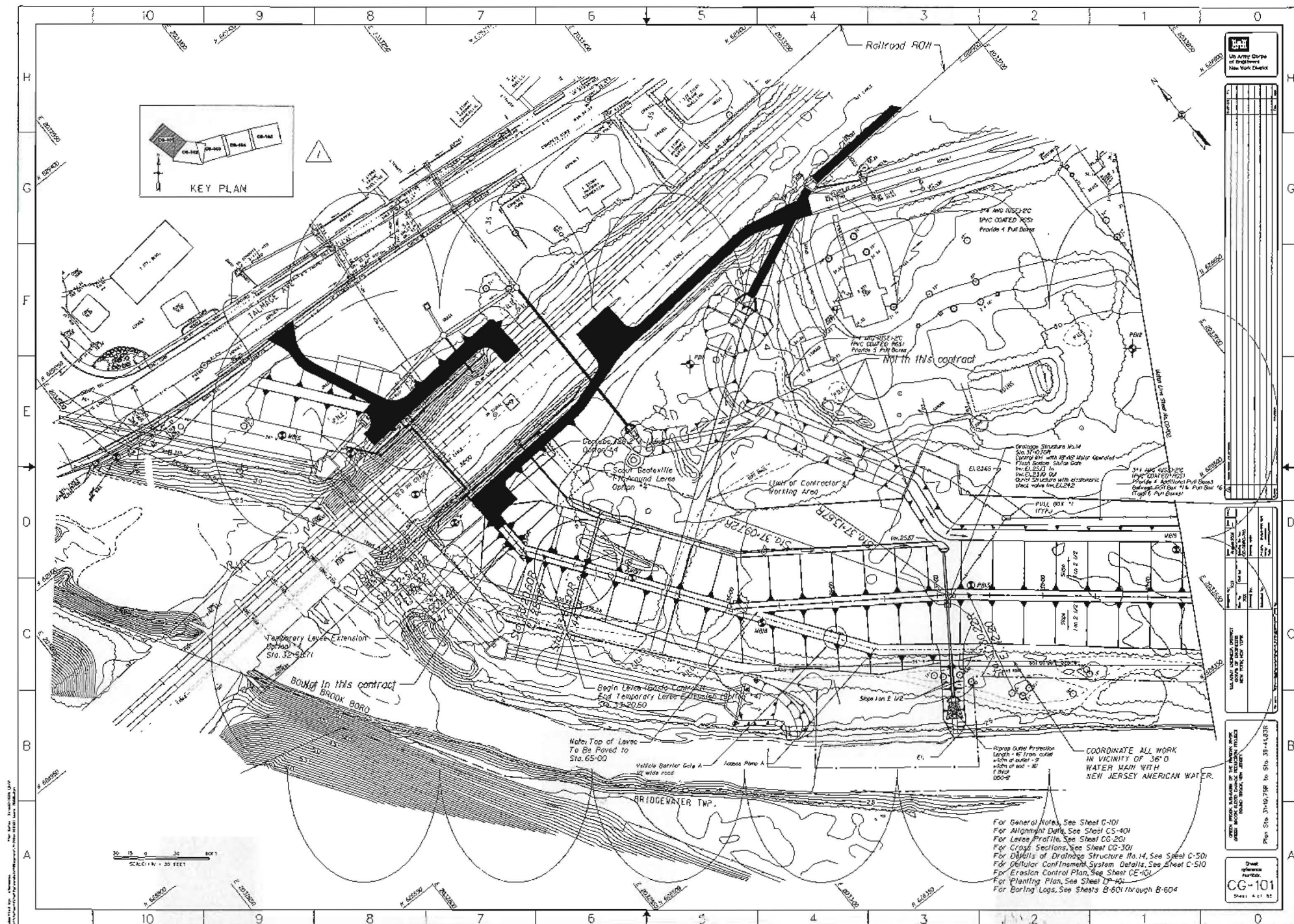
Equipment	Fuel	HP	Hours
AIR COMPRESSOR, 250 CFM, 100 PSI	Diesel	95	166
ASPHALT FINISHER, 10"WIDE SCREENED, WHEEL	Diesel	155	19
CONCRETE FINISHER, ROTO TROWL, 46"	Gasoline	9	608
CONCRETE MIXER, 12 CF, W/TRAILER	Gasoline	11	304
CONCRETE PUMP, 117 CY/HR, 75' BOOM, TRK MTD	Diesel	210	1392
CONCRETE SAW, 13" DPTH, S/P	Gasoline	72	6
CONCRETE VIBRATOR, 2.5" w/ 5.6 KW generator	Diesel	7.5	1489
CRANE, HYD, SP, 20 TON	Diesel	105	120
CRANE, MECH, CRWL, 0.75 CY, 25 TON	Diesel	311	78
CRANE, MECH, TRK MNT, 125 TON	Diesel	100	63
CRANE, HYD, SP, 30 TON	Diesel	155	38
CRANE, HYD, SP, 10 TON	Diesel	64	20
CRANE, HYD, TRK MNT, 70 TON	Diesel	365	16
CRANE, HYD, TRUCK MTD, 25T	Diesel	210	71
GRADER, MOTOR, 135 HP (101KW)	Diesel	135	1000
GRADER, MOTOR, 12' BLADE	Diesel	215	6
HYDRAULIC EXCAVATOR, CRWL, 24,640 LBS	Diesel	79	2388
LOADER/BCK-HOE,WH, 0.80CY	Diesel	70	1306
LOADER/FE, CRWL, 1.30 CY	Diesel	70	4
LOADER/FE, WHL, SKID -STEER, 14.3 CF	Diesel	38	151
LOADER/FE, WHL, SKID-STEER, 9-11 CF	Diesel	44	102
LOADER/BCK-HOE,WH, 0.80CY	Diesel	70	6
LOADER/BCK-HOE,WH, 1.25 CY	Diesel	96	11
PAVING BREAKER 66 LB; 100 CFM COMPRESSOR	Diesel	63	331
PUMP, WATER, CENTRIFUGAL, 2" (50MM)	Diesel	5	80
PUMP, WATER, CENTRIFUGAL, 2" (51MM)	Diesel	5	40
PUMP, WATER, DIAPHRAGM, SKD MTD (51MM)	Diesel	22	40
ROLLER, STATIC, SELF-PROP, 14.25 TON	Diesel	87	19
ROLLER, VIB, SELF PROP, DD, 2.9 TON	Diesel	33	24
ROLLER, VIB, SELP PROP, DD, 7.8 TON	Diesel	31	3
ROLLER, STATIC, SELF-PROP, 25.25 TON	Diesel	250	26
SCRAPER, TANDEM POWERED, 21 CY	Diesel	330	3377
SCRAPER, TANDEM POWERED, 34 CY	Diesel	450	186
DOZER, CRAWLER (DOZER), 240HP	Diesel	240	1771
DOZER, CRAWLER (DOZER), 300-340HP	Diesel	340	1
TRACTOR, CRAWLER (DOZER), 310 HP	Diesel	310	894
TRATOR, CRAWLER (DOZER) 341-440 HP	Diesel	440	66
TRUCK OPTION 10.0 CY	Diesel	489	11
TRUCK OPTION 12 CY	Diesel	260	4
TRUCK OPTION, FLATBED 8'X20'	Diesel	489	10
TRUCK OPTION, FLATBED8'X12'	Diesel	489	6
CHAINSAW, 24" - 42" LONG BAR	Gasoline	6	290

**BACKUP DATA FOR EMISSION CALCULATIONS**  
**EMISSION FACTORS**  
**GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT, BOUND BROOK, NEW JERSEY**  
**U.S.A.C.E NEW YORK DISTRICT**

Equipment	Fuel	Emission Factors (g/bhp-hr)					
		Load Factor	VOC	CO	NOx	PM	SOx
AIR COMPRESSOR, 250 CFM, 100 PSI	Diesel	75%	1.13	3.03	14.06	1	
ASPHALT FINISHER, 10"WIDE SCREENED, WHEEL	Diesel	59.0%	0.6	3.2	10.3	0.9	0.93
CONCRETE FINISHER, ROTO TROWL, 46"	Gasoline	50.0%	625.8	1328.1	0.96	3.6	1.6
CONCRETE MIXER, 12 CF, W/TRAILER	Gasoline	50.0%	625.8	1328.1	0.96	3.6	1.6
CONCRETE PUMP, 117 CY/HR, 75' BOOM, TRK MTD	Diesel	74%	1.12	3.03	14.06	1	0.93
CONCRETE SAW, 13" DPTH, S/P	Gasoline	50.0%	625.8	1328.1	0.96	3.6	1.6
CONCRETE VIBRATOR, 2.5"	Diesel	75%	1.13	3.03	14.06	1	
CRANE, HYD, SP, 20 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, MECH, CRWL, 0.75 CY, 25 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, MECH, TRK MNT, 125 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, HYD, SP, 30 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, HYD, SP, 10 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, HYD, TRK MNT, 70 TON	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
CRANE, HYD, TRUCK MTD, 25T	Diesel	43.0%	1.26	4.2	10.3	1.44	0.93
DUMP TRUCK, HIGHWAY, 10-13 CY	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
DUMP TRUCK, HIGHWAY, 16-20 CY	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
GRADER, MOTOR, 135 HP (101KW)	Diesel	57.5%	1.54	3.8	9.6	1	0.87
GRADER, MOTOR, 12' BLADE	Diesel	57.5%	1.54	3.8	9.6	1	0.87
HYDRAULIC EXCAVATOR, CRWL, 24,640 LBS	Diesel	58.0%	0.7	5.2	10.75	1.44	0.93
LOADER/BCK-HOE,WH, 0.80CY	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
LOADER/FE, CRWL, 1.30 CY	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
LOADER/FE, WHL, SKID -STEER, 14.3 CF	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
LOADER/FE, WHL, SKID-STEER, 9-11 CF	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
LOADER/BCK-HOE,WH, 0.80CY	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
LOADER/BCK-HOE,WH, 1.25 CY	Diesel	46.5%	1.4	6.8	10.1	1.05	0.85
PAVING BREAKER 66 LB; 100 CFM COMPRESSOR	Diesel	75%	1.13	3.03	14.06	1	
PUMP, WATER, CENTRIFUGAL, 2" (50MM)	Diesel	74%	1.12	3.03	14.06	1	0.93
PUMP, WATER, CENTRIFUGAL, 2" (51MM)	Diesel	74%	1.12	3.03	14.06	1	0.93
PUMP, WATER, DIAPHRAGM, SKD MTD (51MM)	Diesel	74%	1.12	3.03	14.06	1	0.93
ROLLER, STATIC, SELF-PROP, 14.25 TON	Diesel	57.5%	0.8	3.1	9.3	0.78	1
ROLLER, VIB, SELF PROP, DD, 2.9 TON	Diesel	57.5%	0.8	3.1	9.3	0.78	1
ROLLER, VIB, SELP PROP, DD, 7.8 TON	Diesel	57.5%	0.8	3.1	9.3	0.78	1
ROLLER, STATIC, SELF-PROP, 25.25 TON	Diesel	57.5%	0.8	3.1	9.3	0.78	1
SCRAPER, TANDEM POWERED, 21 CY	Diesel	58.0%	0.7	5.2	10.75	1.44	0.93
SCRAPER, TANDEM POWERED, 34 CY	Diesel	58.0%	0.7	5.2	10.75	1.44	0.93
DOZER, CRAWLER (DOZER), 240HP	Diesel	57.5%	1.26	4.2	10.3	1.11	0.85
DOZER, CRAWLER (DOZER), 300-340HP	Diesel	57.5%	1.26	4.2	10.3	1.11	0.85
TRACTOR, CRAWLER (DOZER), 310 HP	Diesel	59%	0.6	3.2	10.3	0.9	0.93
TRATOR, CRAWLER (DOZER) 341-440 HP	Diesel	59%	0.6	3.2	10.3	0.9	0.93
TRUCK OPTION 10.0 CY	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
TRUCK OPTION 12 CY	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
TRUCK OPTION, FLATBED 8'X20'	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
TRUCK OPTION, FLATBED8'X12'	Diesel	41.0%	0.84	2.8	9.6	0.8	0.89
CHAINSAW, 24" - 42" LONG BAR	Gasoline	50.0%	625.8	1328.1	0.96	3.6	1.6

## **Appendix D**

### **Project Plans**



U.S. Army Corps of Engineers  
New York District

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2	DRAWN			
3	CHECKED			
4	APPROVED			

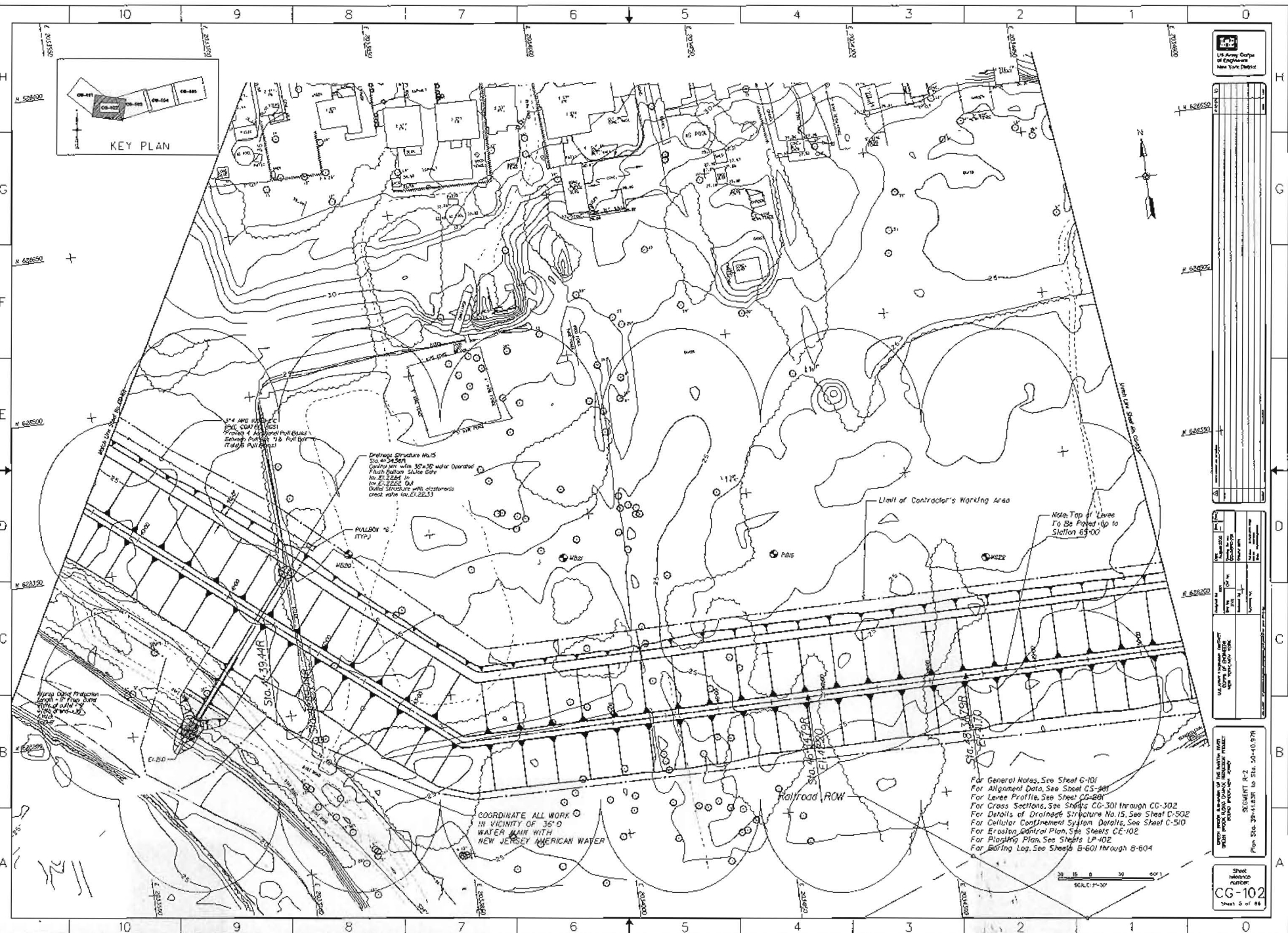
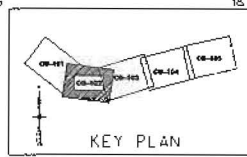
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3	CHECKED			
4	APPROVED			

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SHEET NO. 101  
DATE: 10/1/52  
BY: J. H. B. / J. H. B.  
CHECKED: J. H. B. / J. H. B.  
APPROVED: J. H. B. / J. H. B.

Sheet  
101-101  
Sheet A of 12

For General Notes, See Sheet C-101  
For Alignment Data, See Sheet C-5-401  
For Level Profile, See Sheet C-201  
For Cross Sections, See Sheet C-301  
For Details of Drainage Structure No. 14, See Sheet C-510  
For Details of Drainage Structure Details, See Sheet C-510  
For Erosion Control Plan, See Sheet C-101  
For Planting Plan, See Sheet C-101  
For Boring Logs, See Sheets B-601 through B-604





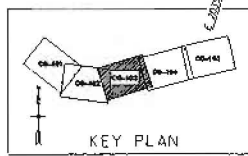
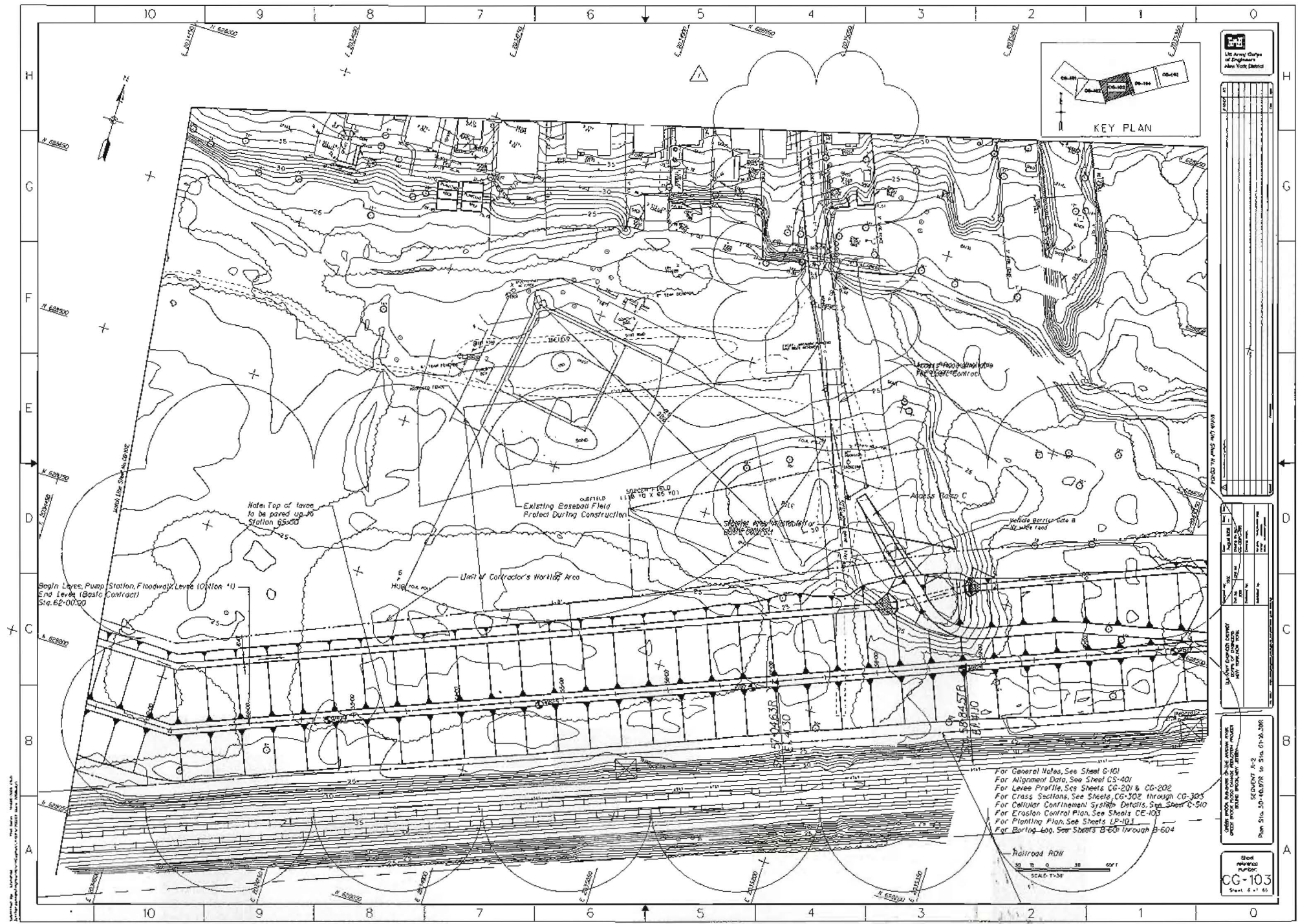
For General Notes, See Sheet C-101  
For Alignment Data, See Sheet C-5-901  
For Levee Profile, See Sheet C-2-801  
For Cross Sections, See Sheets C-3-101 through C-3-102  
For Details of Drainage Structure No. 15, See Sheet C-5-102  
For Cellular Confinement System Details, See Sheet C-5-101  
For Erosion Control Plan, See Sheet C-1-102  
For Planting Plan, See Sheet C-1-102  
For Barling Log, See Sheets B-6-101 through B-6-104

30 15 0 30 60 1  
SCALE: 1"=30'

Sheet Reference Number  
CG-102  
Sheet 5 of 66

Sheet Reference Number  
CG-102  
Sheet 5 of 66





U.S. Army Corps of Engineers  
New York District

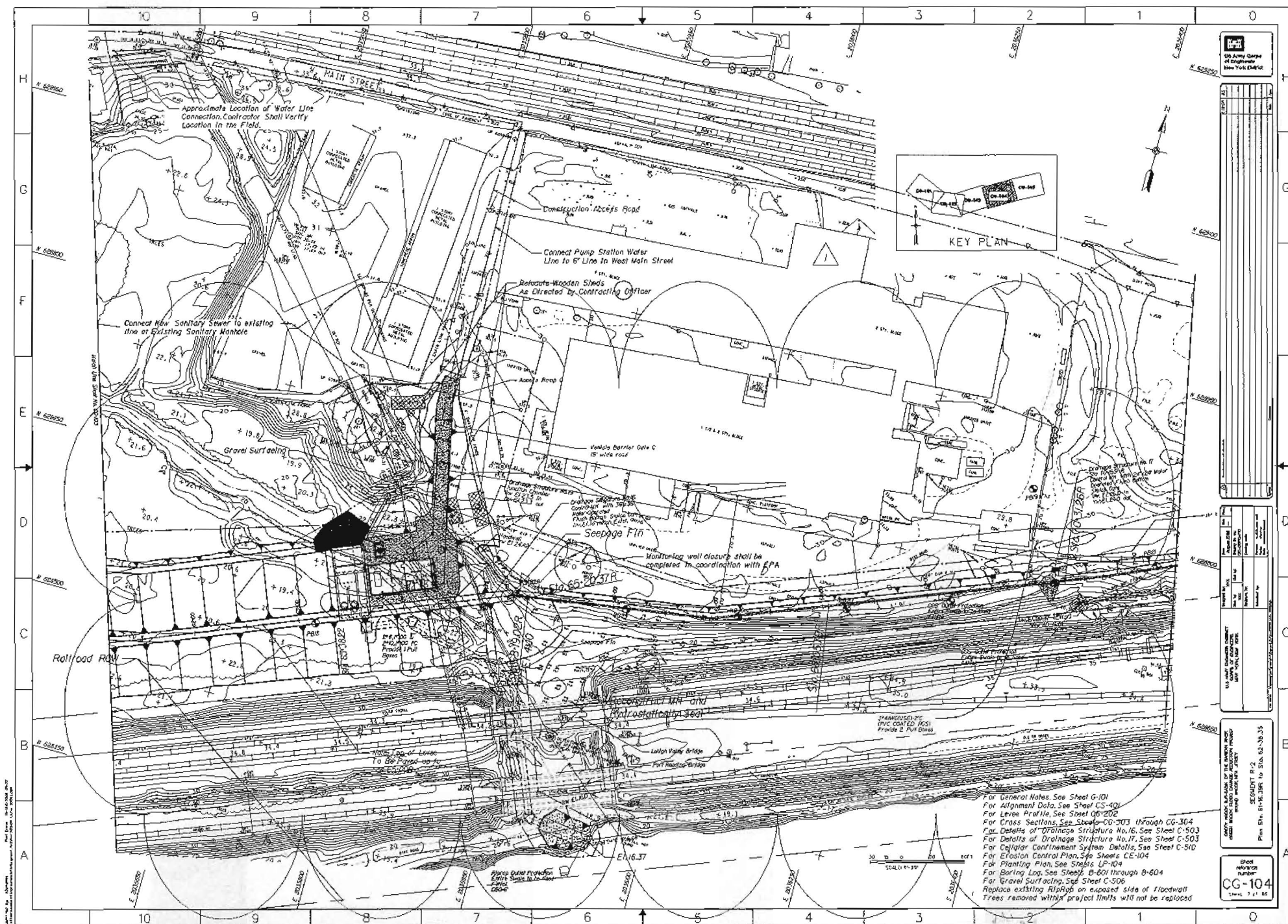
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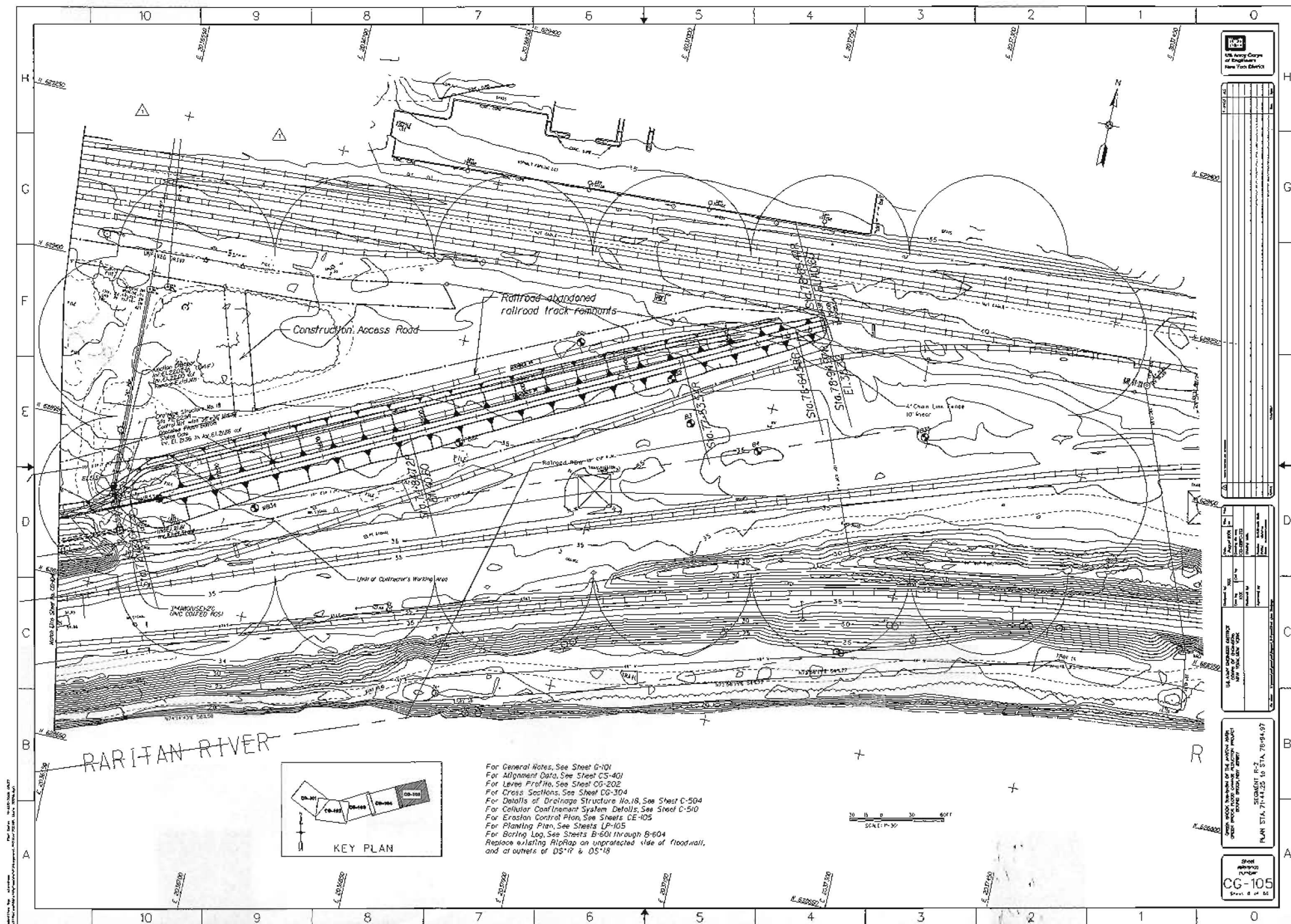
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For General Notes, See Sheet C-101  
 For Alignment Data, See Sheet C-401  
 For Levee Profile, See Sheets C-201 & C-202  
 For Cross Sections, See Sheets C-302 through C-305  
 For Cellular Confinement System Details, See Sheet C-510  
 For Erosion Control Plan, See Sheet C-103  
 For Planting Plan, See Sheet C-101  
 For Barling Loop, See Sheets B-601 through B-604

Sheet  
 number  
**CG-103**  
 Sheet 6 of 65





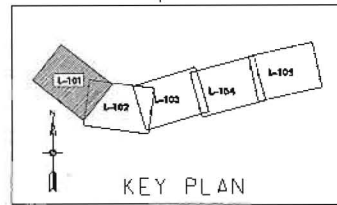


## **Planting Plan**

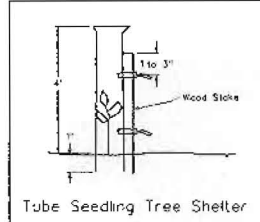


Shrub Planting Schedule					
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
172	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
55	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
13	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
87	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
20	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC

SEEDING LEGEND			
	Spade M.	20 lbs/acre	
	Flodden M.	10 lbs/acre	
	Wetland M.	10 lbs/acre	
	Lean Mix	30 lbs/acre	

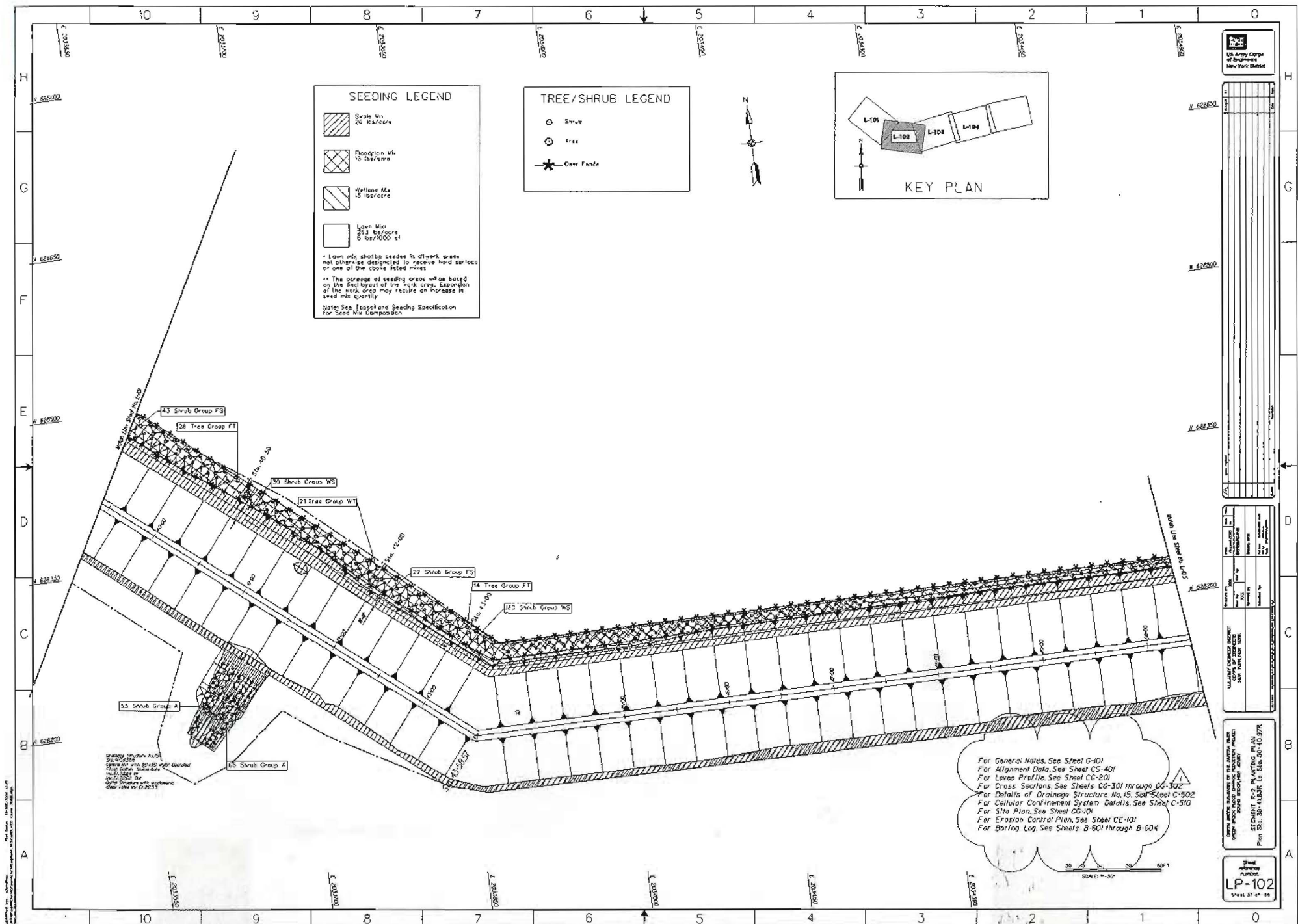


Tree Planting Schedule					
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
14	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
42	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
117	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC
Qty	Scientific Name	Common Name	Container Size	Height/Caliper	Spacing
104	<i>Arundo donax</i>	Black chokeberry	Min. 2"	Min. 3"	5' OC
	<i>Cornus sericea</i>	Redosier dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea alba</i>	Pink dogwood	Min. 2"	Min. 3"	5' OC
	<i>Spiraea angustifolia</i>	Flowerberry	Min. 2"	Min. 3"	5' OC



TREE/SHRUB LEGEND			
	Shrub		
	Tree		
	Door Fence		

For General Notes, See Sheet C-101  
 For Alignment Data, See Sheet C-101  
 For Cross Sections, See Sheet C-101  
 For Details of Drainage Structure No. 1, See Sheet C-101  
 For Cellular Containment System Details, See Sheet C-101  
 For Site Plan, See Sheet C-101  
 For Erosion Control Plan, See Sheet C-101  
 For Boring Log, See Sheets B-601 through B-604



### SEEDING LEGEND

- Slope Mix  
20 lbs/acre
- Floodplain Mix  
15 lbs/acre
- Wetland Mix  
15 lbs/acre
- Lawn Mix  
20 lbs/acre  
6 lbs/1000 sq ft

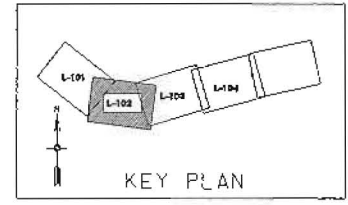
\* Lawn mix should be seeded in all work areas not otherwise designated to receive hard surface or one of the above listed mixes.

\*\* The coverage of seeding areas will be based on the final layout of the work area. Expansion of the work area may require an increase in seed mix quantity.

Notes: See Erosion and Seeding Specification for Seed Mix Composition.

### TREE/SHRUB LEGEND

- Shrub
- Tree
- Over Ponds

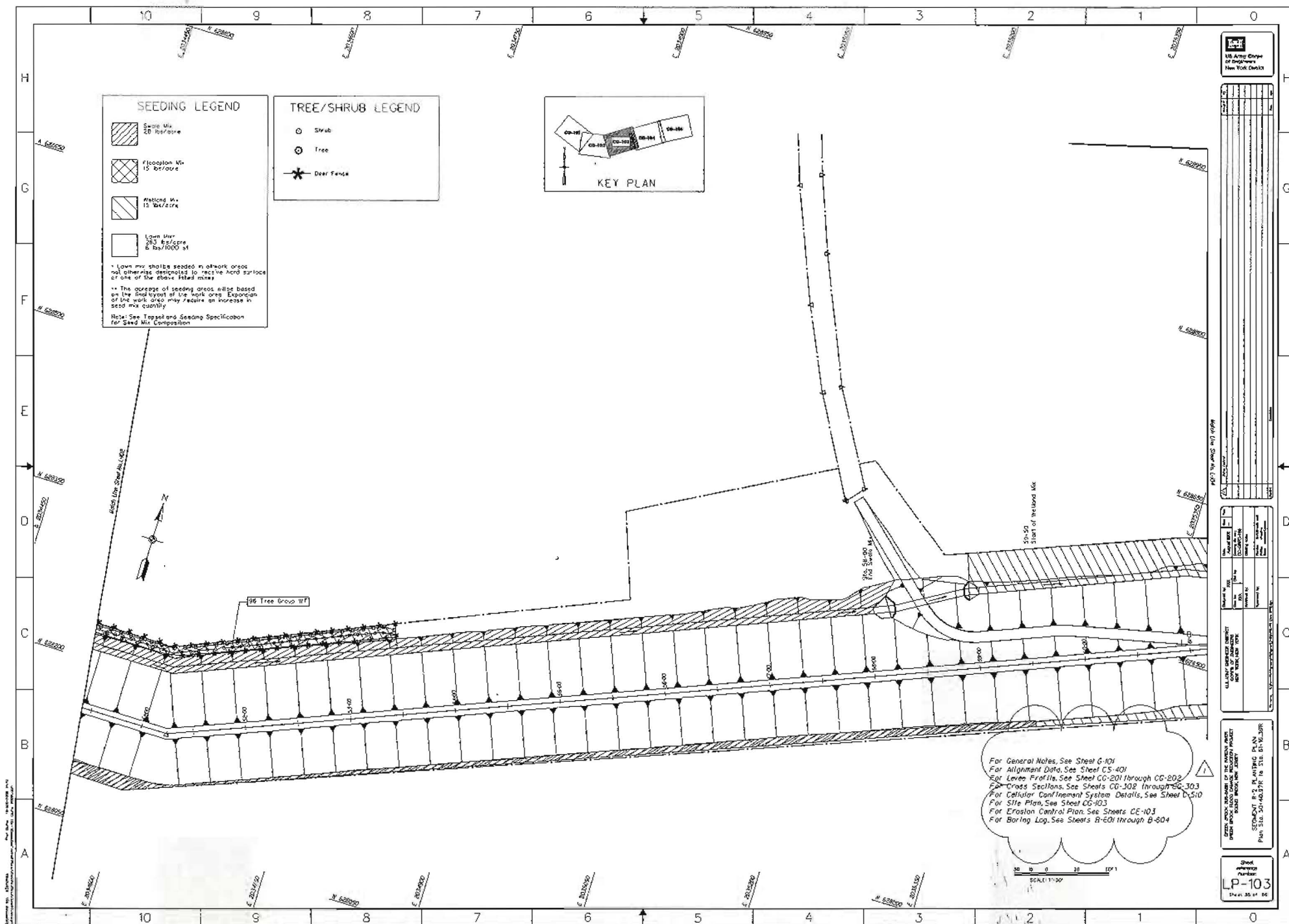


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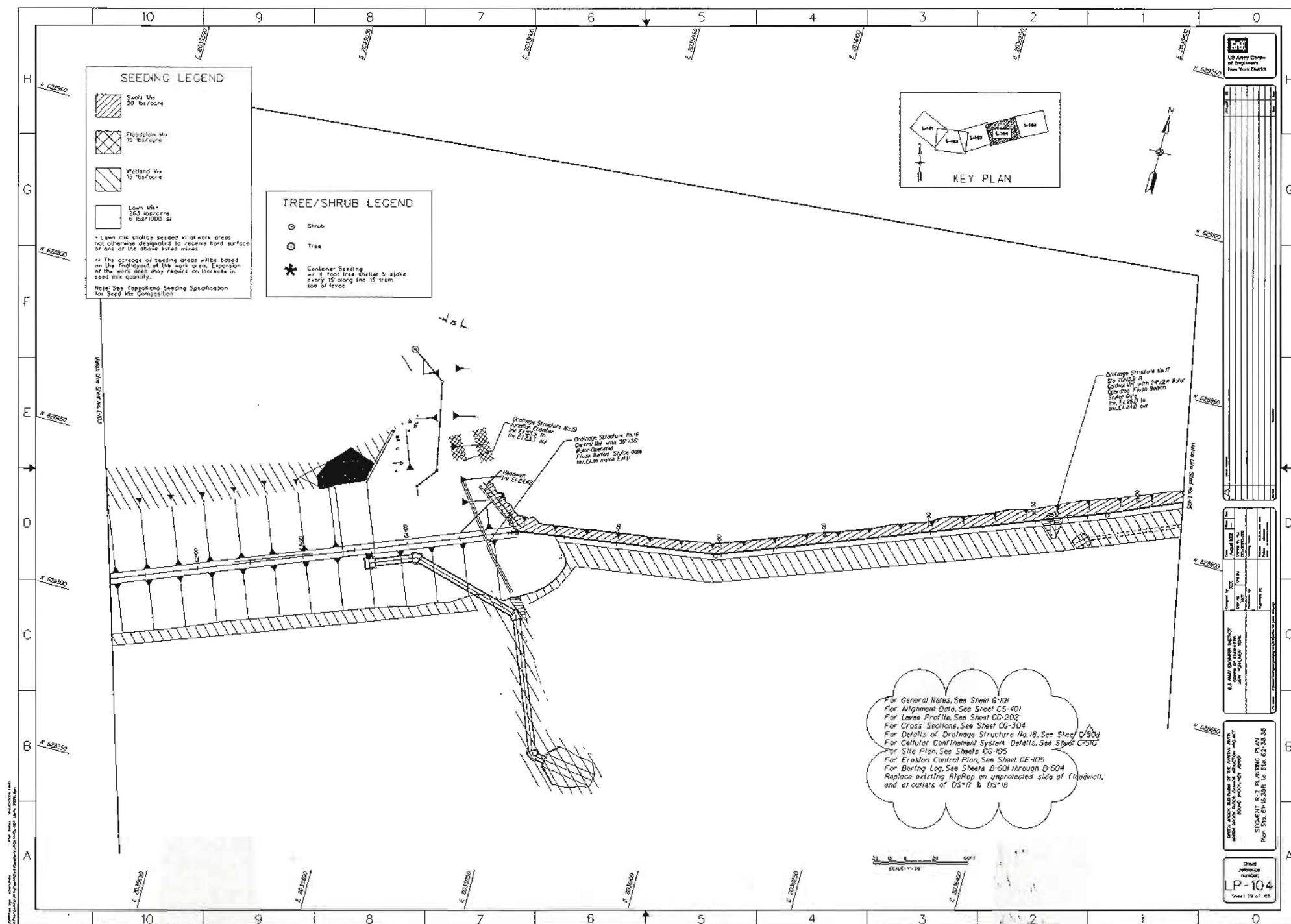
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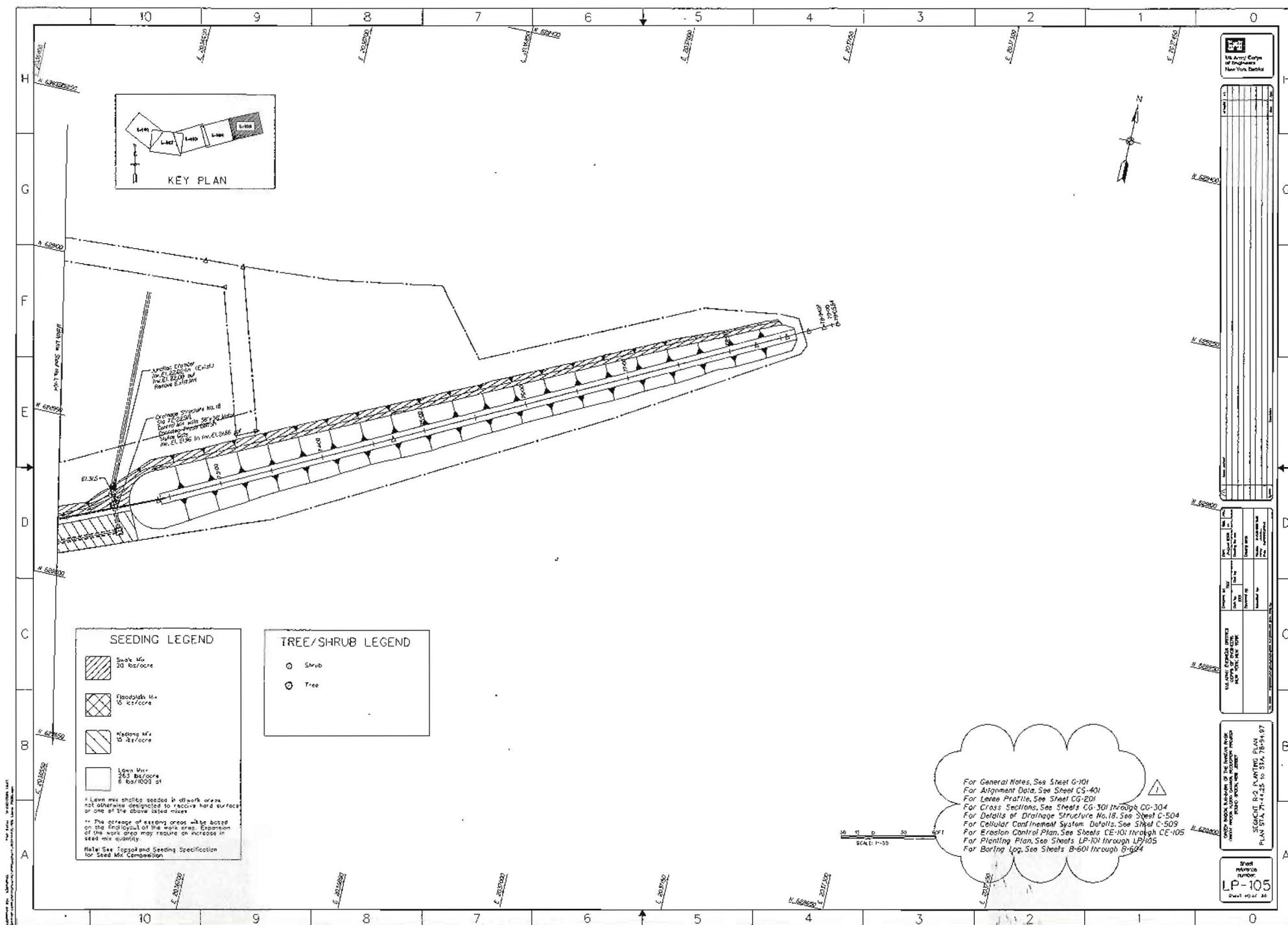
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**LP-102**  
 Sheet 37 of 50

For General Notes, See Sheet G-101  
 For Alignment Data, See Sheet CS-401  
 For Levee Profile, See Sheet CG-201  
 For Cross Sections, See Sheets CG-301 through CG-302  
 For Details of Drainage Structure No. 15, See Sheet C-502  
 For Cellular Confinement System Details, See Sheet C-510  
 For Site Plan, See Sheet CG-101  
 For Erosion Control Plan, See Sheet CE-101  
 For Boring Log, See Sheets B-601 through B-604











## **Appendix E**

### **Pertinent Correspondence**

#### **Mailing List**

#### **Public Notifications**



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

September 12, 2008

REPLY TO  
ATTENTION OF

Environmental Analysis Branch  
Planning Division

Virginia KopKash  
Bureau Manager  
Bureau of Technical Services  
Division of Land Use Regulation  
New Jersey Department of Environmental Protection  
PO Box 439  
501 E. State Street  
Trenton, NJ 08625

RE: Green Brook Flood Control Project, Segment R2  
Bound Brook, Somerset County  
Permit Number 1800-03-0001.2FWW 070001 IP

Dear Ms. KopKash:

The US Army Corps of Engineers, New York District, (District), has prepared the *Draft Environmental Assessment for the Segment R2 Levee and Floodwall Construction, Green Brook Flood Damage Reduction Project, Bound Brook Borough, New Jersey* (DEA) (Enclosure 1). The purpose of the DEA is to supplement information about site conditions along the Segment R2 project area resulting from new data obtained from the *May 2007 Final Removal Action Completion Action for Brook Industrial Park Superfund Site, Bound Brook, New Jersey*. Specifically, the DEA addresses the presence of arsenic and chromium identified in soil samples taken in 2001 and 2006 as part of the remediation action of the Brook Industrial Part Superfund Site (BIPSS). The samples were taken in the wooded area to the west of the BIPSS and within the location of where the Segment R2 levee will be constructed (Figure 1).

On August 28, 2008, the District met with Mr. Peter Mannino, Remediation Manager, Environmental Protection Agency (EPA), to confirm the relationship of this contamination to the BIPSS and to determine if the boundaries of the BIPSS should be expanded to include the wooded area. According to Mr. Mannino, the soil samples were taken in the wooded area in order to delineate the extent of the contamination attributed to the BIPSS. Results indicated levels of arsenic and chromium above the New Jersey Department of Environmental Protection (NJDEP) Non-Residential Direct Contact Soil Cleanup Criteria, but were not considered hazardous. Based on further investigation, the EPA determined that the contamination is primarily the result of other contributors located both up- and downstream from the BIPSS and the boundaries of the BIPSS should not be expanded to include this area.

A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil. Given that the soil sampling conducted during the BIPSS remediation action was only surficial, the District has provided, in the project construction specifications for Segment R2, language requiring the contractor to take composite soil samples within the levee footprint, test them for all contaminant parameters and coordinate the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed near the Raritan River and the excavation will extend six feet below the ground surface, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed allowable levels established by NJDEP criteria, recharge pits will be excavated and water will be pumped into the pits and contaminants allowed to seep back into the ground. The contractor will be required to test the water for contaminants and should levels exceed the criteria established by NJDEP, the water will be pumped to open pits and allowed to seep back into the ground. Since they will be excavated within the levee footprint, the recharge pits will be backfilled with the material used to construct the levee. The pits will be opened and closed in small increments to reduce exposure to humans and wildlife. Prior to construction, the contractor will be required to prepare an Environmental Protection Plan to address minimizing contaminant exposure and soil erosion during construction.

The District has coordinated with and obtained concurrence from both Mr. Mannino and Mr. Siva Vijayasundaram, Site Remediation Office, NJDEP, to implement this strategy.

Please review the enclosed DEA and submit any comments in writing to the District prior to September 29, 2008. We look forward to continued coordination with your office on this project. If you have any questions or require additional information, please contact Ms. Kimberly Rightler at (917)790-8722.

Sincerely,



Leonard Houston  
Chief, Environmental Analysis Branch

Enclosure

CC:

J. Legg, NJDEP  
C. Defendorf, NJDEP



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

September 12, 2008

REPLY TO  
ATTENTION OF

Environmental Analysis Branch  
Planning Division

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

Dear Mr. Davis:

The US Army Corps of Engineers, New York District, (District), has prepared the *Draft Environmental Assessment for the Segment R2 Levee and Floodwall Construction, Green Brook Flood Damage Reduction Project, Bound Brook Borough, New Jersey* (DEA) (Enclosure 1). The purpose of the DEA is to supplement information about site conditions along the Segment R2 project area resulting from new data obtained from the *May 2007 Final Removal Action Completion Action for Brook Industrial Park Superfund Site, Bound Brook, New Jersey*. Specifically, the DEA addresses the presence of arsenic and chromium identified in soil samples taken in 2001 and 2006 as part of the remediation action of the Brook Industrial Part Superfund Site (BIPSS). The samples were taken in the wooded area to the west of the BIPSS and within the location of where the Segment R2 levee will be constructed (Figure 1).

The Fish and Wildlife Coordination Act Report prepared for Segment R2 expressed concern that the construction of the levee and floodwall system could potentially expose contaminants and/or interfere with any ongoing remediation efforts related to the BIPSS (Enclosure 2). On August 28, 2008, the District met with Mr. Peter Mannino, Remediation Manager, Environmental Protection Agency (EPA), to confirm the relationship of this contamination to the BIPSS and to determine if the boundaries of the BIPSS should be expanded to include the wooded area.

According to Mr. Mannino, the soil samples were taken in the wooded area in order to delineate the extent of the contamination attributed to the BIPSS. Results indicated levels of arsenic and chromium above the New Jersey Department of Environmental Protection (NJDEP) Non-Residential Direct Contact Soil Cleanup Criteria, but were not considered hazardous. Based on further investigation, the EPA determined that the contamination is primarily the result of other contributors located both up- and downstream from the BIPSS and the boundaries of the BIPSS should not be expanded to include this area.

A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil

within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil. Given that the soil sampling conducted during the BIPSS remediation action was only surficial, the District has provided, in the project construction specifications for Segment R2, language requiring the contractor to take composite soil samples within the levee footprint, test them for all contaminant parameters and coordinate the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed near the Raritan River and the excavation will extend six feet below the ground surface, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed allowable levels established by NJDEP criteria, recharge pits will be excavated and water will be pumped into the pits and contaminants allowed to seep back into the ground. The contractor will be required to test the water for contaminants and should levels exceed the criteria established by NJDEP, the water will be pumped to open pits and allowed to seep back into the ground. Since they will be excavated within the levee footprint, the recharge pits will be backfilled with the material used to construct the levee. The pits will be opened and closed in small increments to reduce exposure to humans and wildlife. Prior to construction, the contractor will be required to prepare an Environmental Protection Plan to address minimizing contaminant exposure and soil erosion during construction.

The District has coordinated with and obtained concurrence from both Mr. Mannino and Mr. Siva Vijayasundaram, Site Remediation Office, NJDEP, to implement this strategy.

Please review the enclosed DEA and submit any comments in writing to the District prior to September 29, 2008. We look forward to continued coordination with your office on this project. If you have any questions or require additional information, please contact Ms. Kimberly Rightler at (917)790-8722.

Sincerely,

A handwritten signature in dark ink, appearing to read "L. Houston". The signature is fluid and cursive, with a large initial "L" and a stylized "Houston".

Leonard Houston  
Chief, Environmental Analysis Branch

Enclosures





DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF  
Environmental Analysis Branch

September 8, 2008

Charley Defendorf  
NJ Dept. of Environmental Protection  
Office of Engineering and Construction  
Floodplain Management  
501 East State Street, CN 419  
Trenton, NJ 08625

Dear Mr. Defendorf:

This letter serves to summarize discussions held between U.S. Army Corps of Engineers, New York District (District) staff and Mr. Pete Mannino, Remediation Manager from the Environmental Protection Agency on 26 August 2008 and then with Mr. Siva Vijayasundaram of the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Office on 3 September 2008 regarding the construction of the Segment R2 levee and floodwall of the Green Brook Flood Damage Reduction Project (GBFDRP) which is being constructed near and within the Brook Industrial Park Superfund Site (BIPSS) in the Borough of Bound Brook, New Jersey (Enclosure 1).

The purpose of the meeting with Mr. Mannino was to confirm that the BIPSS will not be extended to include a wooded area located west of the BIPSS where soil sampling was performed during the BIPSS remediation action as referenced in the *May 2007 Final Removal Action Completion Action for Brook Industrial Park Superfund Site, Bound Brook, New Jersey* and to obtain concurrence of the District's strategy in handling excavated material within the wooded area where the Segment R2 levee will be constructed. According to Mr. Mannino, soil samples were taken in the wooded area in order to delineate the extent of the contamination attributed to the BIPSS. Results indicated levels of arsenic and chromium above the New Jersey Department of Environmental Protection (NJDEP) Non-Residential Direct Contact Soil Cleanup Criteria but were not considered hazardous. Based on further investigation, it was determined that the contamination is primarily a result from other contributors located both upstream and downstream from the BIPSS.

A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil.

Given that the soil sampling conducted during the BIPSS remediation action was only surficial, we have provided in our construction specifications for Segment R2 language requiring the

7

contractor to take composite soil samples within the levee footprint, test them for all contaminant parameters and coordinate the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed close to the Raritan River and that excavation will extend down six feet, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed allowable levels established by NJDEP criteria, recharge pits will be excavated and water will be pumped into the pits and allowed to seep back into the ground. The pits will be opened and closed in small increments and will be excavated within the levee footprint so the pits can be backfilled with the material used to construct the levees. We explained this strategy to Mr. Mannino and he concurred with this approach.

District staff then spoke with Mr. Siva Vijayasundaram to discuss the above and obtained his concurrence with our approach of handling the material during construction.

If you have any questions or concerns please contact Ms. Kimberly Rightler, Project Biologist at (917) 790-8722. For additional information about the Segment R2 project, please contact Mr. John O'Connor at (917) 790-8213.

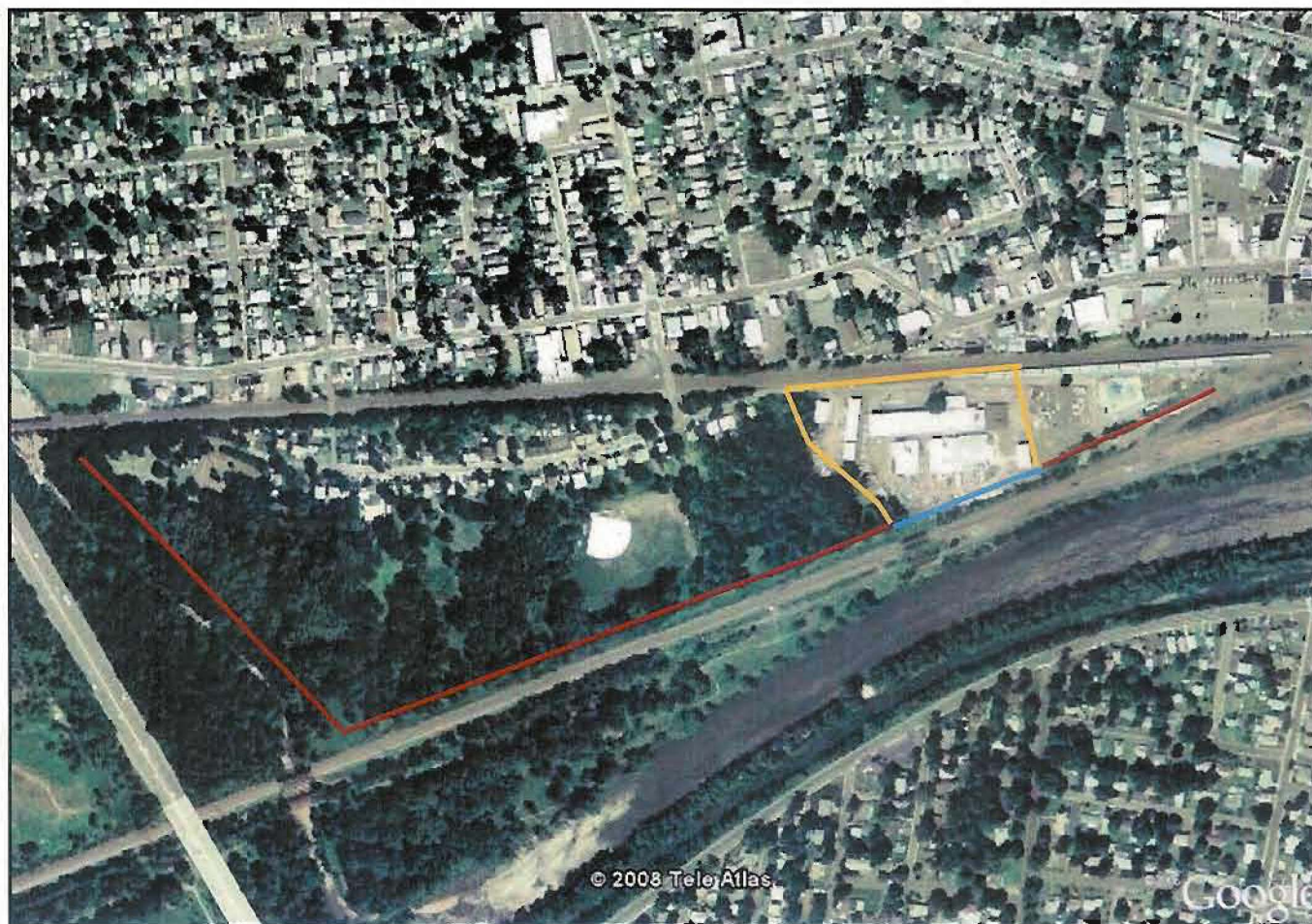


Leonard Houston  
Chief, Environmental Analysis Branch




Enclosures

Cc:  
S. Vijayasundaram, NJDEP

Enclosure Segment R2 Levee and Floodwall Layout



Legend

-  Levee
-  Floodwall and southern boundary of Brook Industrial Superfund Site
-  Brook Industrial Superfund Site Boundary





DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF

Environmental Analysis Branch

September 8, 2008

John Prince, Chief  
Emergency and Remedial Response Division  
Central New Jersey Remediation Branch  
Environmental Protection Agency  
290 Broadway  
New York, NY 10007

Dear Mr. Prince:

This letter serves to summarize discussions held between U.S. Army Corps of Engineers, New York District (District) staff and Mr. Pete Mannino from your office on 26 August 2008 regarding the construction of the Segment R2 levee and floodwall of the Green Brook Flood Damage Reduction Project (GBFDRP) which is being constructed near and within the Brook Industrial Park Superfund Site (BIPSS) in the Borough of Bound Brook, New Jersey (Enclosure 1). The purpose of the meeting was to confirm that the BIPSS will not be extended to include a wooded area located west of the BIPSS where soil sampling was performed during the BIPSS remediation action as referenced in the *May 2007 Final Removal Action Completion Action for Brook Industrial Park Superfund Site, Bound Brook, New Jersey* and to obtain concurrence of the District's strategy in handling excavated material within the wooded area where the Segment R2 levee will be constructed.

According to Mr. Mannino, soil samples were taken in the wooded area in order to delineate the extent of the contamination attributed to the BIPSS. Results indicated levels of arsenic and chromium above the New Jersey Department of Environmental Protection (NJDEP) Non-Residential Direct Contact Soil Cleanup Criteria but were not considered hazardous. Based on further investigation, it was determined that the contamination is primarily a result from other contributors located both upstream and downstream from the BIPSS.

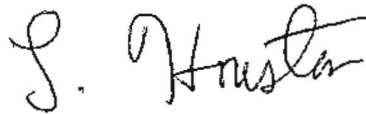
A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil.

Given that the soil sampling conducted during the BIPSS remediation action was only surficial, we have provided in our construction specifications for Segment R2 language requiring the contractor to take composite soil samples within the levee footprint, test them for all contaminant parameters and coordinate the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed close to the Raritan River and

that excavation will extend down six feet, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed allowable levels established by NJDEP criteria, recharge pits will be excavated and water will be pumped into the pits and allowed to seep back into the ground. The pits will be opened and closed in small increments and will be excavated within the levee footprint so the pits can be backfilled with the material used to construct the levees. We explained this strategy to Mr. Mannino and he concurred with this approach.

We would also like to note that we discussed the above with NJDEP Site Remediation Officer Siva Vijayasundaram on 3 September 2008 and obtained his concurrence with our approach of handling the material during construction.

If you have any questions or concerns please contact Ms. Kimberly Rightler, Project Biologist at (917) 790-8722. For additional information about the Segment R2 project, please contact Mr. John O'Connor at (917) 790-8213.

A handwritten signature in black ink, appearing to read "L. Houston". The signature is fluid and cursive, with a large initial "L" and a stylized "Houston".

Leonard Houston  
Chief, Environmental Analysis Branch

Enclosure




Cc:  
C. Defendorf, NJDEP  
S. Vijayasundaram, NJDEP



Enclosure Segment R2 Levee and Floodwall Layout



Legend

-  Levee
-  Floodwall and southern boundary of Brook Industrial Superfund Site
-  Brook Industrial Superfund Site Boundary



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, NEW YORK DISTRICT  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK, NY 10278-0090

July 8, 2008

Environmental Assessment Section  
Environmental Analysis Branch

Mr. Terry Karchner  
Deputy State Historic Preservation Officer  
Historic Preservation Office  
New Jersey Department of Environmental Protection  
CN 404  
Trenton, New Jersey 08625-0404

Dear Mr. Karchner:

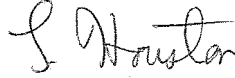
The U.S. Army Corps of Engineers, New York District (Corps) in partnership with New Jersey Department of Environmental Protection Office of Engineering and Construction, is proceeding with the construction of the Green Brook Flood Damage Reduction Project (HPO-C2003-4; 03-0308-1). We are responding to comments emailed to Ms. Lynn Rakos of my office, on 17 June (Enclosure 1), requesting clarification and further information in response to a our letter dated 3 June.

As requested, full plans and specifications for all three project segments; Talmage Avenue Bridge Replacement and ML-2 Culvert, Railroad Closure Structure and Diversion Culvert Pipes, and Levee/Floodwall/Pump Station, are contained on the enclosed CDs. There are no artistic renderings available. Enclosed instead is a series of photographs taken in Bound Brook of completed Green Brook Flood Damage reduction features and other photos that we anticipate being illustrative of proposed work (Enclosure 2). If you or your staff require further clarification on the enclosed material please contact Ms. Rakos.

It is the Corps' opinion that archaeological testing at the site of the stone wall within the railroad embankment, encountered during construction, is not feasible. The rail line actively carries passenger and freight trains so open trenching is not an option. The only approach to the testing would be through the use of a tunnel boring machine. It is unlikely that more data than was already recorded would be obtained from additional borings. As indicated in our letter to you, the Corps will be conducting investigations of the railroad embankment in the location of five other proposed drainage pipes to determine if any obstructions are present. The Corps' project archaeologist will monitor these investigations. A brief report of the monitoring will be prepared and coordinated with your office. The Corps will also conduct historic research into the Central Railroad of New Jersey and subsequent railroad company records, in an effort to determine the function of the stone wall encountered during construction. Please let us know if you concur with this approach.

Please review the enclosed material 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

CF (w/enclosures)  
Deborah Fimbel, NJHPO  
D'Amico (Somerset County Cultural and Heritage Commission)  
McEwen, Cameron

ENCLOSURE 1

Rakos, Lynn NAN02

**From:** Shean McDill [Shean.McDill@dep.state.nj.us]  
**Sent:** Tuesday, June 17, 2008 3:18 PM  
**To:** Rakos, Lynn NAN02  
**Cc:** Michelle Hughes  
**Subject:** Green Brook Flood Control Project

HPO-F2008-85  
Log # 03-0308-9

June 17, 2008

Lynn Rakos  
Department of the Army  
Corps of Engineers, New York District

RE: Green Brook Flood Control Project  
Bound Brook, Somerset County

Dear Ms. Rakos:

This e-mail is in response to the submission of your letter, with enclosures, dated June 3, 2008.

Summary: Further documentation is needed in order to make a determination of adverse effect.

#### 800.5 Assessment of Adverse Effects

Thank you for submitting your letter with enclosures to this office for review. Based on a review of the submitted materials, a determination of effect cannot be made at this time. While the material acknowledges that there will be an effect on historic properties, sufficient documentation has not been provided in order to determine if that effect will be adverse.

According to your letter, during installation of the first culvert pipe, on March 20, 2008, a stone wall was encountered inside of the railroad embankment. This archeological discovery may potentially have historic significance. Based on the submitted material, this structure can, likewise, not be properly assessed.

#### Additional Comments

Please submit a set of complete plans and specifications to this office for review. Please include elevations depicting the completed levees, closure structures, maintenance ramp, flood wall, and pump station. Please include available artistic renderings of the completed construction.

Additionally, it is necessary to conduct archeological testing on the stone wall which was uncovered during culvert pipe installation. Additional research should also be conducted in conjunction with archeological testing in order to collectively determine the nature and purpose of the wall. A report documenting the findings of the aforementioned testing and research should be forwarded to this office.

As the proposed closure structure at Middle Brook is removed from the town center and there are no additionally known historic resources adjacent to the railroad tracks, the choice of a plain concrete finish at this closure location will not constitute a further encroachment.

Thank you again for the opportunity to review this project. Should you need any further assistance or if you have any questions regarding these comments, please contact Michelle Hughes at (609) 984-6018.

Sincerely;  
Shean McDill

ENCLOSURE 2

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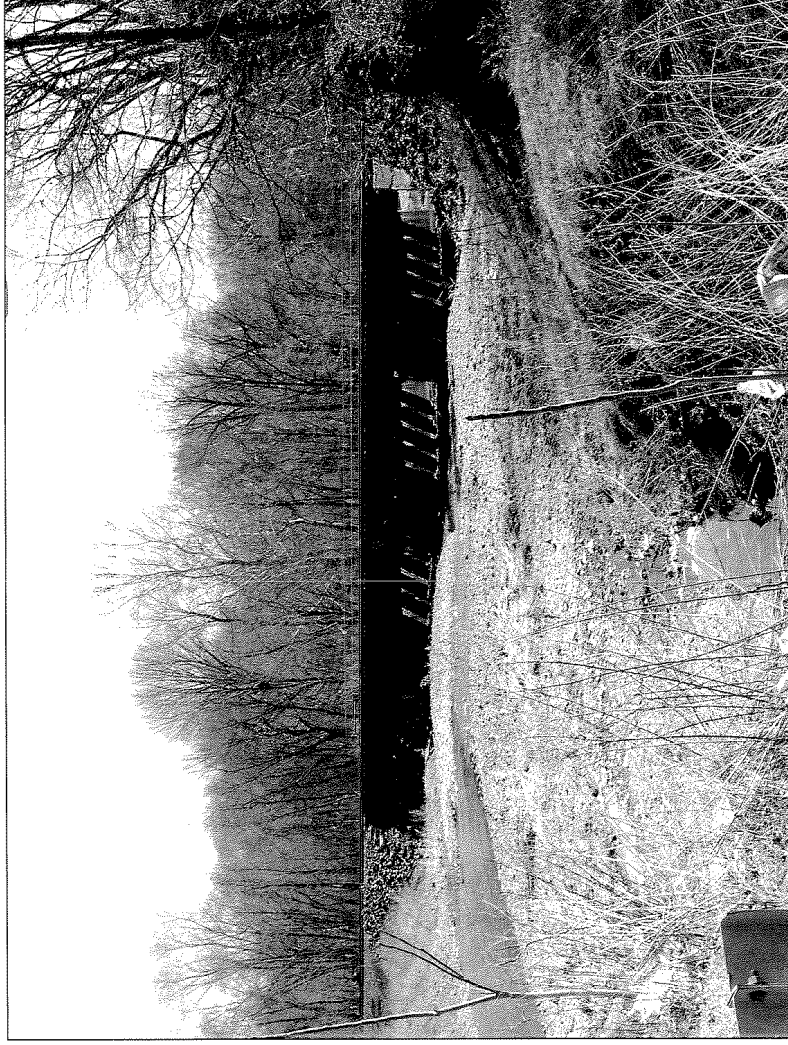




“Google Earth” view of Talmage Ave. and Tea St. intersection, Bound Brook, NJ. The paved R-1 levee is visible at the top left of image; bright green lines represent continuation of R-1 levee; red line is the R-2 levee, grey line is the proposed access road; purple oval is the closure structure.



**Bound Brook: Former Central New Jersey Railroad line (NJ Transit Raritan Valley Line), over Middle Brook. The R-1 levee and closure structure will be meet the railroad just east of (to the right) of the bridge. View looking southeast from Talmage Ave. (Photo: April 2006)**



**Bound Brook: CNJRR (NJ Transit Raritan Valley Line), over Middle Brook. View looking southeast from Talmage Avenue Bridge (Photo: April 2006).**



**Bound Brook: Photographer standing on Segment R-1 Levee; Tea Street runs along upper left of photo; Talmage Ave. Bridge in upper right, beyond that is the NJ Transit Raritan Valley Line with a train passing over the bridge. This levee will continue to Talmage Ave. (which will be carried on a new higher bridge) and then continue on the south side of Talmage to the RR line. View looking south, April 2007.**



**Bound Brook: Segment R-1 Levee in the vicinity of Tea Street, north of Talmage Ave. This is a typical view of a completed levee. The R-1 levee near its intersection with the railroad track crossing will be similar in height. The R-2 levee, near to the historic railroad bridges will be approximately 5 feet higher. View looking northwest, April 2007.**

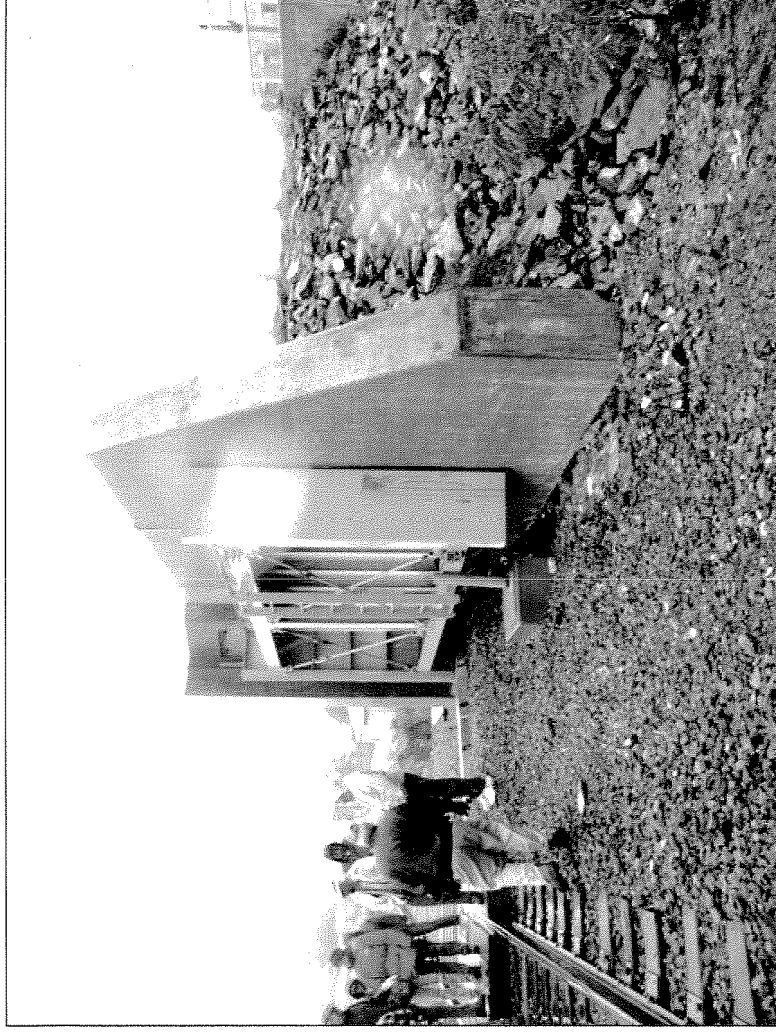




**Bound Brook: Segment R-1 levee, in the vicinity of Tea Street, north of Talmage; the proposed access road will be similar to this paved section of levee. View looking north, April 2007.**



**Bound Brook:** View looking west along the former Central New Jersey Railroad line (NJ Transit Raritan Valley Line). The R-1 levee and closure structure will be meet the railroad in the vicinity of the two signals. April 2008.



Railroad Closure Structure, Lockhaven, PA. Gate in open position. The Railroad closure structure across the former CNJRR (NJ Transit Raritan Valley line) will look similar to this once completed but will be longer. This gate encloses just one track while the one in Bound Brook will have enclose two active tracks on a wider embankment.

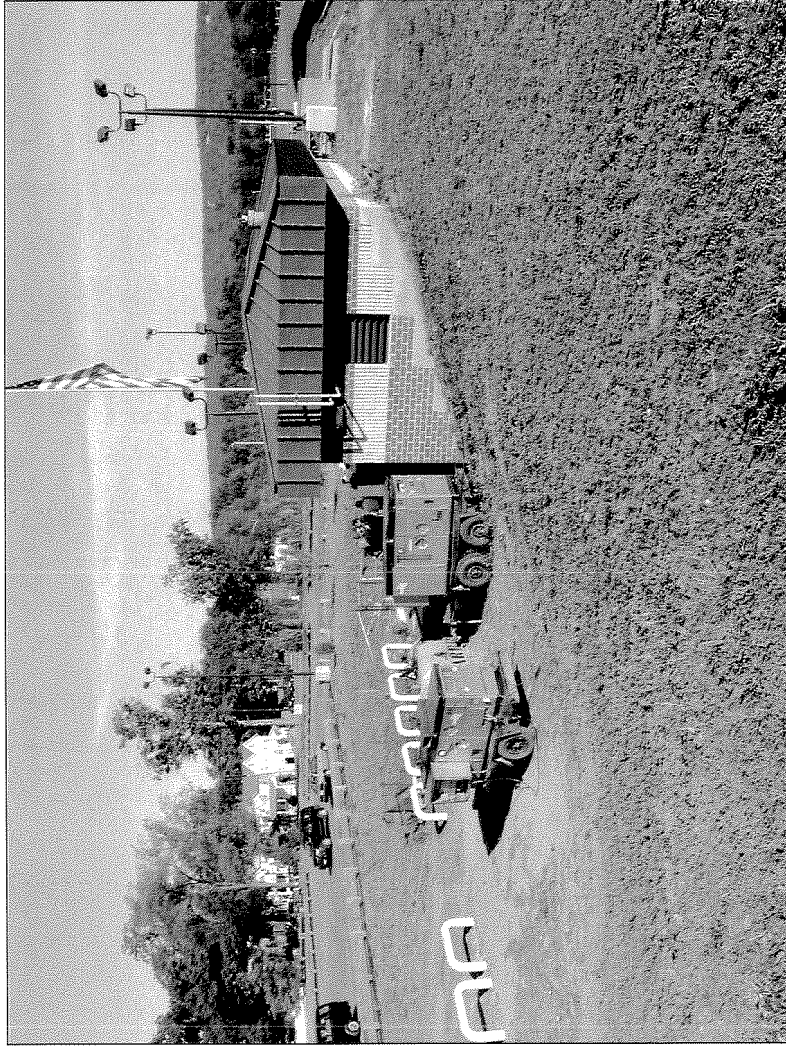




Railroad Closure Structure, Lockhaven, PA. Gates in closed position. The height above railroad grade of the completed closure structure and levee across the NJ Transit tracks will be similar to the height of the levee and walls of the Lockhaven structure.



View southeast to the bridges of the former Port Reading Railroad, in the foreground, and Lehigh Valley Railroad, in background. The pump station will be constructed into the levee to the right of the bridges. The levee will be located on the photographer's side of the railroad embankment and will be 5 feet higher than the railroad grade Photo: Lynn Rakos, April 2008.



**Bound Brook:** The Segment T pump station is built into the Segment T levee. The pump station on Segment R-2 will also be built into the levee, however, the R-2 pump house will rise a story above the grade of the levee to ensure that the station does not flood. The roof will be 15 feet higher than the railroad grade. April 2007.



**Bound Brook:** The Segment T pump station is built into the Segment T levee. The pump station on Segment R-2 will also be built into the levee, however, the R-2 pump house will run for a greater length along the levee as a small meeting/locker room will be included in its design. Photo: April 2007.



“Google Earth” view of Bridges on the former Port Reading and Lehigh Valley Railroads, Bound Brook, NJ; the red line is the R-2 levee, the blue line is a flood wall; purple rectangle is the approximate location of the pump station.



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June 3, 2008

Environmental Assessment Section  
Environmental Analysis Branch

Mr. Terry Karchner  
Deputy State Historic Preservation Officer  
Historic Preservation Office  
New Jersey Department of Environmental Protection  
CN 404  
Trenton, New Jersey 08625-0404

Dear Mr. Karchner:

The U.S. Army Corps of Engineers, New York District (Corps) in partnership with New Jersey Department of Environmental Protection Office of Engineering and Construction, is proceeding with the construction of the Green Brook Flood Damage Reduction Project (HPO-C2003-4; 03-0308-1). A Programmatic Agreement for the project was signed in 1998. A number of structures and archeological sites within the project's area of potential effect were identified in the PA as eligible for the National Register of Historic Places (NRHP). Among those properties were the Lehigh Valley Railroad (LVRR) and Port Reading Railroad (PRRR) Bridges in Bound Brook and the Central Railroad of New Jersey (CRRNJ) Main Line Corridor Historic District (now New Jersey Transit's Raritan Valley Line). Enclosure 1 is a letter from your office dated 16 March 1996 that includes reference to these historic railroad related resources. Presently plans are being developed for Segment R2. All work in this segment is within the Borough of Bound Brook, Somerset County and includes the replacement of Talmage Avenue Bridge, the installation of a double-barrel culvert and five diversion pipes, the construction of a pump station, floodwalls and levees, and drainage improvements (Enclosures 2 and 3). Certain construction elements within segment R2 are within or adjacent to the historic railroad corridors and contributing resources. This letter will individually address each construction element and the relevant railroad related resource (Please see Enclosure 4 for a list of construction elements and railroad resources). All construction elements were part of the original area of potential effect for this project as defined in the PA but for the drainage feature beneath the LVRR/PRRR bridges and the permanent access road adjacent to the former CRRNJ corridor.

1. Talmage Avenue Bridge Replacement and ML-2 Culvert

Construction is underway on the first element, the replacement of the Talmage Avenue Bridge and the ML-2 culvert. This task included the installation of a culvert, consisting of two 48-inch diameter pipes at a distance of four feet from each other, beneath the NJ Transit railroad (former CRRNJ) embankment (Enclosures 5 and 6). The location of the easternmost pipe is twenty feet east of the bridge over the Middle Brook, a contributing element of the historic rail corridor

(Enclosure 7). The top elevation of the pipes is nine feet below current grade of the railroad embankment. As the excavation for the pipes was to be accomplished with a tunnel boring machine and the pipes will be completely buried and not visible following completion of construction, the Corps was of the opinion that there would be no effect on the historic railroad corridor. On 20 March 2008, during installation of the first pipe, a stone wall was encountered inside the railroad embankment (Enclosures 8 and 9). This unanticipated find was not able to be evaluated until after the wall had been breached and the pipe had been inserted.

The wall, running parallel to the railway line, was comprised of dry laid fieldstone, and was found to be just one stone thick. Its extent along the length of the embankment is not known although it was not encountered in the second bore, four feet east of the first. The height could also not be ascertained due to limited exposure. The function of this wall is not known. The wall did not continue east, as it was not encountered in the second pipe installation, suggesting it is not a part of the support structure from the original construction of the railroad embankment. It is possible that the wall was connected with an earlier bridge over the Middle Brook. The wall was, however, found some distance from the present stream bank, and it is not likely that the stream has meandered that significantly since the construction of the railroad. No further work on this feature will be undertaken.

A second element of this contract, is to build, as originally proposed, a short levee segment between Talmage Avenue and the NJ Transit rail line (see Enclosure 5). The width of the levee, adjacent to the railroad will measure approximately 40 feet. Its height will be six above the grade of the rail line. The levee will tie into the railroad embankment. A sheet pile wall will be installed at the terminus of the levee facing the rail line. This wall will later be faced in concrete and form part of the closure structure discussed below.

## 2. Railroad Closure Structure and Diversion Culvert Pipes

To complete the network of flood damage reduction measures for Bound Brook two closure structures, essentially very large gates, must be installed along the former CRRNJ rail line. Impacts from the South Main Street Closure Structure, which will run adjacent to and parallel with the rail line at the bridge over South Main Street in downtown Bound Brook, were addressed in a Standard Mitigation Agreement (SMA) that was developed in consultation with your office and signed in 2007 (Enclosure 10). Current plans for the "Railroad Closure Structure and Diversion Culvert Pipes" include the construction of another closure structure across the NJ Transit line, 40 feet east of the bridge over the Middle Brook, a contributing element to the CRRNJ historic district. This closure structure will run perpendicular to the tracks, closing off the tracks during certain flood events (Enclosures 11 and 12).

In a letter to your office dated 30 June 2006, the Corps stated that it was the Corp's opinion that the construction of the Middle Brook closure structure will have an effect but not an adverse one given that the construction of the gate will be limited to 100 feet of railroad on a 60+ mile

historic district corridor (Enclosure 13). To maintain a sense of continuity in design for Corps structures along the corridor the Corps agreed to use a finishing treatment for this structure similar to that selected for the South Main Street Closure Structure. Since that agreement however, the Corps presented five wall finishes to Dan Saunders of your staff, by email in December 2007. Four finishes were considered acceptable and were provided to the Borough of Bound Brook who made the final decision on the finish. They selected a finish with a horizontal block effect (Enclosure 14). The terra cotta color was selected to complement the finishes included in Bound Brook's redevelopment plan. The horizontal block pattern in terra cotta is not considered an appropriate finish for the closure structure near the Middle Brook. The Corps proposes that a simple concrete finish is more appropriate given the location of this structure outside of the urban core of Bound Brook (see Enclosure 7 for the setting of closure structure). Enclosures 15 and 16 are photos of a railroad closure structure on a flood control project in Lockhaven, PA. The Green Brook structure will be similar in height but the gates will be longer as they have to span four tracks instead of one. Also please consider that when open, which the gates will be except for times of certain floods, most of the wall will be blocked by the metal gates. Please provide a comment on this revised approach to having a simple concrete finish instead of the terra cotta horizontal block effect.

Plans for the "Railroad Closure Structure and Diversion Culvert Pipes" also include the installation of five pipes, in three separate locations, beneath the railroad embankment (Enclosure 17). A permanent operation and maintenance ramp will also be proposed to run for approximately 150 feet from the West Main Street cul-de-sac on or adjacent to the railroad embankment (See "Access Road No. 2" on Enclosure 11).

As with the ML-2 culvert, discussed above, five diversion pipes will be installed using a tunnel boring machine. Diversion Pipe 4 consists of three adjacent pipes. The pipes will again, in the vicinity of the railroad, be buried and therefore not visible when construction is completed. It is the Corps' opinion that the construction of the diversion pipes will have no effect on the railroad historic district. Given that a stone wall was encountered during the excavation for the ML-2 culvert, the Corps will be conducting investigations of the railroad embankment to determine if any obstructions are present. The Corps' project archaeologist will monitor these investigations. A brief report of the monitoring will be prepared and coordinated with your office.

The permanent operation and maintenance ramp will run on and adjacent to the south side of the railroad embankment, from the western terminus of West Main Street for 150 feet to the levee to be constructed parallel to the Middle Brook (see Enclosures 11 and 18). The ramp is within the Borough of Bound Brook, where numerous roadways run adjacent to, or cross, the railroad corridor. The Corps' opinion is that the construction of the 150 feet of operation and maintenance ramp adjacent to the railroad corridor will have an effect on the CRRNJ historic district but it will not be adverse as construction will not affect the NRHP eligibility of the 60+ mile long district.



### 3. Levee/Floodwall/Pump Station

This construction element includes the construction of a system of levees and floodwalls and a pump station (Enclosure 19). The system will run south along the Middle Brook from the NJ Transit railroad line, then run east along the Raritan River just to the north of the former Port Reading and Lehigh Valley Railroad lines, to tie in at the NJ Transit line, west of the east-bound platform and shed of the Bound Brook Station. A pump station and buried drainage pipe are proposed on the unnamed stream over which the LVRR and PRRR bridges cross.

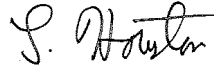
This project segment was re-designed to avoid any adverse effects associated with tying a levee into the east-bound shed and platform as was originally proposed. The Bound Brook Passenger Station is listed on the NRHP. As per the Programmatic Agreement, treatment plans were to be developed to mitigate for effects to the station. Treatments are no longer required due to avoidance through re-design. The redesigned levee will run along the alignment of three abandoned railroad spurs that parallel each other (Enclosures 20 and 21).

As per Charles Scott of your staff, via email dated 8 January 2008, these spurs were likely part of Bound Brook Junction, the interchange between the former Lehigh Valley Railroad and the Central Railroad of New Jersey and would have been an important link in the rail system prior to railroad consolidation. One of the spurs may have served the former Bound Brook Woolen Mills. Portions of the woolen mills complex are extant but heavily altered. The complex was determined not significant in the initial survey for the Green Brook Flood Damage Reduction Project, conducted by Hunter Research in 1989/90. A railroad round house was located immediately east of the woolen mills but based on historic maps and photos it appears that the spurs did not service the round house (Enclosures 22 and 23). The spur is significant in that it serviced two NRHP eligible railroads. The integrity of the spur however has been compromised and now just segments of the spur remain (Enclosures 24 and 25). Mr. Scott suggested that rails could be placed upon the completed levee to suggest the former interchange. This idea was considered by the Corps but has since been determined not feasible as an option due to the location of the levee in an area between two active rail lines and not accessible by the public.

A pump station will be built into the earthen levee (Enclosure 26). The structure will be visible from the railroad corridor as the working floor of the building is designed to be six inches higher than the top elevation of the levee. Drainage from the pump station will be through a pipe that debouches into the Raritan River. The pipe will run under the LVRR and PRRR bridges (Enclosure 27). The bridges and abutments will not be impacted by construction but to ensure this the Corps will require a pre-construction survey, periodic inspections and a post-construction survey of the bridges. An open stone-lined swale was originally proposed to carry the outflow and can be seen on Enclosure 26, which is undergoing re-design. Charles Scott of your office, by phone 12 October 2007, suggested that the stones selected to line the channel be similar to exposed local stone in channel but this is no longer necessary due to the re-design. It is the Corps' opinion that the construction will have a temporary impact on the bridge that will be mitigated through the proposed monitoring plan. The final design, employing a buried pipe to channel flow, will have no effect on the historic railroad bridges or corridors.

Please review the enclosed material 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


CF (w/enclosures)  
Deborah Fimbel, NJHPO  
D'Amico (Somerset County Cultural and Heritage Commission)  
McEwen, Cameron



STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF LAND USE REGULATION  
501 East State Street, Station Plaza 5, 2<sup>nd</sup> 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.		Approval Date <b>MAY 16 2008</b>
		Expiration Date <b>MAY 16 2013</b>
Permit Number/s 1800-03-0001.2 FWW 070001 IP	Type of Approval/s Freshwater Wetlands Individual Permit	Enabling Statute/s NJSA 58:10A NJSA 13:9B
Applicant  New Jersey Department of Environmental Protection 501 East State Street Trenton, NJ 08625		Site Location  Green Brook Flood Control Project, Segment R-2 Borough of Bound Brook Somerset County, New Jersey
<p>The applicant, New Jersey Department of Environmental Protection (NJDEP), is proposing structural flood protection (levee system and floodwall), along the Middle Brook and the Raritan River in the Borough of Bound Brook, Somerset County. The proposed project consists of the construction of the connecting Segment R-2 of the Green Brook Flood Control Project. The levee system will be a 4,000 linear foot earthen levee including a pumping station and installation of four outfalls, 740 linear feet of a floodwall, a NJ Transit closure gate with diversion pipes and an East Main Street closure gate. The levee height in the project location ranges from 40.6 to 45.2 feet above grade, with 2.5:1 side slopes 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 the Borough of Bound Brook from repeated catastrophic flooding events associated with the Raritan River and Middle Brook.</p> <p>The floodwall and levee system will result in disturbances of the following: the temporary disturbance of 0.954 of an acre of freshwater wetlands, and 0.881 of an acre of wetland transition areas. The permanent disturbance of 7.287 acres of freshwater wetlands, and 1.835 acres of transition area. <b>The permittee must mitigate for the temporary loss of 0.954 acres forested wetlands through an on-site restoration project and the permanent loss of 7.287 acres of palustrine forested wetlands through use of the Finderne Farm Wetland Mitigation Project as detailed below.</b></p>		
Prepared by   Kimberly Kerkuska Senior Geologist		
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.		Received or Recorded by County Clerk
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 attached *Administrative Hearing Request Checklist and Tracking Form*.
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.
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 the attached construction report. The Construction Reports are also available at [www.nj.gov/dep/landuse/](http://www.nj.gov/dep/landuse/).
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 restriction 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 Raritan River and Middle Brook, any proposed grading or construction activities within the banks of these or any other watercourses on site are prohibited between May 1<sup>st</sup> and July 31<sup>st</sup> 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. **The drawings hereby approved** are six (6) sheets prepared by the URS Group, Inc., dated February 2007, unrevised, entitled: "GREEN BROOK SUB-BASIN OF THE RARITAN RIVER, GREEN BROOK FLOOD CONTROL PROJECT, SEGMENT R-2 LEVEE AND PUMP STATION, RAILROAD CLOSURE STRUCTURE AND DIVERSION CULVERT PIPES, SOUTH MAIN STREET CLOSURE STRUCTURE AND RAILROAD AVENUE SITE GRADING, BOROUGH OF BOUND BROOK, NEW JERSEY"

"OVERALL WETLAND PERMIT APPLICATION PLAN REFERENCE SHEET", Sheet 91 of 96;

"WETLAND PERMIT APPLICATION PLAN, STA. 32+07 to STA. 39+41.83," Sheet 92 of 96;

"WETLAND PERMIT APPLICATION PLAN, STA. 39+41.83 to STA. 50+40.97," Sheet 93 of 96;

"WETLAND PERMIT APPLICATION PLAN, STA. 50+40.97 to STA. 61+16.39," Sheet 94 of 96;

"WETLAND PERMIT APPLICATION PLAN, STA. 61+16.39 to STA. 71+44.25," Sheet 95 of 96;

"WETLAND PERMIT APPLICATION PLAN, STA. 71+44.25 to STA. 79+59.21," Sheet 96 of 96.

**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. **This permit is not effective for the purpose of conducting regulated activities authorized by this permit until the following special conditions are satisfied:**

15. Mitigate for the **temporary** loss of **0.954** acres forested wetlands through an on-site restoration project as shown on the plans "GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 PLANTING PLAN 1 STA." Sheet No. L-101, "GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 PLANTING PLAN 2 STA." Sheet No. L-102, "GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 PLANTING PLAN 4 STA." Sheet No. L-103, "GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 PLANTING PLAN 6 STA." Sheet No. L-104, GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD DAMAGE REDUCTION PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 PLANTING PLAN 6 STA." Sheet No. L-105 dated March 2008 and prepared by the U.S. Army Corps of Engineers.
16. Mitigate for the **permanent** loss of **7.287** acres of palustrine forested wetlands through use of the Finderne Farm Wetland Mitigation Project as shown on the Department-approved plans entitled, "Wetland Mitigation Design for the Finderne Site, Green Brook Flood Control Project, Bridgewater Township, Somerset County, New Jersey", sheets 1 - 46 of 46, all plans dated 5/11/05 with no revisions, and prepared by The Department of the Army, New York District Corps of Engineers, and The Louis Berger Group, Inc. The project has been designed and constructed in advance of wetland impacts anticipated by the Greenbrook Flood Control Project. As segments of the Greenbrook Flood Control project apply to the Division of Land Use Regulation for permits, wetland impacts are evaluated on a case-by-case basis to determine if the appropriate type of mitigation is available within the Finderne Farm Mitigation Project. The U.S. Army Corps of Engineers is approved to use of the forested creation portion of the Finderne Farm Wetland Mitigation Project that was designed to mitigate for palustrine forested wetland impacts at a 2:1 ratio. As such, the proposed Segment R-2 impacts to 7.287 acres of forested wetlands requires that 14.574 acres of forested wetlands creation be debited from the Finderne Farm Wetland Mitigation Project.
17. In the event that there is a conflict between the permit conditions and the approved mitigation plans and proposal, the permit conditions take precedent.
18. Within 60 days of the issuance of this permit the permittee shall complete, sign and file with the County Clerk (the Registrar of Deeds and Mortgages in some counties), the Division approved conservation restriction for the mitigation site with an attached metes and bounds description that includes a map depicting the protected area. A copy of the Wetlands Mitigation Area Model Deed/Conservation Restriction is located on the Internet at <http://www.nj.gov/dep/landuse/forms/index.html>). The permittee shall use this language without changes to the text. For projects within both U.S. Army Corps of Engineers and Department jurisdictions, there are two model conservation restrictions available at the above-referenced web address that must be used for projects under joint Federal and State jurisdictions. The conservation 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 mitigation project are located, within 10 days of approval of the final wetland mitigation proposal. Within 10 days of filing the conservation restriction, metes and bounds description and map(s), the permittee must send a copy of the conservation restriction to the Division.
19. The mitigation designer must be present on-site during critical stages of construction of the mitigation project. This includes but is not limited to herbicide applications, 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.

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 Division's 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. 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.
22. 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.
23. The permittee shall assume all liability for accomplishing corrective work should the Division determine that the compensatory mitigation has not been 100% successful. Remedial work may include re-grading and/or replanting the mitigation site. This responsibility is incumbent upon the permittee until such time that the Division makes the finding that the mitigation project is successful.
24. Within 5 days following final grading of the site, a disc must be run over the site to eliminate compaction. The mitigation designer must be present to oversee this phase of the project and confirm with the Division this activity has occurred prior to planting of the site.
25. 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:
  - a. 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;
  - b. 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;
  - c. Show on the as-built plans that the boundaries of the wetland mitigation area have been visibly marked with 3 inch white PVC pipe extending 4 feet above the ground surface. The stakes must remain on the site for the entire monitoring period;



- d. 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;
  - e. To document that the required amount of soil has been placed/replaced over the entire area of the mitigation site, provide a minimum of 6 soil profile descriptions to a depth of 20 inches. The location of each soil profile description should be depicted on the as built plan as well as provide the GPS waypoints in NJ state plane coordinates NAD 1983;
  - f. Submit soil test results demonstrating at least 8% organic carbon content (by weight) was incorporated into the A-horizon for sandy soil and for all other soil types 12% organic content or if manmade top soil was used it consisted of equal volumes of organic and mineral materials;
  - g. The permittee shall post the mitigation area with several permanent signs as shown on the approved mitigation plan (Note: change checklist to require these to be shown on plan), which identify the site as a wetland mitigation project and that development (Note: change sign specs) mowing, cutting, dumping and draining of the property is prohibited; and
  - h. The signs must also state the name of the permittee, Department's permit number along with a contact name and phone number.
26. If the Division determines that the temporary restoration portion of the mitigation 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. No financial surety will be released by the Division until the permittee demonstrates that the mitigation project is constructed in conformance with the approved plan, all soil has been stabilized and there is no active erosion.
27. Through the five-year monitoring period (which begins upon the completion of construction and planting), the permittee shall continue to provide annual monitoring reports to the Department on the long-term success of the project and to identify any problems requiring remedial action. Any such remedial action shall be taken in accordance with the Department. The permittee shall submit monitoring reports to the Division of Land Use Regulation no later than December 31<sup>st</sup> 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 <http://www.nj.gov/dep/landuse/forms/index.html>.
28. All monitoring reports must include all of the following information:
- a. All monitoring reports except the final one must include documentation that it is anticipated, based on field data, that the goals of the wetland mitigation project including the transition area, as stated in the approved wetland mitigation proposal and the permit will be satisfied. If the permittee is finding problems with the mitigation 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. All monitoring reports except the final one must include field data to document that the site is progressing towards 85 percent survival and 85 percent area coverage of mitigation plantings or target hydrophytes (Target hydrophytes are non-invasive native species to the area and similar to ones identified on the mitigation planting plan). If the proposed plant community is a scrub/shrub or a forested wetland the permittee must also demonstrate each year with data that the woody species are thriving, increasing in stem density and height each year. If the

field data shows that the mitigation project is failing to meet the vegetation survival, coverage and health goals, the monitoring report should contain a discussion of steps that will be taken to rectify the problem, including a schedule of implementation;

- c. All monitoring reports except the final one must include documentation of any invasive or noxious species (see below for list of species) colonizing the site and how they are being eliminated. The permittee is required to eliminate either through hand-pulling, application of a pesticide or other Department approved method any occurrence of an invasive/noxious species on the mitigation site during the monitoring period;
- d. All monitoring reports except the final one must include documentation that demonstrates the proposed hydrologic regime as specified in the mitigation proposal appears to be met. If the permittee is finding problems with the mitigation project and does not anticipate the proposed hydrologic regime will be or has not been met then recommendations on how to rectify the problem must be included in the report along with a time frame within which it will be completed;
- e. The final monitoring report must include documentation to demonstrate that the goals of the wetland mitigation project including the required transition area, as stated in the approved wetland mitigation proposal and the permit, has been satisfied. Documentation for this report will also include a field wetland delineation of the wetland mitigation project based on techniques as specified in the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989);
- f. The final monitoring report must include documentation the site has an 85 percent survival and 85 percent area coverage of the mitigation plantings or target hydrophytes. The permittee must also document that all plant species are healthy and thriving and if the proposed plant community contains trees demonstrate that the trees are at least five feet in height;
- g. The final monitoring report must include documentation demonstrating the site is less than 10 percent occupied by invasive or noxious species such as but not limited to (Source: Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, New Jersey. 107 pages.): *Acer platanoides* (Norway Maple), *Ailanthus altissima*, (Tree of Heaven), *Allaria petiole* (Garlic mustard), *Ampelopsis brevipedunculata* (Porecelain berry), *Artemisia biennis* (Biennial wormwood) *Artemisia vulgaris* (Mugwort or Common wormwood), *Berberis thunbergii* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Carex kobomugi* (Japanese sedge), *Celastrus orbiculatus* (Asian Bittersweet), *Centaurea biebersteinii* (Spotted knapweed), *Cirsium arvense* (Canadian thistle), *Dipsacus fillosum* (Wild teasel), *Dipsacus laciniatus* (Cut-leaf teasel), *Elaeagnus angustifolia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Euonymus alata* (Winged spindletree), *Lespedeza cuneata* (Chinese bush-clover), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet), *Lonicera japonica* (Japanese honeysuckle), *Lonicera morrowii* (Morrow's bush honeysuckle), *Lonicera tartarica* (Tartarian honeysuckle), *Lythrum salicaria* (Purple loosestrife), *Melilotus officinalis* (Yellow sweetclover), *Microstegium vimineum* (Japanese stiltgrass), *Myriophyllum spicatum* (Eurasian water-milfoil), *Phalaris arundinacea* (Reed canary grass), *Phragmites australis* (Common reed grass), *Polygonum cuspidatum* (Japanese knotweed), *Polygonum perfoliatum* (Mile-a-minute), *Potamogeton crispus* (Curly leaf pondweed), *Pueraria montana* (Kudzu), *Ranunculus ficaria* (Lesser celandine), *Rhamnus cathartica* (Common buckthorn), *Robinia pseudoacacia* (Black locust), *Rosa multiflora* (Multiflora rose), *Rubus phoenicolasius* (Wineberry), *Typha latifolia* (Broad-leaved cattail), *Typha angustifolia* (Narrowed leaved cattail).

- h. The final monitoring report must include documentation that demonstrates that the proposed hydrologic regime as specified in the mitigation proposal, which proves the mitigation site is a wetland has been satisfied. The documentation shall include when appropriate monitoring well data, stream gauge data, photographs and field observation notes collected throughout the monitoring period; and
  - i. The final monitoring report must include documentation that the site contains hydric soils or there is evidence of reduction occurring in the soil throughout the delineated wetlands.
29. 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:
- a. 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;
  - b. 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;
  - c. The site is less than 10 percent occupied by invasive or noxious species such as but not limited to (Source: Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, New Jersey. 107 pages.): *Acer platanoides* (Norway Maple), *Ailanthus altissima*, (Tree of Heaven), *Allaria petiole* (Garlic mustard), *Ampelopsis brevipedunculata* (Porecelain berry), *Artemisia biennis* (Biennial wormwood) *Artemisia vulgaris* (Mugwort or Common wormwood), *Berberis thunbergii* (Japanese barberry), *Berberis vulgaris* (Common barberry), *Carex kobomugi* (Japanese sedge), *Celastrus orbiculatus* (Asian Bittersweet), *Centaurea biebersteiniior maculosa* (Spotted knapweed), *Cirsium arvense* (Canadian thistle), *Dipsacus fillonum* (Wild teasel), *Dipsacus laciniatus* (Cut-leaf teasel), *Elaeagnus angustifolia* (Russian olive), *Elaeagnus umbellata* (Autumn olive), *Euonymus alata* (Winged spindletree), *Lespedeza cuneata* (Chinese bush-clover), *Ligustrum obtusifolium* (Japanese privet), *Ligustrum vulgare* (Common privet), *Lonicera japonica* (Japanese honeysuckle), *Lonicera morrowii* (Morrow's bush honeysuckle), *Lonicera tartarica* (Tartarian honeysuckle), *Lythrum salicaria* (Purple loosestrife), *Melilotus officinalis* (Yellow sweetclover), *Microstegium vimineum* (Japanese stiltgrass), *Myriophyllum spicatum* (Eurasian water-milfoil), *Phalaris arundinacea* (Reed canary grass), *Phragmites australis* (Common reed grass), *Polygonum cuspidatum* (Japanese knotweed), *Polygonum perfoliatum* (Mile-a-minute), *Potamogeton crispus* (Curly leaf pondweed), *Pueraria montana* (Kudzu), *Ranunculus ficaria* (Lesser celandine), *Rhamnus cathartica* (Common buckthorn), *Robinia pseudoacacia* (Black locust), *Rosa multiflora* (Multiflora rose), *Rubus phoenicolasius* (Wineberry), *Typha latifolia* (Broad-leaved cattail), *Typha angustifolia* (Narrowed leaved cattail).
  - d. The site contains hydric soils or there is evidence of reduction occurring in the soil; and,
  - e. The proposed hydrologic regime as specified in the mitigation proposal has been satisfied. These criteria must be satisfied to prove the mitigation site is a wetland.

30. The permittee will submit a statement to the Department each time credits are debited or additional credits are approved. At a minimum, the permittee will submit an annual ledger to the Department showing all transactions at the consolidated mitigation project for the previous year.
31. Through the five-year monitoring period (which begins upon the completion of construction and planting), the permittee shall continue to provide annual monitoring reports to the Department on the long-term success of the project and to identify any problems requiring remedial action. Any such remedial action shall be taken in accordance with the Department. Should any report submitted by the permittee note conditions requiring remedial action, the permittee shall determine the cause of the condition. If the permittee determines the problem is due to design, construction or maintenance deficiencies, then the permittee shall be responsible for remediation. Prior to commencing remediation, the permittee shall submit a detailed proposal for such a remediation for review and approval by the NJDEP.

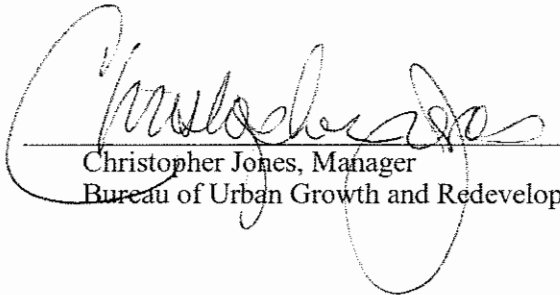
If any part of the mitigation project is considered a failure, the permittee will have 60 days to submit a revised mitigation plan to rectify the project, following receipt of a letter from the Department indicating that the wetland mitigation project is considered a failure.

Once approved by the Department, the permittee shall undertake such remediation and shall, upon completion, submit to the Department a summary of the work performed.

In the event the permittee fails to implement necessary remedial actions within 60 days after notification by the Department of necessary remedial action to address any failure in meeting the success criteria, the Department will notify the permittee and recommend appropriate remedial actions. If the Department determines that the project is operating at a deficit, debiting of credits will immediately cease and the Department will determine what remedial actions are necessary to correct the situation. As determined by the Department and the permittee, if conditions at the project site do not improve or continue to deteriorate within a reasonable time frame from the date that the need for remediation was first identified in writing to the permittee by the Department, Enforcement action will be undertaken to obtain funding to undertake the unnecessary corrective measures.

32. 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. 29 above. The plan shall be submitted within 60 days of receipt of the letter from the Division indicating the wetland mitigation project was a failure.
33. At all times during the monitoring and maintenance period of the project, and in perpetuity as to the ongoing management, maintenance and remediation of the project, the permittee shall be subject to and shall comply with the Freshwater Wetlands Protection Act - N.J.S.A. 13:9B, Flood Hazard Area Control Act - N.J.S.A. 58:16A, Wetlands Act of 1970 - N.J.S.A. 13:9A, Waterfront Development Act - N.J.S.A. 12:5-3, NJ Water Pollution Control Act - N.J.S.A. 58:10A, Coastal Area Facility Review Act (CAFRA) - N.J.S.A. 13:19 and all other applicable federal, state and local laws, rules and regulations in the establishment, construction, management, and maintenance of the project.
34. Long-term management shall be the responsibility of the permittee, Somerset County or other designated organization, as set forth in the Conservation Restriction/Easement. After which, the project will be protected in perpetuity by the recorded NJDEP Wetlands Mitigation Area Model Deed/Conservation Restriction (located on the Internet at <http://www.nj.gov/dep/landuse/forms/index.html>).
35. The Finderne Farm Mitigation consolidated wetland mitigation project is intended to act as compensation for future wetland impacts associated with the Green Brook Flood Control Project. It should be noted that approval of the Finderne Farm Mitigation Site in advance of project impact

authorizations does not suggest that future wetland impacts will be automatically authorized. All wetland impacts associated with the Green Brook Flood Control Project will be reviewed by the Division of Land Use Regulation in accordance with the Freshwater Wetlands Protection Act - N.J.S.A. 13:9B, Flood Hazard Area Control Act - N.J.S.A. 58:16A, Wetlands Act of 1970 - N.J.S.A. 13:9A, Waterfront Development Act - N.J.S.A. 12:5-3, NJ Water Pollution Control Act - N.J.S.A. 58:10A, Coastal Area Facility Review Act (CAFRA) - N.J.S.A. 13:19 and all other applicable federal, state and local laws, rules and regulations. This letter should not be construed as an approval of the entire Greenbrook Flood Control project and the US Army Corps of Engineers has proceeded with this advance mitigation project at their own risk.

  
Christopher Jones, Manager  
Bureau of Urban Growth and Redevelopment

5/16/08  
Date

c: Applicant  
Borough of Bound Brook Construction Official  
JoDale Legg, NJDEP Division of Land Use Regulation



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF

Environmental Analysis Branch

March 21, 2008

Virginia KopKash  
Bureau Manager  
Bureau of Technical Services  
Division of Land Use Regulation  
P.O. Box 439  
501 E. State Street  
Trenton, NJ 08625

Dear Ms. KopKash:

This letter is in response to the 24 January 2008 correspondence from your office regarding the Plans and Specifications for the Greenbrook Flood Control Segment R-2, NJDEP Permit No: 1800-03-0001.2.

In reference to your questions and comments pertaining to the Brook Industrial Park Superfund Site Somerset County, New Jersey Wetland Restoration Plan Sheets 1 and 2, please note that it has already been constructed by the party responsible for the Superfund remediation efforts. However, the mitigation site will be removed by the Corps as a result of the construction of the R2 levee and floodwall. In email correspondence dated 30 January 2008, between Kimberly Rightler, Project Biologist from my office and Ms. JoDale Legg from your office, the impacts, totaling 0.198 acres of Forested wetland, will be mitigated through use of the Finderne Farms.

In regards to your comment that the wetlands, swales and floodplain areas should not be mowed, the swales are a necessary component to the function of the project and will require mowing. Approximately .57 acres of wetland will be impacted by the swales. If mowing the swales is considered a permanent impact, then Finderne Farms will serve as the mitigation. In total, Segment R2 will impact 8.055 acres of forested wetlands. The summary of impacts is as follows:

- 0.198 acres from the Brook Industrial mitigation site
- 0.57 acres from swale maintenance
- 7.287 from floodwall and levee construction

We are proposing to mitigate for these impacts by utilizing forested wetland creation areas C1 and C2 which total 20.2 acres. Using a ratio of 2:1 for creation, the Segment R2 the total mitigation will be using 16.11 acres out of the 20.2 acres available from the two creation areas.

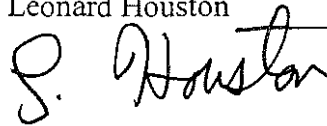
We have removed the tree shelters from the Specifications and are now proposing to install deer fence to protect the plantings along the land side of the levee. We have enclosed a copy of the revised planting plans showing the location of the proposed deer fence. Please note that the container seedlings were removed from the plan: a) their proximity to the swale would eventually pose a maintenance issue and could impact the function of the swale; b) the proposed species could crowd out the other shrub species; c) to accommodate the deer fencing.

Rigid mesh tubes (Enclosure) will be used for plantings located at the outlets. Unlike the tree shelters, the tubes are made of a rigid mesh that will prevent herbivory while allowing adequate sunlight and moisture exposure and weed maintenance. Additionally, the tubes are biodegradable with an average lifespan of approximately two to five years. Specific language will be incorporated into the vegetation monitoring plan along with the Operation and Maintenance manual to include monitoring of the integrity of the tubes along with ensuring that the tubes do not interfere with the growth of the vegetation.

*Elymus riparius* and *Panicum clandestinum* and language allowing the contractor to use cuttings from adjacent wetland plants will be removed from the Specifications.

If you have any questions or concerns please contact Ms. Kimberly Rightler, Project Biologist at (917) 790-8722.

Leonard Houston

A handwritten signature in black ink, appearing to read "L. Houston", written over the printed name.

Chief, Environmental Analysis Branch

Enclosures

Cc:

J. Legg, NJDEP

C. Defendorf, NJDEP





**State of New Jersey**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE  
Governor

Division of Land Use Regulation  
P.O. Box 439, Trenton, New Jersey 08625  
FAX # (609) 777-3656  
Web Site: [www.state.nj.us/dep/landuse](http://www.state.nj.us/dep/landuse)

LISA P. JACKSON  
Commissioner

Ms. Kimberly Rightler  
U.S. Army Corps of Engineers, New York District  
26 Federal Plaza  
Attn: Kimberly Rightler  
CENAN-PL-E  
Room 2146  
New York, NY 10278

JAN 24 2008

RE: Wetland Mitigation Restoration Plans and Specifications for Greenbrook Flood Control  
Segment R-2  
Project Location: Bound Brook, Somerset County  
NJDEP Permit No: 1800-03-0001.2

Dear Ms. Rightler:

This letter is to provide comments in response to the following plans and specifications that have been submitted to date for the above-referenced proposal:

"Brook Industrial Park Superfund Site Somerset County, New Jersey WETLAND RESTORATION PLAN" Sheets 1 & 2, dated January 26, 2006, last revised July 27, 2006 and prepared by Amy S. Greene Environmental Consultants, Inc.;

**Comments**

1. Why are trees being planted at a lower density (15' on-center) at the top of the bank, but a higher density of shrubs (8' on-center) is proposed throughout the restoration areas? Are all trees being planted 15' on-center throughout the restoration area?
2. How will the trees and shrubs be protected from deer predation? Has this been a problem previously in this area w/the restoration that recently took place?
3. Is there an alternative method for attaching the erosion control matting besides the staples? These were a problem in the Finderne Farm Mitigation Site because most popped out of the ground over the winter. If staples are used, they need to be monitored, replaced and removed during the course of the monitoring period.
4. Remove the perennial ryes from the Floodplain Seed Mix: *Elymus riparius* and *Elymus villosus*.

5. Please remove peat moss from the Backfill material proposed for backfilling the planting pits. Using materials mined from wetlands elsewhere is not acceptable.

“GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD CONTROL PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 LEVEE 90% SUBMISSION SEGMENT R-2 **PLANTING PLAN 1 STA.**” Sheet L-101, Sheet 22 of 29, dated February 2006 and prepared by the U.S. Army Engineer District Corps of Engineers New York, New York.

“GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD CONTROL PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 LEVEE 90% SUBMISSION SEGMENT R-2 **PLANTING PLAN 2 STA.**” Sheet L-102, Sheet 23 of 29, dated February 2006 and prepared by the U.S. Army Engineer District Corps of Engineers New York, New York.

“GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD CONTROL PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 LEVEE 90% SUBMISSION SEGMENT R-2 **PLANTING PLAN 4 STA.**” Sheet L-103, Sheet 24 of 29, dated February 2006 and prepared by the U.S. Army Engineer District Corps of Engineers New York, New York.

“GREEN BROOK SUB-BASIN OF THE RARITAN RIVER GREEN BROOK FLOOD CONTROL PROJECT BOUND BROOK, NEW JERSEY SEGMENT R-2 LEVEE 90% SUBMISSION SEGMENT R-2 **PLANTING PLAN 6 STA.**” Sheet L-104, Sheet 25 of 29, dated February 2006 and prepared by the U.S. Army Engineer District Corps of Engineers New York, New York.

### Comments

1. The tube seedlings proposed for use throughout the restoration areas typically have a low survival rate. The tree shelters proposed for use typically do not increase the survivability of the seedlings but cause the seedlings to become weak and essentially unable to stand upright on their own, especially when subjected to the forces of wind and water. Often, if the plants do emerge from the tube, deer eat the fresh growth that emerges as a preferred food item. The Department recommends replacement with larger species. The use of tree tubes is not approved.
2. Since no deer predation protection is proposed, the Department recommends the use of larger species such as #7 (similar to what is proposed at Brook Industrial) to # 15 or balled and burlapped (B & B) at a slightly lower density to increase the rate of survival.

“SECTION 02450 TOPSOIL AND SEEDING” from the Specifications for the Green Brook FCP Segment R-2 submitted by the U.S. Army Corps of Engineers.

### Comments

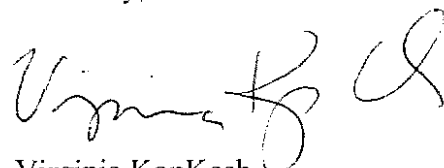
1. Section 2.1 “SWALE MIX” Remove: *Elymus riparius*.

2. Section 2.1 "FLOODPLAIN MIX" Remove: *Elymus riparius*, *Panicum clandestinum*.
3. Section 2.1 "WETLAND MIX" Remove: *Elymus riparius*.
4. Section 3.4 The wetlands, swales and floodplain areas should not be mowed. If mowing encroachment from adjacent lawn areas owned by others is anticipated to be a problem, please arrange large plantings along the boundary such that mowing equipment cannot easily access the seeded areas. Mowing encroachment will require restoration to be considered successful at the end of the monitoring period.
5. Cuttings from adjacent wetland plants should not be used.
6. Section 2.5 PLANT SCHEDULE Since no deer predation protection is proposed, the Department recommends the use of larger species such as #7 (similar to what is proposed at Brook Industrial) to # 15 or balled and burlapped (B & B) at a slightly lower density to increase the rate of survival.
7. Section 2.6 TREESHelter Please remove the treeshelter section from the specification for the reasons stated above.
8. Section 3.5 STAKING All stakes must be removed as necessary to promote survival prior to the termination of the monitoring period.

The Department also requests a copy of the plansheets W-101 to W-104 showing the wetland delineation performed for the proposed project.

We look forward to working with you in the coming months as this mitigation project progresses. Please contact Jo Dale Legg of my staff at (609) 777-0454 or by email at [JoDale.Legg@dep.state.nj.us](mailto:JoDale.Legg@dep.state.nj.us), should you have any questions concerning this letter.

Sincerely,



Virginia KopKash  
Bureau Manager  
Bureau of Technical Services  
Division of Land Use Regulation

cc: Jo Dale Legg, Mitigation Unit, Division of Land Use Regulation  
Kim Kerkuska, Division of Land Use Regulation



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1856

SEP 17 2007

David J. Brouwer  
Chief, Environmental Project Management Branch  
Programs & Project Management Division, Room 1811  
U.S. Army Corps of Engineers  
New York District  
26 Federal Plaza  
New York, NY 10278

Re: Brook Industrial Park Superfund Site  
Soil Remedial Action Report Approval

Dear Mr. Brouwer:

The U.S. Environmental Protection Agency (EPA) has completed its review of the Soil Remedial Action (RA) Report, dated May 2007, for the Brook Industrial Park Superfund site. The RA Report was prepared by Cape Environmental Management, Inc. under contract with the New York District Corps of Engineers. The RA Report adequately documents that the remedial action objectives have been met. Based on this review, EPA hereby approves the Soil RA Report.

If you have any questions regarding this matter, please contact Peter Mannino of my staff at (212) 637-4395.

Sincerely yours,

Carole Petersen  
New Jersey Remediation Branch

cc: Neal Kolb, USACE

## **Mailing List**

## **Public Notifications**

Mr. J. Eric Davis  
U.S. Fish and Wildlife Service  
Ecological Services, Region 5  
927 North Main street (Bldg D1)  
Pleasantville, NJ 08232

Ms. Grace Musumeci  
Environmental Review Section  
Environmental Protection Agency  
290 Broadway  
New York, NY 10007-1866

Ms. Dorothy P. Guzzo  
Deputy State Historic Preservation Officer  
Historic Preservation Office  
NJ Dept. of Environmental Protection  
CN 404  
Trenton, NJ 08625-0404

Chief  
Strategic Planning and Multimedia Programs Branch  
U.S. Environmental Protection Agency  
290 Broadway  
NY, NY 10007-1866

Randy Bahr, Borough Administrator  
Borough of Bound Brook  
Municipal Building  
230 Hamilton St.,  
Bound Brook, NJ 08805

Bound Brook Memorial Library  
402 East High Street  
Bound Brook, NJ 08805

Mr. Charles Defendorf  
NJ Dept. of Environmental Protection  
Office of Engineering and Construction  
Floodplain Management  
501 East State Street, CN 419  
Trenton, NJ 08625

Ms. Virginia Kopkash  
Land Use Regulation Program – Mitigation  
NJDEP  
PO Box 439  
501 E. State Street  
Trenton, NJ 08625

Ms. Kimberly Kerkuska  
Land Use Regulation Program  
NJDEP  
PO Box 439  
501 E. State Street  
Trenton, NJ 08625

Ms. JoDale Legg  
Land Use Regulation Program  
NJDEP  
PO Box 439  
501 E. State Street  
Trenton, NJ 08625

Mr. Carl Andreassen  
County of Somerset  
DPW, Engineering Division  
County Administration Building  
20 Grove Street  
PO Box 3000  
Somerville, NJ 08876-1262

Mr. Thomas R. D'Amico,  
Historic Sites Coordinator  
Somerset County Cultural and  
Heritage Commission  
P.O. Box 3000  
20 Grove Street  
Somerville, New Jersey 08876-1262

Resident  
West Main St.  
Bound Brook, NJ 08805

Resident  
162 West Main St.  
Bound Brook, NJ 08805

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208 West Main St.  
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Resident  
225 West Main St.  
Bound Brook, NJ 08805



**DEPARTMENT OF THE ARMY**  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

REPLY TO  
ATTENTION OF

Notice of Availability of Draft Environmental Assessment

The U.S. Army Corps of Engineers, New York District (District) announces the availability of the *Draft Environmental Assessment for the Segment R2 Levee and Floodwall Construction, Green Brook Flood Damage Reduction Project, Bound Brook Borough, NJ* (DEA).

The District is proposing to construct Segment R2, a levee and floodwall along Middle Brook and Raritan River south of West Main Street in the Borough of Bound Brook, NJ. This segment is the last remaining structural flood damage reduction measure of the Bound Brook Element of the Green Brook Flood Damage Reduction Project. The purpose of the DEA is to supplement information known about site conditions along the Segment R2 project area resulting from new information obtained from the *May 2007 Brook Industrial Park Superfund Site Removal Action Completion Report*. Specifically, the DEA will address the presence of arsenic and chromium in the western portion of the Segment R2 project area identified in soil samples taken in 2001 and 2006 during the remediation action of the Brook Industrial Park Superfund Site.

The DEA will be posted on the Green Brook Flood Damage Reduction Project link on the New York District's website:

<http://www.nan.usace.army.mil/business/prjlinks/flooding/greenbk/index.htm>

For further project information contact: John O'Connor  
Project Manager  
New York District Corps of Engineers  
(917) 790-8213  
[john.a.oconnor@usace.army.mil](mailto:john.a.oconnor@usace.army.mil)

To request a copy of the Draft Environmental Assessment and submit written comments, contact:

Kimberly Rightler  
Project Biologist  
New York District Corps of Engineers  
Attn: CENAN-PL-E  
26 Federal Plaza  
New York, NY 10278-0090  
(917) 790-8722  
[kimberly.a.rightler@usace.army.mil](mailto:kimberly.a.rightler@usace.army.mil)

Comments received by September 29, 2008 regarding the DEA will assist in the agency's evaluation of the project changes and will be reflected in the project record.



DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK, N.Y. 10278-0090

September 11, 2008

REPLY TO THE ATTENTION OF  
Planning Division  
Environmental Analysis Branch

Randy Bahr, Borough Administrator  
Borough of Bound Brook  
Municipal Building  
230 Hamilton Street  
Bound Brook, NJ 08805

Dear Mr. Bahr:

Enclosed for your review and comment is a Draft Environmental Assessment for the Segment R2 Levee and Floodwall Construction, Green Brook Flood Damage Reduction Project, Bound Brook Borough, NJ (DEA). The purpose of the DEA is to supplement information known about site conditions along the Segment R2 project area resulting from new information obtained from the May 2007 Brook Industrial Park Superfund Site Removal Action Completion Report. Specifically, the DEA addresses the presence of arsenic and chromium in the western portion of the Segment R2 project area identified in soil samples taken in 2001 and 2006 during the remediation action of the Brook Industrial Park Superfund Site.

The DEA will also be posted on the Green Brook Flood Damage Reduction Project link on the New York District's website:

<http://www.nan.usace.army.mil/business/prjlinks/flooding/greenbk/index.htm>


We would like to note that we have sent notices regarding the availability of the DEA and a fact sheet (enclosed) to residents along West Main Street. Document review comments are requested in writing prior to September 29, 2008 at the following address:

U.S. Army Corps of Engineers, New York District  
Planning Division, Environmental Analysis Branch  
Attn: Kimberly Rightler  
RM 2146  
26 Federal Plaza  
New York, New York 10278-0090

or via email at [kimberly.a.rightler@usace.army.mil](mailto:kimberly.a.rightler@usace.army.mil)

Comments received regarding the enclosed DEA will assist in the agency's evaluation of the project changes and will be reflected in the project record. If you have any questions, please contact Ms. Kimberly Rightler at (917) 790-8722.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Houston". The signature is written in a cursive, flowing style.

Leonard Houston  
Chief, Environmental Analysis Branch

Enclosures

### **I. Background Information:**

The Segment R2 levee and floodwall is being constructed near and with the Brook Industrial Park Superfund Site (Figure 1). Located on the northeastern end of the Segment R2 project area, the BIPSS is 4.5 acres in size and was included on the National Priorities List in 1989. In June 1994, a Remedial Investigation/Feasibility Study (RI/FS) was completed and in September 1994, a Record of Decision (ROD) was issued.

The RI, which focused on the industrial properties within the industrial park, recommended that specific areas be targeted for remediation. These areas included interior surfaces of buildings, soil collected from the building's basement and subsurface pits and sediment from a drainage ditch and tributary located behind the buildings. Remediation activities were completed in 2006 and a letter from the Environmental Protection Agency (EPA) stating that the remediation objectives were achieved was signed on September 17, 2007.

As part of the remediation action, surficial (down to six inches) sediment samples were taken in 2001 and 2006 in the wooded area directly west of the area delineated as Superfund to determine the extent of contamination attributed to the BIPSS. The test results indicated levels of arsenic and chromium were above the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria allowable limit of 19 ppm and 20 ppm respectively. In the 2001 sampling effort, forty of the forty soil samples taken in the area had chromium levels ranging from 24 to 101 ppm. Twenty-five of the forty samples had arsenic levels ranging from 21 to 205 ppm. Eight additional soil samples were taken in 2006 with chromium levels in the eight samples ranging from 48 to 90 ppm and four of the eight samples with arsenic levels ranging from 20.9 to 52.9. Based on its investigations, the EPA concluded that the levels were not associated with the BIPSS but rather contaminated with sediment from other sources upstream and downstream of the project area.

### **II. Handling of excavated material during Segment R2 construction:**

A geotechnical analysis of the soil within the levee footprint determined that the in-situ soil does not meet the specifications required for levee construction; therefore the soil within the levee footprint will be excavated to a depth of six feet and replaced with a clay soil overlain with topsoil. During construction, the contractor shall be responsible for taking composite soil samples within the levee footprint, testing them for all contaminant parameters and coordinating the results with NJDEP to determine the proper off-site disposal of the material. Additionally, given that the levee is being constructed close to the Raritan River and that excavation will extend down six feet, the potential of encountering ground water exists. The contractor will be required to test the water for contaminants and should levels exceed the criteria established by NJDEP, the water will be pumped to open pits and allowed it to seep back into the ground. Since the recharge pits will excavated within the levee footprint, they will be backfilled with the material used to construct the levee. The pits will be opened and closed in small increments to reduce exposure risk to humans and wildlife.

The District has coordinated with and has obtained concurrence from the EPA Remediation Project Manager and the NJDEP Site Remediation Officer assigned to the



BIPSS to use this approach. Further, the EPA Remediation Project Manager has verified that the wooded area to the west of the BIPSS is not nor will be part of the BIPSS. The District will continue to coordinate with the EPA Remediation Project Manager and the NJDEP Site Remediation Officer during construction. The District will continue to coordinate with the NJDEP Site Remediation case worker to implement proper safety and environmental measures in the event additional site testing indicates contaminated groundwater.

Given that the floodwall is located within the BIPSS, the EPA conducted aggressive remediation within the foot print of the proposed floodwall and extended remediation activities down into the water table to ensure that the floodwall construction would not expose any remaining contaminants. Given that the floodwall will not extend down to the water table, no exposure to contaminants is expected.

### **III. Contaminant Exposure Risk**

Arsenic and chromium naturally occur in soils in levels that vary with the geologic characteristics of the parent material. Although the levels of arsenic and chromium found in portions of the western area exceed the NJDEP Non-Residential Direct Contact Soil Clean-Up Criteria, they are not considered hazardous.




The primary exposure pathway of arsenic and chromium for humans is through ingestion. Exposure to arsenic and chromium would be greatest during excavation of soil for the levee. Exposure risk to residents is considered to be minimal given that the levee is setback from residences and is in an isolated area rarely used by the local community. Further, since it appears that the contamination may be more indicative of deposition of contaminated sediment during flood events, the contamination may be more surficial and contaminant levels may decrease further down the soil horizon. 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' and the public's health. Soil testing will be performed during construction to verify this and will be coordinated with NJDEP accordingly to determine the appropriate off-site disposal method.

The contaminant exposure risk to wildlife resources is considered minimal since construction activities will cause resident species to leave the area. Additionally, material will be excavated and disposed off-site, further reducing exposure risk. Areas disturbed for temporary access during construction will be reseeded upon completion so the long term exposure risk is minimal. To protect aquatic resources, erosion and sediment control best management practices will be implemented to reduce the introduction of sediment into open water surfaces.

FIGURE 1: Segment R2 Levee and Floodwall Layout



Legend

-  Levee
-  Floodwall and southern boundary of Brook Industrial Superfund Site
-  Brook Industrial Superfund Site Boundary





DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
26 FEDERAL PLAZA  
NEW YORK, N.Y. 10278-0090

September 11, 2008

REPLY TO THE ATTENTION OF  
Planning Division  
Environmental Analysis Branch

Library Director  
Bound Brook Memorial Library  
402 East High Street  
Bound Brook, NJ 08805

Dear Director:

The U.S. Army Corps of Engineers, New York District (District), has prepared a Draft Environmental Assessment for the Segment R2 Levee and Floodwall Construction, Green Brook Flood Damage Reduction Project, Bound Brook Borough, NJ (DEA). The document has been circulated to the affected public in accordance with the National Environmental Policy Act of 1970. We ask that the Library keep this environmental assessment document and the enclosed fact sheet in a visible location in the library. The document is also available online at the District's website:

<http://www.nan.usace.army.mil/business/prjlinks/flooding/greenbk/index.htm>

The environmental impacts of the Green Brook Flood Control Project were previously assessed 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 purpose of the DEA is to supplement information known about site conditions along the Segment R2 project area resulting from new information obtained from the May 2007 Brook Industrial Park Superfund Site Removal Action Completion Report. Specifically, the DEA addresses the presence of arsenic and chromium in the western portion of the Segment R2 project area identified in soil samples taken in 2001 and 2006 during the remediation action of the Brook Industrial Park Superfund Site.

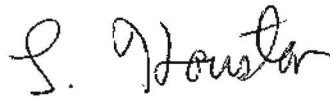
Document review comments are requested in writing prior to September 29, 2008 at the following address:

U.S. Army Corps of Engineers, New York District  
Planning Division, Environmental Analysis Branch  
Attn: Green Brook Project  
RM 2146  
26 Federal Plaza  
New York, New York 10278-0090

or via email at [kimberly.a.rightler@usace.army.mil](mailto:kimberly.a.rightler@usace.army.mil)

Comments received regarding the enclosed DEA will assist in the agency's evaluation of the project changes and will be reflected in the project record. If you have any questions, please contact Ms. Kimberly Rightler at (917) 790-8722.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Houston". The signature is written in a cursive, flowing style.

Leonard Houston  
Chief, Environmental Analysis Branch

Enclosure

## **I. Background Information:**

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