



**US ARMY CORPS  
OF ENGINEERS  
NEW YORK DISTRICT**

## SECTION 905(b) RECONNAISSANCE STUDY Wreck Pond Watershed, Monmouth County, New Jersey



Sedimentation in Wreck Pond, April 2010

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**SECTION 905(b) RECONNAISSANCE STUDY  
WRECK POND WATERSHED,  
MONMOUTH COUNTY, NEW JERSEY**

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SECTION 905(B) RECONNAISSANCE STUDY  
Wreck Pond Watershed  
Monmouth County, New Jersey

1.0 STUDY AUTHORITY

1.1 This Section 905(b) (WRDA) Analysis was prepared as an initial response to the Resolution of the U.S. House of Representatives Committee on Transportation and Infrastructure (Docket 2737), adopted 26 October 2005, which reads as follows:

*“Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army is directed to review the report of the Chief of Engineers on Sandy Hook to Barnegat Inlet, New Jersey, published as House Document 332, 85th Congress, 2nd Session, and other pertinent reports to determine whether modifications of the recommendations contained therein are advisable at the present time in the interest of navigation improvements, flood damage reduction, environmental restoration, and related purposes, with special emphasis on Wreck Pond, Monmouth County, New Jersey, including Black Creek and associated waters.”*

1.2 Funds in the amount of \$90,000 were appropriated in Fiscal Year 2010 to initiate the reconnaissance phase of the study.

2.0 STUDY PURPOSE

2.1 The purpose of the reconnaissance phase study is to determine if there is a Federal (Corps) interest in participating in a cost shared Feasibility Phase study to evaluate flood risk management, environmental restoration, and related watershed improvements to the Wreck Pond watershed. In response to the study authority, the reconnaissance study was initiated in December 2009. The purpose of this Section 905(b) Analysis is to document the results of the reconnaissance phase and to establish the scope of the feasibility phase. As the document that establishes the scope of the further studies, the Section 905(b) Analysis is used as the chapter of the project management plan that presents the reconnaissance overview and formulation rationale.

3.0 LOCATION OF STUDY, NON-FEDERAL SPONSOR AND CONGRESSIONAL DISTRICTS

3.1 The Wreck Pond Brook watershed includes about 8,174 acres in southern Monmouth County, New Jersey. The western boundary of the watershed is in Wall Township and extends east-southeast to Wreck Pond on the border of Spring Lake and Sea Girt. Wreck Pond is a tidal pond located on the coast of the Atlantic Ocean. The watershed also includes lands in the Borough of Spring Lake Heights and Wall Township. The major tributaries are Hannabrand Brook, Wreck Pond Brook, Hurley’s Pond Brook, and Black Creek. Numerous other ponds are also found within the watershed.

3.2 Potential Non-Federal partners for the feasibility phase of the study are:

3.2.1 New Jersey Department of Environmental Protection (NJDEP).

3.2.2 The County of Monmouth, New Jersey.

3.2.3 The Wreck Pond Regional Stormwater Management Committee (RSWMP Committee) has discussed the possibility of establishing an agency representing the four municipalities of Spring Lake, Spring Lake Heights, Sea Girt, and Wall Township, all located in Monmouth County, NJ. This agency could potentially serve as a local partner.

3.3 The study area lies within the jurisdiction of the Fourth Congressional District, represented by Chris Smith (R-NJ-04).

3.4 The study area lies within the jurisdiction of the following Senators:

3.4.1 Senator Robert Menendez (D-NJ)

3.4.2 Senator Frank Lautenberg (D-NJ)

#### 4.0 PRIOR REPORTS AND EXISTING PROJECTS

4.1 The Wreck Pond Brook Watershed Regional Stormwater Management Plan Committee is comprised of municipal representatives from the Township of Wall, the Borough of Spring Lake Heights, the Borough of Spring Lake, and the Borough of Sea Girt, as well as representatives from Monmouth County Planning Board, Monmouth County GIS, Monmouth County Engineering, Monmouth County Health Department, NJ Department of Environmental Protection (Division of Watershed Management; Marine Water Monitoring), NJ Department of Agriculture, Monmouth University Urban Coast Institute, Rutgers University Cooperative Extension, Freehold Soil Conservation District, U.S. Fish and Wildlife Service, community residents and other interested parties. This committee has already been meeting for several years in the interest of developing a watershed-based plan and solutions for the water resource problems experienced throughout the watershed. In developing the Watershed Management Plan, the Committee has collected much of the data required for tasks that would be part of a feasibility study.

4.2 The following reports were reviewed as a part of this study:

4.2.1 Wreck Pond Brook Watershed Regional Stormwater Management Plan, September 2008. The Plan includes two parts, Book 1: Watershed Characterization and Book 2: Stormwater Management Plan. Book 1 provides a detailed description of existing conditions within the watershed, including the results of several monitoring efforts, field investigations, and modeling studies. Information on the watershed includes topographical surveys, geology and hydrogeology, and hydrological information. Information from FEMA on historical flooding and flood zones is also provided. The ecology of the area is also presented, as well as critical habitat and land use data. GIS data from both state and county offices provided much of the data for the study. Other watershed assessment methods included measurement of rainfall at a weather station installed in Wall Township by Monmouth County and the South Jersey

Resource Conservation and Development Council, Inc.; and stream gauging and county water quality stations. Water quality measurements and a nutrient concentration study were performed, and samples were taken once a week between November 2005 and November 2006 at eight county sampling points in the Watershed. Stream assessments were performed by the Freehold Soil Conservation District between March 2005 and May 2006. Rutgers Cooperative Extension characterized the agricultural and recreational lands in the watershed, and analyzed how they could potentially contribute to the contamination of Wreck Pond, with the outcomes of education, outreach, and recommendations for best management practices. A land use survey and farm tours were performed to determine potential agricultural causes of environmental impacts on the Wreck Pond Watershed. Book 2 provides the Stormwater Management Plan and includes analysis of the potential impacts of future development on the watershed and on stormwater flows.

4.2.2 New Jersey Department of Agriculture Hydrologic and Hydraulic Analysis of the Wreck Pond Brook Watershed, October 2008. The New Jersey Department of Agriculture (NJDA) used the River Analysis System (HEC-RAS) to model stream flow, and the Hydrologic Modeling System (HMS) model to examine watershed runoff. The HMS model divides the watershed into three sub-areas that were each modeled separately: Hannabrand Branch stem; Wreck Pond Brook mainstem, and the headwaters of Black Creek. Using a decision matrix, 4 storm events were selected for use in calibrating and verifying the 3 sub-models. The modeling concluded that although most of the watershed is in good condition, several problem areas were identified in which best management practices would be beneficial. Recommendations from the modeling phase were included in the Wreck Pond Brook Regional Stormwater Management Plan. These include: pond dredging and outlet modification; riparian zone flood control; installation of drainage systems along 18<sup>th</sup> Avenue in Wall Township; Restoration of Keller's Pond; and restoration at the Harris Gravel Pit. Many of the recommendations are already being considered, or in some cases implemented, by the stormwater committee.

4.2.3 Wreck Pond Environmental Study, Najarian Associates, March 2008. This study was performed under a grant from the US Environmental Protection Agency. The Borough of Spring Lake contracted for the study to investigate the current condition of Wreck Pond and develop recommendations to improve water quality conditions and reduce closings of local bathing beaches due to outflow from the Pond. The study included investigation of current water quality in the Pond, sediment quality, macrophytes, watershed contributions of bacteria, nutrients, and other constituents and factors to determine current Pond health. Six separate monitoring programs were implemented in Wreck Pond and its tributaries: Ambient Pond Water Quality, Ambient Tributary Water Quality, Wreck Pond and other Pond Sediment Quality, Macrophyte Sampling in Wreck Pond, Watershed Storm Event Sampling for Pollutant Budgets, and Stormwater Outfall Pipe Sample. The study also developed a watershed model using the EPA's Stormwater Management Model (SWMM) to investigate sources of pollutants into Wreck Pond, and advised implementations of several actions that will improve the

quality of stormwater flowing into Wreck Pond.

4.2.4 Wreck Pond Restoration Measures, New Jersey Department of Environmental Protection, May 2004. Governor James E. McGreevey directed the New Jersey Department of Environmental Protection (NJDEP) to reduce or to eliminate beach closures caused by Wreck Pond through restoration initiatives that improve the water quality of the pond. The report proposed a four-point plan to accomplish this objective, including: dredging of Wreck Pond and Black Creek; stormwater management measures; extension of the pond outfall pipe; wildlife management measures. Several elements of this plan were implemented, with work being completed in 2006.

4.2.5 The Future of Coastal Lakes in Monmouth County. Urban Coast Institute, Monmouth University. September 2009. This report examined the functional status of Monmouth County's unique coastal lake features. Many of the lakes are facing the same concerns as those seen in Wreck Pond: eutrophication, pathogen contamination, and aquatic weed overgrowth. The lakes are "no longer primarily recreational features, but instead have become the terminal sinks collecting pollutants from surrounding land uses within their urbanized watersheds via stormwater and runoff." This report recommends a number of alternatives to address the water quality issues in these impaired lakes, all of which should be considered for further study in the Wreck Pond watershed during the Feasibility Phase. Some of these alternatives are already in place or currently under construction, as an example, the manufactured stormwater treatment devices recommended in this report are being installed in strategic locations in the Wreck Pond watershed during the summer of 2010 by the partnership of NJDEP, Monmouth County, and the stormwater committee. Rain gardens are also being constructed and more are planned for the future through partnership with the Rutgers Co-operative Extension program.

4.2.6 Wreck Pond River Herring Field Monitoring and Assessment Final Report, AECOM/ENSR Corporation. ENSR was contracted by the NJDEP Bureau of Coastal Engineering as a condition of their permit to extend the outfall structure seaward in 2006. ENSR was contracted to monitor anadromous clupeid movement within Wreck Pond during spawning migration and to quantify herring usage of the extended outfall structure. A three-year assessment of blueback herring and alewife was initiated in 2006. Data from the first two studies (2006-2007) indicated a viable run of alewife but were inconclusive regarding the blueback herring. In the 2008 study, active sampling with a seine net was incorporated into the methodology, in addition to sampling preferred clupeid habitats, rather than passive sampling as had been used previously. Dependent on site accessibility and water depth, ENSR used one of two sizes of mesh bag seines to search for and confirm the presence of river herring. The sampling effort consisted of one to two seine hauls at each sampling location during each event. In 2008, even though active sampling was used, numbers of alewife decreased and blueback herring was completely absent. The report concluded that the outfall extension does not limit the passage of alewife. However, the low numbers of blueback herring throughout the study period indicate that either there was never a large spawning population that used Wreck Pond or that the movement of the species is hindered.

4.2.7 Old Mill Pond and Wreck Pond Conceptual Watershed Management Study, Watershed Management Advisory Committee, 1996. The Township of Wall received funding from the NJDEP Office of Environmental Services to produce a study that might help alleviate eutrophication problems of Old Mill Pond. The Wreck Pond watershed was included in the resource management plan in order to incorporate a systems management approach. The report recommended the installation of long-term land use/land cover control measures in order to meet the resource management goals presented in the report.

4.2.8 General Design Memorandum, Atlantic Coast of New Jersey, Sandy Hook to Barnegat Inlet, Beach Erosion Control Project, Section II – Asbury Park to Manasquan, US Army Corps of Engineers, 1994. The project was authorized by the River and Harbor Act of 1958, in accordance with reports printed in House Document No. 332, 85<sup>th</sup> Congress, 2<sup>nd</sup> Session. The Chief's Report recommended Federal participation in restoration and protection of the shores of New Jersey from Sea Bright to Seaside Park. Multiple coastal storm damage reduction projects have been studied and constructed under this authority.

## 5.0 PLAN FORMULATION

5.1 During a study, six planning steps that are set forth in the Water Resource Council's Principles and Guidelines are repeated to focus the planning effort and eventually to select and recommend a plan for authorization. The six planning steps are: 1) specify problems and opportunities; 2) inventory and forecast conditions; 3) formulate alternative plans; 4) evaluate effects of alternative plans; 5) compare alternative plans; and 6) select recommended plan.

The iterations of the planning steps typically differ in the emphasis that is placed on each of the steps. In the early iterations, those conducted during the reconnaissance phase, the step of specifying problems and opportunities is emphasized. That is not to say, however, that the other steps are ignored since the initial screening of preliminary plans that results from the other steps is very important to the scoping of the follow-on feasibility phase studies. The sub-paragraphs that follow present the results of the initial iterations of the planning steps that were conducted during the reconnaissance phase. This information will be refined in future iterations of the planning steps that will be accomplished during the feasibility phase.

### 5.1.1 Watershed Planning:

5.1.1.1 The result of a watershed management feasibility study may lead to a recommendation for a watershed program, rather than a site-specific project. Under a watershed management approach, as is recommended for the Wreck Pond Watershed, the Corps follows watershed planning methods which differ from the traditional feasibility study. The result of this watershed management feasibility

study may lead to a recommendation for a watershed program, rather than a site-specific project(s).

5.1.1.2 During a watershed feasibility study, the six-step planning process is modified from the traditional feasibility study approach. Though the steps remain the same, the term “alternatives” should be substituted for “sites” or “sub-basins.” During a comprehensive watershed study, the Corps may approach the feasibility of flood risk management, ecosystem restoration, and navigational improvement opportunities by assessing the needs of the overall watershed by sub-basins. Breaking watersheds into sub-basins allows for more manageable assessment areas and may be more appropriate as sub-basins often experience similar problems and opportunities due to similar physical characteristics. Each basin is unique and will require a basin-specific approach that will be scoped out with the sponsor during the development of the Project Management Plan.

5.1.1.3 Site-specific alternatives throughout the entire watershed are usually not evaluated throughout the basin unless there is a specific need to request or analyze certain site-specific alternatives.

5.1.1.4 Details of how the watershed would be broken out for the purpose of the feasibility study/studies will be worked out with non-federal sponsor(s) and stakeholders during the development of the Project Management Plan. Much of the necessary hydrologic analysis has already been performed by the RSWMP Committee.

## 5.2 National Objectives

5.2.1 The national or Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the nation’s environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Contributions to National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.

5.2.2 The Corps has added a second national objective for Ecosystem Restoration (NER) in response to legislation and administration policy. This objective is to contribute to the nation’s ecosystems through ecosystem restoration, with contributions measured by changes in the amounts and values of habitat.

## 5.3 Public Concerns

5.3.1 A number of public concerns have been identified during the course of the reconnaissance study. Initial concerns were expressed in the study authorization. Additional input was received through coordination with the Wreck Pond Brook Watershed Regional Stormwater Management Plan Committee, the members of which



meet monthly at the Wall Township Municipal Building. The public concerns that are related to the establishment of planning objectives and planning constraints are:

- Economic impacts to tourism in the area as a result of numerous beach closings in Spring Lake and Sea Girt due to discharge from Wreck Pond.
- Impacts to public health due to discharge from Wreck Pond and upstream sources.
- Effectiveness of existing outfall structure.
- Water quality throughout the watershed:
  - Sediment loading in Wreck Pond and other ponds within the watershed
  - Bacteria, nitrate, and phosphorus being discharged into Wreck Pond
  - Algal blooms in Wreck Pond and other watershed ponds
- Flooding, including severe flood events such as in Fall 2005 and Spring 2007, has caused damage to homes, cars, and roads in Spring Lake and Spring Lake Heights.
  - Erosion of wetlands within the watershed due to flooding.
- Loss of habitat for birds, fish, and shellfish.
  - Resultant loss of recreational opportunities on Wreck Pond.
  - Fish passage impeded by outfall and series of dams, culverts and drops structures.
- Erosion of streambanks and degradation of the riparian buffer zone through the watershed.

5.4 Problems and Opportunities: The evaluation of public concerns often reflects a range of needs, which are perceived by the public. This section describes these needs in the context of problems and opportunities that can be addressed through water and related land resource management. For each problem and opportunity, the existing conditions and the expected future conditions are described, as follows:

#### **5.4.1 Problem: Flooding in Spring Lake and Spring Lake Heights.**

Recent severe flooding in the Wreck Pond Brook watershed has caused damage to homes, businesses, infrastructure, and natural features including streambanks, channels, and associated habitat. Severe storms have caused flood conditions along the Wreck Pond most recently in Fall 2005 and Spring 2007.

*Opportunity: Reduce flood damages in the watershed.*

#### **5.4.2 Problem: Beach closings in Spring Lake and Sea Girt, and negative economic impacts to tourism as a result of closings.**

Tourism-related to ocean beaches and fishing is severely affected when the quality of the water released from the Wreck Pond outfall structure is poor, particularly when it is characterized by elevated levels of suspended sediments, bacteria and other chemical compounds that are harmful to both human and environmental health. This is not only a public health concern, since closed beaches negatively affect tourism that contributes to national and regional economic development.

*Opportunity: Maintaining healthy water conditions to support the economic engine of coastal tourism and environmental quality in the watershed and the Atlantic Ocean.*

#### **5.4.3 Problem: Erosion and destabilization of streambanks throughout the Wreck Pond Watershed.**

Throughout the watershed, high stream velocities during flood conditions has caused the destabilization of streambanks in the watershed, affecting public and private property and infrastructure, and also contributing greater sediment volumes to the watershed system.

*Opportunity: Stabilize banks to prevent erosion and sediment loading throughout the Wreck Pond watershed.*

#### **5.4.4 Problem: Sediment loading and deposition at Wreck Pond and other water bodies in the watershed.**

Poor water quality and streambank erosion throughout the watershed has contributed excessive amounts of sediment to the system which due to the geomorphology tends to settled out as it flows into Wreck Pond and is likely constrained from flushing by the outfall structure. As a result, Wreck Pond is silting in and experience further environmental quality issues due to it shallow condition, including eutrophic waters and loss of habitat for fish, birds, and invertebrates.

*Opportunity: Balance the sediment flow regime throughout the Wreck Pond Basin to provide stabilized, healthy ponds.*

### 5.5 Planning Objectives

5.5.1 The national objectives of National Economic Development and National Ecosystem Restoration are general statements and not specific enough for direct use in plan formulation. The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. These planning objectives reflect the problems and opportunities and represent desired positive changes in the without project conditions. The planning objectives are specified as follows:

- To identify one or more watershed-based solutions within the watershed by taking a comprehensive approach to ecosystem restoration and flood risk reduction.
- To examine the entire watershed, including the outfall and stormwater system, and identify improvements in order to reduce the number of beach closures and the resultant economic impacts to tourism.
  - To reduce beach closures due to water quality conditions that may be as a result of water flowing from the Wreck Pond outfall structure.

- To restore a natural tidal exchange between Atlantic Ocean, Wreck Pond, Black Creek, and other appropriate areas of the watershed while balancing the need for flood protection, including analyzing the effectiveness of the outfall structure.
- To identify BMP's within the watershed that address both point and non-point source loading of pathogens, nutrients, etc., carried with the sediment to Wreck Pond and generally improve water quality of the Pond and watershed.
- To maintain or improve the ecological health of Wreck Pond, Black Creek, Hannabrand Brook, Spring Lake and the overall watershed, including the identification of habitat improvements and fish passage.
- To reduce risk of flood damages to homes, private property, businesses, and infrastructure throughout the watershed, including Spring Lake, Spring Lake Heights, Sea Girt, and Wall Township.
- To reduce the threat of loss of life from dangerous flood conditions;
- To mitigate financial losses incurred due to flooding and erosion;
- To maintain or improve the health of the watershed (environmental restoration).
- To improve land use within the floodplain appropriate for maintaining or improving aquatic and riparian habitat throughout the basin.
- To assess existing data from all sources to avoid the duplication of efforts and to analyze differences in scientific results.

5.6 Measures to Address Identified Planning Objectives. A management measure is a feature or activity at a site, which address one or more of the planning objectives. A wide variety of measures were considered, some of which were found to be infeasible due to technical, economic, or environmental constraints. Each measure was assessed and a determination made regarding whether it should be retained in the formulation of alternative plans. The descriptions and results of the evaluations of the measures considered in this study are presented below:

5.6.1 *No Action*. USACE is required to consider the option of "No Action" as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). No Action assumes that no project would be implemented by the Federal Government or by local interests to achieve the planning objectives. No Action, which is synonymous with the Without Project Condition, forms the basis from which all other alternative plans are measured.

5.6.2 *Non-Structural*. USACE evaluated a suite of non-structural measures as alternatives to structural measures, both for flood damage reduction, and for environmental restoration. In the preliminary analysis, no viable non-structural measures could be identified that would meet the planning objectives. Non-structural measures which are currently in-place, such as floodplain zoning restrictions, are highly valuable, and are recommended for continued implementation.

5.6.2.1 *Reconnection of Stream and Floodplain*. Where streambanks are being restored, opportunities may exist to build a floodplain bank in conjunction with the improved streambank. Creation of new floodplains and reconnection to those areas will improve flood water retention, while simultaneously creating or restoring

floodplain habitat. Reconnection of these two systems will reduce habitat fragmentation. Vegetation of these floodplain benches with native plants will add to the habitat value of that system.

5.6.2.2 Debris Removal – Clearing and Snagging. Debris, including large dead trees, smaller live vegetation and boulders, are currently constricting flow and trapping sediments. In some cases, trapped sediment is now growing vegetation and is creating permanent islands. Removing large debris from creek channels will improve the flow of water through the creek. A regular debris removal program, including the removal of the source of debris, will allow the stream to flow more normally and begin to flush sediment recreating a more natural channel. Existing habitat features will be examined with consideration to any removal of natural debris.

Strategic selection of sites for clearing and snagging of impending and existing debris throughout the watershed will have a cumulative impact on flow, velocity and sediment transport in the system. Source removal for impending debris should be considered for removal.

5.6.2.3 Removal of Constrictions. Removal of physical constrictions to flow throughout the watershed will prevent high waters from becoming “backed up” in certain reaches. These constrictions may include public infrastructure. For natural constrictions, existing habitat features will be examined with consideration for removal and for man-made constrictions, the value of the infrastructure will be considered before plans are made.

5.6.3 Structural. USACE will evaluate a number of structural measures to achieve planning objectives, both in the reconnaissance phase and feasibility study. These measures will include structural measures to reduce flood damages and provide ecosystem/river restoration.

5.6.3.1 Modifications to Outfall Structure. Evaluation of the effectiveness of the outfall structure is critical to restoring the health of the pond and quality of water discharged to the Atlantic Ocean. Modifications will be considered with the goal of balancing the restoration of a more natural estuarine condition and protecting property from the risk of flood damages.

5.6.3.2 In-Stream River Restoration Methods. River restoration techniques including redirective and resistive methods and natural channel design will improve the overall health of the river system. Redirective methods such as Bendway Weirs and rock revetments will focus the stream flow and flush out depositional areas within the channel over time allowing for greater channel capacity when needed. Resistive methods such as longitudinal peak stone toe protection (LPSTP) will achieve streambank stabilization and direct the highest velocity flows away from vulnerable banks. Native vegetation can be incorporated in these streambank projects. Using these two kinds of restoration collaboratively and strategically

throughout the watershed will improve the overall health of the ecosystem by allowing for a channel of appropriate depth, velocities and temperature.

Focusing the flow of water, aided by channel improvements within the creek bed, can be designed to flush other depositional areas of the creek that have been filled with sediment. This also generally provides for better habitat and fish passage with more consistent depth and temperature. Implementing these methods would create a healthy channel with appropriate depth and temperature conditions for habitat. The entire lower watershed has reaches that could be improved using stream restoration methods.

**5.6.3.3 Streambank Restoration and Stabilization.** Streambank restoration and stabilization methods will prevent further erosion of banks protecting private and public property and infrastructure located adjacent to the creek. In-stream methods to stabilize the creek and its banks, such as longitudinal peak stone toe protection, have been shown to be effective to restore a more natural stream bank, recreate riparian habitat and reconnect the stream to a floodplain. Environmentally sensitive streambank stabilization methods are preferred in accordance with the USACE ecosystem restoration mission. The entire lower watershed has reaches that could be improved using these restoration methods.

**5.6.3.4 Creation of Wetlands.** Where appropriate, there may be opportunities for the creation of wetland areas that could serve a dual role of aquatic habitat and natural flood storage areas.

**5.6.3.5 Levee or Floodwall Construction.** Construction of a structural feature such as a levee or floodwall on the reaches of the watershed that see the worst flood damages will serve to prevent waters from reaching people, businesses and roads. Levees and floodwalls will be difficult to justify in some areas in the basin because of low population density (i.e., lack of benefits).

**5.6.3.6 Dredging.** Dredging may solve some of the problems identified in Wreck Pond but it would be a short-term method of addressing water quality problems without addressing upstream sources. The causes and sources of sediment and offending compounds within the sediment would still need to be addressed through other alternatives for long-term results.

Dredging of Wreck Pond will be evaluated during Feasibility. Some small-scale or spot dredging may be recommended in sections of the Pond to optimize the hydraulic flow regime (“flushing”) throughout the Pond system. This does not prevent any appropriate local agency from initiating their own dredging action.

## 5.7 Watershed Approach – Systems Analysis

5.7.1 In a watershed feasibility study, a watershed program featuring multiple projects may be recommended to contribute to the overall improvement of the

watershed system, including environmental river restoration and flood damage reduction. Each of these projects can be evaluated as a part of an overall comprehensive approach to the restoration of the watershed. An individual project may not be able to significantly improve the watershed health or reduce flood damages by itself; however, a watershed feasibility study recommends certain types of projects that together will address the problems identified and will maintain or improve the overall health of the watershed.

## 5.7.2 Watershed Management Plan

5.7.2.1 A Watershed Management Plan (an appendix to the Watershed Feasibility Study) will provide a planning tool for the region evaluating all inputs to the watershed including minor tributaries and culverts. This document will include recommendations for best management practices (BMP's), specific to each sub-basin in the watershed that can be implemented by local and Federal agencies. The RSWMP Committee has already prepared a watershed management plan which will be the basis for the Feasibility Phase Watershed Management Plan..

5.8 Planning Constraints. Unlike planning objectives that represent desired positive changes, planning constraints represent objects or activities within the study area that could impede the progress of the watershed study. The planning constraints identified in this study are as follows:

5.8.1 Many of the problem areas in the basin are on private property.

5.8.2 Native American artifacts and other cultural resources are known to be located in the area. Further investigation will be required during the feasibility phase.

5.9 Preliminary Plans. Preliminary plans are comprised of one or more management measures that survived the initial screening. The descriptions and results of the evaluations of the preliminary plans that were considered in this study are presented below:

### 5.9.1 Preliminary Plans Eliminated from Further Consideration

5.9.1.1 Plans for large scale dredging in this watershed have been eliminated because it is anticipated that the costs for dredging the entire pond bottom would exceed the benefits. Plans for some spot dredging could be evaluated further in feasibility.

### 5.10 Preliminary Plans for Further Consideration (previously described)

5.10.1 No Action

5.10.2 Modifications to Outfall Structure

5.10.3 In-Stream River Restoration Methods

5.10.4 Creation of Wetlands

5.10.5 Reconnection of Stream and Floodplain

- 5.10.6 Debris Removal – Clearing and Snagging
- 5.10.7 Removal of Constrictions
- 5.10.8 Levee or Floodwall Construction

## 5.11 Conclusions from the Preliminary Screening

5.11.1 The preliminary screening indicates that the types of projects for further consideration have the greatest potential for implementation in a program following a watershed feasibility report for the study area. The overall watershed improvements for river restoration will include improved ecosystem function, improved habitat, stable streambanks, stable channels, more consistent flow, temperature and depth. The potential ecosystem benefits (in habitat units) from a system of projects as recommended by the watershed feasibility study would likely justify the costs of those projects. A decrease in damages due to flooding would be an ancillary benefit of the recommended river restoration projects. No significant environmental impacts are anticipated that would require mitigation. Conceptual designs and preliminary costs for the types of projects will be determined in the watershed feasibility report. Based on this information, the recommended course of action to address the planning objectives appears to be a watershed management feasibility study that will lead to a watershed program.

## 6.0 FEDERAL INTEREST

6.1 Since environmental restoration and watershed improvements are outputs with a high budget priority and that the other purposes are integral to any comprehensive plans that would be evaluated in the feasibility phase, there is a strong Federal interest in developing a comprehensive watershed management plan in the feasibility phase. There is also a Federal interest in other related outputs of the alternatives including flood damage reduction that could be developed within existing policy. Based on the preliminary screening, there appears to be potential projects that, evaluated and implemented as a system, would be consistent with Army policies, costs, benefits, and environmental laws.

## 7.0 PRELIMINARY FINANCIAL ANALYSIS

7.1 The non-Federal sponsor for the feasibility stage of the study is New Jersey (NJDEP) Department of Environmental Protection. As the local sponsor, NJDEP will be required to provide 50 percent of the cost of the feasibility phase. The local sponsor is also aware of the cost sharing requirements for potential project implementation. A letter of intent from the local sponsor stating a willingness to pursue the feasibility study and to share in its cost, and an understanding of the cost sharing that is required for project construction is included as Appendix E.

## 8.0 ASSUMPTIONS, EXCEPTIONS AND QUALITY OBJECTIVES

8.1 Feasibility Phase Assumptions: The following critical assumptions will provide a basis for the development of a comprehensive watershed management plan:

8.1.1 Without Project Conditions Assumptions: It can be assumed that without federal involvement in comprehensive watershed improvements, streambank degradation will continue throughout the watershed. As a result, the risk of flood damages will continue to be an issue for property owners in the watershed. Wreck Pond itself will continue to silt in as more sediment is loaded into the system and its environmental quality will continue to decrease. More habitat for birds, fish, and invertebrates will be lost without proper flow and depth throughout the pond. Suspended solids loading of water passing through the outfall structure to the Atlantic Ocean will continue to be high and cause beach closings, impact regional economics.

8.2 Policy Exceptions and Streamlining Initiatives: The study will be conducted in accordance with the Principles and Guidelines and the Corps of Engineers regulations. Exceptions to established guidance have been identified that will streamline the study process that will not adversely impact the quality of the comprehensive watershed management plan. Approval of the Section 905(b) Analysis by HQUSACE results in the approval of the following policy exceptions and streamlining initiatives:

8.2.1 This study would be conducted as a watershed management feasibility study including preparation of a watershed management plan as an appendix to the report following regulations including EC 1105-2-409, EC 1105-2-410, ER 1165-2-1 and Policy Guidance Letter #61.

8.2.2 The study of the Wreck Pond Watershed would focus on the area of the pond itself, the outfall structure connecting the pond to the Atlantic Ocean, and all upstream inputs. More focus will be on the urbanized sections of the watershed and less on healthy far upstream reaches. Exact feasibility study limits will be determined with the sponsor during the PMP development.



9.0 FEASIBILITY PHASE MILESTONES.

Milestone	Description	Duration (mo)	Cumulative (mo)
Milestone 1	Initiate Study	0	0
Milestone 2	Public Workshop/Scoping	2	2
Milestone 3	Formulation Conference	11	13
Milestone 4	Alternative Review Conf.	9	22
Milestone 4A	Alternative Formulation Brief.	5	27
Milestone 5	Draft Feasibility Report	3	30
Milestone 6	Public Review	1	31
Milestone 7	Final Public Meeting	1	32
Milestone 8	Final Report to Division	3	35
Milestone 9	Division Commander's Cert.	1	36
-	Chief's Report	4	40
-	Project Authorization	4	44

- P5           Execute Feasibility Cost Sharing Agreement (FCSA)
  
- W1           Receive Funds/Begin Feasibility Study
  
- W2           Public Workshop (formally P-6): Establish protocol for public involvement and agency coordination; present draft Public Involvement Plan; other public workshops to be scheduled if needed.
  
- W3           Formulation Conference: Establish current (baseline) and likely future without project conditions for, a comprehensive look at the basin both existing (baseline) and future without project, with a detailed focus on H&H and ENV; identify, describe and discuss preliminary watershed restoration sites or sub-basins; establish decision framework for prioritizing sites/sub-basins.
  
- W4/W4A      Formulation Review Briefing/Conference (formally P-7/P-8): Spin-off studies (site specific projects) will be identified for Federal and local implementation, if warranted. Conceptual designs and preliminary costs are prepared for sites/sub-basins; and prioritized. Draft Watershed Management Plan (WMP) completed, including draft WRDA language authorizing a Watershed Program.
  
- W5           Draft Feasibility Report, Draft Environmental Document & Final WMP. Vehicle for spin-offs selected (CAP, GI, etc...). A Watershed Study Review Conference with NAD may be scheduled (optional).
  
- W6           Field Level Coordination (Public Review).

- W7 Final Public Meeting.
- W8 Final Report Submitted (formally P-9): Submit Final Feasibility Report, WMP and Environmental Document. District Engineer's Certification.
- W9 Division Commander's Certification (formally P-10).

## 10.0 VIEWS OF OTHER RESOURCE AGENCIES

10.1 Because of the funding and time constraints of the reconnaissance phase, only limited and informal coordination has been conducted with other resource agencies. Views that have been expressed are as follows:

10.1.1 NJDEP has participated in all stakeholder meetings and discussions and is supportive of the recommendations of the Reconnaissance Report.

10.1.2 Monmouth County has participated in all stakeholder meetings and discussions and is supportive of the recommendations of the Reconnaissance Report.

## 11.0 POTENTIAL ISSUES AFFECTING INITIATION OF FEASIBILITY PHASE

11.1 Continuation of this study into the cost-shared feasibility phase is contingent upon an executed FCSA. Failure to achieve an executed FCSA within 18 months of the approval date of the Section 905(b) Analysis may result in termination of the study. There are no apparent issues at this time that impact on the implementation of the feasibility phase.

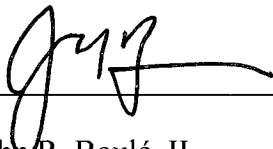
11.2 The schedule for signing the Feasibility Cost Sharing Agreement (FCSA) is Fiscal Year 2011. Based on the schedule of milestones in Paragraph 9, completion of the comprehensive watershed management plan would be in Fiscal Year 2014 with a potential Congressional Authorization in a WRDA 2014.

## 12.0 STUDY AREA MAP

12.1 A map of the study area is provided as Appendix A.

13.0 RECOMMENDATIONS

13.1 I recommend that the Wreck Pond Watershed Feasibility Study proceed into the feasibility phase to develop a comprehensive watershed management plan for the investigation of erosion and sediment reduction, streambank stabilization, ecosystem restoration, flood damage reduction, and related issues in the Wreck Pond Watershed study area. *New Jersey Department of Environmental Protection* has expressed interest in cost sharing the feasibility study and initiating the Feasibility Cost Sharing Agreement upon completion of the Project Management Plan.



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Colonel John R. Boulé, II  
District Engineer  
Commander, New York District  
U.S. Army Corps of Engineers

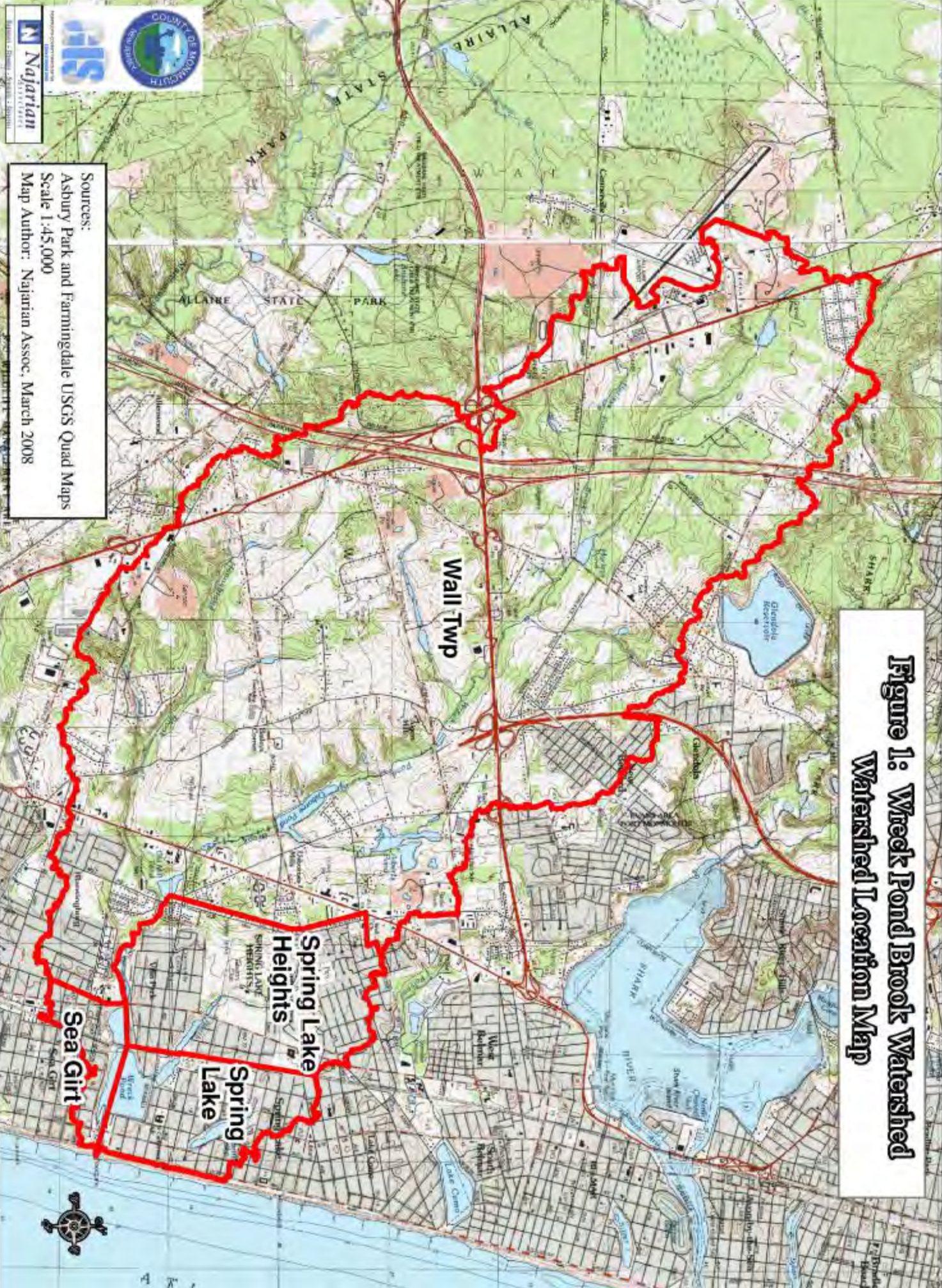
30 Aug 2010

(DATE)

APPENDIX A  
WRECK POND WATERSHED MAP



**Figure 1: Wreck Pond Brook Watershed  
Watershed Location Map**



Sources:  
Asbury Park and Farmingdale USGS Quad Maps  
Scale 1:45,000  
Map Author: Najarian Assoc. March 2008

M Najarian  
ASSOCIATES

AHS

COUNTY OF MONMOUTH  
NJ



APPENDIX B  
STUDY RESOLUTION



**U.S. House of Representatives**  
**Committee on Transportation and Infrastructure**  
**Washington, DC 20515**

**Don Young**  
**Chairman**

Lloyd A. Jones, Chief of Staff  
Elizabeth Meggison, Chief Counsel

**James L. Oberstar**  
**Ranking Democratic Member**

David Heymsfeld, Democratic Chief of Staff

**COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE**  
**U.S. HOUSE OF REPRESENTATIVES**  
**WASHINGTON, D.C.**

**RESOLUTION**

**Docket 2737**

**Wreck Pond, Monmouth County, New Jersey**

Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army is directed to review the report of the Chief of Engineers on Sandy Hook to Barnegat Inlet, New Jersey, published as House Document 332, 85<sup>th</sup> Congress, 2<sup>nd</sup> Session, and other pertinent reports to determine whether modifications of the recommendations contained therein are advisable at the present time in the interest of navigation improvements, flood damage reduction, environmental restoration and protection, and related purposes, with special emphasis on Wreck Pond, Monmouth County, New Jersey, including Black Creek and associated waters.

Adopted: October 26, 2005

ATTEST:   
DON YOUNG  
CHAIRMAN

APPENDIX C  
PUBLIC NOTICE





**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:

CENAN-PL-F

January 2010

WRECK POND WATERSHED  
MONMOUTH COUNTY, NJ  
RECONNAISSANCE STUDY

This notice announces the initiation of a Federally-funded reconnaissance level study to determine if Federal interest in watershed-based flood damage reduction, ecosystem restoration, and other allied water resource problems and opportunities are advisable for the Wreck Pond Watershed, Monmouth County, New Jersey. The New York District Corps of Engineers is conducting the study under the authority of a resolution adopted on October 26, 2005 by the Committee of Transportation and Infrastructure of the United States House of Representatives.

In light of flood damage from storms within the Wreck Pond watershed, as well as recurring water quality problems including bathing beach closings and significant loss of aquatic and wetland habitat, the Corps of Engineers will examine the entire watershed. The Wreck Pond Watershed includes the Boroughs of Sea Girt, Spring Lake, Spring Lake Heights, and Wall Township in the County of Monmouth.

A previous study within the study area of the Wreck Pond watershed, "Chief's Report on Sandy Hook to Barnegat Inlet," was submitted to Congress in March 1956 and authorized by Rivers and Harbors Act of 1958, as amended by subsequent Water Resource Development Acts. This report recommended construction of beach restoration, related coastal storm damage reduction features and subsequent renourishment from Sandy Hook to Barnegat Inlet, New Jersey. The Sandy Hook to Barnegat Inlet Project covers 21 miles of the New Jersey shoreline and is the largest beach nourishment project ever undertaken by the Corps of Engineers, and is the largest beachfill project, in terms of volume, in the world. Continued renourishment in the project area is ongoing subject to funding.

This reconnaissance study will examine the current field conditions and study criteria to determine whether any watershed-based opportunities for flood damage reduction, ecosystem restoration, navigation or other allied purposes exist for continued Federal participation during detailed evaluation and construction. As part of this study, the water resources problem(s) in the area will be identified as will potential solutions to the problem(s). Determination of Federal interest in the project will be based on the preliminary screening of alternatives as well as the extent of support by local officials and interested parties. If continued study and project development by the Federal

government is justified, this study will be followed by a more detailed cost-shared feasibility study.

We request any pertinent information about the project area from the Federal, State and local agencies, as well as the private sector. In particular, we request information on the type and amount of damages that have occurred from events in recent years. The information provided will be used to the greatest extent possible to define the nature and severity of the water resource problems in the watershed and to determine potential Federal interest in providing flood damage reduction and other allied measures to address the issues within the watershed. We also welcome any assistance and suggestions pertaining to the conduct of this study. All comments should be directed to Mr. Jason Shea, Watersheds and Navigation Section Chief, [jason.a.shea@usace.army.mil](mailto:jason.a.shea@usace.army.mil), 917 790 8727; or Ms. Tricia Aspinwall, Project Manager, [tricia.aspinwall@usace.army.mil](mailto:tricia.aspinwall@usace.army.mil), 917 790 8734.

John R. Boulé  
Colonel, U.S. Army  
District Commander

APPENDIX D  
TRIP REPORTS FROM SITE VISITS

## Trip Report:

**Wreck Pond Brook Watershed**

Date: 21 April 2010  
Place: Wreck Pond Watershed, Monmouth County, New Jersey  
Attendees: Laura Singer, CENAN-PL-F  
Mark Burlas, CENAN-PL-E  
Jeff Cusano, CENAN-PL-E  
Gail Woolley, P.E., CENAN-EN-H  
Tricia Aspinwall, CENAN-PL-F  
Steve Jacobus, New Jersey Department of Environmental Protection

Trip Summary:

1. Trip Purpose: To view sites throughout the Wreck Pond Watershed in the Boroughs of Spring Lake, Spring Lake Heights, Sea Girt, and the Township of Wall, NJ. Steve Jacobus, of the NJDEP and the Wreck Pond Watershed Regional Stormwater Management Plan Committee (RSWMP Committee), hosted a site visit for Corps staff.
2. Prior Studies/Projects:
  - a. Wreck Pond Brook Regional Stormwater Management Plan (Wreck Pond RSWMP).

The Wreck Pond Watershed was identified as a watershed of concern by the NJDEP. Together with the municipalities, and Monmouth County, initial goals were identified for the development of the RSWMP, including: reduction of beach closings, improvement of the quality of Wreck Pond and other waters within the watershed, and reduction of flooding. In 2004, NJDEP developed a 4-point plan for the restoration of Wreck Pond, and implemented several measures. These included extending the outfall pipe into the Atlantic Ocean, dredging a portion of the Pond, stormwater management, and wildlife management measures.

NJDEP also financed the preparation of a Regional Stormwater Management Plan for the watershed by the County of Monmouth and the New Jersey Department of Agriculture. The Monmouth County Planning Board was selected to serve as the lead planning agency. The goal of the RSWMP is to improve the quality of waters within the watershed, to reduce pollutant loading, reduce flooding, and to reduce beach closings from the Wreck Pond outfall. The planning process and development of the plan were primarily conducted by the Wreck Pond Watershed

Technical Advisory Committee, with input from the RSWMP Committee. The Committee has been meeting regularly for several years. It and the TAC include representatives from Monmouth County GIS, Monmouth County Engineering, NJDEP Division of Watershed Management, NJ Department of Agriculture, Rutgers Cooperative Extension, Freehold Soil Conservation District, Monmouth University, Najarian Associates, US Fish and Wildlife Service, Monmouth County Health Department, NJDEP Marine Water Monitoring, and the local municipalities.

The Plan includes overall watershed characterization, stream assessments, agricultural land analysis, water quality data collection and analysis, GIS, watershed land use review, build-out land use analysis, hydrologic and hydraulic modeling, watershed water quality modeling, and a bacteria source tracking study. The results of these studies have been synthesized to focus areas of concern and to develop management measures and restoration options within the watershed.

3. Sites Visited:

- a. Brown Avenue Beach, Wreck Pond Outfall: The outfall pipe accommodates tidal flow between Wreck Pond and the Atlantic Ocean. The pipe was extended 300 feet further from shore as part of NJDEP's 4-point restoration plan. Construction was completed in 2006.
- b. Wreck Pond: The Wreck Pond Watershed includes several major streams that drain to Wreck Pond, which has tidal exchange with the Atlantic Ocean through the outfall pipe. There is noticeable tidal fluctuation in the eastern portion of the Pond. Residents have reported a noticeable decline in the degree of tidal fluctuation. As tidal fluctuation has declined, Wreck Pond has become very shallow with sedimentation, leading to algal blooms, and mucky bottoms. Algal blooms, nutrient loads, and sedimentation are noted issues throughout the entire watershed. Portions of the Wreck Pond shoreline are bulkheaded, portions contain riprap, and portions are vegetated. Some areas of the Pond contain wooden bulkheads that appear to be dilapidated.
- c. Black Creek: Black Creek, also known as the North Branch of Wreck Pond Brook, drains the northern part of the watershed. The lower portion of the Creek is impounded and controlled by the weir structure at Ocean and Shore Roads in Spring Lake.
- d. Old Mill Pond: Wreck Pond Brook flows into Old Mill Pond. The confluence of Hannabrand and Wreck Pond Brooks is just downstream of Old Mill Road.

- e. Burne site: The RSWMP recommended the development of a natural wetland, sediment trap, and water quality management basin on the Jimmy Burne property that would work in concert with restoration of the western part of Wreck Pond.
  - f. Former Gravel Pit: The site is located in the headwaters of Hannabrand Brook off Ridgewood Road in Wall Township. The site was formerly a gravel pit that is now owned by Wall Township and used for processing of landscaping material. The site is mostly cleared and stockpiles of processed material and mulch-dying processes are likely the source of nutrients, bacteria and sediment and contaminants flowing into Hannabrand Brook.
  - g. Spring Lake: Spring Lake is located north of Wreck Pond. It is separate from Wreck Pond, but connected to Wreck Pond via stormwater infrastructure piping. Streambank stabilization is required in some areas of the Lake.
4. Challenges and potential solutions discussed during the trip:
- a. The primary issue in the watershed is bacteria and water quality. High concentrations of bacteria exist in Wreck Pond and the discharge from the outfall pipe. Outfall from Wreck Pond after storm events frequently contributes to beach closures. The outfall from Wreck Pond has been the source of most of the swimming bans at the New Jersey Ocean beaches over the last several years.
  - b. Problems with sewer infrastructure may be contributing to stormwater contamination. The infrastructure is aging and potentially leaking into the groundwater.
  - c. Eutrophication of Wreck Pond & Black Creek: This process is facilitated by flow restrictions at their outlets, sedimentation occurs as a result.
  - d. Flooding, especially in the lower portions of the watershed. Streets and homes within Spring Lake and Spring Lake Heights were flooded during a significant flood event in October 2005. Flooding in the lower part of the watershed also affects water quality: due to the age of sewerage infrastructure there may be leaks that occur during flood events.
5. Next Steps:
- a. Continue attending RSWMP Committee meetings and complete draft 905(b) report in June 2010.

**Photos**

**Brown Avenue Beach, Wreck Pond Outfall**



Entrance to Brown Avenue Beach



Stormwater outfall, pond side



Stormwater outfall pipe, Atlantic Ocean side



Stormwater outfall pipe (with extension), Atlantic Ocean side



Wreck Pond





(Wreck Pond)



(Wreck Pond with view of weir & Black Creek)





(Sedimentation in Wreck Pond)







Old Mill Pond





Hannabrand Brook









Former Gravel Pit





Spring Lake



Streambank erosion in Spring Lake





All photos taken 21 April 2010

**MEMORANDUM FOR THE RECORD**

Subject: Site Visit Wreck Pond Brook Watershed 905b Study  
Monmouth County New Jersey

1. Reference subject as above.
2. A site visit was convened on 21 APR 2010 to discuss potential issues and opportunities, as well as reconnaissance of the watershed. Participants include:

Steve Jacobus; NJDEP, Wreck Pond Watershed Manager  
Trish Aspinwall; USACE, Study Manager  
Laura Singer; USACE, Economist  
Jeff Cusano; USACE, GIS and Database Manager  
Mark Burlas; USACE, Senior Wildlife Biologist

3. Background

- a. The Wreck Pond watershed was identified as a watershed of concern by the NJDEP. Outflow from Wreck Pond to the Ocean during storm events has been identified as the cause of swimming beach closings in Spring Lake and Sea Girt. Dredging was identified by NJDEP as a possible solution to the bacteria issues and other water quality concerns in the Pond. A Wreck Pond Brook Watershed Regional Stormwater Management Plan was prepared in 2008 to control future sedimentation prior to further analysis of the feasibility of dredging. Watershed characterization was conducted using existing studies and available data from both the NJDEP GIS data and the Monmouth County Office of GIS. Field studies were conducted including assessments of stream condition, analysis of water level and flow, and review of agricultural and recreational lands. These data were used to provide an overview of watershed conditions including hydrology, topography, soils, land use, and other features. The overall goal of this management plan is to improve the water quality of the ponds and streams within the watershed, to reduce watershed loadings of pollutants associated with current and future land uses, to reduce flooding, and to eliminate or greatly reduce bathing beach closings associated with the discharge from Wreck Pond to the Atlantic Ocean. (Wreck Pond Brook Watershed Regional Stormwater Management Plan, 2008)

4. Preliminary Issues identified at Site Visit

- a. Mr. Jacobs identified the primary issue within the watershed is linked to water quality. After heavy rains, high coliform counts occur along the intertidal zone inducing a public health concern. To protect the public health, temporary closures of sections of recreational beach are required until coliform counts return to acceptable level.
- b. In addition to temporary degradation of water quality associated with storm events, other issues encompass an abandon sand mining operation in the northwestern

section of the watershed and the need for streambank stabilization. Its suspected suspended sediment load is elevated after storms contributing to degraded water quality.

- c. Flooding along portions of Wreck Pond in the Community of Spring Lake also occurs. At this time, there is belief flooding may affect water quality as portions of the sewerage infrastructure are old and may be leaking.
5. Opportunities. The watershed potential opportunities identified during this visit and after review Wreck Pond Brook Watershed Regional Stormwater Management Plan are:
- a. Increase the restoration of ecosystem functionality of the Wreck Pond that can provide habitat conditions for native species.
  - b. Reduce stormwater/sediment runoff from adjacent lands (associated with agriculture lands)
  - c. Increased sedimentation from unstable streambanks within the watershed
  - d. Dredging of the Pond (sections)
  - e. Structural changes to the outlet structure.
  - f. Use of a Pump for flood control or improved circulation
  - g. Use of an aerator to improve circulation
6. PL-E Recommended Actions. At this time (and since a Watershed Regional Stormwater Management Plan has been prepared) from the Corps Ecosystem Restoration Mission, federal interest may be limited. However, PL-E, recommends the following:

**Coordination / Consultation Opportunities**

- a. USACE should continue to coordination with NJDEP and coordinate with EPA regarding Clean Water Act Section 319 funding – may want to be consistent in process and terminology to avoid duplicative efforts.
- b. Modified Engineering Solutions  
PL-E recommends that any construction opportunity identified in the Engineering MFR for this site recon
  - i. Incorporate native vegetated cover for bank stabilization.
  - ii. HTRW Studies/Reports - A Phase One Environmental Site Assessment should be conducted to identify all potentially impacted sites within the project area. This task involves the researching for existing reports on sites with environmental impacts and listing all that information into one document. This effort should be accomplished through literature/library searches, conducting field inspections to field check and confirm reports and by conducting interviews.
  - iii. NEPA Compliance and General Permit Coordination

7. Point of Contact for this memorandum is Mark Burlas and Peter Wepler.

**References**

Wreck Pond Brook Watershed Regional Stormwater Management Plan, 2008 -  
<http://www.co.monmouth.nj.us/PrintPage.aspx?Id=3209>

## MEMORANDUM FOR THE RECORD

SUBJECT: Historical and Cultural Summary for Wreck Pond 905b report

1. Below is the Historical and Cultural Summary for Wreck Pond 905b report
2. Insert into 905b Draft Report under : Planning Constraints 5.8 section

5.8.2 Historical and cultural resources are located within the boundary of the Wreck Pond watershed and will have to be taken into consideration for future studies and project planning. Further investigations and research during the feasibility study will have to be performed to properly determine and define the range of resources, both documented and undocumented, to ensure effective compliance with Section 106 of the National Preservation Act. The Wreck Pond Watershed, due to its landscape typology and interconnected system of diverse watercourses, is known for having inhabitation evidence ranging from pre-historic to historic periods. Native American sites and artifacts have been discovered and documented within the project boundary. Further consultation and collaboration with the NJ State Historic Preservation Office, NJDEP, local historical societies and possible tribal consultation will have to be performed in order to conclude the need for any future archaeological investigations. Below is a list of known sites within the Wreck Pond watershed that have potential eligibility or are already designated by the NJSHPO on the National Register of Historic Places.

Wall Township:

**2751 18<sup>th</sup> Avenue (ID#4013)**

2751 18<sup>th</sup> Avenue  
SHPO Opinion: 6/5/2002

**Allgor-Barklow Homestead (ID#2072)**

New Bedford Road  
NR: 6/21/1984 (NR Reference #:84002748)  
SR: 5/17/1984

**Garden State Parkway Historic District (ID#3874)**

Entire Garden State Parkway Right-of-Way  
SHPO Opinion: 10/12/2001  
Filed Location: Cape May County, Lower Township

**New Jersey Southern Railroad Historic District (ID#ID4836)**

Railroad Right-of-Way from Monmouth, Red Bank Borough to Ocean, Lakewood Borough  
SHPO Opinion: 6/30/2008  
Filed Location: Monmouth County, Red Bank Borough

**Old Mill (ID#2079)**

Old Mill Road and Pond Road  
SHPO Opinion: 7/3/1980

3. The point of contact Heather Morgan, at 917-790-8730  
Heather.M.Morgan@usace.army.mil

MEMORANDUM FOR: Record

SUBJECT: Potential Restoration Opportunities  
Site visit - Wreck Pond; Spring Lake, NJ  
21 April 2010

1. From an engineering perspective, there are at least a few preliminary measures that can be taken to help improve water quality and reduce flooding, and there are a few potential restoration opportunities within the Wreck Pond watershed for which feasible alternatives can be examined.
2. It is known that a high concentration of bacteria is present, both in the sediments of Wreck Pond and in the discharge from the outlet pipe of Wreck Pond. During the site visit, it became apparent that not all of the locations of infrastructure (sewers, stormwater pipes, etc.) are known by the local Dept. of Public Works (DPW) or the town engineer. In many cases, even if a pipe is known to exist, its function may not be. As a first step, an inventory of the existing infrastructure should be taken in order to gain a better understanding of the system's potential contaminant loading into, and discharging from, Wreck Pond.
3. It is also important to get a better understanding of how much of the nutrient loading comes from non-point sources, such as geese and lawn fertilizers. This will help us to determine how and where to focus our efforts. We may find, for example, that a large percentage of the contamination comes from sewer discharge, and that geese or stormwater runoff are not contributing to decreased water quality as much as we might have thought.
4. There was mention of creating vegetative buffers around the pond to try to intercept contaminants from stormwater runoff; however, ideally, runoff should enter vegetated buffers in sheet flow to maximize uptake of nutrients and settling-out of sediments. We have to consider whether we would have the space to create an effective vegetated buffer, although it is likely that any amount of buffer would provide some improvement to water quality. An undersized buffer, in time, would itself become overwhelmed by excess nutrients and sediment, and would be rendered ineffective if runoff causes channelization through the buffer.
5. As mentioned, dredging Wreck Pond may improve water quality and storage for flood waters, but it must be determined where most of the sediment is coming from so that measures can be taken to minimize future sedimentation in the pond.
6. More effective methods for flushing Wreck Pond should be examined.



7. A potential restoration site, in addition to the direct restoration of Wreck Pond, would be the abandoned sand-mining operation in the upper part of the watershed. It might be feasible to restore this site for passive recreation, as was discussed during the site visit. Furthermore, it might be feasible to restore this site using potentially dredged material from Wreck Pond if contaminant levels are within acceptable limits.
  
8. Watershed-wide opportunities to reduce flooding and improve water quality might also include the implementation of low impact development techniques (LID) such as rain barrels and cisterns, and rain gardens. If implemented in great number across the watershed, LID techniques can be very effective in reducing the amount of rainfall that is converted to stormwater runoff. A 2000 sq.ft. roof on a typical residential house will shed 1250 gallons of runoff during a 1" storm event; an entire neighborhood will result in a tremendous amount of runoff, which will normally be directed straight to the storm drain system and potentially cause flooding. Rainwater intercepted in rain barrels can be used to water residential gardens and lawns, and it can be collected in larger cisterns to be used at a municipal level. The Cities of Seattle and Vancouver have very successful incentive programs in which residents can purchase rain barrels at a reduced cost. It may be worth investigating such a program for the Wreck Pond watershed.

Gail Woolley, P.E.  
CENAN-EN-H

APPENDIX E

LETTER OF INTENT

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL  
PROTECTION



## State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
NATURAL & HISTORIC RESOURCES  
Engineering and Construction  
501 East State Street  
Mail Code 501-01A  
P. O. Box 420  
Trenton, N. J. 08625-0420  
Tel. 609-292-9236 FAX 609-984-1908

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

BOB MARTIN  
*Commissioner*

November 23, 2010

Mr. Eugene Brickman  
Deputy Chief, Planning Division  
United States Army Corps of Engineers  
New York District  
26 Federal Plaza, Room 2145  
New York, New York, 10278

Dear Mr. Brickman:

This letter confirms that the Office of Engineering and Construction (OEC) in the New Jersey Department of Environmental Protection has reviewed the recent United States Army Corps of Engineers' (USACE) Section 905 (b) Reconnaissance Study for the Wreck Pond Watershed in Monmouth County, New Jersey.

OEC concurs with the Reconnaissance Study recommendation that the study proceed into the feasibility phase, but must condition this on the development of a Project Management Plan that is acceptable to OEC and the availability of state funds for cost sharing with the USACE. OEC is particularly interested in the flood damage reduction and the erosion and sediment control that the feasibility study will consider.

We have been looking forward to partnering with the USACE to resolve the Wreck Pond issues. Please contact me at 609-292-9236 or [dave.rosenblatt@dep.state.nj.us](mailto:dave.rosenblatt@dep.state.nj.us) to discuss any aspect of this process or OEC's participation.

Sincerely,

David Rosenblatt  
Administrator