FINDING OF NO SIGNIFICANT IMPACT
POND CREEK SALT MARSH RESTORATION PROJECT
SECTION 1135, ECOSYSTEM RESTORATION
CAPE MAY COUNTY, NEW JERSEY

OVERVIEW

The United States Army Corps of Engineers (Corps) has evaluated the restoration of tidal flow from the Delaware Bay into Pond Creek. Pond Creek is located in Lower Township and the Borough of West Cape May, Cape May County, New Jersey.

PURPOSE AND SPECIFICATIONS

The purpose of the Pond Creek Salt Marsh Restoration Project is to restore estuarine intertidal emergent wetland habitat for fish and wildlife resources. This will be accomplished by reintroducing tidal flushing in the lower marsh areas of Pond Creek to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Once established, *Phragmites* often out competes native salt marsh vegetation, creating habitat less suitable for wildlife. Control of common reed will allow the reestablishment of native salt marsh vegetation [e.g., smooth cordgrass (*Spartina alterniflora*), salt hay grass (*S. patens*), and spike grass (*Distichlis spicata*)], thus increasing habitat available for a variety of fish and wildlife resources, in particular, the diamondback terrapin (*Malaclemys terrapin*), egrets, herons, shorebirds, and waterfowl.

The Pond Creek marsh (totaling 417 acres) is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, New Jersey. The marsh, once a free-flowing estuarine tidal marsh before human disturbance, is part of the State of New Jersey's Higbee Beach Wildlife Management Area. The State's Division of Fish and Wildlife currently manages the marsh for migratory bird and waterfowl habitat and human recreation (e.g., birding and hunting). The marsh is bordered by vegetated dunes [beach grass (*Ammophila breviligulata*)] to the west and abandoned railroad tracks supporting red cedar (*Juniperus virginiana*), northern bayberry (*Myrica pensylvanica*), and wax myrtle (*Myrica cerifera*) to the south. A portion of Pond Creek marsh extends south of the abandoned railroad tracks and is bordered by agricultural land, residential development, and small patches of upland forest. The eastern portion of Pond Creek is bordered by agricultural lands with upland forest buffers. The northern portion of Pond Creek is bordered primarily by upland forest with several agricultural fields. An upland forested island is situated in the middle of the Pond Creek marsh, known as Sassafras Island. A small open freshwater area identified as Davey's Lake is situated northwest of the marsh. Pond Creek is almost entirely freshwater wetlands, as a result of a tide gate installed in 1917, at the mouth of Pond Creek, which flows into the Delaware Bay. The tide gate has since deteriorated and been removed. Due to the small size of the creek and the sinuosity of the channel, only a small amount of bay water is currently getting into the marsh to flood the *Phragmites*.

The Corps, U.S. Fish and Wildlife Service, and project partners have identified that constructing a new channel and water-control structure is the least costly and simplest method of reintroducing tidal flow to the marsh and controlling *Phragmites*. The proposed project will include construction of a 920-foot section of new stream channel to shorten the distance between the Bay and the marsh, thus increasing the amount of tidal flow into the marsh and reducing the potential for inlet migration. Upon digging the new channel and inundating the marsh, *Phragmites* will be eradicated or greatly controlled in the Pond Creek marsh. This will allow native, more beneficial marsh vegetation to reestablish (approximately 170 acres). The native vegetation will provide greatly improved habitat for diamondback terrapins, migratory songbirds, wading birds, shorebirds, and waterfowl. In addition, the water-control structure will throttle the tidal inundation to Pond Creek protecting freshwater wetlands in the upper portions of the marsh.

COORDINATION
The project was developed by cooperating agencies including: the U.S. Army Corps of Engineers, the New Jersey Division of Fish and Wildlife (NJDFW), the Cape May County Mosquito Extermination Commission, Ducks Unlimited, Incorporated, and the U.S. Fish and Wildlife Service.

The Draft Environmental Assessment (EA) for the project was forwarded to the U.S. Environmental Protection Agency, Region II, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the NJDFW, and all other known interested parties. In addition, two public meetings were held on this project in West Cape May, NJ on October 13, 2005.

ENDANGERED SPECIES IMPACT
The Environmental Assessment has determined that the selected plan, if implemented, would not jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to the Endangered Species Act of 1973 as amended by P.L. 96-159.

WATER QUALITY COMPLIANCE
Pursuant to Section 401 of the Clean Water Act, a 401 Water Quality Certificate has been obtained from the New Jersey Department of Environmental Protection, Land Use Regulation Program for this project.

COASTAL ZONE
Based on the information gathered during the preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, it was determined in accordance with Section 307(C) of the Coastal Zone Management Act of 1972 that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of New Jersey. A positive consistency determination from the New Jersey Department of Environmental Protection has been received for this project.

CULTURAL IMPACTS
The proposed project will not affect any historic or archaeological sites eligible or listed on the National Register of Historic Places. Concurrence on this no effect determination has been received from the New Jersey Historic Preservation Office. As such, no impacts are expected on historic or archaeological resources.

RECOMMENDATION
Because the Environmental Assessment concludes that the work described is not a major Federal action significantly affecting the human environment, I have determined that an Environmental Impact Statement is not required.

13 Dec 2006

Gwen E. Baker
Lieutenant Colonel, Corps of Engineers
District Commander

Date

ENVIRONMENTAL ASSESSMENT

POND CREEK SALT MARSH RESTORATION PROJECT
SECTION 1135, ECOSYSTEM RESTORATION
CAPE MAY COUNTY, NEW JERSEY

PREPARED BY:
PHILADELPHIA DISTRICT
U.S. ARMY CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA 19107

AND

NEW JERSEY FIELD OFFICE
U.S. FISH AND WILDLIFE SERVICE
PLEASANTVILLE, NEW JERSEY 08232

December 2006

ENVIRONMENTAL ASSESSMENT
POND CREEK SALT MARSH RESTORATION PROJECT
SECTION 1135, ECOSYSTEM RESTORATION
CAPE MAY COUNTY, NEW JERSEY

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1.0 Project Location

The Pond Creek Restoration Project is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, New Jersey (Figure 1). The project site is located in New Jersey's 2nd Congressional District. Additionally, the project area is within the Cape May peninsula, an important stopover and foraging area for birds migrating along the Atlantic Flyway.

2.0 Study Authority

The U.S. Army Corps of Engineer's (Corps) study authority for the Pond Creek Restoration Project is Section 1135 of the Water Resources Development Act of 1986, as amended, which is used for improvements to the environment in the public interest. The Section 1135 linkage for this project is the New Jersey Intracoastal Waterway. In 1941-42 a canal 12 ft deep and 100 ft wide from Cape May Harbor to Delaware Bay was constructed. The canal construction required the excavation of an existing tidal creek and damaged over 300 acres of wetlands. The U.S. Fish and Wildlife Service's (Service) authority for the subject restoration project is pursuant to the Service's *Coastal* Program.

3.0 Purpose and Need for Action

The purpose of the Pond Creek Salt Marsh Restoration Project is to restore estuarine intertidal emergent wetland habitat for fish and wildlife resources. This will be accomplished by reintroducing tidal exchange in the Pond Creek wetlands (Figure 2) to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Once established, *Phragmites* often outcompetes native salt marsh vegetation, creating habitat less suitable for wildlife. Control of common reed will allow the reestablishment of native salt marsh vegetation [e.g., smooth cordgrass (*Spartina alterniflora*), salt hay grass (*S. patens*), and spike grass (*Distichlis spicata*)], thus increasing habitat available for a variety of fish and wildlife resources, in particular, the diamondback terrapin (*Malaclemys terrapin*), egrets, herons, shorebirds, waterfowl and a variety of other wetland-dependent wildlife.

There will be a number of benefits derived from the Pond Creek Salt Marsh Restoration project. Increasing the diversity of vegetation within the wetlands will enhance fish and wildlife habitat. The Pond Creek wetlands currently provide limited habitat for fish and wildlife resources due to the overwhelming presence of dense stands of common reed, which provides limited habitat value for fish and wildlife. Reducing common reed improves habitat value and diversity. Improving diversity within the wetland would also improve the aesthetics of the project site. By opening up the Pond Creek wetlands visually, the general public would be better able to fish, hunt, bird-watch, and conduct environmental studies. Eradicating *Phragmites* would also eliminate the need for the Cape May County Mosquito Commission to spray insecticides in and around marshes and residential areas. The project will also improve water quality within Pond Creek (*e.g.*, total dissolved solids, biological oxygen demand, fecal contamination (coliforms)) by improving tidal flushing of the marsh. Reducing the biomass of *Phragmites* will also decrease the chance and risk of a catastrophic wildfire occurring and damaging residential property in the area. The project may also alleviate some current flooding problems that are experienced due to *Phragmites* blocking outlet structures and impeding upland drainage.

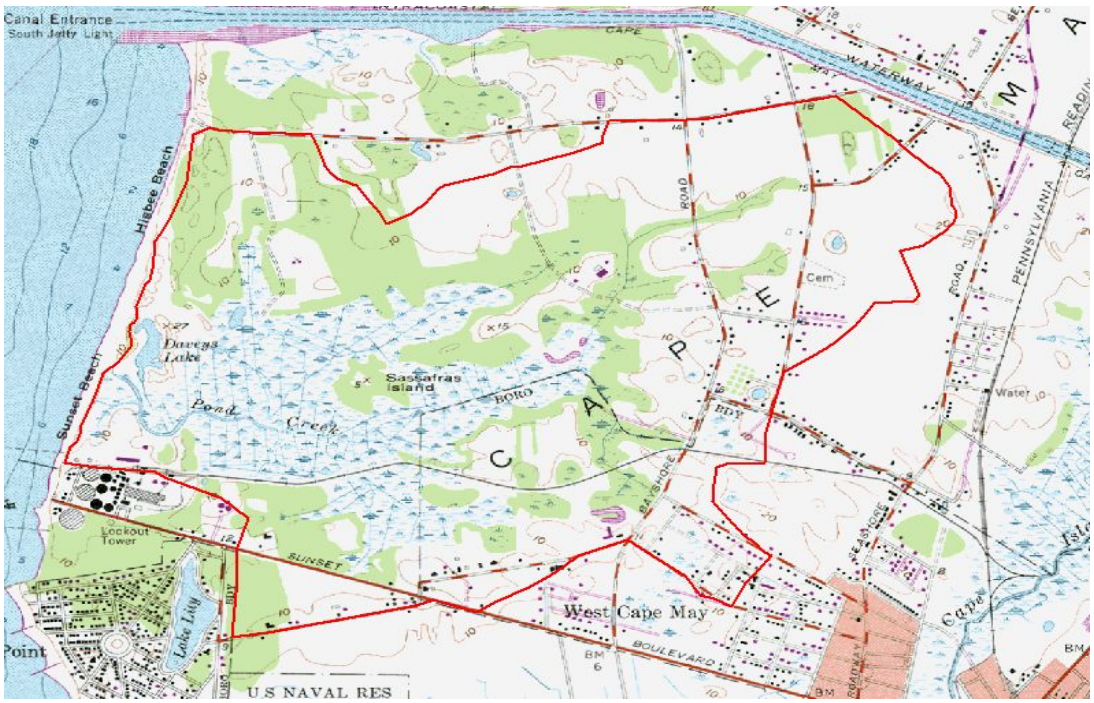

Figure 1. Pond Creek project area.

Figure 2. Aerial photograph of Pond Creek watershed.

4.0 Alternatives

Due to the nature of this project, a limited number of alternatives are available to achieve the goals of ecological restoration while be sensitive to environmental and engineering criteria. The alternatives include no-action, invasive species control, and various structural design measures. For discussions in this document all elevations are using the NAVD88 coordinates system. There were six alternatives considered for the project:

- No-action
- Invasive Species Control - Chemical (herbicide spraying)
- Invasive Species Control - Flooding (four alternatives)
    - Freshwater flooding
    - Full tidal inundation with earthen berms
    - Tidal inundation with water-control structure (existing channel)
    - Preferred alternative - Tidal inundation with water-control structure (new channel alignment)

4.1 No-action

The no action alternative would leave Pond Creek as a palustrine emergent wetland with a failed dune and outlet structure. The current outlet structure has failed and Pond Creek is in the process of returning to a more natural alignment. There is limited flow currently moving through Pond Creek and the local littoral drift often deposits sand at the outlet further limiting outflow from Pond Creek. The Cape May County Mosquito Extermination Commission is often called in to clear the outlet to prevent flooding within Pond Creek due to rain events. The project area would remain dominated by a monoculture of *Phragmites*. The goal of the project is to restore native salt marsh. The no action alternative will not achieve the project goal. This will have long-term negative impacts on the potential wildlife use of the area. *Spartina* marshes have been proven to provide considerably more benefits to wildlife than *Phragmites* marshes. Elimination of dense stands of *Phragmites* and re-establishment of native vegetation will improve habitat quality for anadromous fish, waterfowl, waterbirds, raptors, and furbearers by increasing desirable food plant abundance, invertebrate production, habitat heterogeneity, and open water space.

This predominance of *Phragmites* provides limited fish and wildlife habitat within the project area and provides numerous areas for mosquito breeding. As a result, the Cape May County Mosquito Extermination Commission would continue to spray Pond Creek with adulticide and larvicide on a yearly basis to control mosquito populations. Beach and dune areas would remain unchanged. This alternative was eliminated from consideration because it does not accomplish the goal of improving the ecological functions and values of Pond Creek.

4.2 Invasive Species Control - Chemical

The invasive species control alternative would target control of *Phragmites* within the wetland areas. Control of *Phragmites* can be accomplished with chemical spraying, flooding, and tidal inundation. Control of *Phragmites* using chemical control involves aerial application of glyphosate-based herbicide in the fall. This is followed up by a prescribed burn to eliminate the dead, standing biomass. Typically a second application of herbicide is required to eliminate those *Phragmites* plants that were not affected by the initial application. This alternative typically has good results of eliminating *Phragmites* for 5 to 10 years. However, without a change in topography or hydrology within the wetland, the conditions remain unchanged for recolonization of *Phragmites*. It is likely that chemical control of *Phragmites* alone is a short-term control alternative. In addition, this control option does not eliminate mosquito breeding habitat. This

alternative was eliminated from consideration, because it does not provide long-term ecological improvement within the Pond Creek wetlands.

4.3 Invasive Species Control – Freshwater Flooding

Phragmites control can also be accomplished by flooding *Phragmites* areas. Typically these areas need to be inundated with at least 4-6 inches of water for the majority of the year in order to get good control (Dodici and Schrading, 2003). Pond Creek could be flooded by retaining precipitation on the site, but it would require significant work to the existing berm and installation of a water-control structure. In addition, this option would likely result in flooding of adjacent lands during rain events, due to the loss of storage capacity within Pond Creek. This alternative does not achieve the project goal of restoring estuarine intertidal emergent wetland habitat. In addition, this alternative was also eliminated from consideration due to engineering concerns and concerns of adverse impacts to adjacent property owners.

4.4 Invasive Species Control – Tidal Flooding - full tidal inundation with earthen berms

This alternative involves enlarging the existing creek channel to a bottom width of 10 ft and lowering the bottom elevation from -2 ft to -6 ft to increase the volume of water entering the marsh. This alternative would involve constructing an approximately 4200 foot long dike (10 ft in height) across the back portion of the marsh and raising 2900 feet of the abandoned railroad by 7 feet (Figure 3). The alignment of the dike is shown in Figure 3.

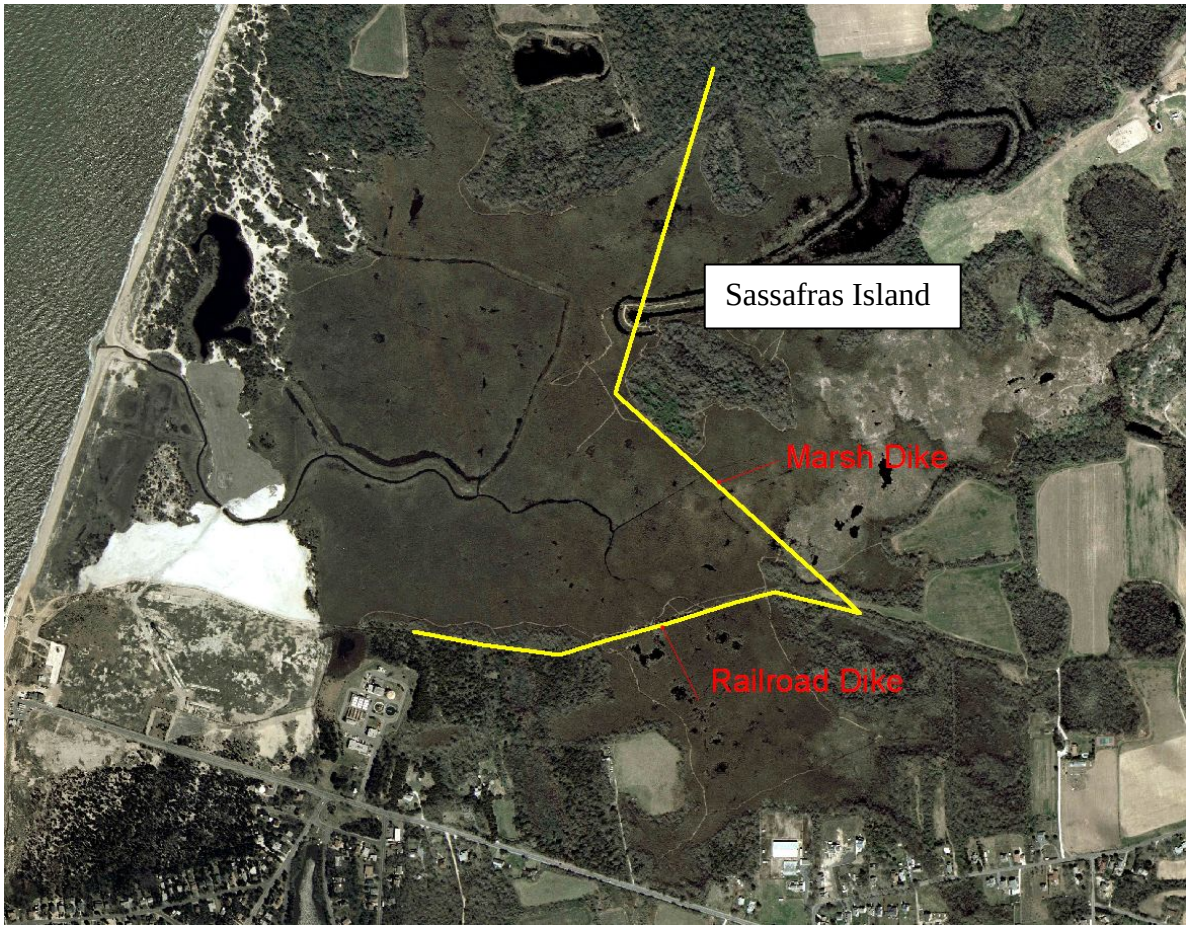

Figure 3. Full tidal inundation using earthen berms.

For the north marsh there would be 166 acres of salt marsh downstream of the dike and 104 acres upstream of the marsh that would serve as a storage area for rain runoff. The dike would be constructed with pipes through it and fitted with flap gates to allow for the movement of rainwater from areas outside the marsh to areas within the marsh. The abandoned railroad (elevation +4 ft) would be raised. Two existing 18" diameter pipes through the railroad will be cleaned out and fitted with flap gates. The constructed dike would prevent daily tide and Delaware Bay storms from impacting local residents who live adjacent to the marsh. This alternative would inundate approximately 165 acres of *Phragmites* marsh.

The proposed dike would start at uplands to the north of the marsh and cut across to Sassafras Island, from the island the dike would continue southward and tie-in to the abandoned railroad berm located in the southern portion of the site. The original plan was to use existing marsh material (soil) to construct the dike. Geotechnical borings were completed at the proposed location and the on-site material was deemed not suitable for dike construction. Hence, the material would have to be trucked in from elsewhere and this added considerably to the cost. In addition, existing marsh areas would be potentially impacted during the construction of the dike. Due to the prohibitively high cost (the need to bring in large volumes of suitable fill and necessary preparation of the foundation) and environmental impacts, this alternative was not considered viable.

4.5 Invasive Species Control – Tidal Flooding - tidal inundation with water-control structure

An existing condition hydraulic analysis showed that the existing channel is inadequate to the task of delivering large quantities of saltwater to the marsh during daily tide conditions. An enlarged channel from the bay to the marsh is needed to inundate the marsh with saltwater. A range of channels were analyzed to determine the approximate size of the new channel necessary to adequately inundate the marsh. The smallest channel analyzed had a bottom width of 20 ft and a bottom elevation of -4.0 ft (minimal excavation). The largest channel analyzed had a bottom width of 50 ft and a bottom elevation of -6.0 ft.

However, any new channel excavated to ensure daily tidal inundation of the marsh is capable of flooding the interior through the delivery of large volumes of water during storm tides. Table 1 show the results of the hydraulic model runs for various storm tides for the various channels. Examination of Table 1 leads one to conclude that construction of a channel large enough to inundate the marsh during a normal tide signal is large enough to flood the surrounding land during storm tide. A means is required to protect the surrounding property.

Table 1 Summary of Various Channel Widths and Delaware Bay Storms				
Channel Plan	Storm Events			
	2yr	10yr	100yr	500yr
	Existing Interior Water Surface Elevations (ft-NAVD)			
	1.47	1.66	4.35	9.3
Bottom Width = 50ft ELMIN= -6 (ft-NAVD)	3.57	4.87	7.57	9.28
Bottom Width = 20ft ELMIN= -6 (ft-NAVD)	3.38	4.71	7.41	9.14
Bottom Width=10 ft ELMIN= -6 (ft-NAVD)	3.21	4.48	7.18	9.07
Bottom Width = 20 ft ELMIN= -4 (ft-NAVD)	3.13	4.33	7.19	9.3
Existing Channel with Culvert removed	1.93	2.87	-	-

A water control structure was the selected method of protection and a plan of improvement was designed to provide maximum daily inundation of the north marsh while minimizing interior water levels due to Delaware Bay storms. The proposed crest elevation of the hydraulic structure is specified as elevation 10.6 ft. This is 1.3 ft higher than the 500 year water surface elevation (wsel) and 3 ft higher than the 100 year water surface elevation. Elevation 10.6 is slightly lower than the elevation of the dunes fronting the bay. The hydraulic structure and approach channel from the bay were sized to attenuate bay tides.

The north marsh encompasses approximately 270 acres. The elevations of the north marsh vary from 1.3 to 1.5 ft with the majority of the elevations around 1.3. The design provides for a volume of salt water capable of inundating 170 acres of marsh (at elevation 1.3). Due to minor differences in topography, some areas of the marsh may not be inundated while other areas may be inundated to a depth greater than the average depth of inundation. The average depth of inundation is the maximum wsel minus the average marsh elevation of 1.3 ft. The north marsh will need to be extensively ditched in order to deliver saltwater to its far reaches. Two locations were considered for the hydraulic structure: at the marsh end of the existing channel and through the north spoil pile. The two locations are shown in Figure 4 and Figure 5.

4.5.1 Tidal inundation with water-control structure (existing channel)

This alternative involves enlarging the existing creek channel over a length of 1600 feet to a bottom width of 20 feet and lowering the bottom elevation from -2 ft to -6 ft to increase the volume of water entering the marsh. This alternative also involves the construction of a water control structure at the junction of the existing channel with the marsh (Figure 4). The water control structure would be approximately 17 ft high and 40 ft wide, with the adjacent sheetpiling over 200 ft wide. In addition to enlarging the inlet channel, new interior ditches will be required to provide daily tidal inundation into the north marsh. This alternative would inundate approximately 170 acres of *Phragmites* marsh.

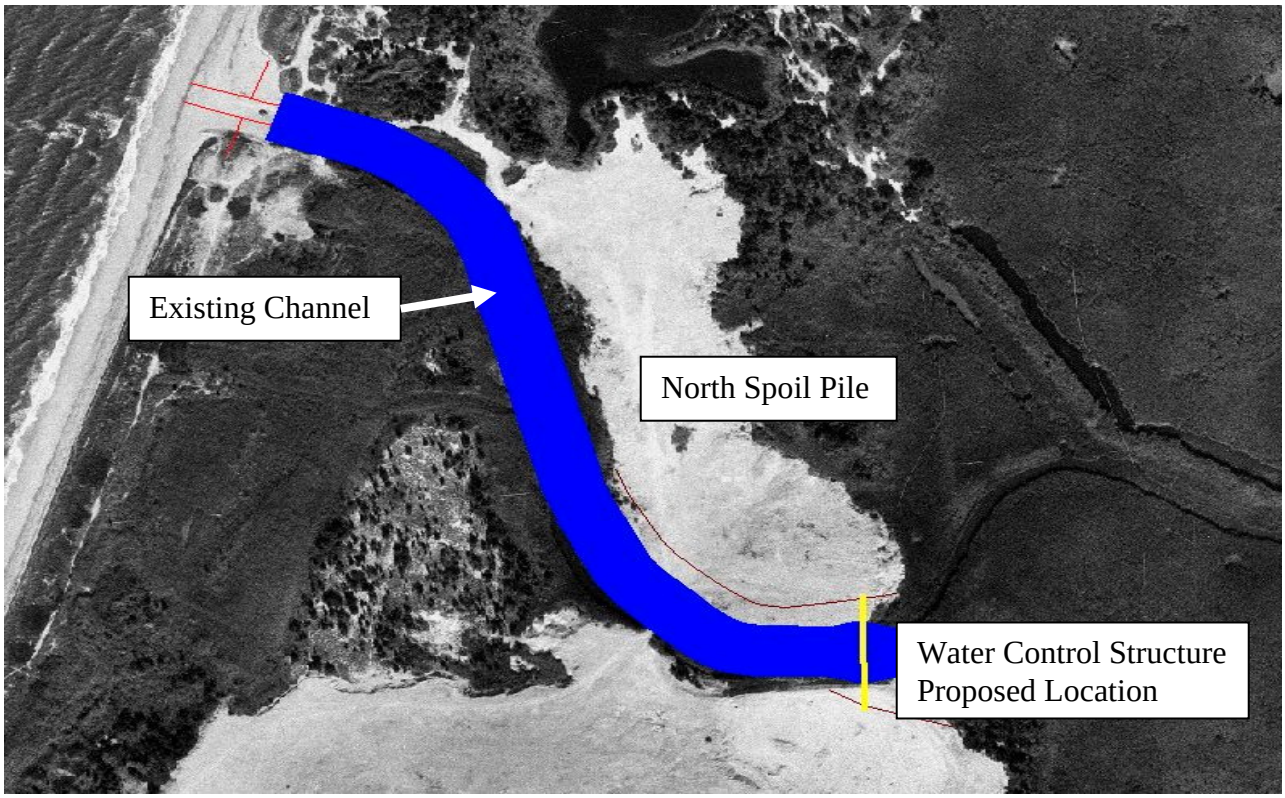

Figure 4. Tidal inundation with water-control structure (existing channel).

The proposed structure would be composed of 4 box culverts with gates on each to control the amount of water entering the marsh. When completed, the elevation of the completed water control structure will be 1.3 ft higher than the water surface elevation of the 500-year Delaware Bay storm, but would allow daily inundation of approximately 170 acres of *Phragmites* salt marsh. This alternative would use the existing alignment, which would be approximately 1650 ft from Delaware Bay to the constructed water-control structure. In addition, a new jetty will be constructed at the bay inlet area to prevent sedimentation of the new inlet.

The potential of breaching the existing dunes near the current inlet is a concern with this alternative. If these northern dunes breach, the new water control structure will be flanked and the residents will have limited protection from Delaware Bay storms. Due to the erosion concerns of the north dunes and the winding nature of the existing channel alignment, this alternative was not selected.

4.5.2 Preferred alternative - Tidal inundation with water-control structure (new channel alignment)

This alternative creates a new 920-foot-long channel with a bottom width of 20 feet and lowers the channel elevation from 1 ft to -6 ft to increase the volume of water entering the marsh. The proposed channel length would be approximately 920 ft from Delaware Bay to the constructed water-control structure and would be consistent with the previous historical location of Pond Creek. The water control structure would be located in the middle of the north spoil pile and would be approximately 17 ft high and 40 ft wide (Figure 5).

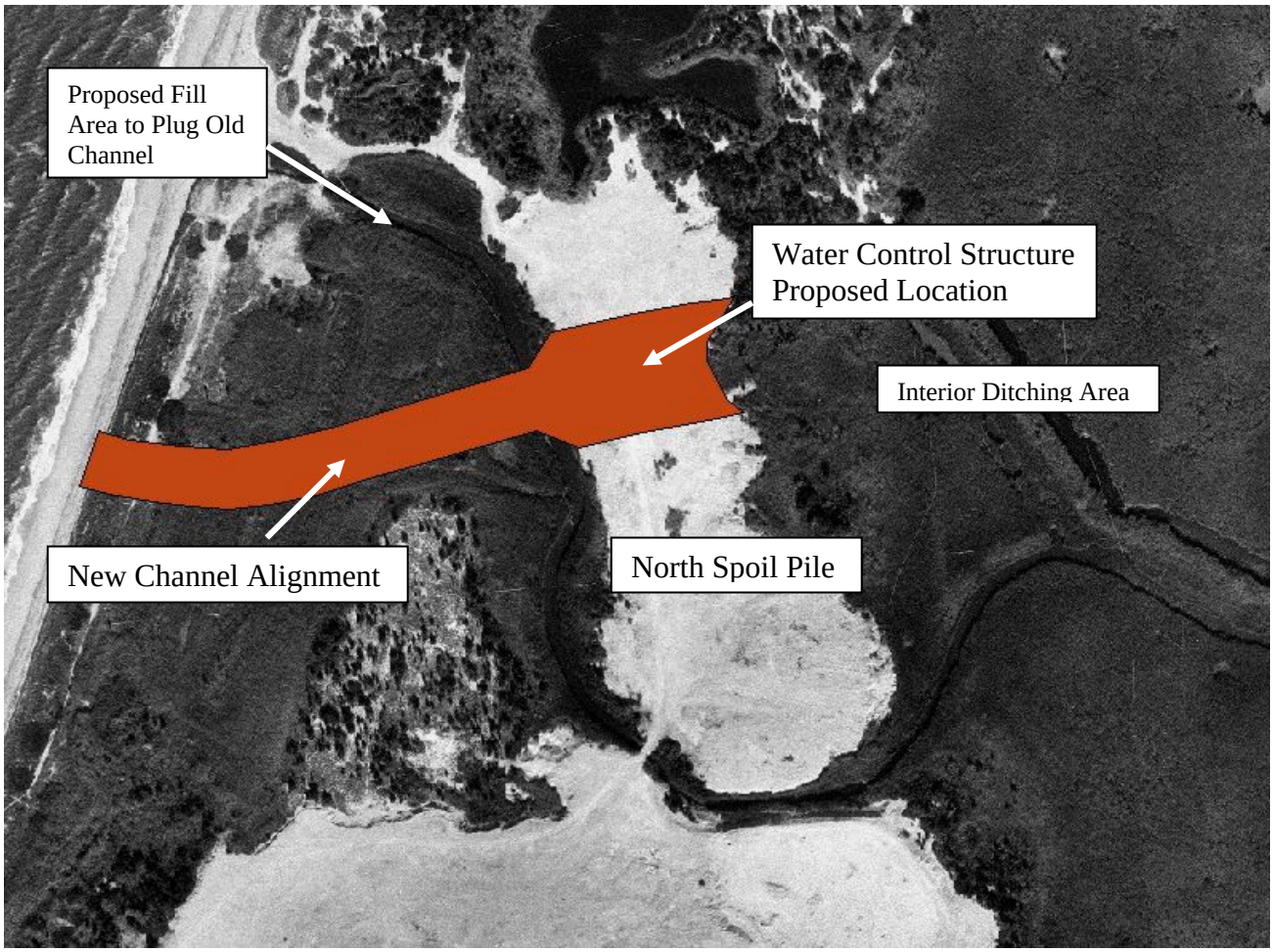

Figure 5. Preferred alternative: tidal inundation with water-control structure (new channel alignment).

In addition, the sheetpiling adjacent to the water control structure would be 200 ft wide. The proposed structure would be composed of 4 box culverts with gates on each to control the amount of water entering the marsh (see Appendix E to review details of the 30% design). When completed, the elevation of the completed water control structure will be 1.3 ft higher than the water surface elevation of the 500-year Delaware Bay storm, but would allow daily inundation of approximately 170 acres of *Phragmites* salt marsh (Figure 6).

This alternative requires excavation through an existing spoil pile deposited by a previous property owner. The excavated sand from behind the dunes will be used to plug the current channel opening. Material excavated for the new channel within the spoil pile will be placed on the adjacent areas of the spoil pile and reseeded. Approximately 26,000 cubic yards (cys) will be excavated within the spoil pile and approximately 13,000 cys will be excavated outside the spoil pile for the new channel. Additionally, a new jetty (Appendix E) will be constructed to stabilize the new inlet for the channel. In order to daylight the channel to the required bottom elevation, the new channel will go 154 ft. into Delaware Bay. This portion of the new channel (approx. 2400 cys) will be dredged and the material placed on the beach.

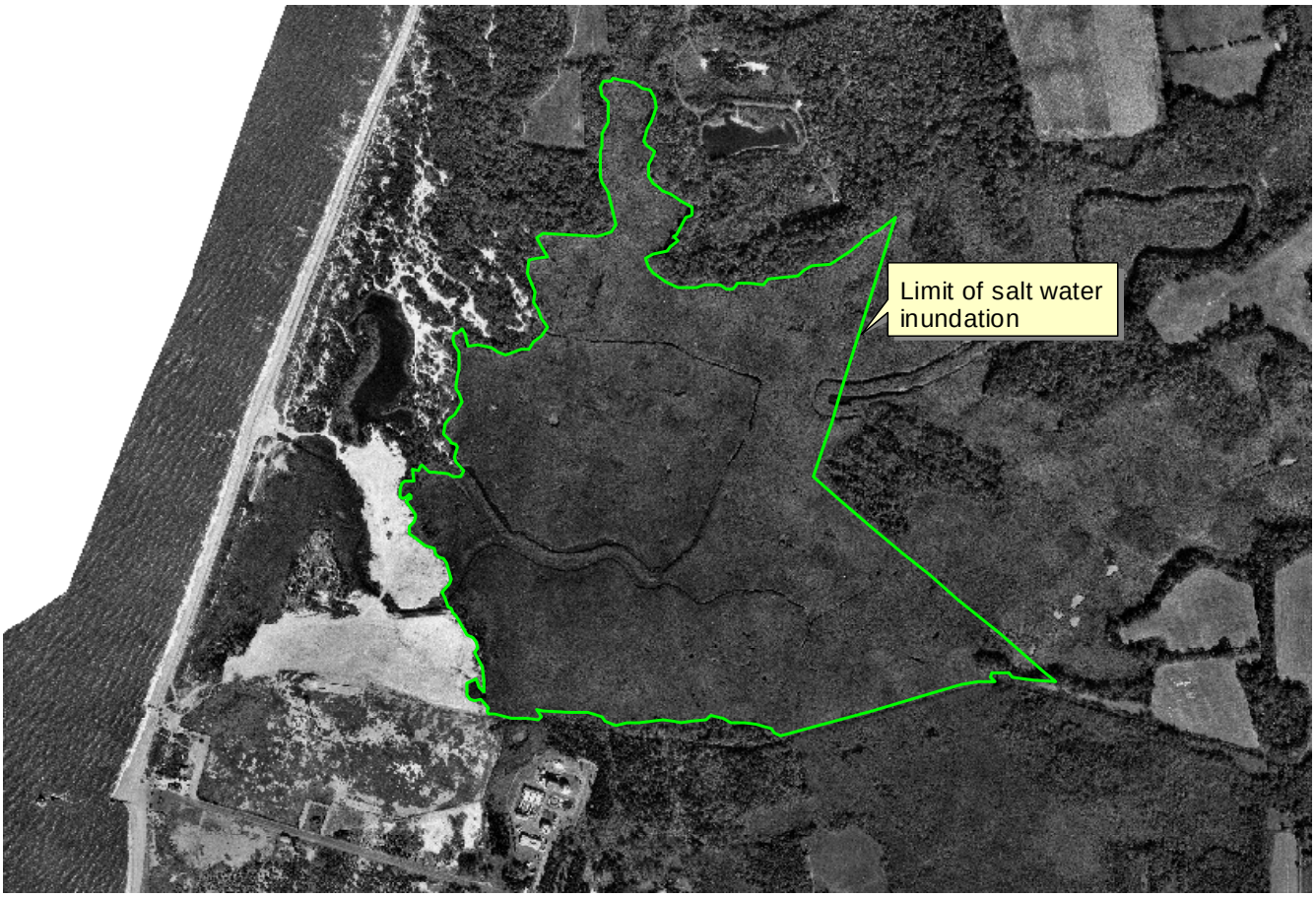

Figure 6. Estimated extent of tidal inundation into the Pond Creek marsh.

In addition to enlarging the inlet channel, new interior ditches will be required to provide daily tidal inundation into the north marsh. The following provides estimated dimensions of interior ditching required to adequately inundate the north marsh based on the assumption that no interior ditches currently exist:

Main Channel 1: 10 ft bottom width,
1500 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Laterals: 14 laterals, 7 on each side of the main channel.
5 ft bottom width
900 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Main Channel 2:
(up north finger) 10 ft bottom width
1680 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Laterals: 16 laterals, 8 on each side of the main channel
5 ft bottom width
120 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Main Channel 3:
(up south finger) 10 ft bottom width

1680 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Laterals: 16 laterals, 8 on each side of the main channel
5 ft bottom width
240 ft long; side slopes of 1V to 5H; elmin = -3.3 ft

Ditching would create channels approximately 200 ft apart. This ditching is necessary to properly move the water through the marsh and flood the existing *Phragmites*. Additional ditching information can be found in the Appendix C.

Selection of the preferred plan is based on performance and stability. The plan also seeks to minimize costs associated with excavation of the new channel and negative impacts to the environment during construction. In order to prevent interior flooding during storm events, the water control structure can not be bypassed and the dunes north of the existing inlet must not be breached. The existing dunes are substantial and are unlikely to fail during storm events. However, long-term erosion is possible due to inlet processes specifically during the formation of the ebb and flood shoals. Eventually equilibrium will be reached and bypassing and re-attachment bars established, but until that happens there will be an interruption of the littoral drift that may trigger down drift erosion. To counter this affect, the selected plan places the inlet south of the existing inlet (approximately 600 ft south). If down drift erosion is triggered and equilibrium is not quickly reestablished, there will be time to mobilize and augment the beach with sand before the Davy's Lake dunes are affected. (Dunes between the last groin in Cape May Point and the existing inlet can be breached without bypassing the proposed project.) The existing inlet has not always been in its present location. Figure 7 is an 1888 map showing the inlet 1500 feet south of the present location.

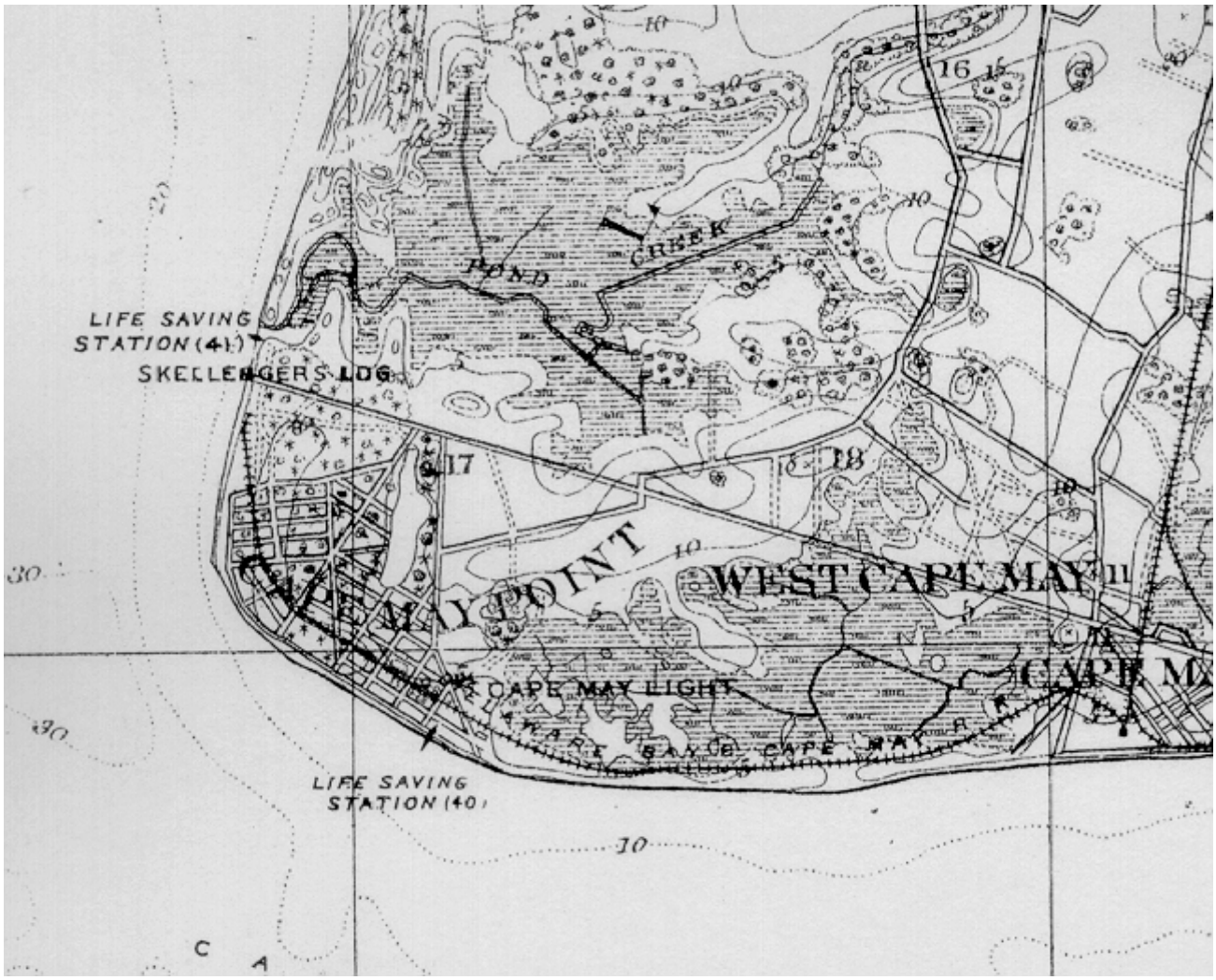

Figure 7. An 1888 map showing the original alignment of Pond Creek.

Current conditions at the site provide local residents with protection from Delaware Bay storms at the 20-year level. When completed, the elevation of the completed water control structure will be 1.3 ft higher than the water surface elevation of the 500-year Delaware Bay storm. In addition, by moving the channel to the south of the existing inlet, the concerns over erosion of the north dunes are alleviated. By having the inlet in this location, the water control structure is protected, by existing dunes that will be located on either side of the new channel, from future erosion. Due to the environmental and hydraulic reasons, this is the preferred and selected alternative. Table 2 summarizes the project alternatives and costs associated with each.

Table 2. Incremental Cost Comparison of Alternatives for the Pond Creek Salt Marsh Restoration Project.

Alternative	**Potential Issues / Support**	**Estimated Cost**	**Benefits**	**Conclusion**
No Action	Does not solve the problem.	$0	None	- Not recommended. - Would not achieve goal of restoring estuarine intertidal emergent wetland.
Invasive Species Control – Chemical (includes construction of new jetty to keep existing channel open)	- Environmental issues of spraying, similar to Corps Lower Cape May Meadow's project (public opposition). - Maintenance issue of multiple spray applications needed to eradicate *Phragmites*.	$1.3 million or $6,500 /acre	- Removal of *Phragmites* - Improved habitat - Approx. 200 acres restored.	- Not Recommended. - Lengthy time delay in seeing results. - Environmental and maintenance issues too great.
Invasive Species Control - Freshwater Flooding	- Flooding from rainwater to local residents due to loss of potential storage capacity. - Water control structure maintenance - Would not achieve goal of restoring estuarine intertidal emergent wetland.	$4.5 million or $27,000 /acre	- Improved freshwater marsh - Approx. 165 acres improved.	- Not recommended. - Dikes would result in additional impacts/loss of wetlands. - Would not achieve project goal.
Invasive Species Control – Tidal Flooding with Constructed Dike	- Cost of dike material - Unable to control volume of water entering the marsh. - Dike maintenance	$3.7 million or $22,000 /acre	- Restored estuarine intertidal wetland - Removal of *Phragmites* - Approx. 165 acres restored.	- Not recommended. - Dikes would result in additional impacts/loss of wetlands.
Invasive Species Control – Tidal Flooding with Water Control Structure	- Can regulate amount of water entering marsh. - Non-federal sponsor's preferred plan. - Supported by resource agencies. - Water control structure. maintenance	$2.5 million or $15,000 /acre	- Restored estuarine intertidal wetland. - Removal of *Phragmites* - Approx. 170 acres restored.	**Recommended**

5.0 Existing Conditions

Prior to 1917, Pond Creek was a free flowing tidal creek, inundated daily by tidal waters of the Delaware Bay. In 1917, a tide gate was installed by the Cape May County Mosquito Extermination Commission to maintain fresh water in Pond Creek. Since that time, the outlet failed numerous times due to the beach building process as sand transported by littoral drift plugged the sluice. This continues to be a problem, causing flooding of adjacent agricultural and residential areas due to inefficient movement of freshwater out of Pond Creek. The tide gate has since deteriorated and been removed. In addition, in the 1950s and 1960s, common reed began to invade Pond Creek. Currently, approximately 95 to 100 percent of the lower Pond Creek marsh is covered by common reed. By 1978, the State of New Jersey purchased the majority of Pond Creek for the Higbee Beach Wildlife Management Area for the benefit of fish and wildlife resources. The Higbee Beach Wildlife Management Plan (Kell *et al*., 1983) identifies two management alternatives which include total tidal inundation of Pond Creek or partial tidal inundation of Pond Creek. The proposed project satisfies the partial tidal inundation alternative.

The Pond Creek marsh, once a free-flowing estuarine tidal marsh before human disturbance, is part of the State of New Jersey's Higbee Beach Wildlife Management Area. The State's Division of Fish and Wildlife currently manages the marsh for migratory bird and waterfowl habitat and human recreation (e.g., bird watching, hunting, and other forms of passive and active recreation). The marsh is bordered by vegetated dunes [beach grass (*Ammophila breviligulata*)] to the west and abandoned railroad tracks supporting red cedar (*Juniperus virginiana*), northern bayberry (*Myrica pensylvanica*), and wax myrtle (*Myrica cerifera*) to the south. A portion of Pond Creek marsh extends south of the abandoned railroad tracks and is bordered by agricultural land, residential development, and small patches of upland forest. The eastern portion of Pond Creek is bordered by agricultural lands with upland forest buffers. The northern portion of Pond Creek is bordered primarily by upland forest with several agricultural fields. An upland forested island is situated in the middle of the Pond Creek marsh, known as Sassafras Island. A small open freshwater area identified as Davey's Lake is situated northwest of the marsh. Land use surrounding Pond Creek continues to be dominated by agricultural activities (i.e., horse farms, small crop fields, pasture) and limited residential development.

5.1 Vegetation and Soils

Currently, the western portion of the site is an undeveloped coastal beach and dune complex. The beach is bordered to the west by the Delaware Bay and to the east by primary dunes ranging in height from 8 to 15 feet. The dunes support American beach grass (*Ammophila breviligulata*), coastal panic grass (*Panicum amarum*), seaside goldenrod (*Solidago sempervirens*), bayberry (*Myrica pensylvanica*), rugose rose (*Rosa rugosa*), poison ivy (*Toxicodendron radicans*), among other plants. Dune and beach substrate is sand providing a low-fertility, excessively drained soil.

Approximately 4.5 acres of the southern portion of the site is dominated by a disposal site associated with the Harbison Walker magnesite plant. This plant, operating from 1941 to 1983, placed processed waste (primarily consisting of waste magnesite and spent or un-reacted dolomite with a high calcium and magnesium content) on the marsh. The deposition material is extremely basic (high pH) and as such limits vegetative growth. The majority of the deposition site remains barren, although efforts of the last two years of placing and disking in dredged material have been successful at neutralizing the pH and initiating vegetative growth (mostly grasses).

Tidal marsh makes up the majority of the project site (over 270 acres). The substrate in the wetlands is a deep layer of muck with layers of soft silt loam and organic material. According to the Cape May County

soil survey, the muck substrate ranges from 1 foot to more than 10 feet thick with high organic matter and anaerobic conditions. The majority of the vegetation within the marsh is made up of *Phragmites*. No other plants were identified within the lower portion of Pond Creek west of Sassafras Island. Wetland areas east of Sassafras Island transition from *Phragmites* dominated wetlands to mixed forested wetlands dominated by conifers; deciduous forested wetlands, and deciduous scrub/shrub wetlands. There are a few areas east of Sassafras Island that remain palustrine emergent wetlands with no *Phragmites*.

5.2 Wetlands

Wetlands within the project area are classified as both Service "priority wetlands" and North American Waterfowl Management Plan (NAWMP) "focus areas." The Emergency Wetlands Resources Act of 1986 (P.L. 99-645) directs the Department of the Interior to identify the location and types of wetlands that should receive priority attention for acquisition by federal and State agencies using Land and Water Conservation Fund appropriations. "Focus areas" are defined by the Atlantic Coast Venture of the NAWMP as sites containing critical waterfowl wintering, migratory, or breeding habitat, with an emphasis placed on American Black Duck (*Anas rubripes*) habitat. These “Focus areas” have been identified as requiring protection. Restoration of the Pond Creek wetlands will restore a variety of functions and values to these wetlands including the ability to provide valuable fish and wildlife habitat.

In addition, there are important freshwater wetlands located in the upper reaches of Pond Creek. These areas provide habitat to a host of native species.

5.3 Fishery Resources

The Pond Creek wetlands currently provide little to no fisheries value due to the restriction of tidal water and the extensive colonization of common reed within the wetlands. The limited fish species that do exist (e.g., Atlantic silversides (*Menidia menidia*)) are restricted to the current channel inlet to Pond Creek.

Essential Fish Habitat

Under provisions of the Magnuson-Stevens Act, areas along the Atlantic coast, including the proposed project area are designated as Essential Fish Habitat (EFH) for species with Fishery Management Plans (FMP’s). The NMFS has identified EFH within 10’ X 10’ square coordinates. The study area contains EFH for various life stages for eight species of managed fish. Table 2 presents the managed species and their life stage that EFH is identified in the Pond Creek / Delaware Bay area. The habitat requirements for the identified EFH species and their representative live stages are provided in Table 3.

Table 3. Summary of Essential Fish Habitat (EFH) Designation for Pond Creek / Delaware Bay Area (NMFS Website, 2005).

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*				X
red hake *(Urophycis chuss)*	X	X	X	
winter flounder *(Pleuronectes americanus)*	X	X	X	X

windowpane flounder *(Scopthalmus aquosus)*	X	X	X	X
Atlantic sea herring *(Clupea harengus)*			X	X
monkfish *(Lophius americanus)*	X	X		
bluefish (*Pomatomus saltatrix*)			X	X
Atlantic butterfish *(Peprilus triacanthus)*		X	X	X
summer flounder *(Paralicthys dentatus)*		X	X	X
scup *(Stenotomus chrysops)*			X	X
black sea bass *(Centropristus striata)*			X	X
king mackerel *(Scomberomorus cavalla)*	X	X	X	X
Spanish mackerel *(Scomberomorus maculatus)*	X	X	X	X
cobia *(Rachycentron canadum)*	X	X	X	X
sand tiger shark *(Odontaspis taurus)*		X		X
Atlantic angel shark *(Squatina dumerili)*		X	X	X
Atl. sharpnose shark *(Rhizopriondon terraenovae)*				X
dusky shark *(Charcharinus obscurus)*		X		
sandbar shark *(Charcharinus plumbeus)*		X (HAPC)	X (HAPC)	X (HAPC)
scalloped hammerhead shark *(Sphyrna lewini)*			X	
tiger shark *(Galeocerdo cuvieri)*		X		

Table 4. Habitat Utilization of Identified EFH Species Identified in the Pond Creek / Delaware Bay Area (NMFS Website, 2005)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
Atlantic cod *(Gadus morhua)*				Bottom habitats Rocks, pebbles, gravel Temps <10 C 29-34% salinity 10-150 m depth
red hake *(Urophycis chuss)*	Surface waters of inner continental shelf, peaks in June and July. Temps <10 C <25% salinity	Surface waters, peaks in Sept and Oct. Temps <19 C >0.5% salinity <200 m depth	Bottom habitats with shell fragments Temps <16 C 31-33% salinity <100 m depth	
winter flounder *(Pleuronectes americanus)*	Bottom habitats (muddy sand, sand, gravel), February to June. Temps <10 C 10-30% salinity <5 m depth	Pelagic and bottom waters, March to July. Temps <15 C 4-30% salinity <6 m depth	Bottom habitats (mud or fine grained sand) Temps <25 C 10-30% salinity 1-50 m depth	Bottom habitats (mud, sand, gravel) Temps <25 C 15-33% salinity 1-75 m depth
windowpane flounder *(Scopthalmus aquosus)*	Surface waters, peaks May and Oct Temps <20 C <70 m depth	Pelagic waters, peaks May and Oct Temps <20C <70 m depth	Bottom habitats (mud or fine grained sand) Temps <25 C 5.5-36% salinity 1-100 m depth	Bottom habitats (mud or fine grained sand) Temps <26.8 C 5.5-36% salinity 1-100 m depth
Atlantic sea herring *(Clupea harengus)*			Pelagic waters and bottom habitats Temps <10 C 26-32% salinity 15-135 m depth	Pelagic waters and bottom habitats Temps <10 C >28% salinity 20-130 m depth
monkfish *(Lophius americanus)*	Surface waters, March to Sept Temps <18 C 15-1000 m depth	Pelagic waters, peaks March to Sept Temps 15 C 25-1000 m depth		
bluefish *(Pomatomus saltatrix)*			Pelagic waters, Mid-Atlantic estuaries May to Oct Temps 19-24 C 23-36% salinity	Pelagic waters, Mid-Atlantic estuaries April to Oct Temps 14-16 C >25% salinity
Atlantic butterfish *(Peprilus triacanthus)*		Estuaries, May – Sept. Temps 7-26 C 3-37% salinity 1-1750 m depth (most <120)	Pelagic waters, estuaries spring to fall Temps 3-28 C 3-37% salinity 1-365 m depth (most <120)	Pelagic waters, estuaries summer to fall Temps 3-28 C 4-26% salinity 10-365 m depth (most <120)
summer flounder *(Paralicthys dentatus)*		Pelagic waters, peaks May and Oct Temps 9-12 C 23-33% salinity 10-70 m depth	Demersal waters (mud, but prefers sand) Temps >11 C 10-30% salinity 0.5-5 m depth	Demersal waters and estuaries 0-25 m depth

Table 4. Habitat Utilization of Identified EFH Species Identified in the Pond Creek / Delaware Bay Area (NMFS Website, 2005)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
scup *(Stenotomus chrysops)*			Demersal waters, spring and summer in estuaries and bays Temps >7 C >15% salinity 0-38 m depth	Demersal waters and inshore estuaries Temps >7 C >15% salinity 2-185 m depth
black sea bass *(Centropristus striata)*			Estuaries in spring and summer; rough bottom, shellfish, and eelgrass beds Temps >6 C >18% salinity 1-38 m depth	Inshore estuaries from May to Oct; structured habitat sand and shell substrates preferred Temps >6 C >20% salinity 20-50 m depth
king mackerel *(Scomberomorus cavalla)*	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity
Spanish mackerel *(Scomberomorus maculatus)*	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity
cobia *(Rachycentron canadum)*	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity
sand tiger shark *(Odontaspis taurus)*		Shallow coastal waters <25 m depth		Shallow coastal waters <25 m depth
Atlantic angel shark *(Squatina dumerili)*		Shallow coastal waters <25 m depth	Shallow coastal waters <25 m depth	Shallow coastal waters <25 m depth
Atl. sharpnose shark *(Rhizopriondon terraenovae)*				Shallow coastal waters <25 m depth
dusky shark *(Charcharinus obscurus)*		Shallow coastal waters, inlets, and estuaries <25 m depth		
sandbar shark *(Charcharinus plumbeus)*		Shallow coastal waters <25 m depth	Shallow coastal waters <25 m depth	Shallow coastal waters <50 m depth
scalloped hammerhead shark *(Sphyrna lewini)*			Shallow coastal waters <200 m depth	
tiger shark *(Galeocerdo cuvieri)*		Shallow coastal waters <200 m depth		

5.4 Wildlife Resources

The lower Cape May Peninsula is one of the most important migratory concentration areas in the world (Kerlinger, 1991; Mabey, 1992). The migratory bird community that uses the lower Cape May Peninsula includes 130 species of neotropical migrants, 20 species of waterfowl, American woodcock, 16 species of raptors, 4 species of owls, and many species of short-distance migrants. One of the primary reasons the Cape May Peninsula is critical to migratory birds is that the peninsula terminates at one of the longest overwater crossings on the east coast. Migratory birds stop over at the peninsula to improve their physical condition via increased body-fat content and / or wait for favorable flight conditions.

The surrounding beach, dune, and estuarine wetlands provide high quality habitat for a variety of migratory shorebirds. Shorebirds that use the beaches and associated estuarine wetlands on and in the vicinity of Pond Creek include: ruddy turnstone (*Arenaria interpres*), willet (*Catoptrophorus semipalmatus*), red knot, dunlin (*Calidris alpina*), semipalmated sandpiper (*C. pusilla*), short-billed dowitcher (*Limnodromus griseus*), sanderling (*Calidris alba*), and least sandpiper (*Calidris minutilla*) (New Jersey Division of Fish and Wildlife, 1994).

A variety of colonial waterbirds nest within approximately 3 miles of Pond Creek including: little blue heron (*Egretta caerulea*), tricolored heron (*E. tricolor*), snowy egret (*E. thula*), black-crowned night heron (*Nycticorax nycticorax*), yellow-crowned night heron (*N. violaceus*), great egret (*Casmerodius albus*), cattle egret (*Bubulcus ibis*), and the glossy ibis (*Plegadis falcinellus*) (Andrews, 1985). Common tern (*Sterna hirundo*), and black skimmers (*Rynchops niger*) also nest in the vicinity of Pond Creek.

The Cape May Peninsula also provides important resting and feeding areas for migratory waterfowl on the Atlantic flyway. Undeveloped coastal estuarine wetlands and the adjacent uplands provide habitat for American black duck (*Anas rubripes*), mallard (*Anas platyrhynchos*), American widgeon (*A. americana*), green-winged teal (*A. crecca*), blue-winged teal (*A. discors*), greater scaup (*Aythya marila*), common goldeneye (*Bucephala clangula*), bufflehead (*B. albeola*), ruddy duck (*Oxyura jamaicensis*), hooded merganser (*Lophodytes cucullatus*), and brant *(Branta bernicla*) (New Jersey Division of Fish and Wildlife, 1994).

Southern Cape May County is considered by many as North America's premier birding area, particularly during southbound migration. No other area in North America can be found that provides foraging and loafing habitat to higher concentrations of raptors, such as osprey (*Pandion haliaetus*), peregrine falcons (*Falco peregrinus*), merlins (*Falco columbarius*), cooper hawks (*Accipiter cooperii*) and sharp-shinned hawks (*Accipiter striatus*) during that season. The lower Cape May Peninsula is one of the most important migratory concentration areas in the world (Kerlinger, 1991; Mabey, 1992).

Mammals common to the Pond Creek area include white-tailed deer (*Odocoileus virginianus*), eastern cottontail rabbit (*Sylvilagus floridanus*), and gray squirrel (*Sciurus carolinensis*). Other abundant, though illusive, species are the Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), muskrat (*Ondatra zibethica*), and raccoon (*Procyon lotor*).

The Pond Creek project area supports a variety of habitat types including beach, dune, palustrine emergent wetlands, ponds, and surrounding uplands. Some of these habitats provide valuable wildlife habitat and are ecologically sound. However, the emergent wetlands within Pond Creek provide limited wildlife value due to the predominance of *Phragmites*. Some wildlife continues to use the site including marsh wren (*Cistothorus palustris*) and red-winged blackbird (*Agelaius phoeniceus*); however the monoculture of *Phragmites* throughout the site severely limits habitat diversity and value.

5.5 Air and Water Quality

The air quality within Cumberland County and Atlantic County (both adjacent to Cape May County) has met (been below) the U.S. Environmental Protection Agency's (EPA) air quality standard for the past six years (Environmental Protection Agency, 2004), except for ozone, which has exceeded (failed to meet) EPA standards every year based on the 8-hour average.

Pond Creek watershed is approximately 1,695 acres or 2.6 square miles immediately south of the Cape May Canal (Schmid, 1972). Dissolved oxygen (DO) measured at a United States Geological Survey (USGS) sampling station at Higbee Beach between 1985 and 1992 averaged 0.1 mg/L (USGS, 2004). The median pH, during the same time period, was 7.9 (Range: 7.8 and 8.0 pH). It is likely that the pH level within the water is affected by waste magnesite associated with the Harbison and Walker spoil piles, as the spent or un-reacted dolomite with high calcium and magnesium content is basic. In 1985 ammonia and nitrites were reported as 1.1 mg/L and 0.04 mg/L respectively. During the same period average phosphorous concentrations were 0.19 mg/L.

The Cape May peninsula is part of New Jersey's outer coastal plain. The substrate is underlain with unconsolidated sediments consisting of alternating beds of sand, silt, and clay. The Kirkwood-Cohansey aquifer system beneath Pond Creek is comprised of alluvial deposits and beach sand and gravel. The surface aquifer is the unconfined Holly Beach water-bearing zone. These two units make up the Cape May Formation. Beneath the Cape May Formation is a layer of silt and clay, then the estuarine sand aquifer, then another confining unit of silty clay, and then the Cohansey aquifer (Lacombe and Carleton, 2002). Most of the residential homes in the area rely on groundwater wells to provide water.

5.6 Threatened and Endangered Species

According to the Service, Higbee Beach and the Delaware Bay shoreline adjacent to Pond Creek provide habitat for the piping plover (*Charadrius melodus*). The piping plover is a federally threatened species that nests and forages on beaches during the spring and summer. No piping plovers have nested within the area in the last 5 years.

Swamp pink (*Helonias bullata*), a federally threatened species, occurs approximately 2.8 miles north of the project area; however no swamp pink habitat occurs in the project area. The federally listed threatened bald eagle (*Haliaeetus leucocephalus*) is a transient visitor of the project area and may forage in open water areas near the project area.

Several birds-of-prey occur in the vicinity of the project area including the State-listed (endangered) northern harrier (*Circus cyaneus*) and short-eared owl (*Asio flammeus*), and the State-listed (threatened) osprey (*Pandion haliaetus*) (New Jersey Division of Fish and Wildlife, 1994). The State-listed (threatened) black rail (*Laterallus jamaicensis*) also inhabits the salt and brackish marshes in the vicinity of Pond Creek (New Jersey Division of Fish and Wildlife, 1994).

5.7 Hydraulics and Hydrology

The Pond Creek watershed is shown in Figure 7. The marsh area divided into two sections north and south of the abandoned railroad tracks is also shown on Figure 7. Pertinent drainage areas are provided in Table 5.

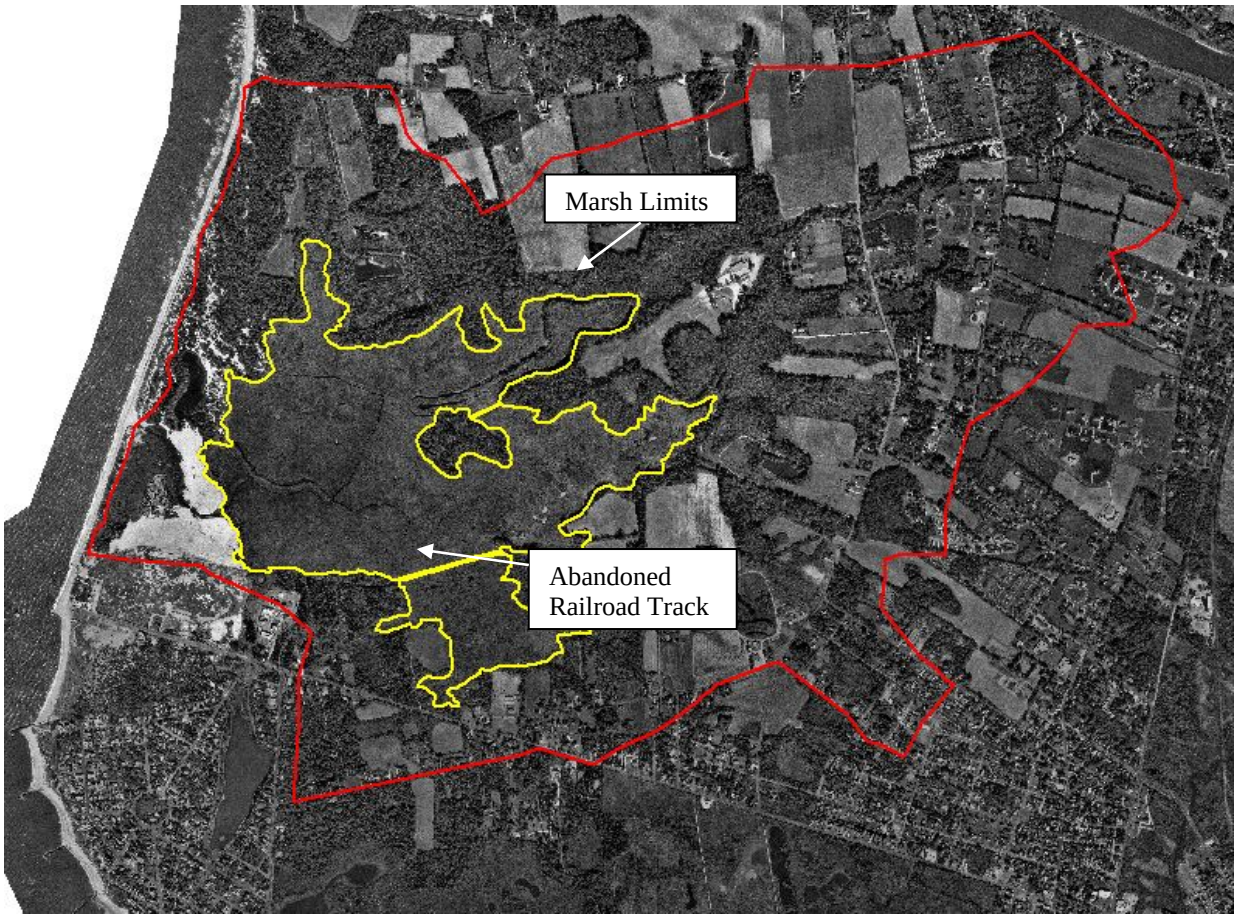

Figure 8. Pond Creek watershed and marsh limits.

Table 5 Pertinent Surface Areas of Pond Creek	
Item	Area (acres)
Drainage area at mouth	1624 *
Total Area of North Marsh	270
South Marsh U/S Of RR	42

*USGS reports Drainage Area of 1523 acres.

Hydraulic Modeling

The hydraulics of the existing condition were determined with the UNET model. UNET is a one dimensional unsteady state model that routes the tide signal from the Bay through the channel (accounting for the culvert constrictions) and calculates the volume of salt water delivered to the marsh. The volume is then coupled with an elevation-capacity curve to determine the water surface elevations in the marsh. UNET requires a downstream boundary condition which is either the astronomical tide stage hydrograph or a storm frequency stage hydrograph. UNET also requires survey data that reflects the flow capacity of the channel from the

bay and the storage capacity of the marsh. UNET was run for the existing condition and all proposed plans of improvement.

Tide Data

Astronomical tide level data is provided in Table 6 and storm frequency data is provided in Table 7.

Table 6 Tide Data for Pond Creek	
Item	Water Surface Elevation (Feet NAVD88)
Mean Lower Low Water	-3.27
Mean Low Water	-3.11
Mean Tide Level	-0.65
Mean High Water	1.80
Mean Higher High Water	2.20

Table 7 Delaware Bay Storm Frequency Water Surface Elevations	
Event (year)	Water Surface Elevation (Feet NAVD88)
2	3.6
5	4.0
10	4.9
20	5.7
50	6.9
100	7.6
200	8.3
500	9.3

Survey Data

A large number of surveyed spot elevations were obtained for use in defining the hydraulic geometry of the UNET model. Numerous points were surveyed in the vicinity of the spoil piles to define the channel and over-bank geometry. Spot elevations were taken at the edge of the marsh and around the perimeter to define the elevation of the marsh relative to the tide signal and to define its storage capacity. Spot elevations were also taken of the developed property surrounding the marsh. The surface area of the north marsh is 270 acres and the spot elevations range from 1.1 to 1.5 ft with an average of 1.3 ft. The surface area of the south marsh is 42 acres and spot elevations range from 1.3 to 1.7 ft, but the majority of the elevations are 1.7 ft.

Subsequent to the survey (January 2002) NJDEP raised the north spoil pile by approximately 7 feet with dredged material removed from the Cape May Canal disposal site. The fill was placed only on the north spoil pile so those elevations have changed since our initial survey. NJDEP will provide a detailed survey of the filled area at the completion of filling operations.

5.8 Socioeconomics

The New Jersey Division of Fish and Wildlife has a very active program in trying to encourage the public to use State game lands for a variety of recreational uses including: bird watching, photography, hiking, fishing, and hunting, as long as such activities do not conflict with wildlife management objectives. In addition, the New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program, in cooperation with the New Jersey Audubon Society through the Cape May Stopover Protection Project, conducted three workshops and produced pamphlets regarding construction of butterfly and hummingbird gardens, wildflower meadows, ponds, and backyard habitat for wildlife.

Cape May is a premier resort for vacation travelers throughout the Northeast. Tourism is one of the major components of the local economy. In 1988 alone, bird-watching tourism in Cape May contributed over $5.5 million to the local economy by 90,000 bird-watching travelers (Kerlinger and Weidner, 1991). Additional bird-watching venues such as the Pond Creek restoration project will assist in driving the local economy. Tidal inundation and the subsequent biological control of mosquitoes will help minimize mosquito breeding habitat and minimize chemical control of mosquito larvae, which will also indirectly help tourism in Cape May.

5.9 Historic and Cultural Resources

The first records of land ownership at Pond Creek date back to 1741 when John Stillwell acquired approximately 200 acres on the Delaware Bay between Pond Creek and New England Creek. The Stillwell property was inherited for several generations. In the early 1900's Pond Creek was large and deep enough for some sailing vessels and was used for delivery of lumber, salt marsh hay, sand, and produce (New Jersey Division of Fish and Wildlife, 1983). Also in the early 1900's a unidirectional tide gate was installed by salt hay farmers to assist in growing and harvesting salt hay. In 1917 a permanent tide gate was installed eventually converting Pond Creek from an estuarine wetland to a palustrine wetland. This tide gate was installed primarily for mosquito control. Commerce associated with Pond Creek ceased after 1917, except during a brief time during the Prohibition Era, during which Signal Hill (one of the tallest dunes in the area, adjacent to Davy's Lake) was used to guide rum runners ashore (Lomax, 1975). In 1923 the property was sold to John S. Higbee who operated a tavern, farm, and inn (Hermitage Hotel) in the area for many years. Between 1940 and present day the outlet, sluice, and tide gate were repaired and replaced at frequent intervals by the Mosquito Commission due to ice and storm damage (Lomax, 1975). Changes in ownership throughout the years did little to substantially change Pond Creek through the mid to late 1900's, except for operation of the Harbison Walker Magnesite Plant. Operation of this plant and its associated spoil pile filled over 5 acres of wetlands at Pond Creek and left a large unvegetated and barren area in Pond Creek. The tide gate has since deteriorated and been removed.

5.10 Land Use

From 1941 to 1983, Dresser Industries operated the Harbison Walker Magnesite Plant (sometimes called the Northwest Magnesite Plant). Operation of the plant consisted of reacting softened clarified seawater from the Delaware Bay with dolomite to produce a magnesium hydroxide solution. This solution was filtered and then fired in rotary kilns to produce magnesite refractory brick. The magnesite plant closed in 1983 and pursuant to the New Jersey Environmental Cleanup Responsibility Act (ECRA) was demolished and removed in 1984. The only remains of the plant are a 10-foot-high chain link fence surrounding the plant site, a water tower, and a plant disposal area of process waste (primarily consisting of water, magnesite and spent or un-reacted dolomite with a high calcium and magnesium content). The State of New Jersey purchased the Harbison Walker Site in 1999 through its Green Acres Program and transferred it to the New

Jersey Division of Fish and Wildlife as part of its Higbee Beach Wildlife Management Area. Land use within the Higbee Beach Wildlife Management Area is restricted to passive recreation, hunting, fishing, and bird-watching. Land use surrounding Pond Creek continues to be dominated by agricultural activities (i.e., horse farms, small crop fields, and pasture) and limited residential development.

6.0 Environmental Impacts

6.1 Vegetation and Soils

The preferred alternative involves excavating a new channel through a dune / beach complex to restore the original channel to Pond Creek as it existed prior to 1917. In addition, the project will involve construction within the deposition site and within the wetland areas. This alternative will involve the conversion of approximately 0.9 acres of beach / dune complex to a tidal channel with 1V:5H slopes (approximately 920 feet long and 125 feet wide). However the existing channel through the dunes (approximately 350 feet long and 150 feet wide) would be converted to a beach / dune complex of approximately 1.2 acres using material excavated from the new channel. As such, the preferred alternative has no net loss of beach / dune habitat. Soils will be stabilized on the access channel by using a 1V:5H slope and revegetating the banks with appropriate vegetation (e.g., dune grass and bayberry in dune habitat, and *Spartina alterniflora* in wetland areas). Rip-rap will be required for stabilization at the bottom of the new inlet jetty and at the base of water control structure (see Appendix E). All necessary soil erosion and sediment controls will be used during the construction to minimize impacts on Pond Creek wetlands and the Delaware Bay. Controls that would be implemented include the installation of soil erosion control fences to prevent runoff and debris from entering the creek. The contractor would be required to complete a plan that describes measures to prevent hazardous materials (e.g. oils) used during construction to enter the wetlands. Furthermore, all construction material would be disposed of in an appropriate manner.

Portions of the Harbison Walker spoil pile would be excavated. This material would be deposited on the other existing spoil piles currently on the project site. Material used from the excavation of tidal channels in wetland areas would also be placed on upland spoil piles and disked into the spoil pile to neutralize the pH within the spoil pile. These areas would then be replanted with native warm-season grasses and shrubs to revegetate the spoil piles thereby improving upland buffers adjacent to the Pond Creek wetlands.

6.2 Wetlands

The proposed project will restore approximately 170 acres of estuarine intertidal emergent wetlands through the reintroduction of tidal waters into wetlands that have been excluded from tidal water since 1917. Wetlands that are currently palustrine emergent wetlands within Pond Creek will be converted to estuarine wetlands. In addition, the invasive plant common reed will be replaced with beneficial estuarine species such as smooth cordgrass, salt hay grass, and spike grass. The remaining 247 acres of palustrine emergent and forested wetlands in the headwater areas of Pond Creek will be protected through the installation of the hydraulic structure limiting tidal flow in these areas.

Construction of the new channel and hydraulic structure associated with the preferred option will result in the excavation of approximately 1.0 acres of palustrine emergent wetlands that are currently dominated by common reed (*Phragmites*). These excavated wetlands will be converted to an estuarine open water channel to provide tidal water to the Pond Creek wetlands following the original watercourse as it existed prior to 1917. A side slope of 1V:5H will be constructed and portions of which would revert to estuarine emergent wetlands. The remaining portions of the excavated wetlands would revert to uplands along the upper edges of the channel. In addition, approximately 0.4 acres of *Phragmites* marsh will be impacted by the temporary

storage of excavated material from the channel until it is placed on the spoil pile or used to plug the old channel. Additional plant species that could be impacted by the excavation include: eastern red cedar (*Pinus Virginia*), bayberry (*Myrica Pensylvanica*), groundsel bush (*Baccharius halimifolia*), beach plum (*Prunus maritime*), red mulberry (*Morus rubra*), and winged sumac (*Rhus copallinum*) (Louis Berger 2000). A 0.1 acre area of palustrine open water at the current outlet of Pond Creek would be filled to plug the outlet and convert the area to coastal dune habitat. Furthermore, portions of the old channel will need to be plugged to prevent a hydraulic connection to the new channel. This would result in the filling of approximately 0.5 acres of open water. Total wetland impacts as a result of the new channel excavation will be approximately 2.0 acres. Additional *Phragmites* wetlands will be impacted as a result of interior ditching needed to create new channels to move the daily tide throughout the marsh and inundate approximately 170 acres. The amount of interior ditching will depend on the existing conditions of the marsh at the time of construction, as the conditions of Pond Creek marsh are constantly changing (see Figure 9 for current conditions) and will range from 0 – 3.0 acres. The amount of acres impacted by interior ditching would be 0, if appropriate channels exist throughout the marsh at the time of construction, or it could be as high as 3.0 acres, if no channels existed and the ditches described in the Alternatives Section needed to constructed for the project. Since, some channels exist already in the interior marsh (Figure 9), it is likely that this impact will be in the 0 – 2.0 acres range.

Figure 9. Pond Creek existing site conditions (September 2006).

The majority of the wetlands within Pond Creek are within Zone A as defined by the National Flood Insurance Program because they are subject to the 100-year flood event. The proposed project will not affect the flood zone category for the project area.

The proposed project would also involve minor and temporary impacts to wetlands associated with Open Marsh Water Management (OMWM). The OMWM process would involve installation of a variety of ponds and radials throughout the 170 acre marsh to provide refuge areas for mosquito-eating fish. These areas are created to allow these fish to move throughout the wetlands during high tide to consume mosquito larvae. The OMWM activities would comply with the Standards for OMWM (see Appendix C). In addition, new radial dispersion channels (see ditching plan in Section 4.5.2) will be created to direct tidal flow from the new water control structure into the *Phragmites* marsh.

The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity. The project will not impact important freshwater wetlands located in the upper reaches of Pond Creek.

6.3 Fishery Resources

The preferred option will open approximately 170 acres of estuarine emergent wetlands to a variety of estuarine-dependent fish that occur in the Delaware Bay including weakfish (*Cynoscion regalis*), Atlantic menhaden (*Brevoortia tyrannus*), bluefish (*Pomatomus saltatrix*), American eel (*Anguilla rostrata*), and white perch (*Morone americana*). The semi-anadromous striped bass (*Morone saxatilis*) could also occur within the lower portions of the Pond Creek wetlands. Perhaps most importantly the mummichog (*Fundulus heteroclitus*) would inhabit the Pond Creek wetlands providing an important forage base for predatory fish and wildlife, but also providing the primary control of mosquitoes within the wetlands. The proposed project would also open up additional foraging and possibly spawning areas for anadromous fish including blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*). The construction of the new channel and inlet with jetty could have a temporary impact on fishery resources. Since finfish are mobile, most impacts will be avoided; however, some impacts to eggs and larvae may occur.

Essential Fish Habitat

Assessment: Based on the above listed habitat utilization by the designated EFH species, it appears that most of the species will not be found in the immediate project area, due to a depth requirement or the fact that they are very migratory in nature (i.e., the sharks). There is the potential for a few species to be found in the project area and these would include: winter flounder, windowpane flounder, summer flounder, king mackerel, Spanish mackerel, and cobia. Most of the above-listed fish species are not estuarine resident species and therefore only utilize this area on a seasonal basis, primarily in the warmer summer months. During the summer months the estuary is typically utilized as a forage area for juveniles and adults and nursery area for larvae and juveniles. The only apparent exception to this is winter flounder which spawns in the estuary, generally from February through June.

The proposed dredging (2400 cubic yards) of the new inlet is scheduled to be undertaken from August – November. Since adults and juveniles of the above-listed species are mobile, it is expected that they will avoid the areas of disturbance and therefore will not be impacted. Winter flounder, however, spawn during the months immediately prior to the time that construction will be occurring. Since winter flounder lay demersal eggs, there is a potential that the construction activities will adversely impact eggs in the proposed areas of disturbance. The area of winter flounder EFH disturbance is relatively small scale (0.2 acres) compared to the suitable habitat available to winter flounder adjacent to the project site within Delaware Bay. In a worst case scenario, 0.2 acres containing winter flounder eggs will be adversely impacted for one

season. The affected area would be available for deposition of winter flounder eggs in subsequent years after the dredging activities are completed

Cumulative Effects on Essential Fish Habitat: We do not anticipate any cumulative effects associated with this project on EFH and managed species.

Conclusion: Based upon the project design, the minimal short-term impacts associated with the construction of the new channel and jetty, the Corps believes that the potential adverse impacts to EFH will not be substantial.

6.4 Wildlife Resources

The proposed project would have little to no impact on most wildlife surrounding the emergent marsh. Beach and dune habitat associated with the excavation of the proposed channel would be converted to estuarine open water. However, dune habitat would be replaced at the existing site of the Pond Creek outlet channel. Adjacent uplands and ponds would not be impacted by the project. The spoil piles, which were recently restored by NJDEP with native warm season grasses, would be temporarily impacted during project construction. Impacted areas of the restored spoil piles would be replanted with native warm season grasses after project construction is complete.

The primary purpose of the proposed project of restoring tidal inundation to Pond Creek would convert a palustrine emergent wetland dominated by *Phragmites* to an estuarine emergent wetland dominated by a variety of beneficial estuarine vegetation such as smooth cordgrass, salt hay grass, and spike grass. As a result of restoring and improving vegetative diversity and tidal exchange into these wetlands, wildlife habitat would be significantly improved. The Pond Creek restoration project area would be used by a wide variety of waterfowl, in particular wintering black ducks. In New Jersey, black ducks winter primarily in tidal estuary systems where they feed on macroinvertebrates and aquatic vegetation. Bellrose (1976) identifies the Atlantic coast of New Jersey as part of a large wintering area for the black duck. In addition the proposed project would restore habitat for a variety of shorebirds, raptors, wading birds, and mammals, improving biological diversity within Pond Creek.

The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity. The project will not impact important freshwater wetlands used by wildlife in the upper reaches of Pond Creek.

6.5 Air and Water Quality

Water quality is not expected to be significantly impacted during the construction of this project. All necessary soil erosion and sediment controls will be used during the construction of the channel, hydraulic structure, and OMWM activities to minimize project impacts to Pond Creek wetlands. In addition, the contractor will be required to complete a plan that describes measures to prevent hazardous construction materials (e.g., oils) from entering the wetlands and possibly traveling downstream. Furthermore, all construction debris will be disposed of in an appropriate manner.

The proposed project will improve dissolved oxygen (DO) levels within Pond Creek. The currently recorded DO levels are very low, which may indicate large stagnant water and poor biological exchange within the wetland. Providing tidal flushing twice daily will provide a significant improvement in DO levels and subsequent biological exchange within the Pond Creek wetlands.

The proposed project is unlikely to affect the Holly Beach aquifer in the vicinity of the residential areas, which are south of the railroad tracks and east of remaining freshwater areas, in part because wetlands within the vicinity of the shallow water wells will remain freshwater wetlands and are not impacted by the proposed project. However, as part of the project implementation, shallow water wells in the vicinity of the project area will be monitored prior to initiation of the project and following project implementation to evaluate salt water intrusion. If monitoring results indicate saltwater intrusion in shallow water wells due to the construction of this project, mitigating action will be taken by the non-federal sponsor, NJDEP.

Temporary impacts to the aesthetics of the project area will occur during improvement operations. Air quality impacts resulting from the release of carbon monoxide and particulate emissions will occur at the site during project related activities and may be considered offensive, but are generally not considered far-reaching. Exhaust from the construction equipment will have an effect on the immediate air quality around the construction operation but should not impact areas away from the Pond Creek project. These emissions will subside upon cessation of operation of heavy equipment.

General Conformity Review and Emission Inventory
Pond Creek

The 1990 Clean Air Act Amendments include the provision of Federal Conformity, which is a regulation that ensures that Federal actions conform to a nonattainment area's State Implementation Plan (SIP) thus not adversely impacting the area's progress toward attaining the National Ambient Air Quality Standards (NAAQS). In the case of the Pond Creek Salt Marsh Restoration Project, the Federal action is to restore a native salt marsh. The U.S. Army Corps of Engineers, Philadelphia District would be responsible for construction. Cape May County, New Jersey within which the Federal action will take place is classified as moderate nonattainment for ozone (oxides of nitrogen [NOx] and volatile organic compounds [VOCs]). The Pond Creek project site is within the Philadelphia-Wilmington-Trenton Nonattainment Area (PA-NJ-DE-MD).

There are two types of Federal Conformity: Transportation Conformity and General Conformity (GC). Transportation Conformity does not apply to this project because the project would not be funded with Federal Highway Administration money and it does not impact the on-road transportation system. GC however is applicable. Therefore, the total direct and indirect emissions associated with the Pond Creek project must be compared to the GC trigger levels presented below.

Pollutant	General Conformity Trigger Levels (tons per year)
NOx	100
VOCs	50

To conduct a general conformity review and emission inventory for Pond Creek, a list of equipment necessary for construction was identified. Pertinent pieces of equipment include: a dewatering pump, bulldozers (various), front loaders, cranes (various), and welders. Table 1 (Appendix E) lists these pieces of equipment along with the number of engines, engine size (hp), and duration of operation. A Load Factor (LF) was also selected for each engine, which represents the average percentage of rated horsepower used during a source's operational profile. Load factors were taken from other General Conformity Reviews and Emission Inventories.

Table 1 (see Appendix E) shows the estimated hp-hr required for each equipment/engine category. Hp-hr was calculated using the following equation:

hp-hr = # of engines*hp*LF*hrs/day*days of operation

The second calculation is to derive the total amount of emissions generated from each equipment/engine category by multiplying the power demand (hp-hr) by an emission factor (g/hp-hr). The following equations were used:

emissions (g) = power demand (hp-hr) * emission factor (g/hp-hr)

emissions (tons) = emissions (g) * (1 ton/907200 g)

Table 2 (see Appendix D) provides the NOx and VOC emission factors selected for each equipment/engine category. These factors were also taken from other General Conformity Reviews and Emission Inventories. Tables 3 and 4 (see Appendix D) present the emission estimates for NOx and VOCs, respectively. The tables present the emissions from each individual equipment/engine category and the combined total.

The total estimated emissions that would result from construction of the Pond Creek project are 5.3 tons of NOx and 0.9 tons of VOCs. These emissions are below the General Conformity trigger levels of 100 tons of NOx and 50 tons of VOCs per year. General Conformity under the Clean Air Act, Section 176 has been evaluated for the project according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project because the total direct and indirect emissions from the project are below the conformity threshold values established at 40 CFR 93.153 (b) for ozone (NOx and VOCs) in a moderate Nonattainment Area (100 tons NOx per year/50 tons of VOCs per year). The project is not considered regionally significant under 40 CFR 93.153 (i).

6.6 Threatened and Endangered Species

A 0.1 acre area of beach would be excavated to construct the outlet channel for the Pond Creek restoration project. However, this limited impact is unlikely to substantially affect the overall habitat availability of beach nesting habitat within the project area. As such, piping plovers would not be adversely affected by project implementation (see Intra-Service Section 7 biological evaluation forms - Appendix B). The federally listed threatened bald eagle (*Haliaeetus leucocephalus*) is a transient visitor of the project area and may forage in open water areas near the project area. The proposed project will improve foraging opportunities for bald eagles by providing additional fish habitat within the project area.

Restoring estuarine wetlands within Pond Creek will improve habitat for these State-listed species. Several State-listed species also occur in the palustrine headwater areas of Pond Creek. The proposed project will not affect these freshwater areas and will not have an adverse impact on the State-listed species found in the area (see Appendix A).

6.7 Hydraulics and Hydrology

The UNET model was run with eight Delaware Bay storm hydrographs as the downstream boundary condition and the results are provided in Table 7. The plan of improvement will be designed so it does not produce frequency marsh water surface elevations greater than those found in Table 5 (existing conditions).

Table 8 Without Water Control Structure – Water Surface Elevations (WSEL) of the Interior Marsh (ft-NAVD)			
Storm Event	Bay WSEL (ft-NAVD)	Maximum WSEL North Marsh (ft-NAVD)	Maximum WSEL South Marsh (ft-NAVD)
2yr	3.6	1.47	1.47
5yr	4.0	1.52	1.52
10yr	4.9	1.66	1.66
20yr	5.7	1.85	1.76
50yr	6.9	2.88	2.54
100yr	7.6	4.35	4.16
200yr	8.3	8.3	8.3
500yr	9.3	9.3	9.3
Daily	3.3	1.38	1.38

Model Assumptions:
- The culvert across the spoil pile is assumed not to breach.
- These wsels reflect the 2000 site condition.
- The south marsh is connected to the north marsh by two 18 inch culverts and the RR track serving as a weir with a length greater than 1200 ft and elevation of 4.1 ft.
- The UNET model included overtopping but non-breaching flow of the downstream section of the spoil pile for the 50-yr and 100-yr events.

A water control structure was the selected method of protection and a plan of improvement was designed to provide maximum daily inundation of the north marsh while minimizing interior water levels due to Delaware Bay storms. The crest elevations of both the levee on the north spoil pile and of the hydraulic structure were specified as elevation 10.6 ft. This is 1.3 ft higher than the 500-year water surface elevation (wsel) and 3 ft higher than the 100-year water surface elevation. Elevation 10.6 is slightly lower than the elevation of the dunes fronting the bay.

The project is designed to reduce flooding. Current conditions at the site provide local residents with protection from Delaware Bay storms at the 20-year level. When completed, the elevation of the completed water control structure will be 1.3 ft higher than the water surface elevation of the 500-year Delaware Bay storm. The proposed project would provide a significant improvement in the protection of local residents from Delaware Bay storms and associated flooding from those events.

6.7.1 Effect on Local Wells

We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. At this point in time, we are not aware of any wells of this type in the project area, but if new information

becomes available during the pre-construction monitoring of local wells (Appendix F), this issue will be revisited. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer. Additional information on potential impacts to large volume supply wells will be known after the pre-construction well monitoring is completed (Appendix F). If new information indicates that this will be a problem, this issue will be revisited.

As stated above, pre and post monitoring of representative local wells will be completed (see Appendix F). This monitoring will determine if the project does impact local wells. If any impacts to local wells occur as a result of this project, NJDEP will mitigate the impacts. The sponsor, NJDEP, will sign a Project Cooperative Agreement with the Corps and this agreement will make NJDEP legally responsible for operation and maintenance of the project, as well as, mitigating any potential impacts associated with salt water intrusion as a result of this project.

6.8 Socioeconomics

The proposed project will improve ecological viability of the Pond Creek wetlands by restoring these wetlands to its original functions and values. The proposed project will also provide additional recreational opportunities within Higbee Beach Wildlife Management Area by providing improved hunting, fishing, and bird-watching.

Additional bird-watching venues such as the Pond Creek restoration project will assist in driving the local economy. Tidal inundation and the subsequent biological control of mosquitoes will help minimize mosquito breeding habitat and minimize chemical control of mosquito larvae, which will also indirectly help tourism in Cape May.

The proposed project will provide additional recreational opportunities for residents and visitors of Cape May and will help minimize mosquito breeding habitat within the project area. Otherwise the proposed project will have no affect on socioeconomics in the project area.

6.9 Historic and Cultural Resources

There are no historic resources (including prehistoric and historic sites, buildings, districts, or objects) which are listed or eligible for listing on the National Register of Historic Places (NRHP) in the vicinity of Pond Creek and as such the proposed project will not affect any historic or cultural resources. In a correspondence dated July 27, 2004 (Appendix C) the New Jersey State Historic Preservation Office concurred with our findings that there are no historic properties within the project's area of potential effects. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

6.10 Land Use

The proposed project will not have an affect on land use within the project area.

6.11 Cumulative Impacts

The Pond Creek Salt Marsh Restoration project will generate cumulative impacts of a regional nature. The Pond Creek wetlands currently provide limited habitat for fish and wildlife resources due to the

overwhelming presence of dense stands of *Phragmites*, which limit habitat value for fish and wildlife. Reducing or eliminating *Phragmites* over hundreds of acres is intended to improve habitat value and diversity. Included in this assessment are other planning and/or construction projects that are currently being undertaken in the vicinity of the Pond Creek project having or potentially impacting the natural resources of Cape May area. A brief summary of these projects are listed below.

U.S. Army Corps of Engineer Projects:
Lower Cape May Meadows (approx. 5 miles from Pond Creek): This is an ecosystem restoration project involving both beach nourishment and freshwater wetland restoration activities. The goals of the project are to improve the quality of the wetlands by reducing saltwater intrusion, increasing water movement through the site, and replacing *Phragmites* with more valuable wetland species. The Beachfill component of this project was completed March 2005. The *Phragmites* removal component of this plan is currently being completed with the planting of native vegetation. Phase II of the *Phragmites* removal, as well as improvements to the internal hydrology, is scheduled for the winter of 2005/2006.

Pine Mount Creek Restoration Project (approx. 36 miles from Pond Creek): This ecosystem restoration project involves the restoration of a freshwater impoundment and fish passage for river herring in the Cohansey River watershed. In addition, through the construction of water control structures, the project will manage impoundment water levels to benefit both estuarine and freshwater species. The project is planned for 2007.

Other restoration projects in the Cape May area:
Green Creek Salt Marsh Restoration Project (approx. 8 miles from Pond Creek): This salt marsh restoration project was completed by the State of New Jersey and the Cape May Mosquito Commission in the late 1990s. This project involved the breaching of a man-made dune and the flooding of a *Phragmites* marsh. This project restored approx. 50 acres of intertidal salt marsh.
PSE&G Estuary Enhancement Program (EEP) (approx. 15 miles from Pond Creek): The EEP involves restoration, enhancement and/or preservation of more than 20,000 acres of wetlands in the Delaware Estuary and offering unique public use opportunities. One of the restoration sites is located in Cape May County near Eldora on West Creek.

<u>Summary and Conclusions</u>
The restoration plan for the Pond Creek project has been considered in the context of other ecosystem restoration projects in the Cape May area. In the context of these other projects currently being undertaken in the region, the Pond Creek project will add to their positive impacts on the natural resources which will result in hundreds of acres of restored wetlands. The juxtaposition of these acres within the known ranges of resident bird species and the annual fall/spring migrants will result in cumulative gains in forage and roosting habitats, reduction in functional fragmentation of these habitats, and reductions in predator pressures through dispersal of foraging activities for avian species in the Cape May area. This is especially important to migratory birds since Cape May is an integral part of the Atlantic Flyway.

In addition, as a result of restoring and improving vegetative diversity and tidal exchange into these wetlands, wildlife habitat would be significantly improved. Furthermore, fishery resources will also benefit from the increase in habitat acres open by the conversion of *Phragmites* to a tidal estuarine marsh. Foraging and refuge areas will increase for fishery resources in a tidal estuarine marsh with the increase in channels and open water as opposed to the confined, monoculture *Phragmites* marsh.

As discussed in the previous sections, there are no long-term adverse effects predicted to occur to

the aquatic or upland ecosystem as a result of the implementation of the recommended plan. Overall, the Pond Creek project, as well as the other project listed above, will add cumulatively positive impacts to the natural resources of the Cape May area.

7.0 Environmental Justice

All of the alternatives, including the selected plan, identified in this study are expected to comply with Executive Order 12989-Environmental Justice in Minority Populations and Low-Income Populations, dated February 11, 1994. The selected plan is not located in close proximity to a minority or low-income community, and no impacts are expected to occur to any minority or low-income communities in the area.

8.0 Relationship of Selected Plan to Environmental Requirements, Protection Statutes, and Other Requirements

Compliance with environmental quality protection statutes and other environmental review requirements is ongoing. Table 8 provides a listing of compliance with environmental statutes. The Service and Corps will apply for the necessary state permits, including but not limited to, a Coastal Zone Management Plan consistency determination from the New Jersey Department of Environmental Protection. In addition, the Service and the Corps, through the EA process, will obtain a State water quality certificate.

Table 9. Compliance with Appropriate Environmental Quality Protection Statutes and Other Environmental Review Requirements.

STATUTE	COMPLIANCE STATUS
Clean Water Act	Full
Endangered Species Act	Full
Fish and Wildlife Coordination Act	Full
National Historic Preservation Act	Full
National Environmental Policy Act	Full
Clean Air Act	Full

NOTE:
Full Compliance: Having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.
Partial Compliance: Some requirements of the statute, E.O., or other policy and related regulations remain to be met.
*All applicable laws and regulations will be fully complied with upon completion of the environmental review, obtaining State water quality certification, coastal zone consistency determination, and concurrence with our determination on cultural resources.
Noncompliance: None of the requirements of the statute, E.O., or other policy and related regulations remain to be met.

9.0 Section 404(b)(1) Analysis

A review of the impacts associated with discharges to waters of the United States for the Pond Creek Salt Marsh Restoration Project in Cape May, New Jersey is required by Section 404(b)(1) of the Clean Water Act, as amended (Public Law 92-500).

I. Project Description

A. Location. The project area is located on Pond Creek, Cape May, New Jersey (Figure 1).

B. General Description. The Pond Creek marsh (totaling 417 acres) is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, New Jersey. The marsh, once a free-flowing estuarine tidal marsh before human disturbance, is part of the State of New Jersey's Higbee Beach Wildlife Management Area. The State's Division of Fish and Wildlife currently manages the marsh for migratory bird and waterfowl habitat and human recreation (e.g., birding and hunting).

C. Purpose. The purpose of the Pond Creek Salt Marsh Restoration Project is to restore estuarine intertidal emergent wetland habitat for fish and wildlife resources and to protect freshwater wetlands for threatened and endangered species and migratory birds. This will be accomplished by reintroducing tidal flushing in the lower marsh areas of Pond Creek to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Once established, *Phragmites* often out competes native salt marsh vegetation, creating habitat less suitable for wildlife. Control of common reed will allow the reestablishment of native salt marsh vegetation [e.g., smooth cordgrass (*Spartina alterniflora*), salt hay grass (*S. patens*), and spike grass (*Distichlis spicata*)], thus increasing habitat available for a variety of fish and wildlife resources, in particular, the diamondback terrapin (*Malaclemys terrapin*), egrets, herons, shorebirds, and waterfowl.

D. General Description of Dredged or Fill Material.

1. General Characteristics of Material: sand/soil

2. Quantity of Discharge: This alternative involves excavating a new 920-foot-long channel with a bottom width of 20 feet and lowering the channel elevation from 1 ft to -6 ft to increase the volume of water entering the marsh. The estimated volume of excavated material is 13,000 cubic yards (cys) (2400 cys with a dredge) for the new channel and 26,000 cys within the spoil pile. The channel will also go 154 ft into Delaware Bay from mean average tide (elev. 1.8).

3. Source of Material: existing area behind sand dunes and north spoil pile.

E. Description of Discharge Sites.

Location: The excavated sand material will be used to plug the opening of the existing channel. Any additional material will be placed on the existing upland spoil pile. Ditching inside the existing *Phragmites* marsh will be needed to facilitate the new water flow throughout the marsh.

2. Size (acres): 2.0 – 5.0 (includes main channel excavation, plugging existing channel, channel material storage, new jetty construction, and interior marsh ditching). The impact from the excavation of the new channel and plugging the old channel will be 2.0 acres. The amount of interior ditching will depend on the existing conditions of the marsh at the time of construction, as the conditions of Pond Creek marsh are constantly changing and will range from 0 – 3.0 acres. The amount of acres impacted by interior ditching would be 0, if appropriate channels exist throughout the marsh at the time of construction, or could be as high as 3.0 acres, if no channels existed. Since

some channels exist already in the interior marsh (Figure 8), it is likely that this impact will be in the 0 – 2 acres range.

3. Type of Sites: *Phragmites* marsh

4. Type of Habitat: freshwater marsh

5. Timing and Duration of Discharge: 6 months

F. Description of Discharge Method. Excavation of the new channel and plugging of the existing channel opening.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations.

1. Substrate Elevation and Slope: varies

2. Sediment Type: sand/soil

3. Fill Material Movement: Significant, excavate a new channel and use the material to plug existing the channel opening. Additional material excavated within the north spoil pile will be placed on the adjacent upland spoil pile areas.

4. Physical Effects on Benthos: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a relatively short time period.

5. Actions taken to Minimize Impacts: Best management practices will be used to minimize any disturbance to only the area necessary to construct the new channel, new inlet, and the associated ditching.

B. Water Circulation, Fluctuation and Salinity Determinations.

1. Water:

   a. Salinity – Increase salinity in the Pond Creek marsh.

   b. Water Chemistry – temporary, minor effect.

   c. Clarity – temporary, minor effect

   d. Color - No effect

   e. Odor – No effect.

   f. Taste - No effect.

   g. Dissolved Gas Levels – No effect.

h. Nutrients – No effect

I. Eutrophication - No effect.

j. Temperature- No effect.

2. Current Patterns and Circulation:

a. Current Patterns and Flow – Temporary, significant effect on flow and patterns when the new channel and inlet is being constructed and when completed. The area should reach a stabilized equilibrium in a relatively short time period.

b. Velocity - Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

c. Stratification - No effect.

3. Normal Water Level Fluctuations – Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

4. Salinity Gradients – Increased salinity in the Pond Creek marsh.

5. Actions That Will Be Taken To Minimize Impacts: Best management practices will be used to minimize any disturbance to only the area necessary to construct the new channel, new inlet, and associated ditching.

C. Suspended Particulate/Turbidity Determinations.

1. Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Fill Site: Temporary, major effect during the construction of the new channel and inlet.

2. Effects on Chemical and Physical Properties of the Water Column:

a. Light Penetration: Minor effect.

b. Dissolved Oxygen: Minor effect.

c. Toxic Metals and Organics: No effect.

d. Pathogens: No effect.

e. Aesthetics: Minor adverse and temporary effects limited to the construction period.

f. Temperature: No effect.

3. Effects on Biota:

a. Primary Production, Photosynthesis: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

b. Suspension/Filter Feeders: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

c. Sight feeders: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

4. Actions Taken to Minimize Impacts: Best management practices will be used to minimize any disturbance to only the area necessary to construct the new channel, new inlet, and the associated ditching.

D. Contaminant Determinations.

No significant contaminants were found on site that would impact this project (Louis Berger 2000).

E. Aquatic Ecosystem and Organism Determinations.

1. Effects on Plankton: No effect.

2. Effects on Benthos: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

3. Effects on Nekton: No effect

4. Effects on Aquatic Food Web: Temporary, significant effect on flow and patterns when the new channel is being constructed and when completed. The area should reach a stabilized equilibrium in a short time period.

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5. Effects on Special Aquatic Sites:

(a) Sanctuaries and Refuges: None.

(b) Wetlands: Major Impacts (2.0 – 5.0 acres) - loss will result from the construction of a new channel, plugging the old channel, and ditching of the interior *Phragmites* marsh. Low quality *Phragmites* marsh would be impacted. The exact amount of impact will be determined by the number of existing channels in the interior marsh at the time of construction. Despite these potential impacts, the goal of the project is to restore a *Spartina* dominated estuarine tidal marsh. The selected plan will restore approximately 170 acres of *Spartina* marsh.

(c) Tidal flats: None.

(d) Vegetated Shallows: None.

6. Threatened and Endangered Species: No effect.

7. Other Wildlife: Temporary, minor effect.

8. Actions to Minimize Impacts: Best management practices will be used to minimize any disturbance to only the area necessary to construct the new channel and inlet.

F. Proposed Disposal Site Determinations.

1. Mixing Zone Determinations:
   a. Depth of water: 6- 8 ft
   b. Current velocity:
   c. Degree of turbulence:
   d. Stratification:
   e. Discharge vessel speed and direction: TBD
   f. Rate of discharge: TBD
   g. Dredged material characteristics: sand

2. Determination of Compliance with Applicable Water Quality Standards:
   A section 401 Water Quality Certificate has been obtained from NJDEP for the construction of the project (Appendix A).

3. Potential Effects on Human Use Characteristics:

   a. Municipal and Private Water Supply: No anticipated effect.

   b. Recreational and Commercial Fisheries: Temporary, minor effect during construction.

   c. Water Related Recreation: Temporary, minor effect.

   d. Aesthetics: Temporary, minor effect.

   e. Parks, National and Historical Monuments, National Seashore, Wilderness Areas, Research Sites, and Similar Preserves: Temporary, minor effect.

G. Determination of Cumulative Effects on the Aquatic Ecosystem.
No significant adverse effects are anticipated.

H. Determination of Secondary Effects on the Aquatic Ecosystem.
No significant secondary effects are anticipated.

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

A. Adaptation of the Section 404(b)(1) Guidelines to this evaluation - No significant adaptation of the guidelines were made relative to this evaluation.

B. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem - The selected plan was determined from a detailed evaluation of alternatives to have the least amount of environmental impacts.

C. Compliance With Applicable State Water Quality Standards - The selected plan is not expected to violate any applicable state water quality standards in New Jersey.

D. Compliance With Applicable Toxic Effluent Standards or Prohibition Under Section 307 of the Clean Water Act - The proposed discharge is not anticipated to violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

E. Compliance With Endangered Species Act of 1973 -The selected plan will comply with the Endangered Species Act of 1973. Informal Section 7 consultation has been completed with the U.S. Fish and Wildlife Service on this project.

F. Compliance With Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972 - No Marine Sanctuaries, as designated in the Marine Protection, Research, and Sanctuaries Act of 1972, are located within the project area.

G. Evaluation of Extent of Degradation of Waters of the United States - The proposed project will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, and recreational and commercial fishing, plankton, fish and shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and wildlife will not be adversely affected. Significant adverse impacts on aquatic ecosystem diversity, productivity and stability, and recreation, aesthetics and economic values will not occur as a result of the project.

H. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem - Appropriate steps (as described above) will be taken to minimize potential adverse impacts of discharging material in the aquatic ecosystem.

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11.0 CLEAN AIR ACT STATEMENT OF CONFORMITY

CLEAN AIR ACT STATEMENT OF CONFORMITY
POND CREEK SALT MARSH RESTORATION PROJECT
CAPE MAY COUNTY, NEW JERSEY

Based on the conformity analysis in the environmental assessment, I have determined that the selected plan conforms to the applicable State Implementation Plan (SIP). The Environmental Protection Agency had no adverse comments under their Clean Air Act authority. No negative comments from the air quality management district were received during coordination of the environmental assessment. The selected plan would comply with Section 176 (c)(1) of the Clean Air Act Amendments of 1990.

13 Dec 2006
Date

Gwen E. Baker
Lieutenant Colonel, Corps of Engineers
District Commander

Appendix A

Relevant Correspondence

State of New Jersey
Department of Environmental Protection

Richard J. Codey
Acting Governor

Bradley M. Campbe
Commissioner

Land Use Regulation Program
P.O. Box 439, Trenton, NJ 08625-0439
Fax # (609) 292-8115
Fax # (609) 777-3656
www.state.nj.us/landuse

DEC 0 1 2005

Minas M. Arabatzis
Department of the Army
Philadelphia District of Engineers
Wanamaker Bldg., 100 Penn Square East
Philadelphia, PA 19107-3390

RE: Pond Creek Salt Marsh Restoration Project
0500-05-0002.1 (CDT050001)
Federal Consistency Determination & Water Quality Certificate
Section 1135, Ecosystem Restoration
Cape May County

Dear Mr. Arabatzis:

The New Jersey Department of Environmental Protection, Land Use Regulation Program, acting under Section 307 of the Federal Coastal Zone Management Act (P.L. 92-583) as amended, has reviewed the information provided by your office dated July 1, 2005. Based on two site inspections by Program staff and supplemental information concerning the proposed project received October 28, 2005, the Program has determined that the project is consistent with New Jersey's Coastal Zone Management Rules N.J.A.C. 7:7E-1.1 et seq, as amended to March 3, 2003, provided that the conditions discussed below are met to the satisfaction of the Department of Environmental Protection.

Project Description

The U.S. Department of the Army, cost shared with the New Jersey Department of Environmental Protection, Division of Fish and Wildlife, proposes to construct one main jettied inlet with three channels and a hydraulic structure that will reintroduce tidal flow into the Pond Creek Salt Marsh. The proposed project will serve to control invasive Phragmites allowing native salt marsh vegetation to reestablish within the State of New Jersey's Higbee Beach Wildlife Management Area. The Pond Creek coastal wetlands currently provide limited habitat for fish and wildlife resources due to the overwhelming presence of dense stands of Phragmites. Reducing the Phragmites will improve habitat value and diversity and will also eliminate the need for the Cape May County Mosquito Commission to spray insecticides in and around marshes and residential areas. The purpose of the project is to restore 170 acres of estuarine inter-tidal emergent wetland habitat for fish and wildlife resources as it existed prior to 1917 when it was manipulated by the Cape May County Mosquito Extermination Commission. The project will also protect adjacent freshwater wetlands in the upper portions of the marsh. Pond Creek Salt Marsh is located along the Delaware Bay and runs north of Sunset Boulevard in the Township of Lower and in the Borough of West Cape May, Cape May County.

The project is located within the Cape May peninsula which is a stopover and foraging area for birds migrating along the Atlantic Flyway. The proposed project involves the construction of a 920-foot long inlet channel with a 20-foot bottom width extending from the Delaware Bay to the constructed water control structure. The water control structure will be located in the middle of the existing north spoil pile and will be approximately 17 feet high and 40 feet wide. Sheet-piling will extend 100 feet from each side of the water control structure in order to aid in the retainment of water that will inundate Pond Creek. A new jetty will be constructed at the edge of the Delaware Bay to stabilize the new inlet for the channel. A new channel will be dredged and extend 154 feet into the Delaware Bay and the material (approximately 2,400 cubic yards) will be placed on the beach. In addition to enlarging the inlet channel, three new interior channel ditches will be constructed within the Pond Creek Salt Marsh. Channel 1 will be approximately 1,750 feet long, channel 2 will be approximately 1,250 feet long and channel 3 will be approximately 1,550 feet long, all channels will have a bottom width of 10 feet. The channels will be dredged through approximately 1.04 acres of existing coastal wetlands. In addition, 0.10 acres of open water area at the current outlet of Pond Creek will be filled to plug the existing outlet and the area converted to a coastal dune habitat. The excavation of the new channel through the beach / dune system will involve the loss of approximately 0.9 acres of beach / dune to a tidal system. The area of existing inlet will be converted to a beach / dune complex of approximately 1.2 acres using material excavated from the new channel. Therefore, the proposed project has no net loss of beach / dune habitat. The proposed project also includes the construction of an access and maintenance road approximately 15 feet wide that wraps around from the north side of the jetty to the south side of the jetty.

The following discussion includes an evaluation of project compliance with the Rules on Coastal Zone Management (N.J.A.C. 7:7E-1.1 et seq.), and identifies the conditions under which the project is found consistent with the rules. **This consistency determination is issued subject to compliance with the identified conditions.**

Wetlands (7:7E-3.27) and Wetlands Buffer (7:7E-3.28)

Wetlands or wetland means an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

All tidal and inland wetlands, excluding the delineated tidal wetlands defined pursuant to N.J.A.C. 7:7-2.2, shall be identified and delineated in accordance with the USEPA three-parameter approach (that is, hydrology, soils and vegetation) specified under N.J.A.C. 7:7A-1.4 of the Freshwater Wetlands Protection Act Rules.

The Pond Creek coastal wetlands ecosystem currently provide limited habitat for fish and wildlife resources due to the overwhelming presence of dense stands of common reed (Phragmites). Reducing the Phragmites will improve habitat value and diversity and will also eliminate the need for the Cape May County Mosquito Commission to spray insecticides in and around marshes and residential areas. The U.S. Department of the Army proposes to construct one main jettied inlet with three channels and a hydraulic structure that will reintroduce tidal flow into the Pond Creek Salt Marsh in order to restore 170 acres of estuarine inter-tidal emergent wetland habitat for fish and wildlife resources. The three proposed channels will be dredged through approximately 1.04 acres of existing coastal wetlands. Several alternatives were considered as discussed below. The project will also serve to protect adjacent freshwater wetlands in the upper portions of the marsh and provide flood control to nearby residents.

Although the proposed project will result in impacts to the existing wetland community in terms of the new inlet and channels it will have an overall positive impact on the salt marsh community thus offsetting any negative impacts of the project. Therefore, formal mitigation measures are not needed.

Alternatives

The Army Corp of Engineers has considered three types of alternatives: no action, invasive species control (chemical), invasive species control (flooding – 3 types).

No Action Alternative

The no action alternative would leave Pond Creek as a monoculture of Phragmites and thus will not achieve the goal of restoring the native salt marsh. This goal has been eliminated from consideration because it would not improve the ecological functions and values of Pond Creek.

Invasive Species Control (Chemical)

The invasive species control through chemicals alternative involves aerial application of glyphosphate-based herbicide in the fall, followed by a prescribed burn and then another aerial application. This alternative typically eliminates Phragmites for 5 to 10 years. This alternative was eliminated from consideration because it does not provide long-term ecological improvement within the Pond Creek wetlands.

Invasive Species Control (Freshwater Flooding)

The invasive species control through freshwater flooding involves inundating the areas with 4 to 6 inches of water for the majority of the year. This alternative was eliminated from consideration due to engineering concerns and concerns of adverse impacts to adjacent property owners.

Invasive Species Control (Tidal Flooding – full inundation with earthen berms)

This alternative involves enlargement of the existing creek channel to a bottom width of 10 feet and lowering the bottom elevation 4 feet below existing grade to increase the volume of water entering the marsh. It also involves the construction of an approximately 4,200 foot long dike across the back portion of the marsh. This alternative was not considered due to the high cost of bringing in large volumes of suitable fill and necessary preparation of the foundation and the environmental impacts.

Tidal Inundation with water control structure (existing channel)

This alternative involves enlarging the existing creek channel over a length of 1,600 feet to a bottom width of 20 feet and lowering the bottom elevation by 4 feet to increase the volume of flow. It would also involve the construction of a water control structure at the junction of the existing channel. This alternative is not preferred because the potential of breaching the existing dunes near the current inlet is a concern. If these northern dunes breach, the new water control structure would be flanked and the residents would have limited protection from the Delaware Bay storms. This alternative was also not chosen due to erosion concerns of the north dunes and the winding nature of the existing channel alignment.

Tidal inundation with a water control structure (new channel)

Tidal inundation through a water control structure and new channel alignment is the preferred alternative. This alternative has been discussed above in the Project Description portion of this Federal Consistency. The benefits of the proposed alternative include increasing the diversity and value of vegetation so as to enhance fish and wildlife habitat and eliminate spraying of insecticides by the Cape May County Mosquito Commission in and around the marsh and residential areas. The proposed project will also improve water quality within Pond Creek by improving tidal flushing of the marsh, decrease the risk of a wildfire occurring and alleviate some of the current flooding problems by removing Phragmites that currently block outlet structures and impede upland drainage. The existing Phragmites will be replaced by natural growth of estuarine species such as smooth cordgrass, salt hay grass and spike grass. The remaining forested freshwater wetlands in the headwater areas of Pond Creek will be protected through the installation of the hydraulic structure limiting tidal flow in these areas.

This Federal Consistency Determination is consistent with New Jersey's Coastal Zone Management Rules (N.J.A.C. 7:7E-1.1) provided the following conditions are met:

- **Inundation must stay within the extent of the proposed tidal inundation as shown on the photo provided and agreed upon by the Department and the ACOE. A long-term monitoring program must be developed in order to insure inundation does not exceed its proposed limits and does not have adverse impacts to woodland areas around the perimeter of the marsh. During the next phase of design for this project a three to five year proposed and post-project monitoring plan must be developed and submitted to the Program for review and approval. The monitoring plan must include provisions for corrective measures if the inundation exceeds the extent expected.**

Endangered or Threatened Wildlife Species Habitat (N.J.A.C. 7:7E-3.38) and Critical Wildlife Habitat (N.J.A.C. 7:7E-3.39)

Areas known to be inhabited on a seasonal or permanent basis by or to be critical at any stage in the life cycle of any wildlife or vegetation identified as "endangered" or "threatened" species on official Federal or State lists of endangered or threatened species or under active consideration for State or Federal listing, are considered Special Areas. Development of this area is prohibited unless it can be demonstrated that the endangered or threatened wildlife or vegetation species habitats would not directly or through secondary impacts on the relevant site or in the surrounding area be adversely affected.

"Critical wildlife habitats" are specific areas known to serve an essential role in maintaining wildlife, particularly in wintering, breeding, and migrating. Development that would directly or through secondary impacts on the relevant site or in the surrounding region adversely affect critical wildlife habitats is discouraged.

The project proposes to enhance the overall habitat for threatened and endangered species and fish and wildlife that inhabit the site by replacing the existing Phragmites with the growth of estuarine species such as smooth cordgrass, salt hay grass and spike grass. In turn, this will improve foraging opportunities as well as habitat. The proposed project will not adversely affect the threatened and endangered species and/or habitat in the surrounding adjacent freshwater wetlands and upland areas. The excavation of existing Phragmites and the reoccurrence of tidal flow into the salt marsh will have a positive effect on the project area because it will improve the diversity and value of vegetation so as to enhance fish and wildlife habitat.

This Federal Consistency Determination is consistent with New Jersey's Coastal Zone Management Rules (N.J.A.C. 7:7E-1.1) provided the following conditions are met:

- **Inundation must stay within the extent of the proposed tidal inundation as shown on the photo provided and agreed upon by the Department and the ACOE. A long-term monitoring program must be developed in order to insure inundation does not exceed its proposed limits and does not have adverse impacts to woodland areas around the perimeter of the marsh. During the next phase of design for this project a three to five year proposed and post-project monitoring plan must be developed and submitted to the Program for review and approval. The monitoring plan must include provisions for corrective measures if the inundation exceeds the extent expected.**

Dunes (N.J.A.C. 7:7E-3.16) & Vegetation (N.J.A.C. 7:7E-8.8) & Beaches (N.J.A.C. 7:7E-3.22)

Development is prohibited on dunes, except for development that has no practical or feasible alternative in an area other than a dune, and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities.

Vegetation is the plant life or total plant cover that is found on a specific area, whether indigenous or introduced by humans. Coastal development shall preserve, to the maximum extent practicable, existing vegetation within a development site. Coastal development shall plant new vegetation, particularly appropriate native coastal species, to the maximum extent practicable.

Development is prohibited on beaches, except for development that has no prudent or feasible alternative in an area other than a beach, and that will not cause significant adverse long-term impacts to the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities.

The Pond Creek Salt Marsh restoration project has no other practical alternative other than to disturb the existing dune and dune vegetation. However, the proposed disturbance is the minimum necessary for the project. The new channel alignment will be more in alignment with the historic alignment of Pond Creek and provide for the restoration of the marsh. The proposed project involves the creation of a new beach and dune where the existing channel flows into the Delaware Bay. Dredged material taken from the new inlet will be used to create the new beach and the new dune will be created using material removed from the existing dune where the new inlet will be located. The excavation of the new inlet through the beach / dune system will involve the loss of 0.9 acres of beach and dune. The project will create 1.2 acres of new beach / dune system at the existing inlet. As a result, there will be a net increase of 0.3 acres of beach/dune system created by this project. In addition, native vegetation will be planted on newly constructed dunes and sand fencing will be installed on the dunes in accordance N.J.A.C. 7:7E-3A.

The proposed beach fill at the existing inlet must have a comparable berm width and height as the surrounding beaches. The proposed jetties are to be constructed at grade with the existing beach height so as not to interfere with the longshore drift and current of the Delaware Bay.

This Federal Consistency Determination is consistent with New Jersey's Coastal Zone Management Rules (N.J.A.C. 7:7E-1.1) provided the following conditions are met:

- **All newly created dune areas must be vegetated with appropriate coastal species to stabilize the area. A site-specific vegetative restoration plan must be submitted to the Program for review and approval.**

- **The proposed beach fill at the existing inlet must have a comparable berm width and height as the adjacent surrounding beaches. A design plan must be submitted to the Program for review and approval.**

- **The proposed jetties are to be constructed at grade with the existing beach height so as not to interfere with the longshore drift and current of the Delaware Bay. A design plan must be submitted to the Program for review and approval.**

- **Prior to final design, all required documents must be provided for Program concurrence to demonstrate that the project remains consistent with New Jersey's Coastal Zone Management Rules N.J.A.C. 7:7E-1.1 et seq, as amended to March 3, 2003.**

If you have any questions regarding this letter please do not hesitate to call Meg Cuccuini of our staff at (609) 984-0288.

Sincerely,

Kim Brodrick

So Mark N. Mauriello, Director
Land Use Regulation Program

12/1/2005
Date

cc: Kim Springer, NJDEP, Office of Coastal Planning

Questions from the December 13, 2005 meeting with local officials in Cape May, NJ.

Attendance:
Merv Brokke – USACE
Mark Eberle – USACE
Bob Imler – Lwr. Twp. Env. Comm.
Kathleen McPherson – Lwr. Twp
David Rutherford – Lwr. Twp Env. Comm.
Clay Sutton – Concerned Citizen
Fred Long – Concerned Citizen
Lee Widjeskog – NJDEP
Pam Kaithern – West Cape May Borough

Comment: Longer time was needed for questions and comments at the public meetings.
Answer: A majority of the questions and answers were not shared with the group because of the small group format after the main question and answer period. Historically, in the time allotted for a public meeting or open house more questions can be answered individually or in small groups as compared to doing so in a larger forum. As always, our intent for these meetings is to answer as many questions as possible in the allotted time.

Question: What about saltwater intrusion into the groundwater that lies above the clay layer (the Holly Beach Zone)?
Answer: Yes, saltwater will enter the Holly Beach Water-Bearing Zone, but this will be limited to areas of the lower marsh.

Question: What is the pressure (head) of the fresh water to offset the salt water?
Answer: The Ghyben-Herzberg relation is a formula $z_s = 40 z_w$
Where:
z_s is the distance from sea level to the salt water interface and
z_w is the distance from sea level to the water table surface
The Ghyben-Herzberg relations shows that if the water level near the shore line in a water tale aquifer is 1 foot above sea level then the salt water is 40 ft below sea level. And if fresh water is 1 inch above sea level then salt water is 40 inches below sea level.

Question: How far is the salt water going to inundate?
Answer: Approximately, 170 acres of the lower marsh.

Question: How do you plan to protect the jetties?
Answer: Jetties will be protected by periodic replacement of sand around them from maintenance dredging associated with keeping the new channel free of sand.

Question: With all the lateral channels proposed in the draft EA, is 1.4 acres of wetland impacts correct?
Answer: This calculation will be checked during the preparation of the final EA which we plan to issue in February 2006.

Question: What about the water flow through the spoil area? How will you prevent contamination or problems with the pH?

Answer: Monitoring wells will be established and monitored to insure that the project does not release high levels of contaminants into the marsh.

Question: What will the monitoring chain of command be at NJDEP? Or who do we call if there is a problem?
Answer: Lee Widjeskog will prepare a chain of command diagram for use by local officials to call for assistance in case there is a problem. When completed, that document will be available on the project website.

Question: Can we get a copy of the Project Cooperation Agreement?
Answer: Yes, go to website:
http://www.usace.army.mil/civilworks/cecwp/branches/policy_compliance/see1135_2.pdf

Question: Can we get a copy of the monitoring report required under the Federal Consistency Determination from NJDEP?
Answer: Yes, when we have an approved monitoring plan from NJDEP that document will be posted to the project website.

Question: Is Southern Gray Tree Frog an issue?
Answer: No, the review of NJDEP determined that the extant of the tidal inundation was far enough away from potential tree frog habitat to be an issue.

Question: Why don't you build small berms along the back of the marsh to insure protection to the freshwater wetland areas?
Answer: We feel that the impact of the small berms and the additional cost are unnecessary to achieve the project goal and protect important freshwater wetlands in the upper marsh. We feel that the proposed water control structure will be able to control the amount of tidal inundation and thus, prevent selected freshwater areas from being inundated.

Question: Will Davey's Lake be inundated with saltwater?
Answer: No, but to insure this doesn't happen we are moving the inlet approximately 600 ft south of the existing inlet and further away from Davey's Lake.

Question: Do the lateral channels have to have a slope of 1V to 5 H?
Answer: No, that is the proposed maximum-sized channels. The actual size of the lateral channels will be determined by adaptive management.

Question: Can you install shallow monitoring wells around some of the freshwater areas to insure that trees are not impacted by the saltwater and also as an early indicator?
Answer: Yes, shallow wells with a 1 ft screen located 5 to 6 ft below land surface can be installed anywhere we can walk. The number of this type of well will be limited by available funding for the monitoring portion of the project.

Question: Can we be added to a Pond Creek email list?
Answer: Yes, we have started a list. If you would like to be added to our emailing list please send an email to us at Mervin.e.brokke@usace.army.mil.

Question: Will you be answering the questions that were posed at the October 13, 2005 public meeting that can now be found in the public transcripts?

Answer: New questions (questions not already received in writing during the NEPA comment period) that were brought up by the public speakers will be addressed in the main body or in a separate section of the Final Environmental Assessment.

Question: What happens in the project area now? How far does the salt water intrude? What are the controls?
Answer: Approximately 60 acres of the lower marsh of Pond Creek are currently being inundated by tidal flow. Currently, there are no controls on tidal inundation into Pond Creek and there is very limited protection from Delaware Bay storms.

Question: Salt water is not good in Lower Cape May Meadows project but is good here, why?
Answer: The Lower Cape May Meadows project is surrounded by high density development which prevents the re-introduction of tidal flow to that area. Pond Creek is a much larger intact natural system that allows for the restoration of a natural tidal creek.

Question: Do the interior main channels and laterals expose the ground to more salt water intrusion?
Answer: Yes, to conditions that existed in 2000 and no to the conditions that existed in 1800.

Question: How much material will be dredged by the mosquito department? What is the process? Does it disturb the land or wildlife?
Answer: Since adaptive management will be used to determine the exact alignment and size of the interior channels, the exact amount of the material to be excavated by the mosquito department will be determined at that time. The process will be that the mosquito commission will excavate a channel and side-cast the material nearby. Yes, there will be a temporary disturbance to the land and the wildlife in the vicinity of the excavation.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

In Reply Refer to:

HR-05/02

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
http://njfieldoffice.fws.gov

JAN 18 2009

Lt. Colonel Robert J. Ruch
District Engineer, Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Lt. Colonel Ruch:

This is the draft letter of the U.S. Fish and Wildlife Service (Service) on anticipated impacts to fish and wildlife resources from the U.S. Army Corps of Engineers, Philadelphia District (Corps) proposed Pond Creek Restoration Project. Cape May County, New Jersey. This letter was prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq*.).

This draft letter is provided based on plans and information provided in the Corps and Service's Environmental Assessment. The Service assisted in the preparation of the subject Environmental Assessment and participated in assessing impacts on fish and wildlife resources in that document.

A. PROJECT DESCRIPTION

The purpose of the Pond Creek Restoration Project is to restore 270 acres of estuarine intertidal emergent wetland habitat for fish and wildlife resources and to protect an additional 147 acres of freshwater wetlands for fish and wildlife including, threatened and endangered species and migratory birds. This will be accomplished by reintroducing tidal exchange in the Pond Creek wetlands to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Once established, *Phragmites* often outcompetes native salt marsh vegetation, creating habitat less suitable for wildlife. Control of common reed will allow the reestablishment of native salt marsh vegetation [e.g., smooth cordgrass (*Spartina alterniflora*), salt hay grass (*S. patens*), and spike grass (*Distichlis spicata*)], thus increasing habitat available for a variety of fish and wildlife resources, in particular, the diamondback terrapin (*Malaclemys terrapin*), egrets, herons, shorebirds, waterfowl and a variety of other wetland-dependent wildlife.

The project purpose would be accomplished through the restoration of tidal inundation to Pond Creek marsh by eliminating the existing tide gate at the mouth of Pond Creek. The preferred alternative involves the construction of a new 300-foot-long channel would be used to carry tidal water into Pond Creek wetlands. This alternative requires excavation through an existing spoil pile deposited by a previous property owner. Elimination of upland tidal flooding and preservation of 147 acres of freshwater wetlands would be accomplished by constructing a water-control structure through which the tidal water would pass. This water-control structure would essentially throttle the tidal flow into Pond Creek limiting tidal inundation to 270 acres. In addition, the existing railroad tracks to the south would prevent tidal waters from impacting freshwater wetland areas to the south. The water-control structure and the existing railroad tracks would prevent tidal flooding of agricultural lands and residential development to the south and east of the project area. The proposed project also protects the freshwater pond to the north of the project site identified as Davey's Lake.

B. METHODS AND PROCEDURES

The information and findings presented in this letter are based on review of the Pond Creek Restoration Project, Cape May County, New Jersey Section 206 Environmental Assessment (U.S. Army Corps of Engineers, 2004) and review of additional information made available to the Service by the Corps. The content of this letter is also based on the following: review of Service files and library material; coordination with the New Jersey Division of Fish and Wildlife (NJDFW) (including Endangered and Nongame Species Program (ENSP) and the National Marine Fisheries Service (NMFS); and, several site visits conducted by a Service biologist in 2002, 2003, and 2004.

C. PHYSICAL CHARACTERISTICS

Currently, western portion of the site is an undeveloped coastal beach and dune complex. The beach is bordered to the west by the Delaware Bay and to the east by primary dunes ranging in height from 8 to 15 feet. The dunes support American beach grass (*Ammophila breviligulata*), coastal panic grass (*Panicum amarum*), seaside goldenrod (*Solidago sempervirens*), bayberry (*Myrica pensylvanica*), rugose rose (*Rosa rugosa*), poison ivy (*Toxicodendron radicans*), among other plants. Dune and beach substrate is sand providing low-fertility, excessively drained soil.

Approximately 4.5 acres of the southern portion of the site is dominated by a disposal site associated with the Harbison Walker magnesite plant. This plant operating from 1941 to 1983 placed processed waste (primarily consisting of waste magnesite and spent or un-reacted dolomite with a high calcium and magnesium content). The deposition material is extremely basic (high pH) and as such limits vegetative growth. The majority of the deposition site remains barren, although efforts of the last two years of placing and disking in dredge spoil material have been successful at neutralizing the pH and initiating vegetative growth (mostly grasses).

Tidal marsh makes up the majority of the project site (over 270 acres). The tidal marsh has not been tidally flowed since 1917 when a tide gate and berm was installed. However, the substrate

in the wetlands remains a deep layer of muck with layers of soft silt loam and organic material. The muck substrate ranges from 1 foot to more than 10 feet thick with high organic matter and anaerobic conditions. The majority of the vegetation within the marsh is made up of *Phragmites*. No other plants were identified within the lower portion of Pond Creek west of Sassafras Island. Wetland areas east of Sassafras Island transition from *Phragmites* dominated wetlands to mixed forested wetlands dominated by conifers; deciduous forested wetlands, and deciduous scrub/shrub wetlands. There are a few areas east of Sassafras island that remain palustrine emergent wetlands with no *Phragmites*.

D. FISH AND WILDLIFE RESOURCES

The Service and the Corps completed a thorough review of fish and wildlife resources within the Pond Creek Environmental Assessment. Fish and wildlife resources inhabiting the project area include a variety of benthic organisms, finfish, shorebirds, colonial nesting waterbirds, waterfowl, and raptors. The diversity of habitat types and the limited development within the Pond Creek supports many estuarine and marine species including weakfish (*Cynoscion regalis*), Atlantic menhaden (*Brevoortia tyrannus*), bluefish (*Pomatomus saltatrix*), American eel (*Anguilla rostrata*), and white perch (*Morone americana*). The semi-anadromous striped bass (*Morone saxatilis*) could also occur within the lower portions of the Pond Creek wetlands. Perhaps most importantly the mummichog (*Fundulus heteroclitus*) would inhabit the Pond Creek wetlands providing an important forage base for predatory fish and wildlife, but also providing the primary control of mosquitoes within the wetlands. The proposed project would also open up additional foraging and possibly spawning areas for anadromous fish including blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*).

The lower Cape May Peninsula is one of the most important migratory concentration areas in the world (Kerlinger, 1991; Mabey, 1992). The migratory population that uses the lower Cape May Peninsula includes 130 species of neotropical migrants, 20 species of waterfowl, American woodcock, 16 species of raptors, 4 species of owls, and many species of short-distance migrants. The surrounding beach, dune, and estuarine wetlands provide high quality habitat for a variety of migratory shorebirds. A variety of colonial waterbirds nest within approximately 3 miles of Pond Creek. In addition, the Pond Creek provides important resting and feeding areas for migratory waterfowl on the Atlantic flyway (New Jersey Division of Fish and Wildlife, 1994).

The primary purpose of the proposed project of restoring tidal inundation to Pond Creek would convert a palustrine emergent wetland dominated by Phragmites to an estuarine emergent wetland dominated by a variety of beneficial estuarine vegetation such as smooth cordgrass, salt hay grass, and spike grass. As a result of restoring and improving vegetative diversity and tidal exchange into these wetlands, wildlife habitat would be significantly improved. The proposed project would restore habitat for a variety of shorebirds, raptors, wading birds, and mammals, improving biological diversity within the Cape May peninsula.

According to the Service, Higbee Beach and the Delaware Bay shoreline adjacent to Pond Creek provide habitat for the piping plover (*Charadrius melodus*). A 0.1 acre area of beach would be excavated to construct the outlet channel for the Pond Creek restoration project. However, this

limited impact is unlikely to substantially affect the overall habitat availability of beach nesting habitat within the project area. As such, piping plovers would not be adversely affected by project implementation (see Intra-Service Section 7 biological evaluation forms in Environmental Assessment). Swamp pink (*Helonias bullata*), a federally threatened species, occurs approximately 2.8 miles north of the project area; however no swamp pink habitat occurs in the project area. The threatened bald eagle (*Haliaeetus leucocephalus*) is federally listed and is a transient visitor of the project area and may forage in open water areas near the project area. The proposed project will improve foraging opportunities for bald eagles by providing additional fish habitat within the project area.

Several birds-of-prey occur in the vicinity of the project area including the State-listed (endangered) northern harrier (*Circus cyaneus*) and short-eared owl (*Asio flammeus*), and the State-listed (threatened) osprey (*Pandion haliaetus*) (New Jersey Division of Fish and Wildlife, 1994). The State-listed (threatened) black rail (*Laterallus jamaicensis*) also inhabits the salt and brackish marshes in the vicinity of Pond Creek (New Jersey Division of Fish and Wildlife, 1994). Restoring estuarine wetlands within Pond Creek will improve habitat for these State-listed species. Several State-listed species also occur in the palustrine headwater areas of Pond Creek. The proposed project will not affect these freshwater areas and will not have an adverse impact on these State-listed species.

E. IDENTIFICATION OF BENEFITS, IMPACTS, AND MITIGATIVE MEASURES

1. Benefits

There will be a number of benefits derived from the Pond Creek Restoration project. Fish and wildlife habitat will be enhanced by increasing the diversity of vegetation within the wetlands. The Pond Creek wetlands currently provide limited habitat for fish and wildlife resources due to the overwhelming presence of dense stands of common reed, which provides limited habitat value for fish and wildlife. Reducing common reed will improve habitat value and diversity. Improving diversity within the wetland would also improve the aesthetics of the project site. By opening up the Pond Creek wetlands visually, the general public would be better able to fish, hunt, bird-watch, and conduct environmental studies. Eradicating *Phragmites* would also eliminate the need for the Cape May County Mosquito Commission to spray insecticides in and around marshes and residential areas. The project will also improve water quality within Pond Creek (*e.g.*, total dissolved solids, biological oxygen demand, fecal contamination (coliforms)) by improving tidal flushing of the marsh. Reducing the biomass of *Phragmites* will also decrease the chance and risk of a catastrophic wildfire occurring and damaging residential property in the area. The project may also alleviate some current flooding problems that are experienced due to *Phragmites* blocking outlet structures and impeding upland drainage.

2. Impacts

Construction of a channel and hydraulic structure associated with the preferred option will result in the excavation of approximately 1.18 acres of palustrine emergent wetlands that are currently dominated by common reed. These excavated wetlands will be converted to an estuarine open water channel to provide tidal water to the Pond Creek wetlands following the original water course as it existed prior to 1917. In addition, a 0.10 acre area of palustrine open water at the current outlet of Pond Creek would be filled to plug the outlet and convert the area to coastal dune habitat.

The excavation of the new channel through a dune / beach complex will involve the conversion of approximately 0.9 acres of beach / dune complex to a tidal. However the existing channel through the dunes (approximately 350 feet long and 150 feet wide) would be converted to a beach / dune complex of approximately 1.2 acres using material excavated from the new channel. As such, the proposed project has no net loss of beach / dune habitat.

Portions of the Harbison Walker spoil pile would be excavated. This material would be deposited on other existing spoil piles in the area. Material used from the excavation of tidal channels in wetland areas would also be placed on upland spoil piles and disked into the spoil pile to neutralize the pH within the spoil pile. These areas would then be replanted with native warm-season grasses and shrubs to revegetate the spoil piles thereby improving upland buffers adjacent to the Pond Creek wetlands.

3. Mitigative Measures

The Service recommends avoiding use of construction equipment in estuarine wetlands; if operation is necessary in these areas, use wide-track equipment or construction mats to reduce compaction of the marsh surface.

F. CONCLUSIONS AND RECOMMENDATIONS

The Service and the NJDFW support removing the existing tide gates at the mouth of Pond Creek and constructing a new channel and water-control structure as the least costly and simplest method of reintroducing tidal flow to the marsh and controlling *Phragmites*. Upon removing the tide gates and digging the new channel, *Phragmites* will be eradicated or greatly controlled in the Pond Creek marsh, allowing native, more beneficial marsh vegetation to reestablish. The native vegetation will provide approximately 270 acres of greatly improved habitat for diamondback terrapins, migratory songbirds, wading birds, shorebirds, and waterfowl. In addition, the water-control structure will throttle the tidal inundation to Pond Creek protecting freshwater wetlands in the upper portions of the marsh.

A draft copy of this letter was forwarded to the NJDFW for concurrence and the Service is currently awaiting NJDFW's response. A copy of the Service's letter to the NJDFW is enclosed.

Additional information regarding Service comments can be provided by Eric Schrading of my staff. The Service would appreciate any written comments on this letter within 30 days.

Sincerely,

Clifford G. Day

Clifford G. Day
Supervisor

Enclosure

LITERATURE CITED

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Mabey, S.E., J. McCann, L.J. Niles, C. Bartlett, and P. Kerlinger. 1992. Neotropical migratory songbird regional coastal corridor study. Final Report. National Oceanic and Atmospheric Administration. Silver Spring, Maryland.

New Jersey Division of Fish, Game and Wildlife. 1994. Notable Information on New Jersey Animals Database. New Jersey Department of Environmental Protection. Trenton, New Jersey.

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State of New Jersey
Department of Environmental Protection

Richard J. Codey
Acting Governor

Bradley M. Campbell
Commissioner

Division of Fish and Wildlife
Martin J. McHugh, Director
PO Box 400
Trenton, NJ 08625-0400
www.njfishandwildlife.com

May 11, 2005

Clifford G. Day, Administrator
U.S. Fish and Wildlife Service
927 N. Main St., Bldg. D
Pleasantville, NJ 08232

Dear Administrator Day:

I am writing to inform you that the Division of Fish and Wildlife (DFW) concurs with the *Draft Fish and Wildlife 2 (b) Coordination Act Report; Pond Creek Restoration Project in Lower Township, Cape May County, New Jersey.* This constitutes the USFWS' draft report on fish and wildlife impacts that can be expected to result from the ACOE's proposed project for Pond Creek.

The DFW agrees with the "Project Description" found in your letter for this joint project between our two agencies. Furthermore, the DFW appreciates the tremendous amount of work your agency has provided the DFW in assisting us with the project. This project will have a far-reaching positive ecological impact on this area's biodiversity. We agree with the list of species associated with the project, the positive benefit that the reintroduction of the mummichog (Fundulus heteroclitus) will have on the area's fish and wildlife, and the corresponding reduction of the local mosquito population.

I look forward to continuing the close working relationship of our two staffs and the staff of the ACOE on this project. I also look forward to our agencies collaborating on other future projects, as we strive to restore valuable fish and wildlife resources in New Jersey.

Sincerely,

Martin J. McHugh, Director
Division of Fish and Wildlife

c. A. Didun, OER; Lee Widjeskog, Lands Mgmt; Donald Wilkinson, OER

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ATTN Robert Dunn

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

RECEIVED
JUN 11 2004
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REPLY TO
ATTENTION OF

Planning Division

JUN 08 2004
(please see last page)
04-1821-1 DF
HPO-G2004-250

Ms. Dorothy P. Guzzo, Administrator
New Jersey Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625

Dear Ms. Guzzo:

This letter is in regard to our current planning for the Pond Creek Salt Marsh Restoration Project. Pond Creek marsh (totaling 417 acres) is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, New Jersey (see Enclosures1a & 1b). The purpose of the project is to restore 270 acres of estuarine intertidal emergent wetland habitat for fish and wildlife resources and to protect an additional 147 acres of freshwater wetlands for threatened and endangered species and migratory birds. This will be accomplished by reintroducing tidal flushing in the lower marsh areas of Pond Creek to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species that has formed an extensive, dense stand throughout most of the Pond Creek marsh. Once a free-flowing estuarine tidal marsh before human disturbance, the marsh is part of the State of New Jersey's Higbee Beach Wildlife Management Area. The State's Division of Fish and Wildlife currently manages the marsh for migratory birds, waterfowl habitat, and human recreation.

The State of New Jersey and the U.S. Fish and Wildlife Service have determined that constructing a new channel and water-control structure is the least costly and simplest method of reintroducing tidal flow to the marsh and controlling *Phragmites*. The proposed project will include construction of a 920-foot section of new stream channel to shorten the distance between the Bay and the marsh, thus increasing the amount of tidal flow into the marsh and reducing the potential for inlet migration. *Phragmites* will be eradicated or greatly controlled in the Pond Creek marsh, allowing native, more beneficial marsh vegetation to reestablish. The native vegetation will provide approximately 270 acres of greatly improved habitat for diamondback terrapins, migratory songbirds, wading birds, shorebirds, and waterfowl. In addition, the water-control structure will throttle the tidal inundation to Pond Creek protecting freshwater wetlands in the upper portions of the marsh.

Pursuant to 36 CFR 800.4 (b) we wish to initiate Section 106 consultation on the preferred alternative described in the enclosed preliminary draft Environmental Assessment (Enclosure 2). At this time we are not aware of any historic architectural or archaeological resources in the area

of potential effect and the likelihood of deeply buried prehistoric archaeological sites appears to be very low. Tidal marsh makes up the majority of the project site (over 270 acres). The marsh has not received tidal flow since 1917 when a tide gate and berm was installed. According to the Cape May County soil survey the area of potential effect has a wetlands substrate that consists of a deep layer of muck with multiple layers of soft silt loam and organic material. The muck substrate ranges from 1 foot to more than 10 feet thick with high organic matter and anaerobic conditions.

The preferred alternative, described in detail in the draft EA, involves excavating a new channel through a dune/beach complex to restore the original channel to Pond Creek, as it existed prior to 1917. This alternative will involve the conversion of approximately 0.9 acres of beach/dune complex to a tidal channel with 5 to 1 slopes (approximately 300 feet long and 125 feet wide). The existing channel through the dunes (approximately 350 feet long and 150 feet wide) would be converted to a beach/dune complex of approximately 1.2 acres using material excavated from the new channel. Given this trade-off, the preferred alternative has no net loss of beach/dune habitat. Portions of the Harbison Walker spoil pile would be excavated. The excavated material would be deposited on other existing spoil piles in the area. Material used from the excavation of tidal channels in wetland areas would also be placed on upland spoil piles and disked into the spoil pile to neutralize the high pH within the magnesite spoil pile. These areas would then be replanted with native warm-season grasses and shrubs to revegetate the spoil piles thereby improving upland buffers adjacent to the Pond Creek wetlands.

Soils will be stabilized on the access channel by using a 5 on 1 slope and revegetating the banks with appropriate vegetation (e.g., dune grass and bayberry in dune habitat, and *Spartina alterniflora* in wetland areas). All necessary soil erosion and sediment controls will be used during the construction to minimize impacts on Pond Creek wetlands and the Delaware Bay. Controls that would be implemented include the installation of soil erosion control fences to prevent runoff and debris from entering the creek. The construction contractor would be required to complete a plan that describes measures to prevent hazardous materials (e.g. oils) used during construction to enter the wetlands. Furthermore, all construction material would be disposed of in an appropriate manner.

From an archaeological perspective the major ground disturbing impact of this project is the excavation of an access channel twenty feet wide by six feet deep for the entrance of tidal waters into the salt marsh. In the preferred alternative the alignment of the channel follows an old streambed for some distance before cutting across the wetlands to the magnesite spoil pile where the new water control structure would be located. This entire distance is an area with very low archaeological site potential.

We request your review comments on the portions of the draft EA that deal with cultural resources and your staff's input on the project's potential impact to cultural resources. At this time, given the extremely low site potential, it does not appear that a phase 1b archaeological survey of the area of potential effect is necessary. Thank you for your assistance with our planning process. For additional information please contact Mr. Robert Dunn of our staff at (215) 656-6556.

Sincerely,

for William C. Mullen

Minas M. Arabatzis
Chief, Planning Division

Enclosures

Copy Furnished:
M. Eberle

I concur with your finding that there are no historic properties affected within the project's area of potential effects. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

NP

Dorothy P. Guzzo 7/27/04

Dorothy P. Guzzo
Deputy State Historic Preservation Officer

Date

Appendix B

Intra-Service Section 7 Biological Evaluation Forms

ES-04/06
. Pond Creek
Cape May Co.

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person:_Robert Smith____

Telephone Number:_(609) 646-9310_____

Date:__January 7, 2004_____

I. Region:

Region 5

II. Service Activity (Program)

U.S. Fish and Wildlife Service, Region 5, Ecological Services, New Jersey Field Office (NJFO), *Partners for Fish and Wildlife Program* proposes to restore 270 acres of estuarine intertidal emergent wetland habitat and to protect an additional 147 acres of freshwater wetlands as part of the Pond Creek wetland restoration project. The project is within the Higbee Beach Wildlife in Lower Township and the Borough of West Cape May, Cape May County, New Jersey.

III. Pertinent Species and Habitat:

A. Listed species and/or their critical habitat within the action area:

Piping plover (*Charadrius melodus*) nesting and foraging habitat exists along the beach within the project area. A piping plover was recorded using that stretch of beach in 1982. Additional piping plover habitat exists within 0.8, 0.9, and 2.4 miles from the project site.

An extant population of swamp pink (*Helonias bullata*) exists within 2.8 miles north of the project area in a different watershed. No swamp pink habitat exists within the project area.

B. Proposed species and/or proposed critical habitat within the action area:

None

C. Candidate species within the action area:

None

D. Include species/habitat occurrences on a map.

See attached map.

IV. Geographic area or station name and action:

New Jersey Field Office through the *Partners for Fish and Wildlife Program* proposes to restore 270 acres of estuarine intertidal emergent wetland habitat and to protect an additional 147 acres of freshwater to Pond Creek in Cape May County, New Jersey.

V. Location (attach map):

A. Ecoregion Number and Name:

Delaware River watershed

B. County and State:

Cape May County, New Jersey

C. Section, township, and range (or latitude and longitude):

Lower Township and Borough of West Cape May

D. Distance (miles) and direction to nearest town:

Immediately west of Borough of West Cape May

E. Species/habitat occurrence:

Piping plover

VI. Description of proposed action (attach additional pages as needed):

See attached Wetland Restoration Plan.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C (attach additional pages as needed):

Piping plover nesting and foraging habitat does occur within the project area. Excavating the new channel for Pond Creek to connect the Delaware Bay will destroy approximately 0.9 acres of piping plover habitat (beach / dune) by converting it to a tidal channel. The project could hinder a piping plover's ability to nest and rear its young.

Swamp pink habitat does not occur within the project area; therefore, the project will have no effect on swamp pink.

B. Explanation of actions to be implemented to reduce adverse effects:

The old tidal channel through the dunes will be converted to approximately 1.2 acres of piping plover habitat using material excavated from the new channel. Therefore, no net loss of piping plover habitat will be lost. There are no documented instances of piping plovers nesting along that stretch of beach since 1982. If piping plovers are found to nest at the site just before construction, construction will be restricted outside the nesting and young-rearing seasons.

VIII. Effect determination and response requested: [* = optional]

A. Listed species/designated critical habitat:

Determination	**Response requested**
no effect/no adverse modification (species: swamp pink_____)	_X__ *Concurrence
may affect, but is not likely to adversely affect species/adversely modify critical habitat (species: piping plover_____)	_X__ Concurrence
may affect, and is likely to adversely affect species/adversely modify critical habitat (species:_____)	____ Formal Consultation

Robert V. Smith

Project Biologist (Requestor), New Jersey Field Office Date 1/7/04

IX. Reviewing ESFO Evaluation:

A. Concurrence X **Nonconcurrence**_____

B. Formal consultation required_____

C. Conference required_____

D. Informal conference required_____

E. **Remarks (attach additional pages as needed):**

Annette Scherer — 2/24/04

Endangered Species Biologist (Reviewer), New Jersey Field Office — Date

J. C. Stahl — 2/25/04

Assistant Supervisor, New Jersey Field Office — Date

Appendix C

Standards for Open Marsh Water Management

STANDARDS FOR OPEN MARSH WATER MANAGEMENT (OMWM)

County mosquito commissions, Rutgers University and the New Jersey Division of Fish, Game and Shellfisheries have been perfecting one technique, Open Marsh Water Management (OMWM), for the control of all genera of salt marsh mosquitoes on open tidal marshes for more than two decades. Perfection is achieved by continued improvement and evaluation. In order to identify this management technique and ensure the finest quality work, certain standards are necessary. These standards should be included in any riparian or other permit. Improper adherence to these standards would be a violation of the permit and an infringement upon the quality of the management technique. The following standards shall be utilized and strictly adhered to in any OMWM project:

1. NEED. OMWM will be based entirely upon need and utilized on mosquito breeding marshes only.

a. OMWM will be confined to *Spartina patens* or mixed *S. patens* / short *S. alterniflora* marshes, or marshes composed of similar vegetation that are irregularly flooded by rains, spring or storm tides. OMWM will not be employed on marshes that are regularly inundated or effected by daily tides such as those dominated by tall saltmarsh cordgrass (*Spartina alterniflora*), wildrice (*Zizania aquatica*), cattail (*Typha* spp.), arrow arum (*Peltandra virginica*), threesquare (*Scirpus olneyi*) or similar vegetation.

b. All alterations must directly affect mosquito breeding depressions.

c. The direction and type of alteration used will depend on the distribution of the mosquito breeding depressions and their proximity to natural ponds and tidal ditches.

d. An experienced wildlife biologist, mosquito control worker, or both, shall stake out all breeding depressions ahead of the equipment. Depression marking shall be utilized to determine the least amount of alteration needed to eliminate mosquito breeding.

e. All mosquito or other ditches encountered that are not contributing to mosquito breeding will not be cleaned.

2. ALTERATIONS. Three types of alterations (tidal ditches, ponds, and pond radials) will be used.

a. Tidal Ditches

(1) All tidal ditches will be dug with suitable equipment (preferably with a rotary ditcher.)

(2) When mosquito breeding depressions are located adjacent to a tidal, mosquito, or other ditch, a tidal ditch alteration will be utilized.

(3) When a tidal ditch is dug near a pond, the spoil should be deposited on the pond side.

(4) Attempts should be made to dig all tidal ditches to a depth of three feet. Meandering or straight ditches are acceptable.

(5) Main tidal ditches are used to provide tidal circulation through large areas. They should be connected to tidal sources on both ends where possible. Their location is determined by the distribution of breeding depressions.

(6) Lateral tidal ditches connect breeding depressions to main tidal ditches, natural tidal ditches, or other laterals. Such laterals often dead-end in breeding depressions.

(7) All mosquito or other ditches that are breeding will be cleaned.

(8) Spoil shall be used whenever possible to fill adjacent mosquito breeding depressions, or spread evenly over the marsh to encourage growth of existing vegetation.

b. Pond Radials

(1) Any mosquito breeding depression located near a natural or other permanent pond shall be connected to that pond by a pond radial. The radial will provide access for fish to prey upon mosquito larvae in the depression.

(2) All pond radials shall be constructed with suitable equipment (e.g., a rotary ditcher).

(3) To prevent pond drainage by muskrats or snow geese, pond radials shall terminate at sufficient distances from tidal ditches.

c. Ponds

(1) Where a large number of mosquito breeding depressions are concentrated in a limited area, a pond alteration will be utilized.

(2) Ponds are constructed using a rotary ditcher, amphibious crane, or other suitable equipment.

(3) Ponds should be shallow (less than one foot in depth) to promote waterfowl, wading bird, and shorebird use.

(4) To prevent mosquito breeding during droughts, a reservoir three feet in depth shall be installed within each pond.

(5) Where large numbers of radials are used, reservoirs are unnecessary.

(6) In any natural pond that desiccates during drought, a reservoir for fish can be ensured by the construction of three foot ditches connecting the lowest areas within the pond.

(7) Pond spoil should be squashed without causing depressions, and reduced to the lowest possible level (approximate elevation of the existing marsh) to ensure the reestablishment of existing native vegetation.

(8) Ponds may take the shape of the breeding area or may be squared off to facilitate construction. The shape of a pond or ditch does not appreciably affect wildlife use. Depth, food potential and availability are the primary factors determining wildlife utilization.

3. OBJECTIVES

a. To adequately serve the three major objectives (control mosquitoes, eliminate insecticides, and enhance the tidal food web), all three alteration types (tidal ditches, ponds, and pond radials) shall be utilized on each section of marsh wherever possible. Diversity provides a better marsh environment, prevents marsh surface breeding by all genera of mosquitoes, and enhances both major branches of the tidal food web.

b. Insecticide use is gradually phased out as OMWM progresses toward elimination of mosquito breeding acreage. When a project is completed, all insecticide use should terminate.

4. OTHER TECHNIQUES

Impoundments, stop ditches, and other management techniques are not considered OMWM techniques.

5. EVALUATION

Mosquito larval dip counts, vegetation plots, invertebrate samples, and wildlife censuses are to be conducted on the area treated with OMWM and compared to a control area of similar composition.

Appendix D

Clean Air Assessment

General Conformity Analysis

Table 1. Project Emission Sources and Estimated Power

Table 2. Emission Estimates (NOx)

Table 3. Emission Estimates (VOCs)

Table 4. Pollutant Emissions from Employee Vehicles

General Conformity Review and Emission Inventory for Pond Creek
Table 1. Project Emission Sources and Estimated Power

hp-hr = # of engines*hp*LF*hrs of operation

Load Factor (LF) represents the average percentage of rated horsepower used during a source's operational profile.

Equipment/Engine Category	# of engines	hp	LF	hrs of operation	hp-hr
Air Compr, 200 CFM, 100 PSI	1	350	0.62	7	1519
Brush Chipper 22"	1	600	0.70	9	3780
Chainsaw, 24" to 42" Long Bar	1	5.7	0.74	9	37.962
Concrete Pump	1	210	0.70	13	1911
Crane, Hyd, TRK Mtd	1	177	0.43	53	4034
Crane, Dragline/Crawler, 2 c/y	1	125	0.43	906	48698
Ldr, F/E, Crwler, 1.5 cy bkt	1	90	0.55	114	5643
Ldr, BH, WH, 0.80 CY FE Bkt,	1	60	0.55	5	165
Tree, Log Skidder Tractor	1	121	0.70	3	254
Tree, Log Buncher	1	170	0.70	3	357
Pile Hammer, 80 ton	1	325	0.70	260	59150
Dozer Crawler, D-4	1	80	0.64	282	14438
Dozer Crawler, D-8	1	240	0.64	282	43315
Trk, HWY43,000GVW 6x4 3 axle	1	210	0.57	114	13646
Trk, HWY 45,000GVW	1	330	0.57	1195	224780
Trk, Off-HWY, R-Dump, 22-30 CY, 35T	1	450	0.57	117	30011
Concrete Vibrator, 2.5"	1	7.5	0.62	25	116
1 Ton Stake Body	1	275	0.70	38	7315
3/4 Ton pick-up	1	165	0.57	60	5643
Portable Generator, 5.5 KW	1	11	0.80	30	264
All Terrain Forklift	1	63	0.70	30	1323
Fuel Truck, 1.5 ton	1	185	0.57	80	8436
1/2 ton pick-up 4x4	1	117	0.57	400	26676
Concrete Truck	1	275	0.57	8	1254

Load Factors taken from the General Conformity Review and Emission Inventory for the Delaware River Main Channel Deepening Project. (May 2003). Prepared for the U.S. Army Corps of Engineers, Philadelphia District by Moffatt & Nichol Engineers

General Conformity Review and Emission Inventory for Pond Creek
Table 2. Emission Estimates (NOx)

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) * (1 ton/907200 g)

NOx Emissions Factor for Off-Road Construction Equipment is 9.20 g/hp-hr

Equipment/Engine Category	hp-hr	EF (g/hp-hr)	Emissions (tons)
Air Compr, 200 CFM, 100 PSI	1519	9.20	0.02
Brush Chipper 22"	3780	9.20	0.04
Chainsaw, 24" to 42" Long Bar	38	9.20	0.00
Concrete Pump	1911	9.20	0.02
Crane, Hyd, TRK Mtd	4034	9.20	0.04
Crane, Dragline/Crawler, 2 c/y	48698	9.20	0.494
Ldr, F/E, Crwler, 1.5 cy bkt	5643	9.20	0.06
Ldr, BH, WH, 0.80 CY FE Bkt,	165	9.20	0.00
Tree, Log Skidder Tractor	254	9.20	0.00
Tree, Log Buncher	357	9.20	0.00
Pile Hammer, 80 ton	59150	9.20	0.60
Dozer Crawler, D-4	14438	9.20	0.146
Dozer Crawler, D-8	43315	9.20	0.44
Trk, HWY43,000GVW 6x4 3 axle	13646	9.20	0.14
Trk, HWY 45,000GVW	224780	9.20	2.28
Trk, Off-HWY, R-Dump, 22-30 CY, 35T	30011	9.20	0.30
Concrete Vibrator, 2.5"	116	9.20	0.00
1 Ton Stake Body	7315	9.20	0.07
3/4 Ton pick-up	5643	9.20	0.06
Portable Generator, 5.5 KW	264	9.20	0.00
All Terrain Forklift	1323	9.20	0.01
Fuel Truck, 1.5 ton	8436	9.20	0.09
1/2 ton pick-up 4x4	26676	9.20	0.27
Concrete Truck	1254	9.20	0.01
		Total NOx Project Emissions (tons) =	5.10

General Conformity Review and Emission Inventory for Pond Creek
Table 3. Emission Estimates (VOCs)

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) * (1 ton/907200 g)

VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Equipment/Engine Category	hp-hr	EF (g/hp-hr)	Emissions (tons)
Air Compr, 200 CFM, 100 PSI	1519	1.30	0.00
Brush Chipper 22"	3780	1.30	0.005
Chainsaw, 24" to 42" Long Bar	38	1.30	0.000
Concrete Pump	1911	1.30	0.003
Crane, Hyd, TRK Mtd	4034	1.30	0.01
Crane, Dragline/Crawler, 2 c/y	48698	1.30	0.0698
Ldr, F/E, Crwler, 1.5 cy bkt	5643	1.30	0.01
Ldr, BH, WH, 0.80 CY FE Bkt,	165	1.30	0.00
Tree, Log Skidder Tractor	254	1.30	0.00
Tree, Log Buncher	357	1.30	0.00
Pile Hammer, 80 ton	59150	1.30	0.08
Dozer Crawler, D-4	14438	1.30	0.021
Dozer Crawler, D-8	43315	1.30	0.06
Trk, HWY43,000GVW 6x4 3 axle	13646	1.30	0.02
Trk, HWY 45,000GVW	224780	1.30	0.322
Trk, Off-HWY, R-Dump, 22-30 CY, 35T	30011	1.30	0.043
Concrete Vibrator, 2.5"	116	1.30	0.00
1 Ton Stake Body	7315	1.30	0.01
3/4 Ton pick-up	5643	1.30	0.01
Portable Generator, 5.5 KW	264	1.30	0.00
All Terrain Forklift	1323	1.30	0.00
Fuel Truck, 1.5 ton	8436	1.30	0.01
1/2 ton pick-up 4x4	26676	1.30	0.04
Concrete Truck	1254	1.30	0.00
		Total VOCs Project Emissions (tons) =	0.72

General Conformity Review and Emission Inventory for Pond Creek

Table 4. Pollutant Emissions from Employee Vehicles

Assumptions:

Average trip distance (1 way) is 25 miles.
Average NOx vehicle emission factor is 0.96 g/mile.
Average VOC vehicle emission factor is 0.84 g/mile.
Work crew comprised of 21 people
Every member of the work crew drives their own vehicle.
Project construction period is 9 months.
Project construction occurs 5 days per week.
There are 7 holidays in a calendar year.
There are 4 weather days (no work) in a year.

Actual work days = 270 days - 78 weekend days off - 7 holidays off - 4 weather days off.

Actual work days = 181 days

NOx Calculation: 21 workers * 2 trips/work day * 181 work days * 25 miles/trip * 0.96 g of NOx/mile* (1 ton/907200 g)

Total NOx resulting from employee vehicles = 0.20 tons.

VOC Calculation: 21 workers * 2 trips/work day * 181 work days * 25 miles/trip * 0.84 g of VOC/mile* (1 ton/907200 g)

Total VOCs resulting from employee vehicles = 0.18 tons.

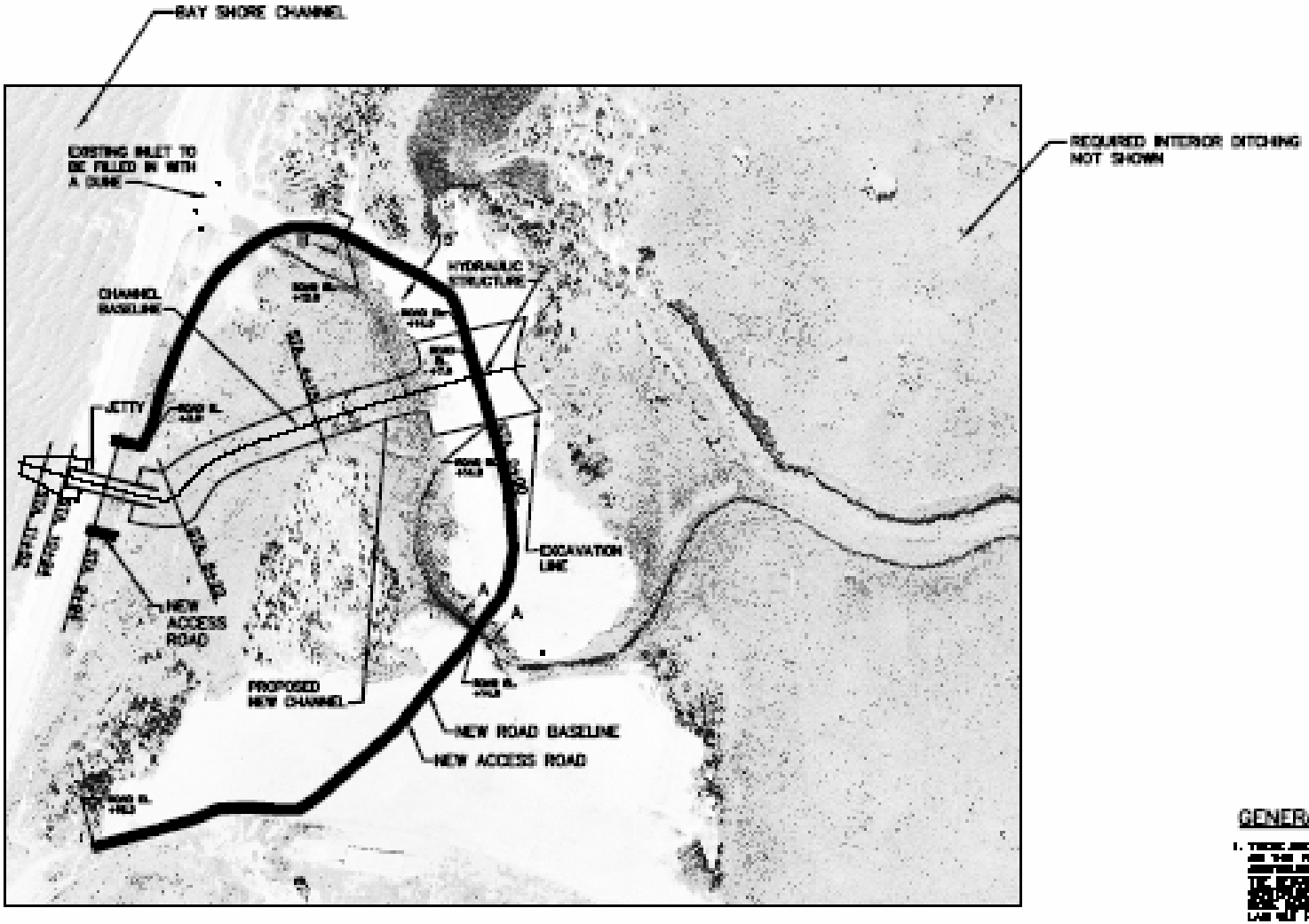
Pollutant emissions associated with employee vehicles derived from data found in: Marine and Land-Based Mobile Source Emission Estimates for 50-Foot Deepening Project. January 2002. Prepared for The Port Authority of New York and New Jersey by Killam Associates and Starcrest Consulting Group, LLC.

Total (construction and employess) NOx Project Emissions (tons) = 5.3

Total (construction and employees) VOCs Project Emissions (tons) = 0.9

Appendix E

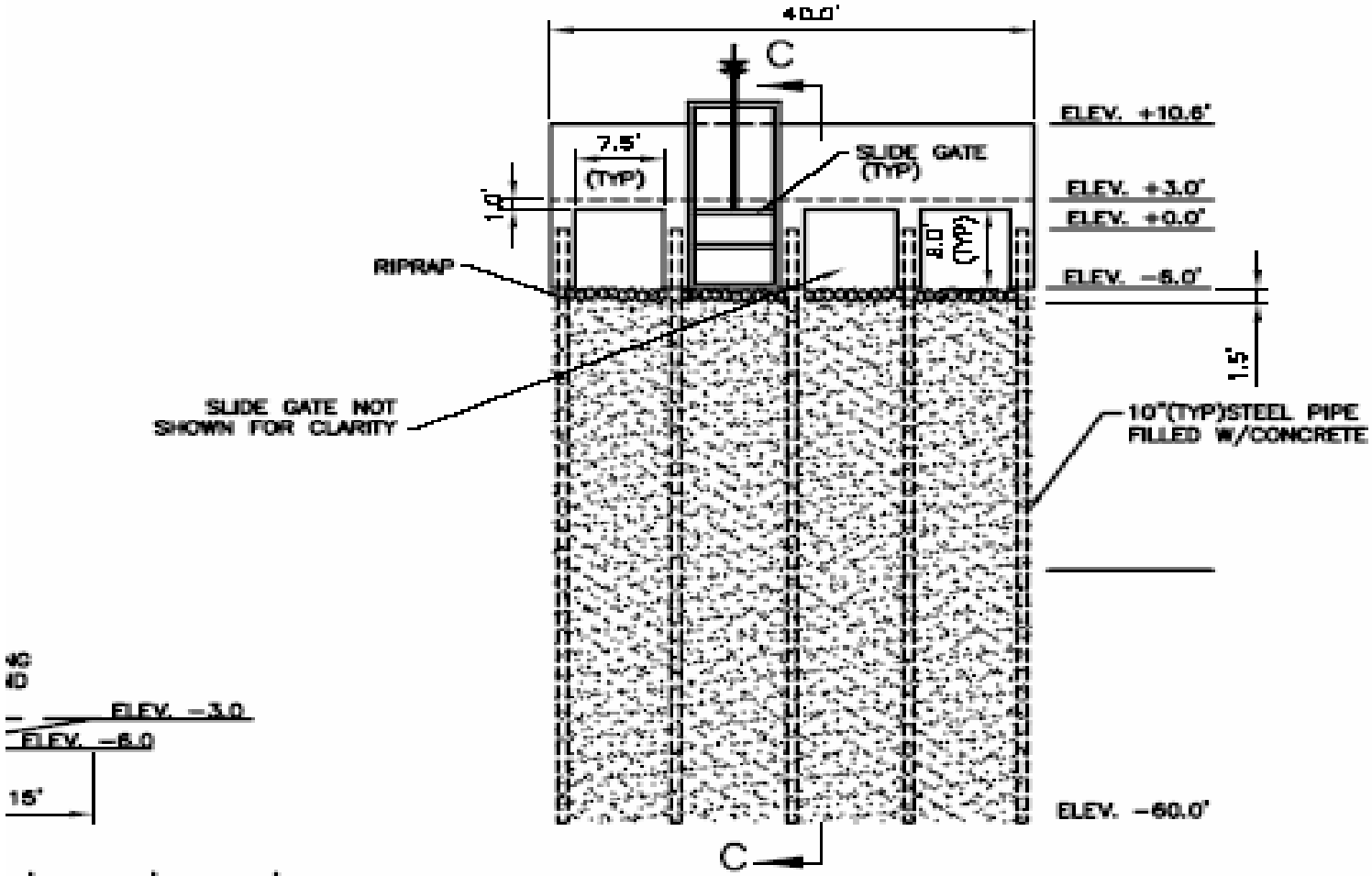
30% Project Design



PROPOSED – GENERAL PLAN

SCALE IN FEET

GENERAL N



ELEVATION VIEW

HYDRAULIC STRUCTURE DOWNSTREAM FACE

10' 5' 0 10'

SCALE: 1" = 10'-0"

Appendix F

Well Monitoring Plan

Work Plan to Evaluate Baseline Water Levels and Chloride and Sodium Concentrations in the Holly Beach Water-Bearing Zone and the Estuarine Sand Aquifer in the Vicinity of the Pond Creek Wetlands, Cape May County, New Jersey

Pierre Lacombe and Otto Zapecza USGS, West Trenton, N.J. September 14, 2005

Introduction

The Army Corps of Engineers has proposed to reintroduce daily tidal flooding of much of the wetlands of Pond Creek, Cape May County (fig. 1). The saltwater wetlands were converted to freshwater wetlands in the early 1900's. The purpose to convert the marsh back to its native salty habitat is to create a marsh that is more conducive to life of migrating and indigenous birds and native diadromous fish. Citizens in the vicinity of the swamp are concerned that the tidal flooding will cause saltwater intrusion into the shallow aquifers and negatively impact their domestic supply wells.

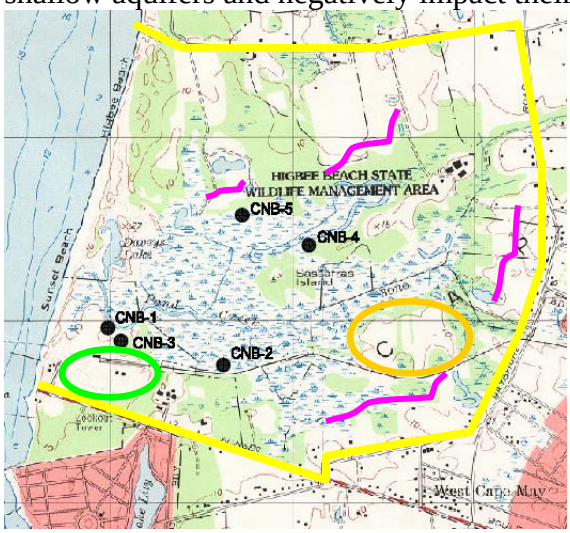


Figure 1. Map of Pond Creek wetlands showing 5 monitoring wells and the location of many domestic supply wells (yellow line); former landfill with monitoring wells (orange oval); former industrial site with monitoring wells (green oval) and potential geoprobe sites (purple lines).

Purpose and Scope

The purpose of the USGS investigation of the area surrounding the Pond Creek wetland is to determine the base line ground-water levels and the existing chloride and sodium concentrations. The aquifers to be investigated are the Holly Beach water-bearing zone and the estuarine sand aquifer.

The wells to be investigated are the 5 existing monitoring wells labeled CNB 1-CNB5, selected domestic supply wells on the north side of Sunset Road from Delaware bay to Bay Shore Road; north and east side of Bay Shore Road to New England Road, and south side of New England road from Bay Shore Road to Higbee Beach (highlighted in yellow). Monitoring wells may still exist around a former landfill (highlighted in orange) and around the former magnesite plant (highlighted in green). In areas where there are no existing wells the USGS will use a geoprobe to install drive points and temporary wells to measure ground water levels and collect ground water samples from the water table aquifer (highlighted in purple).

Tasks to be completed

Locating wells:

1. The USGS will collect available well information from the NJDEP for the domestic supply, agricultural supply, and monitoring wells along the three roads. In all likelihood, the domestic supply wells tap the Holly Beach water-bearing zone (wells that are10 to 40 ft deep), or estuarine sand aquifer (wells that are 90

to 150 ft deep). Agricultural supply wells likely tap the estuarine sand aquifer and existing monitoring wells likely tap the Holly Beach water-bearing zone. It is not expected that any of the wells will tap the deeper confined Cohansey Aquifer (wells that are 210 to 300 ft deep).

2. The USGS will tabulate and plot the wells and then select a broad distribution of wells to best represent the Holly Beach water-bearing zone and the estuarine sand aquifer. The preferred distribution of wells would be 10 wells on the north, 10 wells on the east, and 10 on the south side of the wetlands half tapping the Holly Beach water-bearing zone and the other half tapping the estuarine sand aquifer.

There will likely be a need to supplement the network with additional wells or drive points in isolated locations where existing wells may not be available. The USGS would install such wells using a geoprobe. Approximately 10 to 15 shallow wells or drive points may be installed.

Historical water quality data:

3. The USGS will compile available water chemistry data from the monitoring wells used by the former magnesite plant and the former landfill.

Field visit and determining measuring point altitude:

4. The USGS will site visit the selected domestic supply wells and monitoring wells and measure the altitude of the measuring point of each well to be sampled.

Water level synoptic:

5. The USGS will choose a date with no rain for at least 3 days and synoptically measure the static water levels of the selected wells. All wells will not be pumping for a minimum of 30 minutes prior to measuring the water levels.

6. The USGS will plot and contour the water-level data. Water levels are expected to be near or above sea level in both aquifers. If water levels are below sea level then the USGS would recommend that the ACOE install a monitoring well near the edge of the wetland and near the local cone of depression to determine if the cone extends to the salt marsh.

Water Quality Synoptic:

7. The USGS will collect water samples for chloride and sodium analysis from approximately 30 wells for the two aquifers. Water samples from domestic-supply wells will be collected as close to the wellhead as possible and before any domestic water softening or other treatment equipment that the homeowner may have installed.

Report:

A report will be prepared that will outline the purpose, methods and results of the investigation including water-level contour maps and chloride and sodium concentrations.

Appendix G

Response to Draft Environmental Assessment Agency and Public Comments

WEST CAPE MAY PLANNING BOARD
732 BROADWAY
WEST CAPE MAY, NEW JERSEY 08204

July 19, 2005

US Army Corp of Engineers
Attention: M. Brokke
100 Penn Square East
Phila. Penn 19107

Dear Mr. Brokke,

Re: Pond Creek Project in Lower Township in Cape May County, NJ

I am writing this letter as the Chairperson of the Planning Board of the Borough of West Cape May. Our membership discussed your plans for plans for flooding the Pond Creek fresh water system with salt water, and after much discussion, on a motion by Art Joblin, seconded by myself, voted to write you a letter expressing our concern over this project.

Our Planning Board voted unanimously to express our **concerns over possible contamination of ground water (many of our residents have well water)**; also we **have environmental concerns over changing a fresh water pond into a salt water pond**. This area is a major flyway for many birds that need a source of fresh water during their migration. We are very concerned that there are **no scheduled public meetings** in the area regarding this project. Although this project is in Lower Township, it borders the Borough of West Cape May and affects many of our residents. At this time, we are asking that you schedule a Public Meeting regarding this project, sometime this year at the Borough Hall in the Borough of West Cape May. All local, West Cape May, Cape May, and Lower Township residents would be invited. We feel that more of these local meetings for explanation would be helpful to everyone.

We have been in touch with our Environmental Commission and they have grave concerns about this project, and will be writing to you. I personally know that members of the Cape May City Environmental Commission have been in touch and have concerns about this project.

I look forward to and thank you in advance for your response.

Yours truly,

Jean A. Davis
Chairperson
West Cape May Planning Board

C All Board Members
WCM Commissioners
WCM Environmental Commission
CMC Environmental Commission

RESPONSE

1 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

2 Two public meetings were held on the project in Cape May, NJ on October 13, 2005.

August 4, 2005

Mr. Mark Eberle
Environmental Resource Branch
U.S. Army Corps of Engineers
100 Penn Square East
Philadelphia, PA, 19107-3390

RE: CENAP-PL-E-05-04 Pond Creek Salt Marsh Restoration Project, Cape May County, New Jersey

Dear Mr. Eberle,

Please accept these comments from me and enter them into the public record and thanks again for extending the deadline for the submission of them until today.

As I stated during our telephone conversation last week the problem I am still having is that this Draft Environmental Assessment (DEA) is short on details and seems focused almost entirely on the wetlands area and largely ignores the beach and bay portions of it.

Proposing the construction of a new jetty and channel system and stating that there will be no net loss of beach dune habitat appears without discussion and has raised a variety of questions.

What about potential loss of sand transport, scouring, erosion, blocking of wildlife movements and loss of benthos to this area from these structures? **1**

Are we setting the stage for either exasperating a chronic ongoing problem of beach loss or possibly setting the stage for creating one? **2**

There is no mention of how this new inlet will be maintained but if you need to maintain it every two or three years through dredging or beach replenishment then is that not a long term problem? I ask that because all I read about in the DEA is short-term impacts. **3**

It is also unclear what role the cited beach replenishment in March of this year plays in all of this. Was this a one-time venture or is it ongoing? **4**

RESPONSE

1 There will be minor, temporary impacts to wildlife and benthos during the construction of the new inlet, channel, and water control structure. Blocking of wildlife movements will be minor and the current channel already has that issue for non-flying/non-swimming fauna. As per the project Federal Consistency Determination from NJDEP dated December 1, 2005, the proposed jetty will have to be constructed at grade with the existing beach height so as not to interfere with longshore drift and current of the Delaware Bay. However, the benefits of the new inlet and restored marsh will outweigh the impacts to the Highbee Beach. Over time the beach will adjust to the new dynamics sand transport and the new inlet. In addition, the construction of a jetty is tentative at this point in time. The project will be initially constructed without a jetty, but if the channel migrates or fills in with sand, a jetty will be constructed to insure the correct volume of water entering the Pond Creek marsh.

2 No, we are not setting the stage for an ongoing problem of beach loss.

3 The non-federal sponsor, NJDEP, will be responsible for the operation and maintenance of the project after completion. This will include periodic dredging of the inlet when necessary to maintain flow through the new channel. The estimated timetable for maintenance dredging is every five years.

4 The purpose of the reference to the Corps' Lower Cape May Meadows Restoration project was to provide a regional context for the Pond Creek restoration project and how restoring Pond Creek marsh is part of a regional approach to restoring important habitat in Cape May, NJ.

Will there be time of year restrictions placed on the project when it begins? For example I trust nothing will be allowed to happen on the beach side from March to September so as to give full consideration to HSC's, shorebirds and endangered species. **5**

My literature reviews show me that the beach supports habitat for spawning horseshoe crabs, foraging shorebirds, and endangered species and for these reasons alone deserve more attention in this proposal. **6**

The reality is jetties are a hardening of the beach and come with their own set of complications and I am calling on the COE to either remove them from consideration or reconfigure them in such a way that there will be the absolute minimal loss of habitat because of the negative impacts that they may cause. Alternatives should run from no action to notching to putting them in only as a last resort. **7**

Putting in jetties to stabilize the new channel seems to cut across the grain of current and future habitat protection. The scouring and entrapment of movement by these structures is common knowledge and alternatives to using them is what I am calling for here. It's the proverbial robbing Peter to pay Paul scenario in my mind and I don't see why that has to be. **8**

I believe the COE is justified in seeking alternatives to this matter through the use of the Water Resources Development Act of 1986 as amended and 1996 to investigate better ways of approaching this matter.

The COE and State of New Jersey are further justified in exercising caution and seeking alternative means under the Atlantic States Marine Fisheries Commission's HSC Fishery Management Plan, 1999. **9**

Thank you for the opportunity to comment.

Sincerely,

Michael J. D'Amico
P.O. Box 1803
Massapequa, NY 11758

RESPONSE

5 No, there will be not time of year restrictions on project construction. There were no timing restrictions required under NJDEP's Federal Consistency Determination review. In addition, no endangered species will be adversely affected by project implementation as determined by our coordination with NJDEP and US Fish and Wildlife Service.

6 Based on spawning data collected for over 10 years by Limuli Laboratory horseshoe crab spawning is limited at nearby North Cape May. It is unlikely that Pond Creek beaches provide very good spawning habitat for horseshoe crabs, due to its proximity to the mouth of the bay and therefore more substantial wave action. Horseshoe crabs spawn in much higher numbers in more sheltered areas of the Delaware Bay (e.g., Reeds Beach, Kimbles Beach). Piping plovers used to nest on southern Cape May beaches near the Cape May Canal, but no nesting has occurred in these areas for over 10 years. Shorebird do forage on project beaches, but it is limited compared to other Delaware Bay beaches. The proposed project will not result in the loss in quantity or quality of beach areas available for horseshoe crabs, piping plovers, or shorebirds, but will result in readjusting to location of some beach areas to create more stable areas.

7 The construction of a jetty is tentative at this point in time. The project will be initially constructed without a jetty, but if the channel migrates or fills in with sand, a jetty will be constructed to insure the correct volume of water entering the Pond Creek marsh. In addition, as per the project Federal Consistency Determination from NJDEP dated December 1, 2005, the proposed jetty will have to be constructed at grade with the existing beach height so as not to interfere with longshore drift and current of the Delaware Bay.

8 Comment acknowledged, no response necessary.

9 Comment acknowledged, no response necessary.

CAPE MAY CITY ENVIRONMENTAL COMMISSION
643 Washington Street
Cape May, NJ 08204

July 22, 2005

Mr. Minas M. Arabatzis
Environmental Resources Branch
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Arabatzis:

The Environmental Commission of Cape May City unanimously requests a public hearing of the Pond Creek Salt Marsh Restoration Project. We support the West Cape May Planning Board's written request for a local public hearing. **1**

It is critical that an open public hearing be held so that city and county engineers, elected officials and private citizens can be made aware of the possible negative impact of this project on the fresh water supply of the entire Cape. Experts who have extensively studied the water supply and saltwater intrusion in Cape May County should be invited to attend and to comment: Pierre J. Lacombe and Glen B. Carleton of the U.S. Geological Survey. **2**

Among the serious issues to be addressed are:

Saltwater Intrusion in Cape May County
The USGS Report entitled "Hydrogeologic Framework, Availability of Water Supplies, and Saltwater Intrusion, Cape May County, New Jersey." (Water-Resources Investigations Report 01-4246) is referenced. This report prepared in cooperation with the NJDEP by Pierre J. Lacombe and Glen B. Carleton concludes that:

> "Saltwater intrusion is the most significant threat to the water supply of Cape May County....
> Construction of the Cape May Canal has virtually removed the possibility of obtaining potable water from the Holly Beach water-bearing zone along the 4-mile length of the canal. Erosion of the Delaware Bay shoreline has removed aquifer material, thereby increasing the rate of saltwater intrusion." *(Lacombe and Carleton, 2002, p. 136)*

1. Was the recent NJ Watershed Management Area 16 Study considered in the draft Environmental Assessment? **3**
2. Is it not likely that removal of more aquifer material to construct a new channel and the salinization of Pond Creek will further compromise the Holly Beach aquifer? According to the USGS study, removal of aquifer material increases the rate of saltwater intrusion. **4**

RESPONSE

1 Two public meetings were held on the project in Cape May, NJ on October 13, 2005.

2 Pierre Lacombe, USGS, was in attendance at the October 13, 2005 public meetings.

3 The Watershed Management Area 16 study included an evaulation of both the potable and ecological sustainability of water supplies. The Pond Creek area was formerly a saltwater marsh and was converted in the early 1900's to a freshwater area to increase tillable land. Since it is no longer farmed and is used only for ecological purposes, the sustainability of the water supply of for ecological purposes is maintained.

4 The intention of the new channel is to inundate the lower reaches of the Pond Creek marsh with saltwater. Water in the Holly Beach water-bearing zone in the immediate vicinity of the channel and the wetlands will be made salty. The saltwater will be limited to that area and will not flow inland to the freshwater areas unless the freshwater sustainability of those areas is exceeded.

Mitigating action should saltwater contaminate local wells

1. How many local private wells might be affected near the project area? **5**
2. What form will mitigation take, deeper wells or connection to a municipal water supply? **6**
3. What is the time frame for monitoring and mitigation, years or the lifetime of the well?

Leaching of magnesite or other spoils residue **7**

Will not contaminants known to be in the soil of the site pollute the surface water and the bay through the increased tidal flow?

Cost/benefit analysis

1. How expensive can this project become when the cost of restoring potable water to all of the affected residents is considered? **8**
2. Is the cost of the creation of another salt marsh on the Delaware Bay worth jeopardizing the freshwater supply of the residents of the Cape May peninsula? **9**
3. Will Cape May City's desalinization plant ultimately be required to bail out a poorly planned project? **10**

The potential grave impact on the availability and expense of a sufficient freshwater supply for Cape May peninsula requires a public hearing. All those affected deserve to examine, consider and question the Pond Creek Restoration Plan. Representatives of the USGS and of the NJ Watershed Management Area 16 should be in attendance also.

Sincerely yours,

Charlotte Todd

Charlotte Todd
Cape May City Environmental Commission Chairperson

Cc: Cape May City Mayor and Council
West Cape May Planning Board
Senator Jon Corzine
Senator Frank Lautenberg
Senator Nick Asselta
Assemblyman Jeff Van Drew
Assemblyman Jack Gibson
Commissioner Bradley Campbell

RESPONSE

5 Zero. It is unlikely that any local domestic supply wells will be intruded with saltwater as a result of this project.

6 NJDEP, the non-federal sponsor for the project has agreed to mitigate impacts to local wells (the exact form of this mitigation will be determined, if this occurs), if any result from the implementation of this project. Homes that are along Higbee Beach Road and Bayshore Road north of Simpson Lane presently have no access to public water supplies. At this time any mitigation would likely be in the form of a deeper supply well. However, in the future, it is possible that public-supply service lines may extend into these areas. If that is the situation, then it is possible to connect the home to public-supply water. Homes that are along Bayshore Road south of Simpson Lane have access to Cape May City water supply and they could be connected with that supply.

7 Monitoring for this project will be completed before and after the project is constructed. Mitigation will occur, if necessary, as soon as possible after a problem has been identified. The plan is to test the well water of a selected suite of homes that surround the Pond Creek area (see Appendix F). This data will be used as a base line. If in the future, a home or suite of homes complain of saltwater intrusion problems then the homes in the area of concern will be tested again. If the problem is determined to be a result of the Pond Creek flooding then the problem will be mitigated. If the problem is a result of a faulty septic tank, the Cape May Canal, road salt, etc., then that will be explained to the homeowner. In addition, there was no significant contamination found on the site that would impact this project (Berger 2000).

8 Under the Corps' Section 1135 authority, a cost / benefit analysis is not required for this project.

9 The project has been evaluated and determined to be in the best interest of the public. This project will not jeopardize the freshwater supply of the residents of the Cape May pennisula.

10 A desalination plant for Cape May City will not have to be built as a result of this project.

Ro Wilson
4076 Bayshore Rd
Cape May NJ 08204

A Special Note—

Dear Mr Arabatzis,

I am very concerned about the plan for the opening of marshes to saltwater. I live on Bayshore Rd & back up to George Hall's property & we are worried about saltwater in our wells, 1

Also the fresh water of Pond Creek is valuable to wildlife. 2

RESPONSE

1 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

2 The current conditions at Pond Creek have minimally value to wildlife. The proposed project will restore the Pond Creek marsh to a more productive tidal marsh, which will be an improvement over the existing conditions, and be more valuable to wildllife. Freshwater wetlands in the headwaters of Pond Creek will be preserved and protected through the proposed water control structure. However, currently little to no freshwater wetlands occur within the project area where tidal inundation is expected due to unchecked tidal flow into the project site. Prior to tidal flow into the site, the freshwater wetlands in the lower portion of Pond Creek were 100 percent monocultures of dense *Phragmites* offering limited wildlife value. The project will create a diversity of freshwater and productive salt marsh improving overall wildlife habitat value.

The reputation of the Army Corp is very much in question. There must be a better way to control Phragmites. 3

Please do not let ocean water into Pond creek.

Sincerely,

Ro Wilson

Larry Wilson

RESPONSE

3 As stated in the Alternative Section of the EA, which starts on page 3 of the document, numerous alternatives were examined to control *Phragmites* and restore estuarine intertidal emergent habitat to the project area. The EA concludes that re-establishing tidal flow into Pond Creek is the preferred method for achieving the project goals.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Rd.
Highlands, NJ 07732

August 1, 2005

Mr. Minas M. Arabatzis, Chief
Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Mr. Mark Eberle

Subject: Pond Creek Salt Marsh Restoration Project Environmental Assessment, Cape May County, NJ

Mr. Arabatzis:

We have reviewed the Environmental Assessment, including the essential fish habitat assessment for the above referenced project, and offer the following comments:

The Pond Creek marsh is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, NJ and is part of the State of New Jersey's Higbee Beach Wildlife Management Area.

The Pond Creek Salt Marsh Restoration Project would restore estuarine intertidal emergent wetland habitat for fish and wildlife resources. This would be accomplished by reintroducing tidal flushing in the lower marsh areas of Pond Creek to eliminate and control common reed, *Phagmites australis.* The proposed project would include construction of a 920 foot section of a new stream channel to shorten the distance between the bay and the marsh, thus increasing the amount of tidal flow into the marsh and reducing the potential for inlet migration. A water-control structure would regulate tidal flow into Pond Creek and protect freshwater wetlands in the upper portions of the marsh.

Fish and Wildlife Coordination Act Comments

Although there would be minor, temporary impacts on fishery resources due to the construction of the new stream channel, we support the proposed project which would open up additional foraging and possibly spawning areas for anadromous fishes, including blueback herring, *Alosa aestivalis,* alewife, *Alosa pseudoharengus* and striped bass, *morone saxatilis.* In addition, the mummichog, *Fundulus heteroclitus* would inhabit the Pond Creek wetlands and provide a important forage base for predatory fish and wildlife and provide the primary control of mosquitoes within the wetlands. **1**

Essential Fish Habitat Comments

Although there would be minor, temporary impacts on fishery resources due to the construction of the new stream channel, we support the proposed project which would open approximately 270 acres of estuarine emergent wetlands to estuarine-dependent fish that occur in Delaware Bay including weakfish, *Cynoscion regalis,* Atlantic menhaden, *Brevoortia tyrannus,* bluefish, *Pomotomus saltatrix,* American eel, *Anguilla rostrata,* and white perch, *Morone americana.*

RESPONSE

1 Comment acknowledged; no response necessary.

We concur with the conclusion of the essential fish habitat assessment that the project would have minimal adverse impacts to essential fish habitat; and we agree that the project would have a positive effect on the natural resources in the Cape May area. **2**

Thank you for this opportunity to comment.

Sincerely,

Stanley W. Gorski
Field Offices Supervisor

ar/Pond Creek Salt Marsh Restoration Project

cf: EPA, Region II, R. Montgomerie
NJ F&W, D. Wilkinson
FWS, Pleasantville, S. Mars
NJDEP, LURP

RESPONSE

2 Comment acknowledged; no response necessary.

July 26, 2005

Minas M Arabatzis
U>S. Army Corps of Engineers
Wanamaker Building 100 Penn Square East
Philadelphia, Pa 19107-3390

Re: Pond Creek Meadow, Cape May County NJ

Dear Mr Arabatzis,

It has come to our attention that your office has not scheduled any public hearings relative to the above project but that you will accept requests for such a hearing until July 30.

As residents living close to the Pond Creek Area, we are hereby submitting this written request for such a hearing; and, in anticipation of your favorable response, we are requesting a copy of the Project Proposal, the environmental assessment prepared by the US Fish and Wildlife Service, as well as the Army Corps Environmental Assessment of the Pond Creek Project together with any other data which you consider relevant. **1**

Our address and phone number is listed below. Thank you for your prompt consideration.

Very truly yours,

Frederick A Long Jr. Margaret S Long

696 Soc's Lane
Cape May NJ 08204

(609) 884-7681

RESPONSE

1 Two public meetings were held on the project in Cape May, NJ on October 13, 2005.

JOHN E. SCHNEIDER, RLA, ASLA
REGISTERED LANDSCAPE ARCHITECT

July 21, 2005

U. S. Army Corps of Engineers
Attn: Mr. Minas M. Arabatzis
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107 – 3390

Reference: Army Corp of Engineers proposed project:
Flooding of saltwater into freshwater Pond Creek, Cape May.

Dear Mr. Arabatzis;

I am writing as a Landscape Architect, Regional Planner, and nearby property owner with regards to the ACOE's proposed flooding saltwater into freshwater Pond Creek (near Higbee's Beach, Cape May) for the purpose of the elimination of Phragmites as reported in the July 13th edition of the Herald Newspaper *(pages 8 & 60)*. The purpose of this letter is to request from the ACOE a public hearing, at a convenient time, to explain fully the scope of work, methodology, and research behind this proposed project. This hearing should include adequate time for the airing of opposing points of views from credible professionals in addition to area elected officials and the general public.

Because saltwater intrusion is not an obvious component of the hydrological cycle, it is easy for the ACOE to forget or overlook that some of their proposed actions may have deleterious effects on Cape May's water resources and ecology over a wide area. Careful consideration needs to be given to any scheme that might alter groundwater recharge thereby affecting the salinity of well withdrawals. An appreciation of the limitations of Cape May's groundwater resource will save money and hardship the long run and avert potential litigation.

Basic hydrology teaches that when water is pumped from a well, the initial withdrawal exceeds the rate at which groundwater flows into the vicinity of the well. The surrounding water table is therefore lowered and slopes toward the well forming a cone of depression. The increase in the slope of the *piezometric surface* increases the flow of water toward the well, (Darcy's Law) until it balances with the pumping rate. Multiply this factor times the well water usage in Cape May and you will find that the cones of depression from neighboring wells will eventually intersect if withdrawals continue to exceed recharge increasing the need to pump water from greater depths. This is already happening in Cape May. Should saltwater intrusion into underlying aquifer be increased, then there exists the potential for a serious threat to the viability and usage of our freshwater resource.

RESPONSE

No response necessary.

Before any further action is taken on the proposed saltwater inundation of a freshwater recharge area in Cape May, I request the following from the Army Corp of Engineers:

1. **Public Hearing**: A hearing or hearings shall be scheduled and advertised well in advance to explain the project. Adequate rebuttal time shall be scheduled as well. **1**

2. **Supporting Documentation**: The Army Corp of Engineers shall produce at that meeting, a certified hydrologist to present accurate hydrological mapping of baseline information including piezometric surface (freshwater) depths at critical points and existing aquifer conditions to further include depths of withdrawal from all potentially affected wells. **2**

3. **Scope of Project**: A presentation of the scope of project shall be made by the Army Corp of Engineers to include the proposed engineering plan, landscape demolitions plan, new plantings plan, and follow up plans. **3**

4. **Safety Measures:** Measures that the Army Corp of Engineers will put in place to protect the groundwater supply from saltwater intrusion as a result of this project. **4**

5. **Monitoring:** Produce information on what federal, state, and local government persons will be responsible for the monitoring of this proposed project and who will be responsible for the post project testing of Cape May's water resources? **5**

In closing, the protection of the shared environment is one of government's most fundamental roles. I can appreciate the ACOE's desire to remove the phragmites from the last remnant of bayside coastal dune forest in the entire state of New Jersey and replace it with more diverse native plantings. But this should not be done at the expense of our water supply. **6**

It is nothing new that a safe environment is important to the physical and spiritual health of our community, people, and wildlife, and that a wholesome environment and a healthy democracy are intertwined. We are grateful to the Army Corp of Engineers for continually looking to the future and its efforts to protect the environment. I look forward to your reply and the scheduling of a public hearing of this issue.

Very truly yours,

John Schneider, RLA, ASLA
Landscape Architect & Land Planner
Local Address: 4014 Bayshore Road, Cape May, NJ 08204
(jericschneider@aol.com)

420 CATHCART ROAD • BLUE BELL, PA • 19422-1413
(215) 646 - 4479

RESPONSE

1 Two public meetings were held on the project in Cape May, NJ on October 13, 2005. At the meetings, citizens were given time to make public comments on the project.

2 Pierre Lacombe, a hydrologist with the U.S. Geological Survey (USGS), attended the meetings and presented detailed hydrologic information on the project area, as well as, an explanation about potential affects of the project on local wells.

3 Presentaions (Appendix H), which discussed the scope of the project and engineering plans, were made at each public meeting,.

4 At the meetings, Lee Widjeskog, the representative of the non-federal sponsor (NJDEP), announced that if there was any salt water intrusion to local wells as a result of the proposed project, NJDEP would rectify the problem.

5 Appendix F is the project's plan to monitor the water level and chloride concentrations in observation and domestic supply wells. The US Geological Survey will conduct the surveys and monitoring. This monitoring will determine if there are any impacts to the local wells as a result of the proposed project.

6 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

July 27, 2005

Minas M. Arabatzis
U. S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pa. 19107-3390

Subject Project: Pond Creek Fresh Water Marsh
(Lower Township, Cape May County)

Dear Sir:

The Corps intention to allow a saltwater flow into Pond Creek Marsh is quite concerning to most of the nearby residents of this area. The results of this project could be very damaging to our wells. It is a well known fact that fresh palatable drinking water in this part of the county, or the lack thereof, has been a major concern of most municipalities for years. Why chance the risk? Cape May City's wells are a prime examples of salt water intrusion As a resident that lives a short distance from this **Marsh** it is extremely important that ***a public hearing*** on this project be scheduled as soon as possible. As a matter of **fairness** to all concerned, a public hearing is the only right course of action to be taken by the Corps of Engineers. ***Please let me hear from you.***

1

2

Sincerely,

Wister H. Dougherty
4008 Bayshore Road
Cold Springs
Cape May, New Jersey 08204
609- 884-8178
Fax 609-884-5843
E-mail wisterd@erizon.net

CC: Mayor Walter Craig
Township of Lower
2600 Bayshore Road
Villas, New Jersey 08251

RESPONSE

1 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

2 Two public meetings were held on the project in Cape May, NJ on October 13, 2005.

purearthlab
Pure Earth Environmental Lab, Inc.

7184 North Park Drive
Pennsauken, NJ 08110
tel 856.486.1177
toll free 866.486.1177
fax 856.486.0005
e-mail info@purearthlab.com
web www.purearthlab.com

U.S. Army Corps of Engineers
Attn: Mr. Minas M. Arabatzis
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

July 29, 2005

RE: Army Corp of Engineers proposed project:
Flooding of saltwater into freshwater Pond Creek, Cape May, NJ.

Dear Mr. Arabatzis,

I am responding to an article written in the Herald Newspaper, July 13, 2005 regarding the proposed flooding of saltwater into freshwater Pond Creek. As a Clinical laboratory Pathologist, Environmental Microbiologist and a property owner living in this area of Cape May, I am very concerned about the possibility of salt water intrusion into my drinking water source. Additionally I welcome further explanation and investigation into this particular procedure as a way to control and/or eliminate the spread of the Phragmites reed. **1**

Since Cape May is currently dealing with the issue of saltwater intrusion a public hearing with full disclosure of the proposed project including resulting ramifications is critical. As you are no doubt aware a protected environment safe for the community at large as well as for the wildlife which inhabits the Higbee's Beach region is of paramount importance to all who reside here. **2**

Thanking you in advance for taking my thoughts and concerns under advisement. I look forward to a public hearing with further discussion.

Sincerely,

Theodore J. Passon Jr.

Theodore J. Passon, Jr., PhD./ Virginia M. Passon

4012 Bayshore Drive
Cape May, NJ 08204
TJP/cnc

Theodore J. Passon, Jr.
Ph.D., SM(AAM)
BCLD(ABB)
Laboratory Director

RESPONSE

1 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

2 Two public meetings were held on the project in Cape May, NJ on October 13, 2005.

BOARD of CHOSEN FREEHOLDERS
COUNTY of CAPE MAY
4 Moore Road, DN 101
Cape May Court House, N.J. 08210-1654
(609) 465-1065 ☐ Fax: 465-6189
Website: www.capemaycountygov.net

DANIEL BEYEL, Director
Director of Administration,
Revenue & Finance
and Public Works

LEONARD C. DESIDERIO
Director of Planning and
Economic & Capital Planning

RALPH E. BAKLEY, SR.
Education, Library
and Consumer Affairs

RALPH E. SHEETS, JR., Vice-Director
Director of Public Safety

GERALD M. THORNTON
Director of Health and
Human Services

STEPHEN O' CONNOR
County Administrator

Minas M. Arabatzis
Chief, Planning Division
Environmental Resources Branch
US Army Corps of Engineers, Philadelphia District
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

July 25, 2005

Dear Chief Arabatzis,

The Cape May County Board of Chosen Freeholders is in receipt of the Draft Environmental Assessment for the Pond Creek Salt Marsh Restoration Project, Cape May County, New Jersey. As evidenced by the Assessment, the Pond Creek Area is a highly sensitive environmental area that is in need of restoration. Upon reviewing the Corps' proposal, it is acknowledged that the ecological and cultural/recreational resource may be enhanced by the implementation of the project and the reintroduction of tidal flushing to the area. **1**

One point of concern is that of the project's impact on drinking water quality. The Environmental Assessment provides limited information on the evaluation of the project's impact on residential wells, stating "the proposed project is unlikely to affect the Holly Beach aquifer in the vicinity of the residential areas" (p. 25). The document further offers that monitoring on shallow wells in the area will be conducted prior to commencement of the project and throughout implementation, and if problems with saltwater intrusion are identified, "mitigating actions will be taken" (p. 25). It is recommended that the Corps coordinate both the monitoring and potential mitigation techniques with the US Geological Survey and the New Jersey Department of Environmental Protection, who are currently engaged in the in-depth "Cape May County Water Supply Study". This will facilitate the coordination of data and the identification of problems and solutions in an efficient manner, as the USGS and NJDEP have extensive knowledge of the area's saltwater intrusion problems. **2** **3**

RESPONSE

1 Comment acknowledged; no response necessary.

2 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

3 The U.S. Geological Survey is a partner on the project and will be responsible for pre and post monitoring of the project (see Appendix F for monitoring plan). NJDEP is the non-federal sponsor for this project and will be responsible for any potential mitigation associated with this project.

Thank you for the opportunity to review these documents. I am pleased at the prospect of the restoration of this natural resource and look forward to the increased recreational opportunities that it will provide to our residents and visitors.

Sincerely,

Dan Beyel

Dan Beyel
Freeholder Director

cc: State Senator Nicholas Asselta
Assemblyman Jack Gibson
Assemblyman Jeff VanDrew
Manager, Township of Lower
Mayor, Borough of West Cape May
County Planning Department
Office of Economic Resources & Capital Planning

RESPONSE

No response necessary.

State of New Jersey

Richard J. Codey
Acting Governor

Department of Environmental Protection

Bradley M. Campbell
Commissioner

Division of Fish and Wildlife
Martin J. McHugh, Director
PO Box 400
Trenton, NJ 08625-0400
www.njfishandwildlife.com

July 21, 2005

Minas M. Arabatzis, Chief, Planning Division
Department of the Army
Philadelphia District, Corps of engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pa. 1919107-3390

Dear Mr. Arabatzis:

This serves to inform you of the Division of Fish and Wildlife's [DFW] comments about the Draft Environmental Assessment (DEA) for the Pond Creek Salt Marsh Restoration Project, Cape May County, New Jersey.

The DFW has no concerns and/or corrections to the DEA. We would like to stress the many positive impacts that are expected along with the return of the salt marsh and its associated economic benefits to the Delaware Bay region. In addition to the control of exotic and invasive species such as common reed, the reestablishment of native salt marsh [e.g. smooth cordgrass (*Spartina alterniflora*), salt hay grass (*Spartina patens*) and spike grass (*Distichlis spicata*) will dramatically increase the habitat value for a wide variety of fish and wildlife resources associated with this ecologically important area.

The DFW would like to thank you for the opportunity to comment under the NEPA process. The DFW looks forward to our staffs working on this valuable project and other important projects in the Delaware Bay estuary.

Sincerely,

Martin J. McHugh
Director

c. A. Didun, OER;
L. Widjeskog, Southern Regional Lands Management Superintendent;
D. Wilkinson, OER

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RESPONSE

1 Comment acknowledged; no response necessary.

TOWNSHIP OF LOWER

2600 Bayshore Road
Villas, New Jersey 08251

Incorporated 1798

(609) 886-2005

July 25, 2005

Mr. Minas M. Arabatzis, Chief Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pa. 19107-3390

Re: Pond Creek Salt Marsh Restoration Project

Dear Mr. Arabatzis:

I am forwarding the enclosed letter I received from Mr. William McPherson regarding the Pond Creek Salt Marsh Restoration Project for your information. Mr. McPherson is writing within the 30-day comment period of his concerns regarding possible salt water contamination and other pollutants as a result of restoring tidal flow to Pond Creek.

Please contact Mr. McPherson at your earliest convenience to discuss his concerns. Thank you in advance for your attention to this matter.

Very truly yours,

Kathleen McPherson,
Township Manager

Enclosure

c: Mr. William McPherson
File

RESPONSE

No Comment Necessary.

July 18, 2005

William B McPherson
686 Socs Lane
Cold Spring, NJ 08204
Home phone # 609-884-5504

Dear Mrs. McPherson,

I am writing this letter to express my concerns against allowing another 270 acres of freshwater wetlands be inundated with salt water.

Since Pond Creek is within an island surrounded with salt water and there are numerous new homes that most use fresh water to irrigate their lawns in the early morning hours and when the sun comes up the water is then evaporated and does not return to recharge the aqua furs.

I am concerned that salt water will then contaminate these aqua furs. **1**

I am also concerned with the old Smith's dump on Bay shore Road and the possibility of mercury in the soil from the old Magnisite Plant polluting our wells. **2**

I have been an employee of the Cape May County Mosquito Commission for 40 years and I am quite aware of the Mosquito Commission equipment opening the ditch to allow drainage of Pond Creek after heavy rains and the fact that Pertuban Mosquito's do attach themselves to the phragmites roots during their larvae stage and the Mosquito Commission larvicide's will not kill the larvae, however the larvae hatch is usually twice per season and are somewhat short lived., however if the salt marsh is not properly managed this marsh will produce aedes sollicitans which live longer and bite all day and night

RESPONSE

1 We have concluded that saltwater intrusion will not be a problem. All public supply wells are one mile or more from the limit of projected saltwater intrusion of the project area and they obtain their water from the Cohansey or Atlantic City 800 foot sand aquifer. These deep aquifers will not be affected by the shallow flooding of saltwater. Most of the domestic supply wells tap the estuarine sand aquifer and some tap the Holly Beach water-bearing zone. Generally, home owners use only 200 to 300 gallons of water per day. This small daily volume of withdrawal does not cause saltwater intrusion. Evidence of that is the number of homes along Cape May Canal that have not had saltwater intrusion since the canal was built. If a domestic supply well is very close to the salt front (less than 200 ft.), it may be susceptible to saltwater intrusion. Some heavily used irrigation and other large volume supply wells may cause a cone of depression that may induce limited salt water intrusion. Only a few wells of this type are in the project area. They presently have a withdrawal limit of 100,000 gallons per day and they are only used during the summer.

2 There is no evidence to indicate that our proposed project will cause mercury pollution from the Magnesite Plant to enter local wells. The final assessment of the site completed by Louis Berger Associates in 2000, did not indicate any significant contamination that would impact this project or local wells. Proposed monitoring of the groundwater will also allow the Corps and partners to insure that this project does not contribute to local well contamination with mercury.

unlike the pertubans which bite in the late evening and early morning hours. Also the salt marsh will produce greenheads and strawberry flies in abundance which we have very few of now. **3**

I should also like to advise you if this marsh were to remain Fresh Water with the water level raised twelve to eighteen inches above the phragmites roots this will kill the phragmites and remain a productive fresh water marsh which will recharge the aquifers. **4**

I am quite aware of the Corps stating they will monitor our wells before, during and after construction of this salt water marsh; however what will they do when or if our wells become polluted? **5**

Sincerely,

William B. McPherson

William B McPherson

RESPONSE

3 Concur. Greenheads and strawberry flies are components of a salt marsh community.

4 It is agreed that flooding *Phragmites* will kill the invasive plant; however, this would not accomplish the project goal of restoring estuarine intertidal emergent wetland habitat for fish and wildlife at Pond Creek.

5 We have concluded that your wells will not be polluted as a result of this project; however, if there is a contaminant problem from our project, the non-federal sponsor of the project, NJDEP will investigate and resolve the problem.

Mark P. Eberle, Biologist
US Army Corps of Engineers
Philadelphia District

237 West Commerce St
Bridgeton, NJ 08302
August 10th 2005

Re: Pond Creek Draft Assessment

Dear Mr. Eberle;

A.) The oversimplification and the inherent capability for trouble of the Preferred Option demonstrates that the Corps is operating in an engineering vacuum. Sole reliance on marsh elevations and a greatly deepened, direct channel, even out into the Bay, are cause for deep skepticism. While probably theoretically correct, this approach will lead to expensive, if not impossible, maintenance problems.

1) Unnatural low elevations of the channel bordering on the bizarre, will insure filling in, despite jetty. **1**

2) North/South litoral drift, according to season, while it may equalize, will keep outlet in a state of flux. **2**

3) Situation will be made worse by the hydrologic power of a straight ditch bringing loose material from the marsh for deposition in the system and to Bay **3**

4) The 500 year flooding event will raise water in the Bay and help to send it in all directions at once, bypassing the control structures. So why are the benefits stressed? Is this a phantom carrot held out to property owners and development encroachment, as a ruse, **4**

RESPONSE

1 We do not anticipate the channel filling as result of its construction elevation. The channel will require periodic dredging to remove accumulated sand from Delaware Bay.

2 If necessary, a jetty will be constructed to keep the inlet from migrating and being in a state of flux.

3 The designed depth and flow of inlet channel will be sufficient to flush sediment from the marsh out to the bay.

4 The point of referencing the bay storm protection provided by the water control structures is to show that the bay storm protection for local landowners will be greater with the project (approx. the 500-year level) than without the project (20-year level). This is an incidental benefit of the project.

A) 4. cont'd: to support this Preferred Option?

5. There are no provisions for protecting fresh water resources in the marsh, only mention to absorb runoff. Yet the marsh is allegedly too desiccated to absorb runoff. Without provisions, the long term phragmites condition could worsen and require pesticides (apparently not the condition at present) **1**

B) Green Creek is set forth as a shining example of what can be accomplished. But unlike Pond Creek, Green Creek was heavily, ditched drained and desiccated by the Mosquito Commission many years ago. When tidal flow was introduced, Green Creek was in terrible condition - much worse than Pond Creek is now. Therefore tidal flow was the only option. **2**

C) With regard to protecting "property owners", maps should be drawn to delineate the boundaries of extensive conservation easement areas, (Hidden Valley Ranch, Rea farm) the HBWMA, and actual parcels affected by the various storm events. Are we in the business of protecting the lower elevations of the mega-mansions going in off Bayshore Rd and east of the HBWMA? If so, the Pond Creek plan may and cap have to become a drainage plan. With any option, the old railroad bed to the Magnolia, may have to be raised or reinforced to support culverts or water control structures to this land-locked section of the marsh. **3**

RESPONSE

1 Important freshwater resources of the marsh (above Sassafras Island) will be protected by the management of the water control structure. The water control structure will regulate the volume of water entering the marsh and will determine how much the marsh is inundated by the daily tide. This project will decrease the amount of *Phragmites* in the marsh and reduce the need for herbicides to control it.

2 Discussions with U.S. Fish and Wildlife Service and the Cape May Department of Mosquito Control, indicted that Green Creek was a degraded freshwater marsh dominated by *Phragmites*, and after introduction of tidal flow is now a functioning, productive salt marsh with improved fish and wildlife resources.

3 The goal of the Pond Creek project is to restore estuarine intertidal emergent habitat to the project area, not to protect landowners on Bayshore Road. However, an incidental benefit of the water control structure will be improved bay storm protection to landowners living adjacent to Pond Creek. There will be a drainage plan for the restored marsh area of Pond Creek, but this plan will not include private land adjacent to the marsh. Also, there are no plans to raise the old railroad bed that runs through the Pond Creek marsh.

III

D) From a resource standpoint, it is disturbing to see that the existing channel through the Magnesite dump is not properly portrayed in Program 5. Also the plan for this option is saddled with all sorts of channeling and ditching way up into the marsh as well as for outlet and sluice difficulties. Yet the proposed outlet seems relatively free of problems; here we have a welter of highly detailed engineering data to give an aura of truth and efficacy. So the existing channel is thinly eliminated **1**

E) 1888 was then, but this is now, and circumstances could not be more different. Fresh water habitats have virtually disappeared in the southern Cape. This is not a large coastal marsh with, realistically, only a fractional chance of controlling phragmites. 270 acres is an optimistic prognostication and will not add significantly to maritime resources despite the prodigious listing of fish to be benefited. **2**

F) Pond Creek, miraculously unbrained for many decades, as it stands now, is a viable fresh water eco-system, as attested to by natural mosquito control. Sections are navigable by kayak, large spongy mats of cat-tails remain. The once large populations of muskrats could return by expanding access routes through the marsh from their lodges around the pot-holes. This would help control phragmites. (This winter recovered a fresh water habitat in Cape May Point State Park; marked in the brochure as "Ala Pond" by utilizing muskrats) **3**

RESPONSE

1 The existing channel will be filled and a new channel constructed. The proposed new channel alignment will more mimic the historical alignment of the channel. The new channel will also provide for more efficient movement of the daily tide into the marsh. Data is what it is and is interpreted by technical experts to make project decisions.

2 Yes, circumstances are different from 1888; however, the value of a productive salt marsh for fish and wildlife has not changed. The value of a productive salt marsh for fish and wildlife far outweighs the value of a *Phragmites*-dominated man-made freshwater marsh. Green Creek was opened to uncontrolled tidal flow and initially the marsh was vegetatively unstable as *Phragmites* transitioned to *Spartina* spp. However, this marsh is now a stable, functioning salt marsh. Additionally upland berms were constructed to protect upland areas because tidal inundation was not controllable through a water control structure. Hydraulic instability is not a significant concern at Pond Creek since the tidal flow will be controllable via water control structures. Some marsh instability will occur as *Phragmites* transitions into *Spartina* spp., but this is a temporary change.

3 The majority of Pond Creek, as it currently stands, is a *Phragmites*-dominated man-altered/degraded freshwater system. It is not a very productive freshwater system. In addition, the Cape May Department of Mosquito Control has to spray the marsh for mosquito control. The proposed project will improve the ecosystem and also result in more natural mosquito control with the introduction of fish larvae into the marsh. This will decrease the amount of pesticide sprayed on the marsh.

IV

F) cont'd "Audubon" has recorded an amazing range of birds utilizing phragmites marshes including modest, though significant, observations in Pond Creek

The sweeping elevation only criterion set forth for water levels by the engineers, ignores much soils, vegetation and fresh water hydrology. Therefore, berms to protect fresh water habitat are worthy of deep consideration. Pond Creek has long been known for its unique characteristics and aesthetic diversity. A New Jersey Public Television show, in which this writer participated, stressed these values, now faced with a dark uncertain future. **1**

G) A modest raising of the water levels, using the existing outlet will maintain this unique tradition. As now planned the result will be neither a fresh water marsh or a tidal marsh and a magnificent resource will be increasingly compromised. Phragmites will emerge in yet one more "so so" environment requiring pesticides. **2**

Tidal inundation has become a buzz word, a "one size fits all", a "Bring 'em on" (the tides) bit of jingoism, as all the agencies lock step and become numb to rational considerations. Perhaps a boats on tour, sponsored by the Army Corps, could be enlightening. **3**

Thank you for the opportunity to comment on this vital matter.

Sincerely, Al Nicholson (856) 451-5008

RESPONSE

1 The water control structure will be able to adequately protect freshwater habitat (above Sassafras Island) by controlling the volume of water entering the marsh. The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity. The New Jersey Endangered and Nongame Species Program and the U.S. Fish and Wildlife Service are considering options for pursuing small berms in the upper reaches of Pond Creek. In the meantime the upland forested edge and upstream freshwater wetlands will be closely monitored by the New Jersey Division of Fish and Wildlife to ensure that these areas are not impacted by higher water and salinity.

2 The result of the project will be a tidal marsh covering approximately170 acres of Pond Creek. The upper reaches of the marsh will remain freshwater ecosystems. The project will result in a substantial decrease in the amount of *Phragmites* in the marsh.

3 Tidal inundation is the best way to achieve the goals of the project and restore Pond Creek to a much more productive habitat for fish and wildlife resources.

Aug. 13 2005

This is to request a public hearing with regard to -

FINDING OF NO SIGNIFICANT IMPACT
POND CREEK SALT MARSH RESTORATION PROJECT
SECTION 1135, ECOSYSTEM RESTORATION
CAPE MAY COUNTY, NEW JERSEY

who first requested this project and why? When was it begun? **1**

The purpose of the Pond Creek Salt Marsh Restoration Project is to restore estuarine intertidal emergent wetland habitat for fish and wildlife resources. This will be accomplished by reintroducing tidal flushing in the lower marsh areas of Pond Creek to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Once established, *Phragmites* often out competes native salt marsh vegetation, creating habitat less suitable for wildlife. Control of common reed will allow the reestablishment of native salt marsh vegetation [e.g., smooth cordgrass (*Spartina alterniflora*), salt hay grass (*S. patens*), and spike grass (*Distichlis spicata*)], thus increasing habitat available for a variety of fish and wildlife resources, in particular, the diamondback terrapin (*Malaclemys terrapin*), egrets, herons, shorebirds, and waterfowl.

How was it established that Phragmites is the problem here? Do you have the record for Phragmites - a wolf in sheep's clothing. Diamondback terrapins might be further threatened by any man-made structures you propose. What studies have you used for egrets, herons, shorebirds and waterfowl. **2**

The Pond Creek marsh (totaling 417 acres) is located along the Delaware Bay and runs north of Sunset Boulevard in Lower Township and in the Borough of West Cape May, Cape May County, New Jersey. The marsh, once a free-flowing estuarine tidal marsh before human disturbance, is part of the State of New Jersey's Higbee Beach Wildlife Management Area. The State's Division of Fish and Wildlife currently manages the marsh for migratory bird and waterfowl habitat and human recreation (e.g., birding and hunting). **3**

What year did human management take over. Hunting clearly needs to end in this area!

RESPONSE

1 NJDEP requested the project to improve fish and wildlife habitat at Pond Creek. The project was initiated in 2001.

2 Discussions with State and federal biologists lead to the idea that *Phragmites* was a problem at Pond Creek. Yes, we have a copy of *Phragmites – A wolf in sheep's clothing*. Our project should not impact diamondback terrapins. We have not done specific studies at Pond Creek for egrets, herons, shorebirds, or waterfowl.

3 The management of Pond Creek is the responsible of NJ Division of Fish and Wildlife.

andoned railroad tracks supporting red cedar (*Juniperus virginiana*), northern bayberry (*Myrica*
nsylvanica), and wax myrtle (*Myrica cerifera*) to the south. A portion of Pond Creek marsh extends south
the abandoned railroad tracks and is bordered by agricultural land, residential development, and small
itches of upland forest. The eastern portion of Pond Creek is bordered by agricultural lands with upland
rest buffers. The northern portion of Pond Creek is bordered primarily by upland forest with several
gricultural fields. An upland forested island is situated in the middle of the Pond Creek marsh, known as
assafras Island. A small open freshwater area identified as Davey's Lake is situated northwest of the marsh.
ond Creek is almost entirely freshwater wetlands, as a result of a tide gate installed in 1917, at the mouth of
ond Creek, which flows into the Delaware Bay. The tide gate has since deteriorated and been removed.
ue to the small size of the creek and the sinuosity of the channel, very little bay water is currently getting
to the marsh to flood the *Phragmites*.

Have you reviewed the minutes and records of the CMC Mosquito Commission We were first called by Dr Lagrower of the Commission because of a foolish plan introduced by Rutgers University **1**

he Corps, U.S. Fish and Wildlife Service, and project partners have identified that constructing a new
hannel and water-control structure is the least costly and simplest method of reintroducing tidal flow to the
arsh and controlling *Phragmites*. The proposed project will include construction of a 920-foot section of
ew stream channel to shorten the distance between the Bay and the marsh, thus increasing the amount of
idal flow into the marsh and reducing the potential for inlet migration. Upon digging the new channel and
undating the marsh, *Phragmites* will be eradicated or greatly controlled in the Pond Creek marsh. This will
llow native, more beneficial marsh vegetation to reestablish. The native vegetation will provide greatly
mproved habitat for diamondback terrapins, migratory songbirds, wading birds, shorebirds, and waterfowl.
n addition, the water-control structure will throttle the tidal inundation to Pond Creek protecting freshwater
vetlands in the upper portions of the marsh. **2**

Goals need to be clear! and how this manipulation might harm what has established there needs to be addressed.

COORDINATION
The project was developed by cooperating agencies including: the U.S. Army Corps of Engineers, the New Jersey Division of Fish and Wildlife (NJDFW), the Cape May County Mosquito Extermination Commission, Ducks Unlimited, Incorporated, and the U.S. Fish and Wildlife Service.

Is Ducks Unlimited an agency? Could this be a scheme to get a free shot at moving targets? Why was NJ. Audubon and others not included? **3**

RESPONSE

1 No, we have not reviewed the minutes or records of the Cape May Mosquito Commission.

2 The goal of the Pond Creek project is to restore estuarine intertidal emergent habitat to the project area. Section 6.0 of the Environmental Assessment discusses in detail impacts to the existing conditions of the area as a result of the proposed project.

3 The key partners on the project are NJDEP, U.S. Fish and Wildlife Service, and the Cape May Department of Mosquito Control. The NJ Audubon Society and other interested parties were notified of the project when the draft Environmental Assessment and Public Noticed were released in June 2005

ENDANGERED SPECIES IMPACT
The Environmental Assessment has determined that the selected plan, if implemented, would not jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to the Endangered Species Act of 1973 as amended by P.L. 96-159.

WATER QUALITY COMPLIANCE
Pursuant to Section 401 of the Clean Water Act, a 401 Water Quality Certificate will be obtained from the New Jersey Department of Environmental Protection, Land Use Regulation Program prior to project construction.

COASTAL ZONE
Based on the information gathered during the preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, it was determined in accordance with Section 307(C) of the Coastal Zone Management Act of 1972 that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of New Jersey. A consistency determination from the New Jersey Department of Environmental Protection will be received prior to project construction.

CULTURAL IMPACTS
The proposed project will not affect any historic or archaeological sites eligible or listed on the National Register of Historic Places. As such, no impacts are expected on historic or archaeological resources.

There is not enough information here to proceed. Archaeological sites may be submerged and water quality will surely be affected by encouraged development from this project 1

RECOMMENDATION Draft
Because the Environmental Assessment concludes that the work described is not a major Federal action significantly affecting the human environment, I have determined that an Environmental Impact Statement is 2

We recommend a full environmental impact statement and then public hearing

Marie Nelson
Ruth Fisher
for CAPE.
Box 102
S Dennis NJ 08244

Al Nelson is sending more comments

RESPONSE

1 The section that is referred to is the Finding of No Significant Impact (FONSI) located at the beginning of the Environmental Assessment. This is a brief summary of the findings. More detailed information on the impacts of the project can be found in subsequent sections of the Environmental Assessment (EA). We received concurrence for the proposed project from the NJ State Historic Preservation Office in a letter dated July 27, 2004 (see Section 6.9 in the EA). This project should not encourage more development in the project area.

2 An Environmental Assessment is adequate to document the impacts of this project. No State or federal agency or other citizen has requested the need for an Environmental Impact Statement for this project. Two public meetings were held on the project in West Cape May, NJ on October 13, 2005.

NEW JERSEY AUDUBON SOCIETY

14 November 2005

Mr. Merv Brokke, Public Affairs
U.S. Army Corps of Engineers
Wanamaker Bldg., Rm 600
100 Penn Square East
Phila., PA 19107-3390

Dear Mr. Brokke,

We are writing on behalf of the New Jersey Audubon Society and its 22,000 members. We have reviewed the Army Corps of Engineers proposal to restore tidal flow into the Pond Creek Marsh and are deeply concerned that this action will threaten and destroy existing high quality freshwater wetlands. While the Society does not necessarily object to the espoused goal of converting Phragmite portions of the marsh to tidal wetlands we find no reference of the extensive cattail marshes that lie in the northeastern portion of Pond Creek and fail to see how the this proposal intends to protect their integrity from salt water intrusion. "Protection" as discussed in the document, relate solely toward human residents. **1** **2**

The Army Corps certainly recognizes the value and importance of freshwater wetlands as efforts directed toward protecting the nearby South Cape May Meadows from tidal intrusion attests. It seems incredible that this same agency would initiate another action to do just the opposite. **3**

In short sum the New Jersey Audubon Society's support of this project is contingent upon the understanding that only Phragmites marsh will be effected and that the protection of high quality cattail marsh is assured. If such is not the case, then New Jersey Audubon opposes the project and asks that implementation not go forward until the matter of protecting the cattail portions of Pond Creed Marsh is satisfactorily addressed.

Please feel free to contact us if you have any questions regarding our position. We look forward to hearing from you about this very important project.

Sincerely,

David S. Mizrahi
Vice-president/Research

Eric Stiles
Vice-president/Conservation

Center for Research and Education * 600 Route 47 North * Cape May Court House, NJ 08210
Telephone: 609.861.0700 * Fax: 609.861.1651 * web: www.njaudubon.org

RESPONSE

1 There was a proposal from the NJ Division of Fish and Wildlife to install small berms in the upper marsh to protect freshwater areas from inundation. We feel that the impact of the small berms and the additional cost are unnecessary to achieve the project goal and protect important freshwater wetlands in the upper marsh. We feel that the proposed water control structure will be able to control the amount of tidal inundation and thus, prevent selected freshwater areas from being inundated.

2 The Lower Cape May Meadows project is surrounded by high density development which prevents the re-introduction of tidal flow to that area. Pond Creek is a much larger intact natural system that allows for the restoration of a natural tidal creek.

3 The proposed water control structure will be able to control the amount of tidal inundation and thus, prevent selected freshwater areas from being inundated. In addition, the water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity.

LOWER TOWNSHIP ENVIRONMENTAL COMMISSION

Mr. Minhas M. Arabatzis, Chief Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pa. 19107-3390

Re: Pond Creek Salt Marsh Restoration Project

Dear Mr. Arabatzis:

Members of The Lower Township Environmental Commission attended the presentation given on the Pond Creek Restoration project given by representatives of the U'S Army Corps of Engineers at the Municipal Building in West Cape May. We have also reviewed the Environmental Assessment(EA) package and have the following comments:

1. The presentation on Pond Creek Restoration given at the West Cape Municipal Building was an excellent example of the use of Power Point software and. discussions with a number of attendees after the presentation showed that they agreed. However, all also agreed that they wished that the specialists present to answer questions would have made at least a 15 minute presentation explaining their part in the engineering effort. Individuals answering questions in what is essentially a private conversation after the presentation is not satisfactory for a public hearing. **1**

2. Long term responsibility for maintenance and proper operation of the tide gates, breakwater and channel/inlet dredging was not addressed in either the EA or the presentation. We believe that before the expenditure of any additional funds and work on the project this issue must be formally agreed to by all partners in the project. It will be a total disaster if future funding sources and maintenance work is not in place and the meadow falls back to the present state. **2**

3. We did not find anything that addressed the beach erosion which will occur if the breakwaters are installed as shown. To install these breakwaters without doing anything to stabilize the beach is inviting disaster in the future. **3**

RESPONSE

1 The format of the public meeting, which was not a public hearing, was set up to maximize the amount of information that was transmitted to the public and to also answer as many questions as possible. A majority of the questions and answers were not shared with the group because of the small group format after the main question and answer period. Historically, in the time allotted for a public meeting or open house more questions can be answered individually or in small groups as compared to doing so in a larger forum. As always, our intent for these meetings is to answer as many questions as possible in the allotted time.

2 The non-federal sponsor, NJDEP, will be responsible for the operation and maintenance of the project after construction is completed. They have agreed to this responsibility and will sign a formal project cooperation agreement with the Corps prior to the beginning of construction.

3 Any maintenance requirements associated with the jetties and adjacent beaches will be the responsibility of NJDEP, as they currently are their responsibility.

4. We are concerned as to what effect the water flow thru the spoil area will have upon the meadow. Since this material is remaining as spoils from the magnesite operation we believe that every effort should be made to ensure it does not have any effect on vegetation in the meadow. Perhaps bulkheading in this area of the channel will provide adequate protection. **1**

5. While most members of the public voiced concern about the possibility of saltwater intrusion into the drinkable water supply we are concerned about the effects of saltwater intrusion into the groundwater supply. There is a great probability that this will occur and result in the death of desired vegetation and trees in the area surrounding the area where the phagmitie exist. The South Cape May Meadow Project is eradicating the phragmite without flooding of the area. We believe that this may be a better solution to ridding the meadow of phragmite than that of flooding with saltwater. Under no circumstances do we want the disaster that resulted at Green Creek when the meadow was opened up to saltwater flooding. **2**

We are seriously concerned that no notice was given to Lower Township of an application being made to the NJDEP concerning this project. The area where the project is being proposed is located in Lower Township. We believe that common courtesy would dictate that a municipality be notified when of a project of this magnitude is being proposed. While it appears that the law does not require such notification it should be done if for no other reason than to make municipalities aware of what is going on. In fact, as far as we know Lower Township officials never even received notice of the public presentation/hearing given at West Cape May except thru the newspapers. **3**

Commission members wish to thank you for the information you sent in response to our request at the presentation.

For the Commission

Robert C. Imler
Chairman

cc: NJDEP
Walt Craig, Lower Township Mayor
Kathy McPherson, Lower Township Manager

RESPONSE

1 Under the current conditions of the site, the water flows through the old spoil area. It does not appear to have an effect on the vegetation in the meadow and we don't anticipate an effect from the spoil piles on the vegetation after our project is complete.

2 The proposed water control structure will be able to control the amount of tidal inundation and thus, prevent selected freshwater areas from being inundated. The Lower Cape May Meadows project is surrounded by high density development which prevents the re-introduction of tidal flow to that area. Pond Creek is a much larger intact natural system that allows for the restoration of a natural tidal creek. Green Creek was opened to uncontrolled tidal flow and initially the marsh was vegetatively unstable as *Phragmites* transitioned to *Spartina* spp. However, this marsh is now a stable, functioning salt marsh. Additionally upland berms were constructed to protect upland areas because tidal inundation was not controllable through a water control structure. Hydraulic instability is not a significant concern at Pond Creek since the tidal flow will be controllable via water control structures. Some marsh instability will occur as *Phragmites* transitions into *Spartina* spp., but this is a temporary change.

3 All State and federal laws were followed in the notification process of the project. Lower Township received a copy of the Environmental Assessment and Public Notice. Our standard notification of public meetings is through a Press Release; however, it is agreed that Lower Township officials should have been contacted directly about the public meeting. There was a subsequent meeting with Lower Township and West Cape May officials to further discuss and answer questions on the project in December 2005.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

SEP - 2 2005

Minas M. Arabatzis
Chief, Planning Division
Environmental Resources Branch
Department of the Army
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Arabatzis,

This is in response to your letter dated August 24, 2005 requesting consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended for the Pond Creek Salt Marsh Restoration Project. The purpose of this Restoration Project is to restore estuarine intertidal emergent wetland habitat in the lower marsh areas of Pond Creek to eliminate and control common reed (*Phragmites australis*), an exotic and invasive species which has formed an extensive, dense stand throughout most of Pond Creek marsh. Pond Creek marsh is located along Delaware Bay in Cape May, New Jersey. The Army Corps of Engineers is the federal sponsor for this project and has made the preliminary determination that this project will have no effect on federally listed species.

While a population of the federally endangered shortnose sturgeon (Acipenser brevirostrum) is known to occur in the Delaware River and has been documented in Delaware Bay and several species of listed sea turtles are seasonally present in Delaware Bay, no species listed under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) are likely to occur in the Pond Creek marsh where restoration activities will occur. As such, NMFS is able to concur that this project will have no effect on federally listed species under our jurisdiction. Therefore, no consultation pursuant to Section 7 of the ESA is required for this project. NMFS Protected Resources Division offers no further comments on the Draft Environmental Assessment that was submitted with the August 24 letter. It is our understanding that NMFS Habitat Conservation Division has already submitted comments on the proposed project in a letter dated August 1, 2005 that stated that the project would have a positive effect on the natural resources in the Cape May area. Should you have any questions regarding these comments please contact Julie Crocker of my staff at (978)281-9300 ext. 6530. **1**

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

Cc: Gorski, F/NER4

File Code: Sec 7 ACOE Philly No effect - Pond Creek Salt Marsh

RESPONSE

1 Comment acknowledged, no response necessary.

Mark J. Eberle, Biologist
US Army Corps of Engineers
Philadelphia District

Al Nicholson
237 West Commerce St.
Bridgeton NJ 08302
August 27th 05

Re: Addendum to my testimony of August 10th 2005
On the Pond Creek Draft Assessment

Dear Mr. Eberle:

In my testimony, paragraph A.) "sole reliance on marsh elevations" (for tidal inundation) means the following:

Everything has to be perfect with the main channel depth and the water level settings of the control structures. Maintaining perfection in a highly challenged maintenance situation is highly unlikely. So, in order to get the salt water into the upper reaches of the marsh, channels will have to be dug. Permits will justify the new construction and will result in a greenwal approach in a worked-over area to the detriment of Pond Creek's now natural fresh water hydrology. 1

Kindly inform me of a hearing, if any.
Thank you for your consideration. Sincerely, Al N.

RESPONSE

1 Operation and maintenance (O&M) of the project, including the water control structure, will be the responsibility of the non-federal sponsor, NJDEP. An O&M manual will be completed for the project during the design phase and this will provide guidance on the correct operation of the water control structure and the required elevations of interior marsh channels needed to inundate the project's goal of 170 acres. There will be a design for the interior marsh channels, but since adaptive management will be used to determine the exact alignment and size of the interior channels, the exact amount of the material to be excavated by the mosquito department will be determined at that time. The mosquito department will excavate a channel according to our design and side-cast the material nearby. The distribution of tidal flow will be monitored and corrections to the newly created channel will be made, if necessary.

USGS
science for a changing world
810 Bear Tavern Road
West Trenton, N.J. 08628

September 8, 2005

Mr. Mark Eberle
Army Corps of Engineering
Philadelphia District

Re: Finding of No significant Impact: Pond Creek Marsh Restoration Project;
Section 1135, Ecosystem Restoration, Cape May County, New Jersey

Thank you for giving the USGS an opportunity to review the impact report. As well as the 15 letters sent by citizens and governmental bodies to the ACOE in reference to this project.

Though the USGS is capable of reviewing the entire report and its many facets including tidal flooding, ecological restoration, and ground-water intrusion with saltwater, I have limited this review to ACOE discussion of saltwater intrusion into the ground water supplies of Cape May near Pond Creek. I can suggest that Robert Schopp, Surface Water Specialist in our NJ Office review the tidal flooding component and that Jonathan Kennen or ecology specialist or someone from the USGS Biological Resources Division look at the ecological restoration component. At this time they are very busy and with the end of the fiscal year they would not be able to address these issues in a timely fashion

The ACOE discussion of saltwater intrusion of the Holly Beach water-bearing zone (HBWBZ) as a result of tidal flooding consists of one paragraph on page 25. Upon reading the 15 letters, the local citizens and local governmental agencies are concerned with saltwater intrusion of this and other aquifers. I find no map in the report that shows the anticipated limit of saltwater flooding. I will assume that the flooding will inundate the marsh inside the area showing in fig 7 page 19.

Based on previous USGS investigations I would initially assume that no public supply wells would be impacted by the sea water flooding of the marsh. The only nearby public supply wells are owned by Cape May City Water Bepartment. Based on antidotal information I would guess that any low-volume, domestic-supply well that taps the HBWBZ and is on the roads that circumnavigate the marsh and is more than about 500 ft from the marsh would not be intruded with saltwater. However, because of the nature of the sedimentary deposits of the cape (it is a former spit with many east-west trending sand-clay deposits) any HBWBZ wells that are on the sandy part of the spit will likely be more susceptible to intrusion than wells that are on the clay rich part of the spit. High volume wells in the HBWBZ near the salt marsh may experience saltwater intrusion. Domestic supply wells that tap the estuarine sand aquifer and are low volume likely will not be impacted by the saltwater flooding. **1**

RESPONSE

1 Comment acknowledged, no response necessary.

A simple local water-level and chloride synoptic survey of the domestic, irrigation and other monitoring wells surrounding the marsh would best create a baseline data set of the local area. The water level synoptic should be conducted in a fashion that investigates the summertime low water levels and not the fall, winter, or spring water levels. In all likelihood the water-level synoptic will show that the HBWBZ and Estuarine sand show no cone of depression. If there is a cone of depression in the summer in the HBWBZ then you may need to reevaluate your options. I suspect that the chloride and sodium synoptic will show that most well have a concentration of 40 mg/L or less of chloride. Wells that have higher values may be influenced by local septic tanks or preexisting saltwater intrusion. **1**

I would suggest that the ACOE contact Richard Kropp, the USGS Water Science Center Director, and discuss options on how the USGS could help the ACOE address these issues.

Again thank you for allowing me the opportunity to review this document. Please let me know if I can be of any further assistance.

Respectfully,

Pierre Lacombe
Hydrologist

RESPONSE

1 Comment acknowledged, no response necessary.

CLAY SUTTON
PATRICIA TAYLOR SUTTON
129 BUCKS AVENUE
CAPE MAY COURT HOUSE
NEW JERSEY 08210
609-465-3397 (PHONE) / 609-465-2273 (FAX)
pcsutton@bellatlantic.net

Minas M. Arabatzis
Chief, Planning Division
Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

November 10, 2005

RE: Pond Creek Restoration Project -- Cape May County, New Jersey

Dear Mr. Arabatzis,

Thank you for the opportunity to comment at the October 13 Public Hearing on the proposed Pond Creek Project. I am putting my comments at the hearing into letter form so that you may perhaps better understand my concerns and address them point by point.

While on the surface the project appears sound, there are some major underlying issues. I can't help but believe that the project is being driven by Mosquito Control and Black Duck management rather than any general concern for migratory birds. I believe that over time, the DFW, excepting for the ENSP, has shown a disinterest, and at times a disregard, for nongame species -- instead focusing a far greater effort on game species. This should not be the case at a world-renowned migratory juncture like Cape May. Over 100,000 birders and ecotourists visit Cape May each year, with over 10 million dollars spent in the local area. Any plans for the Pond Creek area must recognize this fact and both maximize bird diversity and guard against potential adverse impacts to birds resulting from the Corps' actions. **1** **2**

I can accept the need for the project, as much of Pond Creek is a *Phragmites*-clogged dead zone, with little wildlife habitat or values. BUT: the plan does NOT recognize the extreme values of the quality fresh water marsh in the upper regions around Hidden Valley. Nor does it recognize the high value of the upland edge/ecotone to migrant passerines. **3**

I would think that the preferred alternative should be the flooding of the marsh with freshwater. I will though, accept your claim that this is impossible -- because, as you have stated, if waters were high enough to kill *Phrag*, then they would be high enough to flood basements, septic systems, crops, etc. in the area. (the whole issue of salt water intrusion and fresh water recharge is a very valid one, but one I won't pursue herein, as many others at the hearing expressed their deep concern here).

RESPONSE

1 The agencies responsible for the development of the project include the U.S. Fish and Wildlife Service, NJDEP, Cape May Department of Mosquito Control, and the U.S. Army Corps of Engineers. The goal of the project is to restore estuarine intertidal emergent habitat to the project area. This goal will also achieve a substantial improvement to the area for fish and wildlife resources. The project is not driven by mosquito control or black duck management.

2 The project does recognize the value of the non-*Phragmites* freshwater wetland areas in the upper reaches of Pond Creek. The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity.

3 Comment acknowledged, no response necessary.

Pond Creek -- page 2.

It seemed that the "Berm Alternative" was a good compromise, using salt water/tides to kill the *Phrag*, but protecting crucial fresh water areas with berms. Now the berms have been eliminated due to costs. (although confusingly still shown on maps and literature). It was only through quizzing the Corps personnel at the hearing that they admitted that the berms were no longer planned....It seemed almost as if they hoped that nobody would notice the elimination of this highly crucial element of the project. **1**

In short, it now seems that you are saying, "We don't have the money to do the job right, but we're going to do it anyway."

I don't believe, no matter what the engineers say, that they can make it work without berms. Agencies claim they can control where the salt water goes with the water control structure alone, but I doubt this because: **2**

- The salt water limit you show on their maps reaches the "horseshoe ponds" of Hidden Valley. If it reaches these ponds, it will thereby get into the whole fresh water area -- they are all interconnected.

- Nobody has ever been successful doing this before. Salt water tidal flooding has done drastic damage to the upland edge in the Mosquito Commission project at Green Creek, and at every one of PSEG's EEP sites. There is massive damage, with hundreds of dead trees, at every one of these sites -- Bivalve and Thompsons Beach in particular. **3**

The project will not work without the berms. The staff experts agreed at the hearing that the berms are best, ideal, just that they can't afford them.

In addition, the Environmental Assessment is drastically flawed. It is inconceivable that you could reach a finding of "No Significant Impact" if you had done a more in-depth and inclusive EIS. Specific problems with the Environmental Assessment are: **4**

- It fails to recognize or address the use of the *Phragmites* sections of the marsh by hundreds of thousands of Tree Swallows (or perhaps millions) as a roost site in fall. *Phrag* is not all bad. In fact, NJAS has an important and insightful position paper on this, and should be reviewed in relation to this project.

- It fails to address the potential impacts of the loss of the upland edge (as the Salt kills the trees and impacts the ecotone) to Woodcock. Woodcock is a "poster species here," one of the main reasons Higbees Beach WMA and Hidden Valley Ranch (now part of the WMA) were protected. Wood Ducks are are abundant in Pond Creek Marsh as well.

- It fails to mention or discuss impacts to threatened Barred Owls. Several pairs are found in the wooded wetlands of Higbee/Hidden Valley.

RESPONSE

1 The berm alternative is presented in detail in Section 4.4 of the EA followed by an explanation of how the preferred plan (the water control structure) was selected through the alternative analysis.

2 The berm alternative was just one of the many alternatives considered when evaluating the Pond Creek project. The salt water limit presented on the maps is just an approximation of the inundation area. The actual area will be determined using adaptive management, starting on a small scale and eventually modified until the goal of approximately 170 acres of *Phragmites* marsh is inundated by the daily tide. In addition, the management of the water level will have the constraint of protecting the important freshwater areas of the upper marshes of Pond Creek.

3 The restoration of salt marshes has been successful in other places. Green Creek was a success in that a degraded *Phragmites* marsh was restored to a productive salt marsh. Green Creek does not have a water control structure and can not control the area of inundation as Pond Creek will be able to do. Also, the U.S. Army Corps of Engineers, New England District, has successfully restored salt marsh in Rhode Island and Massachusetts using water control structures. The projects were Galilee Marsh and Sagamore Marsh and more information can be gathered by contacting New England District.

4 In the NEPA process, it is necessary to complete an EA to determine if an EIS is required. We have concluded that an EIS is not necessary for this project or have we received any requests for that from State or federal agencies. Also, the project has been evaluated by State and federal agencies for listed species and on both accounts, no impacts were identified. *Phragmites* is used by some wildlife species including tree swallows, red-winged blackbirds, and marsh wrens. However, large monocultures of *Phragmites* typically provide limited habitat value for many wildlife species that typically inhabit freshwater marshes and typically support limited wildlife diversity. However, within the Pond Creek watershed, large areas of *Phragmites* will remain intact (e.g. marsh areas south of the railroad tracks, transition areas between freshwater and salt marsh). As a result, wildlife using *Phragmites* for roosting and nesting will continue to have available habitat. In addition, there are many wetlands throughout the Cape May and Cumberland County that support large expanses of *Phragmites* where this habitat is available.

Pond Creek -- page 3.

- There is no mention of the endangered Tiger Salamander. The ENSP has carried out a major successful reintroduction project at Higbee Beach WMA. The vernal breeding ponds are located just a few yards from the edge of the Pond Creek Marsh, very close to the line you show as the limit of salt water inundation. The project without berms could have drastic impacts on Tiger Salamander breeding ponds.

- There is no mention of Southern Gray Treefrog in the Endangered Species section. This is a species of HUGE local concern in the community here. This is a gross oversight. This is an area, in the community of West Cape May, where many single family homes have been denied, and one person forced to tear down an outbuilding, because it encroached a few feet into the special resource value fresh water wetlands. **1**

But now this project proposes to eliminate 140 acres of fresh water habitat (and 400 acres if I'm right that it won't work without berms...) and there is no mention of endangered Southern Gray Treefrogs. There could be huge regulatory and legal repercussions here.

Without duly considering these species and potential impacts, I just don't see how you arrived at "No Significant Impact." Here is what I believe to be the overlaying problems:

- Despite on the surface good discussion about migratory bird values, I don't think the Corps (and especially not the DFW) grasp the enormity, or the true importance of the area to migratory birds. I can list facts/figures/superlatives forever, but these should best be obtained through NJAS/CMBO if not the USFWS. Just suffice it to say that there have now been two centuries of ornithological studies -- and baseline data -- at Cape May. It is a site of national and international importance and recognition. **2**

- I don't think project planners and reviewers grasp that the upland edge of Pond Creek Marsh may be the most important habitat of Higbees/Hidden Valley from a bird-use perspective. Thousands, maybe millions, of Passerines use these edges yearly -- particularly tired migrants dropping into the first wooded areas available during the well-known "morning flight." **3**

- I don't think they recognize the true economic values or impacts here either -- 100,000 plus birders visit Higbee Beach WMA each year. (NJAS did the ecotourism value studies here). To destroy the upland edge of Pond Creek Marsh would not only be an be an ecological catastrophe, it would also be a visual crime from a landscape/viewscape standpoint, too. **4**

I think my claims that you are underestimating the avian ecovalues and ecorisks here are supported by several comments the Army Corps Project Leader made at the public meeting on October 13. He admitted that night was his first visit to Cape May....But his response to my concerns about potential dead trees was, "Why are you concerned about dead trees, dead trees are good for wildlife and birds." A textbook-type response..... When pressured to protect the fresh water sections, he asked me, "Why wouldn't you want it to all to be salt marsh? Salt marsh is far more diverse than fresh, with many more birds using it." Again, a textbook reply.... **5**

RESPONSE

1 During coordination with NJDEP for the appropriate State permits for the project, they did not identify these species in the project area. The project will not impact 140 acres of Southern Gray Treefrog habitat. Again, the project was reviewed by appropriate State and federal agencies for listed species and no impacts were identified or are anticipated from this project. The proposed water control structures will protect vernal pool areas for tiger salamander and other wildlife dependent on these vernal pools. Under current conditions, tidal inundation in Pond Creek is uncontrolled and therefore no protection from coastal flooding and salt water impacts on these vernal pools exists.

2 The sponsor of the project is NJDEP, Fish and Wildlife Division and a key partner in the project is the U.S. Fish and Wildlife Service. Both agencies are responsible for managing and protecting migratory birds as part of their respective missions.

3 Important freshwater areas of Pond Creek will not be impacted by this project. Also, most of the upland edge of the Pond Creek should not be impacted by the tidal inundation and loss of *Phragmites*. We appreciate the diversity in habitat that the upland areas provide for Pond Creek.

4 With the implementation of the project, the Pond Creek area will be improved for fish and wildlife resources, which means more bird species, will utilize the area. This means that the 100,000 birders visiting the area should see an improved salt marsh habitat with more species diversity than the current degraded *Phragmites* marsh that has limited wildlife value. Economic value of ecotourism were considered. Increasing habitat value and diversity within Pond Creek will increase overall migratory bird use of the project area. As a result, this will provide increased bird watching opportunities by visiting and resident bird watchers.

5 The project has the support of the NJDEP and the U.S. Fish and Wildlife Service, who missions are to protect fish and wildlife resources. There is no underestimation of the avian ecovalues or ecorisk.

Pond Creek -- page 4.

My reply to this is that we have tens of thousands of acres of salt marsh in South Jersey, and at best just a few hundred acres of quality fresh water marsh. Everyone knows the inestimable value of fresh water to migratory birds -- particularly in an area/concentration zone when little of it is available. Pond Creek Marsh as a fresh water wetland adds considerable overall habitat diversity to the Cape May area. **1**

In summary, I just don't believe that the project as presented, without the all-important berms, recognizes or protects the extremely high, internationally-known wildlife values of the region, or the extreme importance of fresh water in an area of prevalent salt marsh. Especially when that area is at the very tip of the famous bird funnel that is Cape May. This site calls for the absolute highest and best plan possible, one that takes absolutely no chances when it comes to protecting the remaining quality fresh water wetlands habitats and priceless upland edges -- and the enormous concentrations of migratory birds that depend not only on this general area, but also on this specific habitat type and location. **2**

I urge you to restore the all-important berms to the Pond Creek Project.

Thank you for the opportunity to comment.

Sincerely,

Clay Sutton

129 Bucks Avenue
Cape May Court House, NJ 08210
609-465-3397
609-465-2273 (FAX)
claysutton@comcast.net

cc: Eric Stiles, NJAS
Kathy Clark, ENSP
Jane Galleto, ENSAC
Pam Kaithern, Mayor, West Cape May
David Rutherford, Lower Twp. Envi. Comm.
Alfred Nicholson

RESPONSE

1 Salt marsh is an important of component of the ecosystems found in the Cape May area. As a key stop along the Atlantic Flyway, the Cape May area, is essential to migratory birds. Restoring a natural salt marsh in this area provides needed foraging and roosting sites for migratory birds. Currently, most of Pond Creek is not functioning as a valuable freshwater marsh, but is instead a degraded man-altered freshwater marsh providing limited value to wildlife. Currently Pond Creek is already tidally flowed and is no longer a freshwater wetland. The proposed project will improve the lower portion of Pond Creek as a salt marsh and preserve and protect the remaining freshwater wetlands in the remaining portion of Pond Creek. In addition, South Jersey provides tens of thousands of acres of similarly Phragmites-dominated wetlands and will continue to be available for wildlife.

2 The proposed water control structure will be able to control the amount of tidal inundation and thus, prevent selected freshwater areas from being inundated. The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity. They will have the option of closing gates and minimizing the volume of water entering the marsh from Delaware Bay. If important freshwater areas or upland edge are threatened, they will react accordingly and reduce the amount of water entering the marsh to insure that only the *Phragmites*-dominated area gets inundated by the daily tide.

State of New Jersey

Richard J. Codey
Acting Governor

Department of Environmental Protection
Division of Fish and Wildlife
P.O. Box 400
Trenton, New Jersey 08625-0400
Martin J. McHugh, Director
Visit our Division Website: njfishandwildlife.com

Bradley M. Campbell
Commissioner

Endangered and Nongame Species Advisory Committee

Jane Morton Galetto, Chairman
Dr. James Applegate
Dr. Joanna Burger
Dr. Barbara Brummer
Dr. Emile DeVito
Janet Larson
Dr. Rick Lathrop
Dr. David Mizrahi
Dr. Dale Schweitzer
James Shissias

December 15, 2005

Mr. Minas M. Arabatzis
Chief, Planning Division
Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

RE: Pond Creek Restoration Project, Cape May County, New Jersey

Dear Mr. Arabatzis:

My name is Jane Morton-Galetto and I chair the DEP Division of Fish and Wildlife's, Endangered and Nongame Species Advisory Committee (ENSAC) in New Jersey. ENSAC is the independent advisory group for the Endangered and Nongame Species Program (ENSP), consisting of biologists, academic representatives, resource managers, public health and veterinary medicine representatives, non-profit conservation organizations, and the public-at-large. We review land use and resource management issues that affect nongame, endangered and threatened (E/T) species in the State, and where appropriate, make recommendations to the Division and to the Commissioner.

The Committee supports the restoration of the Pond Creek marsh, and is happy to have the Army Corps of Engineers working with the Division of Fish and Wildlife. This project, however, has significant ecological implications for endangered and nongame wildlife for which this Committee holds some authority.

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RESPONSE

1 See their subsequent letter, sent after a January 2006 meeting on the project, for the response.

Much of Pond Creek marsh is currently dominated by Phragmites, which has limited wildlife value. Restoring tides to much of this marsh will improve the area for shorebirds and many landbirds. The upper, freshwater reaches of this system are currently exceptional habitat for southern gray treefrog (state threatened), eastern tiger salamander (state endangered), and numerous resident and migratory birds. These freshwater wetlands must be protected from any possible intrusion of saltwater from the flooding of Pond Creek.

The Division's Endangered and Nongame Species Program has surveyed migratory birds and analyzed habitat trends in Cape May peninsula in the 1980's, 1990's and again in 2003-04. Despite regulatory protection, forest, field and wetland habitats continue to be lost and fragmented, forcing southbound migratory birds to disperse further north on the peninsula in search of suitable habitat for roosting and foraging. If this trend continues Cape May peninsula may no longer support the bird migration for which it is so well known. The only habitat in the peninsula that has not declined is salt marsh; we do not want to increase salt marsh at the expense of essential freshwater wetlands and upland edges.

In the discussion of alternatives, the one that included berms to protect the upper stream portions was the best to assure protection of these freshwater wetland habitats. The salt water tides would kill the Phragmites, allowing native salt marsh vegetation to gain a foothold, but protect crucial freshwater areas. It appears the reason for eliminating the berms from this proposal was the high cost. We would like to help the Division and the Corps to pursue grants or alternative funding that would make up the difference and achieve the optimal results from this project.

We cannot support the project as it stands: restoring tidal flow without berm protection of the freshwater feeder streams, wetlands and upland edges. The ecological losses to resident and migratory endangered and nongame wildlife would be greater than the expected benefits.

We ask that you coordinate your efforts with the staff of the NJ DEP, Division of Fish and Wildlife, Endangered and Nongame Species Program. Please direct your coordination efforts to Kathy Clark, Principal Zoologist, at (609) 628-2103. Thank you for your consideration of our comments.

Sincerely,

Jane Morton Galetto (lw)

Jane Morton Galetto
Chairperson

C: Martin J. McHugh, Director, NJDFW
Larry Niles, Chief, NJDFW-ENSP
Anthony Petrongolo, Chief, NJDFW-BLM

RESPONSE

1 See their subsequent letter, sent after a January 2006 meeting on the project, for the response.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Acting Commissioner

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Endangered and Nongame Species Advisory Committee

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Dr. Joanna Burger
Dr. Barbara Brummer
Dr. Emile DeVito
Janet Larson
Dr. Rick Lathrop
Dr. David Mizrahi
Dr. Dale Schweitzer
James Shissias

February 16, 2006

Mr. Mark Eberle
U.S. Army Corps of Engineers, Philadelphia District
CENAP-PL-E
100 Penn Square East, Wanamaker Building
Philadelphia, PA 19107-3390

RE: Pond Creek Restoration Project, Cape May County, New Jersey

Dear Mr. Eberle:

As you know, my name is Jane Morton-Galetto and I chair the NJDEP Division of Fish and Wildlife's, Endangered and Nongame Species Advisory Committee (ENSAC). ENSAC is the independent advisory group for the Endangered and Nongame Species Program (ENSP), consisting of biologists, academic representatives, resource managers, public health and veterinary medicine representatives, non-profit conservation organizations, and the public-at-large. We review land use and resource management issues that affect nongame, endangered and threatened (E/T) species in the State, and where appropriate, make recommendations to the Division and to the Commissioner.

We are sorry you were unable to attend the January 26th meeting of this Committee. We heard further discussion and explanation of the project from Eric Schrading and Lee Widjeskog. As were expressed in an earlier letter to your office, the Committee supports the restoration of the Pond Creek marsh. As a result of discussion at the January meeting, Committee members wished to voice their support of the project, with some additional comments. **1**

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RESPONSE

1 Comment acknowledged, no response necessary.

- We recognize the immediate need for installation of the water control structure, due to the degraded and uncontrolled condition of the water channel in its current state. We do not wish to see a major storm event cause damage to the upstream freshwater wetlands, just as we also do not wish to see controlled water levels have that effect. **1**

- We have assurances from the division staff that the water level (once the water control structure is in place) will be carefully monitored and managed to ensure that upland-edge trees and freshwater wetlands will not be affected by higher water and salinity. **2**

- We would like all the partners involved to meet with the Cape May County Mosquito Control Department to determine if that department can assist with building a smaller berm along the lines of the berms originally planned for the project, to protect the upstream wetlands. This would be smaller than the 10 foot berm initially planned by the Corps. The benefits of such a berm, available as a foot path, would extend to nature tourism. **3**

- The Committee suggested that surface water levels and salinity be monitored for more than five years (as currently planned). They suggested monitoring annually for the first ten years, and once every five years thereafter. **4**

I hope you will continue to coordinate with the staff of the NJ DEP, Division of Fish and Wildlife, Endangered and Nongame Species Program as well as the Bureau of Land Management. You may reach Kathy Clark at (609) 628-2103. Thank you for your consideration of these comments.

Sincerely,

Jane Morton Galetto

Jane Morton Galetto
Chairperson

C: Dave Chanda, Acting Director, NJDFW
Larry Niles, Chief, NJDFW-ENSP
Anthony Petrongolo, Chief, NJDFW-BLM
Eric Schrading, USFWS
Peter Bosak, Cape May County

RESPONSE

1 Comment acknowledged, no response necessary.

2 Correct. The water levels will be closely monitored by NJDEP and managed to insure that the upland-edge is not impacted by higher water and salinity.

3 This may be a future project that the NJDEP, Division of Fish and Wildlife, will pursue, if necessary and funding is available.

4 Agreed. Monitoring will be extended to annually for the first ten years and then once every five years thereafter.

Appendix H

Response to questions from October 13, 2005 public meetings and public transcript from the meetings

All questions that were asked at the October 13, 2005 meetings that were not addressed in the written comments (Appendix G) as a result of a comment letter received by the Corps, are answered in this section. Also, note that some questions asked in the 1st session of the public meeting were later answered in the 2nd session of the public meetings during the question / answer segment of that meeting. If you don't find your question from the 1st session answered in the written responses to letters (Appendix G), please check the 2nd session segment of the public transcript located in this appendix.

Questions

1st session –

David Rutherford

1. Q: The agencies that are partners, you share a responsibility. Is it written down in iron-clad fashion?
   A: Yes, the Corps and the non-federal sponsor, NJDEP, will sign a project cooperative agreement prior to the beginning of project construction, which is a legal document that outlines the roles and responsibilities of each project partner.

2. Q: Coincidental with that, how is funding to be accomplished between agencies?
   A: The Corps and NJDEP will cost share the project (75% federal, 25% non-federal). The Corps funds come from the funded Section 1135 authority or congressional added funds. NJ Division of Fish and Wildlife funds come from the sale of hunting and fishing licenses.

Richard Crossley

1. Q: There is a railroad track that bisects Pond Creek marsh. I don't know if it has been considered whether you can actually make it into tow separate marshes, one with saltwater intrusion and the one on the inlet side freshwater. I think that is a very pertinent question.
   A: The current plan has the North marsh (north of the railroad track) being inundated with saltwater. The South marsh (south of the railroad track) will not be inundated with saltwater and will remain as currently exists

2nd session-

Jack Sayer

1. Q: We came up with a set of gravity flow pipes into Delaware Bay…My alternative would be three smaller diameter pipes stacked vertically so the bottom pipe runs full speed with some head pressure behind it, so it keeps the end clear on the bay side….I would like to see this kind of plan to save money.
   A: This alternative would not meet the goals of the project to restore an estuarine tidal marsh. In addition, a water control structure allows NJDEP to manipulate the water levels entering the marsh to accommodate for any changing conditions.

Andrew Long

1. Q: One concern I have from reading the report and from seeing the maps is the interface between the projected saltwater limit and the freshwater limit is not very well defined…I don't know how you are going to convince the saltwater molecules not to find their way into that system and inundate what's above it.
   A: There will be a transition zone between the saltwater area and the freshwater area. The exact limit of saltwater inundation will be determined by the operation of the water control structure. The goal is to inundate approximately 170 acres of the Pond Creek marsh. NJDEP will operate the water control structure in phases (starting with a small amount inundated) to insure that important freshwater areas in the upper Pond Creek marsh are protected.