

CONSTRUCTION MANAGEMENT OF A WATER MANAGEMENT PROJECT,  
WERTHEIM NATIONAL WILDLIFE REFUGE, SHIRLEY, NY.

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*Poster Presentation*

In 2002, the Suffolk County (NY) Legislature determined that a re-assessment of its mosquito control program was in order. As part of this project, Suffolk County decided to test water management techniques. At the same time, the US Fish and Wildlife Service was seeking to reduce the use of pesticides in its Long Island Complex refuges, and also to address other issues it felt were impacting the marshes within these refuges.

Therefore, the Wertheim National Wildlife Refuge (Shirley, NY), a 2,500 acre site along the south shore of Long Island at the mouth of the Carmans River, was selected as a site for a water management demonstration project. A design was made based on a series of techniques detailed by the County to address mosquito control needs, but also to meet important USFWS management goals, including enhancement of habitat for migratory water fowl, suppression of invasive *Phragmites*, and removal of the grid ditch system installed in the 1930s. The New York State Department of Environmental Conservation (NYSDEC), as a requirement of permitting, made some further modifications to the design.



Figure 1 – Site location map.



Figure 2 – Project area

The basic project was to modify two 40 acre portions of the approximately 600 acres of tidal marsh in the refuge. Ponds of varying sizes were to be constructed, with the spoils from the ponds being used to fill the mosquito control ditches and to eliminate hummocky areas of the marsh that supported mosquito breeding. A channel was to be dug around the landward side of one marsh area to increase tidal flows to spots where *Phragmites* were prevalent. Several ditches that were not filled were to be “naturalized” by adding curvature to their previously linear layout. All ponds were to be connected to tidal waters to enhance water quality to support fish.

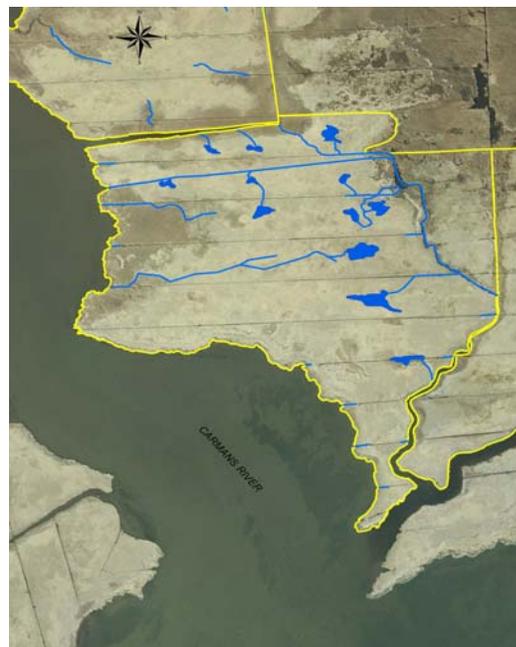


Figure 2 and 3 – Water management in Areas 1 and 2.

Construction occurred in March 2005 and February-March, 2006. In order to ensure compliance with the State permit and to prevent degradation of the marsh through the use

of heavy equipment, construction management was required. Three aspects were focused on:

- 1) equipment choices and management
- 2) permit compliance
- 3) environmental monitoring



Figure 4 - Quality ditcher modified with “low-ground pressure” tracks. Environmental monitor on deck assessing environmental impact during operation.



Figure 5 - Pisten Bully creating tidal channel along landward side of Area 1. In order to mitigate potential spreading of *Phragmites*, the soil from tidal channel along this portion of the marsh was deposited upland into an existing *Phragmites* stand. Environmental monitor in foreground.



Figure 6 - The osprey (*Pandion haliaetus*), a New York State species of special concern is one of the early spring arrivals on the marsh. Once the osprey arrived a non-disturbance buffer zone around the nests was implemented. During the two years of construction the existing two osprey nests were both occupied during nesting and fledgling periods. Also, an additional osprey pole was installed along the northern landward side of Area 1 in early 2006 and by mid-summer a partial osprey nest was observed.

Permit compliance was achieved through GIS design of the project elements. The drawings were translated to the field by staking all important features based on GPS coordinates derived from the GIS design. This attention to detail was maintained through the biological observers (see just below) who monitored the construction of features and compliance with the staking array.



Figure 7 - Each pond and channel was measured and staked. Each stake location was recorded using a GPS and crossed checked with the GIS design.



Figure 8 - Field team assessing area to be managed and verifying staked location.



Figure 9 - Pond staked and ready for management implementation.



Figure 10 - Monitor verifying location of pond with markers.



Figure 11 - Monitor watching Pisten Bully cutting tidal channel in Area 1 to ensure track follows markers.

Cashin Associates, Ducks Unlimited (as a subcontractor to Cashin Associates), USFWS, and Suffolk County combined to provide two trained biologists for all active construction hours. These observers were responsible for ensuring work crews followed the staked out design, and also to watch for potential damage to the marsh from repetitive movements by the equipment. There were instances where particular machines or continued activities began to stress the marsh. Modifications to construction were made to minimize effects. In addition, the observers ensured that important wildlife (ospreys, water fowl) were not impacted in the course of the project.



Figure 12 - Two monitors verifying location of tidal creek to GIS design.



Figure 13 - To minimize impact from machinery, hand crews were deployed in areas of concern.



Figure 14 - Second growing season after management project in Area 1. During this photography event, observations indicated that this pond was teeming with fish.



Figure 15 - Public awareness was also an important part of the water management project.

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