

# Cleaning up After Sandy

## Recovering Waterway Debris at the Jersey Shore

In New Jersey's most recreationally active and environmentally sensitive waterways, Superstorm Sandy's storm debris was removed expeditiously and with state-of-the-art detection techniques to prevent further environmental and economic losses.

By Andrew Raichle, P.E., M.S.A.M.E.

Roller coasters, businesses and homes deposited in the surfzone and backbays of the Jersey Shore. Coastal infrastructure swept out to sea. Thousands displaced or facing significant recovery ahead. Superstorm Sandy's destruction was fast and ferocious, with damages along the East Coast estimated at more than \$65 billion. New Jersey was hit the hardest.

In recognition of the environmental, economic and emotional detriment that these debris represented, the State of New Jersey quickly procured experienced waterway debris removal contractors to identify and remove both emergent and submerged debris throughout state waters.

### INITIAL RESPONSE

Immediately after Superstorm Sandy's landfall, the State of New Jersey and local municipalities began an ambitious cleanup of upland debris. The remnants of residences, infrastructure and general debris represented a health hazard as well as an impediment to redevelopment and an emotional burden to the community. Initially, waterway debris remained a known hazard, but one that was less identifiable and immediately addressable than the easily accessible upland debris.

As weeks passed after the storm, the concern over the impact of marine debris upon the environment and the summer



Cranes dredge New Jersey's Barnegat Bay to clear out sand and debris deposited during Superstorm Sandy. As of December 2013, the state had dredged more than 450,000-yd<sup>3</sup> from its waterways and is developing a long-term program for maintaining state channels in the future. FEMA PHOTO BY ROSANNA ARIAS

2013 recreational boating season mounted. The New Jersey Marine Trades association played a substantial role in publicizing the impact, including producing an economic analysis of the importance of maintaining navigable waters impacted by the storm. According to the Marine Trades report, the impacted waterways put an estimated 10,000 jobs and \$1.2 billion in spending at risk. News outlets described New Jersey's waterways as a "maritime graveyard."

The state reacted with speed and resources to try to mitigate further negative impacts. Initial efforts included forming an internal New Jersey working group, leveraging the experience of the New Jersey Department of Environmental Protection's (NJDEP) dredging and coastal engineering groups, as well as the New Jersey Department of Transportation's Office of Maritime Resources (NJDOT-OMR).

### DEBRIS IDENTIFICATION AND CONTRACTOR PROCUREMENT

The working group collected aerial photography and made field observations to determine the extent of the problem.

That provided a basis for soliciting proposals for marine debris contractors. By mid-January 2013, NJDEP had issued mapping of visible debris throughout the state.

The field observations element included a public participation component managed by NJDOT-OMR. The program allowed mariners to report areas of shoaling or marine debris to the state using an online portal or a hotline phone number. Based upon the field observations, the state delineated the impacted waterways into 11 working zones for response and reporting purposes. These 11 zones were consolidated into three regions (North, Central and South) for purposes of procuring contractors to conduct the marine debris removal.

In February 2013, New Jersey released a request for proposal (RFP) for contractors qualified to identify, remove and dispose/recycle the waterway debris from each of the three regions. In recognition of the importance of securing contractors with adequate resources to complete the work adhering to the aggressive schedule (75 percent complete by June 1, 2013), the RFP had substantial bond requirements,



Within 10 weeks after Superstorm Sandy, the New Jersey Department of Environmental Protection had prepared mapping of known marine debris throughout the state's waterways. By the storm's one-year anniversary, more than 6,000 targets, 194 vessels and vehicles, and four mostly intact homes had been removed from New Jersey waters. U.S. AIR FORCE PHOTO BY MASTER SGT. MARK C. OLSEN

including a \$3 million bid bond and \$100 million performance/payment bonds.

The RFP was structured in a manner that required contractors to offer a unit price schedule for more than 90 items that included debris identification (sidescan sonar, hydrographic survey); debris removal and disposal/recycling; dredging; and verification surveys. The debris removal items included a broad range of categories, inclusive of vessels, vegetative waste, vehicles, electronics, sand and "white goods" (such as dryers and refrigerators).

The procurement process was quickly completed and contracts were awarded to three firms (one for each region) in late February. Contract activities were underway by March.

**ENSURING SUCCESS**

A paramount concern for the State of New Jersey's execution of the debris removal activities was making certain that the work expenses remained eligible for Federal Emergency Management Agency (FEMA) dollars. In order to ensure compliance, the state implemented a rigorous project management program. Each contract was assigned state contract and project managers—and all activities were inspected by a third-party FEMA monitor. Contractors were required to implement an Automated Debris Management System to ensure accurate accounting of the work and

associated expenses. New Jersey likewise committed to an extensive outreach and reporting program to engage local officials, non-governmental organizations and the public. Weekly progress reports and work plans were published throughout the duration of the work, specifying activities and statistics in local and statewide contexts.

Concurrent with the marine debris removal operations, NJDEP and the Marine Trades Association mounted a public relations campaign to inform the boating public and to promote a strong 2013 recreational boating season. The campaign, "Go Boating NJ," utilized local and national media outlets to publicize the message that the state's waterways would be open for business by summer 2013 and also provided an online information source for boaters to follow the progress of the debris removal.

**PROJECT TIMELINE**

The Waterway Debris Project's primary functions were debris removal and dredging of sand deposited by Sandy in navigable waters. Initial efforts focused upon debris removal given its potential for environmental impacts and navigation hazards.

The State of New Jersey set a goal of achieving 75 percent of debris removal prior to June 1, 2013. While work began with removing emergent targets or those visible via aerial photography, concurrently, contractors engaged in a massive sidescan

sonar mapping of the state's waterways to identify non-visible submerged targets, which ultimately resulted in approximately 200,000-acres of surveyed seabed.

The vast majority of marine debris was removed by the summer. On Superstorm Sandy's one-year anniversary, NJDEP announced that the operation was complete. Final statistics included the removal of more than 6,000 targets, 194 vessels and vehicles, and four mostly intact homes.

Meanwhile, the removal effort for storm-deposited sediment focused on navigable waterways and areas of shoaling that could clearly be attributable to Superstorm Sandy. State contractors prepared hydrographic surveys of more than 800-acres of seabed to assist the state and federal government in determining the areas eligible for dredging. Upon the eligibility determination, sediment cores were collected to determine the nature of the material as well as its suitability for beneficial reuse on the adjoining barrier islands, or disposal at an upland site.

As of December 2013, dredging operations were substantially done with completion expected by year end. To date, New Jersey had removed more than 450,000-yd<sup>3</sup> from its waterways and is in the process of developing a long-term program for maintaining state channels in the future.

**A SUMMER SAVED**

New Jersey took on an ambitious program to ensure its waterways were ready for the summer season, which is so essential to the state's economy.

Completing the work is owed, in large part, to the dedicated service of public servants, a commitment to expediency, and a procurement/delivery process that resulted a cadre of professionals and contractors capable of executing the work on-time and on-budget.

Anecdotal evidence suggests the summer was a success. Boaters were back on the waterways and the New Jersey recreational boating industry is on the road to recovery.

**TIME**

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