

Yankee Engineer *Annual Review* 2016



Earth Day, West Thompson Lake, Connecticut



West Hill Dam, Massachusetts STEM event



Archeological Dig, Ball Mountain, Vermont

Yankee Engineer

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In This Issue

Notable Projects

- Cape Cod Canal Dredging/Town Neck beach sand placement
- Hanscom Air Force Base Middle School
- New Bedford Harbor Superfund
- Bridgeport Army Reserve Center
- Milford Pond Aquatic Ecosystem Restoration project
- Westover Replace Hydrant Fuel System
- Cape Cod Canal Major Rehabilitation Evaluation Report
- Boston Harbor Maintenance Dredging
- McArthur U.S. Army Reserve Center BRAC
- Final Dredged Material Management Plan and Final PEIS for Long Island Sound Mount Coffee Hydropower Rehabilitation Project

Program Highlights

- Environmental Program
- Flood Risk Management
- Sustainability
- Sustainability - Operations/Recreation
- New England Recreation
- DERP/FUDS
- Planning
- Contracting
- Regulatory
- DAMOS Program
- Cape Cod Canal
- Tribal Partnership Program
- Levee Safety Program

Highlights from the Field

- Edward MacDowell Lake
- West Hill Dam
- West Thompson Dam
- Cape Cod Canal
- Herring Run Recreation Area Information Building
- Knightville Dam
- Littleville Lake
- Tully Lake
- Thomaston Dam
- Northfield Brook Lake
- Black Rock Lake
- Westville Lake
- Buffumville Lake
- Hodges Village Dam
- Surry Mountain

Notable Projects



Cape Cod Canal Dredging/Town Neck beach sand placement

Sandwich, Massachusetts

The maintenance and advance maintenance dredging of the Cape Cod Canal and the sand placement onto Town Neck Beach in Sandwich, Massachusetts, concluded on Jan. 20. Approximately 130,000 cubic yards of sand was dredged from six areas in the authorized, 32-foot-deep by 500-foot-wide main ship channel and the 25-foot deep East Mooring Basin portions of the Canal. Great Lakes Dredge and Dock Company, LLC, pumped the material directly on the 2,500-foot-long eroded section of Town Neck Beach.



Hanscom Air Force Base Middle School

Bedford, Massachusetts

The New England District completed the construction of the \$34.2M Hanscom Air Force Base (HAFB) 85,000 square foot, two-story Middle School, designed to accommodate 310 students from the 4th through the 8th grade. The project incorporates the 21st Century School concepts, DoD Educational Activity Educational Specifications, Sustainability and Energy Efficiency features, including the components required to meet the Leadership in Energy and Environmental Design (LEED) for Schools Silver criteria. This state of the art school demonstrates the national commitment of providing a high level education for the children of the U.S. military families. The June 2 ribbon cutting ceremony was attended by the HAFB Commander and Congressional representatives, further demonstrating the high importance placed on educating the children of the military service men and women.



New Bedford Harbor Superfund

New Bedford, Massachusetts

New Bedford Harbor Superfund Site Remedial Action Contract (RAC) award to Jacobs Field Services of North America was reinstated on July 28, 2016. Fiscal Year 2016 remediation efforts focused on mechanical dredging in the Acushnet River in the area south of the Coggs Hall Bridge (Lower Harbor) and intertidal remediation of Parcel 265. Approximately 60,000 in situ cubic yards of contaminated sediment were mechanically dredged, and placed in the Lower Harbor CAD Cell from Feb. 1, 2016 - Sept. 30 2016.



Bridgeport Army Reserve Center

Bridgeport, Connecticut

Louisville and New England Districts partnered to deliver the \$17.6 million design bid build Bridgeport Army Reserve Center during September 2016. This state-of-the-art facility is located in Branford, Connecticut on a 13-acre site and contains a 40,000 square foot main building and various support buildings. The new facility is designed to facilitate training and mission execution requirements for 300 Soldiers assigned to a transportation and quartermaster company.



Milford Pond Aquatic Ecosystem Restoration project

Milford, Massachusetts

The District hydraulically dredged a thick layer of bottom sediment from a 17-acre corridor in the Milford Pond and disposed of the sediment in a 30-acre shallow backwater area. This disposal site had been a cedar swamp prior to being flooded with the impounded water behind the constructed dam. Approximately 168,000 cubic yards of organic-rich sediments were hydraulically dredged and pumped through floating pipes to the disposal area, which was contained by an innovative design using large stacked coir (coconut fiber) rolls surrounding the containment area. The 17-acre dredged area is now 12 to 13 feet deep and restored to open water and cleared of the choking milfoil. The deeper water discourages milfoil from returning since it normally can't root into deep water areas. This restoration provides open water habitat for fish and waterfowl, including the four protected bird species that live in the basin. The 30-acre disposal area for the dredged material was designed within the impounded footprint of Milford Pond and will restore emergent and wooded wetlands, including the possibility of restored native Atlantic white cedar community.



Westover Replace Hydrant Fuel System

Chicopee, Massachusetts

The \$26.3 million pressurized system upgrade was completed in June 2016. Westover Air Reserve Base now has an effective means to provide 10,000 barrels of JP-8 Jet Fuel and protect the environment. This facility can provide an adequate Peace Time/War Time storage requirement of JP-8 Jet Fuel, allowing the Air Reserve Base to function independently during any contingencies.



Cape Cod Canal Major Rehabilitation Evaluation Report

Cape Cod, Massachusetts

From October 2015 to October 2016 the New England District completed a structural risk and reliability study for the Bourne and Sagamore Bridges. The District also began an economic study to evaluate the effects of bridge and lane closures on vehicular traffic, marine traffic, and the local and regional economy. The combined structural and economic studies will be the major factors in deciding whether to repair or replace the aging 80-year-old steel bridges. New England District cost engineers estimate that each bridge will cost approximately \$300 million to \$500 million to replace. These two bridges serve an average of 60,000 vehicles per day and are the only means of ingress and egress to Cape Cod - a major vacation and tourist destination for all of New England.



Boston Harbor Maintenance Dredging

Boston, Massachusetts

The Fiscal Year 2016 \$12.8 million Boston Harbor Maintenance Dredging effort was awarded on Sept. 30, 2016 to Great Lakes Dredge and Dock Co. LLC with an anticipated start date in early 2017. This maintenance dredging contract is broken into two phases. The first phase of this project will be the creation of a Confined Aquatic Disposal (CAD) cell within the Main Ship Channel. The approximately one million cubic yards of suitable material dredged for the construction of the CAD cell will be placed at the Massachusetts Bay Disposal Site. The second phase consists of maintenance dredging of portions of the 40-foot Main Ship Channel, the Inner Confluence, and the 35-foot channel with approximately 0.8 million cubic yards of unsuitable maintenance dredge material being placed within the newly constructed CAD cell. The goal of the entire Boston Harbor Maintenance and Improvement project is to increase the economic efficiency of the port thus lowering the cost of transporting goods through the port and throughout its economic hinterland.



McArthur U.S. Army Reserve Center BRAC

Springfield, Massachusetts

The New England District Real Estate team successfully disposed of an Army Reserve Center (ARC) in Springfield, Massachusetts under the Base Realignment and Closure Act of 2005. The ARC was conveyed at no cost to the city of Springfield as a public benefit conveyance to be used for law enforcement purposes.



Final Dredged Material Management Plan and Final PEIS for Long Island Sound

Connecticut

New England District team members completed a Final Dredged Material Management Plan (DMMP) and Final Programmatic Environmental Impact Statement (PEIS) for Long Island Sound. The DMMP and PEIS identify a range of dredged material placement options for all federal projects in the Long Island Sound region which might be dredged. Options also are identified for consideration by non-Federal dredging proponents. Collectively these federal, state, local and private dredging activities total about 53 million cubic yards over a 30-year period. However, only a portion of these are likely to be dredged in that period, as future actions are contingent on federal and non-Federal budget decisions. The DMMP was tasked with identifying options to be considered in the future by those projects that are ultimately funded. Over 1,800 comment letters and emails were received during the comment period and were addressed in the Final DMMP/PEIS, in addition to comments made at public hearings.



Mount Coffee Hydropower Rehabilitation Project

Monrovia, Liberia

The District is providing independent engineering advice and due diligence support to the Millennium Challenge Corporation. The 20-meter high dam was built in 1966. During the civil war in 1990, the dam was not allowed to operate, resulting in a dam breach. Because of the breach, 180 meters of material was eroded down to bedrock. Also, much of the electrical and mechanical equipment had either been stolen or destroyed. Work to rehabilitate the dam and the power house will include but not limited to repairing the breached portion of the forebay dam and repairing the generator floors and columns of the power house to support the crane and turbine/generator equipment during erection and future maintenance. When work is complete, the Liberian capital city, Monrovia, will receive its power from the project. In addition, Monrovia and nearby villages will have a reliable source of clean water.



Environmental Program.

The New England District planned, designed and executed programs and projects to remediate hazardous, toxic, military munitions, and radiological waste sites in support of Military, Civil, Interagency, International and Environmental Integration customers executing Superfund (EPA), Formerly Used Defense Sites (FUDS), Installation Restoration Program (IRP), Formerly Utilized Sites Remedial Action Program (FUSRAP), Legacy Base Realignment and Closure (BRAC), Military Munitions Response Program (MMRP), Environmental Quality (EQ), and Environmental Support for Others (ESFO). The New England District Interagency & International Support (IIES) program totaled \$50 million and included significant Hazardous Toxic and Remedial Waste (HTRW) work for EPA under Superfund, significant support to the Veterans Administration, and varying support to Department of Homeland Security, Federal Emergency Management Agency, U.S. Coast Guard, and the National Park Service. Removal of munitions/ordnance from the Central Impact Area continued at Joint Base Cape Cod along with the significant groundwater treatment and monitoring program. About \$14 million was executed on this program. Two contracts were awarded (\$8 million) for BRAC work at the former Ft. Devens allowing long-term monitoring and O&M activities to continue for the next three years.



Flood Risk Management.

The New England District actively supports national and international Dam and Levee Safety initiatives. On the national front, a team of New England District engineers has been assisting the Risk Management Center (RMC) with the USACE dam and levee portfolio risk assessment process. In 2016, the District team completed a risk assessment on the 20-mile-long Tulsa/West Tulsa Levee System. Internationally, New England District is working in collaboration with the Millennium Challenge Corporation (MCC) and is consulting on repairs to the Mount Coffee Hydropower Rehabilitation Project near Monrovia, Liberia. When completed, the 20-meter high dam will provide power to the capital city of Monrovia and reliable clean water to nearby villages.



Sustainability.

The New England District Sustainability program has procured \$325,000 from Headquarters USACE to cover the cost of the Army Corps of Engineers' first ever solar Power Purchase Agreement (PPA). A site along the Cape Cod Canal has been selected by the New England District and the Huntsville Engineering Center (HNC) for the installation of a photovoltaic (PV) solar array, which will ultimately provide 100-percent of the electricity to the Canal and the New Bedford Hurricane Barrier through renewable energy. HNC has recently completed a project work statement for the array and the New England District is currently drafting the Environmental Assessment; environmental baseline condition work will begin in November. Installation of this solar PV array will allow New England to meet its federal renewable energy goals and drastically reduce the District's greenhouse gas emissions.



Sustainability - Operations/Recreation.

Sustainable contributions and renewable energy endeavors are prime drivers of the New England District programs and projects at Ball Mountain Dam and Townshend Lake projects in Vermont where new Federal Energy Regulatory Commission hydropower projects continued construction by a developer in coordination with USACE, using USACE infrastructure. Additionally, solar arrays were installed at Hopkinton Lake, and work on two additional solar arrays at North Springfield and Otter Brook Lakes was started. The long term plan for the District is to realize solar power at 14 District sites that could eliminate up to 75-percent of grid-tied district electricity use. Additional actions were taken to improve sustainability and energy efficiency, including window, roof and siding replacement of the Boat Maintenance Shop at the Cape Cod Canal, replacement of existing lighting in the Hopkinton Dam gatehouse to LED lighting, and replacement of office windows at Franklin Falls with energy efficient windows.



New England Recreation.

The New England District projects and recreation areas hosted 4.9 million visitors (1.7 million at the Canal; 3.2 million at dams and recreation facilities).



DERP/FUDS.

The District provided for expanded work in environmental restoration under this congressionally directed effort. The District's \$23 million program emphasizes the identification, investigation and prompt cleanup of hazardous and toxic waste, unexploded ordnance and unsafe buildings, structures and debris at current and former military facilities. Outcome: The New England District was one of the recipients of the New England Environmental Business Council Award for Brownfields Project of the Year for our work on the General Services Administration's Watertown project in Watertown, Massachusetts. The project was transformed from an open and barren location with derelict structures, to a green open space with a park and wetlands.



Planning.

The New England District maintained its strong support to the region using the Corps Continuing Authorities Program. The District has 50 active projects in all phases, across all business lines, with at least one project in each state. The District also has a backlog of project requests in most authorities. In fiscal year 2016, the District completed the Milford Pond ecosystem restoration project and continued construction on four additional projects. The District also initiated design of the Nantasket Beach shore protection project which is funded using CAP funds provided in the Sandy Disaster Relief Appropriations Bill. The District continues to work with state agencies, communities and other stakeholders to identify opportunities to assist the region using CAP and other programs.



Contracting.

Contracting Division awarded an Indefinite Delivery/Indefinite Quantity contract for environmental cleanup/dredging of New Bedford Harbor, New Bedford, Massachusetts. The value is not to exceed \$350 million over a 10-year ordering period.



Regulatory.

In Fiscal Year 2016, the New England District's Regulatory program processed approximately 2,500 permit applications. In order to streamline and simplify the regulatory process without diminishing environmental considerations, the District has developed State General Permits which align with State's individual regulatory programs.



DAMOS Program.

The New England District's Disposal Area Monitoring System or DAMOS Program augmented its program budget with funds from the U.S. Environmental Protection Agency in Fiscal Year 2016 to perform expanded monitoring of New England disposal sites, which has demonstrated the lack of significant impacts from aquatic placement of dredged material. In addition, DAMOS expanded efforts to identify beneficial uses of dredged material and initiated refinements to the dredged material suitability testing process in Fiscal Year 2016. All of these efforts are aimed at streamlining the approval of dredging projects in New England.



Cape Cod Canal.

The Cape Cod Canal is a 17.5 mile-long waterway and one of the widest sea level canals in the world. Three New England District operated and maintained bridges, two vehicle and one railroad bridge span the canal; actual annual vehicle traffic (trips) is estimated at 32 million and movements across the railroad bridge are about 1,000. The administrative office in Buzzards Bay has a staff of about 50 and is manned around the clock by traffic controllers and rangers. It has more than 19,000 vessel trips each year, including more than 7,800 commercial ships carrying 7.1 million tons of cargo.



Tribal Partnership Program.

The New England District partnered with the Houlton Band of Maliseet Indians (HBMI) as part of the Tribal Partnership Program (TPP), USACE authority provides for assistance in water resources related projects and studies in Indian Country. The District is assisting the HBMI and their Canadian band, the Maliseet First Nation, with the preparation of a trans-boundary watershed assessment management plan (WAMP) for the Meduxnekeag River, a tributary of the Saint John River. The Saint John River is a 418 mile river flowing along the U.S. and Canadian border before discharging into the Bay of Fundy in New Brunswick, Canada. The goal of the WAMP is to identify and prioritize actions to preserve, restore and protect shared aquatic resources such as anadromous fish. This project brought together leadership of Maliseet First Nations, several United States federal agencies (U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration and the State Department), Environment and Climate Change Canada, Department of Fisheries and Oceans Canada, Global Affairs Canada, and the International Joint Commission. A cross-boundary international summit was held in a spirit of collaboration and of recognizing the value of the shared resource of the Saint John River watershed. While HBMI funding for the initial WAMP is exhausted, the collaboration effort continues.



Levee Safety Program.

In Fiscal Year 2016, the Levee Safety Program (LSP) team completed routine inspections for the 68 federally-constructed levee segments along 72 miles throughout the region. In addition, the LSP team completed the first round of screening level risk assessments on all 68 segments, solicited a contract to perform a second round of Periodic Inspections on seven levee systems, reviewed and approved the first Letter of Intent (under the Rehabilitation Program) within the New England District, and reviewed and approved multiple 33 USC 408 modification packages.



Real Estate.

The New England District Real Estate team administered approximately 100 leases for military single and multi-service recruiting stations throughout the District and in turn enhanced the public's awareness of the Department of Defense's Recruitment opportunities throughout the six-state New England region. Additionally, the District executed three 8(a) contracts to install 418 security upgrades to enhance force protection measures at the recruiting stations.



Equal Employment Opportunity.

Activities highlighted throughout the year included a Black History Month celebration with keynote speaker Park Ranger Ryan McNabb, National Park Service, Feb. 9 in the Concord Park theatre. The 2016 theme for Black History Month is, "Hallowed Ground: Sites of African American Memories." Dr. David Chang, member of the Chinese Historical Society of New England, served as keynote speaker for the Asian American/Pacific Islander Observance, May 26. Dr. Chang's presentation was titled, "Boston's Chinatown: Beyond Stereotypes, Food and Boundaries." Take Your Daughters and Sons To Work Day took place April 22. Twenty-six children attended the popular event that is co-sponsored with the Federal Women's Program. Catherine O'Leary performed "Dangerously High, Breaking Through the Stigma of Mental Illness," during the Disability Awareness Month program, Oct. 18.



STEM.

The New England District participated in various activities focused on Science, Technology, Engineering and Math. Members of the New England District traveled to Blue Hill Technical High School in Canton, Massachusetts, April 19 to host a USACE presentation and to take students on a tour of the Muddy River project in Boston. The Take Your Daughters and Sons to Work Day hosted 26 children at District headquarters in Concord, Massachusetts, April 22. The children participated in hands on STEM activities throughout the day. Michelle O'Donoghue sat on a career panel and answered questions about what it's like to be an engineer as part of the MassBay Community College STEM Starter Academy Summer Program, Aug. 23.

Highlights from the Field



Edward MacDowell Lake in Peterborough, New Hampshire worked with state and local partners since September 2013 on a turtle nesting habitat project that will greatly benefit turtles and upland species. With the help and expertise of local and federal partners, a Wildlife Habitat Prescription Plan was developed for this project. The project involves reclaiming an existing 3.5 acres of gravel pit in order to enhance critical turtle nesting habitat. The primary goal of the project is to provide a suitable nesting area at the gravel pit, thereby increasing turtle nesting rates and decreasing turtle mortality. The habitat prescription plan, developed by the New Hampshire Fish and Game Department, targets a variety of turtle species, including three species of turtles that are currently listed as Species of Concern in the state of New Hampshire.



West Hill Dam Park Rangers Viola Bramel and Ronald Woodall represented the District at the Annual Kids Family Resource Fair in Whitinsville, Massachusetts, on March 19. Over 1,300 people attended the event. West Hill Dam brought on the Water Safety message full force with a self-standing selfie water safety cut out display, kayaks and life jackets. Many of the attendees stopped by the Corps' Water Safety exhibit to take pictures, sit in the kayaks and to get information about water safety. Bramel and Woodall also touched upon the "Every Kid in a Park" program as well as an introduction to the Corps and the Junior Ranger Program. Both Park Rangers were available to answer questions.

Team members at **West Thompson Dam** in Connecticut, **West Hill Dam** and the **Cape Cod Canal**, both in Massachusetts, all held project clean up events in honor of Earth Day during the month of April. Park Ranger Viola Bramel teamed with the Bay State Trail Riders and 28 volunteers for the West Hill Dam event on April 9.

Park Rangers Michelle Cucchi and Cathy St. Andre teamed up with two Connecticut Boy Scout Troops, one Connecticut Girl Scout Troop and other volunteers to get a lot accomplished at **West Thompson** on April 23. Despite the pouring rain, 61 people came out to help. The **Cape Cod Canal** held their annual "Canal Clean Up Day," on April 23. Rainy weather did not deter the record-breaking 221 volunteers from coming out, rolling up their sleeves and getting to work. Every year, hundreds of volunteers turn out to New England District projects and act as environmental stewards by beautifying and improving the locations and saving the U.S. Government thousands in labor costs. The District-





hosted events are in keeping with the Corps' commitment to sustainability and the environment.

The **Herring Run Recreation Area** Information Building in Bourne, Massachusetts got a lot more colorful when the New England District and the Cape Cod Learners Cooperative unveiled a mural entitled, "Where in the World Are We?", May 1. About 40 people attended the event that also introduced an interactive display to accompany the mural and launched the new "Did You Know?" Interpretive Program.

Park Rangers Keith Goulet, **Knightville Dam**, Brooke Dube, **Littleville Lake**, Bill Mehr, **Tully Lake**, Amy Charlton and Daniel DeFiore, both from the **Thomaston Dam Unit (Thomaston Dam, Northfield Brook Lake, Black Rock Lake)**, all recently received their citation authorities and Ranger Badges. The group now joins the rest of the Park Ranger team in having authority to issue citations for Title 36 (Parks, Forests and Public Property) violations. The authority is required for all permanent Park Rangers.

Local families enjoyed a beautiful morning of fishing at **Westville Lake** in Sturbridge, Massachusetts, June 18. Seventy-five parents and kids enjoyed learning to fish and received valuable lessons about water safety.

Boat racing enthusiasts gathered at New England District's **West Thompson Lake** to participate in the annual hydroplane boat races, July 9-10. The Connecticut Outboard Association hosted the event. Nearly 90 racers registered to compete for the top position and over 100 spectators cheered them on.

Local representatives joined members of the New England District team in commemorating the 75th anniversary of **Knightville Dam** and the 50th anniversary of Littleville Dam, at an event held in Huntington, Massachusetts, Oct. 8.

National Public Lands Day (NPLD) is the largest single-day volunteer effort for public lands in the United States, and New England citizens did an incredible job at this year's events. Connecticut's **Black Rock Dam** hosted their NPLD clean-up on Sept. 17, while three Massachusetts sites, **West Hill Dam, Buffumville Lake and Hodges Village Dam**, hosted their National Public Lands Day events on Sept. 24.

For the last 75 years, **Surry Mountain Lake Dam** in Surry, New Hampshire has stood at the ready to protect New Hampshire residents from flooding. The District team members who operate the project held a 75th anniversary event Oct. 1, to commemorate the opening of the dam.



Muddy River Construction.



Take Your Daughters and Sons to Work Day STEM event.



Town Neck Beach Planting.



Engineers Week Career Fair.



Intern visit to the Cape Cod Canal.

Building Strong