

Submersible 'fish' takes environmental investigation, cleanup to new depths

Katie Newton, public affairs



New underwater technology is used in the Kishwaukee River at Camp Grant in Illinois to help detect and characterize anomalies on the riverbed.

The Louisville District is now using towed sensor array technology to help identify underwater anomalies in the Kishwaukee River at Camp Grant in Illinois. This technology will also be evaluated for use in an upcoming Chesapeake Bay survey at Fort Monroe in Virginia.

This new underwater technology, the Underwater Simultaneous EMI and Magnetometer (USEMS), employs a two-sensor array to locate underwater anomalies. The first sensor array (magnetometer) detects ferrous metals including those that are buried deeply below the silt line. The second sensor array (EM61) detects all metals, including aluminum and brass, found on the bottom or just below the silt line. USEMS is the only marine system in the world to simultaneously deploy these two sensors.

"This dual array system allows geophysicists and Explosive Ordnance Disposal (EOD) Specialists to work together in streamlining the number of anomalies that are investigated," said Brooks Evens, the Louisville District Technical Manager for the two projects. "It can help distinguish between a cannonball that might be in the channel or an old boat motor that doesn't need our attention," said Evens.

The submersible "fish" containing the two sensors looks much like a miniature submarine and is towed behind a boat attached to a carbon fiber boom. The fish's

depth is controlled by an operator on the boat as the fish is towed one to two feet off the bottom of the riverbed. The fish's EMI sensor sends out electromagnetic pulses to detect buried metal. In addition, the fish's magnetometer sensor measures disruptions in the earth's magnetic field caused by buried ferrous metal. The strength of the signals is plotted and used to determine which anomalies to investigate. Geophysicists analyze the characteristics and then turn over a "dig sheet" to EOD Specialists who then use an underwater camera for further exploration and resolution of the anomaly.

The benefits of the innovative technology seem endless. "It reduces man hours—we're able to cover larger zones with fewer man hours, which helps to cut cost," said Evens. "It saves time, money and makes everything safer."

USEMS was developed and built by Science Applications International Corporation (SAIC) and the Army Corps of Engineers Huntsville Center (CEHNC), with funding from the Environmental Security Technology Certification Program (ESTCP). They have worked to refine the technology over the past few years on two other pilot sites across the country and now at one of the Louisville District sites.

The technology proved hugely successful in the river at Camp Grant in Rockford, Illinois in April 2012. Camp

Grant is a WWII Formerly Used Defense Site (FUDS) used from 1915-1947 that required remediation of several rifle ranges and investigation of the Kishwaukee River, which divides the park in two.

In April, USEMS was used to identify and then investigate 35 "flagged" anomalies. Of those 35 anomalies, none were identified as MEC—only rusted rebar, road signs and farm implements were found in the river.

"Camp Grant worked out really well," said Evens. "It will allow us to consider expanding the current Land Use Controls (LUCs) out into the river or to say we don't need to continue searching the river bottom for MEC." The proof is out of the 35 anomalies identified as potential MEC, zero MEC was found during the survey. "This helps to confirm that the river presents a low probability for encountering MEC," said Evens.

"This type of technology was a perfect solution for the Camp Grant site," said Valerie Doss, Camp Grant Project Manager. "We might possibly use it again in Spoon River at Camp Ellis as well."

Since things worked out so well in Illinois, the Corps also plans to use USEMS as one of the potential underwater technologies at Fort Monroe in Virginia in the summer of 2013. Typically, Fort Monroe wouldn't fall into the Louisville District footprint, but as part of BRAC 05 the Louisville District was assigned eight project sites outside of its region—one of which was Fort Monroe.

"The working relationship between BRAC and the Louisville District has been ongoing since 2005," said Evens. "The customers have been satisfied and so we want to work hard to complete the work at those sites."

So, next summer depending on the historical research for the water ranges, the Corps will begin an initial investigation of 55,000 acres of underwater real estate at Fort Monroe to determine if and what should be done in the waters of the Chesapeake Bay surrounding the Fort.

The area includes firing arcs put in place after the War of 1812 to protect the Chesapeake Bay, where munitions such as

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cannonballs, parrott rounds and modern 90mm projectiles were fired.

Historical research will be conducted to determine the next step, which will likely include underwater investigation. At that point the Baltimore District will provide support to the Louisville District throughout the investigation. "The new technology will save time and money for the government," said Evens. "Additionally, the area we plan to investigate in the Chesapeake Bay could potentially help to protect fisherman, recreational users, utility crossings, and dredging operations by determining if any unacceptable hazards are present," said Evens.

These new underwater sensor arrays



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Ordnance and an old cannonball from Fort Monroe show what the new technology could help locate.

will also provide benefits to projects reaching far beyond the Chesapeake Bay.

"It's a good system," said Evens. "It's still in infancy stages, but it will be a help-

ful tool moving into the future because the Army, Navy, Air Force and Marines have a vast number of water ranges that this type of technology will help with."

Spotlight

District member throws first pitch at Louisville Bats game

Carol Labashosky, public affairs

Maj. David Kopecky, project engineer, Fort Knox Resident Office, threw out the first pitch with Bobber the Water Safety Dog at his side at the Louisville Bats game June 15 as part of the water safety night at the stadium.

Park rangers and Kopecky and his wife, handed out water safety items and shared water safety messages with game attendees.

The death of a 21-year-old June 16 at Louisville District's Rough River Lake is a strong reminder of the importance of getting water safety messages out to children and adults.

The booth displayed samples of life

jackets and offered water safety messages such as the following:

Wear a life jacket – don't just carry one on board. Make sure it is Coast Guard approved and appropriately sized. It only takes 10 seconds to put on a life jacket and that 10 seconds could save your life if you are involved in a boating accident.

Boaters - Boaters should take safety classes, be familiar with governing state laws, wear a life jacket, and have proper safety equipment onboard before boating. Seventy percent of reported fatalities occurred on boats where the operator had not received boating safety instruction, according to Coast Guard statistics. Check

the weather forecast. File a float plan with family or friends who are not on the vessel.

Swimming - Know Your Limits. At Army Corps of Engineers sites, swimming in non-designated areas is the highest (47 percent) cause for all water-related fatalities nationwide. Of all swimming-related fatalities, 87 percent of those were in non-designated swimming areas. Don't take chances by over-estimating your swimming skills, and swim only in designated areas. Never dive into lakes and rivers. Never rely on toys such as inner tubes and water wings to stay afloat. Never swim alone.

District gets moving for Commander's Be Fit Challenge

Anthony Hite, safety office

The Safety Office would like to thank the participants of the Commander's Be Fit Challenge, which concluded June 15, 2012. A total of 129 individuals from 11 different divisions and offices participated in the challenge.

The challenge consisted of two different competitions. Ninety-five employees competed for the highest percentage of weight lost between March 1 and June 15. Seventy-one employees competed for the most amount of time exercised between March 1 and June 15. Thirty-seven employees participated in both competitions.

The participants in the competition for most time exercised averaged more than 1,000 hours of exercise per month.

The Be Fit Challenge also contains team competitions for weight loss and most time exercised during the time period. The participants from the 11 divisions and offices were broken down into 10 teams based on where they worked.

The winners of the individual and team awards will be announced during Corps Day June 22.



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Corps employees can use the fitness center at the Mazzoli Federal Building during their time off to help reach their fitness goals.