

Falls City Engineer

May/June 2014

VOL. 6, Issue 3

www.lrl.usace.army.mil

U.S. ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT



***Olmsted project team
orchestrates osprey
egg relocation***
page 3

***Science, Engineering,
Technology and Math
embraced by MacDonald
School students***
page 10



Falls City Engineer

Vol. 6, Issue 3

District Commander
Col. Luke T. Leonard
Public Affairs Chief
Todd Hornback

Send articles to Louisville District
Public Affairs office at:
sarah.r.mattingly@usace.army.mil

U.S. Army Corps of Engineers
CELRL-PA
P.O. Box 59
Louisville, KY 40201-0059

Falls City Engineer is an unofficial publication under AR 360-1, published bimonthly for Louisville District employees and members of the public by the U.S. Army Corps of Engineers, CELRL-PA, P.O. Box 59, Louisville, Ky. 40201-0059 under supervision of the public affairs office. Views and opinions expressed are not necessarily those of the Department of the Army or the Corps of Engineers.



On the cover: U.S. Army Corps of Engineers staff teach concepts of buoyancy, load and navigation barge commodities.



Please conserve:
Think before you print.

Commander's Comments

Team,

As you may know, my Army tour in the Louisville District is drawing to a close. We will have a District Change of Command Ceremony July 23 at the Muhammad Ali Center at which time Col. Chris Beck will become the new District Engineer. Col. Beck and I started our transition this week. This really has been the most enjoyable job I've held in the Army, and certainly the most significant, as far as the scope and responsibility of our workload—but I'll mostly miss the people. I've never served with an organization that was so professionally competent, energetic and productive. It was obvious to me from my first day that people loved working here, and after three quick years, you can count me as one of them.

The district has weathered some significant storms during my watch including the sequester, the government shutdown, and the threat of closing down the Olmsted project. We faced dramatic reductions in nearly every program, absurd restrictions on travel and training, and blistering criticism in the newspapers. You met each crisis with a stoic resolve to keep the district functioning productively despite the distractions. Your commitment to stewarding the government's purse, to protecting the people and environment, and to providing world class engineering to our region and our soldiers never wavered. I am still humbled by the dozens who volunteered for duty in war-torn Afghanistan, in the Northeast after Hurricane



Col. Luke T. Leonard
Commander and District Engineer
Louisville District
U.S. Army Corps of Engineers

Sandy, and other floods and storms across the country.

I want to thank each of you for your service, and as I enter my final Army assignment at Fort Knox, I want each of you to know how proud I am to have been a member of your team.

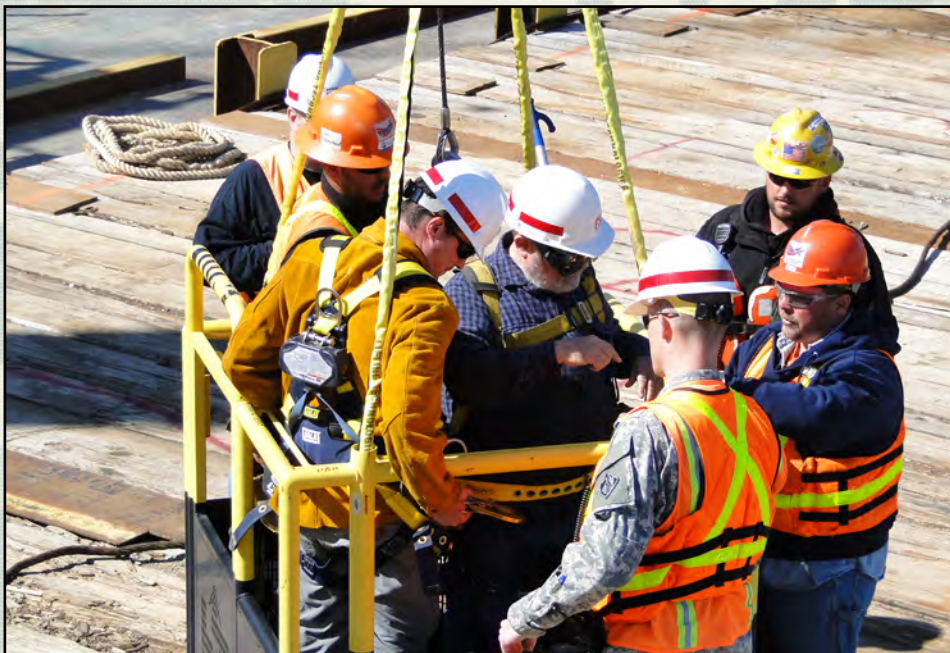
Building Strong!

Luke

Contents

Olmsted project team orchestrates osprey egg relocation	3
An American chestnut orchard is born	4
New EAB Barracks Complex gives Soldiers space for fitness	5
Warriors in Transition HQ Complex complete	5
Danbury, Conn., Reserve Center opens	6
Environmental branch hosts Earth Day contest	6
Cleanup of buried "bomblets" continues at Scioto Ordnance Plant	7
Corps acts quickly to remove mortar found along Dolly Sods trails	8
Biologist named Louisville District Regulator of the Year	9
STEM embraced by MacDonald School students	10

Olmsted project team orchestrates osprey egg relocation



Clockwise from top right, Kyle Stearns (WGA), Jeremiah Dobbs (WGA), Capt. Ian McBride (USACE), Walt Crawford (World Bird Sanctuary), Adam Triska (World Bird Sanctuary), Austin Medley (WGA), and Steve Casner (USACE) prepare to retrieve osprey eggs from atop a work crane.

Carol Labashosky, public affairs

The U.S. Army Corps of Engineers Louisville District Olmsted Dam Project Division, Olmsted, Ill., personnel created and completed a formidable rescue operation of four osprey eggs that lay in a nest atop a ringer crane on the project site.

The ospreys found the boom—the uppermost top—of a ringer crane to their liking and suitable for nesting. So they built a nest, and then laid and tended to their eggs. The crane is critical equipment used for lifts. The two ospreys built their nest in April, but the Corps knew time was soon approaching to use the crane.

“We are working to maintain an environmentally friendly work site here,” said Capt. Ian McBride, Olmsted Division

executive officer. “We wanted to have the osprey eggs taken care of without impacting our job.”

Just like a project timeline, a plan had to be developed and executed for the successful removal and transport of the eggs to a safe haven. The Corps and the project contractors worked together and their points of contacts eventually led them to the World Bird Sanctuary in St. Louis, Mo. Initially, the District had to work with environmental agencies. The end goal was to have the viable eggs transferred carefully to the World Bird Sanctuary.

Within a week, three people from the bird sanctuary arrived on site, donned safety gear, boarded a barge and were hoisted up by crane in a basket to reach

the nest. The nest was approximately three to four feet in circumference. The eggs are larger than those in your dairy section. The men worked to retrieve the eggs more than 180 feet up in the air.

“We got the call (from Olmsted project staff) and sent our two best people to make the relocation work,” said Walter Crawford, World Bird Sanctuary. “The Corps and the contractors who worked the crane were unbelievable. If we said, ‘move it three inches to the left,’ they did exactly that. These guys are totally on the ball.”

“Hats off to the Corps. The whole crew helped out, like an Army team, and the site was staged properly,” Crawford continued. “I have never seen an operation move as smoothly as that.”

He said egg retrieval in general is risky and complicated. While the egg removal occurred, an osprey parent flew above the crane.

The crew retrieved the eggs placing them in a cooler with a blanket, and thermometer to ensure they were kept warm. The Wild Bird Sanctuary staff drove the precious cargo back to St. Louis. On May 26, one egg hatched, and a second osprey was on the verge of exiting his or her egg.

For the future, the Corps developed another plan to ensure the ospreys would choose other real estate to begin their families. The Corps worked with wildlife management agencies and had two platforms—pedestals with a box—erected between 150 and 200 feet which will provide for adequate nesting areas for the future. The pedestals are in a wildlife preserve located across the Ohio River from Olmsted in Ballard County, Ky.

For more information on the World Bird Sanctuary go to:

<http://www.worldbirdsantuary.org/>



The osprey eggs are safely prepared for transport and future incubation at the World Bird Sanctuary.



An osprey parent hovers above its eggs during the egg retrieval.



The Olmsted locks and dam project team assisted the World Bird Sanctuary to relocate osprey eggs from a work crane.

An American chestnut orchard is born

Kevin Wright, Carr Creek Lake

April 21, 2014, marked the beginning of an American chestnut orchard at Carr Creek Lake, Sassafras, Ky. This is the realization of an effort that began with phone calls and inquiries in 2009 when the U.S. Army Corps of Engineers and the American Chestnut Foundation signed a Memorandum of Understanding for joint efforts in the restoration of the American chestnut tree.

Working with the Kentucky Chapter of the American Chestnut Foundation, Kentucky Division of Fish & Wildlife Resources, Eastern Kentucky Division of Forestry and the Knott County Creeks & Streams (PRIDE) committee, an initial planting was completed April 21. The initial planting of 108 nuts, 26 seedlings and 17 stump sprouts was accomplished quickly through the involvement of Knott County Central High School teacher Steve Mobley along with student teacher Michael Conway and 19 FFA students who volunteered to help on planting day. This was a tremendous effort on their part and is greatly appreciated. Volunteers picked up and removed litter from the orchard site. Carr Creek Lake volunteer Edie Wright assisted in laying out the rows and moved and replanted the 11 test trees prior to the initial planting. All these volunteers donated a total of 71 hours for a value of more than \$1,600.

The American chestnut, which once made up a quarter of the trees in Appalachia, was virtually wiped out in the early 1900s when a blight was brought to the United States on imported Chinese chestnut trees. Recent decades have seen organizations working to restore the population by crossbreeding American chestnut trees



(Left to right) Keith Chasteen, Louisville District natural resources specialist, a Knott County Central High School Student, and Carr Creek Lake Ranger Kevin Wright plant a chestnut seedling as part of the initial planting at Carr Creek Lake's chestnut orchard April 21, 2014. Additional planting will take place next spring to complete the orchard.

with the blight-resistant Chinese chestnut.

The new orchard at Carr Creek Lake is being established as part of The American Chestnut Foundation's backcross breeding program. This program is developing blight-resistant chestnut trees with regional adaptability by utilizing offspring from native Kentucky chestnut trees. Although this orchard will represent several specific genetic lines, the Kentucky Chapter hopes to one day have at least 20 different lines from across the state for future reintroduction efforts back into the forests. Addition-

al information on the American Chestnut Foundation's backcross breeding program can be found at www.acf.org.

There are a total of 162 trees in the Carr Creek orchard representing four different genetic sources. Additional planting will occur next spring to complete the orchard and bring it up to the target total of 220 trees. Once the trees grow large enough, blight resistance evaluations will be conducted to determine and retain the most blight resistant and pure American appearing trees. Most of the trees in this orchard are 15/16 American and 1/16 Chinese. The blight resistance comes from the Chinese trees. The highly blight resistant and American-appearing trees will be utilized for further tree development purposes.

There is much more work to be done. Electric fencing will be installed as soon as possible, the rows will have landscape cloth and mulch put down and an irrigation system will be installed. Anyone interested in this project is more than welcome to volunteer to help. Contact the office at 606-642-3308.



An American chestnut orchard was begun at Carr Creek Lake, Sassafras, Ky., as part of an effort to repopulate the once-ubiquitous American chestnut tree in Kentucky.

New EAB Barracks Complex gives Soldiers space for fitness

Katie Newton, public affairs

The Corps recently completed the \$65 million Echelons Above Brigade (EAB) Barracks Complex at Fort Campbell, Ky., and on July 30 Soldiers will begin moving in and exploring the outdoor recreational facilities the complex provides.

The project involved constructing two four-story barracks, which will house 528 Soldiers. In addition to the 209,000 square feet of living space, the project includes several athletic facilities and social gathering features within the complex. Included in the complex are two new softball fields, a soccer field, two sand volleyball courts, two horseshoe pits, covered pavilions, barbeque grills, patio areas, enhanced landscaping, preservation of existing tennis courts, basketball courts, and physical fitness stations.

“These facilities help to promote physical activities and group activities which are important to improving the quality of life and morale of Soldiers,” said Jason Phillips, U.S. Army Corps of Engineers Louisville, Fort Campbell Resident Office, project engineer.

The construction contractor, Balfour Beatty Construction, LLC., has been hard at work since September 2012 when work began to demolish over 500,000 square feet of existing World War II-era barracks and administrative buildings that were on site. The demolished structures were crushed and segregated on site for use as a



An aerial view of the recently completed Echelons Above Brigade (EAB) Barracks Complex at Fort Campbell shows the many sports fields included in the project.

recycled construction backfill material.

Using a site that had already been developed in the past was just one of the many sustainable features of this project which helped it to become a Leadership in Energy & Environmental Design (LEED) certified project. The project included bicycle storage, preferred parking for fuel-efficient vehicles, maximizing open spaces with recreational green spaces, enhanced storm water quality control requirements, reduction of water use by 30 percent, and on-site recycling/reuse of paving and concrete materials. Additionally, a 57% energy reduction was achieved by the help of

an advanced geothermal control package that regulates a large borefield constructed under the soccer field.

“It has been a difficult journey with a tight schedule, but after all the dust has settled we are turning over a really nice facility that will improve the quality of life for those protecting our nation's freedom. Sometimes it is easy to get lost in the trenches so you have to step back and remember it is all about the soldiers,” said Jason Phillips.

Warriors in Transition HQ Complex complete

In June, the Corps completed the Warriors in Transition (WIT) Headquarters Complex at Fort Knox. The \$3.5 million project was designed by GRW, Inc., and constructed by Intersteel, Inc. The 6,900 square foot facility was designed to blend in with the rest of the Warriors in Transition Complex by utilizing brick and cast stone façade features. Additionally, the project was designed to meet LEED Silver and will be going through the certification process in the coming months.



Danbury, Conn., Reserve Center opens



Carol Labashosky, public affairs

Military leaders, elected officials and business partners cut the ceremonial ribbon May 30 to officially open the Veterans Memorial Armed Forces Reserve Center, Danbury, Conn. Pictured are, from left, Todd Korte of The Korte Company, builders of the Reserve center; Col. Chuck Samaris, commander of the New England District of the U.S. Army Corps of Engineers; Maj. Gen. Thad Martin, Adjutant General of Connecticut; Brig. Gen. Dwayne Edwards, deputy commanding general of the Army Reserve's 99th Regional Support Command; U.S. Sen. Chris Murphy; Gabriel Botero, representing U.S. Senator Richard Blumenthal; Nick Savaria, representing U.S. Rep. Rosa DeLauro (obscured); Stephanie Podewell, representing U.S. Rep. Elizabeth Esty; and the Honorable Mark Boughton, mayor of Danbury.

99th Regional Support Command (RSC)

Environmental

Environmental branch hosts Earth Day contest



Katie Newton

The Louisville District's Engineering Division, Environmental Branch, hosted an Earth Day contest in April challenging district employees to show off their creativity. The competition featured two categories—best essay and best plastic bag reuse. Norma Condra (pictured at left with Col. Leonard) from Regulatory won with her essay titled, "What I can Do to Make a Difference" and Becky Kendall from Reserve Support won the best art category for her woven rug made from more than 200 plastic grocery bags.

Col. Luke Leonard recognized the winners with certificates and commander's coins for their special contributions.

Sifting through the past

Cleanup of buried “bomblets” continues at Scioto Ordnance Plant

Katie Newton, public affairs

Sifting through mounds of soil and safely detonating M74 bomblets, or WWII-era bombs, has been a daily task for environmental workers on site at the former Scioto Ordnance Plant in Marion, Ohio. Workers are unearthing small M74 bomblets that were discovered in a burial pit on the property.

Workers have safely detonated 2,883 M74s and have run approximately 2,000 cubic yards of soil through a high energy sifter to clear it of any munitions debris.

“This was a complex removal action,” said Dr. David Brancato, U.S. Army Corps of Engineers (USACE) Louisville District technical manager for the project. “Safety of the community and the workers has been our top priority, and with over 13,000 person hours spent removing and decommissioning the M74s, we are proud to say that worker and community protection was achieved.”

USACE oversees the cleanup of the nation’s Formerly Used Defense Sites (FUDS), and the Scioto Ordnance Plant has been an ongoing environmental restoration effort for the past 17 years. In the fall of 2013, small M74 bomblets were successfully cleaned up from a lagoon on the property, but led to the discovery of more buried M74s that needed to be unearthed when the weather warmed in



Site workers load the tray with munitions debris to be processed in the Thermal Flash Unit (TFU).

the spring of 2014.

The three-acre area was surveyed in late April with geophysical mapping and one burial pit of M74s that were left buried on the site in the 1940s was confirmed. Pit excavation began May 16 to unearth the bomblets, which were four feet below ground level.

USACE’s contractor, CAPE Environmental Management went right to work destroying the munitions debris, which involves a three-step process. First, workers safely detonate the unearthed bomblets to inert the white phosphorous by simply

exposing them to air.

“The detonation of the M74s vents the white phosphorous to the air, causing it to safely burn out,” said Brancato. “Detonations were controlled to ensure neighboring citizens and businesses were informed and protected from the blasts.”

Next, the remaining metal is processed in a Thermal Flash Unit (TFU) to remove any remaining particles of white phosphorous. Lastly, the surrounding soil that has been excavated is processed through a high-energy sifter to expose any particles of white phosphorous to the air, causing deactivation of the white phosphorous.

“Only a few TFUs are available this side of the Mississippi, and we were fortunate through the efforts of our contractors to procure the unit, which offset any safety concerns of the bomblets’ casings retaining any particle of white phosphorous,” said Brancato.

Detonations were completed June 6 and site restoration was completed by the end of June 2014. After the Remedial Action Construction Report and the No Further Action Proposed Plan and Decision Document are completed—expected by June 30, 2015—the project will be closed.



Contractors use the Thermal Flash Unit, which processes the remaining metal to remove any particles of white phosphorous.

Corps acts quickly to remove mortar found along Dolly Sods trails

Katie Newton, public affairs

Editor's Note: The Formerly Used Defense Sites (FUDS) program for the Great Lakes and Ohio River Division (LRD) is managed by the Louisville District, which is responsible for all projects within Kentucky, Indiana, Illinois, Ohio, West Virginia and Michigan. Huntington District serves as the project manager for the West Virginia Maneuver Area project.

Over Memorial Day weekend, an Unexploded Ordnance (UXO)—a 4.2" mortar containing white phosphorous—was found in the Dolly Sods Wilderness Area (DSWA) of West Virginia by Boy Scouts who were backpacking and camping in the area.

Dolly Sods, which is a popular area for outdoor activities such as hiking, backpacking, camping and viewing wildlife, plants and birds native to the area, is part of the West Virginia Maneuver Area (WVMA), a Formerly Used Defense Site (FUDS), which was used by the Army for live fire training and maneuvers during World War II. The U.S. Army Corps of Engineers (USACE) Huntington District has performed two removal actions along the trails and campsites in the past and immediately began coordinating for a safe removal of the unexploded ordnance.

"Janet Wolfe in our Environmental Remediation Section was instrumental in coordinating the response actions to ensure safe disposal of the ordnance," said Rick Meadows, USACE project manager.

Boy Scout Troop 1997 visiting from Ellicott City, Md., ran across the UXO May 25 near the intersection of Dobbin Grade and Beaver Dam trails. The Boy Scouts photographed the UXO, sketched the location of the UXO find and called the U.S. Forest Service hotline number.

"They followed the process outlined in our program to avoid the hazard and properly report it," said Meadows.

The U.S. Forest Service then notified



Rick Meadows, Huntington District FUDS Project Manager, and Janet Wolfe, Huntington District Environmental and Remediation Section, discuss safety at the public safety session held June 7.

the USACE Huntington District. The Huntington District Environmental and Remediation Section, after coordination with the Baltimore District and the U.S. Army Engineering and Support Center, Huntsville, Ala., and personnel at Aberdeen Proving Grounds, contacted the Army 52nd Ordnance Command of Fort Campbell, Ky., which is the Army Explosive Ordnance Disposal (EOD) command center for this part of the country. The EOD Group quickly responded and expeditiously disposed of the UXO in place.

Timely coordination among the Boy Scouts, U.S. Forest Service, Huntington District, and the 52nd EOD Group resulted in the prompt disposal of the UXO May 27, 2014.

Historically, UXO removal was performed at WVMA immediately after WWII and again in 1997-1998. The 1997-1998 removal focused on the existing trails and campsites of DSWA. Subsequently, warning signs were posted at the trailheads to warn the public of UXO dangers outside the cleared areas. Outdoor activities at DSWA outside of the cleared areas include an increased level of risk of encountering UXO.

Additionally, safety sessions are held as part of the Long-Term Monitoring (LTM) for the Dolly Sods Wilderness Area to raise public awareness about UXOs. On Saturday, June 7, Huntington District held a safety session at the Seneca Rocks Discovery Center in coordination with National Trails Day to help alert the public

about the possibility of encountering UXO during their visit.

The Corps emphasizes the 3 R's of Munitions safety: Recognize, Retreat and Report:

Recognize – There is no way to describe UXO. UXO can come in many shapes and sizes. It can be rusty or look like new. It can be out in the open, hidden in bushes or partially buried. The important thing to remember is that if you see what you think is UXO then you should retreat from the area and report it to authorities.

Retreat – Make sure to never touch UXO, as they can be extremely dangerous. If you see UXO, immediately leave the area and do not disturb the item.

Report – If you come across what might be UXO, you should leave it be and report it to your local law enforcement by calling 911. They will be able to take care of the item. Do not use your cell phone near the item. Call 911 after retreating from the UXO.



A partially exposed unexploded ordnance (UXO) was found in the Dolly Sods Wilderness Area.

Biologist named Louisville District Regulator of the Year

Carol Labashosky, public affairs

Laban Lindley is the team leader and regulatory project manager in the Louisville District's Indianapolis Regulatory Office (IRO). He evaluates and manages Department of the Army permit applications for projects in Indiana and Illinois. He received recognition from Louisville District Commander Col. Luke Leonard in a ceremony during mid-June. Lindley was cited for his outstanding leadership and project management of the Eagle Marsh Aquatic Nuisance Species (ANS) control project and the Indiana National Guard's Camp Atterbury Joint Maneuver Training Center (CAJMTC), two high profile projects.

The Award Citation and application describe Lindley's vast expertise in protecting the aquatic environment: "Lindley demonstrates excellence as a project manager. His professional experience is evident in the quality of his work products and his knowledge of the Regulatory Program. Laban's skill was demonstrated on the ANS control project, which is located in Fort Wayne, Ind. This vital project is tasked with the long-term prevention of the spread of Asian carp across Eagle Marsh. Laban coordinated with the Indiana DNR, U.S. Geological Survey, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, U.S. EPA, Council on Environmental Quality (CEQ), Little River Wetlands Project, Maumee River Basin Commission, Allen County Soil and Water Conservation District, and Allen County Surveyor's Office for nearly a year to ensure jurisdictional and permitting issues were clearly understood by the parties involved in the project. Laban did a remarkable job of clearly explaining the regulatory permitting requirements and kept meticulous records documenting all meetings, teleconferences, and field site visits. In addition, he led the effort to delineate and document jurisdictional waters and wetlands on the site. He delineated the 8,800 feet of streams and 42 acres of wetlands at Eagle Marsh and prepared the final delineation map of the project site. Lindley was encouraged by John Goss, Asian Carp director at the White House CEQ, to make this project a top priority because of its importance in protecting the



Col. Luke Leonard, Louisville District commander, presents Laban Lindley with a coin to commemorate his being named district Regulator of the Year at a ceremony at the Mazzoli Federal Building in June.

aquatic environment. Lindley delivered with an excellent final jurisdiction report to the team. His ability to work through difficult issues and quickly resolve problems affords appropriate protection to the aquatic environment."

In addition, Greg McKay, regulatory branch, chief northern section, noted that Lindley's permit decisions were fair, balanced, and reasonable. Lindley's permit decisions are thoroughly documented, well thought out and concisely written, and completed in a timely manner, said McKay. Lindley demonstrated superior project management skills in his continued work in support of the Indiana National Guard's (ING) Camp Atterbury Joint Maneuver Training Center (CAJMTC) in central Indiana. In recent years, he has permitted many projects at this facility which is a premiere training and mobilization site in support of U.S. military efforts around the globe. When the expanded Multipurpose Machinegun Range was constructed, Lindley was commended by the ING for timely delivery of a permit for the project. During construction, the project was found to be in noncompliance with the issued permit and Lindley demonstrated professional-

ism, tact, and sound judgment to work through the noncompliance issues to bring the project into compliance while still maintaining an amicable relationship with our sister Army agency. Lindley continues to provide superior project oversight and recently confirmed jurisdiction on an additional 1,200-acre tract within Camp Atterbury in support of planned future expansion at the facility.

Lindley received a Master of Science from Auburn University, in Fish Biology, a Bachelor of Science from Purdue University in fisheries and he brings a wealth of professional experience to the job to include service as a wildlife technician, Indiana National Guard/Camp Atterbury; and as an environmental specialist, Florida Dept. of Environmental Protection.

Science, Engineering, Technology and Math embraced by MacDonald School students

Carol Labashosky, public affairs

A group of fourth graders are asked, “What does Batman have to do with engineering?” Engineer Jeremy Nichols, U.S. Army Corps of Engineers (USACE) Louisville District, then proceeds to tell them about a Corps technology called “BIM” during an intermediate school STEMposium. He used an analogy that children could understand—superheroes. Acronyms were put aside, thankfully.

“So Building Information Modeling (BIM) technology is kind of like a video game for architects and engineers. Even though we may not be designing the Batmobile or an Iron Man suit, using BIM on our projects does make our jobs pretty cool,” Nichols said.

For the rest of us adults, BIM is a virtual (digital) representation of the physical characteristics of a building—walls, windows, doors, beams, columns, pipes, and ducts, etc. “The technology also allows [our customers] to “walk” through our buildings virtually in the design phase...,” Nichols further explained to this writer.

Approximately 20 Louisville District engineering branch employees spoke to fourth, fifth and sixth graders on math and science careers at the MacDonald Intermediate School STEMposium, Fort Knox, Ky., April 28 and 29. The STEMposium theme was “exploring engineering.”

The Corps’ engineers explained their jobs with the goal of getting the children excited about careers in engineering. The District employees shared their expertise using hands-on sessions to make the concepts interesting and fun for students. The environmental, civil and structural engineering lessons occurred over two intense days of learning. The children rotated through the STEM sessions while the concepts were explained in simple terms. A hands-on exercise occurred afterward with the children constructing a building component, for example, to illustrate the concept. Teachers agreed that the Corps’ engineers exhibited creativity and skill to hold children’s attention.

The students are dependents of military service members, and a few have parents who work full-time for DoD (Department of Defense) agencies on post.

“Having guest speakers participate in the STEMposium not only gave students

the opportunity to learn about the environment and structures, but also STEM careers,” said Gifted Education Services Resource Teacher and STEM coordinator Jane Sanford. “The volunteers from USACE were great representatives of STEM careers.”

More than 170 students in total went through the six, two-part sessions with a strict protocol in place so learning was maximized. A teacher would loudly cue the time before the next lesson: “ONE MINUTE...TIME!” The children then quickly switched to fresh Corps engineers for a new session. The learning experience was effective because groups were kept small, lessons were to the point and interactive, according to Sanford.

James Bruszewski, civil engineer, explained the concept of bridge design in his presentation. Using a foam-cushion model, he illustrated tension and compression forces in bridge members. He demonstrated with the built-up-model examples and how this related to actual design applications.

David Osborne, civil engineer; Corey White, civil engineer; Derek Huber, civil engineer; and Capt. Dan Wolgemuth, project engineer; gave a class exercise using an odd combination of props: a large plastic storage tub of water placed on the science class table, four dollars in pennies and aluminum foil. Combined, these props helped the engineers to explain concepts of load, buoyancy and navigation. They told students to make foil boats of various shapes, configurations and sizes. The students took their sheets of foil, made the little boats—approximately five or six inches long or circular—and then returned back to the tub of water. The children placed the boats in the water and added pennies to their foil boats illustrating “load.” Engineers explained how the design of these hand-crafted foil boats could carry commodities—represented by the pennies—on the river. If one capsized, there were giggles. (Engineering can be fun!)

In another session, the children viewed a couple of PowerPoint slides about 3D design and buildings the Corps helped to design and construct. “We’re structural engineers and designers and use math and science every day. The engineer team

looks at structures to see that they can withstand weight – the sides, the roof, for example. The fourth graders viewed a picture of a Ft. McCoy, Wis., General Purpose Warehouse the Corps built to show the different parts of a building. “Any site or land that you construct that can be engineered you use math and science,” said Nichols.

One engineer asked his group of students, “Who has played the video game Minecraft?” Many little hands went up. “It is designed to be a virtual model like we, as engineers, use.” In Minecraft, the “gamer” or viewer builds things in virtual landscapes. The entire world is made up of blocks of dirt, cobblestone, obsidian, lava, water, as examples, and the designer combines these blocks to create tools, or machines.

Jason Root, resident engineer, Fort Knox, told students to take a look at engineering as a career path. “Whether it is through your teachers, family, or their friends, take a look at engineering. It is an exciting field and can be a great career that leads you to amazing things,” he said.

“The Corps’ engineers demonstrated real-world applications that modeled the concepts being taught to the students. Students were also able to talk with and interact with the engineers in an exciting and engaging context which will hopefully stimulate their interest in math and science fields leading to a future in a STEM career,” said Paul Colonna, instructional systems specialist in secondary mathematics. “The Corps crafted a system that gets students excited in science and math.”



U.S. Army Corps of Engineers staff teach concepts of buoyancy, load and navigation barge commodities using pennies in mini foil boats.

Carol Labashosky