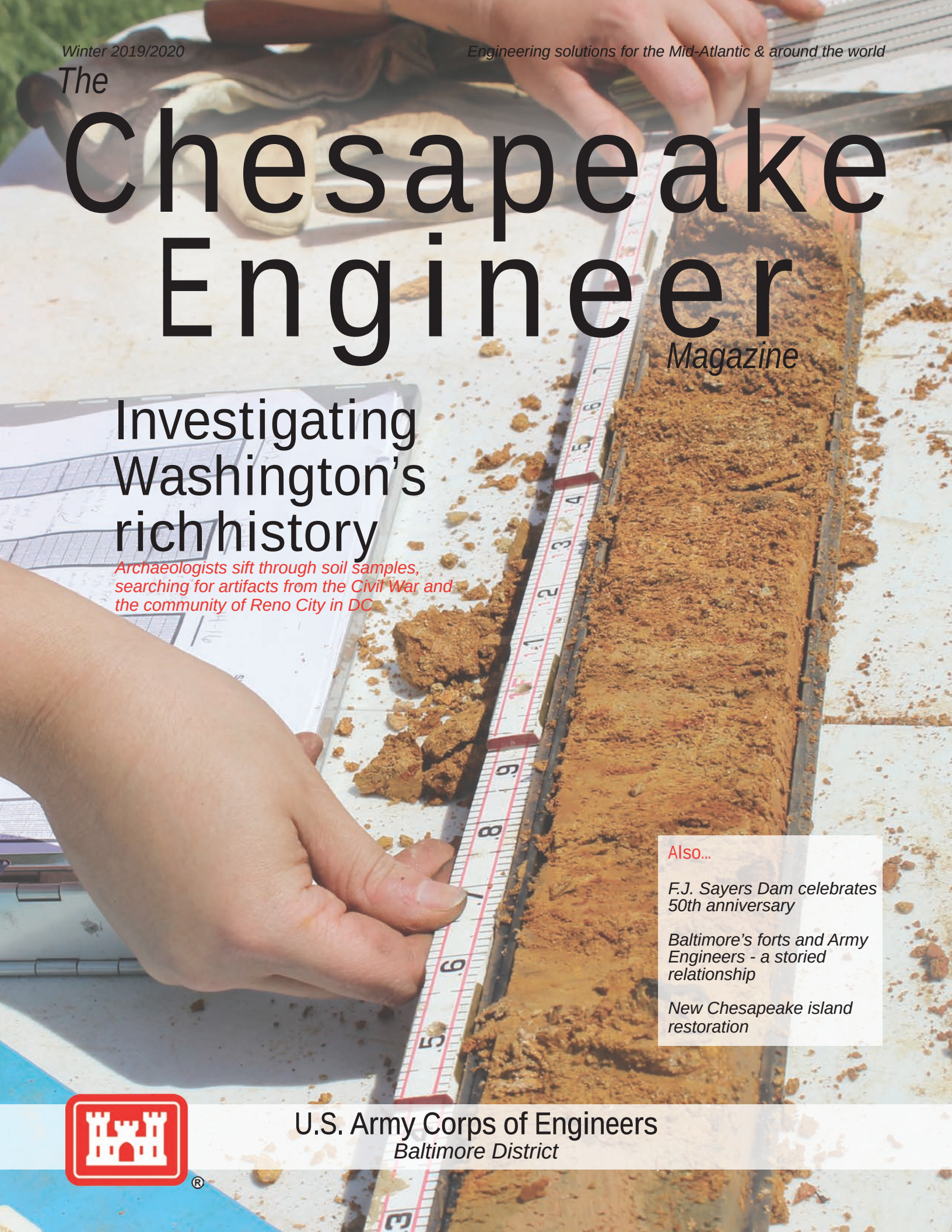
Winter 2019/2020

Engineering solutions for the Mid-Atlantic & around the world

The Chesapeake Engineer Magazine



Investigating Washington's rich history

Archaeologists sift through soil samples, searching for artifacts from the Civil War and the community of Reno City in DC

Also...

F.J. Sayers Dam celebrates 50th anniversary

Baltimore's forts and Army Engineers - a storied relationship

New Chesapeake island restoration

U.S. Army Corps of Engineers
Baltimore District

The Chesapeake Engineer Magazine
Winter 2019/2020

On the Cover: Baltimore District archaeologists examine soil collected by the District's drilling team as part of a geo-archaeological site investigation for an improvement project for the Washington Aqueduct on National Park Service land at Fort Reno Park, Washington, Aug. 12, 2019. (U.S. Army photo by Brittany Crissman)

Features

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The mission of the U.S. Army Corps of Engineers, Baltimore District, is to deliver vital engineering solutions in collaboration with our partners to serve and strengthen the Nation, energize the economy and reduce disaster risks.

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COMMANDER, U.S. Army Corps of Engineers, Baltimore District
Col. John Litz

DEPUTY COMMANDER, U.S. Army Corps of Engineers, Baltimore District
Lt. Col. Geoffrey Kuhlmann

CORPORATE COMMUNICATION OFFICE CHIEF (ACTING)
Sarah Lazo

EDITORIAL CONTRIBUTORS
Brittany Crissman
Chris Gardner
Sarah Lazo, Editor-In-Chief
Cynthia Mitchell
Becca Nappi
Nicole Strong

DESIGN & DEVELOPMENT
Sarah Lazo

Postmaster
Send change of address to:
U.S. Army Corps of Engineers, Baltimore District, Corporate Communication Office, 10-F-27, 2 Hopkins Plaza, Baltimore, MD 21201

Visit us on the web:
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Col. John Litz, Baltimore District commander, and Maj. Gen. Jeffrey L. Milhorn, North Atlantic Division commanding general, overlook the control room at the Deactivated SM-1 Nuclear Reactor Facility, located on Fort Belvoir, Va., Nov. 15, 2019. The SM-1 was the first nuclear reactor in the country to generate power connected to the commercial grid. (U.S. Army photo by Cynthia Mitchell)

The Baltimore District Team is proud to deliver this winter's edition of "The Chesapeake Engineer."

This issue features just some of the diverse capabilities and skills possessed within the District. You will read how the diminishing James and Barren islands in the Chesapeake Bay will be restored through the use of material dredged from the Port of Baltimore, eventually taking over the role of our successful Poplar Island ecosystem restoration project.

We also highlight the historical role of Army Engineers at Baltimore's five storied forts and how District archaeologists search for Civil War and Reno City artifacts at the Washington Aqueduct.

You can learn about how we celebrated the 50th anniversary of Foster Joseph Sayers Dam in Centre County, Pennsylvania — a project named after a local Medal of Honor recipient that has prevented more than $212 million in flood damages.

Baltimore District has also made significant progress with some of our other flood risk management projects by updating master plans, including Raystown and Jennings Randolph lakes. Master plans act as strategic land-use documents that guide the comprehensive management and development of a project's recreational, natural and cultural resources.

We highlight employee accomplishments in and out of the office by recognizing our national Value Engineer of the Year award winner and a District archaeologist for his volunteer efforts around the region. We also showcase the impacts of our involvement in the Annual Bill Nesbit Memorial People with Disabilities Deer Hunt at Jennings Randolph Lake.

In fiscal year 2019, Baltimore District achieved many significant accomplishments. In support of our Navigation mission, 2.6 million cubic yards of material were dredged from six federal Port of Baltimore channels to help ensure safe passage for vessels. In support to flood risk management, the approximate total flood damages prevented by Baltimore District reservoirs and levees through fiscal 2019 was $16.6 billion.

The District is proud of our work as we continue to build strong regional and local partnerships and seek innovative solutions to our Nation's toughest engineering challenges. We continue to push ourselves to improve the way we do business and look forward to continued success in 2020.

Essayons!

BUILDING STRONG!

COL John Litz
Commander and District Engineer
Baltimore District

Endangered Species Surveys on Fort Detrick

Army Corps helps military installations preserve life and habitat

FIELD SURVEYS

Baltimore District Planning Division team members perform a species field survey on Fort Detrick, Maryland, Aug. 21, 2019.

PICTURED

Below: Dan Cockerham, Baltimore District ecologist, and Mary Ann Anderson, former Baltimore District geographer; Right: Mike Moore, pest controller, at left, and Alfred (Lynn) Hoch, cultural and natural resource manager, both with Fort Detrick.

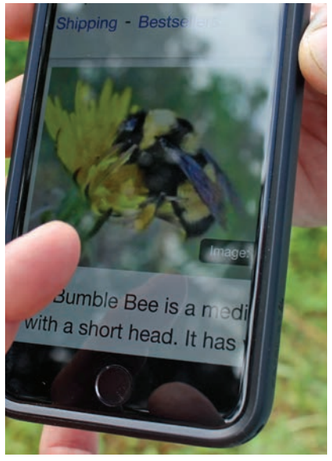
If appropriate habitat is present for the species of concern, then there is potential for the species, themselves, to be there.

Installations work to preserve habitat through federal law and regulations like the Endangered Species Act.

U.S. Army photos by Sarah Lazo

“Species diversity, richness is what keeps the world turning, as they say.”

Dan Cockerham



Searching for suitable habitat indicators and signs of life

Endangered bees and mussels

YELLOW-BANDED BUMBLE BEE

RUSTY PATCHED BUMBLE BEE

BROOK FLOATER MUSSEL

GREEN FLOATER MUSSEL

YELLOW LANCE MUSSEL

Courtesy photos

New Chesapeake island restoration takes big step forward

By Chris Gardner

Providing a sustainable, long-term strategy to ensure safe transport through Port of Baltimore and local navigation channels and necessary placement of dredged material

Aerial of James Island

The U.S. Army Corps of Engineers, Baltimore District, and the Maryland Port Administration are partnering to restore two severely degraded islands in the Chesapeake Bay.

The Mid-Chesapeake Bay Island Ecosystem Restoration Project focuses on restoring and expanding island habitat at James and Barren islands to provide thousands of acres of wetland and terrestrial habitat for fish, shellfish, reptiles, amphibians, birds and mammals through the beneficial use of material dredged from Baltimore Harbor approach channels.

“The Corps of Engineers executes many missions and projects that benefit the nation, including maintaining federal navigation channels and large-scale ecosystem restoration projects,” said Baltimore District Commander Col. John Litz. “We’re proud to partner with the Maryland Port Administration on this large-scale ecosystem restoration project that will have a significant beneficial impact on the Port of Baltimore and the economy.”

In August, Baltimore District and MPA signed a Design Agreement to formally begin the complex pre-construction engineering and design phase of this project.

“This agreement between Maryland and the Corps of Engineers benefits our economy and our most important natural asset, the Chesapeake Bay,” said Maryland Governor Larry Hogan. “The Port of Baltimore is an important economic giant in Maryland and throughout the East Coast. I’m pleased that through this critical dredging project, we can assist the Port’s growth while also stemming the tide of erosion at James and Barren islands.”

Over the past several decades, James and Barren islands in western Dorchester County have experienced significant erosion. The Mid-Bay Island Project will involve the reinforcement and restoration of these islands, while designing them to hold material dredged from navigation channels to ensure open and safe waterways. James Island will accept material from channels in the Maryland waters of the Chesapeake Bay used by ships going to and from the Port of Baltimore, and Barren Island will accept material from nearby shallow-draft channels.

The process will be very similar to the successful Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island to the north in the Chesapeake Bay. Since the Army Corps and MPA began construction in 1998, Poplar Island has accepted roughly 34 million cubic yards of material dredged from Baltimore Harbor approach channels. An expansion of Poplar Island is nearly complete and will increase its capacity to hold material until the Mid-Bay Island Project is ready.

Getting the Mid-Bay project off the ground is critical, as Poplar Island restoration and expansion is set to wrap up within the next couple of decades, leaving more than 90 percent of material dredged from the Baltimore Harbor channels with nowhere to go. ■

Poplar Island restoration

Mid-Bay Fast Facts

- ***2,144 acres of remote island habitat restoration (2,072 acres at James Island, 72 acres at Barren Island)***
- ***James Island restoration to be 45 percent upland and 55 percent wetland***
- ***Barren Island restoration to be 100 percent wetland habitat***
- ***James Island will be able to accept ~ 90 to 95 million cubic yards of dredged material, providing ~ 30 years of capacity for Port of Baltimore maintenance dredging***
- ***Optimal schedule, pending future funding, is for design and construction to be completed on Barren Island and initial construction started on James Island by 2027***

Digging into Archaeologist Ethan Bean

By Nicole Strong

Ethan Bean’s love of archaeology began as an elementary school student in Indiana. He remembers when his town filled a volleyball court with gift cards and other freebies. All day, people searched to find various prizes beneath the sand — from here on, Bean loved to explore.

“Toward the end of middle school, there was a big push to choose your career path, which is when I took on my interests of getting outside, getting dirty and learning about people and began to pursue the study of archaeology,” said Bean.

Bean attended the University of Indianapolis for both his undergraduate and graduate programs where he double-majored in Archaeology and Anthropology and then received a Master of Science in Archaeology. Bean started with the U.S. Army Corps of Engineers, Baltimore District, in 2015 as a Department of the Army intern. During his time in this program, he was able to experience working in different positions throughout the District before he was brought on officially in 2017 as an archaeologist in Planning Division, which was his original application position.

While there are many different aspects of archaeological work within the Corps, Bean mainly works in managing the Civil Works side of things. A big portion of the work he is involved in is flood risk management and ecosystem restoration projects. Some key projects include the Anacostia Watershed Restoration Project in Prince George’s County, and flood risk management projects for Washington and Codorus Creek in Pennsylvania, although he also helps manage cultural resources at various military installations within the Baltimore District’s area of responsibility.

“One of the most interesting things [we’ve found] was from a survey we did at a military installation in Baltimore City,” Bean shared. “After looking at some Sanborn Fire Insurance Maps, we learned that where we were surveying was in the vicinity, and eventually part of, Camp Holabird, which was the Army's first training center for vehicle operation and repair. It was here that the Jeep was tested and refined for action in World War II.”

As an archaeologist with the Corps, Bean is responsible for assessing the project site before construction begins to determine potential impacts to historical or cultural artifacts. To do this, background research is conducted and then a physical survey of the site is performed. Alongside his team, he works to create a grid over the project area. They then systematically dig shovel test pits, which are small, round holes around 35 centimeters in diameter that are dug to test for the presence of artifacts.

Ethan Bean, Baltimore District archaeologist, applies a mortar wash to the arms of a stone fireplace in Smuggler's Notch State Park, Vermont, June 2019. (Courtesy photo)

“We look for anything that would represent past human occupation or use, like ceramics, glass, brick, nails, jewelry, or anything you could think of that would shout, ‘Hey! People have been here!’”

In addition to his work with the Corps, Bean is involved in many volunteer projects working alongside HistoriCorps, the Lost Towns Project and other archaeology societies in surrounding states.

Bean recently helped rebuild deteriorating stone fireplaces that the Civilian Conservation Corps constructed in the 1930s, as well as conducted a pedestrian survey at Jug Bay Wetlands Sanctuary, where he found a projectile point that may have been created around 4,000 years ago.

“I like to volunteer because I learn something new on every project, and I get to meet a lot of really great people along the way. Additionally, a good deal of these projects are about saving the past from being totally lost.”

Bean also has a love for teaching archaeology to others, whether it’s talking to another member in his field or sharing his knowledge with the public.

“It’s awesome seeing people get so excited when they find something or learn something really unique,” Bean said. “I like to find out what people already know and learn what archaeology means to them.”

Bean expresses his love for finding and collecting things in his personal life, as well. He collects as many Star Wars novels as he can and currently has around 200.

"Through archaeology, I've learned that everyone, and everything, has a story; and it's always fascinating to be able to connect with that.” ■

Col. John Litz

Brian Thacker

Congressman Glenn Thompson

Litz, Foster Sayers Junior

U.S. Army photos by John Sokolowski

For 50 years, the U.S. Army Corps of Engineers has operated and maintained Sayers Dam. Since its completion in 1969, with a price tag of just over $30 million, it has prevented more than $212 million in flood damages for downstream communities.

The dam is named in memory of Private First Class Foster Joseph Sayers, a former resident of Centre County, Pennsylvania, who was awarded the Congressional Medal of Honor posthumously in 1945 for his heroic service as a machine gunner in WWII.

By Sarah Lazo

On Sept. 28, 2019, the Army Corps honored this American hero and flood risk management project by opening its facilities to the public, including a formal presentation and tours of the dam intake tower.

The presentation was attended by more than 60 members of the public. The event kicked off with the presentation and posting of colors by Boy Scout Troop 45, out of Milesburg, Pennsylvania; was followed by the playing of the national anthem by the Bald Eagle Area Pep Band; and concluded with remarks by Col. John Litz, Baltimore District commander; Congressman Glenn Thompson; Brian Thacker, Congressional Medal of Honor Society; two Centre County Commissioners and Foster Sayers Jr.

The 442nd Quartermaster Company, Raystown Rangers and volunteers, and the Pennsylvania Department of Conservation and Natural Resources also had representatives on site to speak with attendees and hand out informational materials.

“We have a dedicated team of Army Corps employees on site every day, ensuring the dam is carefully operated and maintained to provide its primary mission of reducing flood risk,” said Litz during his remarks. “Sometimes, the tough decisions have to be made to make controlled releases of water in order to create more storage at the dam for anticipated flood water. Please know that we always try to make the best decisions we can for all of you, with the most current information and data we have available at the time.”

Litz also spoke to the privilege of calling this project by the name of a local man who sacrificed so much, and he acknowledged the sacrifices made by those in the audience and their families.

“We recognize that this project now sits where houses, farms, churches and memories once stood. We know that these can never be replaced, and that will not be forgotten.” ■

Sayers Dam Facts

ORIGINAL NAME

Authorized as Blanchard Dam and Reservoir by Flood Control Act of 1954

STATS

100 feet high; 1.3 miles long; 99,000 acre-feet storage capacity; 339 square-mile drainage area

RECREATION

Bald Eagle State Park includes two campgrounds, boating, fishing, swimming, nature inn and diverse wildlife habitat

Foster Joseph Sayers Facts

- Joined the Army from Howard while employed by Piper Aircraft Corporation in Lock Haven
- Awarded Medal of Honor at 20 for heroic actions near Thionville, France, during WWII on Nov. 12, 1944, where he was killed in action
- Served in the 357th Infantry, 90th Division
- Lies in Schencks Cemetery on edge of dam
- Also awarded Purple Heart & Bronze Star
- Awards and artifacts on display at Pennsylvania Military Museum in Boalsburg

“Taxpayer Advocate” Sean Dawson, 2019 Value Engineer of the Year

By Brittany Crissman

For Sean Dawson, personal connections have been the driving force throughout his four years as the U.S. Army Corps of Engineers, Baltimore District’s Value Engineer.

It’s the connections, problem-solving skills and dedication that made Dawson the recipient of the Army Corps’ 2019 Value Engineer Professional of the Year award.

"Sean was selected out of 70 value engineers from across the Corps for this award," said Col. John Litz, Baltimore District commander. "This is not easy work. He has earned it for his diligent efforts to continually educate and bring awareness to the importance of the program and to expand upon an outcome-based focus."

Dawson’s journey to value engineering

Dawson started at the Army Corps in 1992 and has taken a few different positions since then. For the majority of Dawson’s time, he acted as the Chief of the Civil Works Management Design Section. He sparked a new journey in fall 2015 as Value Engineer, or as he refers to it – “the taxpayer’s advocate.”

“I was at a point in my life where I was ready for something new, even though I wasn’t sure what that would be,” Dawson said. “I had a wonderful position with wonderful people, but I got a little stagnated.”

Even though Dawson wanted to try something new, he was wary of change. After talking to his wife, he realized this opportunity may be just want he needed to invigorate his career, and it was.

“When I finally got settled into the position, I was working on stuff I knew nothing about; it was a new philosophy in terms of looking at things,” Dawson said.

Instead of passing change by, Dawson took it and embraced it. Coincidentally, that is the intended purpose of the Army Corps’ Value Engineering Program.

The Value Engineering Program

Over the decades, this program has been the catalyst for many changes to standards, designs, policies and procedures and has introduced many concepts that have become new standards.

“In the most basic sense, value engineering looks at what something must do to be successful and the resources that can be put in place to make it even more successful,” Dawson shared.

Value engineering allows people to come together to have a discussion on what they think will reduce cost, speed delivery, and enhance performance.

Addressing value engineering is required for any Army Corps project more than $2 million. This includes military construction, navigation, flood risk management, environmental restoration, and evaluation of business processes.

“Value engineering is the taxpayers’ advocate,” explained Dawson. “We want you guys to have high-quality projects with the right expenditure of resources. It is definitely a balancing act.”

Col. John Litz, Baltimore District commander, presents Sean Dawson, Baltimore District value engineer, with the U.S. Army Corps of Engineers 2019 Value Engineer Professional of the Year award at the Baltimore District headquarters, Sept. 11, 2019. (U.S. Army photo by John Sokolowski)

The value engineering methodology has proven to be effective and proactive. In Baltimore District alone, there is an average return on investment rate of 18:1; with every $1 spent on the Value Engineering Program returning $18 in savings or avoidance.

There is always a new strategy, way of thinking or personal experience that can benefit Baltimore District. Dawson wants to be able to identify ideas that can mitigate risk and save his clients and colleagues time, money, and effort. This is what fascinates Dawson and what drives him to promote the Value Engineering Program.

“Sean wants to do what is right, and overall he really deserves the recognition,” said Emily Schiffmacher, supervisory engineer. “I knew nominating him for this award wouldn’t be that hard since I had so many people to back it up. He has helped and continues to help so many people and this overall mission.”

Interpersonal skills have been Dawson’s bread and butter

Dawson finds that interpersonal skills are the fundamental tool to learn about one another. Since value can mean different things to different people, he enjoys sitting down with people and learning their stories and values.

“Value engineering is about finding what people value, it’s about people telling you their story,” Dawson said. “We as people, we are narrative, we tell stories, it’s our oldest tradition. Storytelling is interpreting the world around you. Interpreting what you find important in life and making it relevant to other people. Having connections, personal connections is the way we get things done.”

> “Value engineering **is about finding** what people value; it’s about people telling you their story.”

The way individuals communicate and perceive things can be complex; adding in the topic of value and how to spend limited federal funding each year can make matters even more challenging due to differing opinions, views and perspectives. Having the mutual trust and respect that comes from personal connections, being able to understand who it is you are talking to, and what they value, can lead to fewer problems and a higher success rate; which is a cornerstone of Baltimore District’s mission.

“When you see someone at their wit’s end, I love coming in and saying ‘Hey, let me see if we can help you out,’ and then coming up with a solution. That is my favorite thing about this job.”

What’s next for Dawson?

Becoming the Value Engineer for Baltimore District was a bit of an unknown to Dawson; however, making this change provided him with new opportunities.

In fiscal 2020, Dawson wants to dip his toes into the management side of the program.

In his free time, he reads up on social, cognitive and organizational theories like the Trust Theory, the Organizational Change Theory and the Change Equation. He wants to gain new perspectives on what can be useful and efficient for the Value Engineering Program.

“I was never this guy before; this job rewired my brain, it really did, and I couldn’t be more thankful,” Dawson said. ■

Bill Nesbit Memorial People with Disabilities Deer Hunt

Nov. 12 and 13, 2019 | Jennings Randolph Lake

14 Years of Continuous Camaraderie

"This hunt is important to me because of the camaraderie it provides. It leaves you feeling like everyone involved in this hunt is family; they truly care about you. It is important for this event to continue because it provides an opportunity for people with disabilities that may not otherwise have the ability to experience the outdoors. I love to see all the smiles on everyone's faces and to spend time with all the volunteers who have became an extended family to me. I am entirely grateful to all the volunteers who have helped me and allowed me to continue to play a small part in this wonderful event."

-Charles Harris, *Founder of Operation Heroes*

"Every time I participate in this event, I always have a good time and make new friends, even some lifelong friends. My favorite thing about this event is the camaraderie; I miss that from being in the military, so being able to hang out with other sportsmen is the best thing in the world. Every year, this event improves. A lot of volunteers put their heart and soul into this. This is a great way for people to reconnect with the outdoors, to get those with disabilities back out here, to get them hunting and to get them healthy and happy is great. I wouldn't trade this experience for the world."

-Stephen Said, *Retired Staff Sergeant*

"My favorite part about this event is the camaraderie. The relationship building is fun, from meeting the wounded warriors to the staff; everyone is awesome. Being disabled all my life, the one thing my mom said to me growing up was 'can't never tried,' so everything I wanted to do, I tried. I have hunted all my life, and this event provides me to do that. This event helps build a community in terms of lifelong friendships. I want to see this event build. It has been 14 years, and I think it can keep going, and I hope it does."

-Gordon Sisler, *Professional Deer Hunter*

"This year was my first year participating at this event. I was able to harvest a doe and a buck at an 8-point shot. All the volunteers were so personal and were a big help with the deer. Just making the connections I did was worth the trip. That's what makes the whole hunt - the community it builds. This event made hunting much easier than trying to get out there on your own. It was pretty flawless, actually. Everyone who helps with this event is genuine. I was so thrilled to be a part of something this great. I can't wait for another year."

-John Micheals, *Assistant Director of Resources for Independence*

Thank you to all those who made this event possible...

By Brittany Crissman

"I can honestly say this event has been the most rewarding and humbling activity I have been involved in during my career. To think I had a part in planting this seed to enhance someone's life in a positive way and to look back over 14 years and see how it has grown is very rewarding. I have received far more in return than I have given. I know this event is in good hands for the future, as I see the volunteers and staff grow every year."

-Bill Donnellan, *Jennings Randolph Lake Supervisory Park Ranger*

U.S. Army photos by Brittany Crissman, Ty White and Casey Fernandez

The Bill Nesbit Memorial People with Disabilities Deer Hunt was first held Dec. 4 and 5, 2006. This event is named after Bill G. Nesbit Jr. who passed away from cancer in 2008. He was one of the first hunters selected in the inaugural hunt. In 2005, this event was originally planned to serve as a wildlife management tool. Park Ranger Bill Donnellan came up with the idea to open one of the restricted areas at the project. From there, the proposal went off, and a great amount of work went into getting this event underway. Primary sponsor, Elk District Volunteer Fire Company, and the West Virginia Natural Resources Police and West Virginia Hunter Education Association combine efforts to support the mission of this hunt. Each year, the event has grown tremendously in the number of hunters and volunteers involved, local and corporate sponsorship, expansion of the hunting facilities and accommodations that are offered to the hunters.

The Old Guards

By Capt. Ben Speckhart

Timeworn local forts remain poignant symbols of past Corps endeavors

The collaborative relationship between Baltimore and the U.S. Army Corps of Engineers spans more than two centuries, with a collective narrative that stirs a broad wake in the tide of American history. Few Corps Districts have a pedigree as distinguished, and although the Corps' signature is evident throughout the region — from buildings to bridges to the harbor, itself — nothing more aptly symbolizes this historic past than the fortifications aligning Baltimore Harbor.

Fort McHenry, Baltimore, Sept. 24, 2019. (Photo by Lance Cpl. James Bourgeois)

The bombardment and defense of Fort McHenry during the War of 1812 may be the regional hallmark, immortalized by Francis Scott Key in the words of our national anthem. However, the defense of Baltimore Harbor is a much broader story that epitomizes the Corps' most critical and fundamental missions of preserving national security and protecting American soil, and it illustrates the beginning of a special bond between Baltimore and Army Engineers.

Five fortifications sit within a 5-mile radius of the Key Bridge: Forts McHenry, Carroll, Armistead, Howard and Smallwood, all built between 1799 and 1902. Although they have long surpassed their intended use, they still lie languid in and along the banks of the Patapsco River, like silent sentries never properly relieved of their watch. Each differs in age, access and design, but they have one thing common — they were built by the U.S. Army Corps of Engineers to defend the land of the free.

Fort McHenry

By 1794, tensions between the U.S. and Great Britain had risen to the point that Secretary of War Henry Knox ordered the fortification of Baltimore Harbor, the fulcrum of which was to be Fort McHenry at Whetstone Point.

Built by the "Corps of Artillerists and Engineers" between 1799 and 1802, Fort McHenry marked the first formal Army engineering project in the Baltimore area. The precursor to the current Corps was then fittingly comprised of both Army artillery and engineer officers and was often led by contracted French engineers, including Maj. John Rivardi and Jean Foncin who both played a significant role at Fort McHenry.

The fort is named after James McHenry of Baltimore, a delegate to the Continental Congress, U.S. Secretary of War, and a signer of the U.S. Constitution. By its completion in 1802, the total construction cost had reached $110,358, or approximately $2.6 million in today's dollars.

During the War of 1812, fought between 1812 and 1815, Fort McHenry would earn its battle-tried acclaim woven into the very fabric of American lore. In 1813, British warships began harassing homesteads along the shores of the Chesapeake Bay, and by August 1814, succeeded in burning the White House. They soon set sites on Baltimore, strategically located 150 miles inland and a major hub for shipbuilding, commerce and privateering. British Adm. Alexander Cochrane initiated the bombardment of the fort on Sept. 13, shortly after 4,700 British soldiers landed at North Point to attack Baltimore from the northeast. Army Maj. George Armistead, approximately 1,000 soldiers and 21 cannons defended the fort for 24 hours until the British withdrew. It was in that "dawn's early light" that lawyer Francis Scott Key saw the American flag raised over the fort, subsequently penning "The Star Spangled Banner."

The Corps' greatest contributions were achieved in the months leading up to the battle. In April 1813, Chief of Engineers Col. Joseph Swift ordered Capt. Samuel Babcock to reinforce Fort McHenry in preparation for a British attack. Capt. Babcock built new walls and raised existing ones, reinforced earthwork, and constructed new artillery batteries throughout McHenry's footprint for five months. He also saw to the construction of artillery batteries at several other locations across the surrounding branches of the Patapsco. Without this groundwork by Army Engineers, the defense of Fort McHenry would likely have proven more costly at best, and a failure at worst.

It is also important to note that preparation for and execution of the defense was a joint effort by the U.S. Army, the Corps of Engineers and thousands of citizen volunteers from Baltimore and the surrounding region — perhaps an early and poignant illustration of the cooperative military-civilian partnership that defines the Corps today.

Although Fort McHenry was the only Baltimore fort to see combat, it was never again employed to ward off a hostile enemy. The fort was occupied by Union soldiers during the Civil War, and also served as a prison. During World War I, it was renovated into a military hospital for wounded soldiers returning from the front lines in Europe. On March 3, 1925, it was transferred to the National Park Service. It has since been designated a national monument and historic shrine, and is a major local attraction. It is also home to Baltimore District's soils laboratory.

There is much more to the whole picture that makes up the defense of Baltimore and its surrounding waterways, from dredging channels to constructing temporary defenses. The forts themselves, however, are the physical artifacts of the combined, prolonged and colossal effort to protect the city and its people. They are subtle testaments to countless untold stories, to the labor and skill of the Corps of Engineers, and to the time-tempered relationship between Baltimore and Army Engineers.

Fort Carroll

Named after Charles Carroll, a signer of the Declaration of Independence, Fort Carroll lies just east of the Key Bridge. It is a 4-acre hexagonal island that might look at home in a science fiction film. The elements and decades of neglect have taken their toll, but this deserted bastion was once the pinnacle of military engineering, with its construction supervised by then Brevet Col. Robert E. Lee.

Work began on Fort Carroll in 1847 as a result of a nationwide effort to strengthen the country's seacoast defenses following the War of 1812, as well as a local endeavor to provide protection for the Baltimore Harbor beyond the limited range of Fort McHenry. The brainchild of Chief of Engineers Gen. Joseph Totten, Fort Carroll was built on an artificial island erected near the middle of the channel at a location called Sollers Point Flats. Lee served as the Baltimore District Engineer from 1848-1852, and he oversaw construction during its early stages. The fort was built by employing then state-of-the-art methods, including an underwater masonry saw, diving bell, custom dredge and steam pile-driver.

"Fort Carroll was built in the water where it was twelve or fifteen feet deep. Its walls are on piles which were driven as far as they would go. On the top of these was placed a wooden grillage, and upon the grillage the massive stones of the foundation were laid with the use of the diving bell. The space thus enclosed was filled with material excavated from the channel nearby. The walls are faced with granite and filled with concrete…I may remark that there was never a finer piece of engineering work of its kind."

Gen. William P. Craighill, former Baltimore District Engineer

Ultimately, Carroll fell well short of its original grand design. Construction was hindered by a series of unfortunate events throughout the 1850s, including budget cuts, poor weather, sickness, and even ship collisions on more than one occasion. By 1861, all construction ceased with the outbreak of the Civil War, having raised the walls to a height of 24 of the 40 feet originally planned, and having only placed 44 of the 225 guns initially intended. It would never be completed despite efforts from the Corps of Engineers to do so. Advancements in artillery and the strengthening of a standing Navy soon rendered Fort Carroll and others like it obsolete.

Fort Carroll sat idle for nearly a century, used as a lighthouse for navigation, for artillery practice during World War I, and as a pistol range during World War II. In 1958, the fort was sold to a lawyer from Baltimore, and is privately owned to this day. Several attempts have been made to further develop the island, including erecting a large Lord Baltimore statue and a casino on its foundation, but none have moved beyond conception.

Never completed, never engaged in combat, outdated in its infancy, it would be easy to disregard Fort Carroll's story as a failure. But perhaps that would be an oversimplification. Fort Carroll was an engineering marvel, constructed on an artificial island with cutting-edge technology, and featuring a blacksmith shop, an artesian well and a lighthouse by the time it was finished. Migratory birds have turned its granite walls into a rookery, and oysters are thriving underwater on its adjacent reefs. It is also an important part of both Baltimore and Corps of Engineers history. Aside from engineering feats, it was the chief focus of and last engineering assignment given to Lee, and it was one of the last trapezoidal sea forts built before technology changed the very nature of seacoast defense. Whatever its legacy, Fort Carroll has been a beacon of the Baltimore Harbor for more than 150 years.

U.S. Army photos by Capt. Ben Speckhart

Battery Clagett at Fort Howard Park, Aug. 10, 2019.

One of the pivotal gun platforms in the artillery bunker at Fort Armistead, Dec. 7, 2019.

Battery Hartshorne at Fort Smallwood Park, Nov. 10, 2019.

Fort Carroll, Baltimore, Oct. 10, 2019. (U.S. Army photo by Capt. Ben Speckhart)

Forts Howard, Armistead and Smallwood

The U.S. Army Corps of Engineers, Baltimore District, continued to renovate Fort McHenry and make minor modifications to Fort Carroll for 30 years following the end of the Civil War. It wasn't until the late 1890s that harbor defense again emerged at the forefront of both local and national interest, as war loomed in the distance - this time with Spain.

In 1883, the Corps assessed that building defenses beyond Fort Carroll was necessary to adequately protect the port, and consequently identified three locations to construct new fortifications: North Point, Hawkins Point and Rock Point.

Construction began in 1896 and continued through 1902 at the three locations. Nicknamed "The Bulldog at Baltimore's Gate," Fort Howard at North Point consisted of six gun batteries and was named for Col. John E. Howard, a Baltimore native and former soldier in the Maryland Continental Line during the Revolutionary War. Fort Howard was the primary defense against large enemy ships, outfitted with 12-inch rifled guns, 12-inch mortars, and 5-inch rapid-fire guns.

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At Hawkins Point, Fort Armistead consisted of four concrete gun batteries, and was named after Maj. George Armistead, defender of Fort McHenry during the War of 1812. It was to be used as an intermediate defense in the event of an enemy invasion of the harbor.

Near the confluence of the Patapsco River and Chesapeake Bay at Rock Point, Fort Smallwood consisted of two battery fortifications, and was named after Maj. Gen. William Smallwood, former commander of the Maryland Continental Line and Maryland Governor. Its primary mission was to guard against shallow draft vessels and to protect submerged mines throughout the river.

All three forts comprised the first regional examples of the change in seacoast defense technology. Instead of installing a singular trapezoidal stronghold, these new forts were essentially a series of dispersed reinforced concrete gun batteries along the shore. In contrast to preparing for prolonged, siege-type battles, these forts were designed to separate and conceal the location of artillery, and to quickly overwhelm any advancing force with superior firepower. Merle T. Cole in the "Coast Defense Study Group" writes:

"It is difficult to appreciate today that harbor defense was the high technology…of the Army at the turn of the century. In the days before radio, radar, and aircraft…harbor defense employed what today would be called technologically sophisticated weapon systems in a demanding mission – destroying and damaging heavily armored, moving warships at long ranges."

Neither Spain nor any other adversary would send a fleet to test these advancements, and all three forts would be left untried. In any case, the forts were a microcosm of the modernized methods of coastal defense implemented across the nation, and when completed ensured that Baltimore was one of the best guarded cities in the world at the time.

By 1930, both Fort Armistead and Fort Smallwood were sold to the City of Baltimore for development as parks. Fort Howard was used as Gen. Douglas MacArthur's newly formed Third Corps headquarters in the early 1920s, and a Veterans Affairs hospital was constructed on the grounds in 1940, which remained in operation until the early 2000s. ■

Four of the five forts can be accessed publicly today. Fort McHenry is a well-preserved national park, and Forts Smallwood and Howard are both scenic city parks with public access. Fort Armistead, although not well maintained, is also open to the public, while Fort Carroll can be seen by boat or the surrounding area.

Revisions for the future

Baltimore District updates master plans, discusses enhancement opportunities at lakes

By Becca Nappi

What is a Master Plan?

A master plan is a strategic land-use management document that guides the comprehensive management and development of a project's recreational, natural and cultural resources. Every U.S. Army Corps of Engineers lake has a master plan that serves as a framework for consistent, responsible decision-making for approximately 15-25 years.

Jennings Randolph Lake

Jennings Randolph Lake, located in both Garrett County, Maryland, and Mineral County, West Virginia, was constructed and is managed by the Corps. JRL's previous Master Plan was completed in 1994 and work to update the Master Plan was completed in August 2019. Some examples of specific enhancement projects discussed in the new 2019 Master Plan include providing power and water to all Howell Run Picnic Area pavilions; expanding parking at Shaw beach; establishing a boat-in primitive camping site at Peninsula B; and creating an expanded beach area with parking at newly named "Dragon Head Beach."

Raystown Lake

Raystown Lake, located in Hesston, Pennsylvania, is the largest lake located entirely in the Commonwealth. Raystown Lake's Master Plan revision is still in progress. Some examples of potential enhancement projects at Raystown discussed in the draft include trail expansion at Susquehannock Campground, a non-motorized launch access at Weaver's Bridge, and expansion of facilities such as campsites and sanitary facilities at Nancy's Boat-to-Shore Campground. Raystown's last master plan revision was completed in 1994, and the current update is set to be complete in spring/summer 2020.

Whitney Point Lake

Whitney Point Lake, located on the Otselic River in Broome County, New York (owners of the recreation area), is part of the comprehensive flood control plan for communities in southern New York and eastern Pennsylvania. WPL's previous Master Plan was completed in 1961, and work to update the Master Plan was completed in October 2019. Some examples of specific enhancement projects discussed in the new 2019 Master Plan include improvements to the Old Anderson Trail, a kayak intake area at Keibel Road Recreation area, and extending the Whitney Point Multi-use Trail.

East Sidney Lake

East Sidney Lake, located in Delaware County, New York, is a unit of the comprehensive flood control plan for communities in southern New York and eastern Pennsylvania. The town of Sidney operates and maintains the East Sidney Recreation Area. The previous Master Plan was completed in 1961, and work to update the Plan was completed in October 2019. Some examples of specific enhancement projects discussed in the new 2019 Master Plan include supporting enhancements for hunting and shoreline fishing activities; addressing safety concerns; and improving the reliability of electrical and communications infrastructure.

Indian Rock Dam

Indian Rock Dam, located in York County, Pennsylvania, is a part of the Codorus Creek project that reduces flood risk to the local community. The dam's normally dry reservoir has storage capacity of 9.1 billion gallons. The previous Master Plan was completed in 1959, and the new Master Plan is set to be completed in winter 2019/2020.

What is the purpose of revising a master plan?

Updating master plans is a Corps-wide effort. By revising master plans every 15-25 years, the Corps creates an updated guide for the management of a project based on current public input, environmental changes, boating capacities, etc. In 25 years a lot can change; technology improves, recreational needs may change and environmental factors may vary, which is why the revision process is so imperative. It's important to note that a master plan does not plan or approve changes or improvements to a project's primary mission of flood risk management and does not appropriate money to enhancements discussed in the plan. Instead, it effectively portrays where projects could be authorized if funding or a strategic partnership were to become available.

Construction of Mapes Vehicle Access Control Point comes to a close

First of several Army Corps-led ACP projects on Fort Meade

By Cynthia Mitchell

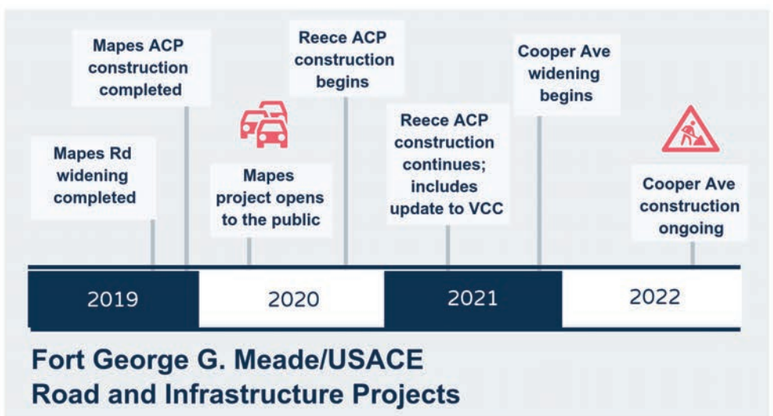
The U.S. Army Corps of Engineers, Baltimore District, recently completed construction of the Mapes Road Vehicle Access Control Point (ACP) on Fort George G. Meade — the first of several road and infrastructure projects planned for the installation.

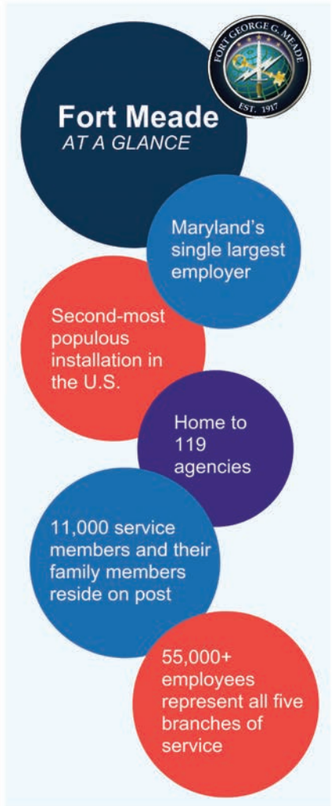
Mapes Road Vehicle ACP is accessible off Route 175/Annapolis Road and will serve as the primary entry point on Fort Meade, Maryland, throughout most of 2020 and 2021. (U.S. Army photo by Cynthia Mitchell)

The $15 million Mapes ACP project adds two additional lanes at the entry point as well as a serpentine road design that meets anti-terrorism/force protection standards. It also widens Mapes Road from two to four lanes to help ease congestion for the thousands of employees, residents and family members who drive through the entry point on a daily basis.

"We are proud to work alongside our partners on Fort Meade to ensure the nation's premier platform for Intelligence and Cyber Operations can continue to provide safe and efficient on-post access to the many people who work and live on Fort Meade," said Col. John Litz, Baltimore District commander. "We look forward to strengthening our partnership with various stakeholders on and around the installation, as we break ground on several other critical infrastructure projects in the next couple of years."

Mapes will become the 24-hour access point for Fort Meade when construction and reconfiguration begins on the Reece Road ACP. Once a contract is awarded, construction of the Reece project is expected to last 18-24 months.





By Brittany Crissman

Investigating Washington's rich history

If you step onto Fort Reno Park today, you'll see kids playing baseball or soccer on two recreational fields on top of the hill. In addition to this park, you'll come across dog owners playing fetch as they run up and down the slope of an open lawn. Families peacefully stroll through the wooded trail at the bottom of the hill, escaping the sounds of our nation's busy capital. In the summer, concerts take place at Fort Reno Park where locals listen to music, enjoying the warm breeze and a beautiful sunset.

Fort Reno Park is a historical site owned by the National Park Service (NPS) and located in the heart of Tenleytown, a neighborhood of Washington, D.C.

Along with the beauty of Fort Reno Park, there is a castle-like structure that peaks out above the trees overseeing the neighborhood of Tenleytown. This building is part of the Washington Aqueduct. Mystical yet charming, the aqueduct brings a sort of historical essence to the modernization of today's surrounding infrastructure.

History of Fort Reno Park

As the highest point in Washington, Fort Reno Park was formally known as Fort Pennsylvania, which protected Washington and what is now Wisconsin Avenue during the Civil War. After the war ended, Fort Pennsylvania became Reno City, a thriving African American working-class residential subdivision where houses, playgrounds, churches and schools stood. In 1863, the U.S. Army Corps of Engineers designed and completed initial construction of the Washington Aqueduct and has been operating and managing the Fort Reno reservoir since 1958. The Army Corps chose this location for one of its reservoirs since it was the highest point in Washington at an elevation of 420 feet above sea level. The Washington Aqueduct provides drinking water drawn from the Potomac River for Washington region residents to this day through three wholesale customers.

By the start of the 1900s, Washington began to expand. Developers built new commercial stores, houses and schools, and a national park now known as Fort Reno Park. Unfortunately, this 'beautification' came at a significant price to the community of Reno City. The original houses, playgrounds, churches and schools were eventually demolished, burned and filled in. By the end of the 1940s, Reno City, along with the associated community had vanished.

Fort Reno Park has a rich history that should never be forgotten.

The importance of the geo-archaeological investigation

Fast forward to present times. Archaeologists and drill team members with the Army Corps, Baltimore District, were at Fort Reno Park in the summer of

2019 conducting a geo-archaeological investigation as part of a project for the Washington Aqueduct. This investigative work is required when doing any kind of construction on a historical site.

Archaeologists like Ethan Bean thrive on this kind of work as it provides the opportunity to essentially 'dig' up the past.

"It would be cool to find something from Reno City because it offers a brief glimpse of time and provides a chance for the community of Reno City to have their story told," Bean said.

Over generations, Tenleytown has restructured itself, making it an intriguing spot to research, but also an imperative one. Geo-archaeological investigations like this one are vital, so important federal projects can successfully proceed while also preserving important snapshots of our history, like the Civil War and the foundations of historically black communities.

"It would be cool to find something from Reno City because it offers a brief glimpse of time and provides a chance for the community of Reno City to have their story told."

The Washington Aqueduct is Washington's first public water system and currently provides approximately 135 million gallons of drinking water per day to more than one million people living, working, and/or visiting Washington; Arlington County, Virginia; and portions of Fairfax County Water Authority's service area in northern Virginia.

The proposed construction improvements at the Fort Reno reservoir, which has a capacity of 20 million gallons, are associated with the way water flows to the public. The Army Corps plans to replace the influent and effluent buildings, as well as modify two aging reservoir drain pipes that will result in improved water quality and distribution.

"As a federal agency, we are required by law under Section 106 of the National Historic Preservation Act of 1966, or NHPA, to consult with interested parties and identify historic properties that could be affected by our projects," explained Eva Falls, Baltimore District archaeologist. "We are required to avoid, minimize or mitigate any adverse effects to those historic properties."

The geo-archaeological investigation included examining soil profiles and evaluating the potential for significant archaeological sites within the footprints of the two proposed drain lines. Evidence of significant archaeological features or artifacts can range from shreds of pottery to building foundations to munitions.

"The goal of this investigation was to try and see if there are archaeological sites still remaining under all of this land movement that happened in the mid-20th century for the creation of the park," stated Falls. "We know that this area was heavily occupied, and there is the potential for deeply buried archaeological sites beneath several layers of earthen fill. There have been previous investigations out there that have identified features associated with Reno City in certain areas of the park."

As NPS owns and operates Reno Park, it is the lead federal agency for compliance with NHPA and the National Environmental Policy Act of 1969 (NEPA) for this proposed project. The Army Corps helped NPS identify historic properties that could be affected by the construction and operation of the two new drain lines by performing a geo-archaeological investigation.

"Before we go out to a site, we like to understand what we should be looking for," said Falls. "Using Geographic Information Systems, we overlay historic maps onto present-day maps and we see if there was, for example, a house here in the past. This way we have a pre-conceived hypothesis of the land surface and potential artifacts."

Falls was able to perform a topographic cut and fill analysis with the help of Baltimore District Geographer Jared Scott. Falls and Scott differentiated the 19th century land surface from the present-day land surface. This allowed them to analyze any land form changes that happened over the 20th century and to map out where there also might be potential for significant archaeological remnants.

Without this desktop analysis, it would be challenging to determine the appropriate size and scope of the field investigation.

After conducting background research, the archaeologists and drill members went out into the field to start digging. The drill team members, Senior Driller John Blackson and Drill Rig Helper Keith Soules, played a significant role in the investigative field work. Geo-archaeological investigations rely on the drill team to provide the equipment and maintenance work to ensure safe and successful drilling when on site.

Blackson and Soules used the Army Corps' Central Mining Equipment track-mounted drill rig to evacuate five soil borings. Each hole was sampled every two feet to a maximum depth of 20 to 22 feet. Archaeologists Falls and Bean opened up each two-foot split-spoon samples to analyze the soil stratigraphy, recording their observations using Munsell Soil Charts, along with photography.

"This method allows us to look for deeply buried land surfaces that could contain archaeological artifact or features" explained Falls. "Potential features included ditches, dry moats, cellars, wells and privies."

Baltimore District Archaeologists Eva Falls and Ethan Bean examine soil collected by the District's drilling team as part of a geo-archaeological site investigation for an improvement project for the Washington Aqueduct on National Park Service land at Fort Reno Park, Washington, Aug. 12, 2019. Bean and Falls classified the samples by color and also searched for artifacts in the soil, stemming from the former Reno City and Civil War times. Fort Reno is the highest point in Washington. (U.S. Army photos by Brittany Crissman; picture directly above by Sarah Lazo)

Concluding the geo-archaeological investigation

The fieldwork was successfully completed in mid-August in which no archaeological artifacts or features were found. Even though it might have been exciting to find artifacts from the Civil War or the community of Reno City, the negative survey results allow Army Corps and NPS the ability to move forward with confidence that no significant historic properties will be adversely affected by the Washington Aqueduct project.

"By improving these drain lines, we have a very low probability of disturbing significant archaeological remains and can now successfully proceed," concluded Falls.

The next time you take in the serene ambience of Fort Reno Park, remember the historical significance that makes it so remarkable, along with the beauty of a portion of the Washington Aqueduct, our nation's capital's first public water system. ■

U.S. Army Corps of Engineers,
Baltimore District

2 Hopkins Plaza
Baltimore, MD 21201

Looking Back...

"Bombardment of Fort McHenry" - Painting by Alfred Jacob Miller, Maryland Historical Society

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