

## From the Chief Engineer Officer

USPHS Engineers,

As a Commissioned Corps and as engineers, we have selflessly and effectively advanced the health and safety of our Nation during the past two years operating under a Public Health Emergency. Engineers have demonstrated unwavering commitment to the USPHS mission and readiness to serve on the front lines of unprecedented current and emergent public health and national security challenges, including the COVID-19, Operation Artemis – Unaccompanied Children, and Operation Allies Welcome missions.

With your personal service and family sacrifices, I urge you to prioritize your resilience by focusing on your well-being and the support of your

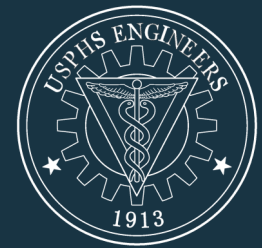
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**Emil P. Wang, J.D.**  
Rear Admiral, USPHS  
Assistant Surgeon General

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family, friends, and colleagues. I also recommend that you strive to maintain balance between your service to our Nation and Corps, commitment to your Agency, and dedication to your families. EPAC is working on programs to provide guidance and resources. For example, the 2022 Council of Captains will present a panel on “Managing a Balanced PHS Career.” Additional resources can be found at [Corps Care](#).

As Surgeon General VADM Murthy said, “Emotional well-being is ... that resource within each of us, which allows us to reach ever closer to our full potential, and which also enables us to be resilient in the face of adversity. When it comes to emotional well-being, we are only going to achieve this ... if we help each other in that effort.” He also advocates that we rely on and appreciate those that inspire and support us: “Anchors are those people in your life who remind you of who you are – your values, aspirations, and worth – even when you forget. Keep them close and always let them know how much they mean to you.”

I encourage us to foster our esprit de corps – I am impressed by and have relied on the community support that our fellow officers provide each other in our assignments and on deployments. With our personal resilience and well-being, as well as the support of our anchors, we will be better able to respond to the many challenges that we face as officers and as a service.

RDML Emil P. Wang, J.D.

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## 2022 EPAC Chair Update

*LCDR Praveen K.C.*

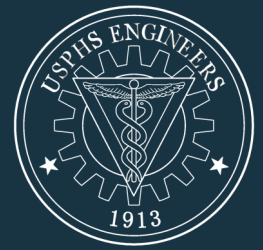
Greetings, Engineer Community!

I am honored by the opportunity to serve as Chair of the Engineer Professional Advisory Committee (EPAC) for 2022. I would also like to congratulate our Chief Professional Officer RDML Wang for his selection to be our 15<sup>th</sup> Chief Engineer. The EPAC looks forward to advising on issues relating to the professional practice and personnel activities of the Engineer Category.

Today I will share my story hoping that I can inspire some. Key concepts that have guided my journey thus far are motivation, leadership, bravery, and contentment.



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### **Motivation (things that gets you going):**

Always try to find what will get you going: your motivating factor and your role model. I was born and raised in a small town called Nepal Gunj in Nepal. In 1996 after completing high school my father wanted me to go to Kathmandu (the capital of Nepal) for college. I disagreed with his suggestion. I knew his income and knew he would not be able to afford to pay for my college (To this day Nepal does not have a student loan system, the only way to go to college/university is if your parents support you). I replied, "sorry father I don't want to go because you will not be able to afford tuition and housing and you have to do the same from my brother too." I have never forgotten what my father mentioned that day. He said, "Praveen if needed I will sell my house, land and everything I have, but you are going to Kathmandu for your college." In 2004 I also found out, from my mother, that my father did not buy any new clothes until my brother and I completed our undergraduate degrees. The person I am today is because of the sacrifice my father made. This is what gets me going to this day. My father is my role model.

### **Leadership (somebody has to do it; someone has to step up):**

Leadership is about respect and patience, but the most important thing for me has been to be open minded, willing to accept another person's opinion. Immigrating to this country with language and cultural differences and being open minded, I learned to be observant of how people from different cultures think, react, and interact. I learned how to work effectively with people of different perspectives, cultures, and backgrounds. Engineer officers are no different, representing a variety of disciplines, agencies and missions. I know from experience how firm engineers can be in their opinions, but I also know how open we are to different ideas if facts support them. I am no different – I am always open to new ideas. For me, a leader not only leads from the front, but also walks with and supports friends, family, and colleagues when needed. The only thing that is constant is time – everything else is changing. Being open minded will help one to adapt to things quickly. I consider this survival of the fittest. Fitness and flexibility go hand in hand.

### **Be Brave but Content:**

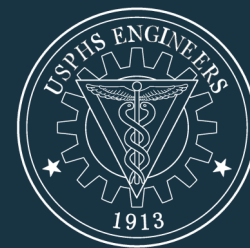
Do not confuse bravery with being physically strong. Bravery also requires mental strength. Don't hide your vulnerability, work with and on it. A kid born in a third world country, who is not a good public speaker or a good writer, without having English as his primary language, and here I am – with your support and encouragement – helping to lead the Engineer Category of the U.S. Public Health Service. Don't be afraid to try – if I can do it, you can also throw away your self-doubt. Last year CDR Cox, in her chair remarks, posed the question: "How do YOU define success?" When I read that, it intrigued me. It got me thinking for a couple of months, and I am not yet 100% sure, but I think I am close, that success to me is to leave a thing in better shape than what I inherited, to be ambitious, but also be content with what I have.

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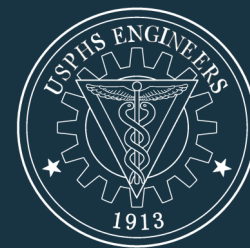


## EPAC Initiatives in 2022:

1. **Lift the spirit and morale of the Engineer Category:** I have recently requested Readiness subcommittees to collaborate in an **officer mental health and well-being** initiative. I will also be working with the Career Development Subcommittee (CDS), Recruitment and Retention (R&R) Subcommittee and Council of Captains (with the CPO's permission) to identify major hurdles that our category currently faces and to propose solutions, ideas, networking opportunities and, if needed, to reach out to CCHQ through our CPO. This is not just an issue for the Engineer Category; we have seen similar issues with other PACs during our Combined PAC Chair groups meeting.
2. **Focus on retention of our Engineer Officers:** As our officers are aware, EPAC has no control over the process of hiring new applicants. A few years back, engineer officers numbered in the range of 385 to 400, and now we are around 360. So the question becomes, what can EPAC do? I plan to work with the Rules Subcommittee, CDS and R&R to ensure that all of our officers are aware of rapid updates coming out of CCHQ and are ready to comply with new policies. We hope to reach out and offer assistance to officers experiencing challenges with issues such as licensure, credentials, continuing education, APFT, etc.
3. **Expand the Category by focusing on recruitment at the local level:** The pandemic has presented a significant challenge in recruitment efforts. As things return to normal, I would like to work with R&R to encourage recruitment efforts of our officers at the local level. We will make sure that any and all of the components used for these efforts are approved by CCHQ and are in compliance with CCHQ guidelines.
4. **Support CCHQ with Training Development:** CCHQ is currently working on a project to provide a primary training and readiness tool for commanders, mission planners, and trainers. CCHQ requested a few engineers to help develop the Task List for the Engineer Category. I will work with Readiness Subcommittee to support CCHQ in this front.

Before we go over the EPAC Subcommittee updates, I would like to give a shout-out to the Events Subcommittee for successfully navigating virtual and in-person logistics surrounding COVID restrictions to plan and execute the Change of Command Ceremony and E-week. Thank you to all volunteers for making these events happen during the pandemic. Our Deputy Surgeon General, RADM Hinton, was very pleased with the events and commented that "I hope this is the start of getting things back to normal." The adaptability of the Events Subcommittee is noteworthy. If you see or feel things that are not working for you or EPAC then please do not hesitate to reach out to educate and guide me. Together, I hope that we can improve each other. This has been the best leadership training opportunity of my life so far –

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it's teaching me fast, but equally kicking my rear. I am enjoying it, though. No pain, no gain.

## **EPAC Subcommittees Updates**

We're off to an excellent start for making an impact for our PHS Engineer Category in 2022! Our EPAC continues to play an integral role in advancing the mission of PHS Engineers to protect and advance the health of the nation. We do this through diverse efforts, such as providing sound engineering expertise, using engineering skills to address complex health-related problems, and advancing technology. Efforts of nine EPAC subcommittees help to maintain our strong platform to excel in our mission. The Mentoring Subcommittee was recently created as a formal *ad hoc* subcommittee to continue mentoring efforts from former volunteers spanning the past two decades. For each subcommittee, a few highlights of the projects and accomplishments include the following:

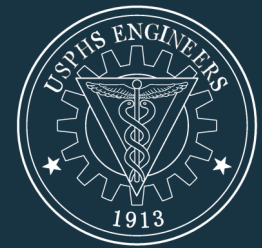
**Rules** – The Rules subcommittee is continuing to align Bylaw's verbiage to the existing Charter. Three of six updates were approved in November 2021 and work is being done to address the remaining items. The team is also working on reviewing procedures and opening the application window for new members in 2022.

**Awards** – The Awards Subcommittee has evaluated nominations for the EPAC Spring 2022 Awards cycle and submitted recommendations to the Chief Engineer. In addition to announcements on the Listserv and General Meetings, the Subcommittee initiated a "get out the message" campaign to let the Engineer Community know about the nominating window and to encourage nominations of deserving staff. The campaign was effective in fielding several high-quality nominations for each award. The subcommittee continues to develop training material for improved award write-ups that are in line with the scoring rubric to provide nominations that are highly competitive. The subcommittee also provides direct feedback to nominators on how to improve award write-ups in the future.

**Career Development** – The Career Development subcommittee is working closely with EPAC Leadership and the 2021 Council of Captains in finalizing the Professional Certifications and Credentials white paper. CDS is also preparing for two Senior Officer Panels with the CPO's Council of Captains in 2022. CDS continues to draft guidance on career tracks, update the EPAC welcome package, and finalize an engineer-specific fillable CV template that aligns with the standardized CV that is required for the 2023 promotion year. In addition, the subcommittee is analyzing survey responses of promotion data analytics to present to the engineer category.

**Events** – The Events subcommittee hosted E-Week 2022 in February, which included the Change in Command to honor our new Chief Professional Officer (CPO) RDML

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Emil P. Wang and recognize the 2022 CPO Awardees. The first CPO Town Hall for RDML Wang was held in March where the CPO introduced himself and fielded questions from the engineering community. Upcoming events include the SAME JETC on May 9-12, Engineering Category Day on May 25th during the COA USPHS Scientific & Training Symposium, and additional Town Halls to be scheduled.

**Information** – The Information subcommittee continues to: maintain and update the EPAC website, publish a spring and fall edition of the Machinatores Vitae Newsletter and post EPAC content on official USPHS Social Media platforms. The subcommittee also manages a SharePoint site on APAN.org to provide a centralized archive and file storage site for EPAC-related material.

**Public Health and Engineering Practice** – The Public Health and Engineering Practice (PHEP) subcommittee has several exciting projects that include: 1) working on solutions for infrastructure challenges brought about by climate change, and 2) developing consolidated documentation for PPE that could be used on deployments. PHEP is continuing to host and add data to the engineering reference library, which offers all USPHS engineers access to key user manuals and procedure documents for use in the field.

**Recruitment & Retention** – The Recruitment & Retention subcommittee has updated its webpage, which now includes the updated approved recruitment presentation for use by engineer officers in recruitment activities. A new workgroup has been formed to promote increased awareness across the engineer category of policy changes that impact recruitment and retention of active duty and reserve officers. The subcommittee also continues to update a database of recruitment contacts.

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## FDA Hosts the Chief Engineer Change of Command and Engineer Awards Ceremony

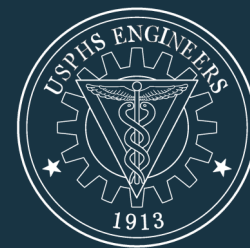
The 2022 PHS Engineers Change of Command Ceremony was held on February 28, 2022, to honor the former Chief Engineer, CAPT Edward Dieser, and recognize the 15<sup>th</sup> Engineer Chief Professional Officer (CPO), RDML Emil Wang. The event was hosted by the U.S. Food and Drug Administration (FDA) at the White Oak Campus. Due to COVID-19 restrictions, in-person attendance was limited to 25 people. An additional 128 people joined the event virtually via Zoom. Distinguished guests included the Deputy Surgeon General, RADM Denise Hinton; Dr. Janet Woodcock, Principal Deputy Commissioner of the FDA; Chief Professional Officers from other categories; and FDA

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## Flag Officers.

The Change of Command was officiated by the EPAC Chair, LCDR Praveen K.C. After the opening, the official party was invited to the conference room with full ceremonial activities, including Color Guard, Bos'n, Sideboys, and more. After the national anthem and the PHS march, the invocation was conveyed by CAPT Jill Hammond, who also later provided the benediction.

Dr. Woodcock provided the opening remarks and recognized the achievements of RADM Hinton, the former FDA Chief Scientist and now Deputy Surgeon General. She highlighted that over 1,100 PHS officers are assigned to the FDA in various capacities including science, research, managerial support, and multidisciplinary positions. Dr. Woodcock shared that of the 349 engineers in the PHS, 81 reside at the FDA. She expressed that engineers have the expertise and broad perspective necessary to effectively tackle the full range of difficult public health issues the FDA confronts. Dr. Woodcock thanked CAPT Dieser for his service and congratulated RDML Wang on his appointment as the CPO. In quick succession, Dr. Woodcock proceeded to recognize all the Flag Officers and distinguished guests, specifically four FDA Flag Officers – RADM Goldman, Chief Medical Officer for Food Policy and Response; RDML Araojo, Commissioner for Minority Health; RDML Jones, Deputy Director of the Office of Counterterrorism and Emerging Threats; and RDML Boyd,



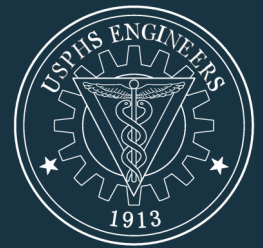
Change of Command (L to R): RADM Hinton, RDML Wang, RADM Goldman, CAPT Hammond, CDR Adeuya, LCDR Martin, LCDR K.C., LCDR Simpson, LCDR Dar, LCDR Eapen, LCDR Bandukwala, LCDR Gu, and LT Price  
(photo courtesy of LCDR David Dar)

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Director of the Office of Regulatory Programs. Dr. Woodcock closed her remarks by encouraging PHS Officers to consider the many opportunities for professional growth at the FDA, as exemplified by these Flag Officers.

CAPT Edward Dieser, the 14<sup>th</sup> Engineer CPO, thanked EPAC for the loyalty and support provided to him and his family during a difficult time. He reminded officers that the engineering profession remains crucial to the PHS mission to protect, promote, and advance health and safety. He encouraged officers to remain ready to respond and be willing to face uncertainty and risk in delivering health solutions. CAPT Dieser highlighted that as an engineer, lawyer, and health professional, RDML Wang is equipped to provide reliable assessments, solutions, and counsel through the continued evolution of our service. CAPT Dieser wished RDML Wang success in his tenure and reminded him of the amazing support he can expect from EPAC in his tenure as the 15<sup>th</sup> Engineer CPO.

RADM Hinton served as the presiding officer and reminded the audience that the partnership between scientists and engineers was pivotal in determining the genetic structure of the third COVID variant within weeks of its discovery. She expressed that the work of our engineers is key to prevention of disease, injury, and exposures and is vital to the re-establishment of community functions during response and recovery operations. She acknowledged the accomplishments of CAPT Dieser and congratulated RDML Wang on his selection as the new CPO.

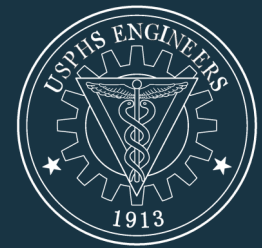


RADM Hinton pinning 15<sup>th</sup> Engineer CPO, RDML Wang

RDML Wang provided brief remarks, thanking RADM Hinton and CAPT Dieser for their support. He acknowledged the other CPOs in attendance virtually and thanked RADM Goldman for attending in person. RDML Wang expressed how engineer officers are uniquely equipped to apply engineering practice and technologies to innovate within the Corps and implement the strategic priorities of the Office of the Surgeon General. He committed to advocating for the needs and interests of engineers to ensure that engineer officers are proficient, valued, and effective assets and agents of change as well as empowering officers to adapt and respond to mission needs.

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## Engineer Awards Ceremony

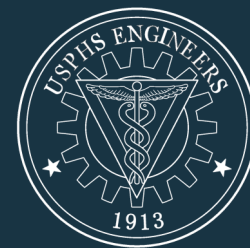
EPAC hosted the annual PHS Engineer Awards Ceremony to formally recognize and celebrate engineers from across the federal government in service to our country. The 2022 award ceremony was officiated by the EPAC Chair, LCDR Praveen K.C., in conjunction with the Change of Command Ceremony on FDA's White Oak Campus. RDML Wang provided remarks for the ceremony and each award recipient participated virtually and provided comments. The three 2022 awards presented included the PHS Engineer Responder of the Year, the RADM Jerrold M. Michael Engineer Award, and the PHS Engineer of the Year.

### 2022 PHS Engineer Responder of the Year: CDR Abraham Marrero

CDR Marrero is a Regional Emergency Coordinator (REC) for the Assistant Secretary for Preparedness and Response (ASPR) in Region 6. He holds a Master of Arts in Disaster Management, Graduate Certificate in Global Health Engagement, graduate education in Organizational Leadership, Bachelor of Science in Electrical Engineering, and an Associate in Applied Science (Nuclear Technology). CDR Marrero is receiving the 2022 Engineer Responder of the Year as a career responder deploying in many roles. In his role as Deputy Federal Health Coordinating Official for the migration crisis, he successfully guided strategic decisions and coordinated NDMS assets to immediately prevent and mitigate a humanitarian crisis on US soil. In his role as Incident Commander of the Dallas Emergency Intake Site, he managed emergency shelter operations for over 2,700 unaccompanied children. Serving in this role, he successfully coordinated a deployment of over 52 PHS officers into an organized incident command structure within 36 hours, a feat necessary to provide 24/7 oversight and preserve the health and safety of the unaccompanied children in federal custody.



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## 2022 RADM Jerrold M. Michael Engineer Award: CAPT Mathew J. Martinson

CAPT Martinson is the Chief of the Permitting, Drinking Water, and Infrastructure Branch at EPA Region 10. He holds active Professional Engineer Registration and is Board Certified in Environmental Engineering through the American Academy of Environmental Engineers and Scientists. CAPT Martinson is receiving the 2022 RADM Jerrold M. Michael Engineer Award for leading and supporting over 120 individuals as a supervisor or higher-level manager. Through supervisory and managerial roles, CAPT Martinson has guided and supported continuing education and development and provided teams and individuals with collateral or interim assignment opportunities. In his role as a Branch Chief, he supervises two section managers (engineers), both of whom were new to supervision before assuming their current positions. He also organized a series of 17 webinars supporting the development of engineering and technical staff before Zoom or MS Teams webinars were the norm.

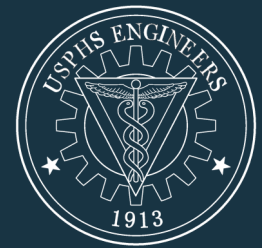


## 2022 PHS Engineer of the Year: LCDR Chaolong Qi

LCDR Qi is a Senior Research Engineer and Project Officer at the National Institute for Occupational Safety and Health (NIOSH) within the Centers for Disease Control and Prevention (CDC). He is stationed in Cincinnati, Ohio, where he holds a P.E. license, obtained a Ph.D in Chemical and Environmental Engineering from Washington University in St Louis, and received a postdoctoral training in Mechanical Engineering at the University of Minnesota. LCDR Qi is receiving the 2022 PHS Engineer of the Year for completing two research projects and leading another three as a research engineer and principal investigator. LCDR Qi has served in the role of Acting Deputy Chief of the Engineering and Physical Hazard Branch. In this leadership capacity (O-6 billet), LCDR Qi co-managed a branch of 39 engineering researchers and staff with a \$4.5 million budget for three months while maintaining his own rigorous research agenda. LCDR Qi served in leadership roles during five deployment tours where he led the Technical Assistance Unit of the Worker Safety and Health Team (supervising 30+ deployers) for four weeks and the Industrial Hygiene Group for six weeks (supervising 18 deployers).



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## CAPT Dieser's Remarks from Engineer CPO Change of Command Ceremony

Engineers and Friends,

Thank you for your loyalty and support to me and my family in our time of need. We continue to work through several significant health challenges, including my son's cancer treatment. We remain focused on complete recovery for all of us. Our journey will continue for many months and we are thankful for the strong support from our family, friends, colleagues, and faith community.

The engineering profession remains critical to all that we do as a Nation and world leader. Similarly, our profession remains critical to our US Public Health Service mission to protect, promote, and advance health and safety.



The PHS Engineer motto is "Machinatores Vitae: Paratus, Volens, Peritus." It begins with "ENGINEERING FOR LIFE." As engineers, we are life-long problem solvers that make better health and life possible.

As PHS Engineers – we remain **READY** to respond at any time, **WILLING** to face uncertainty and risk, and **ABLE** to deliver health solutions based on our expertise. "Engineering for Life: Ready, Willing, Able." This is our motto – this is the azimuth that leads us through the rough seas of life's challenges.

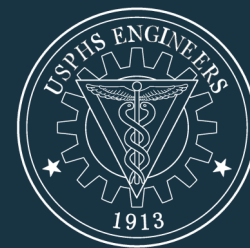
It is my greatest career honor to serve as your 14<sup>th</sup> Chief Engineer. Your resilience, dedication, expertise, and selfless service sustained me as it sustains the advancement of health. I am assured of your capabilities and capacities to excel.

I am also assured of the ongoing leadership of our Category. As an engineer, lawyer, and health professional, RDML Wang affords us reliable assessments, solutions, and counsel through our continued evolution as a Service. He is the standard bearer of our motto, and is steadfast on the watch.

Sir, our engineers will amaze and sustain you in your tenure as our 15<sup>th</sup> Chief Engineer. Congratulations in this greatest of career honors!

I wish you Fair Winds and Following Seas in your appointment. And I look forward to supporting you in our Service of Health.

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## 2021 SAME DC Post Military Branch Service Award

On December 10, 2021, the Washington DC post of the Society of American Military Engineers (SAME) hosted its Annual Holiday Party at the Army and Navy Club at Farragut Square to celebrate the award winners of our local Military Branch Service Members and featured the members of our Leadership and Mentoring Program, and Team River Runner. On this day **LCDR Praveen K.C.** was recognized with the **2021 SAME DC Post Military Branch Service Award** for the U.S. Public Health Service (USPHS) for his contributions to Patriotism and National Security during 2020 and 2021 deployments. His efforts have also been highlighted in The Military Engineer May-June edition and presented during the December 2020 SAME Health Engineering Task Force meeting. CAPT Jennifer Mosser presented the award to LCDR K.C., who dedicated this achievement to his deployment teams.

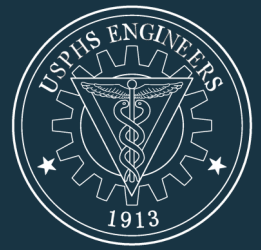


LCDR K.C. with fellow awardees



Pictured (L to R) CAPT Mosser, CDR Cox, LCDR K.C., CDR Coburn, and LCDR Simpson

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## PHS “Hat Trick” at the SAME’s Washington DC Post Award Program

On January 20, 2022 three officers scored awards during the 36<sup>th</sup> annual awards lunch at the National Press Club in Washington, DC. **LCDR Praveen KC, PE, CEM, LEED GA; CDR Samantha Spindel, PhD; and CAPT Nelson Mix, PE, CHMM, F. SAME** were in the spotlight at a major event hosted by the Society of American Military Engineers (SAME) Washington DC Post. The DC Post has over 1,700 members, 170 sustaining members, 50 flag grade officers and is the largest post in the Society.

The Post selected LCDR KC and CDR Spindel to each receive the Outstanding Contributions to the Engineering Profession Award. Nomination criteria is for *“Eminent and notable contributions in engineering, design, or construction in the past five years.”* They will compete at the national level for the SAME Goethals Medal.

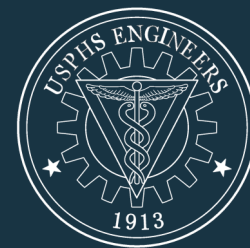
CAPT Mix received the Post Service Award. Nomination criteria is for *“Individuals who have supported the Post over at least a period of three years and have contributed to the success of the Post.”* He will compete at the National level for the SAME Post Service Medal. CAPT Mix was the Post President in 2008 and has since served as the Chair for Readiness, Audit, and the Centennial Task Force.

Also, **CAPT David Harvey, PE, MPH** was installed as the 1<sup>st</sup> Vice President of the Post for 2022.



LCDR K.C. and CAPT Mix, at the 2022 SAME DC Post Awards event, National Press Club, Washington, DC

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## Staff Ride to the Columbia River Quarantine Station: Re-Learning Public Health Lessons

LCDR Matty Haith, LCDR Gary Riley & LT Kyle Menday

In December 2019, four active duty Public Health Service (PHS) officers traveled three hours from Seattle to visit a little-known museum in a sparsely populated part of Washington near the mouth of the Columbia River. The weather was dreary and raining, but in some ways that was the perfect day for a visit to learn and better appreciate life and operations at the Columbia River Quarantine Station, now known as the Knappton Cove Heritage Center.

Upon arriving at the museum, the officers met a retired medical officer and USPHS captain, Jay Paulsen, as well as museum staff to conduct a staff ride. The “staff ride” is a concept widely used by officers in the Armed Forces to dive deeper into a military operation, battle, or campaign. The term dates back to when officers would conduct the event



Army cavalry officers conducting a staff ride (painting by Don Stivers)

on horse-back by riding across the battlefield and key

terrain to discuss and learn firsthand about the geography, political atmosphere, military technology, and how these factors affected leaders’ decisions and the aftermath of the engagement. A staff ride is not a lecture, though. Officers are expected to research different aspects of the operation, present this information to their peers, and engage in deep discussion about the events that unfolded. The goal is for officers to not just know what happened but why and, most importantly, what lessons learned can be used in contemporary operations.



Knappton Cove Heritage Center Entrance Sign

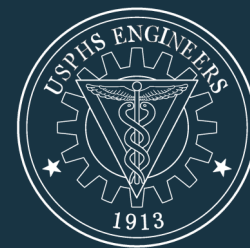
The staff ride to the quarantine station proved to be different than most staff rides. There was no open field like the scene for Pickett’s Charge, the fatal chokepoint of

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# MACHINATORRES VITAE

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Burnside's Bridge, or the high cliffs that served as obstacles for the rangers landing at Pointe Du Hac. This site served as a quarantine station for immigrants and commercial ships arriving to the United States between 1899 and 1938. Several of the buildings still stand where sailors and immigrants would arrive to be quarantined. The PHS officers gained respect for the facilities and devices used to disinfect and separate the travelers. The desolate location on the Columbia River was intentional, to prevent interaction with population centers such as the point of entry across the river at Astoria, OR before traveling on to Portland.



Columbia River  
Quarantine Station



National Park Service, (active and retired) and museum staff

CAPT (Ret.) Paulsen, a former medical officer, gave a briefing on the medical screening that immigrants received before being allowed passage into the US, and the museum displayed artifacts and pictures to compliment the briefing. CAPT Steve Anderson, a now retired engineer officer having formerly served with the Indian Health Service, National Park Service (NPS), and the Environmental Protection Agency (EPA), presented on the facilities at Knappton Cove and quarantine stations throughout the United States, including the more famous Ellis Island. LT Kyle Menday, a nurse officer with ICE, presented on the history of immigration and how it changed during the course of ear-

ly American history. LCDR Gary Riley, an engineer stationed at the NPS, presented on the conditions of the vessels traveling to the United States and the methods they used to prevent, often unsuccessfully, disease exposure amongst crew and passengers. LT Matty Haith, an engineer also with the NPS, presented on the history of the PHS pertaining to immigration and disease control, while Nancy Anderson, Director of the Knappton Cove Heritage Center, gave a narrated tour of the grounds and complex. Nancy is not only the director of the museum, but also a former resident, though you'll be happy to know it was after it was a quarantine station, when the complex was sold to her father.

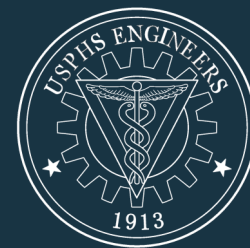
Certainly, none of the attendees or anyone could have foreseen the relevance of quarantines in the coming months. The officers prepared a poster presentation for the 2020 PHS Commissioned Officers Symposium but were never able to present, ironically, due to the COVID-19 pandemic. As the months played out, the officers served on

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their own deployments while also facing COVID-19 challenges at their duty stations. Through the past two years, the officers reflect on the lessons learned from the early quarantine stations and the contemporary environment.

Historically, the PHS saw greater value in forward deploying officers to points of departure as this was seen as the most effective way to prevent disease to spread on the ship and prove more effective in preventing disease spread upon arrival. This is a reminder that public health knows no borders and defense against contagious diseases means defenses at home and abroad.

Unfortunately, the research also presented a darker side of the USPHS. Admiral Rupert Blue served as a medical screening officer for immigrants and responded to disease outbreaks in San Francisco, New Orleans, and Honolulu before becoming the 4<sup>th</sup> Surgeon General and even a health advisor to the League of Nations. However, primary source documents revealed that the former Surgeon General was also a proponent of eugenics and, unfortunately, Admiral Blue was not alone in his beliefs within the PHS community. Most of the 135 Commissioned Corps officers were medical screeners in 1910, with several prominent officers proclaiming the so-called “science” of eugenics and serving in the American Breeders Association.<sup>1</sup>



USPHS memorabilia from the quarantine station

A key statistic suggests an uneven application of medical screenings on immigration: about 1% of immigrants were barred from entry to the United States after screening at Ellis Island; however, 17% of Asian immigrants were barred entering at Angel Island, California.<sup>2</sup> Racial prejudice would come to the forefront again during the tenure of the following Surgeon General and USPHS involvement in the Tuskegee Experiments.

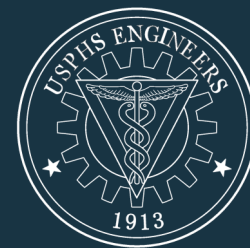
This upsetting past provides lessons for the present. During the pandemic, hate crimes towards Asian-Americans increased, and unscientific misinformation dominated headlines. Misinformation is one of the nation’s greatest threats to public health, as detailed in the recent Surgeon General’s Advisory “Confronting Health Misinformation: The U.S. Surgeon General’s Advisory on Building a Healthy Information Environment.” Positioning the PHS to confront health misinformation is key to our mission.

<sup>1</sup> Lombardo, Paul A., and Gregory M. Dorr. “Eugenics, Medical Education, and the Public Health Service: Another Perspective on the Tuskegee Syphilis Experiment.” *Bulletin of the History of Medicine*, vol. 80, no. 2, The Johns Hopkins University Press, 2006, pp. 291–316, <http://www.jstor.org/stable/44448396>.

<sup>2</sup> Markel, Howard, and Alexandra Minna Stern. “The foreignness of germs: the persistent association of immigrants and disease in American society.” *The Milbank quarterly* vol. 80,4 (2002): 757-88, v. doi:10.1111/1468-0009.00030

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As the nation and world are hopefully on the receding side of the pandemic, how can PHS capture its lessons learned? The United States has 65% more deaths per capita than the average OECD country since the start of the pandemic.<sup>3</sup> This equates to approximately 300,000 more deaths than if the United States had performed on par with other high-income countries. How can we do better? The PHS has done a lot of great work, but now is the time for “staff rides,” so that we can learn from what worked well nationally and at the local level.

<sup>3</sup> OECD data – Healthcare at a Glance 2021. <https://www.oecd.org/coronavirus/en/data-insights/excess-mortality-since-january-2020>

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## Perspectives on Integrity and Excellence

CAPT Nelson Mix

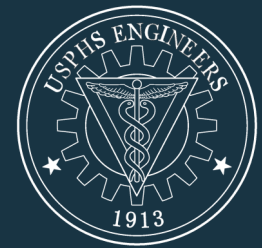
This is my final and 24<sup>th</sup> EPAC article in uniform, as I will retire after 30 years of service on May 1, 2022. I have previously written [A Perspective on Leadership](#) and [A Perspective on Service](#). It is only appropriate that I address these remaining, intertwined two Corps core values. (Remember, the order is **LSIE – Leadership, Service, Integrity, Excellence** – not the backronym LIES!) Here are a few thoughts and definitions. **Integrity** *We exemplify uncompromising ethical conduct and maintain the highest standards of responsibility and accountability.* I remember the USPHS Scientific and Training Symposium in College Park, MD in 2012. During a presentation, I compared integrity to an automated data analysis algorithm by saying “It works for you when nobody is watching.” We hear that our integrity should never be questioned, but we are also taught to question things.



CAPT Mix’s final advice to all officers is “Be true to yourself, and be at peace”

**Excellence** *We exhibit superior performance and continuous improvement in knowledge and expertise.* I think excellence is fundamental to engineering. Engineering is based on accurate measurements, reliable and complete data, and optimization. However, we may have to work at our values to overcome some vices and human nature. Take, for example, writing: do we “dot every ‘i’ and cross every ‘t’?” Similarly, an executive said to me when I was mid-career: “You write fine, but you don’t proofread” – an example of excellence in need! I also think “the pursuit of excellence is excel-

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lence.” (A famous martial artist once said, “The act of trying to be great is greatness in itself.”) Also, please remember, “PHS awards represent excellence,” and “PHS awards should be excellently written!” Excellence is a daily habit, not a single act.

Further, I want to mention pride – the good kind that can be a part of integrity, not the arrogant, conceited kind. We should take pride in what we do. If we fall short of excellence, we should be grateful and optimistic about what we did accomplish, and always try our best. I remember feeling inspired by RADM Williams after a February Engineers’ Breakfast at the Uniformed Service University in the early 2000s. I was an O-4, new to DC, and decided then to make the goal to reach O-7. I thought “What is the worst that happens? I make O-6?” We all fall short. CAPT (Ret.) Andy Smith once said to me: “You’ve raised the bar” (referring to my efforts to help officers at the EPA); it was one of the nicest things ever said to me. I am proud of my attempts at excellence.

I’ve had several award write-ups that were not endorsed, and a few that were lost. Recently, my end of career DSM was downgraded to an MSM. I’m not exactly sure why, and I don’t begrudge anyone about it. I requested it be withdrawn. It has no cash value and would only sit in a shadow box next to the MSM I’ve had for several years. Is this an example of (or a lack of) Pride? Excellence? Integrity? Regardless, I’m reminded of the words of Ralph Waldo Emerson: “The reward for a thing well done is to have done it.” Let’s always strive to embody the four PHS Corps core values!

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## Engineering Control with Ventilation and Filtration: from Agency Research to Emergency Responses

LCDR Chaolong Qi

As we approach the third year of the COVID-19 pandemic, there are many reasons to reflect. Through my eight deployments by both the Centers for Disease Control and Prevention (CDC) and Commissioned Corps Headquarters (CCHQ), I feel very fortunate to have the opportunity to apply the engineering expertise from my agency research to emergency response missions.

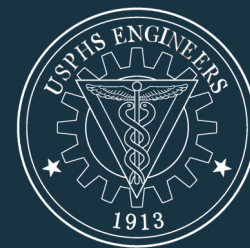
As a research engineer assigned to the National Institute for Occupational Safety and Health (NIOSH), a component of the CDC, I have been leading a research project to address outbreaks of silicosis in the stone countertop industry. Many of us may have noticed the increased use of engineered stone countertops in new or renovated build-

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ings, maybe in our own homes. In the United States, the import of engineered stone increased by 64.8% from 2018 to 2019. Many engineered stones contain greater than 90% crystalline silica by mass. This high percentage of silica increases the risk to workers of contracting silicosis during manufacturing, fabrication, and installation. Indeed, outbreaks of silicosis in this industry have been reported in recent years, with 18 cases, including 2 fatalities reported in the U.S. in 2019. Through extensive field investigation, we found that ineffective wetting methods contributed to unsafe exposures, even under wet operations. By designing a sheet-water-wetting method, we were able to suppress dust formation and reduce worker exposures to levels below the permissible exposure limit set by the Occupational Safety and Health Administration (OSHA). Concurrently, I also led the research of a second engineering control method to reduce silica exposure by using ventilation and air filtration. By using a mobile dust control booth, we found that workers silica exposure can be reduced by nearly 80%. While we are still optimizing this control method, one major stone countertop fabricator has adopted the research findings and implemented these controls in all of their fabrication shops across the U.S.

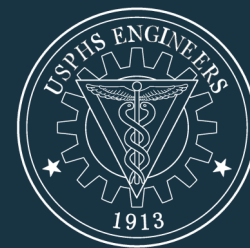


A mobile dust control booth modified and deployed to a stone countertop fabrication shop for field evaluation of its performance in reducing workers' exposure.

This is a study that draws broad attention due to the global outbreak of silicosis and fatalities in the U.S. A report from the National Public Radio sounded the alarm of the outbreak, and I was able to offer my opinion during an interview with them by saying "it's a solvable problem" because of our promising research findings on engineering control solutions, which were covered in more detail during my interview with the Stone Magazine. The bottom line is that nobody should die or suffer from silicosis to make beautiful countertops 21 years into the 21<sup>st</sup> century. There are a rapidly increasing number of workers entering this industry, and they deserve to be protected from unnecessary exposure. Engineers can offer significant contributions to this cause.

As PHS engineers, we have unique opportunities to bring our engineering expertise into practice during emergency responses. My experience at NIOSH on ventilation

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and filtration was very well applied during my deployments. At the beginning of the COVID-19 pandemic, little was known about transmission characteristics of SARS-CoV-2, a novel infectious pathogen that causes COVID-19. Once it was generally accepted that the virus was spread through the air, the expertise in ventilation, filtration and other engineering control measures was in high demand from federal, state, and international groups.

I had the opportunity to contribute to the development of a few high-profile guidance and response tools, some of which had broad applications in the emergency responses by the CDC and other agencies. But what left me with the most satisfaction is the field work on providing specific ventilation assessments and consultation to improve indoor air quality at facilities housing vulnerable populations. During the development, I used the same assessment tools as used in the stone countertop study, such as an air velocity meter, handheld carbon monoxide monitor, and air capture hood, to assess building ventilation and to provide specific recommendations for improvement.

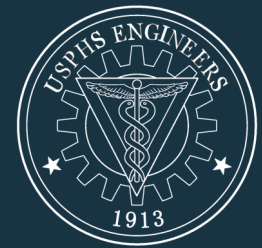
Both the agency work in the field and deployments give me great satisfaction and a better understanding of "Service," one of the four core values in the USPHS. I am very grateful for these opportunities to practice my engineering and leadership skills. I hope my experience will help inspire fellow engineers to continuously make professional strides to serve our mission of protecting, promoting, and advancing the health and safety of the nation.

*Disclaimer: The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. Mention of any company or product does not constitute endorsement by the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.*



LCDR Qi evaluating an air handling unit that was servicing a shelter housing vulnerable population

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## Diverse Application of Engineering Skills at an Unaccompanied Children Emergency Intake Shelter

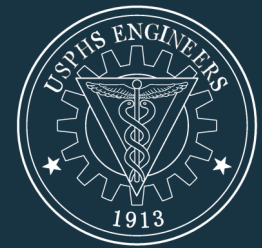
CDR Matt Mergenthaler, CDR Tom Armitage & LCDR Travis Sorum



Engineers do not shy away from technical duties yet are capable of and do so much more. Engineering projects involving drinking water, wastewater, safe buildings, bridges and roads can easily be taken for granted, but necessary for communities to function and thrive. Successfully completing important infrastructure projects requires not only technical skills, but also strong organizational skills, leadership, adaptability, and team-building skills with diverse internal and external stakeholders. Deployments require the same type of skills and dedication to protect the health and safety of the nation.

Last year, large numbers of unaccompanied children (UC) entered the United States and necessitated establishment of emergency intake shelters (EISs) within short response times. The Secretary of Health and Human Services (HHS) called upon civilians and USPHS alike to assist with setup and operations of such sites. Due to the critical need and the number of EISs that were set up across the nation, engineers in the USPHS responded admirably in large numbers. The deployment team at a UC EIS in Erie, PA consisted of roughly 70% engineers with varied specialties and roles. PHS Engineer Officers led in every aspect of operations including Deputy Incident Commander, Officer in Charge, Chiefs of Planning, Operations, Logistics, and Safety, setting up sites, leading intake processes, providing essential care/activities for the UCs, medical support, COVID testing, translating, and facility maintenance.

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During the deployment at an EIS in Erie, Pennsylvania, engineers filled many non-traditional roles with dedication, professionalism, resilience, noteworthy contributions, and lifesaving efforts. The high mission tempo and limited number of staff required many officers to work over 14-hour days in multiple roles. PHS Officers served and led in the following roles/efforts:

- Organized and trained PHS Officers to administer COVID testing. Planned and executed measures to mitigate COVID spread within the facility.
- Organized daily activities, meals, and operations to enhance the morale of the children.
- Provided medical support with intake processing, essential services, triaging patients, assisting medical teams with MMRV vaccinations, lice treatment, and dental reviews.
- Conducted daily facility inspections including structural, fire safety, electrical, gas, plumbing/HVAC, solid waste, and kitchen to ensure safe and sanitary operation of the EIS facilities.
- Assisted dieticians and advised contractors on culturally appropriate foods to prevent malnutrition.
- Created and executed standard operating procedures (SOPs) for operation of the EIS facilities. The SOPs were handed off to contractors as a detailed playbook from UC intake to formal discharge.
- Used engineering and building maintenance acumen to mitigate fire hazards and improve HVAC and plumbing systems to keep facilities functional and safe. Safely evacuated UCs when necessary.

From the beginning of the deployment, engineers led and worked in challenging situations. Due to a shortage of resources, CCHQ was not able to send a pre-trained Incident Command Structure (ICS) staff. As such, the first few engineers on site became the onsite points of contact and filled leadership roles for the entire ICS structure, including Deputy Incident Commander and Officer in Charge (OIC). There were 11 officers onsite for the first three days (including nine engineers), and 17 on the morning of the fourth day when the UCs arrived. Intense planning and creation of many SOPs necessitated engineer officers to lead and work on many tasks. The same multi-duty environment continued even after the full allotted deployment team arrived (44 officers, including 30 engineers). With the safety and health of the UCs and their needs being paramount, it meant the team had to leverage every asset available, including personnel from HHS, DHS, and FEMA sent to the site by their agencies.

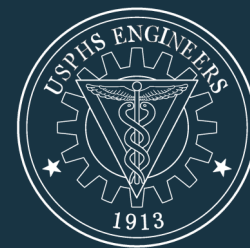
The team operated without a contract or a Contracting Officer Representative (COR) on site until the 11<sup>th</sup> day. The OIC and team communicated with the contractor to address facility improvements. This situation meant careful constructive conversations with documented reasons for a given need or safety issue. The OIC empowered engineer officers to use their technical and project management skills to look for opportunities for improvement.

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The ICS chiefs and OIC selected leads for the various operations based on officers' skills and enthusiasm for a particular task. Leadership worked with PHS officers and the other agency personnel to find a pediatric doctor, nurse, and pharmacist. The doctor then reached out to local medical teams to find other volunteer civilian doctors to help during the intake process with engineers acting as medical aids/triage and COVID testing personnel. Early on in the deployment all engineers were trained and performed COVID testing. Some engineers stayed in medical support roles for the entire deployment. Hence, the deployment team supported the medical needs of the mission without a formal medical team.

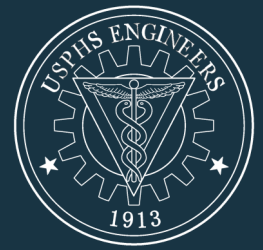
Other engineers continued to take on roles as difficult situations arose. Spanish speakers and individuals with building maintenance and childcare skillsets played key roles. There were many examples of engineer officers going above and beyond. A Lieutenant Junior Grade Engineer officer led the Spanish Translation Team while developing schedules to cover medical and team needs. A Lieutenant Commander Engineer officer worked with the only PHS Dietician to coordinate and facilitate lice treatments. Engineers worked on the facility concerns, including an inoperable fire detection system and inadequate air handling systems (meaning no heat in parts of the building). Temporary solutions were developed to address the various problems including a fire watch system, which was approved by the local fire chief.

All efforts of the PHS deployment team in diverse roles made for a successful deployment. The following are the major impacts of effective and thoughtful leadership demonstrated in this deployment:

- PHS engineers effectively led in all aspects of ICS and in many critical roles within the deployment efforts using project management skills honed daily at their duty stations.
- PHS engineers protected the health of the children throughout the deployment by supporting medical and facility personnel through challenging situations.
- PHS engineers' involvement ensured that the UCs received the standard of care required.
- Engineers led emergency and safety procedures ensuring safety and health of UCs.

PHS engineers lead daily at their agencies from field to the division director levels with planning, design, coordination, and project management. These skills translate directly to deployment requirements from ICS leadership to supporting various needs and requirements, clinical and non-clinical. Engineering skills of problem solving, organizing complex projects, and working with diverse stakeholders ideally match many diverse deployment and ICS requirements. Engineers lead and adapt to fill the needs of the USPHS and their agencies' missions everyday as well as in emergency circumstances.

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## Q&A with CAPT Kris Neset, PE, MSM, Navajo Nation Water Access Team (CDC/IHS)

Name of Deployment: Navajo Nation  
Water Access Mission

Deployment Team: Navajo Nation Water  
Access Team (CDC/IHS)

1. What is your current assignment in  
USPHS?

Engineer Consultant with the CDC –  
National Center for Environmental  
Health (NCEH)

2. What was the mission of your de-  
ployment?

- Using available databases, advised on activities to identify homes/  
communities without access to piped water sources or with intermittent  
access to potable water: Community rankings and GIS water point survey  
dashboard were completed.
- Recommended interventions including homes at-high risk for COVID and  
identified resources to address lack of water access.
- Advised on implementation of Navajo Nation approved recommendations  
to improve access to safe water.
- Advised and developed locally appropriate communication strategies about  
water access.

3. What was your understanding of your role before deployment? Was that your  
role during your deployment?

My understanding of my role before deployment and my actual role during de-  
ployment lined up well with each other. The mission was well-planned with a  
lot of coordination between IHS, CDC, and the Navajo Nation prior to sending  
out the first IHS/CDC field team. I was the “subject matter expert,” CDC Water  
Engineer that would be working with a CDC Environmental Health Officer and  
a CDC Epidemiologist along with IHS Engineers from headquarters and the  
Navajo Area.

4. What would you consider your major accomplishment?

We were the 1<sup>st</sup> of a series of teams to complete a 30-day rotation based out

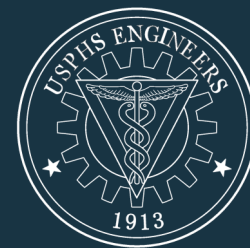






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of Gallup, NM to support the Navajo Nation Water Access Mission. I felt like our initial team set a solid roadmap for the follow-on teams, who did an outstanding job of operationalizing the plan. About 50 transitional watering points were being set up as part of the Navajo Nation Water Access Mission. In addition, water hauling missions and hand washing stations are being completed all over the Navajo Nation.

5. What were some of the challenges that you faced or experienced during your deployment?

The City of Gallup and the Navajo Nation were on various curfews and lockdowns during our 30-day deployment, site access was difficult at times. The Navajo Nation is a vast area and many areas are remote so travel time for site visits and cell phone communication was a challenge. Prior planning and coordination was critical before traveling to make wise use of time.

6. What are some of your best memories from the experience?

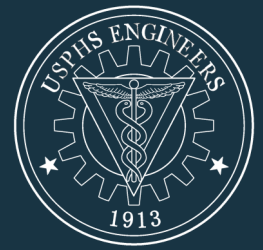
Working well together as a joint CDC/IHS team of engineers and other health professionals towards the mission of increasing water access to the Navajo Nation. The Navajo Nation is a beautiful area and the people were very friendly even under the difficult circumstances during the height of the COVID-19 pandemic in the area.



7. Do you have any advice to share with fellow engineer officers that are responding to address the pandemic?

Ask questions prior to deployment to help set yourself up for success while

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on deployment. With any deployment, you will be busy and most likely working longer than normal work hours and 6 to 7 days per week; however, take time for self-care. Self-care means different things to different people. I like physical fitness so for me I carved out some time each evening after work to do some trail running in the Gallup area or did a Crossfit type workout on the non-running days. This helped keep my mental state in-balance and I feel it helps me be more productive during daily work tasks.

8. How was your post deployment/reintegration experience? Was it a smooth transition back to your daily activities?

CDC was supportive in post-deployment services offered as well as post-deployment de-briefs completed. It was a fairly-smooth transition back to daily activities. I was new to CDC and deployed right after completing in-processing, so the timing worked out well.

9. Please feel free to share anything else regarding your deployment to highlight your experiences or to increase the readiness of fellow officers.

It was a fulfilling mission both professionally and personally. Be ready to go when called upon and expect 30-day deployments to be the norm in the future.

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## Expediting Water Relief for the Navajo Nation

Anne Taylor

In April 2020, as the magnitude of the coronavirus pandemic and its impact were becoming readily apparent, Commander Ryan Clapp, a staff engineer with the Indian Health Service (IHS), flew to Albuquerque. Upon arrival, he bought eight pay-as-you-go cell phones from a retail store and loaded data collection apps on them. Within 48 hours, he had a team of Navajo Area IHS technicians spread out to map water access points on the Navajo Nation using the mobile devices.

While he was in the air, IHS headquarters staff were developing a comprehensive field survey, talking to the Navajo Tribal Utility Authority, and doing all the background work. "We were building things as we were going, and it was moving very fast," said Captain Ramsey Hawasly, assistant director, Division of Sanitation Facilities Construction at IHS and lead GIS program coordinator.

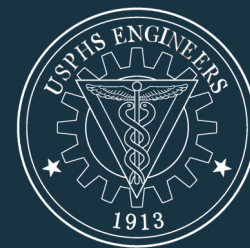
This rapid response was requested by the Navajo Nation president due to the COVID-19 public health emergency. At the time, the Navajo Nation was experiencing the highest incidence of COVID-19 cases in the United States, and the long-standing lack

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of in-home water access was assumed to be a driver of these infections.

The heightened need for handwashing during the pandemic posed a challenge for the many homes without water. For many years, the rugged topography and remoteness of the Navajo Nation has made piping water to homes challenging. Since 2003, IHS and a network of partners have reduced the number of Navajo homes without water access from 30 percent to 20 percent. New funding from the Coronavirus Aid, Relief, and Economic Security (CARES) Act provided the Navajo Area IHS with \$5.2 million, targeted specifically to increasing water access on the Navajo Nation.



(Image courtesy of the Indian Health Service)

The IHS team used a geographic information system (GIS) to map and share construction progress on new water access locations. Many are at or near chapter houses, which serve as county-level governments.

“We were able to collect data in all 110 chapters with just six surveyors, covering an area the size of West Virginia in just two weeks,” said Captain David Harvey, deputy director, Division of Sanitation Facilities Construction at IHS.

### Immediate Short-Term Actions to Improve Water Access

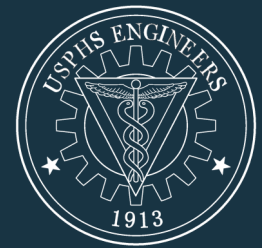
Through the GIS data collection efforts, the CARES Act funds supported the installation of 59 new transitional water point (TWP) connections to existing public water systems; supplied 37,000 water storage containers; distributed 3.5 million water disinfection tablets (where needed); and subsidized the water for people living in homes with no piped water through February 2023.

The data that Commander Clapp and the team collected was critical in identifying locations for needed facilities. It set in motion additional mobile work to design each ac-



A new water access point, now fully operational, was added near the Rock Springs Chapter house. (Image courtesy of the Indian Health Service)

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cess point, calculate construction costs, and place orders for the right amount of pipe needed to make new connections.

### **Building the Capacity to Act Together**

Just four months prior to the start of the pandemic, IHS implemented technology that a group of GIS advocates had been excited to put into action for many years. This group took a change management class to learn how to prepare colleagues for significant process change.

“Luckily, we were already moving in the enterprise GIS direction before the pandemic hit,” said Captain Shari Windt, engineering consultant, Environmental Health Support Center at IHS. “We installed the [ArcGIS Enterprise](#) portal in 2019 and had been working to gain energy behind it.”

The Navajo Water Project provided the opportunity to push digital workflows to the field using a suite of ArcGIS apps—[ArcGIS Survey123](#), [ArcGIS Collector](#), and [ArcGIS Dashboards](#)—to equip field crews with the ability to collect data and provide updates on progress on a central dashboard. Many find that making updates on a shared map leads to new levels of collaboration.

“This project really helped the rest of the program see how beneficial this could be,” Captain Windt said. “Rather than have information stuck in files or drawings, anybody with access can get to it.”

IHS made a big digital leap forward in 2004 with the launch of Sanitation Tracking and Reporting System (STARS). This move consolidated databases that track infrastructure deficiencies in homes and communities; requests for water service to home sites; documents and details of operations and maintenance projects; and service requests. STARS serves as an inventory of tribal sanitation needs, and it put 400,000 homes on the map because the program focuses on serving homes in communities.

“With the STARS system we were able access a lot more data and understand costs really quickly,” Captain Windt said. “Now with GIS, we have the opportunity to combine all individual project drawings into composite drawings and make them readily available to IHS staff as well as our partners. We envision that the tribes will be able to leverage the GIS information gathered by the IHS to improve their operation and maintenance capacity, which supports the water and wastewater facilities constructed with funding from the IHS and other federal agencies. It will allow the IHS to better understand each water and wastewater system as a whole, which will improve the technical support IHS can provide tribes.”

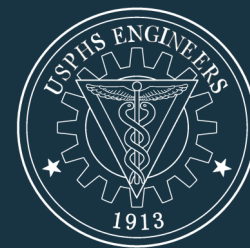
The fast-paced construction lasted from mid-July through September 2020. It was

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guided and communicated through shared maps and plans at each step of the way. An online interactive map marked progress for each chapter. In addition to the online map, a regularly updated map appeared in tribal newspapers because the paper is the primary source of information for many homes.

“We were changing colors on the map, based on whether or not there was an identified transitional water point for each chapter,” said Captain Windt. The map changed when water points were slated for construction, design was in progress, the construction was complete, and the water point was open. A final color was used when a chapter had all the interventions available.

The map guided the workers and the people they were serving to the new TWP. Using GIS analysis, IHS calculated that the average travel distance dropped from 52 to 17 miles, saving people an average of 38 minutes behind the wheel for each trip.

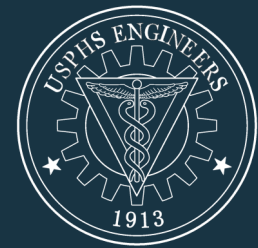


This map shows the status of water access for each chapter on the Navajo Nation. (Click on the image to visit the "Navajo Safe Water" story that won Esri's 2021 Tribal Map Story Challenge in the policy category.)

## Supplying Off-the-Grid Resources

Just as the water access work was wrapping up, the Navajo Nation Department of Water Resources reached out to IHS under a separate request for help on bridging the gap for remote homes without access to a piped water connection.

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DWR requested that IHS provide detailed design project drawings for a water cistern and on-site wastewater disposal facilities. Again, IHS deployed 15 Commissioned Corps engineers and environmental health officers of the US Public Health Service to undertake data collection.

“The cistern project is really beneficial because you can have bathrooms with showers and toilets, and sinks in kitchens,” Commander Clapp said. “The homeowners still have to haul water, but it’s a bridge to more sustainable services such as a connection to a piped water system.”

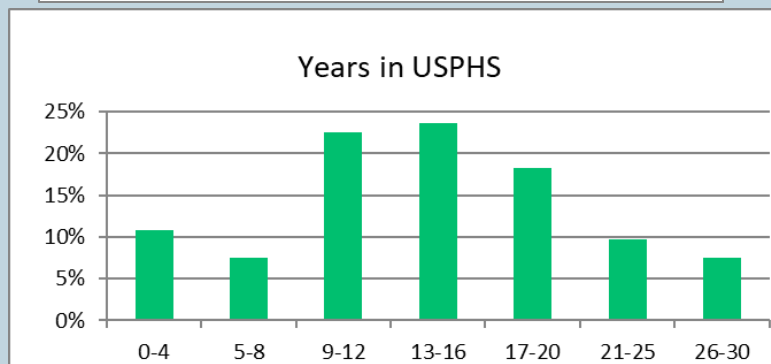
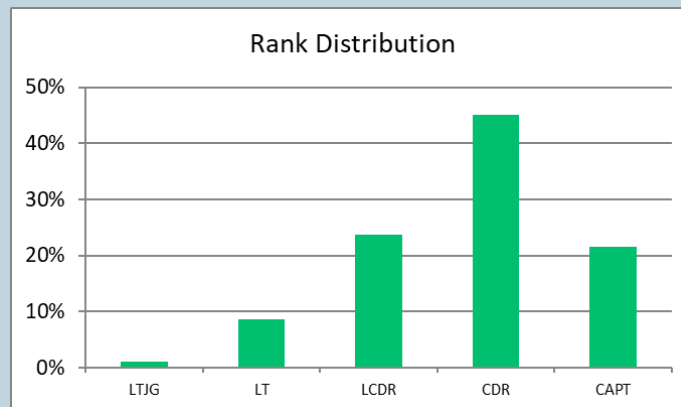
The data in the STARS system combined with analysis in GIS allowed IHS to identify 900 top candidates and provide a map of those homes.

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## Readiness Requirement

**LCDR Michael Tollon (Information Lead, EPAC Readiness Subcommittee)**

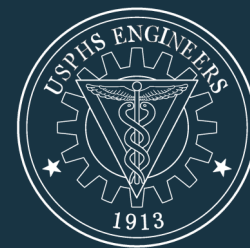
In 2021, the EPAC Readiness Subcommittee (RDS) conducted a category-wide survey on meeting readiness requirements. The survey included asking engineers their biggest challenges in maintaining basic readiness and tips on tackling these challenges. We received 94 survey responses from engineers at varying stages of their careers.





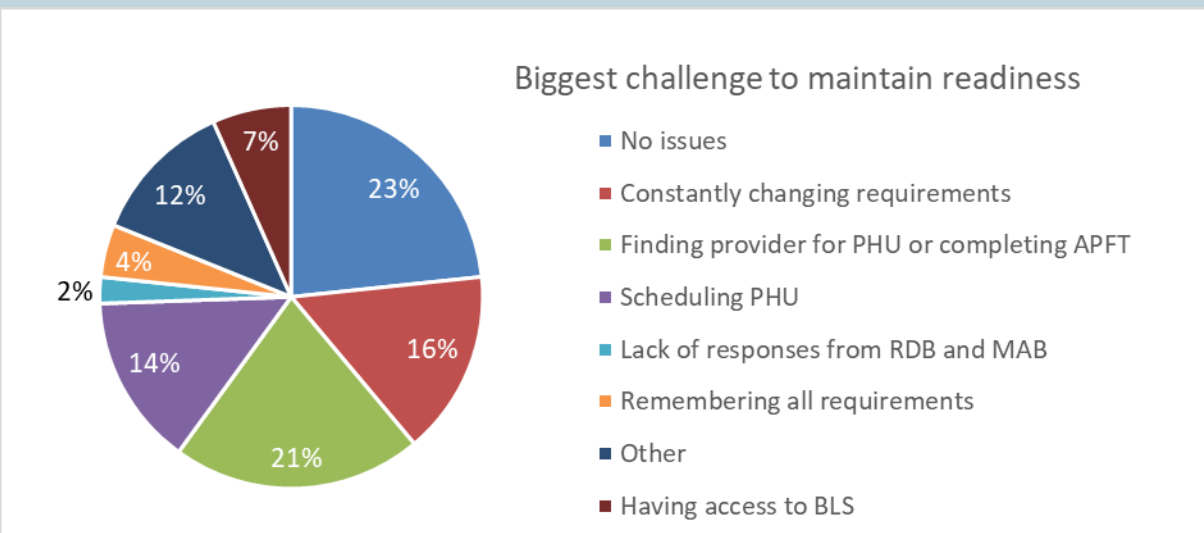
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Engineers reported that to maintain their readiness they periodically check the CCMIS dashboard (42%) or set reminders in calendars (21%) to make sure they are not missing any critical deadlines.

While 23% of officers reported that they did not have concerns about meeting readiness requirements, the biggest reported challenge was completing their Periodic Health Update (PHU) and Annual Physical Fitness Test (APFT) when located in remote duty stations. As you can see below, scheduling and finding a PHU provider when the Officer is not stationed near a military treatment facility (MTF) was the largest reported concern in meeting readiness.



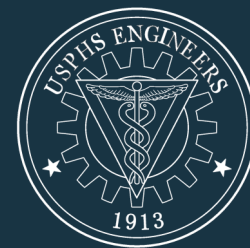
Some officers shared that it has been helpful to broaden their local network of officers to request assistance when needed and gather guidance on meeting readiness requirements. Also, it has been helpful for officers to schedule a PHU appointment far in advance when in a remote duty station.

There also appeared to be confusion about completing an APFT without a fellow PHS Officer physically present as the Testing Official. The current PHS 7044 form allows Officers multiple options for a Testing Official to observe and verify the APFT:

- An officer (any Service) can observe and verify in person.
- An officer (any Service) can observe and verify remotely (via live or recorded video).
- A federal employee non-officer adult (such as, coworker) can observe and verify in person.

Finally, Officers reported difficulty completing the required Basic Life Support train-

*(Continued on page 32)*



ing during the COVID-19 pandemic, and there were inquiries about being able to complete the training virtually. Some Officers stated that they were able to complete the training in two parts: first part is online (for example, [www.worldpoint.com](http://www.worldpoint.com), course #20-3553, and <https://cpr.heart.org/>) and once completed, they can complete the second part at a training station in person.

The Readiness Subcommittee thanks all officers that participated in the survey and welcomes feedback on additional areas of focus. Visit our [website](#) to find more resources related to readiness and deployment.

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## Pursuing an Online Advanced Degree While Working

Career Development Subcommittee

### Why pursue an advanced degree?

One key to career progression in the USPHS is familiarizing oneself with published promotion benchmarks and using them to map out a successful and rewarding career while maximizing readiness to promote to the next temporary or permanent rank. In this article, we will focus on the critical promotion benchmark factor of “Credentials” under Precept 2 - Education, Training, and Professional Development. Specifically, this benchmark factor describes achieving the “Completion of advanced certification or licensure beyond the required, qualifying credential; or enrollment in a degree program beyond the required, qualifying credentials.” ([Benchmarks](#)) Enrolling in and working towards the completion of an advanced degree beyond the required qualifying degree is one method for meeting this criterion. Ideally, the advanced degree education should start before your consideration for T-04/P-03 and confer before consideration for your T-05/P-04 promotion. This article shares the experience of two engineer officers who were willing to share their personal pursuit of an advanced degree—LCDR Tyrrell Lang from the Billings Area Indian Health Service (IHS) and LT Morgan Lee from the US Food and Drug Administration (FDA) Office of Emergency Operations. This article will address several questions on obtaining an online advanced degree and provide information on where officers can view results from a category-wide survey on officers’ advanced degree experience that was completed earlier this year.

### Why did you choose to pursue an advanced degree?

**LCDR Lang:** Upon graduating with a qualifying undergraduate engineering degree, I entered into USPHS service with the IHS in Pierre, SD and immediately began plan-

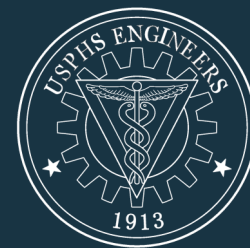
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ning how to meet the category benchmarks to give myself the best chance at successful promotion. I started my career planning by identifying short- and long-term objectives for all promotion levels. One of the key long-term goals I identified was completing a Master's degree. After 4 years of service at an O-2 rank, I researched master's degree programs that would benefit the USPHS and apply to my daily duties as an officer assigned to the IHS. I began by searching the web for distance or online programs and found an overwhelming number of applicable advanced degree options. I next spoke to several senior officers at my duty station who had completed an advanced degree. Many of them recommended that I pursue an online Master of Engineering in Project Management from Montana Tech in Butte, Montana. I reviewed the program that Montana Tech offered and decided to enroll and began pursuing my advanced degree through their distance learning program.

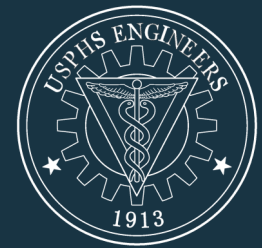
**LT Lee:** After commissioning and talking to other senior officers at my duty station and my career mentors, I knew that a master's level degree was something that I wanted to pursue. I researched various programs, talked with other officers, and used resources on the EPAC website to determine what program I wanted and decided on Engineering Management. I knew I wanted to pursue an online or possibly a hybrid option so I considered both local schools and schools further away from my duty station. I happened to be reading the Society of American Military Engineers (SAME) magazine, *The Military Engineer*, and saw an advertisement for the University of Louisville's Master of Engineering in Engineering Management program, which offered distance learning options and had a reduced rate for military members. When looking further into the program, I decided that this was the right program for me as it had courses that would add value to my agency and the Corps, and there was also sentimental value to me since most of my family went to University of Louisville.

## **Describe your experience completing an online advanced degree while working.**

**LCDR Lang:** Before taking classes online, I was required to travel to the campus for a one-day orientation, print a student ID card, and finalize the enrollment process. I started the program by taking one, 3-credit class per semester for the first two semesters. I soon realized that it was going to take me a considerable amount of time to complete my degree if I continued at this pace. Therefore, in my third semester, I began taking two, 3-credit classes and continued that pace until I had completed the 30 credits required to graduate. The coursework took me two years, or six semesters. I was also required to complete a final project, graduating at the end of my 7<sup>th</sup> semester. All-in-all, my online master's degree took two years and four months to confer.

**LT Lee:** I am currently working on completing my master's, with six out of the ten required courses completed. Louisville has an accelerated program so there are two terms per semester. I decided to start by taking one course per semester choosing which term worked better for me. As I progressed, I started taking one class each term, or two per semester, with this being the most that fits my current schedule. I

*(Continued on page 34)*



appreciate the flexibility this gives me in my schedule to allow for family and work obligations, vacations, hobbies, and other PHS activities.

### How did you pay for your online advanced degree?

**LCDR Lang:** Prior to starting my online master's, I obtained my PE license in the state of Montana. As most states do, Montana requires licensed engineers to complete continuing education relevant to their licensure during each renewal period. Since my position required an active PE license, the IHS supported paying for continuing education to maintain my license. Because my online master's degree of choice was engineering-related, each individual course qualified as continuing education credits toward maintaining my PE license. Therefore, the IHS was willing to pay the costs associated with each course, which helped immensely. To ensure a return on their investment, the IHS required a training service agreement, which stated that I would remain with the agency for a specific amount of time per purchased course completed. I did, however, have to pay out of pocket for other degree program costs such as enrollment fees, books, school materials, and graduation fees that were not immediately relevant to continuing education credits.

**LT Lee:** I used the G.I. Bill to pay for my degree, however, initially, I only received partial funding since I had yet to complete three years of active duty service. Since I knew I was starting before being eligible for full funding from the G.I. Bill, I took cost into consideration when choosing my specific graduate program. Louisville has a reduced active-duty rate making it a great option, and other schools may have similar active duty programs.

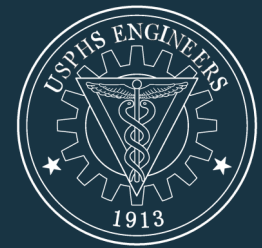
The process of getting funded through the G.I. Bill is simple since much of it is online and you can work with your Military and Veteran student service office at your school to help you with the process. You can apply for benefits initially at the VA website: <https://www.va.gov/education/how-to-apply/>

### Additional considerations when choosing an online advanced degree program

If you are ready to plan your benchmark map and have an online advanced degree on your horizon, here are some additional factors to consider when choosing a program:

- Cost and payment options for program (such as, out of pocket, agency funded, GI Bill, and % costs covered)
- Length of time to complete degree (min/max)
- Location of program if any trips to campus are required to complete degree
- Work/study/life balance
- Program accreditation
- Final project, practicum or thesis required
- Relevance to USPHS, agency, and job-specific duties

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## New Engineer Officers

The EPAC would like to acknowledge the following engineers who have recently become Commissioned Officers. The EPAC welcomes each of you and hopes you will enjoy a long and prosperous career in the PHS.

Rank	Name	OPDIV	City	State
LTJG	David Akakpo	IHS	Parker	AZ

## Fair Winds and Following Seas

The EPAC would also like to recognize the engineer officers who have recently retired from Commissioned Corps service. The EPAC sincerely appreciates your leadership and dedication to the mission of PHS engineers.

Rank	Name	OPDIV
CAPT	David Beveridge	IHS
CAPT	Christopher Brady	IHS
CAPT	Ramsey Hawasly	IHS
CAPT	Leigh Hubbard	IHS
CAPT	Hilda Scharen-Guivel	FDA
CAPT	Jerry Smith	IHS
CDR	Javier Franco	IHS
CDR	Sean Bush	IHS
CDR	Shane Hoffmann	IHS
LCDR	Jon Bergeron	Interior/ NPS

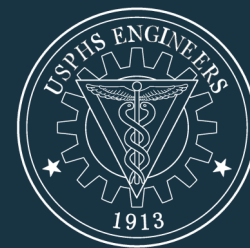
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U.S. PUBLIC HEALTH SERVICE COMMISSIONED CORPS

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Dear Readers,

*Machinatorres Vitae* (Engineering for Life) is a publication of the EPAC, but we need help in bringing you the information and stories that you want to read. Please consider submitting an article for an upcoming issue or let us know when you or a colleague have reached a milestone, been recognized for an accomplishment, or have an experience to share. If you are an accomplished writer, send something along that is already polished. If you don't feel like a Hemingway or Dickinson, just send enough detail so the writing team can take hold of it and build the story for you.

The writing staff can only see a bit of the big world that is public health engineering. There are numerous accomplishments even within our readership that remain unknown except in the relatively small circles around you. If you have not presented at a national meeting, the likelihood is that no one outside of your agency, or possibly even Office, ever heard about the project that you nearly exhausted yourself completing. Here is your chance to shine!

All ideas are welcomed. Remember that we do not have to solely focus on work going on within the PHS. Let us know if you hear of new technologies or applications, or just find an interesting story from the outside world. The rule of thumb is that if you as an engineer are interested in it, then others will be too!

Send your thoughts, suggestions, or a brief synopsis of a proposed article to the newsletter coordinator, CDR Jason Petersen at [Jason.Petersen@ihs.gov](mailto:Jason.Petersen@ihs.gov).

Thank you,

The Newsletter Team  
EPAC Information Subcommittee

*Machinatorres Vitae* is published twice annually and posted on the USPHS Engineer Professional Advisory Committee website. The deadline for submitting articles for the **Fall 2022** edition is **August 31, 2022**.

*This newsletter is for informational purposes only and does not reflect official views of the United States Public Health Service Commissioned Corps or USPHS leadership.*

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