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Defending Our Coasts: Ensuring Military Readiness & Economic Viability as Waters Rise

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Ensuring Military Readiness & Economic Viability As Waters Rise

Post-Conference Report
VCPC's 5th Annual Conference (2017)

The Virginia Coastal Policy Center (VCPC) focuses on providing science-based legal and policy analysis of environmental and land use issues affecting coastal resources, and educates the Virginia policymaking, non-profit, legal, and business communities about these subjects.

The 2017 conference, entitled Defending Our Coasts: Ensuring Military Readiness and Economic Viability as Waters Rise, focused on the impact of sea level rise on military installations in a local, state, and national context. Participants in the conference included VCPC students, academics, business leaders, military personnel, representatives of environmental organizations, and more, including federal and local government officials.

Virginia Environmental Endowment, Virginia Sea Grant, Virginia Institute of Marine Science, Middle Peninsula Planning District Commission, SeaLevelRise.org, Chesapeake Bay Foundation, and the Virginia Coastal Zone sponsored the conference.

W&M Undergraduate Deborah Kornblut prepared this report, with assistance from VCPC Assistant Director, Angela King.

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Overview

The Virginia Coastal Policy Center recently hosted its 5th Annual Conference, which addressed the impacts of sea level rise on the Hampton Roads area, and the broader implications of sea level rise on military efforts and installations. Segmented into four panels with presentations on topics such as resiliency, the conference progressed from broader discussions about sea level rise to a conclusion centered on collaborative solutions.

The first panel explained the current state of the Department of Defense's (DoD) resiliency programs. Moderated by Colonel Paul Olsen (Army Corps of Engineers), speakers in this panel included Shana Udvardy (Union of Concerned Scientists), Captain George Bonner (Coast Guard), Colonel Paul Roege (Army), and Jennifer Armstrong (Senate Committee on Appropriations). Relying on climate scenarios for background information, discussion included the importance of changing the DoD's approach towards preventative measures, the current state of Coast Guard efforts, and sources of funding for DoD projects.

Panel two concentrated on the impact of sea level rise on national security and policy issues. Rear Admiral Ann Phillips (Navy) moderated the panel while Brigadier General Bob Barnes (Army), Maureen Sullivan (Deputy Assistant Secretary of Defense for Environment, Safety, and Occupational Health), and Rear Admiral David Titley (Navy) presented. Discussion included how to align the Secretary's priorities with sea level rise implications, the acceleration of national security threats due to the simultaneous and diverse impacts of sea level rise, and the significance of partnering with local communities and states to formulate solutions.

Mid-way through the conference, Representative Rob Wittman (R-VA) also emphasized how conditions in Virginia reflect on the country's military as a whole. He called for contingency plans, a long-term focus, and overall readiness for sea level rise. Representative Wittman also promoted programs which unite multiple levels of government, such as wetlands preservation.

Incorporating some optimism, the third panel considered opportunities presented by recurrent flooding. The Honorable Chris Stolle moderated while Commander Kathy Purdy Owens (Naval Reserves), Paul Robinson (RISE Resilience Innovations), Kit Chope (Port of Virginia), and Paul Battaglia (Clark Nexsen) spoke. Under appropriate conditions, commercial real estate markets and shipping ports could take advantage of sea level rise by predicting sea level rise impacts and strategically placing projects into areas where the impact would be beneficial for the organization. Through initiatives, such as the Resilience Fellowship, the Hampton Roads area could also serve as a site for experimentation and innovation.

The final panel was dedicated to the crucial role of collaborative solutions in addressing sea level rise. Moderated by Rear Adm. Craig Quigley (Navy) with Colonel Jason Kelley (Army Corps of Engineers), Captain Doug Beaver (Navy), the Honorable Donnie Tuck (Mayor of Hampton), Captain Dean VanderLey (Naval Facilities Engineering Command), and Ben McFarlane (Hampton Roads Planning District Commission) speaking, panel segments evaluated the effectiveness and necessity for various partnerships, and channels of communication both within and outside of the military community.

Professor Andrews, Director of Virginia Coastal Policy Center (VCPC) at the William & Mary Law School, concluded the conference with remarks that employed VCPC as an example to underline the importance of collaborative efforts.

Opening Remarks and Comments

Taylor Reveley, President, College of William and Mary

After welcoming attendees, President Reveley described the impacts of changing environmental conditions in the area. Noting the long-standing relationship William & Mary has with the military; he then stated that the impact on the Hampton Roads area is also an impact on all of Virginia. He then elevated the importance of upcoming endeavors.

Davison Douglas, Dean, William & Mary Law School

Dean Douglas began by stating that the W&M law school trains leaders for various forms of public service, including the military. He then elaborated that it was a privilege to sponsor the conference and that collaboration was important in both organizing the conference and will continue to be significant in future endeavors addressing sea level rise.

Elizabeth Andrews, Director, Virginia Coastal Policy Center

Professor Andrews began by thanking participants, the audience, sponsors, VCPC students and staff involved in the coordination of the conference as well as the Tidewater screening from the previous night. She then addressed the overarching framework of recurring natural disasters in which sea level rise occurs and introduced the concept of resiliency. Ending her remarks by outlining the conference structure, she concluded by mentioning the international reach of military operations.

Speaker

Dr. Jane McKee Smith (USACE)

Dr. Smith began her presentation with an overview of the cycle of resilience and the impact of disturbances on the functionality of a system. After stating that sea level rise and other catastrophic impacts can be mitigated through "multiple lines of defense," the presence of alternate networks, and decision support, she discussed current ongoing assessments, including the naval station at Norfolk and the North Atlantic Coast Comprehensive Study. Lastly, Dr. Smith reviewed future challenges to combatting sea level rise such as justifying preemptive investments among ever-present uncertainty. She concluded her talk by stating that while a lot is being done, there is still more to do.

Audience Questions

1) About ¾ of the way through, you showed a hierarchy. You said we need to look at the full breadth of options. The last place we should build is on a barrier island. At what point in your hierarchy, what is the trigger point where you decide we can't go after these protective measures and decide to relocate?
    a) Right now it's all economics, it's the threshold, if it makes sense or not. After Katrina we did a lot of buy-outs. Often it's a hard sell. After Katrina, the Mayor brought in all these think tanks, but at the first meeting, someone comes in and says "That's where I live" so they went back and said "ok." That's part of the problem. Our decisions are made economically but in the end they tend to be political and that's why we need policy.

Panel 1: The Current State of Department of Defense Resilience Programs

Moderator: Colonel Paul B. Olsen (ODU; USACE, Ret.)

Before the start of the panel, Col. Olsen contextualized the importance of resiliency. Quoting Rear Adm. Phillips, he emphasized Norfolk as "a center of national gravity" in which diplomacy, information technology, military, and economy (under the acronym DIME) play an important role, but each is threatened by "rising seas and settling land." Urging attendees to take action, Col. Olsen introduced the following speakers. At the end of the panel, Col. Olsen emphasized the importance of resilient communities.

Shana Udvardy (Union of Concerned Scientists)

Miss Udvardy centered her presentation on recent studies conducted by the Union. Looking at 18 different installations, the studies assessed changing exposures to coastal flooding in the years 2050, 2070, and 2100 in order to understand the impacts of sea level rise and storm surge. She emphasized funding for various government agencies, such as NOAA, in order to maintain current data. Through its project, "When Rising Seas Hit Home," the Union continues its analyses on chronic flooding and recent inundation.

Captain George G. Bonner (USCG)

Using the Coast Guards principle of protecting "those on the sea, the threats of the sea, and to protect the sea itself," Capt. Bonner began by discussing the Coast Guards response to natural disasters. He then showed examples of flooding from Hurricane Ike, Super-storm Sandy, and other storms to demonstrate the detrimental impacts of flooding on Coast Guard facilities. In order to combat the uncertainty of sea level rise, the Coast Guard uses operational preparedness, resiliency, and partner collaborations, among a variety of other strategies and assessments.

Colonel Paul Roege (Creative Erg, LLC; USA, Ret.)

Defining resiliency as "an entity's ability to survive and thrive in the face of change," Col. Roege presented on the military's relationship with the principles of resiliency. Utilizing a health analogy, Col. Roege explained the necessity for a transition from concentrating on specific illnesses to addressing health as a whole. He concluded by describing resiliency as a community effort which requires individual leadership, collaboration, and the recognition of values.

Jennifer Armstrong (Staff Member, Senate Committee on Appropriations)

Discussing funding for the Corps of Engineers, Miss Armstrong began by differentiating between Congressional actions that authorize and actions that appropriate. She then outlined political and economic challenges for funding the Corps, as well as the tools that the Committee uses to face those challenges, such include funding pots and legislative language. She concluded by stating that additional budget authority is needed to increase funding for critical resilience projects.

Audience Questions

1) To Miss Armstrong: Jen, do you think Congress will give our nation an emergency supplemental as they did after Sandy to help Americans after the hurricane?
    a) Currently Congress is looking at the second supplemental and as I understand, that is not going to include any Corps funding. I think there is the intent through a third supplemental in the future to provide that. One of the things that has to be discussed when you have a bill like the one for Katrina or Sandy is that they include an emergency funding towards the repair of damages that resulted from that storm and then you have the resiliency component which is constructing projects that could've prevented or could prevent future flooding or damage from similar events damages in the future. Resiliency funding is not emergency funding so the Budget Control Act of 2011 changed how that money is designated as emergency. Resiliency funding would count against the budget caps for energy and water development which means that money is being taken away from other priorities in the country and that of course presents a challenge for how that money will be spent.
2) Water resources development bills, and I wanted to point out that VA Congressional delegation do not have a single member on authorization or appropriation subcommittees that develop the water resources bill. You didn't mention what the Commonwealth of Virginia is doing as a state to help with this and there's a reason for that and that's because it's nothing. They don't serve as a non-federal sponsor for the civil works. Senator Wagner and Delegate Mayosr will have a bill that will change that. The Commonwealth of Virginia the active non federal sponsor which will ease the military's current requirement to deal with every current locality with what they do. I just wanted ya'll to know that. Getting the Commonwealth involved and congressional delegation is a key step.
    a) All your points are well noted and we're aware of it. You will hear more of that later.

Speaker

Curtis Brown (Virginia Deputy Secretary of Public Safety and Homeland Security)

Speaking in place of Secretary Moran, Deputy Secretary Brown discussed the importance of collaborative efforts and coordination in which "everyone has a role and responsibility." Deputy Secretary Brown first described the Public Safety and Homeland Security office structure, noting that a goal of the department is to incorporate tenets of resiliency into its structure and approaches. Using Virginia's $120-million-dollar grant award to emphasize the importance of collaboration, Deputy Secretary Brown also communicated that the Hampton Roads area is a source of critical infrastructure which necessitates ongoing sea level rise evaluations. The presentation concluded with Deputy Secretary Brown thanking members in the audience for their participation in collaborative efforts.

Panel 2: National Security and Policy Issues

Moderator: Rear Admiral Ann Phillips (USN, Ret.)

Introduced by Professor Andrews, Adm. Phillips began with opening remarks about developing resiliency, the significance of the Hampton Roads area, and necessity to revitalize and expand the economy. She then outlined the panels focus on the previous and current state state of policy within the Department of Defense at the federal, state and local levels. Lastly, Adm. Phillips introduced the panel speakers.

Maureen Sullivan (Deputy Assistant of Defense for Environment, Safety, and Occupational Health)

Miss Sullivan began by addressing the conflicting goals within the Pentagon between Secretary of Defense Mattis's articulated priorities to "restore military readiness as we restore a military force, strengthen alliances and attract new partners, bring business reforms to the DoD" and with Trump's E.O. 13783 which requires federal agencies to either suspend, revise, or rescind climate policies. According to Miss Sullivan, the D.o.D. approaches the challenge by focusing on readiness, building strong communities, and incorporating business reforms in congruence with the revision of climate policies and emphasis on resiliency. She concluded that as a threat, "changing climate" is a risk for the D.o.D. and will therefore be addressed.

Rear Admiral David Titley (USN, Ret.)

Adm. Titley presented on the acceleration of risk throughout the U.S. due to sea level rise. Accentuating readiness and "beginning with the end in mind", Adm. Titley noted the dispersed and multiplied impacts of sea level rise will cause various actors, not just the D.o.D., to lobby for mitigation and relief efforts. He utilized simulations to demonstrate the severity of flooding in Hampton Roads caused by a 30 feet, 15 feet, and 7 feet sea level rise. He concluded his presentation by describing sea level rise as an issue of self preservation and noting that emission reductions is ultimately a community problem requiring bipartisan participation.

Brigadier General Bob Barnes (USA, Ret.)

Brig. Barnes discussed the D.o.D.'s authority to partner with outside networks in order to address the issue of sea level rise. He sorted D.o.D. assets into three categories: resources fully managed by the D.o.D. (Category 1), national assets that are co-managed with the D.o.D. (Category 2), and resources not managed by the D.o.D. (Category 3). In the past, D.o.D.'s authority evolved in response to dealing with inadequacies through a process of recognition, authorization, and development of financial support. Presenting a House bill and the SASC report from the Senate as indicators that Congress is already considering changes to the D.o.D.'s authority, Brig. Barnes called for actors to get "skin in the game" and for the D.o.D. to look beyond the fence line.

Audience Questions

1) To: Brig. Barnes: You talked about ways to better interact between federal, state agencies and local communities. My understanding about joint land use studies is that they are outside of the requirements process.

a) That's part of the problem. A lot of these existing authorities are precisely that, they're outside of the budget requirement system. Including the REPPI program. It's kind of ad hoc, it's not plugged into the whole detailed system and that really needs to happen. All of these external actions not really tied to a specifics process, they're just general categories. If there's ever to have serious D.o.D. funding to have skin in the game in resiliency processes, then it needs to be built into the requirements process. Need to stop pretending you can successfully plan for an installation without addressing the conditions outside your fence line because there's a lot of assumptions of stability built into the instillation master planning that's just not accurate. They assume the external conditions will remain stable.

2) To: Brig. Barnes: Category 3 and what you said outside the fence line. The military departments pay the costs of dealing with outside of the fence line, where it meets the Corps of Engineers and Civil Works program. Getting the Defense Department to help the non-federal sponsor could help move those projects forwards. Is that generally still true? And if so, is that an appropriate approach?
   a) Brig. Barnes: That's an interesting approach. D.o.D. now does not have the authority to do that. Should D.o.D. have a very tightly written authority to participate in providing funds for water resources projects that would add to resiliency of the military instillation? You could make a case for that. In the REPPI program for example, dollars coming from D.o.D. to its partners can be used by those partners as matching funds for other federal programs along the lines you were suggesting to the Corps program. REPPI first enacted in 2001/2002, the problem had existed for 20+ years, took Congress 5-6 years. Originally low funded, but now it gets $5-6 million a year. So yeah, it could do that, but let me throw in a caution. The best way to kill this effort is for people to look at the D.o.D. as the big cash cow. There is not a lot of spare cash in the D.o.D. so need to make a case in a time of scarce resources and that takes a lot. It's not a quick process.
   b) Adm. Titley: I want to make a quick comment on that. Because you've got to begin with the end in mind. Because you gotta get focused. Because we as a nation have to decide how will we actually address this, and if we are, then we have to figure out how to do it. (Used example of how the issue of Arctic melting lacked a focus and was therefore bounced between agencies). Everybody looks at the D.o.D. as "oh they'll find money," but they won't, because it isn't there. And this is where we have to look at our nation in the context of priorities and are we going to deal with this or are we simply going to react and find that the naval base is in Yorktown because that's the nearest piece of dry land.

3) To: Brig. Barnes: I noticed in the construct of category 3, you didn't speak to the Corps as it pertains. I'd be interested in your thoughts and expanding upon the logic behind that. And then I'd offer that I think that what's happened with the Norfolk Coastal Storm Risk Management Study attempts to do exactly that in dealing with Category 3.
   a) A lot of people don't understand that the Corps civil works, but that the real heart of the Corps mission is engineering support to the active forces in the combat mission. Inside the defense line here or wherever else and that's the D.o,D. funded part of the Corps and a lot of that is happening inside the fence line. But that's a Category 1 thing, but the Corps and its civil works hat, that's a different deal. D.o.D. cannot be a nonfederal sponsor for the Corps, it can't partner with or provide funds as non-federal things for that work outside of the defense line. Right now the D.o.D. and Army Corps of engineers can't go outside the base and help restore a wetland using D.o.D. money. Defense Access Road Program, the

way it's currently written, you can't use it to help Hampton Road Boulevard from road flooding.

4) Each of you spoke a lot about the interactions between the military and civilian communities' capabilities and so forth. The question really is that there's a growing number of studies D.o.D. is doing to show these interactions. On the state side, states are looing at resiliencies, communities look at their needs, utilities look at their needs. So how do we find ways to share that information and to actually influence those decisions so that the utility makes decisions about their undergrounding and network capabilities involving military? How do we allow the military to participate in exposing these needs and defining the value proposition for these decision propositions that don't necessarily take investment but inform?
   a) Miss Sullivan: I can't talk to the money thing just to say that our internal infrastructure the sustainment we're investing about 60 % of the requirement. We did these pilots across the nations, here in Hampton Roads, Idaho, to start exploring that concept. It's a variation on Bob's point of extending master planning off of the base. I think we have not given our instillation the toolsets to start having those discussions. The communities have a role that the community is valuable to the installations and that they're going to make the investments. What came out of the pilot project in Mountain Home Idaho, is that the state actually bought water rights for the air force base, because they knew that if they ran out of water they would be high on foreclosure. Defense dollars are not the total solution, but it has to be a partnership.
   b) Brig. Barnes: Let me tag onto that a little. Absolutely D.o.D. has the authority it needs to pass on this kind of information absent security concerns, classified information for it, but the kind of system to do it, not really. One of the things preceding REPPI program that is still there is the ACUS program, Air Installation Compatibility Uses Own Program. It was a rigorous and comprehensive program to pass to local planning communities, etc. etc. information about the impacts on D.o.D. of certain decisions where things are built in clear zones and places where planes tend to crash and stuff like that, or not building up a 400 ft. tower during, in the approach patter for the fighter jet on the base, but that was organized, that was funded, there were staff responsible for it, there were parameters for engagement, etc. etc. Nothing like that exists yet in this area and needs to as part of the better use of existing authorities.
   c) Adm. Titley: One of the things that would help in this information sharing would be authoritative climate services and by authoritative I mean the government has it's stamp on it and that is what everyone uses. The analogy is for the Hurricane Services. We do not have that for climate, everyone has their own services and it becomes very hard for different places to establish trust if we can't even have a common baseline off of which to start that threat. That will not by itself solve this but it would help. NOAA tried to do this but they were politically naive and there's no near term of this prospect really happening. And we've got to have a common base.
   d) Adm. Phillips: This region has a real opportunity because of our huge federal presence to leverage that for why we should get that attention and why we earn and deserve it. And for that we need to have our own plan regionally and to collaborate. And until we do that, we're at risk and we are vulnerable. We have talked about the IPP Project. It was never out briefed publically but it is available publically. If you look at www.floodingresiliency.org and search for IPP Phase 2 Report you will find the pilot project and the appendixes.

Keynote Speaker

The Honorable Rob Wittman (R-VA, 1st District)

The Honorable Molly Ward (Virginia Secretary of Natural Resources) introduced Rob Wittman (R-VA) as a "gentleman and a scholar" with a history of handling sea level rise issues. Representative Wittman began his presentation by asking "what happens to our nations military" and Virginia's overall role in the nations defense. He then discussed the significance and loss of readiness in D.C. due to inaction, the need for durable solutions, and the use of resources to obtain the "maximum utility possible". Adding that tasks must be clearly delineated among various levels of government, Representative Wittman also noted the importance of leveraging resources and the impact of crossover on readiness and infrastructure investments. Reiterating the importance of sea level rise in a broader context, Representative Wittman concluded that natural systems could be a part of an overall solution.

Audience Questions

1) The big elephant in the room, is we're dealing with resilience which is an acceptance of things as they shall be coming. So the question is, in big public issues we're actually trying to get back to the cause. Earlier, we had Deputy Assistance Secretary of Defense who couldn't utter climate change. It has to be changing climate. I think 2/3 of the American public believes climate change is occurring and 2/3 believe it is human caused and most of us scientists say it's contributed to. So what is your point of view on on this issue of climate change. Shouldn't we be doubling down on eliminating the cause or at least slowing, or reducing the cause? Instead of pulling out of the treaty should be pushing harder?
    a) I think today if we are going to make progress in the public policy realm, we should be looking at places that unite people. If we get into name calling, which is exactly what happens when somebody says "what's the cause" then everybody takes their side and refuses to act. Human beings must adapt and we must do that to adapt the economics of our region and preserve the capability within our military. If we lay the foundation to do that, that builds the foundation to have a rational and thoughtful discussion about other issues surrounding this. If we don't, if everybody gets entrenched in their camps, then we have difficulty progressing on public policy issues. Adaptation, I think, is one of those issues that everyone can agree with. Let's start there, let's have that discussion, let's show that we can get some things done there by agreeing. I think people want us to get things done, let's show them we can do that. And from there we can have a discussion about other other issues that are surrounding what we are dealing with today and that is the reality of recurrent flooding and the impacts on coastal areas.
2) How do we take those steps involving federal, local, state cooperation so that everyone can see the step is taken and be encouraged to take the next one? How do we get started?
    a) Days like today where you bring together a number of different folks from across different political perspectives and the policymaking realm to say yes, this is an issue we have to deal with, it does have an impact on us economically, it has an impact on us strategically, what are the things we need to do. We need to have those clear objective elements and see what we have agreement on between different levels. And we're beginning down that road to put together what the objectives are and the subjective information that says here are the things we have to deal with. And then the question is what happens to us in the region, and

where are these things on localities. Those are the places we can have agreement in public policy and leverage the resources that are there. Let's take for instance the city of Poquoson. To see the impacts of coastal flooding so how do we take what Poquoson, the state, and what happens at Langley. How do we do that to have he maximum utility and come up with an overall strategy and plan. Next is what should our priorities be. You can't get it all at one time so you need to prioritize and those are the places we can put our resources and from there we can make progress. Have to look at it as a joint effort and from there we can accelerate the learning curve. I'm not an advocate of failure but when you do fail quickly and move on and say hey this didn't work lets' try something else, developing what the public policy paths are and how do we get resources together to make those things happen.

3) I'm with the city of Portsmouth from the Intergovernmental Affairs Manager there. We're currently working on a state and federal legislative packages. And one of the issues that recently came up from the community is that persons who have homes that have already paid off their mortgages, the only way they could get flood insurance is if they pay in a lump sum which is problematic to a lot of people who are retired or have limited incomes and if there was a way they could possibly do it in incremental payments not attached to an estate that's not attached to a mortgage. Currently there are two bills (partisan). One is House Resolution 3285 and the other is Senate 1368 and they are entitled the SAFE (Sustainable Affordable Fair Act) and Efficient National Flood Insurance Program Reauthorization for 2017. They seem to be stalled, but both of these bills would allow that to happen for people to pay these bills and I think that was a small step we could take to help mitigate the fiscal impact to state, local and federal coffers. I just wanted to know if you were familiar with that and where you stand on that particular issue?
    a) I am. And reauthorizing the federal flood insurance program is critical, but making sure too that we design it to where flood insurance continues to be affordable and I understand with all the things that have happened with these recent events, insurance markets are trying to respond and reinsurance markets are trying to respond to that. What we want to make sure is fully the impacts on coastal communities. I have been working with other colleagues there including folks like Garret Graves, who's from Louisiana. His district is similar to mine in the amount of coastal areas we have and the type of impacts. We have had some great conversations about what needs to be in that bill. The reauthorization bill will probably take 7 other bills and combine them together. One of those is affordability and flexibility in premium payments for the flood insurance programs, what do we do at the federal level to not only underwrite the program, but what do we do in areas affected by recurrent flooding. How do we make the best best investment and how do we make sure were not continually going in event after event and doing the same thing and essentially not using those dollars to the highest and best use and make sure we're looking at that across the boards. I have been working with a number of members on the financial services committee that are charged with this and excluding the Chairman, who's from TX so his area doesn't have a lot of water around it there so his perspective is a little different, but I can tell you that members like myself have been chewing on his ear constructively and I think he's developing a deep sense of appreciation for what coastal communities have to deal with with flood insurance. Remember too that flood insurance has to continue to be affordable. If it is not, you cannot originate a loan in the flood plain without having flood insurance. If you can't afford flood insurance and you don't pay it and your policy

lapses that's reason for default on your mortgage so if we had that it could be catastrophic on coastal communities. So we understand the broad impacts that it has so we want to make sure it's a manageable program and it reflects what we think is proper perspective on risk and risk sharing and what the role government is paying and what are the long term policies. We want to make sure the communities are resilient with the dollars we have spent.

Speaker

Colonel D. Keith Morrow (USA, Ret.)

Col. Morrow focused on resiliency efforts at the installation or tactical level via a discussion of the Langley-Eustis joint land use study which centered on the issues of encroachment, tidal impacts, maritime security and more specifically, the impact of sea level rise. He discussed how emerging projects, such as the archaeological site management studies, provide guidance for the necessary modifications for older facilities and aging infrastructure on many bases. Col. Morrow called for "really thinking outside of the box" and emphasized the importance of preventative projects.

Speaker

William A. Wrobel (Wallops Flight Facility Director)

Mr. Wrobel began by describing the Wallops facility which has an annual budget of $250 million and composes one fourth of the locations where objects can be sent into orbit. He then shifted his discussion to focus on the status of the islands coastal resiliency, most of which goes back to the 40's therefore leaving the island susceptible to sea level rise. Lastly, Mr. Wrobel noted that the Wallops Shoreline Protection Project deals mostly with erosion at the south end of the island.

1) You noted in one of your slides that there's no critical infrastructure (on Wallops) below 11 feet above mean. So how much does that encompass your roadways into the facilities? And how did you all pick 11 feet?
    a) Fortunately, the main causeway is actually quite high. They had done that back in the late 50s/early 60s timeframe. The roads on the island are fairly low and we have had some flooding in areas and it has not been too bad. It seems as long as the sea wall is ok we don't see any significant, thankfully. And if the replenishment cycle comes in that 5-7 year timeframe, the hope is that it will be ok. (The 11 feet) was a combination of what the Corps had looked at as what they thought was worst case and as engineers, we always like to have a little margin on top.
2) What's the difference between ACRI and ODU, VIMS Commonwealth Center for Resiliency and is there a relationship there?
    a) Mr. Wrobel: Yeah, I'd say there's a relationship there. VIMS is kind of a part of what we're doing overall. They have some expertise and we like to tap into that.
    b) Professor Andrews: I can speak to the second half of that question. So the Commonwealth Center for Recurrent Flooding Resiliency was created by legislation that was created by Delegate Stolle. It's a partnership between ODU and VIMS and the Virginia Coastal Policy Center and that's at the state level bringing together the institutions and leveraging

resources and enabling us to do some research and provide tools to people trying to deal with recurrent flooding. So that's at the state level.

3) We mentioned a couple of times today the military bases, we've learned not to think of them as islands, in your case you do. What you described in terms of building resilience was largely in terms of your own control. Things that you could do to make sure that you would be able to operate. I wonder if there are dependencies that come to mind that you could share or interact with the local community, maybe even including the Virginia Space Center that are important.
    a) I'd say that relative to our locale with the folks that are on the facility certainly we have regular interactions so anything new that we would put up or they would put up or the Navy. Obviously all that is kind of discussed before the actual drawings maybe would come out relative to how they would go ahead and build. So that part of it is probably a lot more straightforward since we're all kind of involved. We're all on the same island essentially. Relative to the rest of the community, I'd say that certainly just by virtue of the fact that a lot of the folks that are part of the community also work at the facility. There's some of that that goes back and forth. Fish and Wildlife Service, which is Assateague, is a part of this group that I've mentioned relative to **Macri** and so the hope is we continue to kind of disseminate that information as we get smarter about the whole thing overall. As a result of the partners that we have, as a part of **Macri**, we think that that does all that.
4) was curious about having sand placement as one of the core resilience measures. Your thought about doing that into the future? I know it's very costly. It's not very cost effective compared to some nature based solutions so I just wondered if NASA and your group has looked into other options and I know the Dutch are trying to think this through. I've done a few case studies where they just plop a bunch of sand sort of north of where they want it to go and then they're modeling to see if that's one option of maybe using sand in a different way. I just wanted to hear about some of your thinking around your resilience in the future as far as the sand is.
    a) Mr. Wrobel: I'm not going to put the Army Corps on the spot here necessarily, but we're kind of partnered in this going forward and so maybe I can let (Col. Kelley) comment to that to a certain extent as well.
    b) Col. Kelley: Certainly investigating other ways, but as shown here, there's been some success with the replenishment in what we've done, but certainly trying to think through ways to be more cost effective, ways to take advantage of what we're learning about natural and nature based features. We also have some things we've actually done with **ERDIC** in terms of the way sediment, in the movement and understanding that. I think that early in terms of incorporating that at Wallops because right now we're on the replenishment cycle and that has seemed to work, but I think we're not opposed and certainly continue to investigate other ways to be wiser with the dollars that we actually have.
5) I'm not hearing anybody mention that this is a barrier island, right, and so the sand moves so the sand is coming from where other people are losing their sand and then it's supposed to leave where you are and go down and replenish. Is there a point of no return where you say ok?
    a) Mr. Wrobel: I would say there may be and maybe the right way to answer is maybe we haven't gotten there yet relative to that. In fact, you can comment on this too, we're actually seeing some growth at the north end of the island which is kind of interesting thing. A fair amount of it actually, even in just the few short years I've been there. It's been amazing.
    b) Col. Kelley: It is. But that's a whole other discussion. There are pro's and con's to the use of sand and as you pointed out, it depends on where you sit, how we value the result of

that. I think your comment is correct, we haven't gotten to that yet and it has continued to develop. It is certainly a space where we need to spend more time and better understand, but we remain in communication with so I think we're back to collaboration and being smart about how we perceive being mindful of what we're trying to do, which is what today is all about.

Panel 3: Opportunities Presented by Recurrent Flooding

Moderator: The Honorable Chris Stolle (Virginia Delegate, 83rd District)

Introduced by Professor Andrews, Delegate Stolle began the panel by noting that recurrent flooding provides an opportunity to "excel" and "improve our economy, and improve our marketable skills." He then introduced the panelists.

Cdr. Kathleen Purdy Owens (Beach Development Group; USN, Ret.)

Beginning her presentation with a "tale of three cities", Cdr. Owens discussed sea level rise induced opportunities for commercial real estate which included collaborative efforts of developing policies, taking advantage of municipalities with flood mitigation programs, and offering services to reduce property owners flood insurance premiums on existing buildings. She stated that available grants are lacking for commercial real estate and few incentives exist to incorporate flood mitigation elements into residential buildings which can be advantageous for this market.

Paul A. Robinson (RISE Resilience Innovations)

Dr. Robinson discussed RISE, which is a regional effort focused on community revitalization, water management, and resilience measurement. Using the Hampton area as a "living laboratory," Dr. Robinson described how RISE helps develop and demonstrate technological capabilities in congruence with economic growth. He concluded with a discussion on efforts RISE has undertaken, which include water assessments via affordable water sensors and the promotion of green infrastructure through reductions in green infrastructure operational and maintenance costs.

Kit Chope (Port of Virginia)

Representing the Port of Virginia which is the 5th largest port operator and owner in the U.S., Mr. Chope began by describing the Port of Virginia as a "catalyst for commerce." He then discussed the Port's general reevaluation report, colloquially known as "the wider, safer, deeper" initiative, and the Port's greater investments in its Virginia International Gateway facility. Mr. Chope concluded that the Port continues to work towards wise investments in the future by identifying critical points of failure in order to address them, partnering with various groups, collaborating with diverse actors and ultimately testing procedures and relations through routine exercises.

Paul Battaglia (Clark Nexsen)

Mr. Battaglia represented Clark Nexsen which is a multidisciplinary firm concentrating on engineering and architectural solutions, often operating at the level of a discrete project. After overviewing the firm's basic practices, Mr. Battaglia discussed the Clark Nexsen Resiliency

Fellowship which is awarded to students to do a research project addressing resiliency. He then discussed 2 former projects, one in which the presence of water was used as an amenity and the other which assessed social capital infrastructure for resiliency. Mr. Battaglia ended his presentation by stating that the firm's behavior is impacted by policy which can create requirements "such as" which are mandatory and incentives which are more malleable.

Audience Questions

1) To Commander Owens: From a commercial real estate perspective, in this Dylan rule state would it be useful for the Commonwealth to take a role in things? Let's say the Hampton Roads Metropolitan Statistical Area?
    a) That's a great question. I can't speak for the commercial real estate industry, but you can see the map, just the CRS map in which communities participate and which ones don't. To get points in the CRS system lowers your score which actually raises your percentage of premium reductions so increasing your building code gives you more points and that directly equates to lower premiums, but it directly equates to higher construction costs so the communities as a whole could look at it and say you know, you've got a hundred million dollar building and to add all those extra costs for flood mitigation for code plus or for what the building code is is 15% more. If you're doing it on a code plus basis without being required to, your building's not going to praise for that and you're going to have a gap in your lending opportunities. (Q: Well I'm sure some developers are telling the Norfolk City Council that they raise their building codes they'll build somewhere else.) That's exactly right, and they'll probably go to the areas that are center. (Q: So CRS for building costs like writing a task order contract that Hampton or anybody else could use some of these mitigation things that is specific to Hampton Roads and help them out that way and..). Well they have to look at also when there are those extra costs and say everyone is doing it, are the rents going to reflect those extra costs that would be maybe changing the scope of the building to something smaller. But you've got Miami Beach there, they've got $1.2 trillion in property value. They can absorb those higher rates for increased building code, but maybe Norfolk can't, maybe Portsmouth can't, and so they're going to be left with why are, why don't we have multi level buildings here. It's because they're being built where the code is less. Bringing the CRE into policymaking and not waiting.
2) I saw some great analyses and models and I wonder if any of you have any suggestions on how do we act upon those. How do we address policies, initiatives, or education to deal with this social capital aspect?
    a) Mr. Battaglia: I have an academic background as was mentioned in the entirely too long introduction, but so I think it's part of architectural education so it is kind of synthetic. I was hoping that something like what Aishwarya ended up investigating would be part of the conversation, but we're missing multidisciplinary firms so for a lot of the engineers you know it's kind of "what is that, why are we even talking about that?" So that education I believe isn't limited to the extent of our firm, of our office. We have very good engineers, as we want our engineers to primarily be, as we want our architects to be primarily good architects, but as we unify our efforts, whether they're in the realm of practice or policy or in the realm of policy we're going to need to communicate with terminology and agency beyond our own proficiency and skill.

3) To: Mr. Chope: Now let's wonder, you know we have, we're looking at dredging the channel 255 feet as an opportunity to bring in additional business. What other things should we be doing from an adaptation standpoint to generate business for the Port?
    a) So I think you know when I talked about the electrification of our terminals, I think we also have engineered in a vulnerability that if we don't develop some resilience for the electrical power distribution system there. So I think a next step that we would potentially take is look at some energy, probably not independence, but some security there, whether it's through some micro gritting, probably not renewables just because real estate its such a prime there, but I think those kinds of things. We're lessening on the source side with the pollution and the noise and I think the opportunity to bring more is, if you don't recapitalize your terminals and you're a port operator, you're not going to attract those ships. Those ships are only going to make a couple calls on the East Coast when they come here and so by continuing to do that we continue to build that better mouse trap to bring them in and to again make sure that mousetrap, if you will, is continuously operating is important. I'm not sure if that answers the question, but the one thing when I saw the questions was to make sure we're building smartly and developing some security for our electricity.

Speaker

The Honorable Carlos Hopkins (Virginia Secretary of Veterans and Defense Affairs)

Secretary Hopkins began his presentation with a discussion of the current treatment of veterans in the Commonwealth. According to Secretary Hopkins, issues concerning veterans are nonpartisan and the administration is determined to make Virginia "the most veteran friendly state in the nation" through initiatives such as the Valued Veterans Program and various transition assistance programs. He also mentioned that the Hampton Roads experience with approximately a 15-inch increase in sea levels over the past years requires collaborative efforts that consider the particular conditions of the area. He concluded that mitigation is necessary and will prevent the reassignment of resources and assets.

Panel 4: Collaborative Solutions

Moderator: Rear. Adm. Craig Quigley (HRMFFA; USN, Ret.)

Before the start of the panel, Adm. Quigley described the structure of the panel as being separated into three, two person panels which address the question of managing complex issues piece by piece. He also noted that the final panel was a culmination of both previous panels and speakers, after which he introduced the panelists.

Col. Jason Kelly (USACE) and Douglas Beaver (City of Norfolk, USN, Ret.)

The first of the three segments focused on 3x3x3 studies. Col. Kelley began his portion by revisiting concepts mentioned in previous panels and speaking as an "enterprise guy" addressing the Corps resiliency efforts. He also discussed a resiliency roadmap which helps guide studies to identify potential risks, reduction measures, and make overall recommendations that reduce those

risks. Describing Norfolk as an example for other coastal communities, Col. Kelley concluded his presentation by stating that community collaboration, vast participation, and dedication to commitment are necessary for progress. Following Col. Kelley, Capt**.** Beaver further emphasized being "action oriented" as well as the importance of maintaining multiple partnerships in his discussion of Norfolk as a Resilient City. Capt. Beaver then discussed the city's goals which were established after receiving 2 years of community input and include goals of 1) designing for the future, 2) stimulating economic opportunities, and 3) increasing community connectivity. Capt**.** Beaver concluded by briefly discussing six ongoing projects, some of which had been mentioned in earlier panels such as the National Disaster Resistance Competition.

Col. Kelly and the Honorable Donnie Tuck (Mayor, City of Hampton)

Focusing on the New Market Creek study and touching on the Dutch Dialogues, Mayor Tuck began the second segment of the fourth panel. Mayor Tuck first explained that the New Market Creek study is a feasibility study sponsored in collaboration with the Corps to identify structural and nonstructural measures to reduce the risk of flooding in the New Market Creek Watershed. He then noted that the study utilized Dutch Dialogues with neighborhoods to develop a list of values for the community, such as creating solutions with equity and responsibility. Col. Kelley followed Mayor Tuck by stating that the Corps are "complementary" to the community which should use past experiences and public participation to develop strategies that mitigate sea level rise. Describing the Dutch Dialogues as "a learning vehicle," Col. Kelley also mentioned the importance of public comments and public review as well as the difficulties in keeping the 3x3x3 studies on track. Both speakers ultimately emphasized the importance of flexible solutions which can be adapted to diverse circumstances and the significance of open discussion among various partners.

Capt. Dean VanderLey (NAVFAC) and Ben McFarlane (HRPDC)

The third segment of the panel concentrated on joint land use studies (JLUS). Capt. VanderLey started off the discussion by describing the symbiotic, interdependent relationship between the bases and the communities around them. He then explained the goal of JLUS is to promote compatible development between the navy and the local community in order to act in the best interest of both parties. Representing the Hampton Roads Planning Commission, Mr. McFarlane was able to elaborate on the details of JLUS implementation. Mr. McFarlane then explained how the Commission coordinates among participating localities by providing technical assistance, acting as a liaison to federal and state agencies, and acting as a forum for local leaders to discuss issues of greater than local concern. Both speakers concurred that future JLUS need to assess sea level rise impacts "far beyond the fence line" while also codifying the informal ties between the installations and the communities in order to maintain assets in the region.

Audience Questions

1) To Panel 1: What I was hoping that we'd hear today was a rethinking of dredge material and the beneficial use of dredge material. We heard from Kit that we're going deeper, wider, safer, that means there's a whole bunch of land that's currently under the Bay that could be brought up, dried out, and sent somewhere for free board. Currently, I know that the Corps believe it's cheaper to deposit that offshore in the Atlantic Ocean. That might have been the case in 1960, in 1970, but I think material has value now. Is the Corps or are you personally relooking that?

a) Col. Kelley: So great question, and we absolutely are. Significant interest in the use of dredge material. In fact, while here today, we had a chance to sit down with Diane and Nick from Senator Kaine's office because that's a consistent and persistent question on how best to take advantage of suitable material, the good material. We definitely want to do that, but again as I spoke to those lines, the federal standard definitely dictates in terms of price and as of this moment when it exceeds the federal standard which permits open water disposal, the localities, some sponsor pays the difference and so that's the reality and that is the standard. What we are not trying to look at are there creative ways, better ways. There's certainly interest on the Eastern Shore. Tangier, for example. We've proffered an idea by what of beneficial use of dredge material and our navigation business line, our flood risk management business, aquatic ecosystem restoration business line, we may be able to find some integration in some ways that would be worthy of appropriation, worthy of funding that would allows us to even reimagine Tangiers. Some different ways to create sales and by way of benefit us that may be able to gain traction. A moonshot, I'll admit, but an idea by way of beneficial use of dredge material and being mindful of the desires of Maryland and the restrictions on open water disposal, in coordination with John Bull (VMRC Commissioner). He too is not a huge fan of open water disposal. So yes, we are. But it's one of those nudges, it's one of those things we have to start talking about, and I think we're a way out from really that being the answer. We're moving in that direction; we're starting to have some discussion that I think will allow us to revisit the way we currently do business.

2) As you've noted this is a somewhat unorthodox use of a joint land use study that you're using to address climate change and working at a much larger scale. I'm wondering for anybody who wants to answer this, to what extent do you think that's a legacy of the previous administration and would it be possible to initiate joint land use studies like this now?
   a) Mr. McFarlane: I will try to answer that. So I think you know, as you might have seen on Cpt. VanderLey's slides that climate adaptation was listed as one of the compatibility factors. I'm not sure if it's still on the list, they might have graded out a little bit for the new list, but what we have in our discussions with OEA about all these projects that are going on in Hampton Roads that are joint IU studies is, you know, we have a lot of experience in Virginia using euphemisms to refer to climate change as sea level rise and whatnot. You may have heard the Congressman to refer to recurrent flooding earlier today, that's something that we've used in Virginia a lot and I think for us the terminology that we have focused on and that we have identified for our reporting for this is flooding. Sea level rise on its own is not the problem, it's because sea level rise is going to increase the frequency of flooding, that's the problem that we're dealing with and in that context, the fact that we can identify two roadways being flooded, major access points to facilities that are being flooded. We've got three joint studies going on in the region right now, I don't foresee the region being blessed with any more in the foreseeable future. You know, we've kind of hit the jackpot for these next couple of years. I think being able to point to specific issues like flooding of roadways to provide major access to facilities or flooding of infrastructure, but that's something that OEA will continue to look upon favorably when funding these grant proposals.
   b) Col. Kelley: The other thing I'd say on these joint land use studies. One of the things that we're all working together to ensure is that the recommendations of the joint land use study are not at odds with those recommendations coming out of, specific to Norfolk, the Norfolk

coastal storm risk management study. It's my hope that as we look at Hampton Boulevard, the recommendations that were going to make to mitigate some of the flooding will also be reinforced by the results of the joint land use study. I think it's that nexus that'll really demonstrate the value from the D.o.D. side and then from the civil works aspect of our mission that coming together will result in authorization from our chiefs report but then a desire to appropriate from both the defense and within our civil works and so when we start talking about new starts and projects that are moving towards construction, I hope that that is the place where we'll be able to see the collaboration and the action that I talked about in my opening comments.

Appendix: Presentations, Congressional Letters of Support, and Speaker Biographies

Videos and presentations are available on the VCPC website at:
http://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/defendingourcoasts/index.php

Congressional Letters of Support

Senator Mark Warner (D-VA):
http://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/defendingourcoasts/warnerletter.pdf
Senator Tim Kaine (D-VA):
http://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/defendingourcoasts/kaineletter.pdf
Congressman Bobby Scott (D-VA 3rd District):
http://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/defendingourcoasts/scottletter.pdf

Speaker Biographies (in order of appearance)

Dr. Jane McKee Smith

Deputy Commanding General for Civil and Emergency Operations, USACE

Smith is the Army Senior Research Scientist for hydrodynamic phenomenon, stationed at the US Engineer Research and Development Center (ERDC), Coastal and Hydraulics Laboratory in Vicksburg, MS. She earned a PhD from the University of Delaware in Civil Engineering with an emphasis in Coastal Engineering. Her research focus is on coastal hydrodynamics, including near shore waves and currents, shallow-water wave processes, and storm surge. Her projects include theoretical and numerical studies as well as laboratory and field experimentation. Smith has 195 professional publications. She is Chair of the Coastal Engineering Research Council of the American Society of Civil Engineers (ASCE) and Past President of the Governing Board of the Coasts, Oceans, Ports and Rivers Institute of ASCE. Smith is an Adjunct Professor at Mississippi State University, and she has served on Master's and PhD Committees at the University of Florida, Louisiana State University, and Texas A&M University. Smith is a Professional Engineer and Coastal Engineering Diplomate (Academy of Coastal, Ocean, Port and Navigation Engineers), and her honors include ASCE Distinguished Member, ASCE Government Civil Engineer of the Year, Waterways Experiment Station Woman of the Year, Army Achievement Medal for Civilian Service, ERDC R&D Achievement Award, and Army Superior Civilian Service Award.

Col. Paul B. Olsen

P.E., U.S. Army Corps of Engineers (Ret.), Director, Programs and Partnerships, Old Dominion University, Research Office

Colonel Paul B. Olsen (U.S. Army Retired) is the Director of Programs and Partnerships for Old Dominion University's Office of Research where he enables research projects between the University and federal agencies including the Department of Defense and NASA, as well as regional organizations in the public and private sectors. In addition to his University position, in 2017, Paul was named the National Director of the Smart Coast Coalition and since 2000, has served as the President of Honor Builders, two rapidly growing organizations focused on strategic engineering and coastal resilience. Paul retired from the United States Army in 2015. His culminating assignment was command of the Norfolk District, U.S. Army Corps of Engineers, Norfolk District, where he gained national recognition in Sea Level Rise Planning and Port Modernization. Olsen is a registered professional engineer in the Commonwealth of Virginia and holds a Master of Science in civil and infrastructure engineering from George Mason University, a Master of Arts Degree in business management from Webster University, and a Master in strategic studies from the U.S. Army WarCollege. Of note, he was named the 2014 Champion of the Port for Hampton Roads, the 2015 Government Engineer of the Year by the American Society of Civil Engineers (ASCE), and the winner of the Pentagon's prestigious 2004 Pace Award for Innovation. Paul, an Eagle Scout for life, is active in the Boy Scouts of America and currently serves on the Board of Directors, Facilities Chair, for the Norfolk Botanical Garden.

Col. Paul E. Roege

U.S. Army (Ret.), Partner, Creative Erg, LLC

Paul Roege is a national security and engineering leader whose goal is to build resilience among communities and regions using energy as a central consideration. His advocacy is based upon over 35 years of international experience in both civilian and U.S. military capacities, including military operations and construction, nuclear material processing, and energy system engineering. As a U.S. Army officer, Mr. Roege built key military infrastructure and exercised combat engineering capabilities in Europe, Asia, Africa, and Central America. He planned restoration of Iraq's oil system during Operation Iraqi Freedom and later established the Army's energy concepts and strategies. In his civilian career, he led engineering and operational teams to address challenges of cleaning up U.S. nuclear weapons sites, and processing and storing tons of plutonium from U.S. and former Soviet weapons programs. Mr. Roege is a registered professional engineer, a West Point alumnus, and holds graduate degrees from Boston University (MBA) and the Massachusetts Institute of Technology (Nuclear Engineer).

Capt. George G. Bonner

P.E., Deputy Commander, Director of Operational Logistics, U.S. Coast Guard

Captain George Bonner assumed duties as Deputy, U.S. Coast Guard Director of Operational Logistics in May, 2017. In that role, he ensures delivery of mission support logistics to units executing Coast Guard operations and serves as field headquarters for the 15 Coast Guard Base commands. Previous command assignments include Commander, Coast Guard Shore Infrastructure Logistics Center and Commanding Officer of the Coast Guard's Facility Design and Construction Center.

A native of Manteo, North Carolina, Captain Bonner graduated from the U.S. Coast Guard Academy (USCGA) in 1989 and has since served as Student Engineer and Deck Watch Officer on CG Cutter HARRIET LANE in Portsmouth, Virginia; as Facilities and Environmental Engineer at Support Center Kodiak, Alaska; as Project Manager at Facilities Design and Construction Center Atlantic in Norfolk, Virginia; as Engineering Officer for Coast Guard Greater Antilles Section in San Juan, Puerto Rico; as Chief of Planning and Executive Officer in the Civil Engineering Unit in Oakland, California; as the Chief of Infrastructure Planning in the Coast Guard Atlantic Area; and as Chief of Logistics and Commanding Officer of Military Personnel at Sector Hampton Roads.

Captain Bonner earned a Master of Science in Civil Engineering in 1995 from the University of Illinois at Urbana-Champaign and a Graduate Studies Certificate in Coastal Engineering in 2007 from Old Dominion University. He is a registered Professional Engineer in North Carolina and Virginia and a Certified Floodplain Manager. He serves on the Society of American Military Engineers (SAME) Hampton Roads Board of Direction and is a Post Past President. In 2015, Captain Bonner was selected as a SAME national Fellow and, in 2016, as the American Society of Civil Engineers, Norfolk Branch, Government Engineer of the Year.

Shana Udvardy

Climate Preparedness Specialist, Climate & Energy Program at the Union of Concerned Scientists

Shana Udvardy is the climate preparedness specialist with the Climate & Energy program at the Union of Concerned Scientists (UCS). She conducts research and policy analysis to help inform and build support to increase resilience to climate change impacts. Prior to joining UCS, Ms. Udvardy provided consulting services on climate adaptation and flood risk management policy. She was also the climate adaptation policy analyst at the Center for Clean Air Policy, director of flood management policy for American Rivers, and water program manager at the Georgia Conservancy. Ms. Udvardy also worked at the Smithsonian Institution's Monitoring and Assessment of Biodiversity Program and was a Peace Corps volunteer in Nicaragua. Ms. Udvardy is a Certified Floodplain Manager, and holds a M.S. in Conservation Ecology and Sustainable Development from the University of Georgia's Odum School of Ecology and a B.A. from Syracuse University's Maxwell School. Ms. Udvardy is frequently called upon to speak on climate adaptation and flood risk management, including two State Department speaking tours in Bangkok and Manila (2014) and Cambodia, Vietnam, and Laos (2012).

Jennifer Armstrong

Professional Staff Member, Senate Committee on Appropriations, Subcommittee on Energy and Water Development

Jen Armstrong is a Professional Staff Member for the Subcommittee on Energy and Water Development of the Senate Appropriations Committee. Jen is responsible for the water portfolio, which provides more than $7 billion in annual funding for the Army Corps of Engineers and the Bureau of Reclamation. Prior to her work on the subcommittee, Jen was with the Army Corps of Engineers since 2004 as a water resources planner, project manager, and government affairs liaison specializing in coastal storm damage reduction, aquatic ecosystem restoration, and navigation. Jen

is a graduate of Old Dominion University, where she earned her Bachelor of Science degree in biology.

Curtis Brown

Virginia Deputy Secretary of Public Safety and Homeland Security

Curtis Brown most recently served as the Chief Deputy State Coordinator at the Virginia Department of Emergency Management. He has homeland security and emergency management policy experience at the federal, state, and local levels. Previously, Curtis served as Regional Emergency Management Administrator for the Hampton Roads Planning District Commission, professional staff on the U.S. House of Representatives Committee on Homeland Security, and Senior Special Assistant to the Governor in the Office of Commonwealth Preparedness.

Curtis received a Bachelor of Science in Political Science from Radford University, Master of Public Administration from Virginia Tech, and Master of Arts in Homeland Security and Emergency Preparedness from Virginia Commonwealth University. He is a graduate of the Virginia Executive Institute, Commonwealth Management Institute, and FEMA's Emergency Management Executive Academy.

Rear Adm. Ann C. Phillips

U.S. Navy (Ret.), Member of the Advisory Board, The Center for Climate and Security

Rear Admiral Ann C. Phillips, USN (Ret) is an independent consultant working on resiliency and climate impact on national security. A Surface Warfare Officer, Rear Admiral Phillips has served in every warfare group of the Surface Navy: Destroyers, Aircraft Carriers, Amphibious, and Replenishment Ships. During her 31 years on active duty she commissioned and commanded USS MUSTIN (DDG 89), and commanded Destroyer Squadron TWO EIGHT, and Expeditionary Strike Group TWO – which included all the Amphibious Expeditionary Forces on the East Coast of the United States. Ashore she was a Senior Fellow on the CNO's Strategic Studies Group XXVIII, and managed requirements and resources for the Surface Navy as Deputy Director and Director of Surface Warfare Division, (N86) in the Pentagon. While at N86, from 2009-2012 she served on the Chief of Naval Operations' Climate Change Task Force, and Energy Task Force, where she Co-Chaired the Surface Force Working Group - developing and implementing climate change adaptation and energy reduction strategies for the Navy.

Upon retirement from the U.S. Navy in 2014 she pursued her MBA at The College of William and Mary, Mason School of Business, graduating in 2016. During this time she also chaired the Infrastructure Working Group for the Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Planning Project, developing a collaborative government and community approach to address the impact of sea level rise across the Hampton Roads region that could be used as a template by other regions facing similar challenges. She continues to work to address sea level rise and climate impact on national security at the regional, state, and national level, appeared in the movie "Tidewater", and has served as a panelist and speaker to a broad range of audiences. She also serves on local, regional, and national non-profit Boards including on the Advisory Board for The Center for Climate and Security and the Board of Directors for the American Resilience Project, WHRO, CIVIC Leadership Institute, and Coastal Community Resilience, Inc. (RISE). In her spare time, she is an active member of the Lafayette Wetlands

Partnership and coordinates an evolving wetlands restoration project for her Norfolk, VA neighborhood.

Brig. Gen. J. Robert "Bob" Barnes
U.S. Army (Ret.)

General Barnes is a Senior Policy Advisor and member of the Advisory Board at the Center for Climate and Security, where he provides policy advice on addressing the national and international security implications of climate change. He is a recognized expert on environmental security, interagency and public-private collaboration on climate change and other environmental matters with national security implications. He retired from the Army in 2001, where his last assignment was as the Assistant Judge Advocate General (Civil Law and Litigation). Previous assignments included serving as the Assistant Judge Advocate General (Military Law and Operations); Staff Judge Advocate for Forces Command; Legal Advisor to Joint Task ForceOlympics; and Chief, Administrative Law Division, Office of the Judge Advocate General. From 1989-91 he served as the Deputy Legal and Legislative Counsel to the Chairman of the Joint Chiefs of Staff, where his duties included addressing operational, environmental, and other legal issues during Operations Just Cause, Desert Shield/Storm, and other contingency operations. Following his retirement from the Army, Bob also participated in a two-year MIPT-Kennedy School study on balancing security and civil liberties, served as a consultant to the World Bank on ethics and integrity, and from 2002-2014 served as a Senior Policy Advisor for The Nature Conservancy, focusing on the national security implications of conservation and energy policies.

Maureen Sullivan
Deputy Assistant Secretary of Defense for Environment, Safety and Occupational Health

Ms. Sullivan is the Deputy Assistant Secretary of Defense for Environment, Safety & Occupational Health in the Office of the Assistant Secretary of Defense (Energy, Installations & Environment). She is responsible for DoD's policies and programs related to compliance with environmental laws; management of natural and cultural resources; cleanup of contaminated sites; safety & occupational health; fire & emergency services; green/sustainable buildings; installation emergency management; international environmental compliance and cleanup efforts; climate change adaptation planning; strategic sustainability planning; planning to address emerging contaminants; and international defense environmental cooperation. Ms. Sullivan is also responsible for overseeing the DoD Native American program, the Armed Forces Pest Management Board, and the DoD Explosives Safety Board.

From 2013 to 2014, Ms. Sullivan served as the DoD member of the Federal Interagency Floodplain Management Task Force. From 2009 to 2012, Ms. Sullivan served as the DoD member of the White House Interagency Climate Change Adaptation Task Force. She served as the DoD representative to the Office of Management and Budget Interagency Panel which negotiated the final Ozone and Particulate Matter National Ambient Air Quality Standards in 1997. She also served as the DoD Liaison to President Clinton's Council on Sustainable Development. Ms. Sullivan was a member of the team that authored Executive Order 13148, "Greening the Government Through Leadership in Environmental Management," which President Clinton signed on April 22, 2000. She also helped draft Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements." After President Clinton signed Executive

Order 12856, she was detailed to the Office of the Administrator, Environmental Protection Agency, to guide initial implementation.

Her total DoD career spans 37 years. Prior to joining the Office of the Secretary of Defense, she held positions with the Defense Logistics Agency in Virginia, Michigan, Ohio, and Germany, where she worked in hazardous waste management, international environmental activities, and pollution prevention. Ms. Sullivan has been a member of the Senior Executive Service since 2008. Ms. Sullivan holds a Bachelor of Science in Natural Resource Economics from the University of Massachusetts at Amherst.

Rear Adm. David Titley
U.S. Navy (Ret.)

David Titley is a Professor of Practice in Meteorology and a Professor of International Affairs at the Pennsylvania State University. He is the founding director of Penn State's Center for Solutions to Weather and Climate Risk. After graduating from Penn State, Titley served as a naval officer for 32 years and rose to the rank of Rear Admiral. Dr. Titley's career included duties as commander of the Naval Meteorology and Oceanography Command, and Oceanographer and Navigator of the Navy. While serving in the Pentagon, Dr. Titley initiated and led the U.S. Navy's Task Force on Climate Change. After retiring from the Navy, Dr. Titley served as the Deputy Undersecretary of Commerce for Operations, the chief operating officer position at the National Oceanic and Atmospheric Administration. Dr. Titley serves on numerous advisory boards and National Academies of Science committees. He received an honorary Doctorate degree from the University of Alaska Fairbanks, and is a Fellow of the American Meteorological Society.

The Honorable Molly Ward
Virginia Secretary of Natural Resources

Molly Ward is a native of Hampton, Virginia and a graduate of the University of Virginia and William and Mary Law School. During her career, she has handled a wide range of matters including cases involving environmental issues, land use, and planning. She has spent her life on the water fishing, crabbing, and enjoying the natural resources of Virginia.

Molly served as the elected treasurer for the city of Hampton from 2002 until 2008, reworking the operations from an ineffective bureaucracy to focus on customer service and measurable results. She eliminated the lines, restored the reputation of the office, and increased collection rates by double digits to almost 100%, which transformed the city budget.

She was elected Mayor of the City of Hampton in 2008, and was elected to a second term in 2012. Leading a diverse, historic city with 140,000 residents and representing the interests of the city and the Hampton Roads region at the Hampton Roads Planning District Commission on issues related to water quality, the Chesapeake Bay, and historic sea level rise. She also served as Chair of the Hampton Roads Military and Federal Facilities Alliance and the Hampton Roads Transportation Planning Organization.

Molly led the bipartisan delegation that persuaded the President to make Fort Monroe a National Monument, the President's first Antiquities Act designation. She has testified in front of Congress and spoken at the Department of the Interior to a nationwide group of conservation leaders on land conservation and the Antiquities Act. She was appointed to serve on the Virginia Outdoors Foundation by Governor Tim Kaine and was on the board that contributed to the

Governor's goal of preserving 400,000 Virginia acres. She most recently served as a Special Assistant to the President and Deputy Director of Intergovernmental Affairs at the White House.

The Honorable Rob Wittman (R-VA)

Congressman, Virginia's 1st District and Chairman, House Armed Services Committee Seapower & Projection Forces Subcommittee

Rob Wittman was first elected to serve the First Congressional District of Virginia in December of 2007. For more than 20 years, Rob has served in several levels of government, from Montross Town Council to United States Congress. In 2005, voters in the 99th Legislative District elected Rob to the Virginia House of Delegates, where he served until he was elected to the United States House of Representatives in 2007.

In the U.S. Congress, Rob serves on the House Armed Services Committee and the Committee on Natural Resources. On the Armed Services Committee, Rob serves as the Chairman of the Seapower and Projection Forces Subcommittee. In addition, as Co-Chair of the Congressional Shipbuilding Caucus, he is a staunch advocate for a robust Naval fleet and a healthy domestic shipbuilding industry. Rob has served as Chairman of the U.S. Naval Academy's Board of Visitors since 2010. As a member of the House Committee on Natural Resources, Rob brings his professional expertise in water quality, fisheries, and other natural resource issues. He is a champion of the Chesapeake Bay and has introduced legislation that will increase the accountability and effectiveness of cleaning up the Bay. He serves as co-chair of the Chesapeake Bay Watershed Caucus, which brings Bay issues into focus for Members of Congress.

Prior to his election to Congress, Rob spent 26 years working in state government, most recently as Field Director for the Virginia Health Department's Division of Shellfish Sanitation. He holds a Ph.D. in Public Policy and Administration from Virginia Commonwealth University, a Master of Public Health degree in Health Policy and Administration from the University of North Carolina, and a Bachelor of Science degree in Biology from Virginia Tech.

Col. D. Keith Morrow

U.S. Army (Ret.), Deputy Commander, 633rd Mission Support Group, Joint Base Langley-Eustis

Mr. D. Keith Morrow is the 633d Mission Support Group (MSG) Deputy Director for Installation Support at Joint Base Langley-Eustis (JBLE), Langley AFB, VA. The 633 MSG is comprised of the 633d Civil Enginering Squadron, 633d Communications Squadron, 633d Force Support Squadron, and the 633d Security Forces Squadron. These subordinate organizations provide engineering services and installation support to 22,000 service members, families and DoD civilians, including Headquarters Air Combat Command, and numerous other mission partners on JBLE-Langley as well as MWR and Military Personnel support to the mission partners at JBLE-Eustis.

Mr. Morrow is a native of Reading, Pennsylvania and received a Bachelor of Science Degree in Music Education from Indiana University of Pennsylvania and a Masters of Arts Degree in National Security and Strategic Studies from the Naval War College. He is married with six children. Following retirement from the U.S. Army in 2003, where he held a variety of command and staff positions as an Infantry, Transportation and Logistics Officer, he entered Civil Service. He has served in a variety of assignments with the Surface Deployment and Distribution

Command, Transportation Engineering Agency, U.S. Army Garrison Fort Eustis, the 733 MSG, and the 633 MSG of the 633d Air Base Wing at Joint Base Langley-Eustis where he is now serving as the Deputy Director for Installation Support. Mr. Morrow is the recipient of the U.S. Department of Army Superior Civilian Service Award and U.S. Department of Army Commander's Award for Civilian Service.

William A. Wrobel

Wallops Flight Facility Director, NASA Goddard Space Flight Center

Bill began his career in 1982 with McDonnell Douglas on the Delta Launch Vehicle Program. While at McDonnell Douglas, he worked various proprietary spacecraft programs. In 1990, Bill joined Orbital Sciences Corporation (OSC), working a variety of programs including TOS, Pegasus, X-34, APEX, and SeaStar. In 1999, Bill was named the Program Director for the Taurus Launch Vehicle Program, OSC. Bill also supported OSC's Advanced Programs Group, providing satellite development support for DoD customers. In 2006, Bill joined NASA Headquarters, serving as the Assistant Associate Administrator for Launch Services, Senior Executive Service (SES). He had responsibility for the administration, management, and direction for the acquisition and certification of expendable launch vehicles within NASA. In addition, he managed the overall policy definition, strategic planning, direction, and administration of the Rocket Propulsion Test Program. In 2010, Bill became Director of NASA Goddard Space Flight Center's Wallops Island Flight Facility. Bill also serves as the Director of Suborbital and Special Orbital Projects, and is responsible for Goddard Space Flight Center's suborbital and low-cost orbital flight projects. Bill was a recipient of NASA's Agency Honor Outstanding Leadership Medal in 2015, as well as various GSFC awards

The Honorable Chris Stolle

83rd District, Virginia House of Delegates

Delegate Chris Stolle represents the citizens of the 83rd House District. He serves on the House Appropriations; Counties, Cities & Towns; and Health, Welfare and Institutions Committees. Delegate Stolle also serves on the Board of Veterans Services, the Hampton Roads Transportation Planning Organization, and the Joint Commission on Health Care. In addition to championing major veterans, transportation, and healthcare initiatives, Delegate Stoll is the Chairman of the General Assembly Joint Subcommittee on Recurrent Flooding (the "Subcommittee".

Delegate Stolle was the patron of the legislation that created the Subcommittee and was also the bill sponsor for the bill that established the Commonwealth Center for Recurrent Flooding Resiliency. He and other members of the Subcommittee have passed numerous bills aimed at flooding adaptation and coastal resiliency. He received the Sierra Club's 2014 Leadership award recognizing his efforts to advance the Commonwealth's initiatives to address recurrent flooding and resiliency and was a participant at the 2015 Union of Concerned Scientists Rising Tides Summit which included local, city, and state leaders from the coastal states. Delegate Stolle is a retired Naval Officer, who started his naval career in the Submarine force qualifying as a Naval Nuclear Engineer. Dr. Stolle later earned his doctorate of Medicine at the Uniformed Services University of the Health Sciences. Dr. Stolle currently serves as Vice President of Medical Affairs at Riverside Regional Medical Center. Delegate Stolle is a native of the Virginia

Beach, a graduate of the U..S Naval Academy, and holds an MBA degree from the College of William and Mary. He and his wife, Lisa, have five grown children and one granddaughter.

Cdr. Kathleen Purdy Owens

U.S. Naval Reserves (Ret.), President, Beach Development Group

Ms. Purdy Owens received an Engineering degree from The Ohio State University and served 21 years in the USN and USNR as a Naval Aviator. She was a pilot at United Airlines for over 17 years and accumulated over 10,000 military and commercial flight hours. She holds a Class A contractor's license and her company Beach Development Group has developed several commercial properties in the Hampton Roads area. She is a member of numerous professional organizations and was recently selected as a member of Congressman Scott Taylor's Sea Level Rise Advisory Group. She serves on the Board of Directors for the Virginia Beach Central Business District Association (CBDA), the Virginia War Memorial, and the Virginia War Memorial Foundation.

Paul A. Robinson

Ph.D., Executive Director, RISE Resilience Innovations

Dr. Robinson is currently the Executive Director of RISE, a non-profit organization dedicated to developing innovative technologies in the resilience sector. Norfolk, Virginia – where RISE is based – is one of the country's communities most threatened by sea level rise. Funded at $10M, RISE aims to grow resilience-related businesses in the local area and assist in access to the worldwide market for their technologies. Dr. Robinson is the founder and CEO of AeroTech Research, a company specializing in weather hazard detection for aircraft. Dr. Robinson is also Senior Advisor to Focus Investment Bank, in the areas of Government, Aerospace, and Defense. He is also a member of a local angel investment group 757 Angels, and Abundance 360. He also works with several startups in technical and managerial roles.

Kit Chope

Vice President – Sustainability, Port of Virginia

Kit Chope joined Virginia Port Authority in July 2015 after retiring from the United States Navy with 26 years of service. A tactical jet aviator, highlights of his career include command of Naval Air Station Oceana in Virginia Beach, Virginia and Strike Fighter Squadron 22 in Lemoore, California. In his capacity as Vice President, Sustainability, Kit leads and orchestrates all internal and external Engineering, Port Development, Environmental Policy, and Process Excellence activities to ensure the Port of Virginia operates and grows sustainably and innovatively. Kit is actively involved in the local community through membership on several boards and is a 2014 alumnus of the CIVIC Leadership Institute. Kit holds a B.A. in International Politics from The Citadel and an M.A. in National Security and Strategic Studies from the U.S. Naval War College.

Paul Battaglia

Principal, Clark Nexsen, AIA, Architectural Department Head, Virginia Beach

Paul Battaglia is a designer with 20 years of experience, working as both a practitioner and an educator. He has experience with programming, project management, design, and construction

administration in federal DoD, corporate, and higher education projects. He joined the firm as a senior architect in 2011, and was promoted to Architectural Department Head of the Virginia Beach office in 2014. As the head of the Virginia Beach architectural department, he collaborates with clients and project teams to provide innovative design solutions.

He previously taught architectural design at Virginia Tech's School of Architecture and at NC State University's College of Design, and held adjunct appointments at Virginia Commonwealth University and Hampton University. Prior to teaching, he practiced architecture for nearly ten years in Richmond, Virginia where he worked on projects ranging from residential renovations and additions to large aviation, public, corporate, and healthcare projects. His ability to draw from and synthesize his experiences as both an academic and a practitioner serves his clients and his projects well. Paul served as chair of the Virginia Society Design Committee and organizes lecture series that invite award-winning practitioners and academics to share their work with the local architectural community. He has both a Master of Architecture and a Bachelor of Architecture from Virginia Tech.

The Honorable Carlos Hopkins

Virginia Secretary of Veterans and Defense Affairs

Carlos Hopkins currently serves as Virginia's Secretary of Veterans and Defense Affairs, the state's top official for coordinating state and federal resources to support Virginia's veteran community and liaison with federal defense facilities. He was appointed to his current position on September 1 after serving the previous 3 years as Counsel to the Governor. Carlos was born in Columbia, SC and is a graduate of The Citadel in Charleston, SC, where he graduated with a degree in political science. He received his law degree from the University of Richmond School of Law.

Carlos began his legal career at a small firm in Richmond handling insurance defense cases and federal court appointed matters. He then served 7 years as a prosecutor in the City of Richmond where, as a Deputy Commonwealth's Attorney, he supervised the office's narcotics and Project Exile prosecutions, as well as the prosecution of all cases occurring within the City of Richmond south of the James River. After a brief stint managing a solo practice, Carlos returned to the public sector Page 13 of 16 when he was asked to serve as the Training Director for the newly restructured Virginia Indigent Defense Commission, the state agency that manages Virginia's public defender system. In 2013, Carlos joined the Richmond City Attorney's office. As a Deputy City Attorney, his practice areas focused on tax assessment and eminent domain litigation as well as public safety. After Governor McAuliff's election, Carlos was then tapped to be the Governor's Counsel in January 2014.

In addition to his civilian legal experiences, Carlos is also a Lieutenant Colonel in Virginia's National Guard where he currently serves as the Chief Legal Advisor to the Adjutant General of Virginia. He has nearly 27 years of service in the Reserve and Guard forces of the United States as a Judge Advocate and former enlisted Soldier and, from July 2008-July 2009, he deployed to Guantanamo Bay, Cuba where he served as the Chief of Military Justice as part of Joint Task Force Guantanamo.

Rear Adm. Craig Quigley

U.S. Navy (Ret.), Executive Director, Hampton Roads Military & Federal Facilities Alliance

Craig Quigley serves as the Executive Director of the Hampton Roads Military and Federal Facilities Alliance, a public-private partnership dedicated to attracting, retaining, and growing federal facilities in the region. A career naval officer, Mr. Quigley served 27 years on active duty, achieving the rank of rear admiral and serving as Deputy Assistant Secretary of Defense (Public Affairs) at the Pentagon. Upon retiring from the Navy, Mr. Quigley accepted a position as Vice President of Communications & Public Affairs for Lockheed Martin Maritime Systems & Sensors. Following Lockheed Martin, Mr. Quigley returned to federal government service as the Director of Communication for U.S. Joint Forces Command in Hampton Roads, Virginia, during a time of great transition in that organization. Mr. Quigley assumed his current duties in September 2010.

Mr. Quigley is a 1975 distinguished graduate of the U.S. Naval Academy at Annapolis, Maryland, and has served as president of his class. A native of Winthrop, Iowa, he is an active public speaker, and believes in the value of mentoring juniors and developing teamwork to accomplish difficult objectives. He serves as a member of the Communications Committee of the U.S. Naval Academy Alumni Association Board of Trustees. He also serves on the Board of Directors of the Association of Defense Communities; the Board of Trustees of Stratford University; the Board of Directors of the NASA Aerospace Support Team; the Board of Directors of VersAbility Resources; the Board of Directors of the Virginia Peninsula Chamber of Commerce; the Board of Directors of the Hampton Roads Chamber of Commerce; and the Board of Directors of the Hampton Roads Chapter of the U.S. Naval Academy Alumni Association.

Col. Jason E. Kelly

Commander, Norfolk District, U.S. Army Corps of Engineers

Col. Jason E. Kelly assumed duty as the 58th commander of the Norfolk District, U.S. Army Corps of Engineers, on July 16, 2015. As the commander, he oversees the district's civil works, military construction, regulatory, and emergency operations missions, and is responsible for more than 350 employees in Norfolk and throughout Virginia.

During more than 23 years of service, Col. Kelly has held leadership positions from platoon to brigade, with duty in Asia, the Middle East, and the United States, including: commander of the 20th Engineer Battalion in Afghanistan; deputy commander of the 36th Engineer Brigade during Operation Iraqi Freedom/Operation New Dawn; commander of the Headquarters and Headquarters Company, 11th Engineer Battalion, 3rd Infantry Division, Assistant Operations Officer for the 10th Engineer Battalion, 3rd Infantry Division, Page 14 of 16 Adjutant for both the 44th Engineer Battalion and the 2nd Infantry Division Engineer Brigade in Korea; Plans Officer for the 4th Infantry Division Engineer Brigade; and Line Platoon Leader, Assault & Obstacle Platoon Leader, and Company Executive Officer in the 588th Engineer Battalion, 2d Armored Division.

Col. Kelly holds a Bachelor of Science degree in mathematics from West Point, a Master of Science degree in Engineering Management from the Missouri University of Science and Technology, a Master of Science degree in Statistics from the Georgia Institute of Technology, a Master of Science degree in Joint Campaign Planning and Strategy from the National Defense University, and a Master of Science degree in Strategic Studies from the United States Army War College. He is a graduate of the Joint Advanced Warfighter School, Combined Arms Services Staff

School, the Sapper Leader Course, as well as the Engineer Officer Basic and Advanced Courses. He is also a certified Project Management Professional.

Col. Kelly's awards and decorations include the Bronze Star with two oak leaf clusters, the Meritorious Service Medal with four oak leaf clusters, the Army Commendation Medal with three oak leaf clusters, the Army Achievement Medal, the Meritorious Unit Award, the National Defense Service Medal, the Kosovo Campaign Medal with Bronze Star Device, the Afghanistan Campaign Medal, the Iraqi Campaign Medal, the NATO Medal, the Combat Action Badge, the Parachutist Badge, and the Sapper Tab. He is also the recipient of the Army Engineer Association's Bronze Order of the Defleury Medal

Cpt. Douglas Beaver

U.S. Navy (Ret.), Military Affairs Liaison, Norfolk City Manager's Office

A native of Honolulu, Hawaii, Doug graduated from Virginia Tech and was commissioned in the U.S. Navy through the Naval Reserve Officer Training Corps program in Jun 1991. He earned an Executive Master of Business Administration degree from the Naval Postgraduate School and is a 2016 alumnus of the CIVIC Leadership Institute. Doug is a member of the Virginia Tech Corps of Cadets Alumni Board of Directors. Doug served for 27 years in the Navy as a Naval Flight Officer where he commanded Carrier Airborne Early Warning Squadron 123 (VAW123) during deployed combat operations and finished his last assignment as the Commanding Officer of the largest Navy base in the world, Naval Station Norfolk. Doug currently serves as the Military Affairs Liaison for the City of Norfolk where he develops, implements, and manages military and Veterans' services programs, initiatives, and activities. He is on the City Manager's Senior Executive Team and is the city's representative to the Military Economic Development Advisory Committee, Veterans Affairs Commission, and Norfolk NATO Festival Committee.

The Honorable Donnie Tuck

Mayor, City of Hampton

Donnie Tuck was born August 16, 1954, in Chapel Hill, NC. He graduated from Chapel Hill Senior High School in 1972 and from Duke University in 1976 with a Bachelor's degree in Public Policy Studies. He is also a 1993 graduate of Old Dominion University with a Master of Public Administration degree. He has had distinguished careers in broadcasting, sports information/athletic public relations, technical writing, and local government. Donnie was elected to serve on the Hampton City Council on May 4, 2010 and re-elected to the Hampton City Council on May 6, 2014. On May 3rd of this year, he was elected as Hampton Mayor. He is married to Robie Tuck (Major, USAF Ret.) and has a daughter, Elizabeth.

Capt. Dean VanderLey

Commanding Officer, Naval Facilities Engineering Command, Mid-Atlantic

Capt. VanderLey is a native of Tacoma, WA. He graduated from Calvin College in Grand Rapids, MI with a B.S. in Mechanical Engineering and received his commission from OCS in Newport, RI in 1991. He also holds a Master of Science Degree in Civil and Environmental Engineering from Stanford University. After completing the nuclear submarine training pipeline, Capt. VanderLey served on the USS MICHIGAN (SSBN 727)(GOLD) in Bangor in various division officer positions including Main Propulsion Assistant and Tactical Systems Officer from

1993-1996. He then served as the lead instructor for the Trident Prospective Commanding Officer course at Trident Training Facility, Bangor. Capt. VanderLey was selected for transfer to the Civil Engineer Corps (CEC) in 1998. His initial CEC tours included Assistant Resident Officer in Charge of Construction at Puget Sound Naval Shipyard; Assistant Public Works Officer at Naval Air Station Keflavik, Iceland; and Operations Officer for Naval Mobile Construction Battalion SEVEN where he deployed in support of Operation Iraqi Freedom in 2003.

Capt. VanderLey's recent tours have included Planning Officer at CNIC; Executive Assistant to the Principal Deputy Assistant Secretary of the Navy (Installations and Environment), Mr. Wayne Arny; Commanding Officer of NMCB FOUR including deployments to Kuwait and Afghanistan where he was awarded the Battle "E", the Meritorious Unit Commendation (Army), and the Peltier Award as the best active duty Seabee battalion; Public Works Officer for Naval Station Norfolk; Civil Engineer Corps Head Detailer and Deputy Commander for Operations for NAVFAC Atlantic. He is now the Commanding Officer of NAVFAC Mid-Atlantic.

Capt. VanderLey is qualified in Submarines and Seabee Combat Warfare, a Joint Qualified Officer, a member of the Acquisition Professional Community, a registered Professional Engineer, and a Certified Energy Manager. His decorations include the Legion of Merit, Bronze Star, five Meritorious Service Medals, three Navy Commendation Medals, four Navy Achievement Medals, the Combat Action Ribbon, the Presidential Unit Commendation Ribbon, and the Iraq and Afghanistan Campaign Medals. He is married to the former Veronica Kalchschmid of Thousand Oaks, CA. They have four children: Naomi, Isaac, Jacob, and Grace.

Ben McFarlane

Senior Regional Planner, Hampton Roads Planning District Commission

Ben McFarlane is a Senior Regional Planner for the Hampton Roads Planning District Commission, the regional planning organization for southeastern Virginia. Mr. McFarlane has been with the HRPDC for nine years and is the lead planner for the Commission's coastal zone management and coastal resiliency programs. He has been a principal or contributing author on several technical reports produced by the HRPDC on issues such as climate change, sea level rise, green infrastructure, and water quality protection. Mr. McFarlane is a member of the Virginia Coastal Policy Team, which advises the Virginia Coastal Zone Management Program on policy and funding priorities. He received a B.A. in Economics and a Master's of Urban and Environmental Planning from the University of Virginia.