STATEMENT OF

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SUPERINTENDENT OF THE UNITED STATES NAVAL ACADEMY

BEFORE THE

HOUSE SUBCOMMITTEE

ON

ENERGY AND POWER

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Summary

The United States Naval Academy (USNA) has made significant progress in mitigating the impacts of heavy rain and high tides, preparing for potential large-scale storms similar to Tropical Storm Isabel, and developing a plan to mitigate the effects of future rising sea levels.

To control nuisance flooding caused by the combination of rainfall and tides, USNA has several projects in various stages of implementation. These include the completed Cooper Road Storm Water Management Project; the utilization of ground floor door dams on buildings in the flood plain, road and parking lot closure gates, and existing exterior building walls as flood walls where feasible (ongoing); and the upcoming Cyber Building flood wall (in procurement).

Tropical Storm Isabel caused widespread flooding in 2003, and we have taken several measures to ensure that a similar event will not have the same catastrophic impact. We have raised the ground floor elevations of new construction, relocated and elevated our chiller plant, relocated HVAC equipment to rooftops, and raised electrical outlets on ground floors. We have also installed check valves on underground tunnels and storm lines. We have identified suitable opportunities for “wet flood-proofing” and instituted operational protocol for equipment and chemical relocation in classrooms and labs.

Lastly, I have recently chartered a Sea Level Advisory Council, co-chaired by leading faculty members in the Academy’s Naval Architecture, Ocean Engineering, and Oceanography Departments, to better project future sea level changes in the Annapolis area and identify vulnerabilities at the Academy. From this analysis, we will prioritize these vulnerabilities and work to define project solutions in this critical area of concern.

Introduction

Mr. Chairman, distinguished members of this committee, thank you for the opportunity to appear before you today on behalf of the United States Naval Academy. I am pleased to report solid progress with respect to flood prevention, response, and preparing for the effects of rising sea levels at the Naval Academy.

Managing Heavy Rain and High Tides

Before discussing the possible effects of rising sea levels, I would like to address our recent and ongoing efforts to manage the combination of heavy rain and high tides. Our institutional agility in dealing with conventional flooding will directly impact our success in managing more drastic short- and long-term climate-related events. Simply put, we can better handle a major storm or drastic sea level rise if we can manage surges caused by heavy rainfall and high tides.

To control nuisance flooding, we have several projects in various stages of implementation. First, the completed Cooper Road Storm Water Management Project uses underground reservoirs to capture storm water. The storm water remains in the reservoirs until the water table can naturally absorb it. The Cooper Road Project has been very effective at managing storm water that once caused regular flooding, and will likely serve as a model for other areas on the Yard.

Next, we now utilize door dams at the ground floor openings on buildings in the flood plain. We have installed closure gates on roads and parking lots, and identified existing exterior building walls for use as flood walls.

Lastly, our upcoming Cyber Building, currently in procurement, will be located on a corner of the Yard where we occasionally experience nuisance flooding. The building will be designed to act as a flood wall for that corner. Enclosure 1 provides a visual summary of the Naval Academy's overall flood protection system.

Infrastructure Improvements after Tropical Storm Isabel

Next, I would like to discuss some of the infrastructure improvements we have made in the wake of Tropical Storm Isabel. In 2003, Isabel caused widespread flooding and equipment damage throughout the Yard, totaling $120M to repair. Enclosure 2 shows a flood inundation map to illustrate the storm's effects. We have taken several measures to ensure that a similar event will not have the same detrimental impact.

We have raised the ground floor elevations of new construction. For example, Wesley Brown Fieldhouse was built above the flood level and acts as a flood wall. We relocated our chiller plant and moved HVAC equipment to rooftops where feasible. We have raised electrical outlets on ground floors, and installed check valves on underground tunnels and storm lines.

Where suitable, we have also identified opportunities for "wet flood-proofing," wherein we designate buildings and fields that will be allowed to flood during once-in-a-hundred-year type storms. These structures can handle some flooding with minimal damage, and using the resources required to keep them dry would not be cost effective. Perhaps most importantly, we have instituted operational protocol for equipment and chemical relocations in classrooms and labs in the event of a major storm.

Preparing for the Future

To prepare for future flooding, major tropical events, and rising sea levels, I recently chartered the Naval Academy Sea Level Advisory Council. The Council is co-chaired by Professor Dave Kriebel, our Naval Architecture and Ocean Engineering Chair, and Captain Emil Petruncio, USN, our Oceanography Associate Chair. The Council also includes Ms. Sara Phillips, Architect of the Naval Academy, and will use our faculty's academic research for actual infrastructure implementation. A council member from the Naval Facilities Engineering Command will ensure coordination across commands.

The Sea Level Advisory Council will look to better project future sea level changes in the Annapolis area and identify the Naval Academy's vulnerabilities. From this analysis, we will prioritize these vulnerabilities and work to define project solutions to inform our future resource management in preventing and minimizing the damaging effects of inundation.

The Next Generation

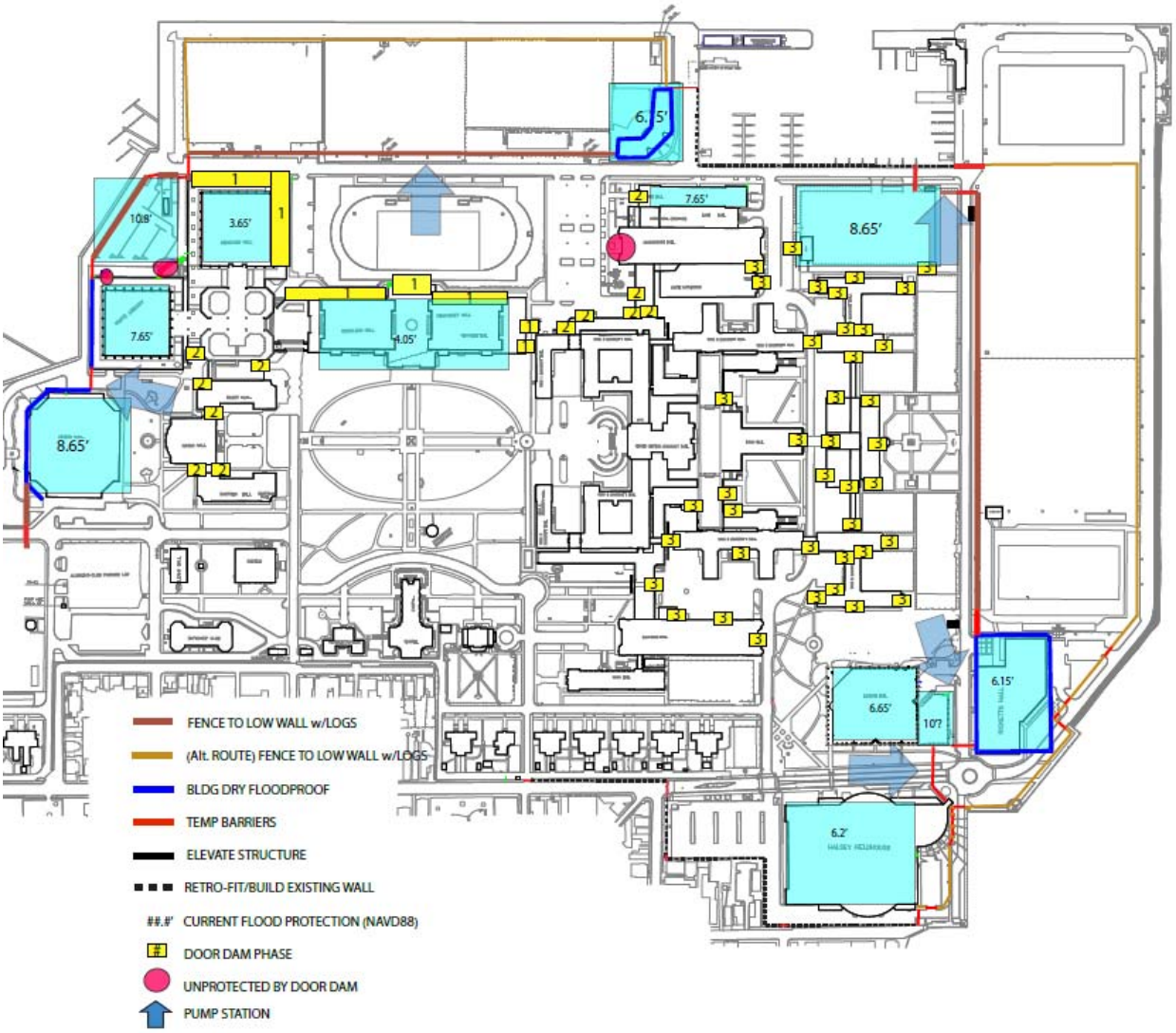
Finally, I think it is important to mention some of the academic courses available to our midshipmen, who will eventually be responsible for mitigating the long-term effects of sea level rise at the Naval Academy and beyond. We currently offer two courses specifically designed to investigate this issue and educate its inheritors. The first is Oceanography 445 - Global Climate Change. This course reviews the science of climate and the natural and human factors that influence the local, regional, and global climate. We also offer Political Science 345 - Environmental Politics and Security. This course examines the major environmental problems currently influencing U.S. domestic and environmental security policies, and includes weekly

outside speakers who present material from various perspectives, including representatives from industry, the military, and the advocacy community.

Conclusion

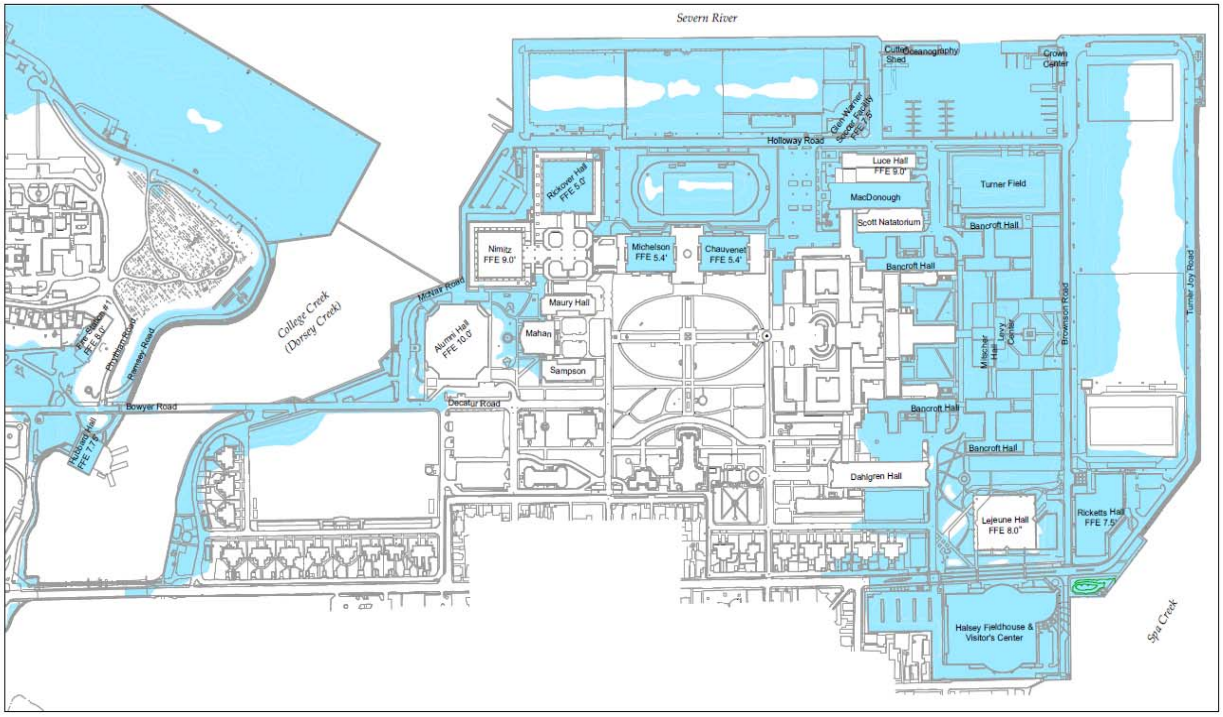
Mr. Chairman, distinguished members of this committee, thank you for the opportunity to appear before you today. In summary, the Naval Academy is aware of the risks of heavy rain, high tides, severe tropical weather, and rising sea levels. We are studying and adapting to these risks to identify, prioritize, and develop effective solutions to future vulnerabilities. I am prepared to address any questions you may have regarding my testimony.

USNA Flood Protection System



Enclosure 1

Tropical Storm Isabel Flood Inundation Map



Enclosure 2