



U.S. Army Corps of Engineers Institute for Water Resources

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Unmanned Aircraft System Considerations within USACE Civil Works

ALEXANDRIA, VIRGINIA. Unmanned aircraft systems (UAS) offer a plethora of potential for the U.S. Army Corps of Engineers (Corps) Civil Works Program. They have been touted to track hurricanes, create 3D maps, protect wildlife, assist farmers, locate archaeological sites, improve metrology, and conduct search and rescue among other applications. More recently, Amazon has claimed that packages will soon be delivered to your front door via a UAS once Federal Aviation Administration (FAA) regulations are lifted. Realistically, it may still be many years before packages are dropped at one's front door. Regardless, government agencies and companies alike are starting to explore these capabilities due to some relaxation of FAA restrictions beginning in 2014. This leads us to question how will this impact the Corps and what is the future of small unmanned aircraft systems within the Corps?

The Institute for Water Resources sought out this question in their new report title "Unmanned Aircraft System Use within the U.S. Army Corps of Engineers Civil Works." This report was published on June 29, 2015. It was written as part of an IWR policy research project on planning technologies. The primary audience for this report is Civil Works within the U.S. Army Corps of Engineers (USACE); however, those within the UAS field throughout the Army will likely benefit from this report.

Small unmanned aircraft systems offer the potential for cost-effective surveys of remote and/or small areas while offering new and improved tools to collect data and aerial imagery. Images and video are proving essential for Corps operations to inspect infrastructure, emergency management and communicating with the public through aerial video. The Corps' use of small systems is expanding and research is underway by the Engineer Research and Development Center to test new applications of this technology, such as spot spraying invasive species or taking soil samples. The UAS applications within the Corps are expanding quickly!

This report summarizes the state of the UAS technology with a focus on small UAS, its current and future use in the Corps Civil Works (non-military), challenges in using an UAS, and the process for acquiring UAS services. Finally, the report concludes with recommendations for the Corps UAS program and management. The mentioned companies and products are not endorsed by the government and serve only as examples. This paper is not a substitute for official guidance, memoranda, policies, rules, laws, or procedures; it has a summary and generalization of the key procedures and policies that a UAS proponent should keep in mind. The laws and regulations are changing often and it is important to look for the latest updates when pursuing UAS services.

The team lead and principal author of the report was Erin Rooks (Institute for Water Resources), along with a broad collaboration from others at IWR, Corps Engineering and Construction, the UAS Community of Practice and Working Committee, South Atlantic Division UAS Operations Center of Expertise - Jacksonville District, the Photogrammetric Center of Expertise - St. Louis; Army Aviation Engineering Directorate (AED); the Program

Executive Office Aviation (PEO AVN); Corps Southwestern Division, New Orleans, Huntington, Omaha, and the Engineer Research and Development Center; and various companies from the UAS industry and services.

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