

Customer Success Story

Stormwater Management Consulting



HEC-RAS Bridge Redesign in New Jersey

In 2017, civil engineer Joseph Skupien was interested in trying GeoHECRAS, CivilGEO's innovative river modeling software. With a distinguished career as a hydraulic engineer spanning more than 40 years, Skupien was accustomed to using the US Army Corps HEC-2 software and later the HEC-RAS software, and building hydraulic models with long-standing, familiar practices. His interest was tempered by the usual questions related to trying something "new". However, since his introduction to CivilGEO's GeoHECRAS, he has used the software regularly on a broad range of projects including, most recently, for a hydraulically complex bridge redesign project in New Jersey.



In collaboration with New Jersey County's Division of Engineering, Skupien performed a hydraulic modeling analysis to understand the hydraulics of a dated and structurally deficient humpback or perched bridge and to evaluate how to size a new bridge and reengineer the road approaching the bridge through modification of the road's vertical curvature. The bridge size and road profile, also the site of chronic flooding, presented several design challenges and a tough hydraulic balancing act was in order. Options included enlarging the bridge opening to let more water through, which could result in increased downstream discharges, or raising the road, which would alter the road overtopping hydraulics and possibly increase flooding upstream. Skupien is still in the process of analyzing the site's hydraulic characteristics, but he is clear on one point: the ability of GeoHECRAS to efficiently process a variety of terrain data expedites the process of developing hydraulic simulations. This gives him time to carefully study and refine alternatives and design solutions.



The most amazing thing about GeoHECRAS is that it lets me spend time on the analysis, not the data input."

Joseph Skupien, P.E.



It allows me as an analyst, modeler and design engineer, to focus on the model, the problem, and not spend a lot of time or budget on handling the data. A lot of data goes into these models. You can spend a lot of time taking that data from the surveyor's data log or map and converting it into a form of data that HEC-RAS requires. CivilGEO's software manages all the different forms of data and all the different methods of analyzing and constructing data. It was hard to believe when I first started using it. As an engineer, you need to understand the data and the data conversion process, but with GeoHECRAS you don't have to do that work."

Joseph Skupien, P.E.

President
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The use of GeoHECRAS for floodplain delineation has resulted in significant time and cost savings as well. Skupien notes that the software allows him to easily convert and merge data and create the necessary contours and cross-sections for flood maps. He observes how easy it is to generate results for a floodplain analysis and then have the time to refine the simulation and check it for accuracy. Adding cross-sections or making other modifications to the model at a later point in the process presents no difficulties, since they are performed directly in the GeoHEC-RAS software. The efficiencies realized both at the front end of model construction and during model refinement means the client benefits from the additional time available for analysis and consideration of design alternatives.



Engineering projects are typically collaborative efforts and Skupien points out that GeoHECRAS gives him the ability to easily share his results and solutions with road and bridge designers and other professionals using the visualization tools GeoHECRAS offers.

Skupien notes that he has made use of virtually all of GeoHECRAS' many capabilities: From entering data in different formats, to merging and converting data, to extracting cross-sections and using other georeferencing tools.

The quality of CivilGEO's technical support has also made a positive impression on Skupien. In the early days of working with the software, he struggled at times with GeoHECRAS' still unfamiliar platform and methods of managing data. He discovered that the technical support team at CivilGEO gave him everything he needed to quickly get up to speed.



"The folks at CivilGEO, the tech support, is amazing! I was worried about getting into something new. But they were quick to look at my model and get back to me. I'm a busy professional and I can't wait three days for a response. CivilGEO is without question expert in what they do!"

Joseph Skupien, P.E.

For a civil engineer like Joe Skupien, whose career began modeling with HEC-2, the predecessor to the USACE's HEC-RAS, the data processing capabilities of GeoHECRAS was a welcome alternative to the labor and time-intensive model-building methodologies of the past.



Connect with CivilGEO

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