Meet the Expert, Rebecca Briesmoore, Civil Engineer

Rebecca Briesmoore, Civil Engineer, with the U.S. Army Corps of Engineers, is a graduate of Iowa State University College of Engineering with a civil engineering degree. Rebecca has been with the Corps for four years and works in the Hydraulic Engineering Section. She and her colleagues do maintenance, inspections and operate the locks and dams on the Mississippi and Illinois Rivers to allow for navigation. Rebecca’s hours can vary, because there always has to be someone at work every day to make sure everything is working (gate settings) properly.

Rebecca does dam safety projects. She also studies dams, which are big structures that hold a lot of water. The Corps has to develop emergency action plans on what would happen in the event of a flooding or water emergency and consider what, if any, communications would be needed. She also works on preventative measures and computer modeling to simulate what would happen to the river, dams, locks and neighboring communities in the event if something would happen.

While her job has her mostly in the office, she does get to go on inspections, visiting project sites, and presenting to communities. With inspection work, different engineers look for different things. When she goes out, she is looking at what the water is doing to the structure. The water is really strong during floods and can cause soil erosion. This can be harmful to the structure.

There may be problems under the water, causing holes which can affect the bottom of the dam’s structure. Divers also go in and inspect. The engineers talk to the lock masters, because water can be a slow process to study, so it might not change right away, and the lock masters notice things that happen over a period of time, rather than people seeing them who are just out there for a day.

When Rebecca and her engineering colleagues assess safety needs based on what is happening at the site. If there is any type of construction going on, they wear safety vests and hard hats, as well as safety boots and goggles. If they are going up and onto the dam with much walking, then they will wear a harness for fall protection.

The Army Corps of Engineers has seen an increase in flooding in the last twenty years. Just because a flood might be reported as a 500 year event doesn’t mean it only happens once every 500 years, just that it has a low probability of happening. It is a good way of educating people that the terminology just means that it likely won’t occur again for some time, but it can. Flooding can even happen in the winter, not just spring and summer, so these factors are changing the way they operate.

They are always looking at all kinds of options for flood control with their work and inspections. While dams can be environmentally unfriendly by blocking wildlife and getting clogged with debris, the Corps is doing different things than building dams and are instead exploring options such as home buy outs/incentives, as well as working with communities to develop a floodplain. Some areas are putting in parks or different types of trails along the river to go about other efforts to minimize flooding. They are also putting in levees, which are like really long hills, that can be useful.

Rebecca really likes that she gets to go outside and do different things, including ecosystem restoration projects and presenting her modeling projects to officials and communities. Rebecca works on many models of river systems, mapping if a dam broke, creating river models where she essentially puts a river into a computer and sees what will happen based on different factors. Sometimes it can take a long time
to develop those detailed models – weeks at a time. She knows that her long efforts are worth it, but making them takes a long time.

Rebecca enjoys her work with others and notes that sometimes people think that engineers work alone all the time. She gets to work with people at work, in communities, towns, officials, biologists, and likes that lots of different people have to work together. Rebecca thinks presenting and being able to work with others are great skills to have and develop.

She enjoys writing and thought she wanted to be a writer when she was young, but decided on engineering because she enjoyed math and science and liked the idea of problem solving. In her job as a civil engineer, she enjoys working with different people and having different ideas.

Rebecca would like everyone to remember that water is really powerful. People forget that it can be really dangerous and everyone needs to have respect for what it can do and its strength. It can wash away trains, bend metal, and devastate communities. Rebecca wants everyone to be careful, and don’t ever drive through flood water, as it only takes about 6 inches of water to wash away a car.

But, it’s also good it is powerful. Red Rock Dam has a hydro power plant going in that will produce electricity for the community of Pella off the dam. Rebecca knows that water has a lot of uses, and it is very important. We can’t do anything without it, which is what makes it fun for her to study and work around.