Flood Awareness Month – PODCAST 7: River Gauges
RUN TIME: 5 MIN 28 SECONDS

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STEFANIE: I have a question about river gauges. Now, do you have your own river gauges, then, along the rivers in Iowa? Are there just certain rivers? Do you work with the USGS? How does that work as far as measuring the levels of the river?

JEFF JOHNSON: Well, the National Weather Service has some, but the lion's share are owned by the USGS – and, uh, they're owned and operated by that agency we work closely with. And they do a pretty good job with it –they're well collaborated and the information is done very accurately and we have a method to get that information to us real time to use both in monitoring the river, but also into the models themselves as inputs. You can get information into the model from the river level. Also, it, it gives us a benchmark as to where we're at with the river. So yes, a lot of them are owned by that agency.

STEFANIE: Mmm hmm.

JEFF JOHNSON: Recently, there have been, since the 2008 flood, the Iowa Flood Center…

JEFF ZOGG: Mmm hmm.

JEFF JOHNSON: …has added river gauges along the river at various points, particularly when the USGS hasn't had gauging or there's been a lack of gauging…

JEFF ZOGG: Mmm hmm.

JEFF JOHNSON: …and that information is used and it's available to the public I believe on their website at this time, at the Iowa Flood Center.

JEFF ZOGG: Mmm hmm. Sure.

JEFF JOHNSON: And the Weather Service uses that information. We use all information. You wanna expand on that a little?

JEFF ZOGG: Mmm hmm. Sure. I'll go back to the, the USGS river gauges. The U.S. Geological Survey – we also call them the USGS – they operate a network of over 150 river gauges across the state of Iowa, and they are the experts in, in river gauging. We at the Weather Service – we just have a handful of gauges statewide. It's the U.S. Geological Survey that owns and operates the vast majority of them. The U.S. Army Corps of Engineers also owns and operates a few of the gauges, but even the U.S. Army Corps of Engineers will contract with the USGS to own and operate gauges as well. It's important to realize that for many of the gauges that the USGS operates – it's not funded entirely by federal tax dollars. A lot of these gauges are cooperative efforts between the federal government and the local

community. There's many gauges where the federal government may take up 40 percent of the cost of the gauge and the remaining 60 percent is shared among the local community. It could be different communities, it could be counties. I think it's important that people realize in their local community – their, their communities are also involved indirectly in the stream gauging by monetarily supporting the gauges that the USGS operates. I don't think a lot of people realize that. That input's very important because without the local community support, it would be impossible for the USGS to have the amount of gauges out there. By having the cost-sharing from different communities the USGS is able to install additional gauges and then give that information to us. The data that's provided by those gauges is very important. Although we can forecast the rivers, we need to know during a flood event what the river's actually doing. We want to make sure that what the model is expecting the river to do is what the river's actually doing. And that's where those gauges are, are very important, in getting us real-time information.

Another thing that the USGS does is they'll go out and make real-time measurements of the rivers. While they're in flood they'll actually measure the flow of the river and give us that information too, again, as another check to be sure that those river gauges are, are reporting accurately – and that our forecast is tracking. So, it's important for people to realize that the USGS – they're oftentimes unsung heroes. They're behind the scenes, but they're providing us very important, vital information that without it, it would have a big impact on our ability to forecast the rivers.

The Iowa Flood Center was created after the 2008 floods, and it's part of the University of Iowa in Iowa City. They've deployed – in coordination with the Iowa Department of Natural Resources, among other agencies – a network of about 100 stream sensors across the state. These sensors are put on bridges and give us information on, on river levels. They're not maintained to the same extent that the USGS maintains their gauges. They don't provide flow information, either. We view them as supplemental; they're definitely valuable, but we combine that with the information that we receive from the USGS to make our river forecasts.

STEFANIE: It sounds to me like it's just a real collaborative effort – you guys working in concert with not only state and federal agencies but with the locals.

JEFF JOHNSON: Yeah, it certainly is. I mean weather forecasting, on the other side of this, is done predominantly by the National Weather Service. I mean, we have our own weather prediction models. We own the satellites – NOAA does. We have access to a lot of the surface data – we have other sources of surface data. But unlike that, river forecasting, we are dependent on inputs – particularly with the river gauges – from other sources. So, you know, in talking of the arena of funding, National Weather Service budgeting does not account for these river gauges. So it's real important, I think, for people to know to keep those funding levels up – especially in these days of tight budgets – that we don't want to lose any of these river gauges. Because I think that would be detrimental to the flood forecasting in that area wherever that gauge is lost–

STEFANIE: And those towns depend on your forecast when there's a flood threat.

JEFF JOHNSON: Oh, absolutely. They need that information in order to prepare and respond to that flood threat. I mean if it's – do you need to sandbag, or do whatever you need to do

JEFF ZOGG: Mmm hmm.

JEFF JOHNSON: …evacuate…. Without the river gauges, we're blind, really.

JEFF ZOGG: And more importantly, the real-time river gauges – there's a lot of what we call "staff" gauges out there which are essentially rulers sticking in the water a person can go read. That information obviously is valuable, but the middle of the night during a flood event, who's gonna go, uh, read a staff gauge and call it in to us every 15 minutes? So those real-time river gauges are very important. It has happened elsewhere in the National Weather Service across the country where for whatever reason, a

real-time gauge that's operated by the USGS is discontinued. The gauge is ripped out, and the Weather Service will stop doing forecasts for that location. And that means with no forecast, no flood warnings. So those real-time river gauges are very important in our ability to do forecasts and warnings for flooding.