Linda Engle Introduction: Sustainable Idaho is brought to you by the Portneuf Resource Council.

Madison Long: Welcome to Sustainable Idaho. I'm your host Madison Long and today I talked with Kendra Kaiser, the Director of the Idaho Water Resources Research Institute and Associate Research Professor in the Department of Soil and Water Systems at the University of Idaho.

Kendra Kaiser: The Idaho Water Resources Research Institute, IWRRI, we are one of 54 sister institutes across the country, and our role is to identify priority research needs for the state and the region, conduct research on those needs, and then disseminate information out to those communities.

ML: IWRRI's current research involves hosting the Big Wood River Dashboard, and assisting in leveraging resources to make data gathered by the dashboard visually compelling and easily accessible for users. What is this water dashboard and how did it get started?

KK: The Big Wood Dashboard is a really exciting project. We started it by getting a request from the Wood River Water Collaborative to develop some additional tools to help folks in the basin make some decisions. They were looking for additional information about streamflow forecasting at some critical locations in the watershed that weren't currently being forecasted by existing national tools. That helps farmers make decisions about what crops to plant, how much water might be available for them in the upcoming irrigation season.

ML: The Big Wood River is located in South-Central Idaho and is one part of the Wood River Valley covered by the Wood River Water Collaborative. The dashboard is set up to aid farmers and ranchers in the area, but are there any other entities that will benefit?

KK: One of the components of the dashboard is a tool that looks at how stream temperatures in Silver Creek change as a function of stream flow. Silver Creek is a blue ribbon trout fishery, and a lot of folks really love fishing over there, and high stream temperatures can negatively impact fish. This is a model that helps people understand how stream flow in Silver Creek is related to temperatures and help give people the visual of the type of conditions that might suggest that they need to be careful with how the fish are doing in the stream.

ML: What started as what Kaiser calls a "grassroots" effort, the Wood River Water Collaborative was formed through a Bureau of Reclamation WaterSMART grant purposed to bring different types of users together to identify the biggest priorities to improve water system management. The Bureau of Reclamation is a federal agency that oversees water resource management. Irrigators, non-profits, and researchers came together to decide what tools would be most beneficial forecasting wise.

What are some of the data points used by the Dashboard?

KK: One of the things we were really excited to do with this project was to integrate data from a lot of different sources.

ML: Kaiser mentioned streamflow data used from the United States Geological Survey, mountain snow observations from the Natural Resources Conservation Survey, valley weather data from the AgriMet Network, and then also gridded remote sensing products.

KK: Our back-end database pulls in all these different data sets and then synthesizes it down to pull out relevant metrics for a given year. On the first tab of the webpage in the dashboard, it focuses on our streamflow volume forecasts. And so we start predicting the volume of the irrigation season water availability in February - all the way through the end of April. The next page shows current conditions in the watershed in the context of the historical ranges. You can look at data and say, I know what the wintertime temperature has been, and I can see that it's much higher than it ever has been before. Or I can see that our snowpack is about on average. That's a good way for people to contextualize what the forecasts are showing.

ML: With data refreshed and updated every morning, farmers and ranchers can go online and see how conditions are changing.

KK: The primary benefit of where this tool is useful is in the early season conditions, such as March or in April. A lot of the irrigators that we talk to are making decisions about what crops they're going to be planting around that time of year. So they can decide, am I going to go towards a crop that's going to have higher water use requirements, or can I, should I shift towards something that will have a lower water use requirement? Currently, the tool does not continue updating through the summer or through peak irrigation demand, but we have submitted a grant to the Department of Agriculture, the USDA, to get additional funds to expand the modeling work.

ML: What kind of feedback have you been receiving from these irrigators?

KK: Some of the early feedback that we got is that people have different familiarities with different types of data visualizations that many scientists are really comfortable with. One of their requests was including written descriptions of how to interpret some of the data.

ML: How might this dashboard change current irrigation or water management practices?

KK: I think water managers and water users across the state are continuing to look for new tools and new resources that can help them make decisions. By developing a tool like this, we are creating a new tool in their toolbox. The unique thing that this one adds is it gives folks a look into the back end of how the model is working by showing those current conditions. It helps folks put the forecast in context of what's going on in the basin.

ML: Although the Big Wood River Dashboard hasn’t heard feedback on whether or not the dashboard was helpful for irrigators in choosing different crops, the Big Wood Groundwater Management Area Advisory Group is considering how they might use these forecasts and tools to manage water rights and groundwater resources.

KK: One of the things that's really interesting about groundwater management plans in the state is that they rely on both current data as well as some forecasted data to evaluate if groundwater users need to be curtailed to protect surface water users' rights in a given basin. Tools like this provide additional information for them to evaluate if curtailments are really necessary or see when conditions are changing in the basin.

So as an example, you could have an April 1 forecast, but then by the middle of April or the middle of May, conditions could change really rapidly. And if you're really beholden to that April 1 forecast, it doesn't give you an opportunity to adaptively manage the system. Having resources that are updated daily demonstrate how the system is changing through time, really gives them a new tool to adaptively adjust to the conditions in the watershed.

ML: Is there anything you wanted to add about the Big Wood River Dashboard and its broader implications?

KK: I think that this project is a really exciting opportunity to demonstrate what it looks like for communities to engage with the universities on projects that are really important to them. When we have communities coming directly to us, telling us what they need, then it gives us a really exciting opportunity to create research that's relevant and useful to them. This is just the first of many exciting projects that IWRRI has in the works to kick off all of the great things that we have coming.

ML Outro: Thank you to Kendra Kaiser from IWRRI for educating us about the Big Wood River Dashboard and how it's helping Idaho farmers and ranchers. This Dashboard utilizes an interactive set of tools to visualize forecasting weather, stream, and watershed data in the Big Wood River Basin, Camas Creek, and Silver Creek. With constant updates, farmers and ranchers can use this dashboard to see historical and current trends to support their farming decisions in the early season. If you would like to check out the dashboard, visit our website kisu.org/sustainableidaho for details.

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