North Plains Water News

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Master Irrigator Hits the Road for 2022

The Master Irrigator Class of 2022 will meet in a new location for the second time in as many years. After moving from the original location at the North Plains Water Conservation Center (WCC) to the Moore County Community Building in 2021 to allow more space for social distancing, the program will be presented at the O'Loughlin Center in Spearman in 2022.

Members of the Master Irrigator Project Advisory Committee (PAC) and the board of directors suggested a change of location to encourage increased participation from across the district. "Although participants have come from every county in the district over the five years of the Master Irrigator, the numbers show that a significant concentration of class members were in the counties closest to the WCC," said board president Bob Zimmer. After consideration of multiple sites, the O'Loughlin Center was selected. Other sites will be considered by the PAC for future Classes.

The award-winning Master Irrigator Program is an interactive education program designed to encourage adoption of water conservation and efficiency practices by reducing the learning curve through in-class presentations, demonstrations and peer-to-peer discussion. It's a four-day, 24-hour, intensive program spread over four consecutive Wednesdays. The curriculum is designed by retired Texas A&M Professor, Steve Amosson and based on his well-established Master Marketer Program.

The content is created with extensive input from the PAC, including growers and leaders from industry, education and research. The four, one-day sessions explore the latest information related to agromomics, irrigation scheduling, irrigation systems, and special topics. Each day begins with an economic analysis of the conservation practice and ends with a producer panel composed of growers and other experts with first-hand, real-world experience with the subject matter. According to Amosson the panels are a crucial part of the success, "The producer panels are critical because of the discussions that ensue between the participants and the panelists, and because of the credibility their fellow growers carry."

Finally, after participants complete the training, they qualify for up to $10,000 in cost-share funding to put toward the cost of applying a conservation practice to their own operations. The funds are made available through the Texas Water Development Board Agriculture Conservation Grant Program. "The TWDB has stepped-up to partner with the district on multiple occasions to support programs that are making a difference in conservation," said general manager Steve Walthour.

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Soil health and its impact on water use efficiency are among the topics discussed. Also included in the curriculum are explorations of irrigation system options, irrigation scheduling and emerging technologies.

Master Irrigator Class of 2021 from Left to Right; Back: Gene Bain, Brian Davis, Donta Norman, George Wall, Bryce Betzen, Charles Russell, Larry Schneiderjohn; Second Row: Cari Beauchamp, Coury Tucker, Amanda Davis, Cameron Betzen, Kevin McGarraugh, Laney Miller, Dennis Coker; Front Row: Brian Lubbers, Paul Burgener, Tom Davis, Rustin Russell, Nathan Arp, Gary Brorman. Deadline to apply for class of 2022 is Friday, March 11th.

Missouri River Transfer Project Would Mitigate Flooding and Protect Economies in the Six-State Ogallala-High Plains Region

The Missouri River watershed is the longest drainage basin in the U.S. and encompasses most of the central Great Plains. The Missouri River has a long history of severe and devastating flooding events. The Army Corps of Engineers and the Bureau of Reclamation developed plans to mitigate flooding on the Missouri River that became a major part of the Omnibus Flood Control Act of 1944. Even after implementation of this plan, the Missouri River has continued to set flooding records that has caused billions of dollars in losses in multiple states as recently as 2019. Diverting Missouri River flood water, available seasonal water, other excess water or purchased water can be a possible solution for mitigating flood damage in the Missouri River watershed. Diverting water to the Ogallala – High Plains region will help insure the continued community and economic viability of the six-state region.

This is not a new idea and the need for a project such as this has become more necessary as time has passed. As early as 1967, Beck and Associates (in a study prepared for Mid-West Electric Consumers Association) proposed a transfer plan that would divert Missouri River water from near Fort Randall Reservoir in South Dakota to supply water along the Colorado-Kansas border into the Texas High Plains and into the Pecos River in New Mexico and finally into the Rio Grande River above Lake Amistad.

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Winter Water Level Measurements and Monitor Wells

Beginning in early January district personnel start annual water level measurements. Currently the district measures 434 wells. Monitor well measurements are typically complete by early to mid-March.

For various logistical reasons staff are usually able to successfully measure about 80% of the wells. The information collected is analyzed and used to create hydrographs and maps. The information plays an important role in making reasonable long-term management decisions based on the best scientific data available.

Changes in the water table, calculated from monitor well measurements vary from rises in the water level to declines that may locally exceed 8-12 feet per year. Each county in the district has areas experiencing little or no decline as well as areas of much greater decline.

Natural Resource Specialist, Keila Davila is running an E-Line down a well to find the static water level of the well for Winter Water Levels.

Declines are caused predominately by pumping and are influenced primarily by surface recharge of the aquifer and lateral flows into and out of the aquifer. Recharge is affected by rainfall, surface runoff, evaporation and plant uptake, depth to water, soil porosity and the geologic substrata present.

An aquifer characteristic that affects the speed an aquifer refills and consequently how much water a well can produce is intra-formational flow. Intra-formational flow is the flow of water from one part of an aquifer into another part of the same aquifer.

The district also drills or rehabilitates monitor wells, or installs water level monitoring equipment in up to ten monitor wells annually when well sites and/or equipment are available. The wells are non-production wells dedicated solely to data collection which provide more accuracy, reliability and consistent information than other types of wells the district monitors. They are also readily available, if needed, for conducting aquifer tests that cannot be conducted using other types of wells.

Master Irrigator

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"Their collaboration now is vital to the continued success of the district's premier agricultural conservation program."

A total of 117 participants have completed the Master Irrigator Program, representing approximately 350,000 acres of irrigated land in the district. Surveys of graduates show that 100-percent of participants adopt at least one of the conservation strategies to be used on their own operations. The survey also reveals actual results in the form of 87-percent reporting improved water efficiency, and 58.7-percent reporting reduced water use.

Past graduates expressed their satisfaction with the program:

"Was well worth the time I spent here."

"This was a great program that has been a great benefit from a knowledge standpoint and information sharing among producers."

"Overall, the entire training provided good information, the producer panels showed how many different operations adopted individual practices/tools to make a successful operation."

Applications are currently being accepted for the Master Irrigator Class of 2022. Topics and dates for the course are as follows: March 23rd: Agronomics, March 30th: Irrigation Scheduling, April 6th: Systems, and April 13th: Systems and Special Topics. Registration information is available online at www.northplainsgcd.org/masterirrigator or by calling Baylee Barnes at 806-935-6401. Only 25 participants will be accepted. A $100 registration fee is required to secure a position in the class. The deadline to apply for the 2022 class is Friday, March 11th.

Missouri River Transfer Project

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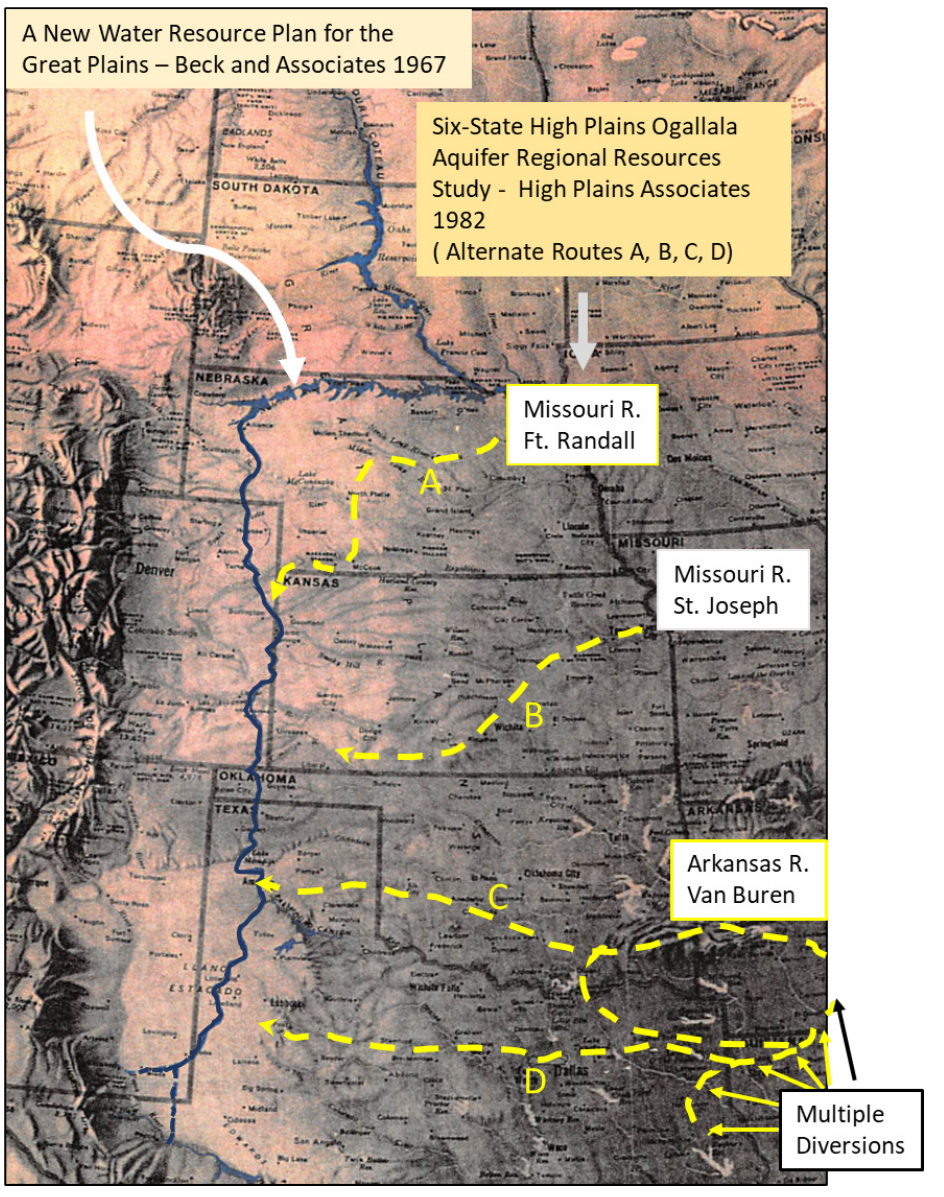
Depletion of the Ogallala – High Plains aquifer and the anticipated impacts of not meeting the regional water needs of the water user groups in the High Plains states include value-added losses, electric power purchase costs, job losses, tax losses on production and imports, water trucking costs, utility revenue losses, utility tax losses, consumer surplus losses for municipal water supplies, population decreases, and school enrollment losses. Approximately $35 billon in crops are grown each year on the High Plains, one of the most fertile regions of the world. In this region the Ogallala – High Plains aquifer is the primary, and often the only, water source. According to USDA National Agriculture Statistics Service data, farmland in the region produces nearly one-fifth of the wheat, corn, and cotton as well as approximately one-half of the sorghum and cattle in the United States. In addition to agriculture, the aquifer supports all other user groups including municipal, manufacturing, mining, and steam-electric power. The aquifer continues to be the only water supply for most small communities and a primary water supply for larger communities on the High Plains. Groundwater withdrawals by these water user groups continue to outpace recharge, causing generally widespread depletion of the aquifer.

The Water Resources Development Act of 1976 authorized the Six-State High Plains-Ogallala Aquifer Regional Resources Study (High Plains Study) to address the problem of depleting High Plains Ogallala aquifer water supplies. The study was completed in 1982 and confirmed the possibility of transferring water into the region.

The U.S. Department of Commerce, in coordination with the U.S. Army Corps of Engineers and other federal, state, and private entities, examined the feasibility of various alternatives to provide adequate water supplies to "assure continued economic growth and vitality of the High Plains region." Among the five strategies included in the High Plains Study, one strategy evaluated construction of large-scale surface water transfers from adjacent areas to restore irrigated acres.

Updating the 1982 study as would build on the past work and tell us if moving water to the High Plains is feasible, the systems needed to do it, and estimated costs. North Plains is in discussions' with other districts in the Texas Panhandle, New Mexico, Colorado, Kansas and Nebraska to build an advocacy group to encourage to Congress to authorize an update of the study. The update could confirm the feasibility of this concept to mitigate billions of dollars in flood damage on the Missouri River, to create jobs, ensure food security, and to provide much needed water supplies in the Ogallala – High Plains Region.



The Decision to Drill a New Well

Nicholas Kenny, P.E.

So you want more water? Who doesn't? Old wells aren't yielding additional volume, the prospects of rerouted surface water are decades out, and you've already called in all favors with the man upstairs. It's time to admit you might need a new well.

Ongoing troubles with the East Well at the Water Conservation Center brought the need for a new well into focus for the district. Water production declined early in the 2021 season and the pump was surging at any flow greater than 260 GPM, which isn't quite enough to keep up with mid-summer demands on a corn and cotton rotation. After an inspection and a moderate rehabilitation effort in July, it was clear that the 50 good years of service from this well have taken its toll on the casing and gravel pack.

To be responsible in securing the long-term demonstration efforts at the WCC, The district decided to drill a new well following the 2021 cotton harvest. The capital investment of a new well will impact the operations at the WCC for multiple future iterations. Thus, much consideration has been given to the design and construction of the well.

There is a valid counterpoint that drilling a new well is not a method of water conservation and that it is not congruent with the mission of the North Plains Groundwater Conservation District. Unpumped water is indeed saved water. However, there is not a farming model that adequately pays a producer for not producing. In the Texas North Plains, irrigation is still the highest user of water and the most effective farm risk mitigation strategy. The purpose of the Water Conservation Center is to demonstrate high-level farming practices that can inform decisions across millions of acres, impacting region wide conservation.

Ultimately, the considerations listed above are common across many farming operations within the district and outlining the process of constructing a well could be useful for producers considering a new well.

Objectives of the new well were outlined in detail including necessary water production for the farm's water balance, potential well drillers, possible well locations, pipeline tie-ins, proximity to electrical power, etc. Well construction is a legitimate project and is benefitted greatly by project management. Like many ventures, it costs the same money to drill a bad well or a good well, so it is highly recommended to be deliberate in your decisions.

Four test holes were drilled at the WCC to find the most productive well and the most efficient location. Though additional cost was incurred to drill the test holes, the expense was minimal compared to cost of drilling a well that didn't meet the needs of the operation.

Once the criteria are determined, the first major step is to identify the well's location. Test holes are highly encouraged. A test hole helps categorize the production potential and drilling reliability for the actual well. A test hole takes approximately one day to drill and costs between $3,500 and $5,000. At the WCC, four test holes were drilled in October 2021 after a Test Hole Permit was obtained. The test hole process identifies the aquifer formation every 5-feet down the well by bringing cuttings to the surface for inspection, from the top to the bottom of water bearing formations. Coarser layers below the water level contribute more water to a well's capacity than clay layers, so a test hole that has a higher percentage of sand and gravel is more desirable. The total depth of the well in the North Plains is determined once the drilling has reached the depth of the Red Bed, the impermeable red clay layer that defines the floor of the aquifer. After the test hole is drilled, electronic logs are recorded by sending apparatus down the test hole to further predict production capacity.

The first test hole at the WCC was in an ideal location but did not show acceptable production potential. Circulation was lost on the second test hole, indicating a production well would be risky to construct. The third test hole showed excellent production potential but was in a poor location. The fourth hole also indicated excellent production potential and was in a practical location. However, it was within 400-yards of an existing well and would be limited to Class B production (less than 400 GPM). The fourth location was ultimately selected as the well site since 400 GPM will be suitable for production at the WCC, especially since a well that can physically support more than production limits should have a longer lifespan when pumped below the regulated capacity.

Once the location is identified, subsequent steps can occur simultaneously. Future articles will document the ongoing process of well construction, pump design, controls, power delivery, pipeline construction, and operation.

***WCC test hole number 4 cuttings these** help to understand the aquifer formation and the best location to drill a new well. Sand and Gravel produce more water and are indicators of a desirable well location.*

Welcome Krystal!

Krystal Donley, Administrative Assistant

Krystal Donley joined the district in March 2021 as a Part-Time Administrative Assistant, working with the administrative staff to help answer any questions our stakeholders have and help with production reporting. Krystal decided to apply for the position because she was looking for a job that would work with her daughter's school schedule and help provide for her family. Going on almost a year, Krystal's favorite part of her job is that she gets to learn new things every day. Krystal was born and raised in East Texas, moving to Amarillo her Freshman year of high school. She graduated from Randall High in 2009 and she later received her license in Cosmetology. Krystal enjoys spending time with her husband Tyler and 4 year old daughter Tesley; camping, going to the river and racing mud trucks.

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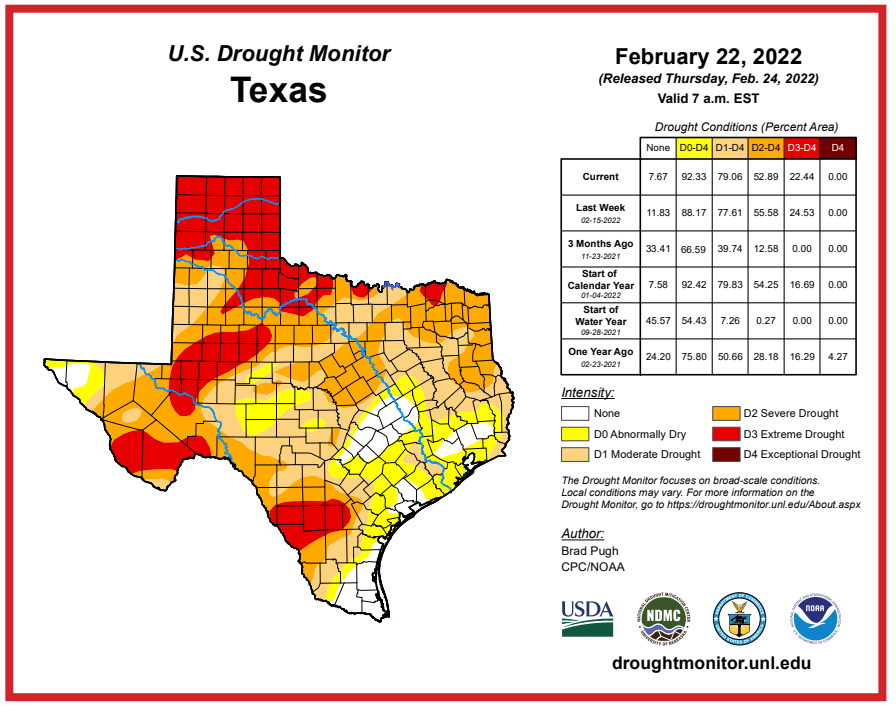

New Natural Resource Specialist

Keila Davila, Natural Resource Specialist

The district would like to welcome our newest employee Natural Resource Specialist Keila Davila. Keila joined the district in December 2021 working with the field staff to check and maintain wells within the district. When asked why she chose to apply with the district Keila said, "to gain experience in my field and utilize my knowledge on the area of study." So far Keila's favorite part of the job is seeing the different areas of the Panhandle; she really enjoys seeing the beautiful landscapes and scenery. Keila grew up in San Angelo, Texas, graduating from West Texas A&M University with a degree in Environmental Science with an emphasis on Geology, and a second degree in Biology. In her free time Keila enjoys hiking National and State Parks. Her favorite hike is the Narrows at Zion National Park. She also enjoys raiding rock and mineral shops any chance she gets. Keila is a powerlifter and dog mom, taking her 4 dogs out to the dog park or any open land to let them play and run.

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Call for 2022 Water Festival Volunteers!

We are thrilled to announce that in 2022, the North Plains Groundwater Conservation District will be holding our Save the Planet's Water Festivals (STPWF) for fourth graders within the district and we need volunteers!

Water Festivals take place in Dalhart, Perryton, and Dumas. On average, we engage over 800 students and adults with the full day of fun, hands-on activities and lessons teaching the kids about water and other natural resources. This year's festivals are scheduled for the following dates and locations:

May 17, 2022 Dalhart Water Festival, Rita Blanca Coliseum
May 18, 2022 Perryton Water Festival, Frank Phillips College Allen Campus
May 19, 2022 Dumas Water Festival, Moore County Community Building
May 20, 2022 Dumas Water Festival, Moore County Community Building

STPWFs have grown and evolved from Project WET's National Day of Water Education. They are designed to give kids a fun and active day full of diverse water-related topics. The goal of the STPWF is to educate our students on the importance of water and its conservation. With this knowledge, students can become effective Water Rangers with the ability and desire to help save the water in their day-to-day lives. The festival is comprised of different stations and activities that students will cycle through with their class throughout the day. These stations can cover topics like the hydrologic cycle, groundwater, water quality, water management, water conservation, soils and the properties of water, and more.

The North Plains Groundwater Conservation District recognizes the important role our young people have in the future of water conservation. While it is our job to save as much water as possible for the children now, it will soon be their job to do the same for future generations. We believe that making these bright young minds aware of our water and its value will prepare them for that future responsibility, as well as inspire a sense of positive community participation. We would love your help in doing so!

The Water Festival begins at 9:00am and ends at 2:30pm. If you would like to volunteer for the "Save Our Planet's Water" Festival please, contact Baylee Barnes at 806-935-6401 EXT: 213 or bbarnes@ northplainsgcd.org or visit our website at www.northplainsgcd.org.