

North Plains Water News



A Publication of the NORTH PLAINS GROUNDWATER CONSERVATION DISTRICT

VOLUME 66, NO. 2

SPRING 2022

Grant Will Help Growers Manage Irrigation

Measuring something is the first step toward managing it. Some irrigators in the North Plains Groundwater Conservation District will get some help doing just that, thanks to a grant from the Texas Water Development Board (TWDB). During their most recent round of agriculture conservation grants, the TWDB approved the district's application for funds to cost-share meters for irrigators in the district. The \$300,000 grant will allow the district to assist in the purchase of approximately 400 new meters to aid farmers in the effort to manage one of our most valuable resources.

The TWDB has partnered with the district to provide the meter reimbursement program since 2015. In that time, the program has provided over \$1.2 million to deploy approximately 1400 new meters. These meters help irrigators know more precisely how much water they are applying to a given crop. This information helps them be better stewards of the water.

In addition, the meters allow for more accurate reporting of water use to the district, which aids the local elected board members in making decisions about conserving, protecting and preserving the area's groundwater. When the last of the TWDB grants expired last year, the board of directors allocated funds to keep the program going. "We recognize that no system or machine is perfect," said board president Bob Zimmer. "We know meters will break and have their problems, but they are the best way we have of gathering water use information for growers and for the district."

All new wells in the district have been metered since 2003. While still required to report all irrigation, owners of wells drilled before 2003 are allowed to use an alternative metering method. However, in 2013 the district passed Rule 3.5E that requires meters be placed on all wells on a property if a new well is drilled,

regardless of when the other wells on the property were drilled. This philosophy and the rules to carry it out will make sure more meters are put to work in the North Plains Groundwater Conservation District. "The partnership with the TWDB and the district has made it easier for irrigators to do the right thing," said Zimmer.

The same day the TWDB approved the district's meter reimbursement grant, the agency approved a total of \$1,195,529 in grants through its Agricultural Water Conservation Grants Program.

The other grant recipients are Edwards Aquifer Authority, Evergreen Underground Water Conservation District, Panhandle Groundwater Conservation District, El Paso Water Improvement District No. 1, United Irrigation, Texas Tech University, and Texas A&M University-Kingsville.

These grants will support the implementation of conservation strategies outlined in the regional and state water plans and promote innovation and water conservation in agricultural irrigation throughout the state.

Visit the TWDB Agricultural Water Conservation webpage to learn more about this program and examples of previously funded projects. The TWDB is the state agency charged with collecting and disseminating water-related data, assisting with regional water and flood planning, and preparing the state water and flood plans. The TWDB administers cost-effective financial assistance programs for the construction of water supply, wastewater treatment, flood control, and agricultural water conservation projects.

For more information about the North Plains Groundwater Conservation District Meter Reimbursement Program contact Kirk Welch at kwelch@northplainsgcd.org or call 806-935-6401.

Contributions to this story provided by Lauren Mungia of the Texas Water Development Board. 💧

Master Irrigator Hits the Road and Draws Its Youngest Class in 2022

In this year's Master Irrigator class, the North Plains GCD once again produced an excellent array of content and speakers for the class of 2022. Ending in April, this class included the youngest participants in years' past and one returning student from 2017. The graduating class included 17 producers. These producers represented 72,477 acres of irrigated agricultural land.

Master Irrigator is the North Plains GCD's award-winning program geared toward educating irrigators on how to irrigate responsibly. The program's speakers also highlight what opportunities there are to improve their water saving technology and practices. In addition to this class being largely younger participants compared to previous years, and having a participant return for a second time, Master Irrigator 2022 was also special due to its location. This year, for the first time ever, Master Irrigator was held outside of Moore County at the O'Loughlin Center in Spearman, Texas. The class spanned four consecutive Wednesdays from mid-March to mid-April and provided participants with 24 hours of rigorous instruction on irrigation from experts in irrigation and agronomy.

Q & A with Master Irrigator's first two time graduate, Barrett Pierce:

North Plains GCD: How long have you been farming in the district?

Pierce: In 2009, I acquired my first farm in the Texas Panhandle, west of Dumas in Moore County. Today I own 26 pivots in the North Plains Groundwater Conservation District and 16 others in the region.

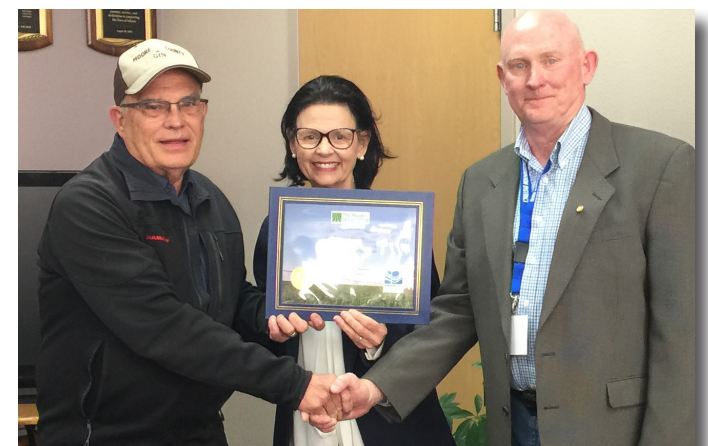
North Plains GCD: What has your experience been with water use and farming in the district?

Pierce: Primary crops are corn, cotton, milo, soybeans, and wheat. Irrigation capacity ranges from 1.0 to 2.6 GPM/acre at our deficit irrigated farms up to 5 to 6 GPM/acre at our abundant water farms. The Ogallala aquifer is the primary source for the water. Pumping levels and pumping capacities suffer

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Pictured left to right: Barrett Pierce and NPGCD Board Director for Moore County, Harold Grall.



Pictured left to right: Barrett Pierce, Kathleen Jackson, Texas Water Development Board Director, Steve Walthour, NPGCD General Manager.

Master Irrigator Hits the Road

(continued from page 1)

annual declines ranging from modest to severe. A group of farmers operate my farms. Our overall farm strategy is “**Learning to Farm with Less and Less Water**”. Every crop is monitored in the traditional sense (yield/acre and crop cashflow/acre) and in a water usage efficiency sense (yield/acre-inch and crop cashflow/acre-inch of both applied water and total water) during the appropriate season. Our western farms are deficit irrigated and managed for water usage efficiency. Our abundant water farms are managed in the traditional sense, seeking to increase yield and crop cashflow but with an additional bias for water usage efficiency. Two to four crop rotations are employed. Each crop year we strive for a 4-6% increase in year-on-year (YOY) total crop cashflow from a combination of yield improvement, commodity price increases and input cost reductions. As any category or combination approaches 4-6%, we begin capturing the improvement. If any category or combination of categories reaches 10% versus the prior year, we capture as much as possible. Thus, if the harvest price of cotton is up 10% YOY, we contract to sell or hedge as much as we can and push yield. Our tillage practices include strip till, vertical till, conservation till, and no-till. Conventional tillage is used when needed. Most primary summer cash crops are strip till or vertical till. No crop residue is removed from the farms, although at times exceptions may occur on the abundant water farms. While I prefer not, cattle are incorporated on some of our deficit irrigated farms. The dryland corners on our western deficit irrigated farms have all been restored to native perennial grasses and forbs. Cover cropping and soil health improvement are, like most things, easier to accomplish at the abundant water farms. We have not had a successful multi-species cover crop on the deficit irrigated farms, and soil health benefits are slow and difficult to quantify.

We have developed and continue to employ an **Opportunity Cropping** strategy at deficit irrigated farms. The summer cash crop acreage is reduced so that it can be fully irrigated at 5 GPM/acre with some capacity to spare. The summer cash crop might be corn, cotton or milo depending on the available irrigation capacity. A three-crop rotation might be 1/3 corn, 1/3 winter wheat and 1/3 summer milo. The corn is fully irrigated. The wheat and milo are established with irrigation. If we catch sufficient rain, either or both may be irrigated to finish or finished as an irrigated-to-establish dryland crop. If not, we hope to have enough cover to help control weeds, prevent erosion and improve infiltration. A four crop rotation might involve two deficit irrigated crops and two irrigated-to-establish opportunity crops. **Opportunity Cropping** is still in the formative stage. Much of our success has been in the wetter years when we take the winter and/or summer opportunity crop to harvest with significant production. I credit Trent, Paul and Gregg (recently deceased) Breland with developing our **Opportunity Cropping** strategy and its successful implementation. We are striving to demonstrate sustainable economic viability at small deficit irrigated farms.

North Plains GCD: This is your second time attending Master Irrigator, what about your first time through the course made you want to participate a second time?

Pierce: The first Master Irrigator course introduced me to precision irrigation and farming technology, and the concept of irrigation water efficiency. This technology and the supporting concepts and practices continue to rapidly evolve. So, the initial course exposed me to many new evolving concepts, and I wanted to retake the course to see what new ideas had developed in the interim. The Master Irrigator courses allow me to interact with our farmers and to better appreciate their challenges.

North Plains GCD: What about your second experience of Master Irrigator differs from your first?

Pierce: The first course was more about efficiencies in irrigation systems. The focus of the second course is on using efficient irrigation systems via strategies and management practices that are economically viable as well as water efficient. There is overlap, of course, and an oversimplification might be “Irrigation Technology” versus “Irrigation Strategies and Management Practices”.

North Plains GCD: What things did you learn from each Master Irrigator class that stood out to you most?

Pierce: In the first course, I was astonished at the evaporation losses between the nozzles and the ground. Much of the technology was focused on getting more of the irrigation water from the wells into the soil. The technical presentations in the second course have been outstanding and make clear that there is no best practice that will work universally. Each farm is different – different soils, different irrigation capacity, different operators, and different equipment fleets. Consequently, a strategy is required that is tailored to each farm, to each crop and to each operator. Even then the weather will dictate in-season modifications.

North Plains GCD: What do you feel like Master Irrigator offers that is valuable to the area and other growers?

Pierce: Irrigated farming is vital to the economy of the Texas Panhandle. Huge volumes of water are extracted from the declining Ogallala aquifer to produce food and fiber and sustain our local rural communities. The Master Irrigator course affords landowners, farmers and supporting suppliers and service providers the opportunity to become better stewards of the land and the irrigation water we use. This stewardship is the legacy we give to future generations.

North Plains GCD: Would you recommend Master Irrigator to a person who has not attended yet?

Pierce: Yes.

North Plains GCD: Would you suggest people attend multiple times like you have?

Pierce: It was important for me re-take the Master Irrigator Course, but many attendees could teach the course. I suggest each person consider what new ideas and new technology they learned during their first course, then ponder how quickly irrigation technology is evolving and make their own decision to retake the course accordingly. 💧



Desired Future Conditions

Every five years the Groundwater Management Area 1 (GMA-1) Joint Planning Committee meets to adopt a new desired future condition (DFC). DFCs are the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one or more specified future times. DFCs must balance between the amount of groundwater landowners need to sustain their operations and the need to conserve, preserve, and protect the same groundwater for future generations. The North Plains Groundwater Conservation District’s eight counties are represented in GMA-1 along with 10 other counties.

Once the GMA-1 Joint Planning Committee adopts a DFC the Texas Water Development Board (TWDB) models the expected groundwater availability or how much groundwater can be pumped on average to achieve the DFC. Below is NPGCD’s modeled available groundwater (MAG) created by the TWDB measured in acre-feet per year:

Ogallala -Rita Blanca Aquifers MAG (2022)								
	2020	2030	2040	2050	2060	2070	2080	
Dallam	319,323	269,752	228,251	195,016	165,443	144,455	127,992	
Hansford	296,868	295,895	281,027	264,464	247,229	229,951	211,025	
Hartley	354,907	270,408	207,323	170,002	144,264	124,448	108,128	
Hutchinson	77,759	80,242	77,674	74,510	70,462	67,541	63,950	
Lipscomb	250,966	270,997	262,931	250,133	235,071	219,119	201,565	
Moore	140,116	139,837	132,461	121,696	105,913	88,223	72,976	
Ochiltree	259,136	260,144	246,760	231,654	215,169	199,455	180,919	
Sherman	289,546	287,846	260,978	226,290	197,926	166,784	145,097	
WEST	1,103,892	967,843	829,012	713,004	613,546	523,910	454,193	
EAST	884,730	907,277	868,392	820,761	767,932	716,066	657,459	
SUB TOTAL	1,988,622	1,875,121	1,697,404	1,533,765	1,381,478	1,239,976	1,111,652	
Dockum Aquifer MAG (2022)								
	2020	2030	2040	2050	2060	2070	2080	
Dallam	15,953	15,549	14,687	14,045	13,502	12,920	12,406	
Hartley	12,379	11,802	11,031	10,343	9,737	9,242	8,815	
Moore	4,487	5,402	5,398	5,068	4,773	4,477	4,204	
Sherman	444	416	309	289	293	288	290	
SUB TOTAL	33,262	33,170	31,424	29,745	28,304	26,928	25,715	
TOTAL MAG								
WEST	1,137,155	1,001,013	860,436	742,749	641,851	550,838	479,909	
EAST	884,730	907,277	868,392	820,761	767,932	716,066	657,459	
TOTAL	2,021,884	1,908,290	1,728,829	1,563,510	1,409,783	1,266,904	1,137,367	

In order to achieve the DFC for our district, pumping must decline from 1,908,290 acre-feet per year in 2030 to 1,137,367 acre-feet per year by 2080. The district has been tracking groundwater production since 2007 and for the past 5 years (2016-2020) the NPGCD averaged 1,568,200 acre-feet per year in annual groundwater withdrawals. On average, the district has been below the TWDB’s modeled groundwater withdrawal amount, meaning the district is on track to achieve it’s Desired Future Conditions. 💧

Spring Field Activities

Our field staff has been keeping busy this spring and will continue going into summer. In Mid-March the field staff completed Winter Water Levels, in February they started Production Meter Inspections, and on April 6th the Summer Draw Down Project officially started.

Winter Water Levels are a Wrap!

In mid-March staff wrapped up 2022 Winter Water Levels. Field staff visited 436 wells across the eight counties the district covers. The purpose of this project is to measure the depth-to-water levels (distance from the surface to the water) in wells to determine changes in aquifer levels from year to year. Each year the same wells are measured to stay consistent and get the best possible data. Some of these 436 wells have been measured since 1982.

To measure the depth-to-water staff members lower a steel tape into the well until the lower part of the tape hits water, a chalk coating at the end of the tape indicates the water level. Also, used is an E-Line or electric line. The E-Line measures the static water level of a well with two wires attached to an electronic sensor indicating when, and at what depth, the tape hits the water.

The data found from these measurements is used to develop Hydrographs (graphs showing water flow in respect to time), Depth-to-Water Maps, Decline Maps (shows the decline of our groundwater for the past year), and IRS Depletion numbers. These maps help to show what is happening to the Ogallala aquifer over time and help us determine the future of groundwater in our area.

The average depth-to-water across the district is -314.29 feet, meaning the groundwater is on average 314 feet below the surface. The average current decline across the district is -2.28 feet; the average 10 year decline across the district is -2.21 feet.

The staff found the shallowest well in the district is in Lipscomb County with a depth of -3.62 feet to water. The deepest well in the district is in Hartley County with a depth of -538 feet to water.

County average water level changes for 2022 are:

- Dallam 2.89 feet
- Hartley 3.19 feet
- Sherman 2.69 feet
- Moore 2.07 feet
- Hansford 1.67 feet
- Hutchinson 1.81 feet
- Ochiltree 1.56 feet
- Lipscomb 1.04 feet

Production Meter Inspections

Field staff have been conducting production meter inspections since February. The staff is sent out to inspect meters when there are discrepancies in the meter numbers reported on productions reports. These discrepancies include meter numbers being written down incorrectly, meters being moved, no totalizer numbers or wrong totalizer, and a broken meter being reported. The staff has conducted meter inspections on 48 properties across the district.

The Summer Draw Down Project has Begun

The field staff started working on the Summer Draw Down Project on April 6th. For this project staff tracks flow rate changes, depth-to-water changes in near by wells, and the amount of water produced. These numbers will help the district compare wells in use year-round to those wells in use seasonally for crop production. 💧



The Field Team Left to Right: Braden Cadenhead, Keila Davila, Mitch Funk and Odell Ward. The Field Team has been working hard to finish up the Winter projects and getting started on the Summer project. The team has been short handed recently, but you wouldn't know it from their work. Funk joined the team in early May and has been a great help in his time at the district.

30 Day Metering Rules

With ag production going strong the North Plains Groundwater Conservation District would like to remind landowners about the district's rules on Water Flow Meters. According to Chapter 5.1 of the district's rules, owners must install a district approved water flow meter to all wells drilled or reworked to increase production after October 14, 2003. You must also report annual production from that well and all other wells to the district.

The flow meter placed on the well **must** remain on the well and be in working order at all times while groundwater is being produced. If the meter stops working or has to be removed to make repairs, it **must** be reported to the district within 30 days. The owner or agent is required to report to the district the date the meter stopped working, the date of removal, and the final totalizer reading. The date the meter is replaced and the type of meter it's being replaced with, must also be reported to the district. Lastly, staff at the district can help you determine how much water was used while the meter was broken.

The chart below shows the minimum totalizer requirements based on the classification of the well:

Well Capacity (GPM)	Well Classification	Minimum Totalizer Capacity in Gallons	Minimum Totalizer Capacity in Acre-feet	Minimum Totalizer Capacity in Acre-inches
0-17	Non-Exempt	7 digits	2 digits	3 digits
18-100	A	8 digits	3 digits	4 digits
101-400	B	9 digits	3 digits	4 digits
401-800	C	9 digits	4 digits	5 digits
801-1800	D	9 digits	4 digits	5 digits

All flow meters are required to be installed according to manufacturer's recommendations. Flow meters **must** display whether they read in gallons, acre-feet, or acre-inches. They also must display the meter multiplier and have a non-resettable totalizer. Please contact the district before you purchase a meter if you are not sure what size meter you will need.

If you have any questions or concerns you can always contact Lewis Orthman, Compliance Coordinator at (806) 935-6401 Ext: 203 to assist you. 💧



Pictured above is a McCrometer, with a totalizer read in gallons. All meters must be installed according to the manufacturer's recommendations. Broken meters must be reported to the district within 30 days and then replaced.

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North Plains GCD now offers our district newsletters by email. If you would like us to send you a digital copy of the newsletter, you can go online at www.northplainsgcd.org/sign-e-news/ and fill out the form, or just email info@northplainsgcd.org. You can also go online to download previous newsletters, and find us on Facebook, Twitter and Instagram.



Return Well Back Into Service After Buying or Leasing New Land

The district’s field staff is currently inspecting all wells within the district that have not been inspected in the past 5 years. Based on these inspections it has been found that several old wells that were classified previously as capped/plugged have been brought back into service either as an irrigation well or converted over to a livestock/domestic well on the property. **If you have recently purchased, leased, or inherited farmland** where old capped irrigation and/or livestock/ domestic wells are located on the property you should visit the district’s interactive map at <https://map.northplainsgcd.org/mapv2/> to check the current status and the original permitted size or classification of each well on the property.

When observing the interactive map and upon clicking on the well pin number you will be able to bring up the well permit/classification documents that have been scanned into our database, which should give you an idea of the status of the well(s). Before bringing a well back into service, owners or lessees, are required to notify the district, so the classification of the well(s) can be updated. It is especially important to make sure any irrigation wells are properly classified, because they may be subject to annual reporting requirements. This reclassification process does not have to happen immediately in order for the old well(s) to be inspected, reworked, and checked-out to determine if they are going to be cost effective



If you have recently purchased land in the North Plains Groundwater Conservation District please call or come into the office, so we can help you properly and legally classify your wells.

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for use. The district can be notified after a satisfactory operational test of a well(s), and then the proper documentation can be completed based on how the well is to be reclassified and used.

Reclassification documents the **original permit** to its new classification and will fall under the current district rules for groundwater production. With this amendment to the permit the district utilizes a well permit (construction) time limit of 150 calendar days to ensure the required equipment is installed for the well to be used in groundwater production. The minimum required equipment on all irrigation wells will be as per district rules chapter 4.5; check valve (chemigation)—non-swing check type, vacuum-relief device, automatic low-pressure drain (LPD), and access port. Along with the required equipment, a flow meter must be installed to measure **all groundwater being produced from the well**, based on when the well was originally permitted. If the well is not required to have a meter, an alternate metering method has to be in place for reporting annual groundwater production, as per district rule 5.1.

If the well is to be converted over to livestock or domestic type well, the same process comes into play for reclassification, but all the required equipment previously mentioned is not applicable. It does have to have a check valve to prevent back-flow and the converted well casing top needs to be contained and/or sealed up to prevent debris, pollutants, and critters from entering the well casing. Wells that need to be re-permitted in order to be pumped above 17.5 GPM must be in compliance with all district rules.

If you have any questions or concerns you can always contact our office at (806) 935-6401 ext: 203 for Lewis Orthman, Compliance Coordinator to assist you with your specific situation or classification documentation process. 💧

