

# North Plains Water News



A Publication of the NORTH PLAINS GROUNDWATER CONSERVATION DISTRICT

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## Outside the Box: Yoder Vineyard

Groundwater is vital to agricultural production throughout the state of Texas, but especially here in the northern Panhandle. While water conservation is a challenge for agricultural producers, many welcome new practices as an opportunity to make a difference for future generations following in the agricultural lifestyle.

The real question for area farmers is how to diversify their operations and remain stewards of the Ogallala aquifer. Zac Yoder, a North Plains Groundwater Conservation District board member, thinks he might have found his answer in something a little unconventional for this area of the Panhandle: wine grapes.

“We have been trying different crops for a few years such as cotton and soybeans,” Yoder said. “Our family thought it was a great time to think outside the box and learn something new.”

Yoder, like many area agriculturalists, would like to prolong the ability to irrigate responsibly for as long as possible. Without irrigation, farmers are much more susceptible to drought and thus crop failures.

“Water is our most valuable asset,” Yoder said. “Without irrigation, the agriculture industry in this area would be drastically different.”

The vineyard, comprised of five acres, was established in 2015. Though the vineyard is doing well so far, the Yoder’s have chosen to evaluate the vineyard year by year and make management decisions at that time.

While water conservation practices such as strip till, no till and soil moisture probes were already being used on the operation prior to the addition of the vineyard, other technologies such as sub-surface irrigation will be added to the vineyard to better utilize the resources available.

The Yoder family relocated to Dalhart, Texas, from Ohio in the early 1980s in order to farm. Zac became involved with the family’s operation in 2007 and moved back to Dalhart the next year to begin farming full-time. Along with his parents, Steve and Pamela Yoder, Zac, his wife Rinnell and their two young sons, Elijah and Oliver, now make up the operation which involves managing 3,000 acres of farm and grassland. In addition to the vineyard, the Yoders also grow traditional crops



*After growing more conventional crops in the northern Panhandle since the 1970s, Zach Yoder and family decided to try something new. Their five acre vineyard, installed in 2015, promises to offer even more opportunities for the family farm in the future.*

such as corn and wheat while also grazing cattle. As part of their land and water management strategy they include other crops in their rotations including alfalfa, cotton, sunflowers and soybeans.

With the population increasing steadily, Yoder understands the need for continued conservation and he is looking to the future for how he can better conserve water in all the family’s endeavors.

“I would like my sons to have the same opportunity to farm that I have had,” Yoder said. “To ensure that, we need to take measures to safeguard their ability to grow the food their generation will need while being conservation minded.” 💧

## Desired Future Conditions

Water conservation is rooted in planning for the future and that begins with setting goals. North Plains Groundwater Conservation District board members are required to set goals, also known as Desired Future Conditions (DFCs) for the district’s groundwater. Periodically they analyze the DFCs to decide whether or not to amend current standards.

Desired Future Conditions are the desired, quantified conditions of groundwater resources (such as water levels, water quality, spring flows, or volumes) at a specified time or times in the future or in perpetuity. In essence, a desired future condition is a management goal that captures the philosophy and policies addressing how an aquifer will be managed.

On December 15, 2008, the North Plains Groundwater Conservation District recommended that the district representatives of Groundwater Management Area 1 adopt DFCs for the Ogallala aquifer in the counties that comprise the district. The Joint Planning Committee considered two DFCs, one for the eastern counties and one for the western counties. Two DFC’s were proposed because they reflected the stakeholder’s desires, and because the uses or conditions of the aquifer within the district differ substantially from one geographic area to another. The DFCs were adopted in 2009 and continue to be a vital tool in managing groundwater in the northern Panhandle.

In July 2015, district general manager Steve Walthour provided an assessment of the district’s status related to DFCs. His analysis was based on preliminary runs from the High Plains Aquifer System Groundwater Availability Model (GAM) produced by Texas Water Development Board subcontractor, Intera Geoscience and Engineering Solutions. The amount of water the model predicts to be available, while still meeting

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## 2015 Production Reporting Highlights

A schedule for the 2015 production reporting process has been set by North Plains Groundwater Conservation District staff. The 2015 Annual Production Reports were mailed out in November. This year, the district also mailed out a Groundwater Conservation Reserve (GCR) Worksheet along with the 2015 Annual Production Report.

This worksheet gives producers the opportunity to calculate their GCR for 2016. The GCR worksheet is for the producer’s information only and it is not necessary to return it to the district. An automated version of the worksheet is also available on the district website, [www.northplainsgcd.org](http://www.northplainsgcd.org). The reports are due in the district office on Tuesday, March 1, 2016, by close of business.

If you failed to turn in your 2014 Annual Production Report on time the district would like to remind you, that if the 2015 Annual Production Reports are filed by close of business on Thursday, January 15, 2016, the late filing fee charged for 2014 will be refunded in full. 💧

## Save Paper and Water by Choosing our E Newsletter

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](http://www.northplainsgcd.org) and fill out the form on the right side of the page, or just email [kwelch@northplainsgcd.org](mailto:kwelch@northplainsgcd.org). You can also go online to download previous newsletters and find us on Facebook, Twitter and Instagram.





# First Year of “3-4-5” Program Showcased During District Events

This year, much needed rain has been welcome despite making day-to-day operations a bit more challenging for district growers. The “3-4-5” project has benefitted from excellent rainfall in this, the first year of the project, improving the opportunities to leave water in the ground for the future. Good yields and good data to support the project are expected. According to “3-4-5” project lead, Leon New, the project fields all received between 10-14 inches of rain during the growing season. “Out of the 17 fields in the project, 10 applied less than 12 inches of irrigation water,” said New.

The “3-4-5” project picks up where the district’s acclaimed “200-12” project left off. Participants in the “3-4-5” are using variable rate irrigation to simulate 3, 4, and 5 gallon per minute irrigation conditions in side-by-side, production-scale demonstrations. The “3-4-5” participants are applying many of the same techniques and technologies used in the “200-12” and demonstrating their applications under the selected levels of available irrigation. “We are currently compiling the data and looking forward to seeing the comparisons between water applied and return on investment,” said New.



District board member Harold Grall and 3-4-5 project lead Leon New present a comparison on PMDI and LEPA as methods of irrigation to conserve water and resources during the NP-GCD 3-4-5 Field Day at the North Plains Water Conservation Center at Etter.

To showcase the initial year of the project, grower meetings were held across the district. On August 25, 2015, the district’s corporate partner, Crop Production Services (CPS), held a field day in conjunction with the district at the North Plains Water Conservation Center (the Center). Farm Manager, Stan Spain explained the on-farm demonstrations while CPS conducted informational sessions at the Center. In September the district hosted a series of “turn-row” meetings for interested growers, vendors and others across the district. Representatives from the Natural Resources Conservation Service, Canadian River Municipal Water Authority, Texas Water Development Board and other groundwater districts attended the meetings. The first of the series was held at the Center on September 22, 2015. Though rainy weather caused the field tour to be cancelled, participants gathered in the barn to hear from agricultural and groundwater experts on topics that would allow them to make better decisions concerning their operations.

The meeting featured a presentation by district board member Harold Grall about a demonstration comparing Precision Mobile Drip Irrigation (PMDI) to LEPA (Low Energy Precision Application). PMDI involves drip hoses being pulled across the field by the center pivot system, in order to reduce wind-loss and evaporation by applying the irrigation directly to the soil. LEPA, Low Energy Precision Application, applies the irrigation water with hoses no more than 18 inches above the soil and is reported to reach application efficiency levels of 95 percent and more. PMDI is projected to reach efficiencies approaching 98 to 99 percent. In general, Grall said the PMDI compared favorably with the LEPA systems. More information will be available in the final report.

The Perryton Fall Field Day was held the following day at the Ochiltree County Expo Center before participants moved to board member Danny Krienke’s “3-4-5” fields. Fall Field Days concluded on September 24, 2015, in Dalhart with participants viewing board member Zac Yoder’s “3-4-5” fields before returning to the Rita Blanca Coliseum for educational presentations. The data from the first year of the project is being compiled and analyzed and the final report will be presented in early 2016. 💧

# 2015 District Water Levels

Annually the district monitors declines in water levels as an important part of its data collection efforts. The data contributes to the management of the area’s groundwater resources. The district tracks declines in groundwater by maintaining a network of over 436 water-level monitor wells. District monitor wells are measured in January and February after the majority of the season’s agricultural pumping is completed. Measuring is usually completed by mid-March. The information is analyzed and used to create maps that show average water level changes across the district. The data helps the district make reasonable, long-term management decisions based on accurate and current information.

The district began drilling its own dedicated monitor wells in 2007 and also began installing water level monitoring equipment in many of them. The equipment records measurements every 12 hours. So far, the district has drilled 52 dedicated monitor wells and installed monitoring equipment in 46 of those. These continuous measurements create a valuable record of the ongoing changes in water levels. These non-production wells are dedicated solely to data collection. Dedicated, non-production monitor wells provide information with a greater degree of accuracy, reliability and consistency than do the other types of wells the district may monitor. They are also available, if necessary, for conducting water quality analyses and other aquifer tests that cannot easily be conducted in other types of wells.

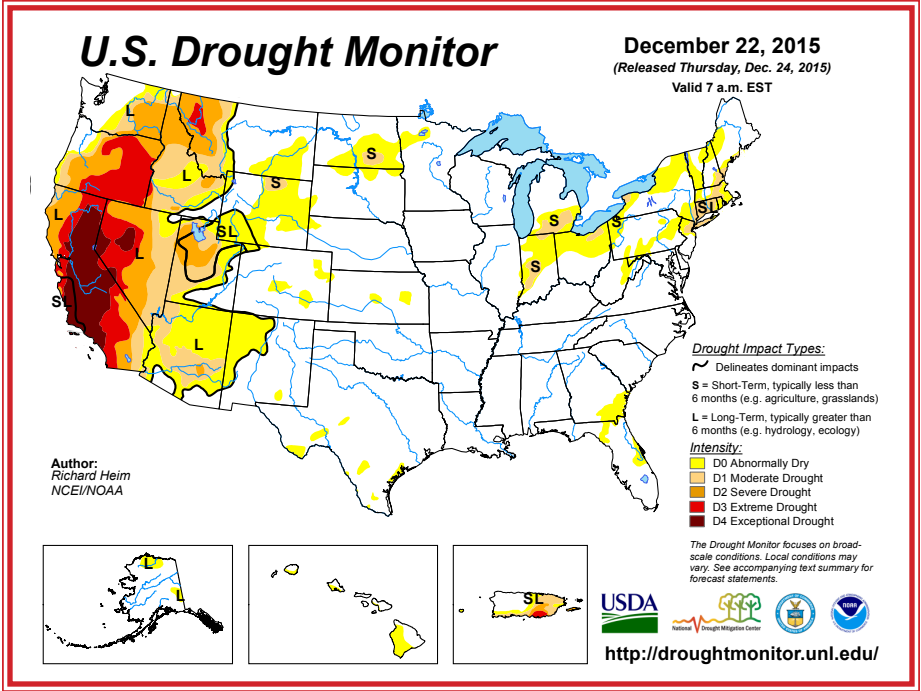
Changes in water levels in district monitor wells vary from rises in some instances, to declines that locally may exceed 8-10 feet per year. Each county in the district has areas of little to no decline, as well as areas of much greater decline. Changes in the water level of the aquifer averaged for all the monitor wells of any county, or calculated from groundwater production data, however, overall show declining water levels.

Declines in the water table are caused predominately by pumping and are influenced by surface recharge and lateral flows into and out of the aquifer. Recharge of the aquifer from the surface comes from rainfall and snowmelt. The Panhandle of Texas historically receives such modest amounts of rain and snow and has such a high evaporation rate that there is little opportunity for surface recharge to appreciably affect water levels.

The water level measurements resulting from the 2014 production season have been gathered, tabulated and published in the “2014-2015 Hydrology and Groundwater Resources” report. The full report is available in the district office and on the district’s website [www.northplainsgcd.org/science-a-technology/hydrology-maps.html](http://www.northplainsgcd.org/science-a-technology/hydrology-maps.html). A summary of the results are also presented in the following table and illustrations. For information on measurements in specific areas, please contact the district at 806-935-6401.

County	Average Annual Feet of Decline
Dallam	2.29
Hansford	2.03
Hartley	2.58
Hutchinson	2.41
Lipscomb	.045
Moore	2.88
Ochiltree	1.02
Sherman	2.19

Average annual declines in water levels by county calculated from reported production. (continued on page 3)





2015 District Water Levels

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Average annual declines in water level are calculated values created by using reported groundwater production and an estimated specific yield of 18 percent. The entire area of each county was used in the calculations except for Moore and Hutchinson Counties in which only the area that falls within the district was used.

Average county declines and average declines in monitor wells differ because district monitor wells are typically located near areas of intense pumping. This tends to over-represent declines resulting in higher values than averages calculated by other methods.

Average Depth to Water and Comparisons of Average Declines in Select District Water Level Monitor Wells.

County	Avg. Depth to Water (feet)	2014 Avg. Well Decline (feet)	2013 Avg. Well Decline (feet)	Current 5-Year Avg. Well Decline (feet)	Previous 5-Year Avg. Well Decline (feet)	Current 10-Year Avg. Well Decline (feet)	Previous 10-Year Well Decline (feet)
Dallam	271	3.9	3.9	4.0	3.1	3.5	3.7
Hansford	298	2.5	2.4	2.3	1.9	2.2	1.4
Hartley	355	4.5	4.5	4.4	4.1	4.6	3.1
Hutchinson	348	2.0	2.0	2.1	1.9	2.1	1.7
Lipscomb	162	1.1	1.1	1.0	.08	1.0	.03
Moore	347	2.7	2.6	2.5	2.2	2.4	1.6
Ochiltree	335	1.7	1.7	1.6	1.2	1.5	.08
Sherman	298	3.2	3.0	2.9	2.4	2.7	1.8
District-wide	345	3.1	3.0	3.0	2.5	2.9	2.1

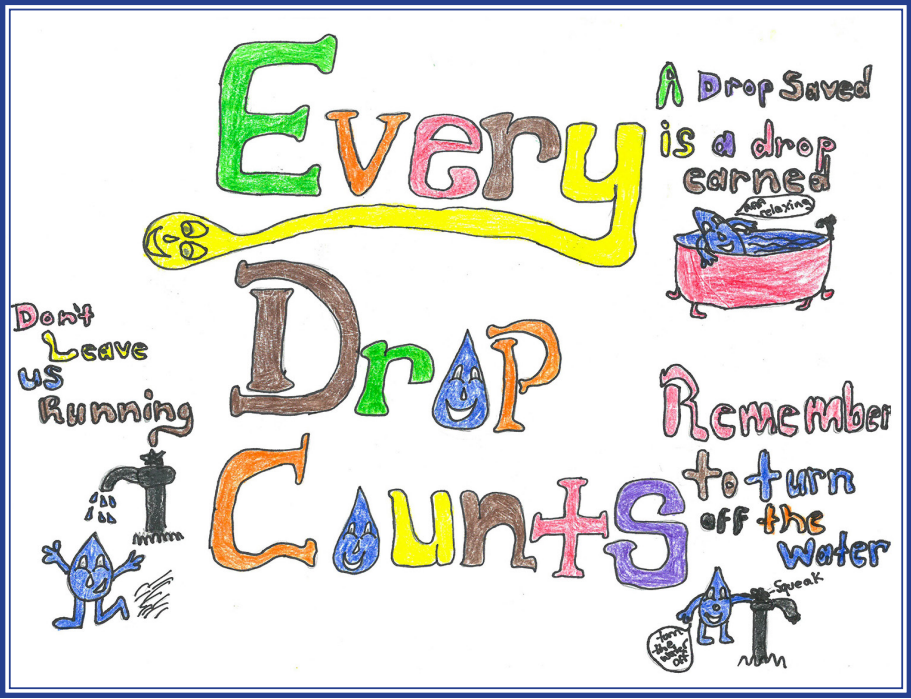
The information in the above table was derived from an analysis of monitor wells. The data from some monitor wells, indicating both rises and declines, are not sufficiently consistent to insure accuracy and reliability in their use. Such data may be excluded during the calculations of declines, depth to water or saturated aquifer formation.

2016 Water Conservation Artwork Contest Winners Announced

Leticia Barraza of Dalhart was this year’s grand prize winner in the Water Conservation Artwork Contest sponsored by the North Plains Groundwater Conservation District. The annual contest is open to all fourth, fifth, and sixth grade students who reside within the district.

Leticia’s artwork titled “Every Drop Counts” features smiling water drops sharing bits of wisdom including a reminder to turn of faucets. Leticia will receive a certificate of recognition, a \$50 cash prize, and her artwork will be featured on the cover of the 2016 North Plains Groundwater Conservation District Water

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Leticia Barraza of Dalhart is the 2016 Water Conservation Artwork Contest winner. Her artwork titled “Every Drop Counts” features smiling water drops sharing bits of wisdom including a reminder to turn of faucets.

Education Program Request

Interested in getting a North Plains Groundwater Conservation District staff member into your classroom? The district offers a variety of conservation education programs appropriate for grade levels K-12 that we would love to share with your students. For more information, please contact Kirk Welch at 806-935-6401 or at [kwelch@northplainsgcd.org](mailto:kwelch@northplainsgcd.org).



Assistant General Manager-Outreach Kirk Welch conducts soils labs with students at the Hemphill County Water Festival in Canadian.

Desired Future Conditions

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the desired future condition, is called the modeled available groundwater (MAG).

The figure illustrates that the district as a whole has pumped well below the MAG since the DFCs were established in 2009, producing 18 percent below the MAG from 2010-2014. While the western counties have produced 5 percent more than the MAG during the period, the eastern counties have produced 54 percent less than the MAG.

Walthour recommended that the board direct its representative to propose DFCs to include a combined 40 percent of the total volume in storage remaining in 50 years for the Ogallala, Dockum and Rita Blanca aquifers in Dallam, Hartley, Moore and Sherman Counties; and 50 percent of the total volume in storage for the Ogallala aquifer in Hansford, Hutchison, Lipscomb, and Ochiltree Counties, providing that there is no substantial change in the GAM. The board voted in favor of the measure.

The tables below show the average production from 2010-2014 and the district’s combined current MAG amounts for the Ogallala, Rita Blanca and Dockum aquifers.

District Production Average					2014 District Production Comparison			
County	Average Annual Production 2010-2014	Estimated MAG Average 2010-2014	Annual Average DFC Available Reserve	MAG Percent Above or Below Production	2014 Production	2014 Estimated MAG	2014 DFC Available Reserve	MAG Percent Above or Below Production
Dallam	368,431	398,214	29,783	7%	393,624	383,754	-9,871	-3%
Hansford	199,446	280,125	80,679	29%	211,634	275,661	64,028	23%
Hartley	456,188	417,103	-39,085	-9%	442,058	402,260	-39,798	-10%
Hutchinson	66,342	60,721	-5,620	-9%	73,992	60,137	-13,855	-23%
Lipscomb	46,542	289,167	242,625	84%	48,791	287,824	239,032	83%
Moore	224,582	197,027	-27,556	-14%	209,907	190,262	-19,645	-10%
Ochiltree	98,086	264,865	166,779	63%	106,278	260,268	153,990	59%
Sherman	344,981	318,919	-26,062	-8%	361,336	313,973	-47,363	-15%
Total	1,804,599	2,212,555	407,956	18%	1,847,620	2,174,138	326,519	15%

West - Production Average					2014 West Production Comparison			
County	Average Annual Production 2010-2014	Estimated MAG Average 2010-2014	Annual Average DFC Available Reserve	MAG Percent Above or Below Production	2014 Production	2014 Estimated MAG	2014 DFC Available Reserve	MAG Percent Above or Below Production
Dallam	368,431	398,214	29,783	7%	393,624	383,754	-9,871	-3%
Hartley	456,188	417,103	-39,085	-9%	442,058	402,260	-39,798	-10%
Moore	224,582	197,027	-27,556	-14%	209,907	190,262	-19,645	-10%
Sherman	344,981	318,919	-26,062	-8%	361,336	313,973	-47,363	-15%
Total	1,394,183	1,331,390	-62,793	-5%	1,406,925	1,290,249	116,676	-9%

East - Production Average					2014 East Production Comparison			
County	Average Annual Production 2010-2014	Estimated MAG Average 2010-2014	Annual Average DFC Available Reserve	MAG Percent Above or Below Production	2014 Production	2014 Estimated MAG	2014 DFC Available Reserve	MAG Percent Above or Below Production
	199,446	280,125	80,679	29%	211,634	271,198	59,564	22%
Hutchinson	66,342	60,721	-5,620	-9%	73,992	59,552	-14,440	-24%
Lipscomb	46,542	289,167	242,625	84%	48,791	286,480	237,689	83%
Ochiltree	98,086	264,865	166,779	63%	106,278	255,670	149,392	58%
Total	410,416	894,878	484,463	54%	440,694	872,901	432,206	50%

# Water Conservation Artwork Contest

(continued from page 3)

Conservation Calendar. Leticia was in Mrs. Smith’s class at Dalhart Intermediate School last school year when the entries were submitted. The calendars are free to the public.

Other winners in this year’s contest were:  
**Avery Stringer** – artwork titled “Water Conservation”. Avery was in Mrs. McOmber’s class at Hillcrest Elementary in Dumas.  
**Natalie Carbajal** – artwork titled “Don’t Waste Water”. Natalie was in Mrs. Henley’s class at Hillcrest Elementary in Dumas.  
**Kira Fierro** – artwork titled “Save Water”. Kira was in Mrs. Mason and Mrs. McOmbers’ class at Hillcrest Elementary School in Dumas.  
**Balyn Keosyhauong** – artwork titled “Save Our Planet’s Water”. Balyn was in Mrs. Mason’s class at Hillcrest Elementary School in Dumas.

**Bailey Lewis** – artwork titled “Water Is Being Wasted”. Bailey was in Mrs. Smith’s class at Dalhart Intermediate.  
**Luis Galvan** – artwork titled “Collect Rain Water”. Luis was in Mrs. McOmbers’ class at Hillcrest Elementary School in Dumas.  
**Jacob Long** – artwork titled “Saving Water”. Jacob was in in Mrs. Mason’s class at Hillcrest Elementary School in Dumas.  
**Gunnar Willis** – artwork titled “Collecting Rainwater”. Gunnar was in Mrs. McOmbers’ class at Hillcrest Elementary School in Dumas.  
**Grayson McCurley** – artwork titled “Full Loads”. Grayson was in Mrs. McOmbers’ class at Hillcrest Elementary School in Dumas.  
**Braxton Cooksey** – artwork titled “Save the Rain”. Braxton was in Mrs. McOmbers’ class at Hillcrest Elementary School in Dumas.💧

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# Board Profile: Gene Born

The North Plains Groundwater Conservation District board of directors is made up of a group of individuals who are very passionate about water conservation. While preserving our water resources is a big part of their lives, they also have other passions they devote their time and energy to outside of the board room.

While attending school at Texas Tech University in 1957, Lipscomb County director Gene Born learned to fly. Born, having always been fascinated by aviation, obtained his commercial license and joined the Army. After serving as an instructor for the Air Force ROTC program at Texas Tech, Born chose to return to the family farm located in Follett, Texas.

“After I was discharged from the Army, one thing led to another and I came back to Lipscomb County and went into the family farming operation with my father,” Born said. “We put in our first irrigation well around 1960.”

After the first well came a few more and by 1970 a group of people in Lipscomb County began growing concerned about conserving water. It wasn’t long before Born’s family, along with others in the county, pushed to see Lipscomb



County become part of the North Plains Groundwater Conservation District.  
By then Born’s flying career for the Farm Service Agency, mapping agricultural land in southwest Kansas, Oklahoma and part of the Texas panhandle was winding down.  
“That’s when I started getting more interested in the model airplanes,” Born said. “I’m incredibly intrigued by the remote control aspect of it.”  
Born began collecting and building detailed replicas of famous planes such as World War II Triple Ace C. E. ‘Bud’ Anderson’s P51 Mustang. World War II warbirds still remain some of Born’s favorite subjects, though he builds many different types of remote-controlled planes. Born builds some himself and trades for others while additional planes are acquired at auctions when a builder decides to move on from a project. Regardless of their origin, Born finds getting them flight worthy to be a welcome challenge just like that of water conservation.  
“I think the moment that I became interested in water conservation was when my father turned to me and asked, ‘What are your grandkids going to do for water if you keep drilling all these irrigation wells?’” Born said. “That’s when I got to thinking that maybe we needed to do a little more to conserve water here in the northern Panhandle. It’s something I’m proud to be a part of.”💧

