

Spring 2016
Volume 30, Issue 2

Tri-Basin Topics

A quarterly publication of Tri-Basin Natural Resources District

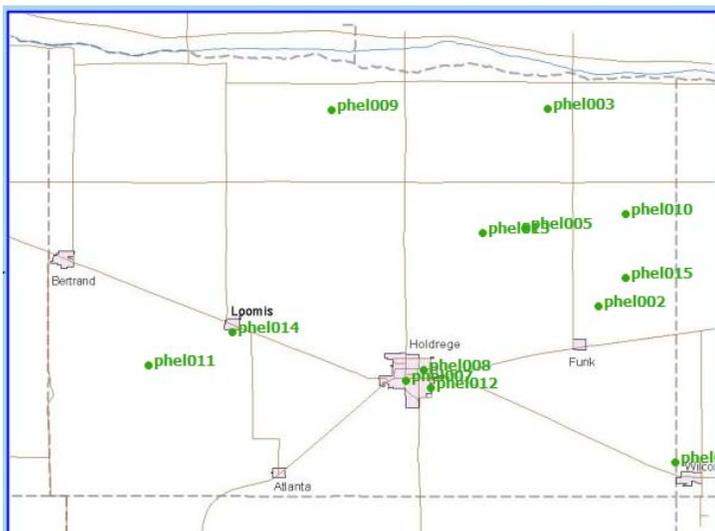
NeRAIN Provides Valuable Precipitation Data

Nebraskans have a valuable resource for precipitation data available at their fingertips. The Nebraska Rainfall Assessment and Information Network (NeRAIN) is a network of data gathered from hundreds of volunteers across the state who record and report precipitation and weather data.

This program is a joint project of the Nebraska Department of Natural Resources (NDNR) and Nebraska's Natural Resources Districts (NRD), and was started through funding from the Nebraska Environmental Trust. The data is compiled by NDNR and published on a website (<http://nerain.dnr.ne.gov/nerain/>), where it can be used for daily decision-making by agricultural producers, industry leaders, homeowners, utility providers, insurance professionals, natural resources managers, and educators.

Users of the website can access maps and records of precipitation amounts based on county or natural resources district, and can choose to view data focused on precipitation or temperature. A specific weather data station can also be focused upon. Scientists and water managers can study these maps to learn how storms develop and move across the region and to make water-use decisions.

Tri-Basin NRD is looking for additional volunteers to rec-



NeRAIN weather stations in Phelps County.



NeRAIN volunteers are provided a rain gauge (above) and training on reporting precipitation received on their property.

ord rain gauge readings at their home, farm, or place of business. District staff hope to eventually recruit at least one volunteer from each of Tri-Basin's 45 townships to record and transmit rainfall and snowfall data.

Selected volunteers will receive a free rain gauge furnished by Tri-Basin NRD. These gauges are quality instruments approved by the National Weather Service. If you are interested in participating in the volunteer rain gauge reader program, please contact Esther Smith, TBNRD NE Rain Coordinator, by email at esmith@tribasinprd.org or by phone at 1-877-995-6688.



Manager's Message

by John Thorburn

Conjunctive use. It's a term that I hear often in my job. What, the uninitiated might ask, is conjunctive use? In much of Nebraska, groundwater aquifers and surface streams are connected. Many streams are fed by springs. The reverse also occurs. Water seeps down through

streambeds, recharging groundwater aquifers. Conjunctive groundwater use occurs when a water user pumps a well that draws water from an aquifer connected to a stream.

A simple way to demonstrate groundwater conjunctive use is to go out and buy a slush drink (*Slurpee™*, *Mr. Misty™*, etc.).

A bit out of season, for a cold drink, you say? Perhaps, but it is necessary for this experiment. Your drink will act as a model of surface water/groundwater interaction. Your straw represents a well. The liquid on top of the ice represents surface water. The ice represents the riverbed. Suck on the straw and watch the "surface water" disappear.

Very few wells are close enough to a stream to have an immediate effect on streamflows. You won't see little whirlpools form in a river when farmers turn on their irrigation wells. Research indicates that irrigation wells just a quarter mile from the

Platte River are too far away to directly deplete streamflows.

If conjunctive use just involved a few water users along riverbanks, it wouldn't be a big issue. Unfortunately, it's not quite that simple. Wells further away from a river or creek can indirectly affect streamflows after years or even decades of use.

When an irrigation well is pumped, one of four things happen to the water. It either seeps back into the ground, runs off on the surface, evaporates into the air or it gets consumed by crops or weeds. The percentage of pumped water that evaporates or is consumed, which is referred to as evapo-transpiration, is a loss to the conjunctive water supply.

Over time, the cumulative consumptive uses of many irrigators and towns can lower aquifer levels far enough to dry up springs. Streams begin to show further declines in average flows when the groundwater table drops below the level of the streambed.

It is simple enough to understand how conjunctive use occurs. The difficulty lies in determining how much a given well affects flows of a nearby stream. If the real world were as simple as our slush model, it would be easy to estimate

streamflow depletions. In actuality, the Platte and Republican River systems have complex geology. Our highly variable weather also complicates the process of estimating stream depletions, as does water use by trees and weeds along streambanks, changing farming practices and crop mixes, possibly even global warming. Millions of dollars have been spent by government and industry to develop computer models, like the Cooperative Hydrology Study (COHYST) model of the Platte watershed, that estimate the effects of groundwater pumping and these other variables on streamflows.

Conjunctively used groundwater resources benefit thousands of people, farmers and townsfolk alike. Conjunctive groundwater is the foundation of our economy in south-central Nebraska. On the other hand, declining streamflows threaten endangered species habitat, municipal water sup-



plies and irrigators that rely on surface water.

Tri-Basin and other Platte and Republican basin natural resources districts have worked with the Nebraska Department of Natural Resources for more than a decade to develop and implement Integrated Water Management Plans that have as their goal protecting and sustaining Nebraska's conjunctive water resources. One way that we are working to achieve this goal is by paying Central Nebraska Public Power and Irrigation District millions of dollars to divert floodwaters and other high flows from the Platte into their canals. That diverted water is then allowed to soak away into the canal banks. This "seepage" recharges groundwater supplies, augments tributary streamflows and makes up for water consumed by groundwater irrigators.

Protecting Nebraska's vitally important conjunctive water resources is expensive. The alternative, however, would be to allow these resources to be depleted and diminished. A "hands-off" conjunctive water resources management policy would have costs and consequences for our region that are orders of magnitude greater than our current expenditures on computer models and groundwater recharge diversions.

Chemigation Permit Renewals Due June 1

Chemigation renewal forms have been sent to producers and are due, along with payment, in the Tri-Basin NRD office by June 1, 2016. Anyone who wants to apply fertilizer or ag chemicals through their irrigation system needs to apply for a chemigation permit for the 2016 season. Land-owners and operators should contact Tri-Basin NRD toll-free at 1-877-995-6688 regarding chemigation permits. All newly permitted chemigation systems must be inspected before use. A person who is certified as a chemigation applicator must supervise injection of fertilizer and ag chemicals in irrigation water.

NRD staff do routine inspections on chemigation systems from June until August. Routine inspections are required every three years. If your system is due for an inspection, you will receive a postcard this summer. Routine inspections must be completed for permits to be eligible for renewal the following year. Renewal permits are \$15 and new permits are \$50.



Tri-Basin to Host Arbor Day

Tri-Basin NRD will host the Holdrege Chamber of Commerce's Coffee Connection from 9:30 to 10:30 a.m. on Arbor Day, Friday, April 29. Holdrege area residents are invited to stop in the Tri-Basin NRD office during Coffee Connection to receive a free tree seedling.

Tri-Basin will also provide free tree seedlings in other communities throughout the district on Arbor Day. Watch for details on community Arbor Day celebrations in local media outlets.

Tri-Basin NRD Offers ACE Scholarships

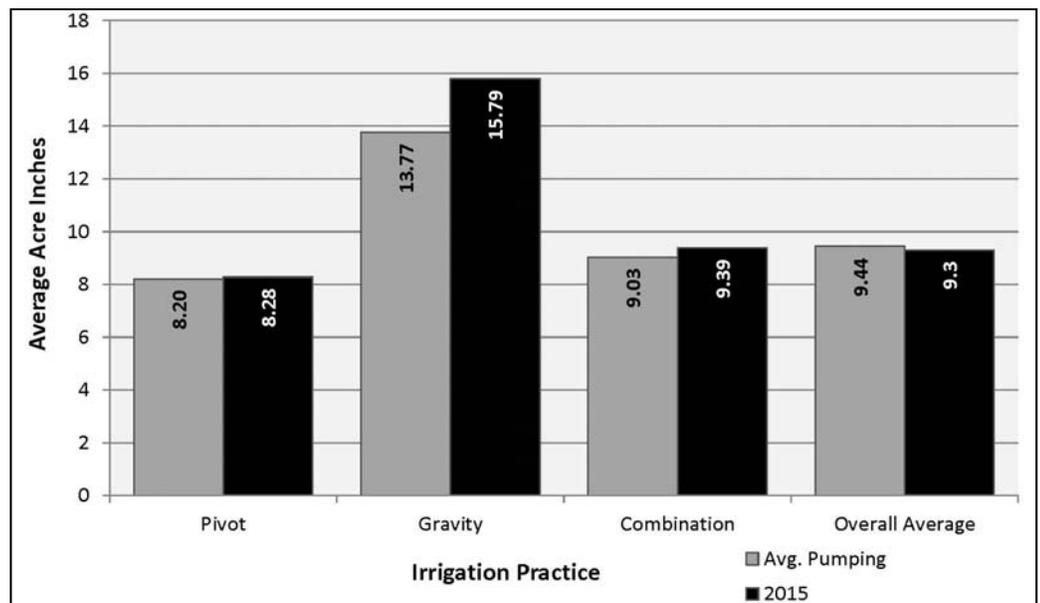


Adventure Camp about the Environment (ACE) is a natural resources camp sponsored by Nebraska's natural resources districts for students who have completed sixth, seventh, or eighth grade. It will be held at the State 4-H Youth Camp at Halsey June 12-15. Cost of camp is \$190.

Tri-Basin NRD is offering up to six scholarships that cover the full cost of registration for students from Gosper, Phelps, and Kearney Counties who want to attend this camp. The deadline to apply for TBNRD scholarships is May 2, 2016. More information about the camp and applying for the scholarships can be found on Tri-Basin NRD's website, www.tribasinnr.org, or by calling Nicole Salisbury at Tri-Basin NRD toll-free at 1-877-995-6688.

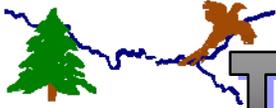
Check Beginning Meter Readings Before Starting Irrigation

As you are getting equipment ready for irrigation season this spring, we'd like to remind you to record the beginning meter readings of your irrigation flowmeters before you begin irrigating crops. We have your ending readings from 2015 in our records, and will use those as the beginning readings for 2016 on your Water Use forms. However, in the event of a discrepancy in readings or a broken meter, your recorded beginning reading can be extremely helpful in tracking down a problem or estimating water use!



Tri-Basin NRD Republican Basin Irrigation Water Pumping

Tri-Basin NRD staff has compiled the 2015 Irrigation Water Use Data. The above chart shows irrigation water use in the Republican Basin portion of the district by practice for 2015, compared to the average over the past 11 years. For more detailed information on Tri-Basin NRD's irrigation water use, contact our office.



Spring 2016

Tri-Basin Topics

Non-Profit Permit
U. S. Postage
PAID
Holdrege, NE 68949
Permit No. 220

Tri-Basin Natural Resources District
1723 Burlington St. Holdrege, NE 68949
(308) 995-6688
email: tribasin@tribasinprd.org
www.tribasinprd.org

RETURN SERVICE REQUESTED

Nebraska's NRDs: Protecting Lives, Protecting Property, Protecting the Future

CALENDAR

April 5.....NRD Board Meeting, 1:30 p.m.*

April 26 & 27 Water Jamboree at Harlan Co. Reservoir

April 29..... Arbor Day
Coffee AM & Tree Giveaway at Tri-Basin NRD

May 5-7..... NGPC Outdoor Discovery Program
at Fort Kearny

May 17.....NRD Board Meeting, 7:30 p.m.*

May 30.....NRD Closed for Memorial Day

June 14.....NRD Board Meeting, 7:30 p.m.*

* Times are tentative. All meetings are at TBNRD office in Holdrege unless otherwise noted.

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A mailing list is maintained and requests to be placed on the list should be sent to the above address. Comments and suggestions may be addressed to the General Manager.

Get Tri-Basin Topics in your inbox instead of your mailbox!

To request an electronic version of this newsletter, send an email nsalisbury@tribasinprd.org.