

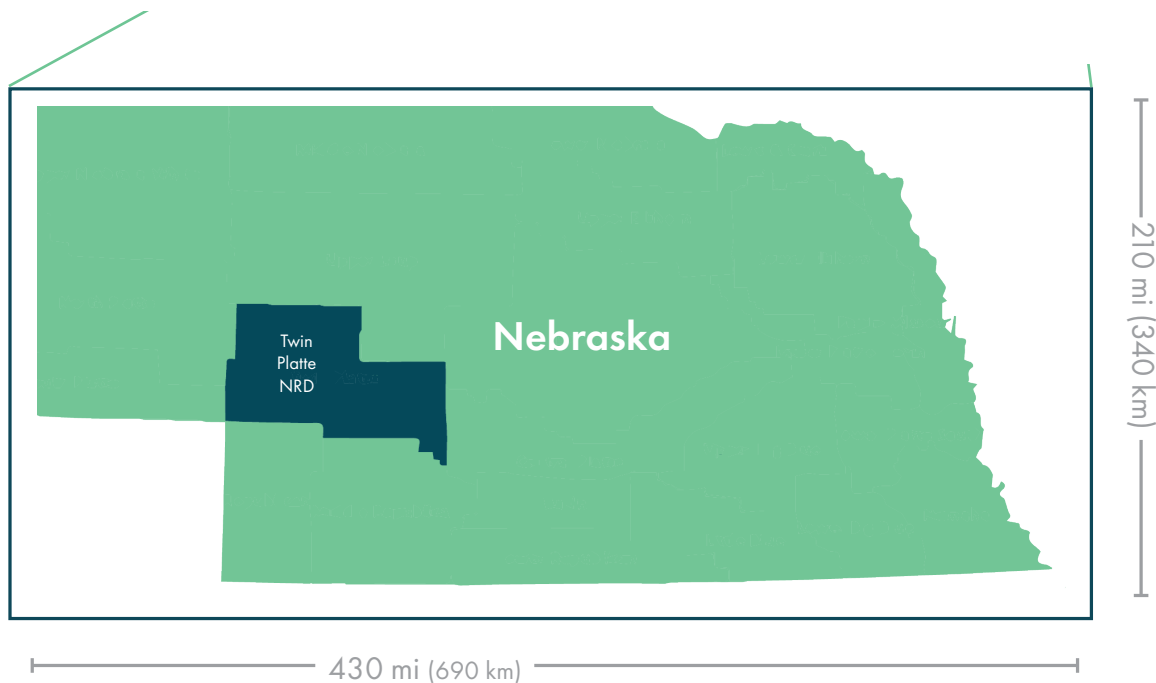
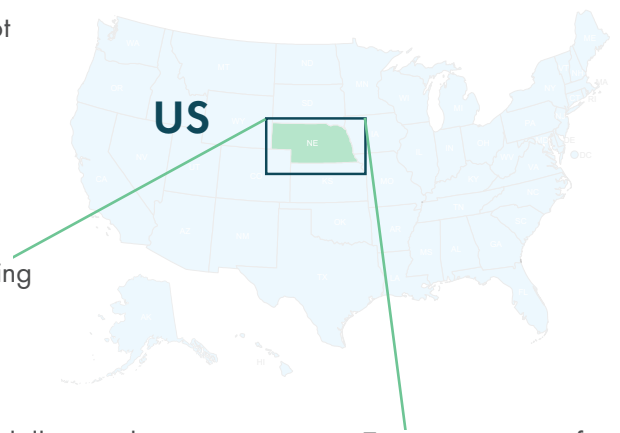
TRANSFERRING GROUNDWATER IN THE HIGH PLAINS

Twin Platte Natural Resources District, Nebraska



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- ▶ In the Twin Platte Natural Resources District (TPNRD), water demand for crop irrigation is generally high due to low average annual rainfall. The district seeks to ensure groundwater supply sustainability and prevent long-term groundwater depletion. The TPNRD is accountable for the impacts of groundwater pumping on streamflow governed by the Platte River Basin and local integrated management plans.
- ▶ TPNRD limits groundwater use for irrigation by imposing a well drilling moratorium. Water use in the district has also been managed by implementing a water data program, providing growers with real time information through an online dashboard. Groundwater allocations and metering systems are not used in the district.
- ▶ Growers can formally transfer their groundwater pumping rights separately to land ownership. To be approved, groundwater transfers must be determined to have no net negative impacts on streamflow. Some adjustment to the amount of groundwater pumping rights transferred may be needed to avoid any anticipated net impact resulting from the transfer.
- ▶ The frequency and size of formal groundwater transfers vary greatly. Transaction costs include fees associated with the formal transfer application and, when necessary, additional costs for well drilling and irrigation systems. Transaction size often depends on the area needed to transition to a full center pivot irrigation system. Groundwater transfer activity appears to be positively correlated with crop commodity prices.





BACKGROUND

TPNRD, in west-central Nebraska, receives an average of 18-22 inches of rainfall per year. There are 320,000 acres irrigated solely with groundwater and about 45,000 acres that use a mix of surface water and groundwater. The main crops grown in the area are corn and soybeans, though TPNRD also produces sugar beets, alfalfa, and potatoes. The district imposes a well drilling moratorium and measures groundwater levels at 135 sites in real time via water level sensors and wireless transmitters. Water use in the Platte River Basin is limited by an interstate compact with Colorado. The district must be in compliance with the basin integrated management plan and the district's integrated management plan that was agreed by the state and TPNRD.



GROUNDWATER TRANSFERS

The non-refundable administrative fee for a formal permanent groundwater transfer permit is \$200. The transfer process requires estimation of the potential impacts of the transfer on streamflow resulting from surface water-groundwater interaction. Without an additional fee, the district estimates 50-year impacts of any formal transfer on streamflow using pre-existing outputs of a hydrological model. Once approved by the TPNRD Board of Directors, the transfer permit is valid for one calendar year. Transfer size in TPNRD varies between 6 and 130 acres, which corresponds to the sizes of a corner lot and an area needed for a full center pivot, respectively. Transfer activity in TPNRD fluctuates between 5 and 140 transfers per year. More frequent transfers seem to be driven by higher corn and soybean prices. Most transfers are between irrigators, though groundwater transfers for cattle feedlots and industry also occur occasionally.



TRANSFER DIRECTION & BOUNDARIES

If the transfer doesn't lead to higher streamflow depletion based on TPNRD's hydrologic model, no adjustment is made to the amount of water transferred. Transfers from lower to higher streamflow depletion are discouraged, and to be approved, the quantity of groundwater pumping rights transferred may need to be adjusted so there is no net expected increase in stream impact over a 50 year period. The exact adjustment is determined on a case-by-case basis. The distance within the district between buyer and sellers is not limited when transferring groundwater.



OTHER POINTS OF INTEREST

(i) Growers who can legally irrigate with both groundwater and surface water ("commingled") on their property are able to transfer their water, but these transfers are very infrequent (3-4 transfers over the last 15 years) and need to be co-administered by the Nebraska Department of Natural Resources (NeDNR) and relevant ditch company because surface water is not overseen by the NRDs. (ii) In 2021, TPNRD began monitoring groundwater levels using water level sensors and wireless transmitters, which allows to observe the aquifer's seasonal fluctuation in real time.

Transfer means a change in the groundwater use location, purpose, or point of withdrawal.

A **formal transfer** is a transfer of a property right. In TPNRD, formal transfers of groundwater rights between wells are called "transfer of certified acres."

An **informal transfer** is a reallocation of water across space/time without transfer of a property right. Informal transfers, often called "pooling," allow joint operation of two or more irrigated tracts. In TPNRD, there are no such informal transfers.

Transfer direction must be considered when there are concerns about impacts of groundwater pumping on streamflow.

Transfer boundaries define the area within which groundwater can be transferred.

*Transferring Groundwater Factsheet #7,
Twin Platte Natural Resources District
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Daugherty Water for Food Global Institute, January 2022
This work was supported by USDA
under contract numbers OCE 58-0111-20-007 and OCE 58-0111-21-007*