TRANSFERRING GROUNDWATER IN THE HIGH PLAINS

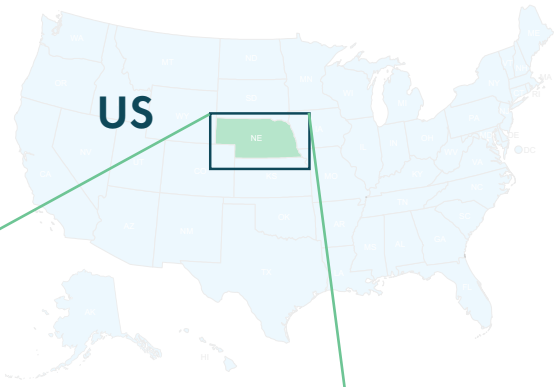
Upper Big Blue Natural Resources District, Nebraska

Water*for*Food
DAUGHERTY GLOBAL INSTITUTE
at the University of Nebraska

- The Upper Big Blue Natural Resources District (UBBNRD) manages groundwater use for crop irrigation to ensure the long-term sustainability of its supply. The UBBNRD is accountable for the impacts of groundwater pumping on streamflow governed by interstate compact. The district also seeks to prevent long-term groundwater depletion.

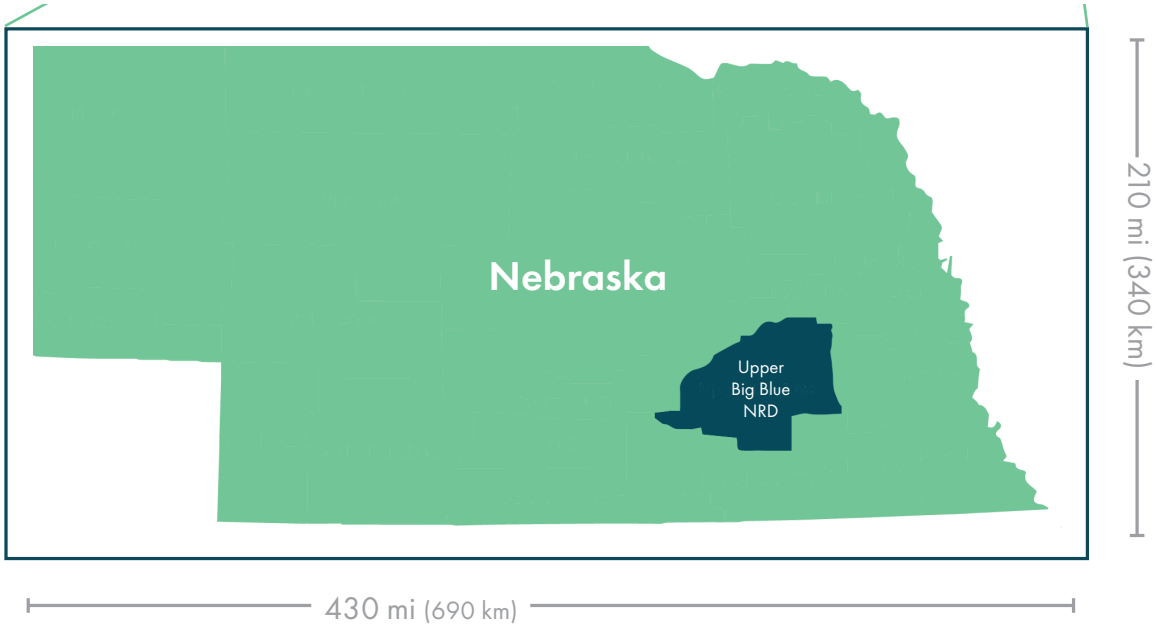
- Groundwater use for irrigation is restricted with mandatory metering and water use reports. Currently, there is no moratorium for well drilling or agricultural acre development in the district. The district is prepared to use an allocation system if groundwater availability reaches a predetermined low level.

- Groundwater transfers in UBBNRD allow pumping water from a well onto a parcel of land located either within the same survey section or in a connected survey section without discontinuing the right to pump the same amount of water onto the original parcel. Models are currently being developed to help understand the connection between groundwater and surface water in the Big Blue River basin, which in the future might be used to better understand transfer impacts to streamflow.



- UBBNRD regulations limit the size of the transfer and the distance that groundwater can be transferred. For agricultural groundwater transfers, transaction size is limited by the size of the source and destination tracts involved in the transfer, as well as the irrigation technology used (e.g., it usually doesn't exceed the amount needed for a full center pivot irrigation system).

- The frequency of groundwater transfers depends on the transfer boundary rule. Transactions occurring within one survey section have less administrative burden and are more common. Transaction costs for transfers outside one survey section include fees associated with the transfer application and, when needed, fees for hydrologic evaluation and well construction.



BACKGROUND

UBBNRD, in southeastern Nebraska, covers a 2,865 square mile area in the upper portion of the Big Blue River watershed. The majority of the district is outside the areas of limited groundwater availability (a "High-Risk groundwater area" in UBBNRD terminology) and receives an average of 26-28 inches of rainfall per year. There are 1.24 million acres irrigated solely with groundwater. Less than 50,000 acres use surface water. The main crops grown in the area are corn and soybeans. There are approximately 12,000 active wells in the district. To verify groundwater use compliance, UBBNRD meters and monitors all groundwater wells, and there's an allocation system ready to be implemented if groundwater supply drops to a trigger level. First, a 3-year allocation of 30 inches would be implemented, which, if necessary, would be followed by a 5-year allocation of 45 inches.

GROUNDWATER TRANSFERS

In UBBNRD, authorized groundwater transfers allow pumping groundwater from a well on one survey section onto a connected survey section without discontinuing the right to pump groundwater onto the original tract. The process may result in doubling water withdrawals from the same well. For this type of transfer, an applicant needs to pay a $50 fee and receive authorization from the district's board of directors. Transfer size is limited to the number of acres that can be irrigated on the tract where the originating well is located. Agricultural water transfer size in UBBNRD can't exceed water needed to irrigate 160 acres. On average, there have been about five such transfers per year. Most transactions are for agricultural uses, but transfers to large water users (withdrawing more than 500 acre-feet per year), like the ethanol industry or municipalities, also occur on occasion. These large water transfers require the applicant to go through a hydrologic evaluation, which helps to understand water availability for such a withdrawal and potential impact to existing water users. This evaluation is done by an independent private firm. Then, for large water transfers, a new well usually needs to be constructed. The evaluation and well construction add additional costs for the applicant.

Groundwater transfers from one well onto a parcel within the same survey section, which can be owned or operated by one or multiple people, don't need to be authorized or approved by the district. For these transactions, land operators don't need to pay a fee; they only need to inform the district about a change in irrigation practice. Such water transactions are more frequent.

TRANSFER DIRECTION & BOUNDARIES

Since 2014, groundwater can't be transferred from, to, or within the designated "High-Risk" areas. Transfers that started prior to 2014 are allowed to continue, but the number of irrigated acres can't be increased. Outside these areas, water from an originating well can be transferred within the same survey section or from one survey section onto a directly connected survey section. There are no rules specifying transfer direction within these boundaries.

OTHER POINTS OF INTEREST

In 2021, UBBNRD developed and implemented a water accounting software. The platform improves water use monitoring and tracks information provided in mandatory water reporting.

Transferring Groundwater Factsheet #6,
Upper Big Blue Natural Resources District
R. Rimsaite, S. Munezero, and N. Brozović
Daugherty Water for Food Global Institute, December 2021

A **survey section** is an area covering one square mile (640 acres).

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 UBBNRD, there are no such formal transfers.

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 when an allocation system is implemented ("agreement pool" in UBBNRD terminology). In UBBNRD, "pooling" can also mean groundwater transfers from one well within the same survey section (defined as "owner-operator pool" or "well pool"). Besides "pooling," informal transfers are called "groundwater transfers," which allow landowners to pump groundwater from their well onto a neighboring survey section.

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.