

PUMPING POINTERS

Q&As for pumping water into Nebraska's Rainwater Basin wetlands

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Rainwater Basin wetlands are of international importance and annually host millions of spring-migrating ducks and geese. Approximately 90% of the mid-continent population of greater white-fronted geese, 50% of the mid-continent population of lesser snow geese, 50% of the mid-continent population of mallards, and 30% of the continent population of northern pintails use the Basins during spring migration. Surveys have identified that a minimum of 300,000-500,000 shorebirds represented by 40 different species migrate through the Basins during the spring. Over 257 species of birds have been recorded in the Rainwater Basin, and the wetlands are regularly used by the federally endangered whooping crane. In addition, these wetlands are important sources of groundwater recharge, help to improve water quality, and provide recreational opportunities.

If the Rainwater Basin landscape was unaltered, pumping would probably not be as necessary. But the Rainwater Basin landscape has been highly modified, with nearly 90% of the wetlands destroyed or highly degraded, and the hydrology of the remaining wetlands greatly altered. This means that natural runoff no longer makes it to many of these wetlands and therefore ponding frequency and duration are greatly reduced. Adding supplemental water via pumping provides a direct benefit to meet the needs of the millions of migrating waterfowl and other water birds that use this region.

Q. Why do we pump wetlands?

A.

- **Provide habitat for migrating waterfowl and other water birds-** The primary reason we pump is to provide ponded habitat for the migrating waterfowl and other water birds that use this region as mentioned above. Pumping in the fall also can provide carry-over water into the spring and that can make spring pumping more efficient or unnecessary.
- **Provide areas for wildlife observation and waterfowl hunting-** Pumping in drier years provides places to hunt both during the fall waterfowl season and during the late winter/spring Conservation Action light goose season. Pumped wetlands also provide areas for people to observe the millions of migratory birds that pass through this area.
- **Help spread out the distribution of migrating birds-** Large concentrations of migratory birds create concerns about competition for limited food and habitat. Pumping objectives are commonly identified prior to fall and spring migration and these are used to strategically guide where we pump to provide ponded habitats to redistribute birds over a larger area. By doing so, managers can increase the amount of foraging and loafing habitats available to migratory birds.

Q. How do we decide when to start pumping?

A. Several factors influence the decision of when to begin pumping. In August and early September, hot weather leads to high evaporation rates and plants that are still actively growing lead to high transpiration (water loss through growing plants). In most years, this makes pumping in August or early September less efficient, especially considering the low capacity of some of the pumps on public areas. Soil moisture conditions are another factor to consider in deciding when or if to pump. A wetland that has been dry for a longer period of time can develop large cracks through the clay soils. This reduces the cost effectiveness of pumping because first the soil needs to be hydrated in order to seal the cracks so the wetland will pond water. This can take a long time and use a lot of water. In addition, there are strong concerns within the farming community about pumping ground water into wetlands, so sensitivity

concerning when water is used and the amount pumped into wetlands is needed. Ground water pumping into wetlands only occurs during the non-irrigation season to help address these concerns. In some areas, the rates charged for electricity are reduced after September 1st, so delaying turning on the electric pumps saves money. Finally, there is a limited amount of money available for pumping, so it has to be spent wisely. However, if conditions are right, some early pumping may be done for the teal season.

Delaying most of our pumping to mid to late September or October takes advantage of generally declining evapo-transpiration rates and saves money and water. Most areas can be pumped to hutable levels within 2 weeks (especially if the vegetation has been managed); however there may not be an adequate depth of water for boats. The money saved by delaying pumping can be applied to pumping into later October to provide waterfowl hunting opportunities for the entire season.

In the spring pumping usually begins in mid-February to provide ponded water for the birds when they arrive.

Q. How do we decide when to stop pumping?

A. Pumping is stopped when the desired water levels are reached and can be maintained or when funding becomes limited, whichever comes first.

Q. How do we decide which areas to pump?

A. In mid to late August, U.S. Fish and Wildlife Service (USFWS), Nebraska Game and Parks Commission (NGPC), Ducks Unlimited, and Rainwater Basin Joint Venture (RWBJV) staff assess wetland water and habitat conditions. This assessment is not conducted earlier because water conditions can change so rapidly. Participants exchange information on habitat conditions and evaluate areas that they feel require pumping. Part of the evaluation of habitat includes assessing the density and distribution of wetland vegetation. Pumping into wetlands that are choked with dense stands of vegetation will not usually provide the quality of habitat as will pumping into an area that has been managed (through grazing, burning, mowing, disking, spraying, etc.) to reduce the density of the vegetation and increase moist-soil plants attractive to waterfowl. As noted earlier, some wetlands may be so dry that pumping will not be effective. The information shared is then used to make decisions about where to pump and allows land managers to estimate the amount of water needed to pond adequate water in these wetlands. Based on this information, and considering the amount of dollars available, a list is compiled of areas to be pumped and when pumping is likely to occur.

Within the Rainwater Basin, functional wells and pumps are available on about 29 State Wildlife Management Areas (WMAs) and 16 Federal Waterfowl Production Areas (WPAs). Several WPAs in the western portion of the region also receive surface water from irrigation canals. Outside of the Rainwater Basin, there are 5 WMAs with functional wells and pumps.

Q. How many areas were pumped last year?

A. The number of areas pumped can vary greatly from year to year. In the fall of 2022, the Nebraska Game and Parks Commission pumped water into 22 different wetlands on Wildlife Management Areas (WMAs), and the U.S. Fish and Wildlife Service pumped or delivered surface water into 4 Waterfowl Production Areas (WPAs) located in the Rainwater Basin Region. Outside of the Rainwater Basin, NGPC pumped water into 5 WMAs. In the spring of 2023, water was pumped or delivered into 8 WMAs and 10 WPAs in the Rainwater Basin, and 2 WMAs outside the Rainwater Basin.

Q. Why aren't more areas pumped?

A. Wetlands are not always wet. It is good for wetlands to periodically go dry, so it would not be ideal to pump all of the wetlands all of the time. However, because the Rainwater Basin landscape has been so drastically altered, the Rainwater Basin Joint Venture has an objective of providing reliable water to more basins.

There are two main reasons that more areas are not pumped or that a given wetland is not pumped more. Many existing public areas cannot be fully pumped because the USFWS or NGPC do not own enough of the basin and pumping could possibly affect the neighbor's land in the remainder of the basin. Acquiring these "roundouts" from willing sellers would help to address this. In addition, there may be opportunities to obtain agreements from neighbors to allow pumping and/or to pay to provide supplemental water for public/private areas. Removal of excessive amounts of culturally-accelerated sediment from the public portion of the wetland will also help to increase the number of areas and amount of water that can be pumped without impacting neighbors due to an increase in the water storage capacity of the wetland. The other reason more areas are not pumped is that it costs money to drill new wells, acquire pumps, and operate the pumps. As funds become available, new pumps and wells may be added.

Q. How much water is used?

A. The amount pumped varies greatly depending on the conditions of the wetlands. In some years almost no pumping is done. On average, with spring and fall pumping combined, approximately 2,500 acre-feet of water are pumped on public lands. To put this in perspective, this is equivalent to the amount of water used to annually irrigate crops on about 3 sections of land. We comply with all Natural Resources District and Nebraska Department of Natural Resources rules regarding wells and ground water use.

Q. How much does it cost?

A. Costs vary greatly based on the type of well and pump, the energy source used to power the pump, and the size of the basin. Costs per day to pump an area range from \$60 to over \$500 per day.

Q. How is it paid for?

A. Fall pumping on state Wildlife Management Areas (WMAs) is paid for with money that is budgeted for the operation of each area, totaling approximately \$20,000. The funds for pumping WMAs come from the sale of state Habitat Stamps and Federal Aid in Sport Fish and Wildlife Restoration funds paid by hunters and other conservationists. Pumping on federal Waterfowl Production Areas (WPAs) is paid for out of the U.S. Fish and Wildlife Service Rainwater Basin operation and maintenance budget. Federal duck stamp money is not able to be used for operation and maintenance costs such as pumping.

In addition, Ducks Unlimited and the Rainwater Basin Joint Venture recently established a Water Development Fund that is being used to help to fund pumping and other actions that will improve the capability of pumping areas. If you are interested in contributing, please contact Terry Kostinec with Ducks Unlimited (tkostinec@ducks.org).

Q. What is involved in setting up the ability to pump into a wetland?

A. The ability to be able to deliver water into these wetlands takes a lot of planning, funding, and work to make the projects a reality. This includes: acquiring enough land from willing sellers to allow for pumping; wetland restoration (including the removal of culturally-accelerated sediment) for the wetland to have the capacity and ability to pond water; managing the wetlands to ensure the vegetation is in the proper condition; and installing wells, pumps, and water delivery systems. Over the past 15 years the Nebraska Game and Parks Commission has completed restoration projects on 22 WMAs within the Rainwater Basin, and we have added wells/pumps/water pipelines to 18 WMAs within the Rainwater Basin and 3 WMAs/Park areas located outside of the Rainwater Basin. In addition, more projects are in the planning stages. Many partners have helped make these projects possible, including: Ducks Unlimited, Friends

of the Rainwater Basin, Natural Resources Conservation Service, Nebraska Environmental Trust, North American Wetlands Conservation Act (NAWCA), Pheasants Forever, Rainwater Basin Joint Venture, and the U.S. Fish and Wildlife Service.

Q. Who can people contact for more information?

A. Contact the U.S. Fish and Wildlife Service office near Funk, NE (308-263-3000) with questions about pumping of Federal areas, information is also available at http://www.fws.gov/refuge/rainwater_basin_wmd/. Contact the Nebraska Game and Parks Commission's District/Area Offices or the area wildlife biologist with questions about pumping of state areas. Pumping and wetland condition updates are available at <https://outdoornebraska.gov/hunt/game/waterfowl/#wetlandhabitatconditions>. The location of state Wildlife Management Areas and news releases listing areas pumped is available at www.OutdoorNebraska.org. General wetland information is available at www.NebraskaWetlands.com.

The Rainwater Basin Joint Venture *Implementation Plan* and information about the partnership is available at www.rwbjv.org. In addition, the RWBJV has an approved *Water Management Plan*.