



The Nebraska
Environmental Trust

preserving NATURAL NEBRASKA™ for future generations

NEBRASKA ENVIRONMENTAL TRUST FUND NARRATIVE SECTION

H1. Project Sponsor: Nebraska Department of Natural Resources

H2. Project Name: Republican Basin Water Meter Proposal

In five pages or less, provide a discussion of your project. Be sure to cover the points specified in the instructions.

NARRATIVE

DESCRIPTION

In the year 2000 the ground water wells in the Nebraska portion of the Republican River Basin depleted the water supply by over two million acre feet. This year the amount of ground water in storage in basin decreased by a total of 1.16 million acre feet. Statistics like these have led to ever increasing concern over the future maintenance of basin's water supplies. Such statistics were also part of the reason that the State of Kansas sued Nebraska over the Republican River Compact.

If there is to be a sufficient quantity of good quality water to sustain the health of the economy, the local communities and natural ecosystems of the basin in the future, irrigators must develop management practices that conserve water and minimize the leaching of contaminants to the ground water. Such practices will also be necessary to insure the State of Nebraska's compliance with the recent settlement of the litigation over the Republican River Compact.

Improved water management without accurate measurement of water usage is impossible. Water measurements provide the data necessary for determining current usage, improving water management, monitoring pump performance and irrigation efficiency, detecting pumping plan performance and well problems and providing accurate water data for future planning efforts. According to Jack Maddux, a ground water irrigator in the Upper Republican Natural Resources District, "a meter is an invaluable tool in managing irrigation systems. It allows the irrigator to optimize the use of water without waste or the risk of ground water contamination." According to Bob Hipple, the manager of the Upper Republican Natural Resources District "between 1980 and 2000 our average water use was around 11.6 inches. This occurred despite the fact that the allocation was 22 inches for a number of those years and was 14.5" most of the rest of the period. While not all of this limitation of use can be credited to the metering, it along with the usage reports did allow the water users to track actual water use. This information would not otherwise have been available to the irrigators and they would have had to rely solely on guesswork, which is notoriously inaccurate. Metering surely played an important role in achieving this limitation of water use."

The meter data will also be useful to the Natural Resources Districts (NRDs) in implementing groundwater management and water quality plans in the basin, especially in dry years when existing groundwater development may be subject to more stringent use limitations under the Compact. An understanding of pumping and consumptive water use is also vital to helping allocate the water allowed for use under the Compact among the in-state Nebraska users.



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The purpose of this application is to acquire cost share to assist in purchasing approximately 1470 meters for monitoring high capacity well pumping in Nebraska's Republican River Basin. It is anticipated that the requested \$600,000 would be cost shared with landowners at a 50% rate. To date government funding sources have supplied 50% cost share averaging about \$408 per meter. After existing cost share is accounted for that leaves a remaining need of about \$1,701,768 for about 4,171 wells. \$800,000 of that amount can be met through state appropriations transferred after settlement of the Republican compact lawsuit. Environmental Trust funds would be used for meters that are installed on a voluntary basis at least 3 months prior to being required as a result of any rules or regulations the NRDs have. (See note in bold at end of this section for schedule and related issues).

In order to most effectively manage groundwater plans are to see that all of the basin's approximately 11,700 active registered groundwater irrigation wells are metered plus any other high capacity wells. Natural Resources District estimates indicate that as of July 1, 2003 approximately 4,845 wells remain to be metered and that existing unexpended cost share from all sources came to about \$275,000. The NRDs are reading and calibrating the meters.

Note: The Republican River Compact Settlement does not require that meters be installed on irrigation and other high capacity wells in the Republican River Basin. However, such meters would greatly improve the accuracy of Nebraska's water use calculations for the Basin Compact Administration and would also greatly aid in the implementation of measures to ensure future state compliance with the Compact. Therefore, the state asked all of the Republican River Basin Natural Resources Districts to require the installation of meters on such wells. The Upper Republican NRD has required meters for over 20 years. Each of the other districts responded affirmatively to the request and adopted regulations that now require the installation of meters according to the schedule set forth below.

MIDDLE REPUBLICAN NRD

December 31, 2003 wells in the SW ¼ of a section

December 31, 2004 wells in the NW ¼ of a section

Wells in the NE ¼ and SE ¼ are already required to have meters in place

LOWER REPUBLICAN NRD

January 1, 2004 – wells in Sections 1-12

April 1, 2004 – wells in Sections 13-24

April 1, 2005 – wells in Sections 25-36

Tri-Basin (Republican Basin Portion Only)

December 31, 2004 – meters must be installed on ½ of an individual's wells

December 31, 2005 – meters must be installed on the other ½ of an individual's wells



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This Environmental Trust proposal would require that a meter be installed after April 1, 2004 and at least 3 months prior to its applicable deadline in order to be eligible for cost share from the Environmental Trust monies.

We recognize that this proposal raises a question as to whether it is to fund “actions mandated by regulations.” If it is determined that the proposal is not consistent with the Trust’s eligibility criteria, we request that such a conclusion be communicated to the department as soon as possible. There are some alternate approaches to that could be used to fund different meters likely to be deemed eligible if cost share for the meters currently being applied for is deemed to be ineligible. We would appreciate the opportunity to alter the application for those specific purposes if needed.

BACKGROUND

The vitality of the human and wildlife communities in the Republican Basin depends on maintaining a plentiful supply of good quality water. In recent years the use of water for irrigation in the Republican River Basin has increased to the point that many people are concerned that current uses may not be sustainable into the near future. There is also the need to curtail water use to remain in compliance with the Republican River Compact.

If the State and the Natural Resources Districts are going to ask people to be more careful with their use of water, they have to have a better understanding of how much water they are using for irrigation and how water use can be changed by using best management practices. By using a meter on wells, an irrigator can operate the irrigation system so that the actual application rate is closer to the desired application. In many cases, when an irrigator first installs a meter, they are surprised to find they are applying a lot more water than they thought and a lot more than is needed to meet the crop requirements.

The amount of water used by wells was also a significant source of contention in the lawsuit with Kansas over the Republican River Compact. The Compact counts the consumptive groundwater use as part of compact calculations to the degree it affects stream flows. Although it is allowable under the settlement to provide calculated estimates of pumping, use of actual meter data is preferred because it is more accurate and its accuracy is more likely to be accepted by both those being regulated based on the pumping numbers and by the other Compact states. In addition, the Compact Administration has developed a ground water model to determine the impacts of ground water pumping on stream flow. The model will also be used to determine the amount of water that is being imported into the basin from the use of surface water from the Platte River. This imported water can be counted as a credit for Nebraska under the Compact settlement agreement. Accurate pumping measurements of wells in the area of the Platte that is contributing the imported water will be necessary for calculating the imported water credit.



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PROJECT DESIGN

The goal is to have 100% of the groundwater wells in the Republican River Basin metered by December 31, 2005. The State has supplied 50% cost share for many meters installed to date. All irrigation well owners in the basin will be required to have meters over the next few years, but the schedule for installation varies with the individual NRD. Many irrigators are installing meters before they would be legally required by their district and the Trust funds would be used only for those well owners installing meters at least 3 months before they were required to do so. (See note in bold under project description for more information on that topic). The process that has been established:

1. Landowner applies to NRD
2. NRD approves
3. Landowner installs/has installed
4. Landowner brings bill to NRD
5. NRD approves
6. NRD sends bill to Nebraska Department of Natural Resources
7. Department of Natural Resources approves claim and pays landowner.
8. NRD calibrates and reads meters and works with landowner to assure maintenance

Natural Resources District estimates from September/October 2002 indicate that as of July 1, 2003 the remaining unmetred wells by District were approximately:

100 Upper Republican NRD
1,000 Middle Republican NRD
2,245 Lower Republican NRD
1,500 Tri-Basin NRD
4,845 Total

About \$275,000 in unexpended cost share exists. At \$408 in cost share per meter that would help purchase about another 674 meters, bringing the total number of wells needing meter cost share down to 4171. At \$408 per meter that leaves \$1,701,768 in remaining meter cost. Another \$800,000 is available from funds transferred from the Republican Lawsuit settlement. Application has been made to the U.S. Bureau of Reclamation for another \$644,000. However there is no indication at this point that the application is likely to be successful. If it were to be, Environmental Trust Funds could be reduced accordingly.

ENVIRONMENTAL OBJECTIVES, BENEFITS AND OUTCOMES



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This project will help assure that Nebraska does not overuse its consumptive use allocation of Republican River Basin water. A result of keeping within those allocations is likely to be a higher number of river reaches with greater streamflow than would have occurred without the allocations. Greater awareness of pumping amounts is, in the aggregate, likely to result in more efficient water use and less expenditure of energy for pumping. Keeping within water use allocations is also likely to help bring about a stabilization of groundwater levels.

ECONOMIC/SOCIAL/PUBLIC HEALTH IMPACTS

Meters are a vital part of Nebraska's implementation of the Republican River Compact. If Nebraska were to be unable to effectively implement its obligations under the compact due to a lack of water use data or other reasons, there could be significant financial consequences for the state. Kansas could take Nebraska to court and seek financial recompense. Ultimately some method would need to be found to measure consumptive water use and Nebraska or Nebraskans would need to pay for that method. Meters are the most effective way of generating reliable water use information.

The social and economic impacts of implementing the water management program needed to implement the Republican Compact settlement go far beyond the cost of the meters. Three of four of the Republican Basin NRDs have moratoriums on new wells. To meet compact requirements they are also likely to need to allocate water and allocate that water more stringently during dry years. This will not only curtail net new irrigation development but also impose consumptive use restrictions on current users that result in water savings. In this type of belt tightening it will be especially important that allocations needed to meet compact requirements be developed with accurate information and that water users have access to their full allocation. Any mistake can cost a landowner money. Furthermore, the meter is the only way individual irrigators will be able to know they are meeting water use requirements. It will also allow them to plan and conserve water use on a multi-year basis.

OUTCOMES

The success of the overall project will be measured by whether we are able to see that meters are installed on all remaining Republican River Basin registered irrigation wells by the December 31, 2005 goal. This will involve obtaining other funding sources in addition to those being applied for in this grant. Expected outcomes include water savings and positive impacts on groundwater levels, reduced water use per acre of crop production, more efficient and reliable measurement of water use for compact and management purposes, and the ability to more closely tune water use to compact requirements.