Rio Grande Inter-Basin Roundtable
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Mr. Michael King, Executive Director
Colorado Department of Natural Resources

Mr. Todd Doherty, Intrastate Water Management & Development
Colorado Water Conservation Board

Reference: Quantifying Mogote / Romero Flows and Effects on the Conjeos System

Gentlemen:

The Rio Grande Inter-Basin Roundtable (R.G.R.T) has determined that the single, most critical water issue confronting the Rio Grande Basin (Basin) is the current unsustainable management of surface and ground water. The R.G.R.T. has made the decision that water activities that address this issue be favorably considered for funding from the Water Supply Reserve Account, SB 2005 -179 (WSRA Funds), providing the proposed water activities meet the SWSI findings for the Basin and the CWCB & IBCC Criteria and Guidelines for funding.

This is a joint project of the Mogote-Northeastern Consolidated Ditch Company (Mogote NE) and the Romero Irrigation Company (Romero), together referred to as RMNE. The Mogote-Northeastern Consolidated Ditch Company is the Applicant, taking fiscal and administrative responsibility for this Project. This large and complex combined system represents two of the oldest ditch companies, holding many of the most senior water rights on the Conejos River.

Physically and administratively, the Mogote NE and the Romero overlap, with both ditch systems taking their water from the Conejos River and both having the same governing Board of Directors. The primary water right for the Mogote NE is for 4,120 acres and the Romero Irrigation System's water right is for 10,872 acres.

The Board consists of 5 members, with two elected from the Mogote NE and three elected from the Romero system. Annual meetings are held on the same day, 30 minutes apart. This allows the Mogote NE assessments to be set first, because Romero Irrigation Company must pay 60% of the assessments in the Mogote NE. Since the two systems overlap and operate so closely, they are served by one ditch rider, whose knowledge of the RMNE and of the Conejos Water Conservancy District goes back many years.

The Mogote-Northeastern Consolidated Ditch Company, with 2,080 irrigated acres, was incorporated on April 18, 1910, acquiring the 15-mile Mogote Ditch and the 9-mile Northeastern Ditch. With 44 shareholders, the Mogote Ditch (No. 98) has priority No. 115, dating from June 2, 1887, with 2040 irrigated acres. The Northeastern Ditch (No. 62) includes priorities 66, 119,

and 127. The appropriation for 66 dates from April 21, 1883 and the 119 and 127 appropriations occurred in 1890.
The Romero Irrigation Company, which irrigates 10,872 acres, was incorporated as a mutual ditch company in 1900. The 51 shareholders have 389.9 shares of outstanding stock, with assessments at $75 per share.
RMNE represents 2778.119 shares, with Romero Irrigation Company holding 1166.059 of those shares, or 60%.

The Problem: When water is available in the Conejos River, 667 cfs, or about 25% of the Conejos River flow, is diverted into the Romero Ditch, Conejos County, Colorado. As these flows enter the RMNE system, they run through about 80 miles of earthen canals and ditches along the Mogote foothills. Because the Romero gate is one of the larger diversions off the river channel, handling multiple decreed water rights, the diurnal effect has significant impact on the actual water diverted throughout the day, requiring significant monitoring and adjustment in the attempt to meet decreed flows. Since the Romero gate at the diversion has such a large flow a 10% error in the flow can have a significant impact on irrigators and the Conejos River Compact flows. Although losses throughout this combined and complex ditch system are substantial, RMNE has had no way to quantify or to know the timing of the return flows or to equitably distribute and manage water for its water users.

These issues can be addressed in the following manner:

Improving Water Management Efficiency: Through the combined technologies of measuring weirs, automation, and telemetry, RMNE can now extend the success experienced in similar previously funded WSRA projects in south-central Colorado. With the pressures of drought, a critically diminished aquifer, and the Rio Grande Basin's priority to improve the efficiency of surface and ground water management, RMNE needs to find out where the irrigation water is flowing in its system. A major element of this Project is to replace the Romero diversion gate with a new 12 foot automated radial gate to provide consistent flows to meet the applicable decreed water rights. In addition, the installation of measuring weirs and telemetry on major laterals in the system will allow irrigation flows to be monitored allowing flows to be quantified, water loses and return flows to be determined.

Knowing the Location of Irrigation Water in the System: The RMNE system irrigates about 15,000 acres. A small discrepancy in water management in such a large area has the potential to hugely affect the flows associated with Conejos River Compact between Colorado, New Mexico and Texas. When there are 2,500 cfs in the Conejos River, about 650 cfs of that Compact-entitled water, or about 22% to 26%, is available to the RMNE ditch system. Year after year, water users on the Romero and Mogote have coped with significant, but as yet un-quantified, irrigation water losses. For example, the Romero Ditch, with priority #1 of native water, travels twelve miles from the Conejos to the last stockholder on the RMNE system. For example, the Ditch Rider can take out of the river 27 cfs for delivery to an irrigator at the bottom of the system, but when the water arrives at the irrigator's location, there are only about 6 cfs to deliver. The question is what happened to those 21 cfs? If the Ditch Rider knew where the "losses" occurred he could correct the situation.

RMNE needs to quantify these losses to determine if this loss is consistent and irrelevant of the amount of water in a ditch, or is it a percentage of the total amount which grows in relation to the volume of water in the system. With the amount of water that this company diverts, it's Ditch Rider must manage 20-30 different irrigation streams, this makes it virtually impossible to accurately quantify these numbers without this type of project. For native water

the ditch company is required to deliver the irrigator's full entitlement at the irrigator's headgate, with the ditch company paying for any deceases in water flow in the system. These "losses" significantly impact the timing of the irrigator's turn to take the water and volumes available. By quantifying these impacts RMNE can take corrective measures to more accurately manage the native water such as: Does any volume of this water significantly return to other laterals within RMNE, and if so can the Ditch Rider adequately take steps to adjust the respective flows?

On this system, irrigators can have a portion of their water rights stored in Platora Reservoir. If they call for this water then any losses incurred during the delivery process are deducted from the quantity of water called for. With an accurate measurement of losses the individual irrigator can order the correct amount of reservoir water and the native water is not in jeopardy of being the transportation means which further exacerbates the already growing turn- around time and diminished volumes of water. At the present time these losses have not been quantified and reasonable assumptions have been made. This Project will install the infrastructure of measuring weirs and telemetry, enabling RMNE to quantify losses within the system; show where the return flows are; and greatly increase the management efficiency of a system which diverts a lot of Conejos River Compact water.

Forecasting River Flows: Water users in this part of Colorado represent the last line of defense for the Colorado Department of Water Resources (DWR), which administers the Conejos River Compact. In a recent report to the Rio Grande Interbasin Roundtable, the Division Engineer stated that despite DWR's best efforts, there are often large volume discrepancies between the forecasts and actual river flows, particularly on the Conejos system. Costs of these errors to the District, the Basin, and to Colorado are high. For example, if flows in the river are under projected, then it is possible irrigators will be curtailed to have sufficient water to meet the Conejos River Compact; thus causing the irrigators to receive less than their legal quantity of irrigation water, with corresponding loss in crop yield. Improved water management in the RMNE irrigation system will help to quantify and better understand the flows on the Conejos River and its tributaries; ensure that sufficient quantities of water are available to meet agricultural needs; and help Colorado more accurately predict Conejos River flows and meet its Compact obligations.

The Project: A major element of this Project is to replace the Romero diversion gate with a new 12 foot automated radial gate to provide consistent flows to meet the applicable decreed water rights. In addition, sixteen measuring weirs will be installed on major irrigation laterals on the RMNE system. This new system, when combined with a recently installed similar gauging and telemetry system serving the Conejos Water Conservancy District, will allow RMNE to identify and quantify gains and losses in flows throughout this large combined system and to more effectively manage existing water supplies.

The Project meets the Threshold and Evaluation Criteria and addresses Tier 1, Tier 2 and Tier 3 of the WSRA Application.

Extended Benefits: Through this Project, RMNE will (1) equalize the distribution of irrigation water based on empirical real-time data; (2) maximize sustainable beneficial use of existing water supplies; (3) gain a better understanding of its role in the Conejos River system; (4) support DWR's efforts to minimize forecasting errors and the effect of those errors on water users; and (5) help streamline Colorado's compliance with its obligations under the Rio Grande Compact.

Project Costs: The costs of the major elements of this Project are as follows:

• Romero 12 foot Automated Radial Gate and associated telemetry system	$102,850
• Installation of 16 measuring weirs, with flows ranging from 10 cfs to 340 cfs, and associated telemetry systems	$210,000
• Engineering and Design – NRCS In-Kind	$ 27,500
• Hydrogeological Support – Third-Party	$ 40,000
PROJECT TOTAL COST	$380,350

Sources of Funding:

• NRCS	$ 27,500
• Conejos Water Conservancy District	$ 60,350
• Mogote-Northeastern Consolidated Ditch Company and the Romero Irrigation Company	$ 7,500
• WSRA - Basin Account	$ 16,700
- Statewide Account	$268,300
TOTAL FUNDING	$380,350

Recommendation: At the regular R.G.R.T meeting on January 8, 2013, RGRT Members voted unanimously to request funding from SB 2005 - 179 for a total of $285,000.

The R.G.R.T urges the CWCB to approve this request for funding of $285,000 from the WRSA Rio Grande Basin and Statewide Accounts for a the Quantifying Mogote / Romero Flows and Effects on the Conjeos System Project that has multiple benefits to local stakeholders, the region and statewide.

The R.G.R.T. appreciates the support of the Department of Natural Resources, the Colorado Water Conservation Board and the Interbasin Compact Commission in assisting in meeting the needs of all users of Colorado's water and in fostering intrabasin and interbasin communications and discussions. We believe that the above project will assist in this effort.

Sincerely,

Mike Gibson
Chair, Rio Grande Interbasin Roundtable

Attachment (1)

cc: The Mogote- Northeastern Consolidated Ditch Company