

NM WRRRI Student Water Research Grant Progress Report Form Progress
Report due Friday November 18, 2022
Draft Final Report due Friday, April 28, 2023
Final Report due Wednesday, May 31, 2023

1. Student Researcher: Jared Wood
Faculty Advisor: Lani Tsinnajinnie, P.h.D.

2. Project title: Dynamic Fallowing in the Middle Rio Grande: A Look at the Environmental Water Leasing Program

3. Description of research problem and research objectives: The Environmental Water Leasing Program (EWLP) offers small farmers payments to temporarily lease their surface water rights, receiving payments in exchange for using the water that is then directed to strategic Silvery Minnow habitat locations when the Rio Grande dries. I endeavored to do a holistic study of the program, describing incremental changes that it creates for the Minnow and aquatic ecosystems, program participants, and local communities, and the drivers that determine how a range of effects for all parties may differ within a range of possible water years.

4. Description of methodology employed.

Compilation and analysis of ecological monitoring and fish studies showed the effects the program has for the Minnow. Analysis of participant surveys showed participant opinion and land management behavior. Analysis of local agricultural economics provided a backdrop for describing the decisions that potential participants make when considering the program. A conceptual model illuminated the key drivers that will determine a range of outcomes for participants and externalities to neighboring communities.

5. Description of results; include findings, conclusions, and recommendations for further research.

EWLP scaled impressively in its first three years to offer important habitat for the Minnow, payments for irrigators, and flexibility for water managers.

The effects for the Minnow must be understood through ecological monitoring at each location. Some monitoring shows locations with a greater quantity of Minnows than the nearby main channel, though not all locations have been monitored, and these habitats may become ecological traps if nearby agricultural fields are leaching too many inputs.

Most program participants prefer the option of receiving a payment from the program in comparison to their available alternatives, and would enroll again if given the option. However, participants who enroll bare land and fallow it without managing it for weeds and soil fertility may not understand the cost of doing so, and may be creating more problems for themselves and their neighbors than they realize.

Fallowing bare land without land management practices externalizes harms primarily associated with weeds and dust to neighbors and local communities near program participants. EWLP is unique amongst paid fallowing programs in the West for not requiring land management practices to mitigate for these externalities. At the time of writing, a significant portion of participants are presumed to be bare fallowing, though the extent of participants and land are not well understood.

To reduce harmful externalities, EWLP should require land management practices of program participants and monitor and verify them as all other following programs in the U.S. West do. To do this, EWLP would have to offer greater payments to compensate for participants' greater costs, and to increase its operating budget to account for costs associated with education, monitoring, and verification.

6. Provide a paragraph on who will benefit from your research results. Include any water agency that could use your results.

Middle Rio Grande Conservancy District and Bureau of Land Management, who administer the EWLP, are the primary agencies that may benefit. The State of New Mexico, which has been exploring fallowing as a way to increase water quantity delivered to Texas, also benefits.

7. Describe how you have spent your grant funds. Also provide your budget balance and how you will use any remaining funds. If you anticipate any funds remaining after May 31, 2023, please contact Carolina Mijares immediately. (575-646-7991; mijares@nmsu.edu)

I have spent my grant funds on GIS software, professional services to design and implement a GIS study of vegetative response to additional waters as measured through NDVI, and tuition payments for my dual Masters degrees.

8. List presentations you have made related to the project.

Poster presentation at WRRRI conference.

Masters defense

Public presentation hosted by Albuquerque Wildlife Federation.

9. List publications or reports, if any, that you are preparing. For all publications/reports and posters resulting from this award, please attribute the funding to NM WRRRI and the New Mexico State Legislature by including the account number: NMWRRRI-SG-2022.

Not applicable.

10. List any other students or faculty members who have assisted you with your project.

Robert Berrens and Maceo Martinet were also on my committee and provided essential guidance. John Fleck also supported informally with discussions and connections.

11. Provide special recognition awards or notable achievements as a result of the research including any publicity such as newspaper articles, or similar.

Not applicable.

12. Provide information on degree completion and future career plans. Funding for student grants comes from the New Mexico Legislature and legislators are interested in whether recipients of these grants go on to complete academic degrees and work in a water-related field in New Mexico or elsewhere.

This funding helped me graduate with a dual masters in Water Resources and Community and Regional Planning. I was hired by the New Mexico Environment Department as a Water Resources Professional, where I have been contributing to surface water quality and statewide watershed planning for 6 months at the time of writing.