Yale SCHOOL OF THE ENVIRONMENT

Ucross High Plains Stewardship

FELLOWSHIP BRIEF

Conservation Easements as a Groundwater Management Tool in Colorado

Abbey Warner, MEM '21

The Need.

The statewide land trust Colorado Open Lands (COL) aims to preserve the significant open lands and natural heritage of Colorado through private and public partnerships, innovative land conservation techniques and strategic leadership. One region of focus for COL is the San Luis Valley, is a high-altitude desert valley surrounded by the San Juan and Sangre de Cristo mountain ranges. Hydrologically, the San Luis Valley includes the headwaters of the Rio Grande and two stacked groundwater aquifers. Both people and ecosystems in the Valley rely on surface water and groundwater for uses such as farming, ranching, and migratory bird habitat provision. Groundwater pumping for irrigated agriculture and recent years of drought in the Valley have caused both groundwater aquifers to be overdrafted to unsustainable levels. Colorado's State Engineer will set mandatory restrictions to shut down irrigation wells if groundwater sub-districts and other stakeholders are unable to meet the groundwater recharge requirements through voluntary programs.

In response, Colorado Open Lands (COL) has been working with water districts, groundwater sub-districts, engineers, land trusts, appraisers, and attorneys to compile, scope, and analyze the list of voluntary tools available to sub-districts. The team is exploring a new conservation easement model tied to groundwater pumping reductions, which would ensure that producers who reduce groundwater withdrawal retain both flexibility in farming decisions and the value of that water. COL is leading the way for new opportunities in water management through groundwater easements.

The Project.

Abbey joined COL this summer to learn the ins and outs of private land conservation in the West. Specifically, she supported the project team in evaluating the feasibility of a conservation easement model that would restrict groundwater pumping to promote aquifer recharge in the basin. This involved communicating with conservation professionals in other states with declining aquifers, evaluating methods of valuing irrigation restrictions, attending research team meetings, and compiling research findings into a final report. Through discussions with agricultural producers, groundwater managers, engineers, appraisers, academics, and land trusts, the team developed a suite of groundwater pumping reduction scenarios and tools to support groundwater aquifer recovery in the San Luis Valley.

The Findings.

Abbey authored a report for COL called "Groundwater Conservation Easements for Aquifer Recovery in the San Luis Valley." This publication describes the urgent state of groundwater overdraft in the San Luis Valley and the suite of voluntary legal and programmatic tools available to groundwater sub-districts to reduce pumping. Writing the report involved compiling research, meeting notes, interviews, webinar information, and input from the project team as well as drafting the report and incorporating reviewer comments. This report will inform project funders about the results of the feasibility study and guide collaborative action to reduce groundwater overdraft. In addition, stakeholders in the San Luis Valley and other agricultural basins will use the findings to address groundwater overdraft in the San Luis Valley.

The Impact.

The effects of population growth and climate change on Colorado's water systems will continue to drive the need for innovative solutions to the impacts of water scarcity and drought. Abbey's work with COL supports exploration of creative ways to manage surface water and groundwater through use of conservation easements that benefit the public, landowners, and ecosystems of Colorado. Abbey's contributions to this project led to the publication of a report which will provide useful information not only to stakeholders in the San Luis Valley, but to other water-scarce regions of Colorado and the West.

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The Student.

Abbey Warner is a Master of Environmental Management candidate at the Yale School of the Environment. Her current studies and prior work experience in the nonprofit and agricultural sectors center around natural resource and land management to promote the multiple benefits of water provision, climate mitigation and adaptation, ecosystem health, and equitable development within communities. Abbey holds a Bachelor of Science degree in Conservation and Resource Studies from the University of California, Berkeley.