

# **Acequias And Adjudication: An Historical And Spatial Analysis Utilising Geographic Information Systems**

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**Abstract.** The oldest and most important water management systems in New Mexico are the community acequia associations. They have historically been the principle units of government responsible for the distribution and use of irrigation water, have the power of eminent domain, and are recognised under New Mexico law as political subdivisions of the state. New Mexico's State Engineer's Office has been adjudicating the Upper Rio Grande acequias since 1966 involving water rights of most of New Mexico's Indian Pueblos and Tribes, the federal government, municipalities, and thousands of individual defendants. Many of the approximately 700 acequia associations in north-central New Mexico are currently undergoing adjudication under the classification of "ongoing" or "long-term." The greatest numbers are concentrated in Mora, Rio Arriba, San Miguel, Santa Fe, and Taos. Hydrographic surveys must be performed as part of the adjudication process includes three phases: surveying, data compilation, and adjudication. The GIS will combine technical, social, and historical geographically-referenced data in a clear and concise manner. GIS will be utilised to analyse the potential success of implementing an alternative to assessing fixed flow rates in acequia water rights adjudication, proposing that a percentage of flow be assessed to the acequias. This would allow for flexibility in the water management system, which is a traditional method that has worked for centuries.