

Water in the Desert

Engineering, Legal, and Logistical Study
to Implement the Conversion of Oil &
Gas Produced Water to Useable Water
in Lea & Eddy Counties, New Mexico



Project Sponsor

- Water Reclamation Committee JPA
Lea/Carlsbad Soil & Water Conservation
Districts
- Funding provided by grant under the
Department of Energy Office of Worker and
Community Transition 3161 Program



Project Team



- Natural Resources Consulting Engineers, Inc. (NRCE)
- Northwest Economic Associates (NEA)
- WestWater Research, LLC
- Luebben Johnson & Young LLP
- Participating Agencies - Sandia & LANL



Purpose

- Evaluate the technical, economic, legal, logistical feasibility of reclaiming oil and gas produced water within Eddy and Lea Counties, New Mexico.



Methods

1. Follow approach of New Mexico ISC Regional Water Planning Handbook.
 - Emphasis on Public Participation
 - Development and Comparison of Alternatives
 - Allow study to be consistent with previous planning efforts for the Study Area
2. Build on Existing Studies to Extent Possible
3. Emphasis on Economic, Institutional, Legal and Logistical Issues



Description of the Alternatives

- Alternative 0 – No Change in Current Activities (Irrigated Land Retirement)
- Alternative 1 – Reclamation of Oil and Gas Produced Waters



Evaluation Criteria

- Costs
 - Capital
 - Operation and Maintenance
 - 40-year planning period
 - Secondary economic costs
- Feasibility
 - Legal
 - Political
 - Social



Evaluate Water Demands in Eddy and Lea Counties

- **Review and Quantify Existing Water Demands**
 - Identify and Inventory Major Demand Sectors
 - Agriculture
 - Municipal
 - Industrial/Commercial
 - Environmental
 - Identify Demand Characteristics and Needs for Major Sectors
 - Reliability and Availability
 - Quality
 - Pricing
 - Quantify Source Reliance for Major Sectors
 - Groundwater
 - Surface Water Source (Live Flow & Storage)



Regional Economic Analysis

- **Economic Measures**
 - Direct Impacts (primary output)
 - Indirect Impacts (supporting industries)
 - Revenue
 - Employment
 - Land Values
 - Taxes
 - Other
- **Input-Output Model and Sector Forecasts**



Regional Economic Analysis

- **Regional Economic Importance and Value of Water**
 - **Description of Water Use and Linkages to the Regional Economy**
 - **Analysis and Focus on Recent Dry-Year Impacts**
 - **Value of Water by Individual Demand Sectors**
 - **Agriculture**
 - **Municipal**
 - **Industrial**
 - **Environmental**



Regional Economic Analysis

- **Market Pricing Analysis**
 - **Municipal Water Pricing Structure**
 - **Industrial**
 - **Irrigation Water Cost**
 - **District Charges**
 - **Energy/Pumping Costs**
 - **Water Right Leases & Sales**
 - **Price Dispersion**
 - **Historic and Future Price Trends**



Evaluate Water Supply Alternatives

- Cost of Produced Water
- Cost of Alternative Water
- Ease of Implementation (Feasibility)
- Economic Measures
 - Comparison of Economic Activity by Sector
 - Planning Horizon and Growth Path
 - Qualitative Analysis (e.g. Environmental Objectives)
 - Eddy and Lea Counties and State of New Mexico



Evaluate Water Supply Alternatives

- **Allocation of Project Costs**
 - **Level of Benefits to Produced Water Users**
 - “Ability to Pay” Analysis
 - **Cost Comparison of Alternatives**
 - Produced Water Disposal
 - Cost Avoidance by Oil & Gas Industry
 - Market Pricing Analysis
 - **Costs Recoverable by Direct Charges**
 - **Incentives for Private Investment**
 - **Level of Public Funding**
 - Types and Sources of Public Funding



Legal Analysis: Goals

- Legal certainty
- Economic efficiency
- Political viability



Legal Analysis: Objectives

- Describe existing legal framework
- Identify problems & potential solutions
- Assess feasibility of solutions



Legal Analysis: Tasks

- Summary of Relevant Laws
- Rights & Liabilities of Water Producers
- Rights & Liabilities of Cleaned Water Owners/Operators
- Public & Private Sector Issues
- Final Recommendations



Summary of Relevant Laws

- Water laws/regulations
- Oil & gas laws/regulations
- Environmental laws/regulations
- Contract law



Rights & Liabilities

- Water Producers
 - Establish clear ownership rights
 - Establish clear limits of liability
- Cleaned Water Owners/Operators
 - Establish clear transfer of rights
 - Establish clear limits of liability



Public & Private Sector Issues

- Describe potential public sector roles
- Identify legal benefits & risks
- Assess alternative public/private structures



Final Recommendations

- Proposed statutory changes?
- Proposed regulatory changes?
- Proposed contractual changes?

