3-2010

The E-Flow Challenge in an Acequia Irrigation System with Storage - Environmental Flow Workshop

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The E-Flow Challenge in an Acequia Irrigation System with Storage

Environmental Flow Workshop

by:

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President Acequia de La Isla
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&
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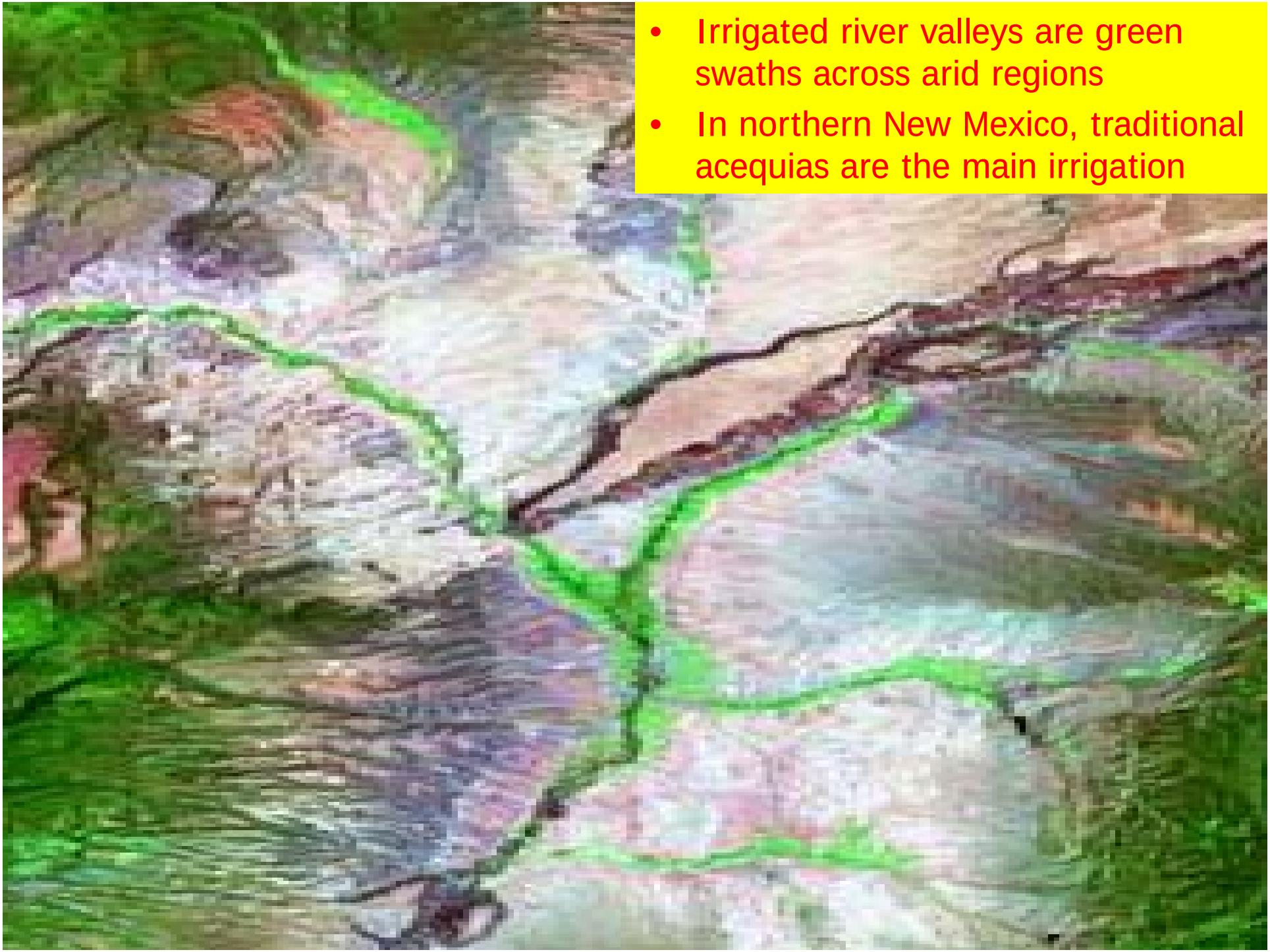
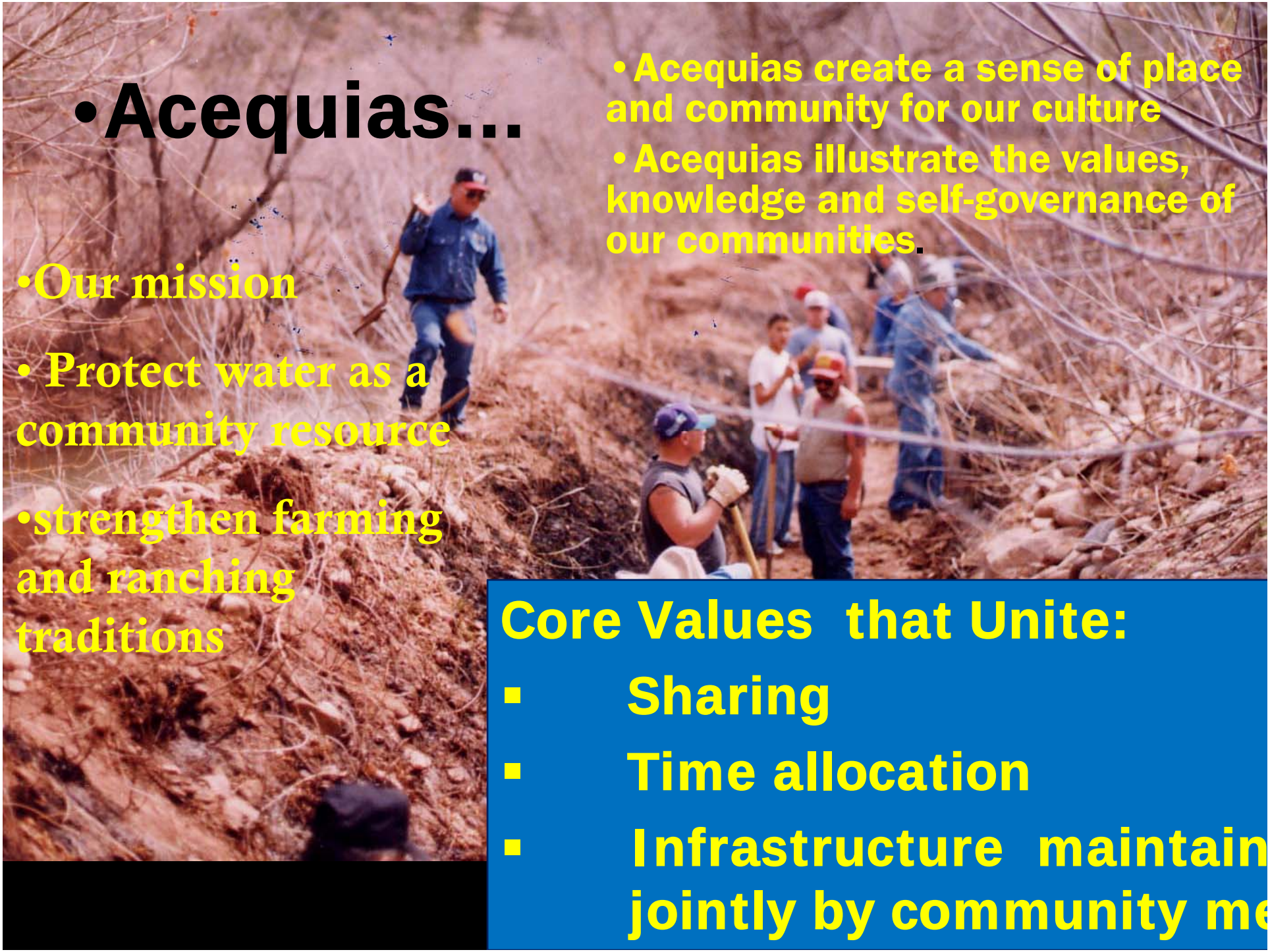
March 15, 2010


• Irrigated river valleys are green swaths across arid regions
• In northern New Mexico, traditional acequias are the main irrigation



•Acequias…

- Acequias create a sense of place and community for our culture
- Acequias illustrate the values, knowledge and self-governance of our communities.

- Our mission
- Protect water as a community resource
- strengthen farming and ranching traditions

Core Values that Unite:

- Sharing
- Time allocation
- Infrastructure maintain jointly by community me

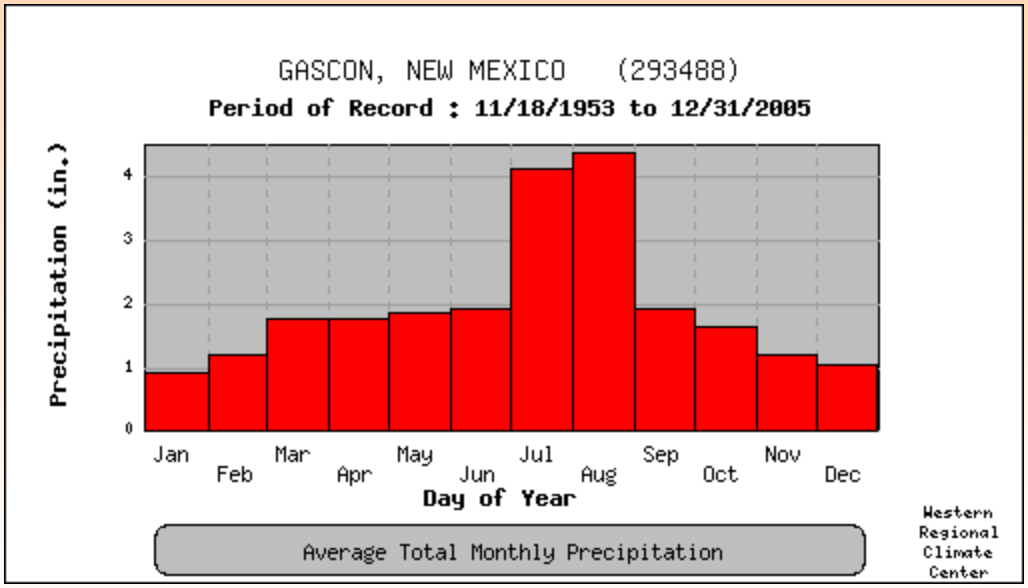
New Mexico Acequias

FARMS AND COMMUNITERIES

The E-Flow Challenge

- Drought - Filling in the GAP: > 50% variation year to year
- Natures water hogs and wildlife
  - 15 Beavers dams + Fish
- Deal with Human Water Hog –
  - Irrigation of lands without water rights
  - Pond fetish – Entitled to my own lake and fish
- Competing Values – Can't have it all
  - Stored e-flow vs River E-flow
- Governmental Jurisdiction
  - Game & Fish, State Engineer, Environment Depts.
- Financial Drought – Development + Water Transfers

Seasonal Variation
Short term Gap problem E-Flow

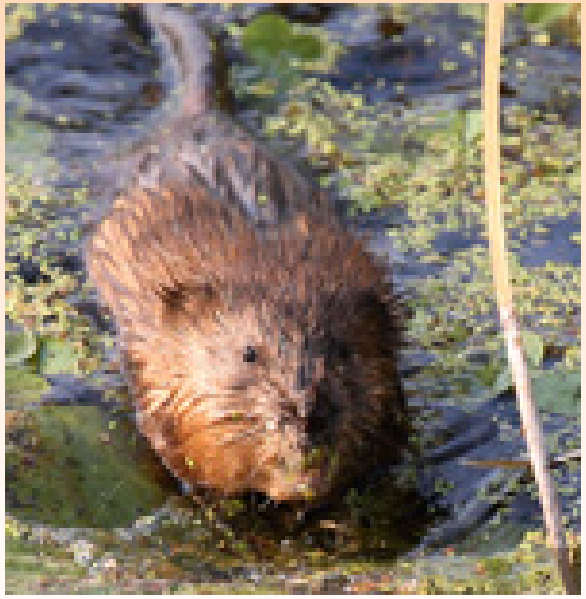


Annual Variations
Long-term gap problems for E-flow

Ledoux Valley - Precipitation (Inches)			
Season	Long Term	2009	Shortage
Winter	3.12	0.94	69%
Spring	5.37	3.42	36%
Summer	10.5	3.81	64%
Fall	4.8	2.63	45%
Annual	23.79	10.82	54 %

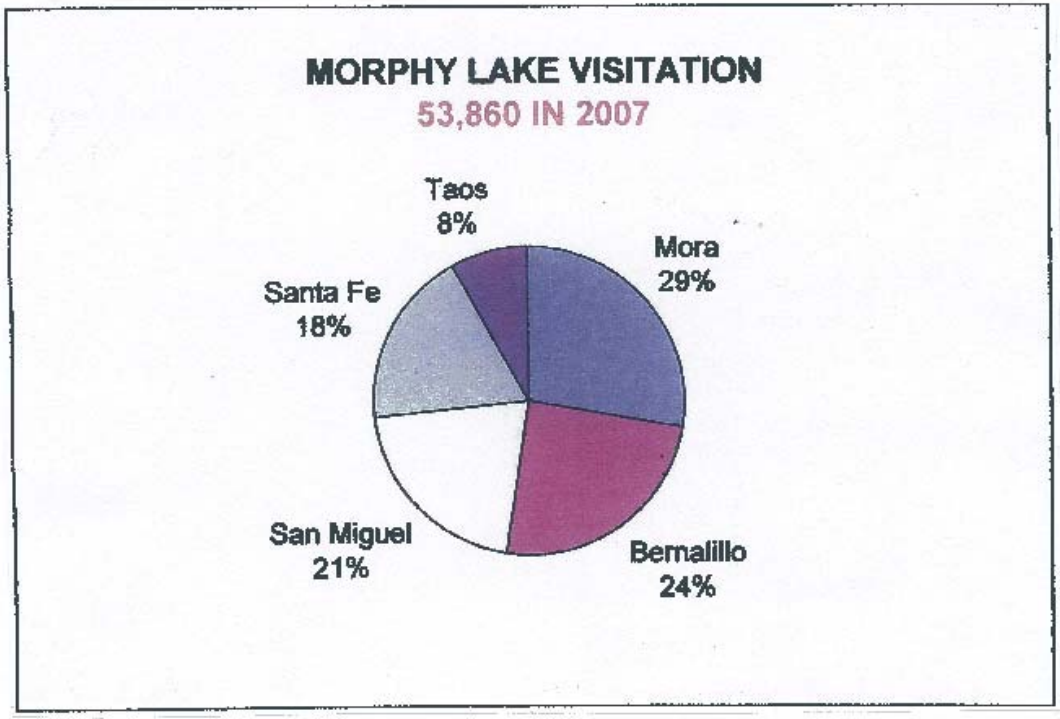
Beneficiaries of River E-Flow Natures Water Hogs:

Muskrats



Beavers

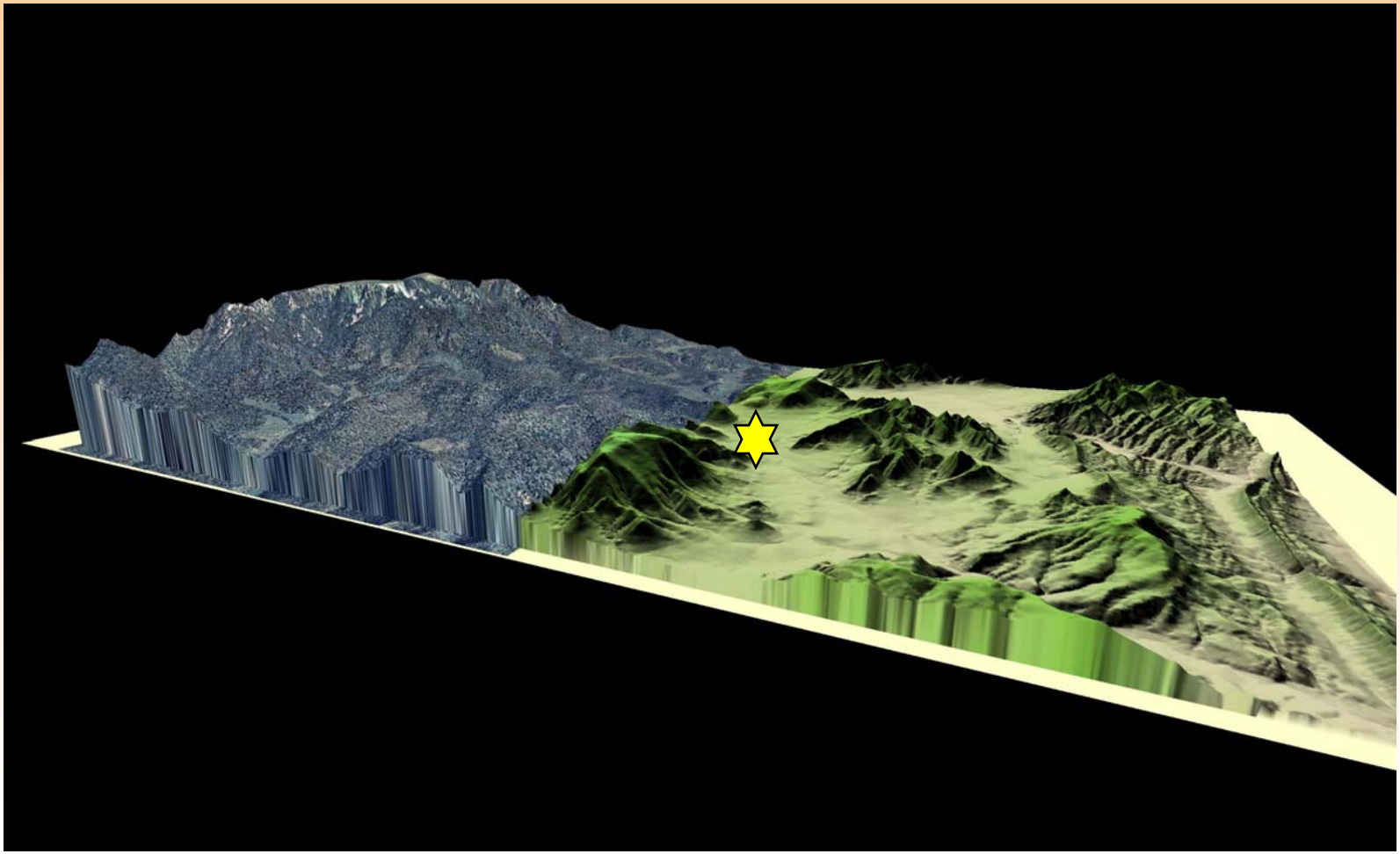
Environmental Benefits of Stored Flow
53,000 Visitors Fishing and Camping



Ledoux Valley – Morphy Lake Irrigation system

- Water Shed Area: 25,000 acres
- Elevations: 7000 FT to 12,000 FT
- Precipitation: Mean Annual 23.79,
  - Summer 10.5, Spring 5.37, Fall 4.8
- Dam Storage 400 AC-FT – Minimum Storage is 150 AC-FT for fishing and camping
- Main crops: Alfalfa and Grass hay + Grazing
- Minor crops: Organic Alfalfa, Corn, potatoes, garlic

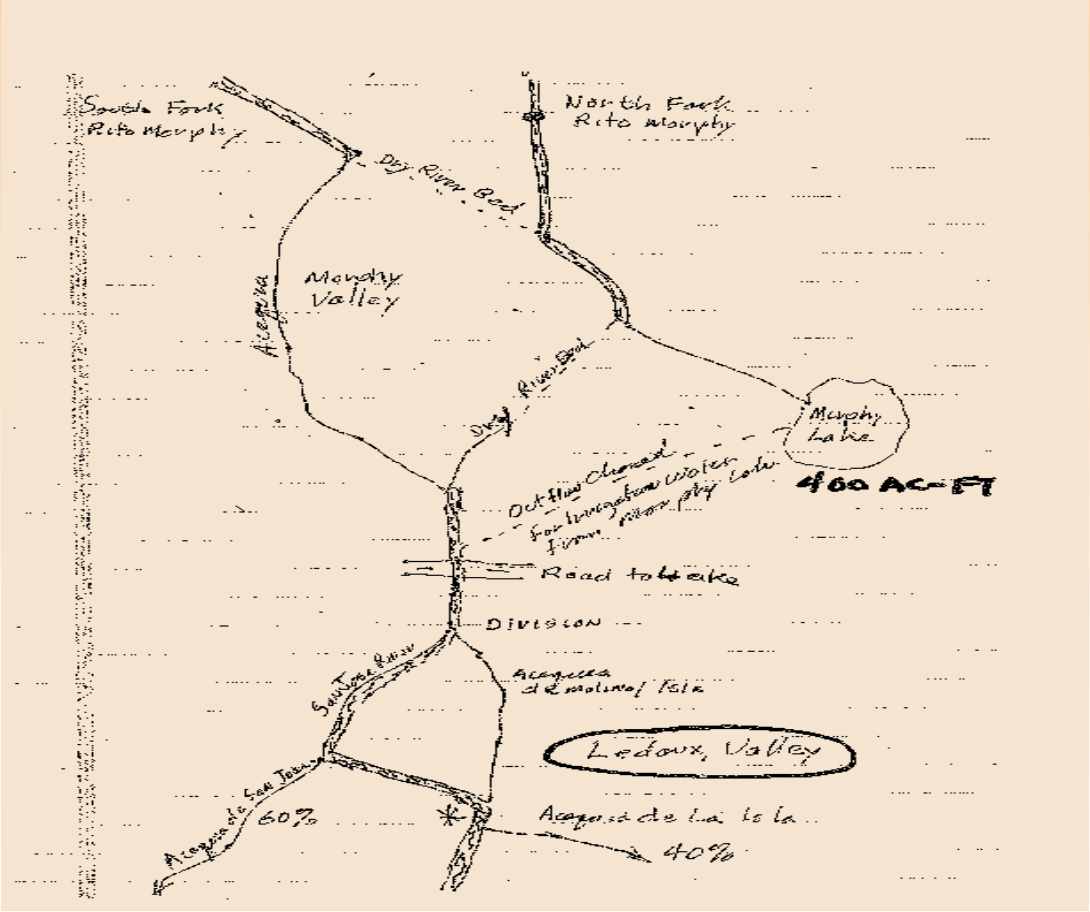
- Ledoux Valley



E-Flow Shared Values for the Ledoux Valley

- Access to Water by all life forms in the community – Duty to our neighbors
  - Livestock: 240 cows, horses + wildlife
- Store a minimum of 150 Ac-ft in Morphy Lake irrigation dam for fishing and camping
- Provide Irrigation water to 40 Farmers that own a total of 1200 acres.

Acequia in the Ledoux Valley – Mora County Priority Date 1851 - Drawn by H. Trujillo October 2009



Operating Modes – Ledoux Acequias

Required Minimum Stored E-Flow every year – 150 AC-FT

- Typical Irrigation Season – Good year
  - Irrigation Release from Lake 4 CFS for 30 days
  - Release to river below all diversions 1/3 to 1/2 CFS
- Very Dry year – 2002 {Driest in 1000 years}
  - No Irrigation
  - Release to river 1/2 CFS – Carry for 8 months
- Problem: Fake Good Year 2009 {Worse than 1000 years}
  - Adequate Storage: Irrigation Release from Lake 4 CFS for 30 days
  - Release to river below diversions 1/3 to 1/2 CFS

Result: Inadequate to reach end of valley - 5 miles down

Cost to Farmers of E-Flow

- Stored E- Flow 150 AC-FT : $ 40,000
- E-Flow 50 AC-FT : $13,333
  - 107 days @ ½ CFS {Sept 15, 2009 to Feb 1, 2010}

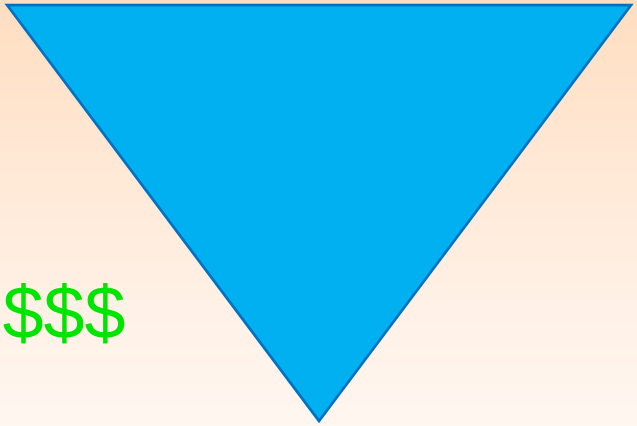
- Based on the amount of hay for beef cattle that can be produced with the water in the valley

Balance is Supported by Farmers

- Stored E-Flow
  - 150 AC-FT
- Drought
- Economic Drought $$$

E-Flow

50 AC-FT



Irrigation – 1200 Acres

40 Farmers

New Mexico Acequia Association

- 13 regional acequia associations
- 11 regions organizing
- Each region has delegates to the Congreso de las Acequias, the governing body of the New Mexico Acequia Association
- 800 + Acequias Communities