

# Reformulation of RIVER MANAGEMENT ALTERNATIVES USIBWC Rio Grande Canalization Project

Presentation to the USIBWC

August 14, 2003

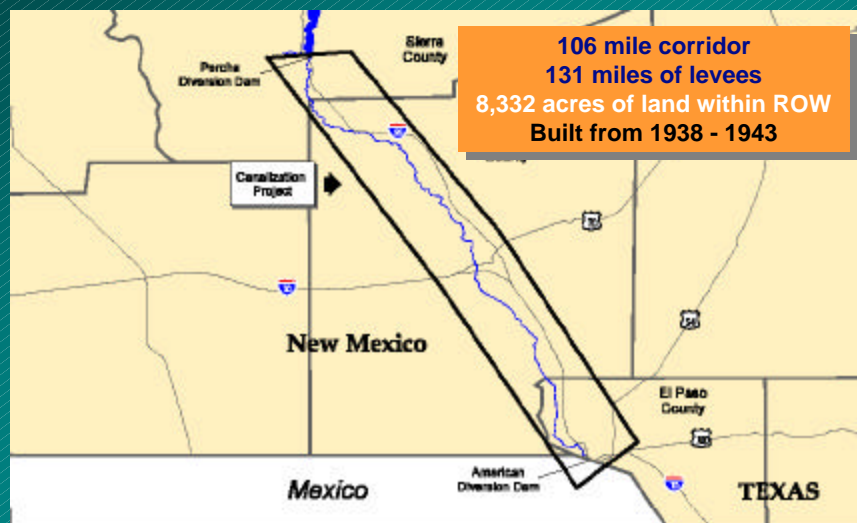


UNITED STATES SECTION,  
INTERNATIONAL BOUNDARY  
AND WATER COMMISSION

PARSONS



## Rio Grande Canalization Project (RGCP)





## Environmental Impact Statement Rio Grande Canalization Project

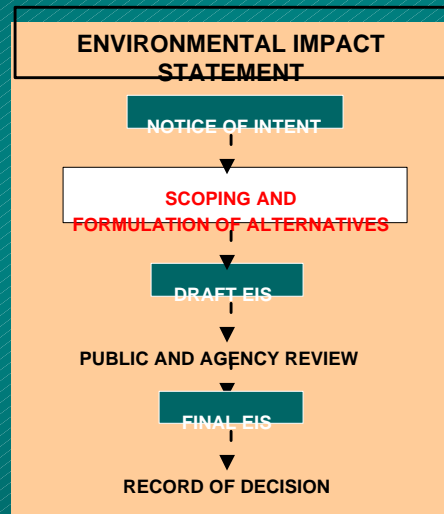
- Comply with NEPA
- Purpose and need
- Evaluate future river management alternatives with regard to environmental improvements
- Consider alternatives that are consistent with mission:
  - Flood control
  - Water deliveries



## Formulation of Alternatives: An Element of Ongoing EIS

Major Federal Action →

**FORMULATION OF ALTERNATIVES:**  
River management strategies incorporating improvements to riparian and aquatic habitats





## Stakeholder Consultation

### Initial Scoping Meetings

### Alternatives Formulation

- Technical workshops
- Public presentations
- Final Report – March 2001

### Partial Reformulation of Alternatives

- Technical workshops – 2001
- Review meetings with irrigation districts and environmental organizations – 2002

Next: Draft EIS for 45-Day Public Review



## Stakeholder Consultation

### Key Issues from Stakeholders

- Water availability and strategy for water acquisition
- River configuration and historical changes
- Flood control strategies and potential for river restoration
- River restoration based on opportunities and constraints



## Alternatives Presentation

- Reformulated Alternatives
- Implementation Projects
- Major Implementation Issues
- Q&A



## Alternatives for Evaluation in the EIS

### RIVER MANAGEMENT ALTERNATIVES



- Maintain current O&M
- Modified O&M and flood control improvement
- Integrated USIBWC land management
- Targeted river restoration



## Reformulation of Alternatives

### Changes in Environmental Measures - Floodway

- Riparian corridor development used as key criteria
- Use of active floodplain concept for site location and selection
- Emphasis on overbank flows for cottonwood development (i.e. stream bank shavedowns)
- Managed grasslands with salt cedar control partially replace annual mowing



## Reformulation of Alternatives

### Changes in Environmental Measures - Channel

- Aquatic habitat diversification adopted as key criteria
- Reopening meanders within ROW retained as environmental measure
- Modified dredging of arroyos selected over use of in-channel artificial habitat
- Artificial wetlands excluded as non-sustainable measure



## Implementation Projects

- **Linear Projects**
  - Extend over several miles (grazing leases, grassland management, induced overbank flows)
  - Arranged in 7 River Management Units
- **Point Projects**
  - Planting (14 locations)
  - Stream bank shavedowns (9 projects)
  - Reopening of meanders (6 projects)
  - Modified arroyo habitat (12 locations)



## Implementation Projects

### Acres and Distribution of Linear Projects

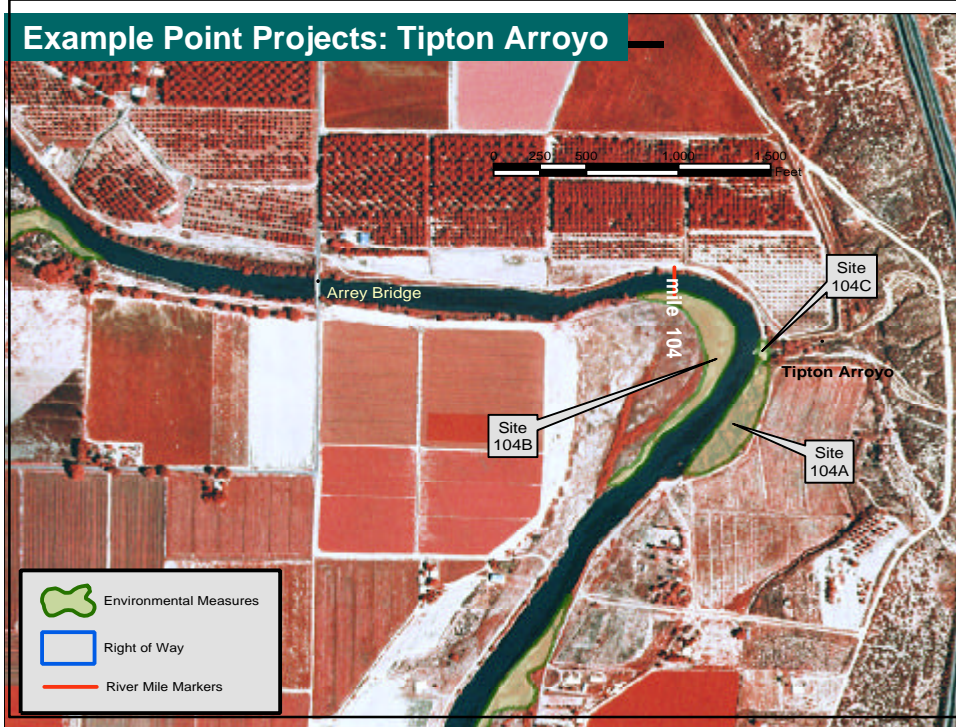
ID	Measure		Upper Rincon	Lower Rincon	Seldon Canyon	Upper Mesilla	Las Cruces	Lower Mesilla	EI Paso	All RMUs
1	Grazing modification in uplands and floodway	Project:	UR-1	LR-1		UM-1	LC-1	LM-1	EP-1	
		Acres:	1911	473		638	136	256	138	3,552
2	Modified grassland management in floodway	Project:	UR-2	LR-2		UM-2	LC-2	LM-2		
		Acres:	639	611		22	301	68		1,641
3	Seasonal peak flows to promote revegetation *	Project:	UR-3	LR-3						
		Acres:	214	302						516
4	Voluntary conservation easements	Project:		LR-4	SC-4 *	UM-4		LM-4	EP-4	
		Acres:		536	808	28		202	44	1,618

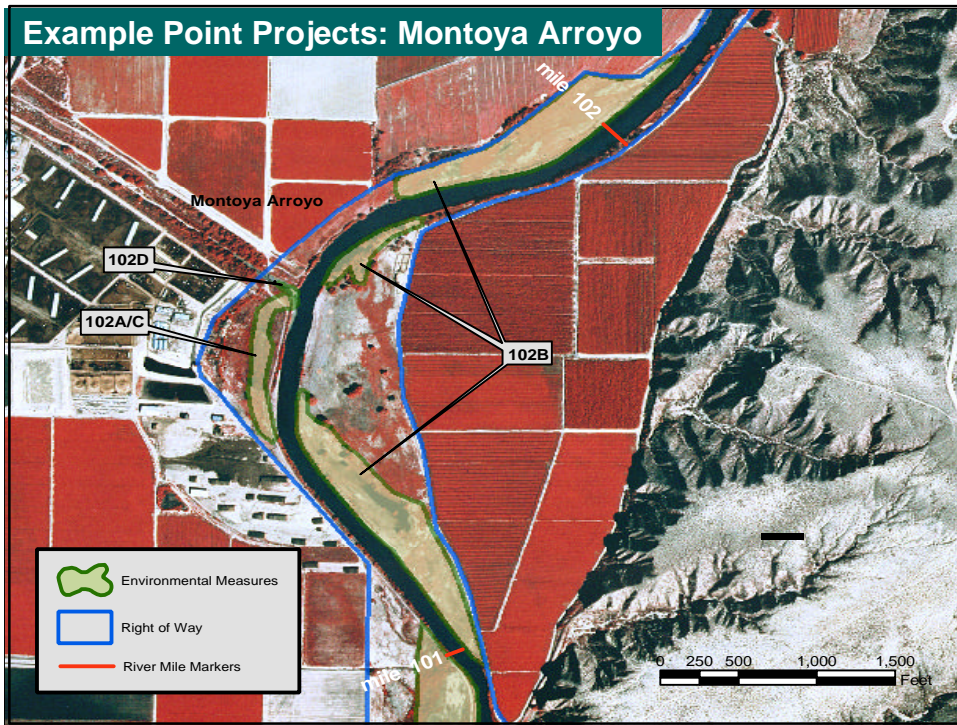
### Point Projects


- Four types of measures
- 20 locations identified by river mile
- Mostly in the Rincon Valley
- Tipton and Montoya Arroyos as examples

Mile ID		Native Vegetation Planting	Bank Shavedowns for Riparian Vegetation	Open Former Meanders	Modify Dredging at Arroyos
105	Oxbow Restoration	105A		105C	
104	Tipton Arroyo	104A	104B		104D
103	Trujillo Arroyo		103B		103D
102	Montoya Arroyo	102A	102B	102C	102D
101	Holguin Arroyo	101A	101B		101D
99	Green/Tierra Blanca	99A			99D
98	Sibley Point Bar		98B		98D
97	Jaralosa Arroyo	97A		97C	97D
95	Jaralosa South	95A			
94	Yeso Arroyo	94A	94B		94D
92	Crow Canyon		92B	92C	
85	Placitas Arroyo				85D
83	Remnant Bosque	83A	83B		83D
78	Rincon/Reed Arroyo				78D
76	Bignell Arroyo	76A	76B		76D
54	Channel cut	54A		54C	
49	Spillway No 39	49A			
48	Spillway No 8	48A			
42	Clark Lateral	42A			
41	Picacho and NMGF	41A			

### Example Point Projects: Tipton Arroyo





 **Alternative 1**  
**Maintain Current O&M Practices**

Management Category	Practice
<b>Levee System Management</b>	Inspections and routine maintenance
<b>Floodway Management</b>	Mowing of the floodway Grazing leases (3,552 acres within the ROW)
<b>Pilot Channel and Irrigation Facilities Management</b>	Channel maintenance Maintenance of drainage and irrigation structures Maintenance of American Diversion Dam
<b>Sediment Management</b>	Maintenance of five NRCS sediment control dams Sediment dredging from the mouth of the arroyos Sediment disposal



## Alternative 2 Flood Control Improvement

### Current Conditions

- System efficient but deficiencies exist
- Levee height evaluated by hydraulic modeling
- Ongoing evaluation of structural condition

### Actions included

- Levee rehabilitation and/or construction
- Modification of grazing leases (3,552 acres)
- Protection of siphons (ongoing)
- Sediment management study
- Habitat improvement as secondary benefit



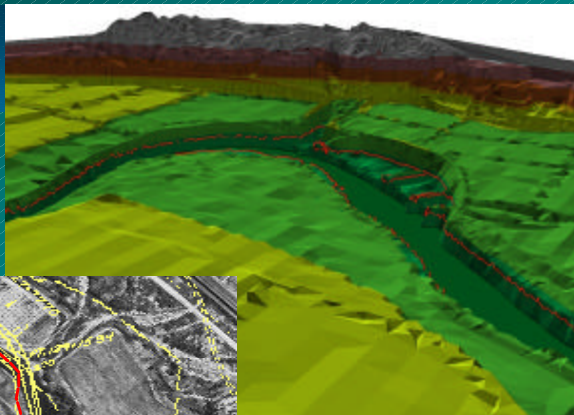
## Alternative 3 Integrated USIBWC Land Management

*Includes previous flood control improvements and changes in grazing leases plus:*

- Managed grasslands / reduced mowing
- Tree planting at floodable locations
- Stream bank shavedowns to take advantage of peak discharges
- Modified sediment management
- All measures within ROW



Active floodplain  
reference elevation



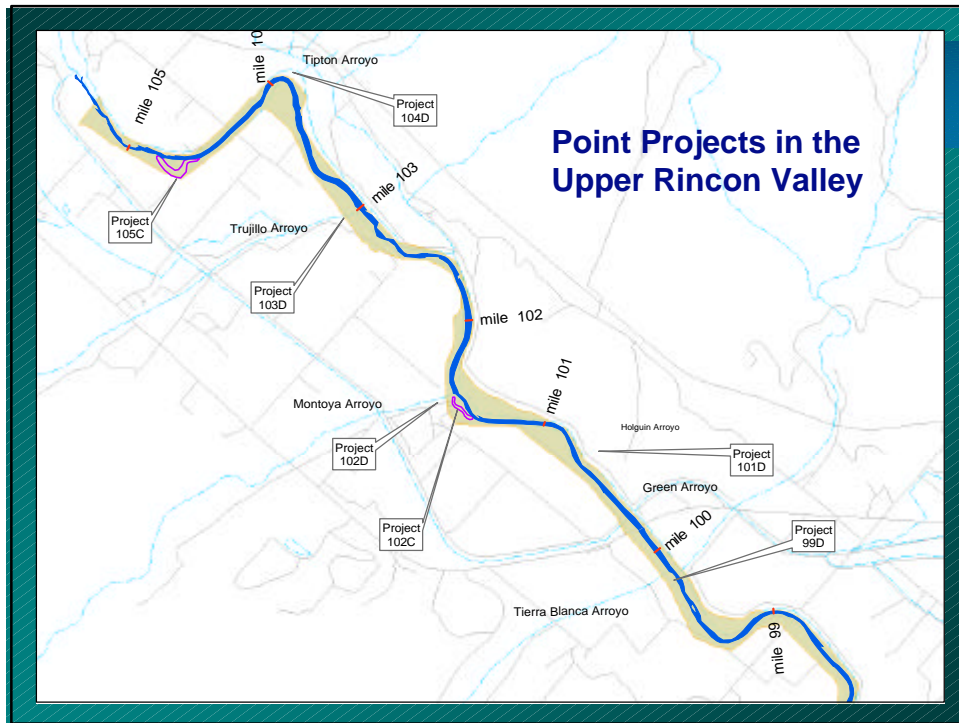
1938 conditions  
at Tipton Arroyo



## Alternative 4 Targeted River Restoration

*Includes previous flood control improvements  
and changes in grazing leases plus:*

- Changes to floodway maintenance
  - Modified grassland management
  - Planting of riparian vegetation
- Adds limited channel reconfiguration
  - Reopen six meanders within ROW
  - Modified dredging in 12 arroyos

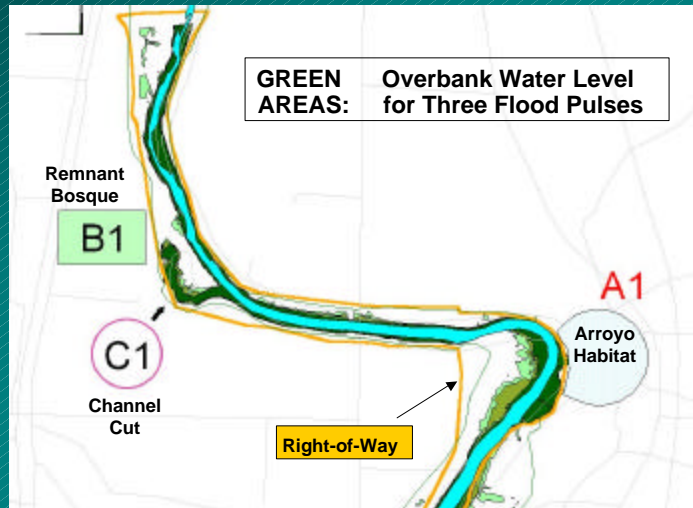


### Alternative 4 (cont.) Targeted River Restoration

- **Based on agency / stakeholder participation (conservation easements, erosion in sub-basins)**
- **Considers controlled overbank flow in Rincon Valley**
  - Overbank flows were simulated up to 3,600 cfs above irrigation flows
  - During Elephant Butte high-storage conditions
  - Long-term implementation



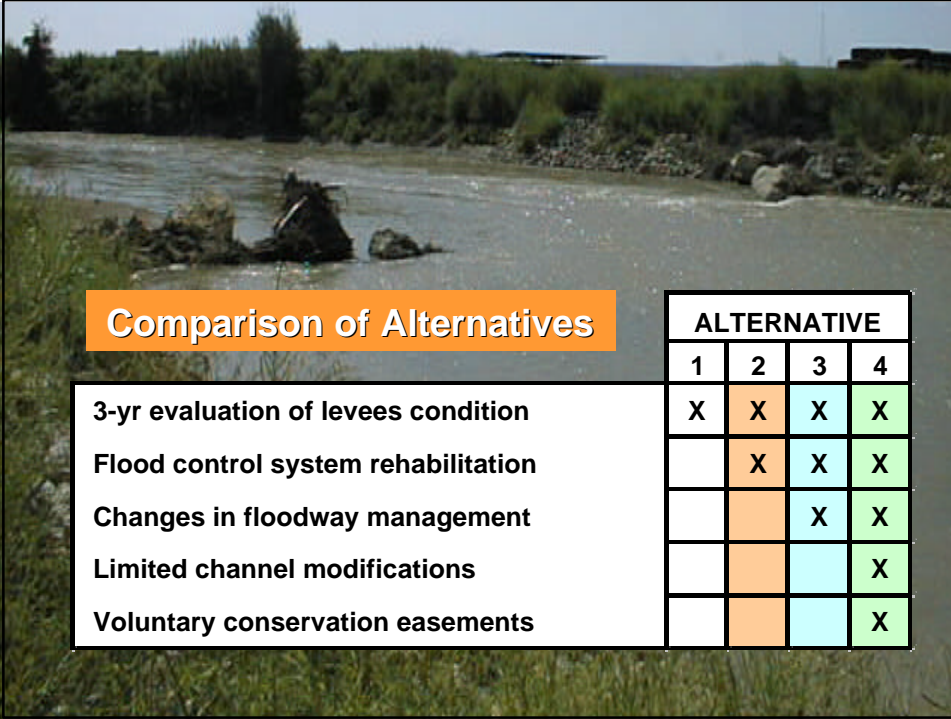
## Potential Overbank Flows in Rincon Valley by Controlled Water Releases



## Acreage of Measures Under Consideration for the Floodway


### At Full Implementation (20-year horizon)

	<u>Acres</u>	(% of ROW)
Grazing leases modification	3,552	(43%)
Managed grasslands	1,641	(20%)
Planting areas (riparian)	223	(3%)
Bank shavedowns:	127	(2%)
Induced overbank flows:	516	(6%)



**Comparison of Alternatives**

	ALTERNATIVE			
	1	2	3	4
3-yr evaluation of levees condition	X	X	X	X
Flood control system rehabilitation		X	X	X
Changes in floodway management			X	X
Limited channel modifications				X
Voluntary conservation easements				X



## Implementation Timeline for Linear Projects

Measure		Phase 1 (Years 1-5)	Phase 2 (Years 6-10)	Phase 3 (Years 11-20)	Alternative*
Grazing modifications	<i>Actions</i>	Guidelines, Implementation	Guidelines revision, monitoring		MFCI, IULM, TRR
	<i>Projects</i>	UR-1, LR-1, UM-1, LC-1, LM-1, EP-1			
Grasslands management	<i>Actions</i>	Guidelines, pilot testing and monitoring	Implementation, monitoring	Monitoring	IULM, TRR
	<i>Projects</i>	UR-2	LR-2, UM-2, LC-2, LM-2		
Peak flows	<i>Actions</i>	Agreements, water acquisition	Implementation, monitoring	Monitoring	TRR
	<i>Projects</i>		UR-3, LR-3		
Conservation easements	<i>Actions</i>	Agreements; target remnant bosques	Implementation	Secure additional easements	TRR
	<i>Projects</i>	LR-4, SC-4	LM-4, EP-4		

\* MFCI, Modified O&M and Flood Control Improvement Alternative; IULM, Integrated USIBWC Land Management Alternative; TRR, Targeted River Restoration Alternative.



## Key Issues for Implementation of Environmental Measures

- **Project functionality**
- **Water Issues** (water use and acquisition)
- **Historical river configuration** (1938 baseline)
- **Flood control deficiencies evaluation**  
(limited opportunities for river restoration)
- **River restoration approach**  
(riparian corridor & aquatic habitat diversification)



## Key Issues for Implementation of Environmental Measures

### RGCP FUNCTIONALITY

- **Ensure adequate flood control and continued water deliveries** (with some efficiency losses)
- **Potential levee deficiencies limit extent / locations**  
(areas with freeboard or structural deficiencies)
- **Mowing maintained as needed for salt cedar control**  
(partially replaced by grasslands / riparian vegetation)



## Key Issues for Implementation of Environmental Measures

### WATER ISSUES

- Water availability is a controlling factor  
(cooperative effort with irrigation districts)
- Compensation for water use and loss in delivery efficiency
- Water from conservation programs / water banking  
(increased on-farm irrigation system efficiency)
- Emphasis on not-decommissioning farmland



## Key Issues for Implementation of Environmental Measures

### RIVER CONFIGURATION

- Streambed and active flood plain largely retained within ROW
- Most significant configuration changes pre-date RGCP construction
  - Upstream flow control
  - Major cuts
- 1938 conditions used as baseline



## Key Issues for Implementation of Environmental Measures

### RESTORATION ANALYSIS

- Analysis was based on current constraints (flows, river geometry, water availability)
- Limited restoration based on:
  - Riparian corridor development
  - Aquatic habitat diversification
- Potential restoration is not associated with levee relocation

## Questions & Answers

RIVER MANAGEMENT ALTERNATIVES  
Rio Grande Canalization Project