

Benefit Cost Analysis of AWSA Proposals

Presented to:

New Mexico Interstate Stream Commission

November 10, 2014

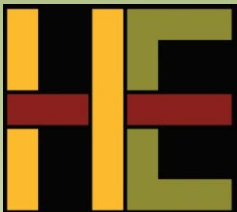
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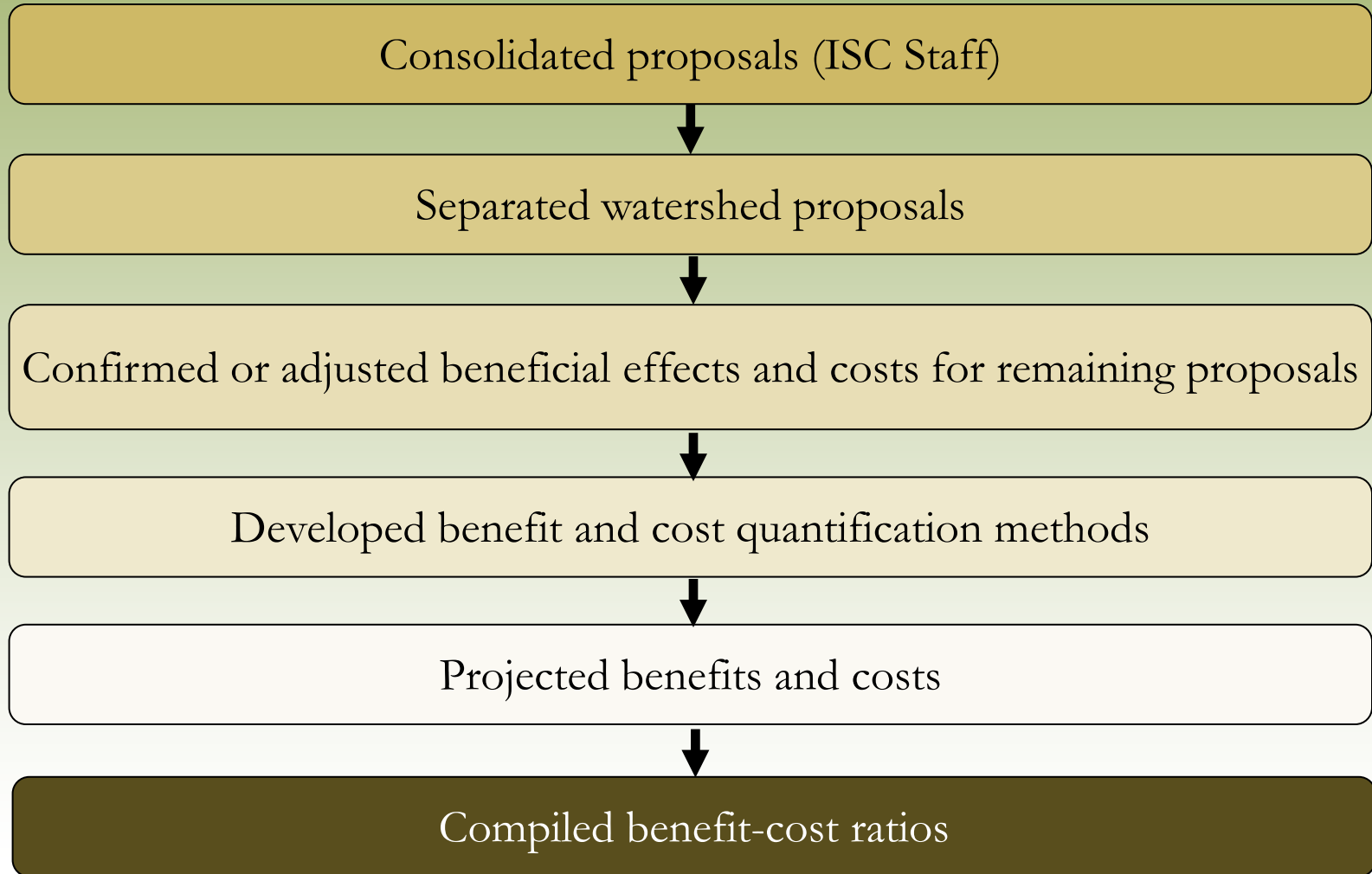


AWSA Proposals Evaluated in this Benefit-Cost Study

Proposal Name	Proposal Number	Nature of Proposal
Southwest Regional Water Supply	1, 2, 3a	Diversion, conveyance, storage for new surface water supply
GBIC Irrigation Diversion Structure	3b	Diversion structure replacement
Deming Effluent Reuse	4	Expansion of wastewater reuse system
Grant County Wells and Pipelines	5	New wellfield, pipeline, storage
Grant County Reservoir	6	New reservoir, pipeline and booster station
Grant County SWCD Watershed	7	Watershed improvements
NMFIA Watershed	8	Watershed improvements
NMSU Watershed	9	Watershed improvements
Gila National Forest Watershed	10	Watershed improvements
Catron County Watershed Component	11a	Watershed improvements
Catron County Ditch Improvements	11b	New infiltration gallery diversion; conversion to pipe conveyance
Luna Ditch Improvements	12	New weir and diversion structure, new pipeline
Sunset/New Model Ditch Improvements	13	New pipeline
Pleasanton East Side Ditch Improvements	14	New pipeline
Municipal Conservation Programs	15	Establishes an account from which to fund conservation programs



Overview of Benefit-Cost Analysis



Summary of Treatment of Five Watershed Proposals

Watershed restoration proposals fundamentally differ from the other proposals:

- Increased water supply a corollary or incidental effect
- Not focused on meeting a specific water demand or shortage
- Location for delivery of any increased supply unclear
- Estimates of increased yield more speculative
- Yields lowest in dry years when needed the most
- Benefits short-term

Benefit-cost analysis not appropriate for the watershed proposals



Benefits Attributable to Non-Watershed Proposals

Proposal Name	Agriculture	Environment	Municipal	Recreation
Southwest Regional Water Supply	✓	✓	✓	✓
GBIC Irrigation Diversion Structure	✓	✓		
Deming Effluent Reuse			✓	
Grant County Wells and Pipelines			✓	
Grant County Reservoir				✓
Catron County Ditch Improvements	✓			
Luna Ditch Improvements	✓	✓		
Sunset/New Model Ditch Improvements	✓	✓		
Pleasanton East Side Ditch Improvements	✓			
Municipal Conservation Programs			✓	

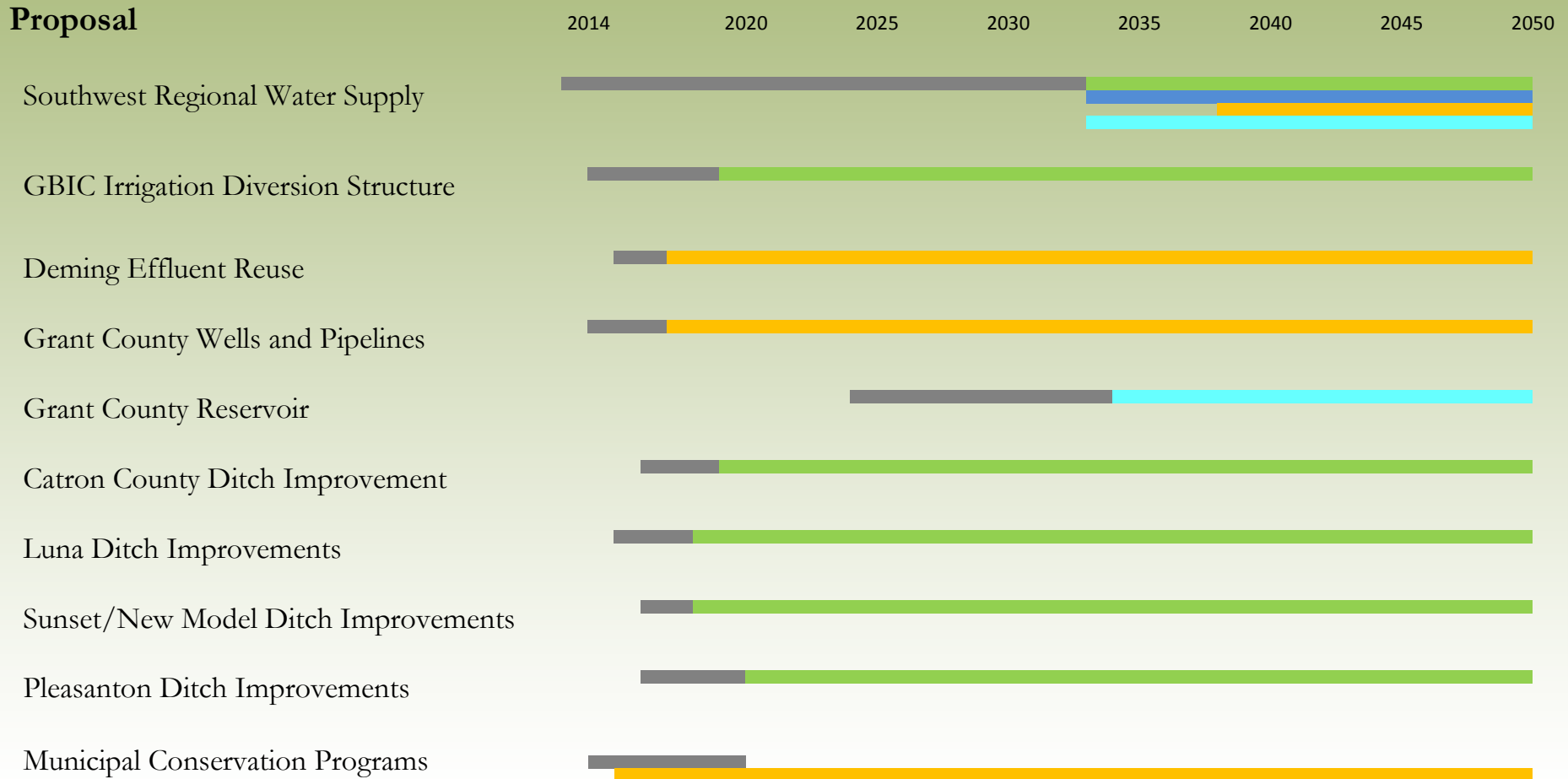


Quantifiable Positive Effects of Each Proposal

Proposal Name	Agriculture	Environment	Municipal	Recreation
Southwest Regional Water Supply	2,000 AF/ yr	1,000 AF/ yr	5,000 AF/ yr	1 reservoir; 65,000 annual visitor days
GBIC Irrigation Diversion Structure	224 AF/ yr plus O&M savings			
Deming Effluent Reuse			410 AF/ yr	
Grant County Wells and Pipelines			943.2 AF/ yr	
Grant County Reservoir				1 reservoir; 45,000 annual visitor days
Catron County Ditch Improvements	25 % increase in efficiency plus O&M savings			
Luna Ditch Improvements	O&M and other cost savings			
Sunset/New Model Ditch Improvements	1,473 AF/ yr			
Pleasanton East Side Ditch Improvements	15% increase in efficiency			
Municipal Conservation Programs			1,135 AF/ yr	



Timeline of Benefits for AWSA Proposals



Benefit Quantification Methods

Benefit	Approach to Quantification
Agricultural	<ul style="list-style-type: none">▪ Net agricultural revenue per AF of water; regional agricultural multipliers▪ Reduced O&M costs
Environmental	<ul style="list-style-type: none">▪ Similar water purchases for the purpose of supporting fish populations and other aquatic species and habitat
Municipal	<ul style="list-style-type: none">▪ Average regional price per 1,000 gallons, plus estimated consumer surplus▪ Avoided costs of developing additional supplies (next best alternative)▪ Avoided purchase of developed supplies
Recreational	<ul style="list-style-type: none">▪ Visitation based on data for comparable NM reservoirs▪ Estimates of recreational spending per visitor day; regional recreational multipliers; additional consumer surplus estimates
Construction-Related Stimulus	<ul style="list-style-type: none">▪ Application of regional output multiplier for the construction industry to capital expenditures



Projected Total Benefits of AWSA Proposals

(2014 – 2050)

Proposal Name	Agriculture	Environment	Municipal	Recreation	Construction Stimulus	Total Benefits
Southwest Regional Water Supply	\$1.8	\$1.6	\$63.8	\$71.0	\$622.7	\$760.9
GBIC Irrigation Diversion Structure	\$0.6				\$2.2	\$2.7
Deming Effluent Reuse			\$31.0		\$5.2	\$36.2
Grant County Wells and Pipelines			\$17.9		\$20.8	\$38.6
Grant County Reservoir				\$44.1	\$19.3	\$63.5
Catron County Ditch Improvements	\$3.2				\$8.2	\$11.4
Luna Ditch Improvements	\$0.6				\$1.8	\$2.4
Sunset/New Model Ditch Improvements	\$3.0				\$15.9	\$18.9
Pleasanton East Side Ditch Improvements	\$1.1				\$3.1	\$4.2
Municipal Conservation Programs			\$75.7			\$75.7



Note: All benefits are presented in millions of 2013 dollars

Projected Total Costs of AWSA Proposals

Proposal Name	Capital Costs	O&M Costs	Total Costs
Southwest Regional Water Supply	\$477.8	\$33.2	\$528.9
GBIC Irrigation Diversion Structure	\$1.7	\$0.9	\$2.5
Deming Effluent Reuse	\$4.0	\$2.0	\$5.9
Grant County Wells and Pipelines	\$15.9	\$13.4	\$29.3
Grant County Reservoir	\$14.8	\$1.2	\$16.1
Catron County Ditch Improvements	\$6.3	\$8.2	\$14.5
Luna Ditch Improvements	\$1.4	\$1.8	\$3.2
Sunset/New Model Ditch Improvements	\$12.2	\$16.4	\$28.7
Pleasanton East Side Ditch Improvements	\$2.4	\$3.0	\$5.4
Municipal Conservation Programs	\$8.7	\$1.6	\$10.4



Note: All costs are presented in millions of 2013 dollars

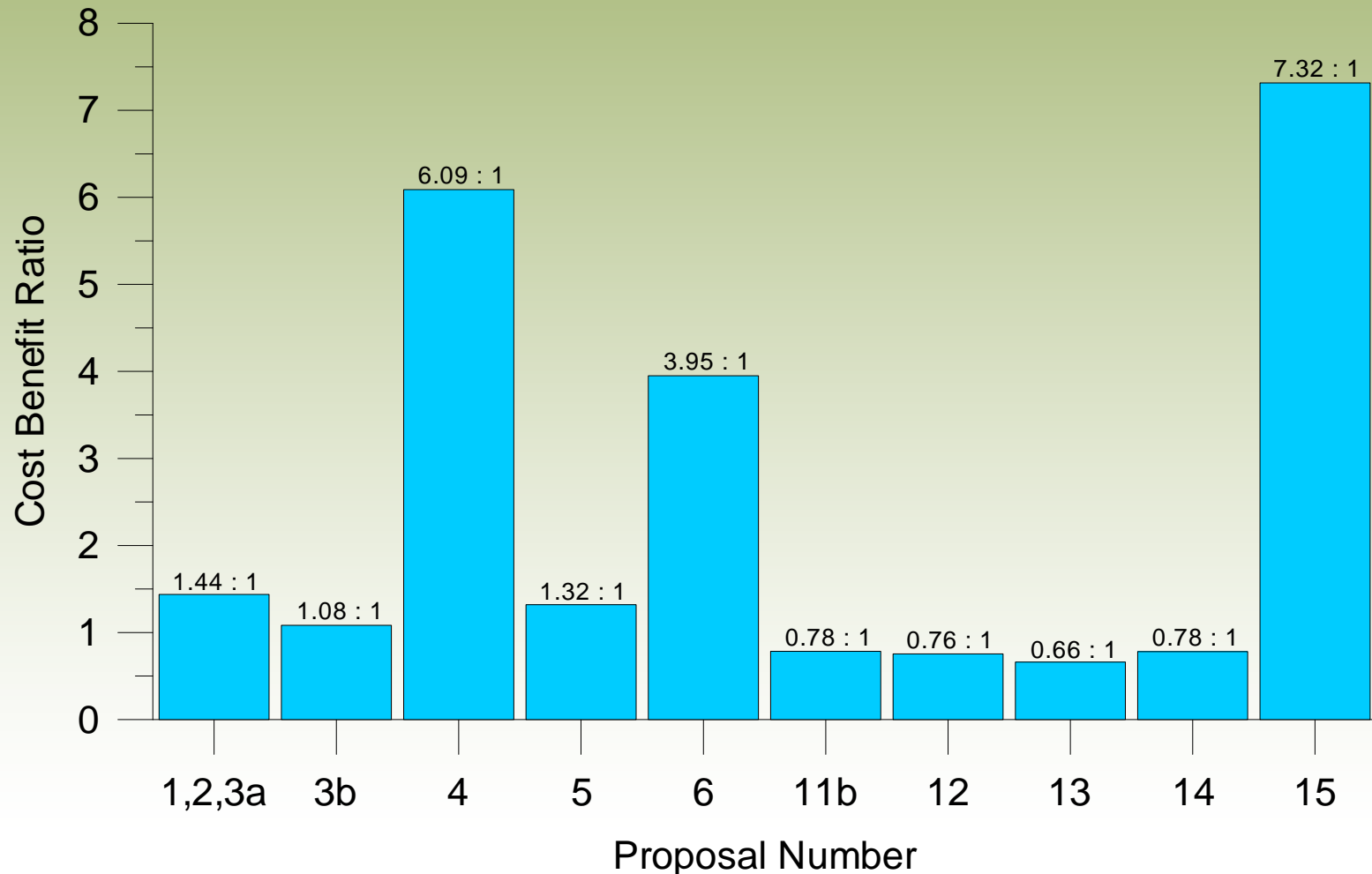
Benefit-Cost Summary of AWSA Proposals

Proposal Name	Total Benefits (2014 - 2050)	Total Costs (2014 - 2050)	Benefit Cost Ratio
Southwest Regional Water Supply	\$760.9	\$528.9	1.44
GBIC Irrigation Diversion Structure	\$2.7	\$2.5	1.08
Deming Effluent Reuse	\$36.2	\$5.9	6.09
Grant County Wellfield and Pipelines	\$38.6	\$29.3	1.32
Grant County Reservoir	\$63.5	\$16.1	3.95
Catron County Ditch Improvement s	\$11.4	\$14.5	0.78
Luna Ditch Improvements	\$2.4	\$3.2	0.76
Sunset/New Model Ditch Improvements	\$18.9	\$28.7	0.66
Pleasanton East Side Ditch Improvements	\$4.2	\$5.4	0.78
Municipal Conservation Programs	\$75.7	\$10.4	7.32



Note: Benefits and costs are presented in millions of 2013 dollars

Benefit Cost Ratios for *AWSA* Proposals



Thank You

Questions?

