Table ES-2. Weighted Project Scores

#		Likelihood of success if implemented	Technically feasible to implement	Protection of implemented project	Public Acceptance	Addresses Issues Critical to Public	Public Benefits	Public health and safety	Adverse impacts	Environmental Permitting / Water Rights	Benefits in multiple resource categories	Time to provide at least 50% of expected benefits	Duration of benefits	Benefit/Cost	Addresses Water Quality, Riparian and Aquatic Habitat Issues	Total	Rank	Page Number of complete description	Estimated Project Life Cycle Cost (50 years)
Weight		2	1	1	3	3	3	1	1	1	2	1	1	1	2				
RIPARIAN HABITAT PROJECTS																			
27	Noxious weed management in the upper watershed	3	4	3	2.8	3.6	3.6	3	5	5	2	5	3	2	2	**74**	17	3-53	250k
28	Noxious weed management in the lower watershed	3	4	2	3.8	4	4	3	5	5	3	5	3	2	2	**80**	**8**	3-54	250k
29	Revegetation in the lower watershed	4	4	3	3	3	2.8	3	5	5	4	3	5	5	4	**83**	**5**	3-54	$300k
30	Grazing management	4	5	2	3.2	2.6	3	3	5	5	4	3	5	4	3	**80**	**8**	3-55	$200k
31	Riparian buffer zone	4	5	2	2.6	2.8	2.6	3	5	5	4	3	5	4	3	**78**	**10**	3-57	$200k
32	Acquisition of equivalent resource in San Luis Valley for high quality habitat and recreation	5	5	5	1.2	1	1	3	5	5	3	5	5	4	1	**65**	31	3-57	$800k
33	Purchase land downstream of Wightman Fork for recreation and habitat	5	3	5	1.2	1.2	1.2	3	5	5	3	5	5	3	4	**69**	25	3-59	$1–3M
BIO RESOURCES PROJECTS																			
34	Fish–stocking above Terrace Reservoir	2	5	3	1.8	1.4	1.4	3	4	5	2	4	2	4	1	**54**	41	3-59	$50k
35	Fish–stocking at Terrace Reservoir	3	5	3	2.4	1.8	1.6	3	4	5	2	4	2	4	1	**59**	33	3-59	$50k
36	Fish–stocking below Terrace Reservoir	2	5	3	2.2	2	2	3	4	5	2	4	2	2	1	**57**	36	3-59	$50k
37	Construction of fish barriers	4	5	3	1.4	1	1	3	4	3	1	4	4	3	3	**55**	40	3-60	$200k
38	Establishing conservation easements	5	4	5	1.8	1.6	1.6	3	5	5	4	4	5	4	4	**76**	13	3-61	up to $1k/acre
AGRICULTURAL PROJECTS																			
39	Ditch headgate consolidation	3	4	2	2.2	2.4	2.4	3	4	3	3	4	5	3	2	**65**	30	3-62	$200k
40	Replace headgates with corrosion resistant materials	4	5	2	3	3.4	3.4	3	5	5	1	4	3	2	1	**70**	21	3-64	$300k
RECREATION PROJECTS																			
41	Improve public access to Terrace Reservoir	3	5	4	1.8	1.4	1.4	3	5	5	1	4	5	4	1	**59**	34	3-64	$100–200k
42	Improved access to main stem of the river above Terrace	4	4	4	1.4	1.4	1.4	3	4	5	1	4	5	3	1	**57**	37	3-65	$500k
43	Improved access to main stem of the river below Terrace	4	3	4	1.4	1.4	1.4	3	4	5	1	4	5	3	1	**56**	39	3-65	$500k
STUDIES AND ADMINISTRATIVE ACTIVITIES																			
44	Funding for citizen group to help implement and monitor the Master Plan	4	5					3	5					5	5	**36**	**1**	3-66	$300k
45	Site specific PMF study	3	5					3	5					4	1	**25**	4	3-67	$20k
46	Ice Jam Flooding Study	3	3					4	5					2	1	**22**	7	3-67	$25k
47	Capulin Flood Hazard Mitigation Plan	3	5					5	5					3	1	**26**	**2**	3-67	$50k
48	Dewatering Management Plan	3	3					3	5					4	2	**25**	4	3-67	$25k
49	Terrace Reservoir sediment quality study	3	4					4	5					3	2	**26**	**2**	3-69	$75k
50	Ground water monitoring	3	5					3	5					3	1	**24**	6	3-69	$150k

to the Alamosa River through acquisition of equivalent resources in the neighboring Conejos River watershed for high quality habitat and recreation. This project was important to the federal Trustees as it would provide immediate benefits by protecting high-quality wildlife and recreation resources deemed important to the region.

ES.7 Preferred Restoration Alternative

The preferred alternative was determined in a stakeholder meeting held in La Jara on December 13, 2004. Stakeholders were presented with the three alternatives shown above. The benefits and constraints of some of the projects were discussed and projects were added to the preferred alternative with the consensus of the group. The preferred alternative is listed in Table ES-4 for funding levels of $5 million, $10 million, and $15 million.

Figure ES-6 depicts the location of the projects included in the preferred alternative. Each project is described briefly below.

Project 44. Funding for Alamosa River Foundation to Help Implement and Monitor the Mater Plan

The Alamosa River Foundation was involved in the development of the Master Plan from its inception. The Alamosa River Foundation could be provided with funding for a part-time staff person or persons to assist the Trustee Council by performing the following tasks:

- Act as watershed coordinator to facilitate community meetings.
- Assist in restoration project monitoring activities.
- Act as a restoration project sponsor/manager to submit proposals to the Trustee Council for NRD funding.
- Act as project manager to implement restoration projects listed in the Master Plan but not receiving NRD funding.
- Seek additional funding from other sources for restoration projects to increase the funding available for watershed restoration projects well beyond the NRD funding.
- Seek additional funds for operating the Alamosa River Foundation to increase the scope and scale of activities the Foundation is able to perform.
- Work with the Colorado Tourism Office and other agencies and non-profit groups to promote tourism and recreation in the Alamosa River watershed.
- Conduct a public relations campaign to publicize watershed improvement projects, increased recreational opportunities in the watershed, and success stories.
- Communicate potential work opportunities to local businesses by publicizing RFPs, contracting, and project management opportunities.
- Strive to manage and complete projects in the most cost-effective way in order to maximize the goals that can be achieved with available funding.

Project 9. Instream Flow Water Rights

This project would acquire water rights to maintain prolonged streamflow during periods when the river is dry under existing conditions. The minimum release from Terrace Reservoir needed to significantly improve water quantity conditions below Terrace Reservoir is not known for certain. It has been assumed that reasonable targets are a 10 cubic feet per second flow from Terrace Reservoir to Gunbarrel Road and a 5 cubic feet per second flow from Gunbarrel Road to County Road 10. A senior priority water right would be purchased from one or more willing sellers to provide sustained instream flows in virtually every year. A senior right could be combined with other lower priority rights until the target flow is established.

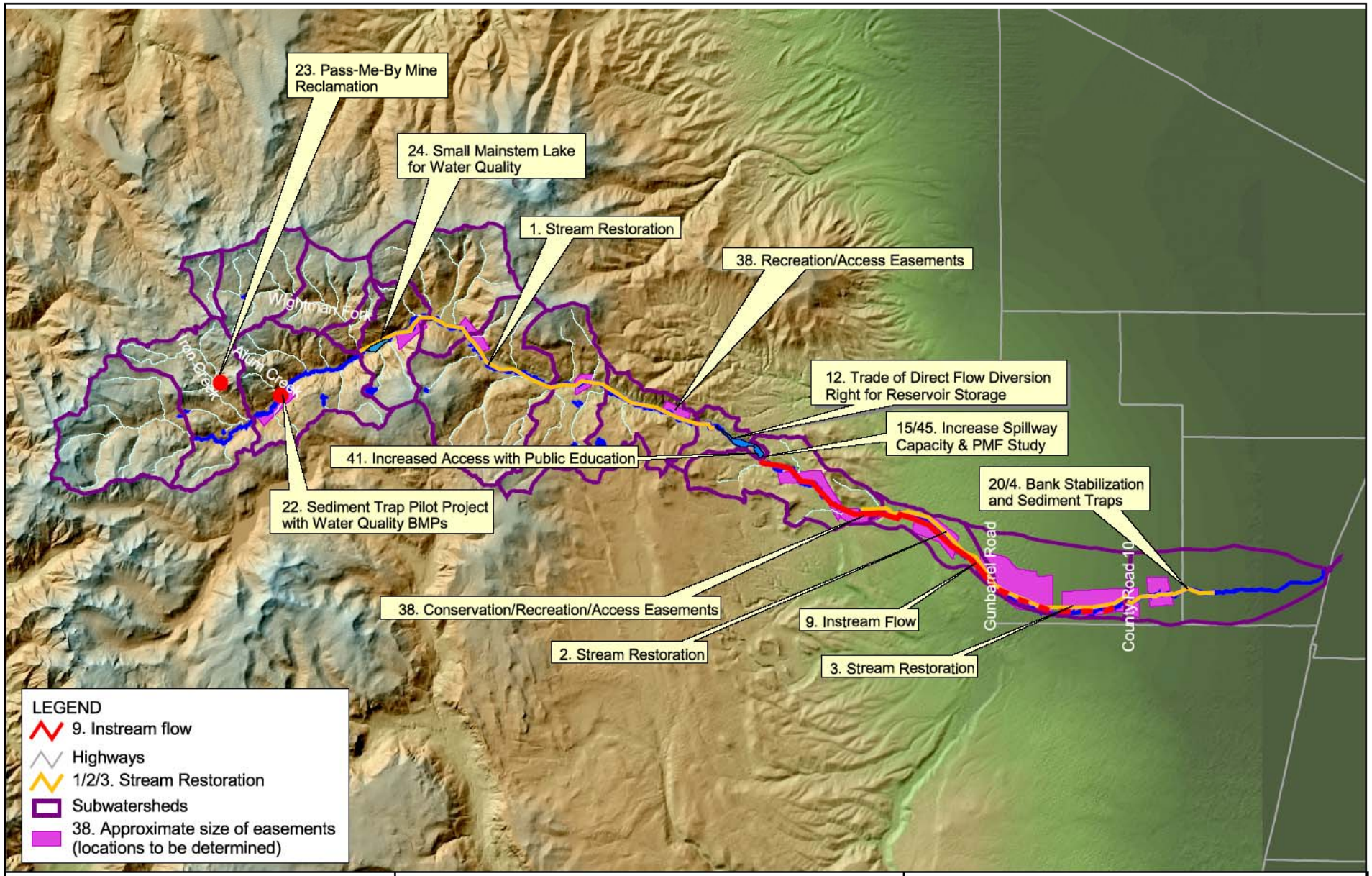
If willing water right sellers are identified, there are still several challenges to implementing this project including:

- Acquiring a water right to establish a more sustainable instream flow lasting longer than the current flow management will only be successful if storage is available for that flow (see Projects 12 and 15).
- Negotiations with the Colorado Water Conservation Board (CWCB) will be required to create an instream flow donation or lease agreement.
- Applications to change an agricultural water right to instream flow uses must be formulated by an attorney and filed with the water court.
- The water right may be obtained with or without the associated land. If land is acquired as part of the transfer, a plan for long term management of the property will have to be developed.

Table ES-3. Three Preliminary Watershed Alternatives

By Highest Project Score	$M	Watershed Objectives	$M	Trustee Preferences	$M
44. Funding for citizen group	0.3	44. Funding for citizen group	0.3	44. Funding for citizen group	0.3
3. Funding to complete project between Gunbarrel Road and County Road 10	0.12	9. Purchase appropriate water rights for instream flow	3.3	3. Funding to complete project between Gunbarrel Road and County Road 10	0.12
9. Purchase appropriate water rights for instream flow	4.0	12. Trade of direct flow diversion right for reservoir storage (no new water source)	0.1	32. Acquisition of equivalent resource in San Luis Valley for high quality habitat and recreation	0.8
12. Trade of direct flow diversion right for reservoir storage (no new water source)	0.1	2. Bank Stab Gomez to Gunbarrel / Revegetation in lower watershed / dead tree management / noxious weed control / grazing management	1.2	9. Purchase appropriate water rights for instream flow	2.5
1. Most important Stream restoration from Terrace to Wightman Fork	0.5	3. Funding to complete restoration proejct from Gunbarrel to County Road 10	0.12	12. Trade of direct flow diversion right for reservoir storage (no new water source)	0.4
				1. Bank Stab Terrace to Wightman Fork / dead tree management upper watershed	1.2
Subtotal	**5.02**	**Subtotal**	**5.02**		**5.02**
1. Complete Stream restoration Terrace to Wightman Fork / dead tree management upper watershed	0.7	9. Finish purchasing water rights	0.7	9. Finish purchasing water rights	1.5
15. Increase spillway capacity (in return for instream flow storage) / PMF Study	1.52	22. Sediment trap pilot project with water quality on Alum Creek	1.0	2. Bank Stab Gomez to Gunbarrel / Revegetation in lower watershed / dead tree management / noxious weed control / grazing management	1.2
2. Bank Stab Gomez to Gunbarrel / Revegetation in lower watershed / dead tree management / noxious week control / grazing management	1.2	23. Reclamation of abandoned mines (Pass–Me–By mine only)	0.35	15. Increase spillway capacity (in return for instream flow storage) / PMF Study	1.52
4. Stream restoration County Road 10 to County Road 13	0.4	1. Bank Stab Terrace to Wightman Fork / dead tree management upper watershed	1.2	38. Conservation / recreation / access easements in lower watershed (500 acres)	0.5
31. Riparian Buffer Zone	0.2	15. Increase spillway capacity (in return for instream flow storage) / PMF Study	1.52	31. Riparian Buffer Zone	0.2
22. Sediment trap project Phase 1 (suggest Alum Creek)	1.0	41. Increased access to Terrace Reservoir (include parking lot, public education, trail)	0.2		
		38. Recreation / access easements in upper watershed (2 locations, 100 acres total)	0.1		
Subtotal	**10.04**	**Subtotal**	**10.09**	**Subtotal**	**9.94**
22. Complete sediment trap project	1.0	38. Conservation / recreation / access easements in lower watershed (500 acres)	0.5	24. Mainstem for water quality (small)	4.0
38. Recreation / access easements in upper watershed (2 locations, 100 acres total)	0.1	24. Mainstem for water quality (small)	4.0	23. Reclamation of abandoned mines (Pass–Me–By mine only)	0.35
38. Conservation / recreation / access easements in lower watershed (500 acres)	0.5	20. Lower watershed sediment deposition locations	0.2	41. Increased access to Terrace Reservoir (include parking lot, public education, trail)	0.2
23. Reclamation of abandoned mines (miser, Pass–Me–By major projects, small projects at other sites)	1.5	35. Fish stocking at Terrace Reservoir	0.05	20. Lower watershed sediment deposition locations	0.2
18. Improve Terrace Reservoir outlet works (tower)	3.0	48. Terrace dewatering management plan / sediment quality study	0.1		
Total	**16.14**	**Total**	**14.9**	**Total**	**14.7**

Note: Projects that were split between funding levels are indicated by an arrow. Only projects that can be completed in increments were split. The cost of combined projects, such as stream restoration and revegetation was estimated as 80 percent of their combined total due to economy of scale for doing them at the same time.



Alamosa River Watershed Restoration Master Plan

MWH in association with Agro Engineering, Lidstone and Associates, and SWCA

Figure ES-6.

Location of Projects in Preferred Alternative

Note: Projects without a location such as funding for the citizen group are not shown. Riparian buffer zone would cover the entire riparian corridor of the Alamosa River.

Project 12. Trade of Direct Flow Diversion Right for Terrace Reservoir Storage

Storage of the acquired water rights would be needed to capture spring and summer runoff for release throughout fall and winter. Assuming storage could fill over 6 months and release over 6 months, about 3,600 acre-feet of storage would be needed.

This project is an option for storing acquired water rights in Terrace Reservoir without construction of new storage facilities. Potentially, Terrace Irrigation Company could use the acquired water right as it is available in the spring and summer for irrigation purposes. The amount diverted would vary based on the water year. Then, an equal amount could be released from Terrace Reservoir during late fall, early spring, and perhaps winter months as a trade.

By spring, the release out of Terrace Reservoir would reduce the volume of stored water in Terrace Reservoir by the total amount diverted the previous season through the Terrace Main Canal. This additional space could then be used to capture high spring flows. Therefore, the storage available for Terrace Irrigation Company to capture high flows would not be reduced. However, the Terrace Irrigation Company would probably be forced to divert more water early in the irrigation season while the acquired water right was in priority and reduce stored water that would be available late in the irrigation season.

This project would require Terrace Irrigation Company to agree to the trade, and reservoir improvements may be needed as an exchange for the trade. It would also require approval from the Division Engineer and potentially a water right change.

Project 15. Increase Terrace Reservoir Spillway Capacity

Terrace Reservoir is currently operating under a State Engineer imposed storage restriction due to inadequate spillway capacity (see Figure ES-7). Increasing the spillway capacity, thus allowing for the removal of the filling restriction, is the most economical way to increase the physical storage capacity available in Terrace Reservoir. Removing the filling restriction would recover about 2,200 acre-feet of storage capacity. This project could potentially be done in place of or in addition to Project 12, Trade of Direct Flow Diversion Right for Reservoir Storage.

Figure ES-7. Terrace Reservoir Spillway from Downstream

Project 45. Probable Maximum Flood Study

Conducting a site-specific Probable Maximum Flood (PMF) study for the basin could potentially reduce the cost of increasing the spillway capacity. Site-specific PMF studies are frequently successful in reducing the anticipated amount of flow that spillway structures are required to pass. A more specifically calculated PMF could reduce the cost required to improve the spillway and remove part or all of the State Engineer's restriction on the reservoir. This project would be done in conjunction with Project 15, Increase Terrace Reservoir Spillway Capacity.

Stream Restoration and Vegetation Projects

The stream restoration projects will stabilize the channel and banks, thereby decreasing the amount of sediment entering the river, promoting native streambank vegetation, improving diversion structure performance, and enhancing fish and migratory bird habitat. The main focus of the proposed stabilization and restoration projects is to limit the amount of sediment entering the river due to stream bank erosion. Mitigating sediment supply will improve channel stability at irrigation diversions and bridges, and will help maintain channel capacity. The four channel stabilization projects included in the preferred alternative are:

- Project 1. Terrace Reservoir to Wightman Fork
- Project 2. Gunbarrel Road to Gomez Bridge
- Project 3. Funding to complete ongoing restoration project from County Road 10 to Gunbarrel Road (see Figure ES-8)
- Projects 4 & 20. County Road 13 to County Road 10