

Table 5-1: Analysis of Selected Alternatives (Page 1 of 2)

Potential Alternative	Estimated Total Project Cost (Millions)	Wetlands Impacts (ac)				Stream Impacts (LF)	Logistical Issues	Potential Impacts to Previously Identified Cultural Resources		Previously Identified Threatened or Endangered Species in Vicinity ***	Other Considerations	Land Acquisition Requirement (acres)
		Forested	Emergent	Scrub	Total			Structures	Arch.			
1 No Action	\$31.2				0		Doesn't satisfy water deficit	0	0			0
2 Construct New Dam at Buck Mountain	\$109.7	U/A	U/A	U/A	25	40,000	9240 lf - roadway 1320 lf - bridge 3 buildings	4	11	James spiny mussel	Crozet demand	664
3 Construct New Dam at Buck Mountain + Beaver Creek Reservoir	\$105.0	U/A	U/A	U/A	<25	32,000	9240 lf - roadway 1320 lf - bridge 3 buildings	4	11	James spiny mussel	Crozet demand	330
4 Construct New Pumped Storage Facility at Rocky Creek	\$105.5	0	0	0	0	7,400	1 building	0	0	James spiny mussel Bewick's wren Loggerhead strike	Crozet demand	135
5 Construct New Pumped Storage Facility at Rocky Creek + Beaver Creek Reservoir	\$98.1	0	0	0	0	6,300	1 building	2	0	James spiny mussel Bewick's wren, Loggerhead strike	Crozet demand	116
6 James River Intake	\$109.5	U/A	U/A	U/A	5	+/- 32 streams crossings	None	10**	1	Unknown		30
7 James River Intake + Beaver Creek Reservoir	\$102.7	U/A	U/A	U/A	5	+/- 32 streams crossings	None	10**	1	Unknown	Crozet demand	30
8 Regional Cooperation with Fluvanna/Louisa Counties	N/A	U/A	U/A	U/A	U/A	?	None	unknown	unknown			Unknown
9 Regional Cooperation with Fluvanna/Louisa Counties + Beaver Creek Reservoir	N/A	U/A	U/A	U/A	U/A	?	None	2	unknown		Crozet demand	Unknown
10 Raise Ragged Mountain Dam with Pumped Storage	\$81.7	1	4	0	5	2,300	I-64 issues	0#	0	Peregrine falcon, Loggerhead strike	I-64 issues	120
11 Raise Ragged Mountain Dam + Beaver Creek Reservoir	\$69.0	1	4	0	5		None	2#	0	Peregrine falcon, Loggerhead strike	I-64 issues Lengthy fill time Crozet demand	102

"WATER SUPPLY ALTERNATIVES"
 "STANDSTILL FLOWING"
 "SUPERSONIC EVALUATION"
 JULY 2004

Table S-1: Analysis of Selected Alternatives (Page 2 of 2)

Potential Alternative	Estimated Total Project Cost (Millions)	Wetlands Impacts (ac)				Stream Impacts (LF)	Logistical Issues	Potential Impacts to Previously Identified Cultural Resources Structures	Potential Impacts to Identified Arch.	Previously Identified Threatened or Endangered Species in Vicinity ***	Other Considerations	Land Acquisition Requirement (acres)
		Forested	Emergent	Scrub	Total							
12. Raise Ragged Mountain Dam with Pumped Storage + Beaver Creek Reservoir	\$78.7	1	4	0	5	<2,300	None	2#	0	Peregrine falcon, Loggerhead shrike	1-64 issues Crozet demand	102
13. Raise Ragged Mountain Dam + Beaver Creek Reservoir + Add 4 ft. Crest Gates on SFRR	\$82.1	6	14	18	38	18,200	688 lf - roadway 420 lf - bridge	2#	10*	James spiny mussel, [†] Peregrine falcon, Loggerhead shrike	1-64 issues Lengthy fill time Crozet demand	190
14. Raise Ragged Mountain Dam with Pumped Storage + Beaver Creek Reservoir + Add 4 ft. Crest Gates on SFRR	\$91.6	6	14	18	38	<18,200	688 lf - roadway 420 lf - bridge	2#	10*	James spiny mussel, Peregrine falcon, Loggerhead shrike	1-64 issues Possible phasing: low short term \$	190
15. Raise SFRR high enough to provide all required additional storage	\$99.3	11	11	25	47	35,700	834 lf - roadway 420 lf - bridge	0	10*	James spiny mussel		300
16. Raise SFRR + Beaver Creek Reservoir	\$98.6	<11	<11	<25	<47	<35,700	792 lf - roadway 420 lf - bridge	0	10*	James spiny mussel	Crozet demand	300
17. Pumpback from Moores Creek WWTP to SFRR Tributary	\$91.2	UA	UA	UA	2	+/- 20 streams crossings	None	unknown	unknown	James spiny mussel		5
18. Pumpback from Moores Creek WWTP to SFRR Tributary + Beaver Creek Reservoir	\$91.6	UA	UA	UA	2	+/- 20 streams crossings	None	unknown	unknown	James spiny mussel	Crozet demand	5
19. Pumpback from Moores Creek WWTP to SFRR Tributary + Beaver Creek Reservoir + Add 4 ft. Crest Gates on SFRR	\$110.6	7	10	18	35	+/- 20 streams crossings + 16,000 LF	688 lf - roadway 420 lf - bridge	unknown	unknown	James spiny mussel [†]	Crozet demand	120
20. Expand Sugar Hollow Reservoir + Beaver Creek Reservoir	\$125.6	0	0	0	0	4,900	None	4	0		Trout stream, federal property Crozet demand	75
21. Expand Sugar Hollow Reservoir + Beaver Creek Reservoir + Add 4 ft. Crest Gates on SFRR	\$127.9	5	10	18	33	18,700	688 lf - roadway 420 lf - bridge	4	10*	James spiny mussel [†]	Trout stream, federal property Crozet demand	170
22. Dredging SFRR + Beaver Creek Reservoir + Add 4 ft. Crest Gates on SFRR	N/A	5	15	18	38	16,000	None	0	0	James spiny mussel [†]		N/A

* The number of archaeological sites associated with SFRR is artificially high in comparison to the others because this reservoir was surveyed recently for the project. Intensive survey of the other alternatives would likely result in similar numbers of archaeological resources.

** The James River pumped storage route is within two historic districts that are on the National Register of Historic Places. Multiple individual properties are along this route.

RMSA has reported 2 structures of potential concern at Ragged Mountain, but these are not recorded with the VDFR.

† The Buck Mountain Reservoir alternative has at least 1 unrecorded archaeological site identified during the SFRR survey by Gray & Page.

**The Bewick's wren, loggerhead shrike, and peregrine falcon are bird species with wide ranging habitat preferences. Listings in the table indicate historical sightings in the vicinity, although the preferred habitat may not be impacted by the alternative.

†† Online database indicates presence. DGIF survey determined absence.

UA - Unavailable

Table S-2: Key Determining Factors for Selected Alternatives

Potential Alternative	Estimated Cost (millions)	Wetlands Impacts (acres)	Stream Impacts (linear feet)	Threatened or Endangered Species	Other Issues
1 No Action	\$31.2	N/A	N/A	*	Does not satisfy water deficit
2 New Dam at Buck Mountain Creek	\$109.7	25	40,037	*	
3 New Dam at Buck Mountain Creek + Beaver Creek Reservoir	\$105.0	<5	31,624	†	
4 Pumped Storage at Rocky Creek	\$105.5	0 ¹	7,355	*	
5 Pumped Storage at Rocky Creek + Beaver Creek Reservoir	\$98.1	0 ¹	6,343	*	
6 James River Intake	\$109.5	5	32 stream crossings	Unknown	
7 James River Intake + Beaver Creek Reservoir	\$102.7	5	32 stream crossings	Unknown	
8 James River (Regional Cooperation)	N/A	Unknown	Unknown	Unknown	Unknown
9 James River (Regional Cooperation + Beaver Creek Reservoir)	N/A	Unknown	Unknown	Unknown	Unknown
10 Raise Ragged Mountain Dam with Pumped Storage	\$81.7	4.8	2,284	*	Inundates 1-64 culvert
11 Raise Ragged Mountain Dam (No Pumped Storage) + Beaver Creek Reservoir	\$69.0	>4.8	>2,284	*	Inundates 1-64 culvert
12 Raise Ragged Mountain Dam with Pumped Storage + Beaver Creek Reservoir	\$78.7	<4.8	<2,284	*	Inundates 1-64 culvert
13 Raise Ragged Mountain Dam (No Pumped Storage) + Beaver Creek Reservoir + 4 foot Crest Gates SFRR	\$82.1	38	18,151	*	Inundates 1-64 culvert
14 Raise Ragged Mountain Dam with Pumped Storage + Beaver Creek Reservoir + 4 foot Crest Gates SFRR	\$91.6	<38	<18,151	*	Inundates 1-64 culvert
15 Raise SFRR to Provide All Required Additional Storage	\$99.3	46.7	35,712	*	
16 Raise SFRR + Beaver Creek Reservoir	\$98.6	<46.7	<35,712	*	
17 Pumpback from Moores Creek WWTP to SFRR Tributary	\$91.2	2	20 stream crossings	*	
18 Pumpback from Moores Creek WWTP to SFRR Tributary + Beaver Creek Reservoir	\$91.6	2	20 stream crossings	*	
19 Pumpback from Moores Creek WWTP to SFRR Tributary + Beaver Creek Reservoir + 4 foot Crest Gates at SFRR	\$110.6	35.21	16,022 + 20 stream crossings	*	
20 Expand Sugar Hollow Reservoir + Beaver Creek Reservoir	\$125.6	0 ¹	4,913	*	Inundates federal property
21 Expand Sugar Hollow Reservoir + Beaver Creek Reservoir + 4 foot Crest Gates SFRR	\$127.9	33.21	18,735	*	Inundates federal property
22 Dredging SFRR + Beaver Creek Reservoir + 4 foot Crest Gates on SFRR	N/A			*	

* Listed species have been identified in the project vicinity
 † Listed species have been identified in the project footprint
 1 Available mapping does not show wetlands (other than stream channel) in the project footprint. It is likely that field-based analysis would indicate presence of wetlands