VHB, INC.
"WATER SUPPLY PROJECT SUMMARY OF RECOMMENDED ALTERNATIVES."
MAY 2001

RIVANNA WATER SEWER AUTHORITY
WATER SUPPLY ALTERNATIVES MATRIX

Draft

ALTERNATIVE	INCREASE IN 2050 SAFE YIELD (mgd)	ESTIMATED COST ($)	ANNUAL O&M COST ($)	UNIT COST ($/g)*	POTENTIAL # OF RESIDENTIAL DISPLACEMENTS	POTENTIAL IMPACTS TO PREVIOUSLY IDENTIFIED CULTURAL RESOURCES		PREVIOUSLY IDENTIFIED T & E SPECIES in vicinity	APPROXIMATE WETLAND IMPACTS (Acres)
						STRUCTURES	ARCHAEOLOGICAL		
Dredge South Fork Rivanna Reservoir									
--Single Event	7.2	$ 71,000,000	n/a	$9.86	0	0	0	0	5
--Annual Dredging	7.2	$ 7,200,000	$ 800,000	$1.00	0	0	0	0	5
Reduce Sediment Load into South Fork Rivanna Reservoir									
--BMPs	2	$ 8,800,000	n/a	$4.40	0	0	0	0	80
--Land Use Controls	2	$ 16,000,000	n/a	$8.00	0	0	0	0	0
Alternate Release Scenarios at South Fork Rivanna Reservoir	1.6	$ 386,000	n/a	$0.24	0	0	0	0	minimal
Add 4 ft. Crest Controls on South Fork Rivanna Dam	7	$ 2,260,000	n/a	$0.32	0	1	1	James spinymussel	18
Add 8 ft. Crest Controls on South Fork Rivanna Dam	11	$ 18,300,000	n/a	$1.66	2	1	1	James spinymussel	39
Use South Fork Rivanna Reservoir as a Pumped Storage Reservoir	0	n/a	n/a	n/a	0	0	0	0	minimal
Up to 5 ft. Drawdown of Chris Greene Lake	2.9	$ 7,400,000	not significant	$2.55	0	0	0	0	minimal
20 ft. Draw Down of Chris Greene Lake	5.5	$ 14,700,000	not significant	$2.67	0	0	0	0	minimal/temporary
Use of Chris Greene Lake as a Pumped Storage Reservoir	0	n/a	n/a	n/a	0	0	0	0	minimal
Use Beaver Creek Reservoir to Supplement Flows in Mechums River	0	$ 500,000	not significant	n/a	0	0	0	0	minimal
Dredge Sugar Hollow Reservoir	0.1	$ 4,900,000	not significant	$49	0	0	0	0	2
Conversion of Ragged Mtn. to Pumped Storage Reservoir	10	$ 47,000,000	not significant	$4.70	1	0	0	0	5
Pumpback to Mechums River	15	$ 56,000,000	$ 150,000	$3.73	0	unknown	unknown	James spinymussel	2
Pumpback to Moormans River	15	$ 69,000,000	$ 280,000	$4.60	0	unknown	unknown	James spinymussel	5

*Unit cost based only on capital cost per gallon.
Does not include effects of annual operations and maintenance costs.

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ALTERNATIVE	REDUCTION IN DEMAND (mgd)	ESTIMATED COST ($)	ANNUAL O&M COST	UNIT COST ($/g)*	POTENTIAL # OF RESIDENTIAL DISPLACEMENTS	POTENTIAL IMPACTS TO PREVIOUSLY IDENTIFIED CULTURAL RESOURCES		PREVIOUSLY IDENTIFIED T & E SPECIES in vicinity	APPROXIMATE WETLAND IMPACTS (Acres)
						STRUCTURES	ARCHAEOLOGICAL		
Water Conservation									
--Plumbing Changeout	1.13	0	n/a	0	0	0	0	0	0
--Pricing Structure	0.13	unknown	n/a	n/a	0	0	0	0	0
--Comm./Industrial	0.28	0	n/a	0	0	0	0	0	0
--Landscaping/Xeriscaping	0	n/a	n/a	n/a	0	0	0	0	0
--Education	0.13	$ 2,500,000	n/a	$19.23	0	0	0	0	0
--System Pressure Reduction	0	n/a	n/a	n/a	0	0	0	0	0
Growth Management	1.7	unknown	n/a	n/a	0	0	0	0	0
Drought Management Demand Side	1.4	$ 250,000	n/a	$0.18	0	0	0	0	0
Drought Management Supply Side	1	unknown	n/a	n/a	0	0	0	0	0
Leak Detection and Meter Calibration	0	n/a	n/a	n/a	0	0	0	0	0

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ALTERNATIVE	INCREASE IN 2050 SAFE YIELD (mgd)	ESTIMATED COST ($)	ANNUAL O&M COST ($)	UNIT COST ($/gallon)*	POTENTIAL # OF RESIDENTIAL DISPLACEMENTS	POTENTIAL IMPACTS TO PREVIOUSLY IDENTIFIED CULTURAL RESOURCES		PREVIOUSLY IDENTIFIED T & E SPECIES in vicinity	APPROXIMATE WETLAND IMPACTS (Acres)
						STRUCTURES	ARCHAEOLOGICAL		
Aquifer Storage & Recovery	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Conventional Withdrawal of Groundwater	0.1	$ 1,200,000	n/a	$12	0	0	0	0	0
Construct Dam on Buck Mountain Creek	14.4	$ 57,000,000	not significant	$3.96	1	6	0	James spinymussel	59
Construct Dam on Preddy Creek	6.4	$ 91,000,000	not significant	$14.22	6	7	0	0	77
Construct Dam on Moormans River	11.6	$ 106,000,000	not significant	$9.14	22	14	1	0	68
Construct Dam on North Fork Rivanna River	15.4	$ 79,000,000	not significant	$5.13	2	3	4	James spinymussel	72
Construct Dam on Mechums River Near Lake Albemarle	13.3	$ 68,000,000	not significant	$5.11	21	15	2	James spinymussel	144
Construct Dam on Mechums River Near Midway	5.6	$ 26,000,000	not significant	$4.64	6	6	0	James spinymussel	52
Construct Dam on Buck Island Creek	15	$ 118,000,000	not significant	$7.87	14	6	0	0	103
James River Withdrawal at Scottsville	15	$ 72,000,000	$ 170,000	$4.80	0	unknown	1	unknown	5
Rivanna River Withdrawal	4.7	$ 18,000,000	not significant	$3.83	0	unknown	unknown	0	2
Mechums River Withdrawal	0.2	$ 850,000	not significant	$4.25	0	unknown	unknown	James spinymussel	minimal

ALTERNATIVE	INCREASE IN DEMAND (mgd)	ESTIMATED COST ($)	ANNUAL O&M COST ($)	UNIT COST ($/g)*	POTENTIAL # OF RESIDENTIAL DISPLACEMENTS	POTENTIAL IMPACTS TO PREVIOUSLY IDENTIFIED CULTURAL RESOURCES		PREVIOUSLY IDENTIFIED T & E SPECIES in vicinity	APPROXIMATE WETLAND IMPACTS (Acres)
						STRUCTURES	ARCHAEOLOGICAL		
Regional Cooperation	3	$ 3,100,000	n/a	n/a	0	unknown	unknown	0	minimal

ALTERNATIVE	REDUCTION IN SAFE YIELD (mgd)	ESTIMATED COST ($)	ANNUAL O&M COST ($)	UNIT COST ($/g)*	POTENTIAL # OF RESIDENTIAL DISPLACEMENTS	POTENTIAL IMPACTS TO PREVIOUSLY IDENTIFIED CULTURAL RESOURCES		PREVIOUSLY IDENTIFIED T & E SPECIES in vicinity	APPROXIMATE WETLAND IMPACTS (Acres)
						STRUCTURES	ARCHAEOLOGICAL		
No-Action	7.7	n/a	n/a	n/a	0	0	0	0	0

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