Analysis by Hydrologics for Rivanna Water & Sewer Authority

Provided by RWSA to Charlottesville Tomorrow on July 19, 2011

Improvement Scenario	Interim Future with Improvements[1]		Long-Term Future with Improvements[2]	
	Safe Yield	Total System Useable Storage	Safe Yield	Total System Useable Storage
Expand Ragged Mountain Reservoir +42 Feet	13.9 MGD	3,101 MG	18.7 MGD	2,714 MG
Expand Ragged Mountain Reservoir +30 Feet	12.5 MGD	2,460 MG	15.3 MGD	2,073 MG
One-Time Dredging[3]	9.2 MGD	1,602 MG	6.7 MGD	1,215 MG
Repeated Dredging[4]	10.3 MGD	1,797 MG	10.3 MGD	1,797 MG

[1]Assumes existing Sugar Hollow Pipeline remains in service to refill Ragged Mountain Reservoir from Sugar Hollow Reservoir, no new pipeline. All improvement scenarios use minimum stream flow requirements stated in DEQ Water Protection Permit 06-1574 specified for after the dam and before the pipeline. To be consistent with previous safe yield analyses, all analyses in this column except Repeated Dredging assume additional sedimentation in useable storage pool at South Fork Reservoir of 213 MG when compared to current conditions. Water treatment plant constraints on minimum production from Observatory of 2 mgd apply, as do maximum treatment capacities of 12 and 8 mgd from South Fork and Observatory, respectively.

[2]Assumes new South Fork to Ragged Mountain Pipeline is in service to refill Ragged Mountain Reservoir from South Fork Reservoir for both "Expand Ragged Mountain" scenarios, but assumes Sugar Hollow Pipeline for dredging scenarios. Ragged Mountain Reservoir expansion scenarios use minimum stream flow requirements stated in DEQ Water Protection Permit 06-1574 specified for after the dam and after the pipeline; dredging scenarios use minimum streamflow requirements after the dam and before the pipeline scenarios. To be consistent with previous safe yield analyses, all analyses in this column except Repeated Dredging assume additional sedimentation in useable storage pool at South Fork Reservoir of 600 MG when compared to current conditions, or 387 MG when compared to "Interim Future Safe Yield with Improvements". No water treatment plant limitations on minimum and maximum production exist for Ragged Mountain Reservoir expansion scenarios, but are assumed to exist for the dredging scenarios.

[3]Per the HDR Engineering Dredging Feasibility Study in 2010, dredge reservoir one-time to add 228 MG of total storage, meaning South Fork Reservoir would then be 1,010 MG immediately after dredging today, 815 MG at Interim Future, and 428 MG in 50 years (Long-Term Future). 815 MG for the Interim Future is calculated by adding 228 MG to 587 MG, allowing for the re-settlement of some dead storage area created by the one-time dredging.

[4]Dredging would restore the useable storage in the South Fork Reservoir to 1,010 MG, then be repeated sufficiently often to retain useable storage at 1,010 MG throughout the long-term period.