
Overcoming the Reagan 'Recovery'

Save lives, create economic growth: Develop the water resources of Virginia

by Joyce Fredman

The second in the series of surveys of state-level production potentials, looks at the potential for water resources improvements in the Commonwealth of Virginia.

Given that Virginia is a state which has so much to offer the world in terms of shipbuilding and ship repair capability, a state which has one of the world's leading port facilities, a state which captivated the vision of many of our Founding Fathers for its industrial and agricultural capability, one would think that water management would be of primary concern. It is an outrageous irony that the inland water-management facilities, in fact, with few exceptions, are so underdeveloped.

The water resources potential in the Commonwealth of Virginia is enormous. There are nine major river systems whose drainage basins—in whole or in part—cover the state's 40,817 square miles. The map shows their locations, and their rank order in size of their drainage basins. Developing these systems fully would provide significant new quantities of water for industrial, agricultural, and residential use, and potentially, even hydro-power. At the same time, flood damage could be minimized.

In the late 1950s and early 1960s, extensive river management plans were worked out by the Army Corps of Engineers for the upgrading of the Appalachian Region—the multi-state zone that forms the entire highland border of western Virginia. From these uplands, water drains in all directions to form the headwaters of the Tennessee, the Roanoke, the James, and the Shenandoah and Potomac Rivers.

However, the rise of the zero-growth and "post-industrial" lobbies of the 1960s to the present, has functioned to prevent the development potential of these rivers from being fulfilled. Dams were not built, channels not cleared, water not cleaned.

The toll this obstruction has taken is dramatically shown by the impact of the "100 Years Flood" which hit the state in November 1985. At least 50 people died, there was over \$1.5 billion of direct damage, hundreds of animals were killed, and dozens of communities in Virginia and West Virginia shut down, never to revive.

This obstruction of development must stop. An existing program for the development of the Potomac River system is paradigmatic for all the Virginia river basins, and indicative of the kind of projects needed nationally. That plan is summarized here, and then the general description of each of the river systems follows.

Potomac basin development

In 1956, ten projects nationwide were commissioned by the Eisenhower administration. One of those, the Potomac River Basin Report, was outlined for a substantial section of Virginia, as well as the neighboring areas. Completed in 1963 by the Army Corps of Engineers, the plan set goals, whose optimism and comprehensive approach are more than appropriate today. With some upgrading of technologies, it could be easily revived. It entails a program for flood control, water supply, quality control and recreation. Included are:

- 418 headwater reservoirs
- 16 major reservoirs (4 trunk sewers in connection with 3 of them)
- 3 small flood control projects
- treatment of all wastes entering the basin's streams by 2010 to 85% effectiveness throughout the basin, and 90% in the D.C. metropolitan area of.
- land management and conservation measures to reduce erosion and rapid localized runoff.

The cost of the headwater and major reservoir projects is estimated to have been \$498 million (1960 dollars, approximately \$1.2 billion in 1987), 21% of which would have been for headwater reservoirs and 79% of which would have been for major reservoir projects. Under this plan, 50 reservoirs would have been available by 1965, 336 more by 1985, and the remaining 32 by 2010. This would have prevented over 40% of the average annual damage done by flooding. Imagine if systems such as this had been set up for all the river systems. Now reflect on the 50 lives and billions of dollars in direct and indirect damages in the 1985 flooding alone, aside from the billions of dollars and many lives lost in floods since the 1960s, when the plan was first conceived.

The nine river basins

The state of Virginia is drained by nine major river systems:

1) The James River Basin, in the middle part of the state, is the largest watershed in Virginia, encompassing 10,206 square miles in Virginia and a small area in West Virginia. About 25% of Virginia's area lies in this basin. The average run-off at Richmond is about 4,884 mgd (million gallons per day).

2) The Roanoke River Basin. In the southern part of the state; the watershed of Roanoke River drains portions of Virginia and North Carolina, encompassing about 9,580 square miles, of which 6,261 are in Virginia. Average run-off at Kerr Reservoir Dam is about 5,218 mgd from a drainage area of 7,780.

3) The Potomac-Shenandoah River Basin. Formed by the confluence of its north and south branches in West the Potomac River's basin consists of parts of Maryland, West Virginia, Pennsylvania, the District of Columbia, and Virginia. The Virginia portion comprises about 14% of the state's area. Average flow of the Potomac River at Washington is about 7,361 mgd.

4) The Chowan River and Dismal Swamp. The headwater areas of the Chowan River lie in south-central Virginia. The basin includes about 10% of the state. Main tributaries are the Meherrin, Nottoway, and Blackwater Rivers. Downstream from the confluence of the Backwater and Nottoway Rivers near the Virginia-North Carolina boundary, the name Chowan is used. The most unusual coastal drainage basin is that containing Dismal Swamp, which lies in the Coastal Plain and includes a portion of the cities of Chesapeake and Suffolk, and adjacent North Carolina.

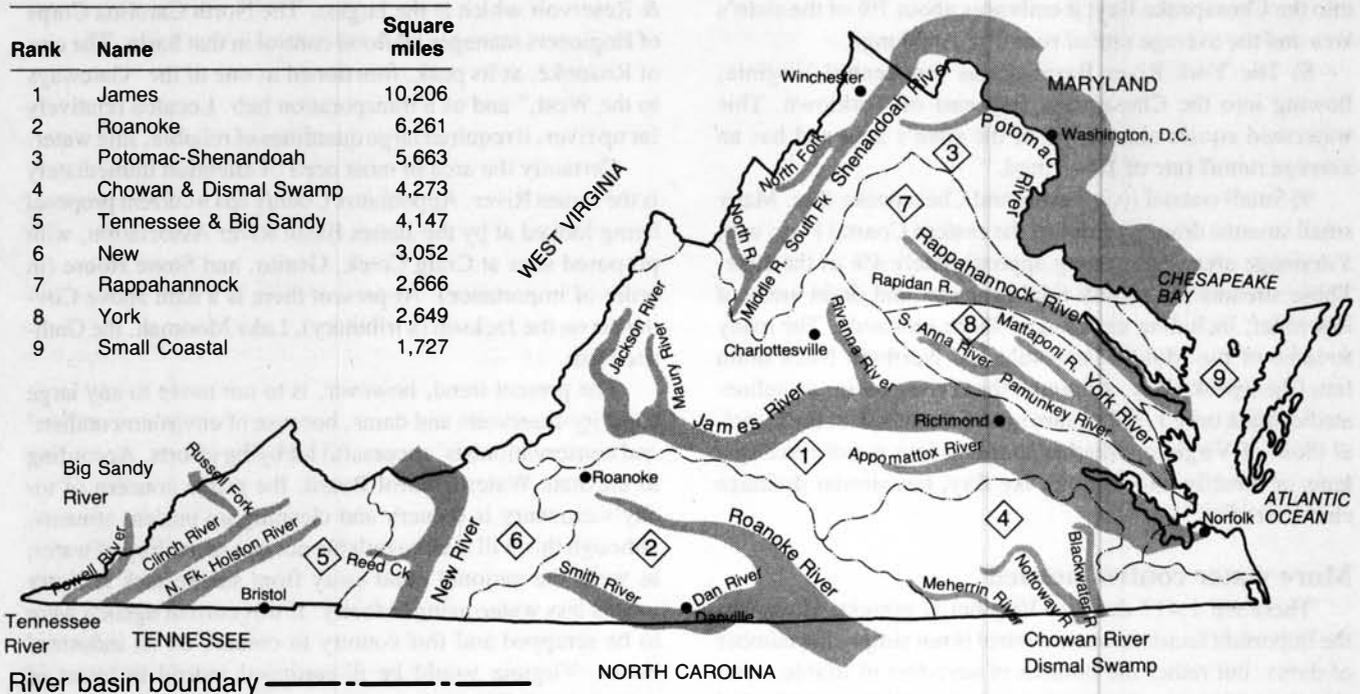
5) The Tennessee and Big Sandy River Basins. The Tennessee River has its headwaters in all or portions of 10 southwest Virginia counties. The area of this portion of the watershed is 3,164 square miles of a total of approximately 40,910 in the entire basin which drains parts of seven states. This basin exceeds others in average annual precipitation which ranges up to 50 inches in the western portion. Average runoff is high and is estimated to be 2,966 mgd. The Big Sandy Basin has a drainage area comprising 2.5% of the state.

6) The New River Basin. The New River flows into Grayson County, Virginia from North Carolina, at the aver-

Nine river systems give Virginia great water resources

River systems ranked by size of drainage region in Virginia

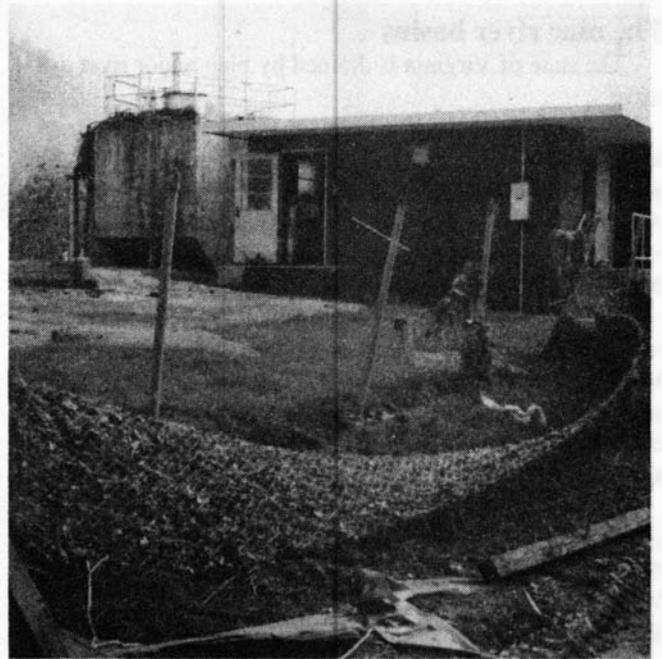
Rank	Name	Square miles
1	James	10,206
2	Roanoke	6,261
3	Potomac-Shenandoah	5,663
4	Chowan & Dismal Swamp	4,273
5	Tennessee & Big Sandy	4,147
6	New	3,052
7	Rappahannock	2,666
8	York	2,649
9	Small Coastal	1,727



Source: Virginia State Water Control Board, Bureau of Water Control Management.



House trailers were upturned and swept away in this 300 unit trailer park in Roanoke, as the Roanoke River flooded in November 1985.



The Buchanan town sewage treatment plant was severely damaged, and shut down, by the raging James River in the November 1985 floods.

age rate of 837 mgd and leaves near Glen Lyn at the rate of 3,237 mgd. The watershed totals about 7.5% of the area in the state.

7) The Rappahannock River Basin lies in northeastern Virginia, rising in the Blue Ridge Mountains and emptying into the Chesapeake Bay; it embraces about 7% of the state's area and the average rate of runoff is 1,826 mgd.

8) The York River Basin drains east-central Virginia, flowing into the Chesapeake Bay east of Yorktown. This watershed equals almost 7% of the state's area and has an average runoff rate of 1,643 mgd.

9) Small coastal river basins and Chesapeake Bay. Many small streams drain portions of the eastern Coastal Plain with a drainage area representing approximately 4% of the state. These streams are mostly tidal estuaries and drain areas of low relief, including the Eastern Shore peninsula. The many streams of the Middle Peninsula and Northern Neck drain into Chesapeake Bay. Although these river basins as delineated contain only 1,727 square miles, the whole of the Coastal Plain of Virginia, whether draining into major river systems or directly into Chesapeake Bay, has similar drainage characteristics.

More water control needed

There are 1,417 dams in Virginia at present. However, the important factor in water control is not simply the number of dams, but rather the number of acre-feet of usable water storage within any dam and reservoir, and how well sited they are. The most highly developed and regulated basin is

the Roanoke. This has more usable storage than any other; the dams and reservoirs there include: Philpott Reservoir, Smith Mountain Lake, and Leesville Dam and Reservoir, which are owned by Appalachian Power Company, Lake Gaston owned by Virginia Power, and the John H. Carr Dam & Reservoir which is the largest. The North Carolina Corps of Engineers manages all flood control in that basin. The city of Roanoke, at its peak, functioned as one of the "Gateways to the West," and as a transportation hub. Located relatively far up river, it required large quantities of reliable, safe water.

Certainly the area in most need of attention immediately is the James River. Appomatox County has a current proposal being looked at by the James Basin River Association, with proposed sites at Craig Creek, Genito, and Stone House (in order of importance). At present there is a dam above Covington on the Jackson (a tributary), Lake Moomah, the Gathrite Dam.

The present trend, however, is to *not* move to any large capacity-reservoirs and dams, because of environmentalists' and conservationists' successful lobbying efforts. According to the state Water Control Board, the prime concern of today's citizenry is scenery and cleaning up present streams, although this will make available not one more drop of water; as well, the national trend away from smokestack industry means less water-using industry. If this current agenda were to be scrapped and this country to embark on an industrial boom, Virginia would be ill-equipped indeed in terms of water control. The water-management plans "are on the shelf." They need only to be implemented.