REPORT OF THE

STATE WATER COMMISSION

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

DOCUMENT NO. 158

COMMONWEALTH OF VIRGINIA
RICHMOND
2014

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REPORT OF THE STATE WATER COMMISSION

EXECUTIVE SUMMARY

I. COMMISSION DELIBERATIONS

The State Water Commission (the Commission) is a 15-member legislative body established by statute that is charged with (i) studying all aspects of water supply and allocation problems in the Commonwealth, (ii) coordinating the legislative recommendations of all state entities that have responsibilities with respect to water supply and allocation issues, and (iii) annually reporting its findings and recommendations to the General Assembly and the Governor In 2013, the Commission met twice and devoted its time to reviewing the policies associated with the management of the Commonwealth's ground water resources in Eastern Virginia and receiving testimony on the work of the State Water Plan Advisory Committee (the Advisory Committee) in assisting the Department of Environmental Quality (DEQ) in the development and implementation of the statewide water resources plan. At its first meeting, the Commission elected Delegate Thomas Wright as chairman and Senator Emmett Hanger as vice-chair.

A. Management of Ground Water Resources in Eastern Virginia

1. Nature and Scope of Problem

Amid reports of excessive withdrawals of ground water resulting in incidents of saltwater intrusion, collapsing aquifers, and land subsidence in Eastern Virginia, the Commission examined the Commonwealth's current policies to manage the resource. In response to this seemingly critical situation, the State Water Control Board had adopted regulations on June 17, 2013, expanding the current ground water management area north from the Middle Peninsula/Northern Neck region to certain localities in Northern Virginia. When an area is designated as part of a ground water management area, a permit is required for withdrawals greater than 300,000 gallons per month or 10,000 gallons per day. Withdrawals of less than 300,000 per month, which represent a significant percentage of total withdrawals, are not regulated.

Mr. David Paylor, Director of the Department of Environmental Quality, outlined the nature and scope of ground water issues in Virginia's coastal plain. Located east of I-95 along the fall line, the coastal plain aquifers are a series of aquifers separated by consolidated nonpermeable layers. Many of the layers are formed from fluvial and marine sediments. The Potomac aquifer is the largest, most productive of these aquifers and on average has the best water quality. Over the last four years, DEQ, in conjunction with the U.S. Geological Survey (USGS), has examined how the different layers interact and impact ground water flow. The recent discovery of an impact crater in the Chesapeake Bay has caused the agencies to rethink the way the computer models are being developed for analysis of the ground water system and how the system reacts to the installation of new wells. Mr. Paylor emphasized the complexity of trying to determine the impact of withdrawals on the affected aquifers.

He explained that concern for ground water arose in the 1950s. Beginning in the 1960s, the withdrawals from the coastal aquifer increased significantly and have remained at those levels. The original legislation to regulate ground water withdrawals in certain regions was enacted in 1973. Twenty years later, this law was updated with the passage of the Ground Water Management Act of 1992. Much of the revision in the 1992 Act was focused on ensuring that existing water withdrawal rights of current permit holders were protected by allowing the permittees to continue to withdraw up to their permitted capacity. However, at the end of the current 10-year permit, their permitted use would be based on their historic actual use.

Mr. Paylor noted several management issues that need to be addressed, including the continued decline in the primary aquifers, land subsidence, saltwater intrusion, and the pumping of primary aquifers in a manner that is not sustainable over the long term. Under a newly implemented ground water withdrawal model that, according to Mr. Paylor, more accurately reflects reality, there will be less water available for withdrawal.

Virginia is not alone in experiencing ground water problems. Other southern coastal states have implemented strategies to preserve their ground water resources. Maryland does not permit withdrawals for the purpose of irrigation. North Carolina has reduced all existing withdrawals from the Potomac Aquifer by 30 to 75 percent over 15 years, prohibited new withdrawals, and provided some financial assistance to withdrawers so that they may convert to other sources of water supply. Georgia and South Carolina have designated certain areas where no new withdrawals will be allowed and designated other areas where only incremental withdrawals are allowed. These states have also mandated the implementation of conservation measures to reduce the existing maximum withdrawals. Florida has instituted regional caps on the amount of ground water allowed to be withdrawn and mandated conservation and efficiency measures and the metering of all withdrawals, including agriculture-related withdrawals.

Mr. Paylor emphasized that the region's aquifers "are not on the precipice of collapse." There still is time to develop strategies to stabilize the situation, and various options that may be available to preserve the resource must be evaluated. He indicated that solutions will depend on not one but a combination of options. He noted that after examining Virginia's program, a peer review panel recommended several regulatory and programmatic options. The regulatory options include:

- Reducing pumping;
- Spreading out pumping and finding different locations for the wells, thereby reducing pressure on the system without reducing the yield;
- Modifying management goals;
- Instituting zoning of withdrawals by ensuring permits in regional or aquifer groupings; and
- Implementing water conservation measures.

From a programmatic perspective, the panel recommended (i) the collection of more data on water levels, water quality, and land subsidence and (ii) an increase in program resources.

The Department of Environmental Quality is also exploring several short-term actions for managing ground water aquifers. The agency is examining the feasibility of having some permit holders move their wells to a higher level in the Potomac Aquifer. This policy may slightly reduce yield but would reduce the threat of saltwater intrusion. In order to develop a more accurate model, the agency needs a more complete set of data. Currently, DEQ is not receiving withdrawal information from a significant number of wells that operate below the withdrawal limit of 300,000 gallons per month. Although these wells are required to submit data on their levels of withdrawal, the reporting has been sporadic. In addition, the agency will (i) continue to increase ground water quality samples to 50 per year and (ii) work with the Virginia Economic Development Partnership and local governments to determine the availability of ground water for potential site locations.

Mr. Paylor is reviewing the program to ensure that adequate resources exist to carry out an effective management program and fully implement these actions. The review includes consideration of various options, including:

- Examining ways to spread out withdrawals, thereby reducing stress on the aquifers while maintaining significant yield;
- Evaluating drawdown criteria that protect against subsidence and saltwater intrusion;
- Promoting the greater use of alternatives such as water reuse, conjunctive use of surface and ground water, and water recycling;
- Considering additional regulatory change; and
- Over the next five to 10 years, seeking to develop plans that move the agency in a direction to ensure the preservation of the water resource for the long term.

Mr. Mark Bennett, the Director of the Virginia/West Virginia Water Science Center, USGS, discussed the USGS-DEQ Cooperative Program in the Coastal Plain. The two agencies conduct joint operations in such areas as water-level monitoring, borehole geophysical loggings, development of a hydrogeological framework in Eastern Virginia, participation in a salinity network, and ground water monitoring. Over the last 100 years, much effort has been made to understand the complexity of the ground water system. A significant step forward in that understanding was the discovery of the Chesapeake Bay Crater and the subsequent analysis of the system of aquifers. Mr. Bennett commented on the dynamics of the changes that are occurring in Virginia's aquifers. For instance, figures from 2008 show a significant reduction in aquifer storage and an accompanying increase in the incidence of saltwater intrusions. He noted that aquifer compaction is a major factor in land subsidence and that subsidence in turn is a major contributor to sea-level rise in Virginia's Coastal Plain.

2. Local Government Perspectives

Four local officials presented their concerns regarding the use of Virginia's ground water resources. Mr. Lewis Lawrence, Executive Director of the Middle Peninsula Planning District Commission, noted that until recently little attention had been paid to ground water quantity and quality issues in the Northern Neck as the region had not been designated as a management area. About a decade ago, local officials throughout the region began to be concerned about water

issues when DEQ documented local incidents of saltwater intrusion and the region experienced major droughts in 2002 and 2003. At the same time, the state mandated that local or regional governments develop and submit water supply plans to DEQ for review and approval. Mr. Lawrence indicated that local governments are concerned that there has been no response from DEQ to the submission of these plans.

In 2010, localities began to realize that they were going to have to react to a convergence of state and federal water quality and quantity-related requirements. According to Mr. Lawrence, the multiplicity of these programs resulted in confusion at the local level. That year, the Chesapeake Bay TMDL was developed by DEQ. This caused localities in the region to begin to compartmentalize the management of water resources into such categories as water quantity, water quality, and drinking water standards. Then in 2011, localities were asked to respond to the Environmental Protection Agency requirement for states in the region to develop and implement the Watershed Implementation Plan for cleaning up the Chesapeake Bay. A year later, in 2012-2013, the localities had to adjust to the changes in state law that transferred oversight of such locally administered water programs as the erosion and sediment control, stormwater, and Chesapeake Bay Preservation Act from the Department of Conservation and Recreation to DEQ.

In light of all these mandated activities, Mr. Lawrence stated that localities want to be assured that DEQ will be provided with the funds necessary to administer the various water programs, including the hiring of adequate staff necessary to issue permits in a timely fashion, especially in light of the fact that the Middle Peninsula localities will be in a ground water management area, where withdrawers will have to obtain a permit. The final concern expressed by the localities in the region is that the ground water in the Middle Peninsula will be used by existing permittees outside the region, leaving limited amounts of ground water for future economic development activities within the region.

Mr. Pete Mansfield, a member of the Board of Supervisors of Middlesex County, which will be included in the Eastern Virginia Ground Water Management Area, suggested that a solution to the "overdraw of the Potomac Aquifer" is needed. According to Mr. Mansfield, the problem will not be corrected through additional monitoring and more stringent permitting, the latter of which would only result in slowing the rate of increased withdrawals at the expense of future growth in the region. He maintained that Virginia is in a critical situation, with a high percentage of wells experiencing saltwater intrusion due, in large measure, to lower ground water levels resulting from significant ground water withdrawals by paper mills in West Point and Franklin. Mr. Mansfield offered an alternative strategy for relieving pressure on the Potomac Aquifer. He requested the Commission's assistance in providing financing for a $250 million project to pipe treated water from Hampton Roads Sanitation District (HRSD) wastewater treatment facilities to the West Point and Franklin mills. According to Mr. Mansfield, there are several benefits of adopting such a strategy. First, approximately 23 million gallons of ground water per day that is currently withdrawn for industrial use would be replaced with treated reused water from the HRSD treatment facilities, thereby reducing withdrawals from the aquifer by 20 percent and having more potable water available for domestic use. Second, by reusing effluent from wastewater treatment plants, approximately 900,000 pounds per year of embedded nutrients would not enter the waters of the Chesapeake Bay. He suggested that reusing wastewater is the most economical answer to a nutrient removal program and an effective strategy for complying

with EPA's TMDL requirement. The savings generated, according to Mr. Mansfield, "should nearly" pay for the $110 million first phase of the project. Finally, the implementation of a water reuse system for Middlesex County, instead of relying on surface water discharges into the Bay, provides a template for a sustainable reuse program for agriculture and industry.

Dr. Jim Pyne, Chief, Hampton Roads Sanitation District's Small Communities Division, discussed the merits of Mr. Mansfield's approach. According to Dr. Pyne, the real challenge Virginia faces is how to move water from one place to another. He characterized Mr. Mansfield's approach as both an economic issue (as water in all its forms, including reusable water, has economic value) and a "transportation problem" (as there is a need to develop a transportation system to move this valuable resource). Ground water has been a preferred source of water supply because its accessibility makes it relatively inexpensive. As long as ground water has been readily available, there has been little economic incentive to invest in alternative sources. What is happening now is that because ground water may not be as readily available, the economics of the situation are changing. Dr. Pyne suggested bringing all stakeholders together to engage in a water resource planning effort to discuss "how to manage water holistically in all its varieties." He stated that water reuse is a viable option, but "we will have to move the resource from where it is to where it has to be."

Mr. Larry Dame, Director of Public Utilities of New Kent County, manages 13 distinct water systems spread throughout the County, all of which are supplied by ground water. He also manages a two million gallon per day wastewater treatment plant and a reclaimed water system. The County's system includes 11 ground water permits, ranging from 3.9 million gallons per year to 239 million gallons per year. He indicated that obtaining a new permit is "extremely difficult due to dwindling supplies." Yet, to a small county with limited resources, ground water is the only option. At the request of DEQ, the County consulted with its larger neighboring localities about obtaining finished surface water. However, this option is cost prohibitive for a small utility whose annual budget is less than $5 million. The County has engaged in an ongoing search for alternative sources of waters. For example, in late 2013, the County planned to explore the possibility of using abandoned borrow pits for water. The Department of Environmental Quality has suggested that the County assess the possibility of withdrawing water from the Pamunkey River, which is a tidal river, and build a reverse osmosis water treatment plant.

As New Kent County is traditionally dependent on ground water, Mr. Dame expressed concern that few alternatives are available, none of which are easy or cost effective. He mentioned several issues faced regularly by small counties like New Kent:

1. If the county seeks to expand connections to houses or businesses outside a defined service area, it will have to request a permit modification from DEQ. However, there is concern that additional conditions may be placed on the modified permit. He suggested a possible solution would be, in the case of a request for an additional connection outside the service area, to allow the connection through an administrative appeal. To receive the approval, the permit holder would submit a revised service area map and document that there would be no increase in the amount of ground water allocated.

2. The time frame for permit turnaround is "extremely" slow due in part to the reduced staffing levels at DEQ as well as the complexity of permits. He recommended an increase in the staffing level for ground water permitting, especially since the ground water management area has increased.

3. The requirement of an aquifer test for a permit renewal or permit request for existing systems presents a challenge. The test takes 48 hours of pumping without restrictions and another 24 hours of down time for aquifer recovery. Utilities frequently do not have enough storage capacity for the 72-hour period, so they have to haul water to continue uninterrupted service. Mr. Dame suggests not requiring an aquifer test on small existing systems or on permits if an additional allocation of less than 25 percent is requested.

4. New permits have "use or lose" conditions that give DEQ the right to modify the permit if the allocation is not used. According to Mr. Dame, this places a burden on the locality that is trying to attract business but does not have a secure water resource for the future; DEQ, however, has indicated it will work with the locality to obtain the necessary allocation.

5. There are inconsistencies between Virginia Department of Health (VDH) and DEQ regulations regarding well testing and Equivalent Residential Connections, making it difficult for a locality to supply water to its citizens. To address this, he recommends that VDH and DEQ have the same regulations for well construction and testing.

6. A significant financial burden is placed on applicants to provide well-monitoring equipment. Although Mr. Dame acknowledges that monitoring is important, he would like to see the state pay for the monitoring of wells and require the permit holders to provide the land.

7. With the adoption of a new ground water model by DEQ, which combines the Upper, Middle, and Lower Potomac Aquifers to determine the impact of water withdrawals, localities may be required to raise their pumps, which were previously set, in the case of New Kent County, for the purpose of monitoring the Middle Peninsula Aquifer. Mr. Dane acknowledged that monitoring is necessary; however, raising the pumps to the top of the aquifer will be a costly requirement and may take up to three years to complete.

Mr. Dame concluded by urging that consideration be given to the use of reclaimed water when discussing establishing ground water management area and attendant regulations. Many industrial and commercial users of ground water have the ability to use reclaimed water, thereby saving the declining ground water supplies for human consumption. His office has received, from DEQ, 13 ground water permit applications for review and comment. Seven of these applications listed irrigation as the use. He noted that reclaimed water "could easily handle these requests." He suggested that stress on the ground water aquifers could be reduced if incentives could be put in place for those permit holders who offer reclaimed water services. Reiterating Mr. Mansfield's statements, Mr. Dame acknowledged that HRSD is the largest provider of wastewater treatment within the management area and has the capacity to supply the two largest withdrawers of ground water: the paper mills at West Point (23 MGD) and Franklin (32 MGD).

However, HRSD has no incentive to provide reclaimed water to either of these facilities, nor do these facilities seek reclaimed water because they have withdrawal permits. If the state would work with these larger users and HRSD to develop a strategy for using reclaimed water, according to Mr. Dame, "it could free up over 20 billion gallons of ground water annually."

Upon conclusion of the presentation by local government officials, Commission Chairman Thomas Wright requested that Mr. Paylor respond to their concerns. Mr. Paylor provided a written response that appears as Appendix A of this report.

3. Finding Virginia's Water Balance; Plan for the Future

Ms. Rebecca Rubin, President and CEO of the environmental consulting firm Marstel Day, discussed opportunities to engage the business sector in the development of water-related policies. She indicated that CEOs and business leaders nationwide are increasingly aware of water-related risks to their businesses and are interested in their companies' playing a role in developing a solution. She also believes it is important to work with public water providers and local governments to consider additional strategies for water use reductions and efficiencies. Ms. Rubin emphasized that Virginia is "ripe for the right kind of business development; those that are low impact and water smart." Businesses will weigh such investments against the challenges they face in an increasingly water-stressed region. She questioned whether Virginia's current policies support water-use innovation in a meaningful way. For instance, one policy that focuses on ground water sustainability is the maintaining of recharge areas to replenish ground water. Aquifer storage and recovery (ASR) is a specific type of aquifer recharge practice that augments ground water resources and recovers water for future uses. This approach is used (i) as a substitute for augmentation of surface storage, (ii) to allow ground water pumping to continue while protecting against saltwater intrusion, (iii) to prevent drying of wetlands, (iv) as an emergency supply in the event that surface water sources are disrupted, and (v) as a means of putting recycled water into reuse for domestic and other purposes.

She noted that the limited understanding and adoption of water conservation and appropriate use measures hinder the opportunity to provide a sustainable ground water resource. Going forward, Ms. Rubin recommended that Virginia adopt an approach that includes the following six interrelated strategies:

- Build initiatives already underway in Virginia. A number of projects have been undertaken in several localities that have focused on (i) water reclamation and reuse programs that conserve drinking water, (ii) reducing surface water withdrawal, (iii) providing alternatives in times of peak demands, (iv) keeping pace with population growth, and (v) cost effectiveness.

- Identify states with successful legislative/regulatory approaches. Florida has enacted laws that make water conservation and reuse of reclaimed water state objectives and proclaim that water conservation and reuse are in the public interest. Every wastewater treatment facility or any applicant for a consumptive use permit is required to conduct a reuse feasibility study and must implement water reuse policies. Currently, according to Ms. Rubin, Virginia's reclamation and reuse program is voluntary. She recommends that Virginia adopt, by statute or regulation, a policy that reclamation and reuse is in the

public interest and that tax incentives and tax credits be provided to end users in order to create demand for such policies.

- Work with significant withdrawers of ground water, including the manufacturing sector and public water withdrawers that are responsible for approximately 80 percent of the ground water withdrawals. The CEOs of major manufacturers and local officials should be invited to a strategy session to develop a plan to reduce the amount of water used and increase the opportunities for water reuse. Such strategies could include homeowner, builder, and commercial business incentives and building code enhancements.

- Address underreporting of water withdrawals. It is difficult to chart a course for a sustainable future water supply if laws and regulations allow for unknown quantities of water to be withdrawn. According to Ms. Rubin, approximately 90 percent of all existing surface water withdrawals are excluded from Virginia Water Protection (VWP) permit requirements. To address the current situation, she suggests the following policy options: (i) amend the Ground Water and Surface Water Management Acts as well as the VWP permit regulations to require permits for withdrawals, including for agriculture, to be set at certain levels based on gallons per month (e.g., 25k, 50k, 100k); (ii) require all nonresidential users to gauge and report when their average daily withdrawal in any single month exceeds 10,000 gallons; and (iii) explore concepts such as capping of withdrawals from basins and aquifers.

- Explore aquifer storage and recovery mapping, modeling, and recharge techniques. A significant factor in ground water sustainability is maintaining recharge areas to replenish ground water. One approach to ensuring aquifer recharge is ASR. The aim of such an approach is to both augment ground water resources and recover the water in the future for various uses.

- Funding options for water infrastructure. There are several alternatives for financing water infrastructure beyond the current approaches. The state should work with various conservation organizations, such as The Nature Conservancy and The Trust for Public Land, which have experience in this area, and develop conservation financing techniques. A second option is to attract investment in the transportation of water and conservation of the resource. This could include making it a high priority that industries and developers provide proffers to contribute to "water transportation infrastructure"; provide accelerated tax write-offs to the industry for conservation and priority water transportation investments; and establish a water infrastructure investment fund to attract proffers and other private marketing investments (i.e., creation of a public-private partnership for water infrastructure).

B. State Water Resources Plan

In 2010, the Commission recommended legislation establishing an advisory committee to assist DEQ in developing, revising, and implementing the State Water Resources Plan (SWRP). The 25-member Advisory Committee was composed of representatives of industrial and municipal water users; public and private water providers; agricultural, conservation, and

environmental organizations; state and federal agencies; and university facility with expertise in water resources-related issues. The Advisory Committee, operating under a two-year sunset provision, was to review a number of issues related to the formulation and implementation of the SWRP. Among the issues to be examined were:

- Procedures for incorporating local and regional water supply plans into the State Water Resources Plan and minimizing potential conflicts among the various submitted plans;

- Development of ways for calculating actual and anticipated future water demand; and

- Opportunities for use of alternative water sources, including water reuse and rainwater harvesting.

Mr. Arthur Petrini, the Director of Public Utilities for Henrico County and a member of the Advisory Committee, presented its findings and recommendations (Appendix B). He noted that all localities have analyzed their current and future water supply sources and demand needs and the vast majority of the submitted plans (38 out of 48) are regional plans. He emphasized that the SWRP is integral to "Virginia's future ability to thrive while protecting in stream and off stream uses." He highlighted two recommendations of the Advisory Committee. The Advisory Committee recommended a proposed structure and content for the SWRP, which is found in Appendix 4 of the Advisory Committee's report. The eight headings and numerous subheadings in the appendix, according to Mr. Petrini, "offer a comprehensive listing of subjects that the Committee feels will produce a very functional plan." These include an overview of Virginia's water resources planning process; Virginia's water resources; water use; water management framework; comparison of water supply and water use; current and potential water supply problems; potential management strategies to address water problems; and issues of special concern. The second recommendation (Recommendation 9D) calls for the extension of the Advisory Committee beyond the December 31, 2012, sunset date. The Commission agrees that the Advisory Committee should continue to assist DEQ in the development and implementation of the SWRP; however, and with the assurance from the agency that it would continue working with members of the Advisory Committee, the Commission finds no need to statutorily extend the authorization for the Advisory Committee.

Mr. Scott Kudlas, Director of DEQ's Office of Water Supply, commented on the work of the Advisory Committee. He indicated that members of the Advisory Committee not only effectively represented their constituencies but provided valuable input that will enhance the water supply planning process. He pointed to three important aspects of the Advisory Committee's work: (i) recognition that its work is the first step in an ongoing process; (ii) the strong desire of the Advisory Committee that the momentum created by its work continue; and (iii) a sense of shared responsibility that characterized its deliberations. Mr. Kudlas indicated that the agency intends to adopt the "table of contents" recommended by the Advisory Committee in organizing the draft of the first SWRP. He expects that the narrative of the plan will be completed in early 2014. The agency has completed its reviews of all but five of the submitted local and regional plans. It is also conducting quality control analyses of the data included in the plans. The data will then be incorporated into cumulative impact models for each of Virginia's river basins. The model for the Roanoke River Basin has been completed, and the staff is

currently working on developing the impact model for the Shenandoah River Basin. The expectation is that the models will be completed by December 2014.

II. FINDINGS AND CONCLUSIONS

The Commission has received extensive testimony describing the stress being placed on our ground water resources in Eastern Virginia. The Commission finds that the State Water Control Board's action to extend the current management area northward to include certain localities in Northern Virginia is an appropriate decision and concludes, in agreement with Mr. Paylor, that additional strategies will need to be adopted to ensure a sustainable ground water resource in Eastern Virginia. The testimony of several speakers recommended policies that (i) promote and encourage the reclamation and reuse of water by lowering regulatory hurdles while at the same time protecting public health, (ii) provide incentives for reducing the amount of ground water withdrawn for industrial use while insuring an adequate amount for potable uses, and (iii) attract investments in infrastructure for the transportation and conveyance of water for industrial and domestic uses. Mr. Paylor assured the Commission that DEQ will examine a wide range of policies aimed at protecting ground water in Eastern Virginia. The Commission looks forward to reviewing any statutory or regulatory recommendations from DEQ that will enable the agency to institute an effective, comprehensive policy ensuring the sustainability of Virginia's ground water resources.

With respect to the development and implementation of a state water resources plan, the Commission is encouraged by the progress being made on the SWRP and would hope that DEQ will continue to work with a group of stakeholders, including representatives of local and federal governments, water users and producers, and agricultural, conservation, and environmental interests, in developing a 30-to-50-year road map for meeting Virginia's water needs. The Commission during the next year intends to continue to examine the status of the various efforts to protect Virginia's water supply and monitor the development of the statewide plan.

Respectfully submitted,

Delegate Thomas C. Wright, Jr.
Senator Emmett W. Hanger, Jr.
Senator Creigh R. Deeds
Senator John C. Miller
Senator Frank M. Ruff, Jr.
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Mr. Michael T. McEvoy

APPENDIX A

COMMONWEALTH of VIRGINIA

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September 4, 2013

The Honorable Thomas C. Wright
Chairman, State Water Commission
P.O. Box 1323
Victoria, VA 23974

Dear Chairman Wright:

Thank you for the opportunity to present information on the challenges we face with managing the coastal aquifer system. While this is a significant challenge, there is sufficient time to act responsibly. This is an important issue for the Commonwealth that will require a calibrated and measured response.

Commission staff has communicated your desire for us to address the local concerns heard at your July 16, 2013, meeting. What follows is our response to these concerns:

1. Service area expansions. *These changes are already allowed administratively. However, like many other permits issued by the Department of Environmental Quality (DEQ), when the total amount of the withdrawal increases or when the impacts change based on the inclusion of a new well, the permit must be reopened and amended.*

2. Permit processing times are slow. *Due to limited program resources, processing times for groundwater withdrawal permits can be up to two years or more. Ideally, permit review times should be closer to one year. DEQ is continuing to look at ways to improve permit processing including reducing modeling times significantly.*

3. Aquifer testing is a challenge. *DEQ staff goes to great lengths to eliminate the need for or to reduce the expense associated with aquifer testing. Applicants have significant advance notice of the need to conduct an aquifer test (usually 10 years). Unfortunately, even with advance notice, there are occasions when applicants fail to do the advance planning necessary to minimize the impact of the test on existing operations.*

4. Permits are based on 10 year need so it is a use it or lose it permit. *DEQ permits are based on what an applicant's actual projected need will be for the 10 year permit. If a projected need is not realized during the permit term, the applicant must re-justify that need for the next permit term. This has resulted in reduced permit allocations over time for some permittees. As we discussed on July 16, as we manage and try to stabilize the aquifer, there may be proportional reductions that need to be made to current allocations over time to prevent declines in groundwater levels, deterioration of groundwater quality, and subsidence.*

5. Inconsistencies between the Department of Health (VDH) and DEQ. *The two agencies have different missions and their regulatory standards are designed to meet their different missions. In a Ground Water Management Area (GWMA), it is a simple case of the more restrictive applies so there is no real conflict in fact. DEQ has the more restrictive testing requirements as it is designed to characterize an aquifer's response to the proposed withdrawal. The difference in the methodologies to project water supply need by the two agencies reflects their missions: the VDH method maximizes volumes to ensure a maximum amount of water can be delivered to customers, and the DEQ method minimizes volumes to ensure the minimum amount of water is used for the beneficial use allowed. Water conservation is not addressed by VDH.*

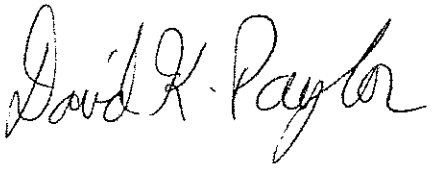
6. Groundwater monitoring is a financial burden. *For many years, the DEQ subsidized the responsibility of water users to monitor the impact of their use on water resources. This changed when state funding for this activity was eliminated. Now the costs associated with this impact monitoring have been placed on the user. DEQ has continued to cover operation and maintenance costs. More monitoring is helpful and it is expensive. In 2009, DEQ presented the Commission with the estimated $1-1.5 million per year cost estimate for re-establishing this program at a basic level of service.*

7. Raising pumps is expensive and takes time. *This is true. DEQ permits have a compliance schedule that considers: the costs of raising the pumps, the number of pumps to be raised, and the time necessary to raise the pumps. However, raising pumps is the single most effective means of reducing the loss of aquifer system storage, reversing the hydraulic gradient, and slowing subsidence.*

As I said in my testimony on July 16, we are continuing to evaluate the effectiveness of potential solutions with the expectation of having a comprehensive plan of action to recommend next year. The current condition of the coastal aquifer system is that it is over allocated. Because of the nature of this issue and the potential and possibly conflicting impacts on localities and other stakeholders, it will be important to develop a solution that achieves the water management objective while minimizing the impact to our economy and our communities.

Please let me know if you have any questions. My staff and I will also be available during the September 11 meeting to answer any questions that you and members of the Commission may have regarding these responses or about these issues generally.

Sincerely,



David K. Paylor

DKP:ewf

December 30, 2012

Dear Director Paylor:

Enclosed please find the final report of the State Water Supply Plan Advisory Committee. This report reflects the work of the Committee and its consensus recommendations on eight issues the Committee was tasked with examining by the General Assembly in 2011 (Va. Code § 62.1-44.38:2.), namely:

1. procedures for incorporating local and regional water supply plans into the state water resources plan and minimizing potential conflicts among various submitted plans;
2. the development of methodologies for calculating actual and anticipated future water demand;
3. the funding necessary to ensure that the needed technical data for development of a statewide planning process;
4. the effectiveness of the planning process in encouraging the aggregation of users into common planning areas based on watershed or geographic boundaries;
5. the impact of consumptive use and reuse on water resources;
6. opportunities for use of alternative water sources, including water reuse and rainwater harvesting;
7. environmental flows necessary for the protection of instream beneficial use of water for fish and wildlife habitat, and
8. the role of the State Water Control Board in complying with the state water resources plan.

In addition, the Committee has made recommendations regarding five other issues that we hope may enhance the effectiveness of water supply and water resources planning in Virginia. Those issues include: interbasin transfer, methods for calculating water supply, critical data gaps, extension of the Water Supply Plan Advisory Committee, and permitting for Water Supply Projects.

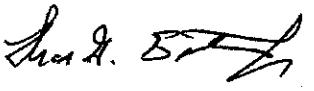
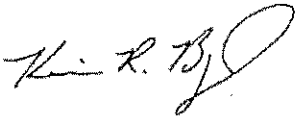
Not only did the full Committee meet several times since its inception in 2010, but there were also multiple sub-Committee meetings addressing the specific issues assigned by the General Assembly. The diversity of the membership you selected ensured that committee meetings did not lack for lively discussion. At the same time, the work of the committee was marked with respectful dialogue, a significant increase in mutual understanding among the interests represented, and a will for collaborative problem solving.

The Committee also considered input from non-Committee members. All of the Committee and sub-Committee meetings were open to the public, and non-Committee attendees provided helpful comments on the issues under consideration.

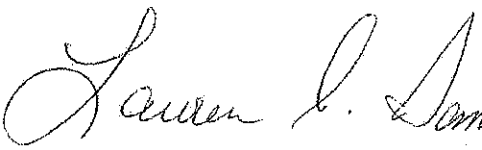
The Committee most sincerely thanks you for the opportunity to advise DEQ on the issues pertaining to the management of the waters of the Commonwealth, which we recognize as both life-sustaining and economically essential. We also commend DEQ staff for their consistent and dedicated work in support of the Committee, and for the greater purpose of wisely managing this public trust resource.

We respectfully request that you forward a copy of this report to the State Water Commission.

Committee Members

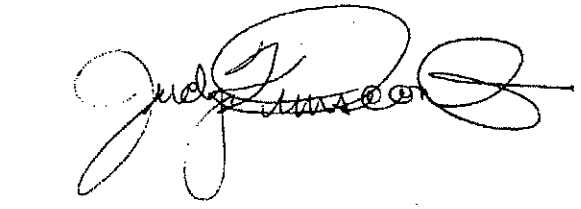
Name	Signature
John Aulback, II, PE	
Mark Bennett	
Tom Botkins	
Kevin Byrd	
John Carlock	

William Cox

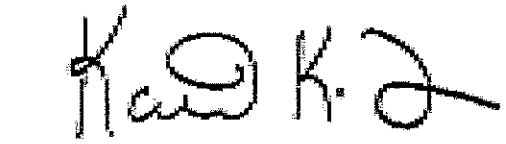


Larry Dame

Judy Dunscomb



Katie Frazier



Mike Lawless

Rick Linker

Mark Mansfield *(retired)*

Rob McClintock

Chuck Murray

John O'Dell

Art Petrini

Thomas J. Roberts

Digitally signed by Thomas J. Roberts
DN: cn=Thomas J. Roberts, o=RockTenn CP LLC, ou=West Point Mill, email=tjrobert@rocktenn.com, c=US
Date: 2013.01.07 15:23:44 -05'00'

Tom Roberts

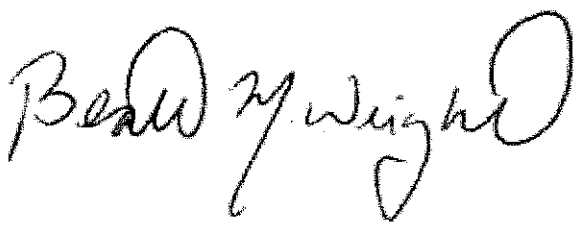
Scott Smith

John Staelin

Ed Tankard

Bob White

Beate Wright



Report of the State Water Supply Plan Advisory Committee to Virginia Department of Environmental Quality

Background

In 2003, the General Assembly tasked the State Water Control Board with developing a state water supply planning process and local, regional, and state water supply plans. Va. Code § 62.1-44.38:1. The State Water Control Board promulgated regulations in 2005 establishing the local and regional water supply planning process. 9 VAC 25-780-10 *et seq.* In accordance with those regulations, all local and regional water supply plans were submitted to DEQ by November 2011.

In 2010, the General Assembly required DEQ to establish a State Water Supply Plan Advisory Committee (the "Committee") to do two things: (1) advise DEQ in developing, revising and implementing a state water resources plan and (2) examine and make recommendations on eight different issues, as discussed in more detail below. Va. Code § 62.1-44.38:2. The Committee terminates on December 31, 2012. *Id.*

This report reflects the work of the Committee and its recommendations.

Mission Statement

The Committee agreed upon the following mission statement to guide its work:

Advise DEQ on the process of developing, implementing, and revising the Commonwealth's State Water Resources Plan (SWRP) to ensure water resources are utilized equitably/reasonably, efficiently, and sustainably for all beneficial uses.

Membership

A list of the Advisory Committee participants is attached as Appendix 1. The participants represent a diverse group of stakeholders. Additionally, all of the committee and subcommittee meetings were open to the public, and input was received from a number of people that attended and participated in the meetings as interested parties. The meeting minutes reflect input from both members and non-members.

Subcommittees

In addition to conducting its work through meetings of the Committee, the following subcommittees were established:

- Subcommittee 1 - Procedures for incorporating local and regional water supply plans into the SWRP
- Subcommittee 2 - Minimization of potential conflicts among various submitted plans
- Subcommittee 3 - Development of methodologies for calculating actual and anticipated future water demand
- Subcommittee 4 - impacts of consumptive water use and reuse on water resources; opportunities for use of alternative water sources, including water reuse and rainwater harvesting; environmental flows necessary for the protection of instream beneficial use of water for fish and wildlife habitat
- Subcommittee 5 – Other policies and procedures that may enhance the effectiveness of water supply planning and water resources planning in Virginia: interbasin transfer
- Subcommittee 6 – format of the final committee report to DEQ
- Subcommittee 7 – Other policies and procedures that may enhance the effectiveness of water supply and water resources planning in Virginia: Water Supply

The Committee accepted the recommendations of each subcommittee.

Meetings

The Committee met regularly to discuss issues and review the work of the subcommittees. The subcommittees met between the Committee meetings.

A list of the meetings held by the Committee and subcommittees is attached as Appendix 2.

Assumptions:

In making its recommendations, the Committee made the following assumptions:

- The primary purpose of the Committee is to provide advice on the eight issues listed in Va. Code § 62.1-44.38:2(B).

- The focus of the Committee is on how these issues will impact the state water supply planning process in Virginia.

- The evaluation of these issues must be done in the context of the existing regulatory framework.

- The terms "state water supply plan" and "State Water Resources Plan" are used interchangeably in the Code and the regulation. The Committee's intent is that they are one and the same and uses the term State Water Resources Plan (SWRP) in this report.

- Future work of the Committee, if its term is extended, could include evaluation of changes to the existing regulatory framework to resolve existing regulatory conflicts and other issues identified through initial and subsequent drafts of the SWRP.

Recommendations:

The Committee reached consensus on the following recommendations, organized by topics identified at Va. Code § 62.1-44.38(B). The reports of each of the subcommittees are attached as appendices to this Final Report. Those reports provide context and explanations for the recommendations included in this Final Report.

1. Procedures for incorporating local and regional water supply plans into the State Water Resources Plan and minimizing potential conflicts among various submitted plans.

A. Review of local and regional water supply plans.

Recommendations:

i. For the first local and regional water supply plan submittals, DEQ's review should consist of a determination of whether the local/regional plan is consistent with the water supply planning regulation. If it is not consistent with the regulatory requirements, DEQ should send the locality or region a letter identifying the components that are missing or incomplete and asking for a revision.

ii. DEQ should use the local/regional plans to identify potential issues such as potential conflict, public concern, and flaws in the alternatives analysis. Even though the local/regional plan may be consistent with the regulation, DEQ will outline these issues and request that the locality or region report on the progress toward resolving such issues in future submittals.

iii. The local/regional plans, along with DEQ's proposed findings, should be subject to public notice and comment in accordance with the state water supply planning regulation. Following the public notice and comment, DEQ will issue the consistency determination letter. The public comments received on the plans should be used by DEQ as part of the identification of potential issues or flaws in the plan that should be addressed before the next plan submittal cycle. The local/regional plans should not be presented to the State Water Control Board for approval.

B. Minimizing Potential Conflicts

Recommendations:

i. The SWRP should be used as an informational tool for future water supply decisions. The information derived from local and regional plans can be used to evaluate alternative water sources and to determine the extent of hydrologic conflicts between localities, regions, existing users, and other instream and offstream beneficial uses. This evaluation will also assess cumulative impacts to streams. DEQ will request that the locality(ies) address any conflict and report on the outcome in the next iteration of their local/regional water supply plan. Specifically, locality(ies) should identify the parties to the conflict and detail the final resolution or, if a resolution is not achieved, an explanation of attempts to resolve the conflict. These analyses will be included in the SWRP, which will identify conflicts and efforts to resolve the conflicts.

ii. When conflicts are identified, attempts should be made by the locality(ies) to address the conflict at the local level, with informal facilitation with DEQ staff, localities, and water users.

iii. DEQ does not currently have any authority to resolve conflicts within the context of the SWRP beyond identifying them and facilitating discussion between localities and regions. Under the current regulatory framework, conflict arising from efforts to implement the SWRP can be resolved through the following methods:

- Issuance of Virginia Water Protection permits,
- Litigation among parties,
- Creation or use of a legislative or voluntary body (such as a river basin commission), and
- Regulations (such as declaration of a Surface Water Management Area or Ground Water Management Area).

Because these procedures are available, the Committee recommends no additional authority be created to resolve conflict at this time.

C. Incorporating Local/Regional Plans into State Water Resources Plan

Recommendations:

i. Development of a SWRP offers the opportunity to assess statewide water resources and plan for the future. The initial version of the SWRP should identify state water management policies and programs for maximizing the beneficial use of water in the Commonwealth. The SWRP should include an overview of state management programs currently available to facilitate water's beneficial use.

ii. The Committee recommends that the SWRP follow the proposed structure and contents found at Appendix 4.

2. The Development of Methodologies for calculating actual and anticipated future water demand

Recommendations:

A. Each locality and region in Virginia is unique. The individual needs and resources of the localities and regions may result in application of different methodologies for calculating demand. The plan should allow for flexibility in the type of methodology applied.

B. All of the methodologies employed in the initial local and regional water supply plan submittals were reasonable and should be found to be consistent with the requirements of the planning regulation.

C. Further analysis will be needed as the planning process moves forward to determine whether a given methodology allows comparison across multiple plans.

D. DEQ should develop recommendations on demand methodologies and reasonable applicability that preserves flexibility and allows professional judgment in the choice of method to best characterize and address local circumstances, but enables comparison across multiple plans.

3. **Funding necessary to ensure that the needed technical data for development of a statewide planning process.**

Budget cuts at both the state and local levels have impacted the ability to obtain accurate data about the availability of surface and ground water in the Commonwealth. In addition to the costs associated with the equipment and manpower necessary to obtain the data, resources must also be devoted to ensuring that the data is properly understood, analyzed, managed, and made available for use in future local and regional water supply planning and permitting efforts. The availability of these data to support both permitting and planning decisions will significantly affect the reliability and sustainability of our water supplies.

Additionally, adequate staffing at DEQ is needed to ensure the thorough and timely review and approval of local/regional plans and development of a SWRP. Local/regional plans were submitted to DEQ between 2008 and 2011. None of the plans have been approved to date. Such a lengthy review process adversely impacts the planning process because localities lose momentum and engagement in the planning process; and it is difficult to maintain a consistency of thought, understanding, and interest.

Recommendations:

A. The Committee recommends that adequate resources be dedicated to enable DEQ to conduct timely reviews of the local and regional water supply plan submittals.

B. Dedicated funding for water supply-related staff and monitoring equipment should be included in the DEQ budget.

C. Tighter timeframes for the plan review process should be set to allow for a more effective and consistent planning effort.

4. Effectiveness of the planning process in encouraging the aggregation of users into common planning areas based on watershed or geographic boundaries.

The vast majority of localities participated in the development of a regional plan. Many of the regions are large and cover the entire territory within a given river basin. There are several regions, however, where greater regional cooperation would make sense in order to develop a truly sustainable water supply plan. Many of the planning areas and divisions were based on political jurisdictions which do not necessarily reflect watershed boundaries.

Allowing the additional time for localities working in a region to submit the plan was an effective way to encourage regional planning. Additional incentives are needed to ensure continued cooperation among regions and also to encourage greater regional planning efforts. The goal is to establish a planning process that allows for a more strategic determination of how to optimize Virginia's water resources through regional and watershed based planning. Broader regional plans that include consideration of the larger watershed are more likely to result in identification of more cost-effective water supply options that support a greater number of beneficial uses.

Recommendations:

A. As part of DEQ's review, recommendations should be made about which localities/regions should be working together. DEQ should facilitate regional cooperation and encourage regionalization in water supply planning through education, incentives, and other appropriate means.

B. The Committee supports the concept of regional water supply planning. The use of regional planning bodies, such as the planning district commissions and the Interstate Commission on the Potomac River Basin, allows for development of technical support and knowledge of the watershed for purposes of optimizing the resource and the planning effort. The Committee supports the concept of establishing other similar bodies (such as in the James River basin).

5. Impact of consumptive use and reuse on water resources.

The existing regulations do not always differentiate between consumptive and non-consumptive uses. Consumptive use has the greatest impact on water availability. The impact of consumptive uses on beneficial uses is and should continue to be evaluated in water supply planning and permitting. Currently the VWP regulation requires consultation with other agencies. The Water Reclamation and Reuse Regulation and its proposed amendments lack a requirement for agency consultation where there is a consumptive use.

Recommendations:

A. The water supply planning regulation should be amended to require localities and regions to estimate consumptive uses by purpose and volume in the planning area, to the extent practicable.

B. Consideration should be given to whether consumptive water users should be required to mitigate for their impact, possibly by constructing or financially contributing to reservoirs to be used for low flow augmentation.

Where consumptive uses are identified by DEQ as the source of conflict in a basin, the SWRP should include recommendations for what types of offsets for consumptive uses could occur, including construction of or financial contributions to reservoirs to be used for low flow augmentation.

6. Opportunities for use of alternative water sources, including water reuse and rainwater harvesting.

No single type of alternative water supply may be appropriate in all situations. Local conditions and cumulative impacts must all be taken into account. The planning process will help identify where alternative water sources are viable.

Water reclamation and reuse are alternative water sources that are useful and sometimes essential means of meeting water demand or other regulatory requirements. At the same time discharge of wastewater and ground water recharge are important sources of water to support instream and offstream beneficial uses.

Existing permitted discharges under the VPDES system may constitute important sources of water to downstream users. Conversion of VPDES regulated discharges to water re-use could have significant impacts to other beneficial uses.

Stormwater runoff can have a significant impact on instream hydrology. Stormwater reclamation and reuse efforts – including rainwater harvesting – are alternative water sources and may also have the potential to alter streamflow in ways that positively or negatively impact instream and offstream beneficial uses and groundwater. Currently there is not a strong regulatory connection between stormwater capture and instream flow protection. The issues associated with stormwater management require more thoughtful consideration and improved regulatory coordination.

Recommendations:

A. The Committee supports the cumulative impact analysis included in the proposed amendments to the Water Reclamation and Reuse Regulation as a tool to address potential impacts of water reuse projects on downstream users.

B. The Committee recommends that DEQ, DCR, and VDH evaluate stormwater as an alternative water source and opportunities for improved regulatory consideration of stormwater management issues, as part of the state water supply planning process.

7. Environmental flows necessary for the protection of instream beneficial use of water for fish and wildlife habitat.

The Virginia Code does not define environmental flows. For purposes of the Committee's evaluation, environmental flows are considered to be equivalent with flows needed to protect instream beneficial uses as defined by the Code.

Recommendations:

A. DEQ should continue to evaluate impacts to instream and offstream beneficial uses in evaluating local and regional water supply plans and permits, and develop improved technical tools and methodologies to quantify instream flow needs, non-permitted withdrawals and uses, ground water discharge to streams and other critical information needs.

B. DEQ should evaluate impacts of hydrologic and meteorological changes on a wide range of issues associated with water supply including sustainability, water quality, and demand patterns, as well as impacts to stream hydrology and biological communities.

8. Role of the State Water Control Board in complying with State Water Resources Plan.

During the 2012 General Assembly session, legislation was enacted that directs the State Water Control Board to "consult with and give full consideration to any relevant information contained in the state water supply plan." Va. Code § 62.1-44.15:20(C). The Committee makes the following recommendations about the role of the SWCB in complying with the SWRP.

Recommendations:

A. Planning should inform decision making but not dictate specific outcomes. Inclusion of an individual water development project in a local/regional plan does not constitute approval or endorsement.

B. The SWRP, in order to serve its intended purpose, should receive consideration in permitting decisions, together with all other relevant information. However, the SWRP itself will not include or endorse specific projects.

C. Permitting fact sheets employed in state proceedings should describe how local/regional water supply plans were evaluated in the permit process. The documentation in local/regional plans may be used to support a permit application.

9. Other Policies and Procedures that the Director of the Department of Environmental Quality determines may enhance the effectiveness of water supply and water resources planning in Virginia.

The following are issues and proposed solutions identified by the WSPAC and subcommittees that could enhance the effectiveness of water supply and water resources planning in Virginia.

A. Role of interbasin transfer in water management

Local/regional plans may identify alternative water sources that can only be accessed through an interbasin transfer. Several interbasin transfers already take place in Virginia. Interbasin transfers play a role in water supply management.

Recommendation:

Interbasin transfer is a basic water management tool that should be evaluated on a case-by-case basis, using the same process by which other proposed water uses are evaluated.

B. Methodology for Calculating Supply

Reasonable and defensible methods for evaluating safe yield are necessary to ensure the plans submitted support the objectives of the water supply planning regulation.

Recommendation:

DEQ should provide guidance to localities and their agents on safe yield evaluation for incorporation during the second iteration of plan submissions.

C. Data Gaps

Information requested by the regulation is not always available. This is due, in part, to a lack of reporting by the regulated community. There is also a lack of dedicated resources at both state and local levels to develop, gather, ground truth, and analyze the requested data. The resulting gaps in available data may compromise the ability of DEQ to develop a SWRP that fulfills its statutory obligations.

Recommendation:

DEQ should be given additional resources and authority to obtain data on ground water resources and unreported surface water and ground water withdrawals to give a more complete picture of available water supply to meet Virginia's needs now and in the future.

The SWRP should include recommendations regarding other critical sources of information needed to effectively manage water resources in the state, such as VDH's private well permitting program data.

D. Extension of Water Supply Plan Advisory Committee

The General Assembly directed the Water Supply Plan Advisory Committee to advise DEQ in developing, revising and implementing a SWRP. The SWRP has not yet been drafted. The committee terminates December 31, 2012.

Recommendation:

The Committee believes it would be useful to extend its term for another two years so that it can continue to advise DEQ on the development and implementation of the SWRP.

E. Permitting for Water Supply Projects

Major surface water supply and surface water withdrawal projects are subjected to permitting by agencies at both the state and federal levels. Given the time and resources DEQ has devoted to water supply management, permitting, and planning, DEQ can be an important advocate in related permitting proceedings.

Recommendation:

Projects that receive VWP permits from DEQ should receive full DEQ support in the federal permitting process.

Appendices

1. List of SWSP Advisory Committee Members and Subcommittee Members
2. Meeting Schedule for Committee and Subcommittees
3. Subcommittee Reports
4. Proposed Table of Contents for the SWRP

Appendix 1

List of State Water Supply Plan Advisory Committee Members
and Subcommittee Members

Name	Representing	Email
John Aulbach II, PE (Susan Douglas)	VDH	JOHN.AULBACH@VDH.VIRGINIA.GOV
Mark Bennett, Director Water Science Center	USGS, Virginia	mrbennet@usgs.gov
Tom Botkins	MeadWestVACO	thomas.botkins@mwv.com
Kevin Byrd	New River Valley PDC	kbyrd@nrvpdc.org
John Carlock	HRPDC	jcarlock@hrpdcva.gov
Dr. William Cox	VT-208	cox@vt.edu
Larry Dame, Director Public Utilities Dept.	New Kent County	ladame@co.newkent.state.va.us
Judy Dunscomb	The Nature Conservancy	jdunscomb@tnc.org
Katie Frazier Blair Krusz	VA Agribusiness	katie.agribusiness@att.net blair@agribusiness@att.net
Michael Lawless	Draper Aden	mlawless@daa.com
Rick Linker	Dominion Virginia Power	Rick.r.linker@dom.com
Mark Mansfield	Norfolk District, USACE	Mark.T.Mansfield@usace.army.mil
Rob McClintock	VEDP(Economic Development Partnership)	RMCCLINTOCK@YESVIRGINIA.ORG
Charles Murray General Manager	Fairfax Water	cmurray@fairfaxwater.org
John O'Dell	Water Well Solutions, LC	John@waterwellsolutions.net

Art Petrini Dept. of Public Utilities	Henrico County	Pet12@co.henrico.va.us
Tom Roberts	Smurfit Stone/Mission H20	tjroberts@smurfit.com
Scott Smith	DGIF	Scott.smith@dgif.virginia.gov
John Staelin	Clarke County Board of Supervisors	jstaelin@earthlink.net
John E. "Ed" Tankard	Tankard Nurseries	ed@tankardnurseries.com OR Sharon@tankardnurseries.com
Bob White	Region 2000	bwhite@region2000.org
Ms. Beate Wright Manager of Water Quality Loudoun Water	VA AWWA	bwright@loudounwater.org

ALTERNATES

Name	Representing	Email
Sam Austin Alt for Mark Bennett	USGS	
Paul Peterson Alt. for Beate Wright		
Andrea Wortzel Alt. for Tom Roberts	Hunton & Williams LLP	awortzel@hunton.com

Subcommittee 1: Procedures for incorporating local and regional water supply plans into a state plan **62.1-44.38:2.B.(i)**	Subcommittee 2: (Identification) Minimization of potential conflicts among various submitted plans. **62.1-44.38:2.B.(i)**	Subcommittee 3: Development of methodologies for calculating actual and anticipated future water demand **62.1-44.38:2.B.(ii)**
John Carlock (Whitney Katchmark)	Rick Linker	Art Petrini
Tom Roberts (Andrea Wortzel)	Chuck Murray	Wes Kleene
Judy Dunscomb	Donna Johnson for Katie Frazier	Mike Lawless
Scott Smith	Tom Botkins	Beate Wright
Bill Cox	Rob McClintock	Larry Dame (Mike Lang)
John Staelin	John O'Dell	Mark Bennett
Kevin Byrd	Greg Garman	Tom Roberts
Bob White	Mark Mansfield	Ed Tankard

Subcommittee 4:	Subcommittee 5:	Subcommittee 6:
Impact of consumptive use alternative water sources, including water reuse and rainwater harvesting; Environmental flows necessary for protection of instream beneficial use of water for fish and wildlife habitat **62.1-44.38:2.B.(v) (vi) (vii)**	Other policies and procedures that may enhance the effectiveness of water supply and water resources planning in Virginia: INTERBASIN TRANSFERS; DATA GAPS; EXTENSION OF WATER SUPPLY PLAN ADVISORY COMMITTEE; PERMITTING FOR WATER SUPPLY PROJECTS **62.1-44.38:2.B.(ix)**	Draft final report for WSPAC
Larry Dame	Bill Cox	Bill Cox
Beate Wright	Mike Lawless	Mike Lawless
John Staelin	Rick Linker	Andrea Wortzel
Tom Botkins	Tom Botkins	John Carlock
Rick Linker	Bob White	Judy Dunscomb
Chuck Murray (Traci Goldberg)	John Staelin	Rick Linker
Scott Smith	John Carlock	
Judy Dunscomb (Nikki Rovner)		

Subcommittee 7: Other policies and procedures that may enhance the effectiveness of water supply and water resources planning in Virginia: WATER SUPPLY **62.1-44.38:2.B.(ix)**
Chuck Murray
Beate Wright
Rick Linker

Appendix 2

Meeting Schedule for Committee and Subcommittees

WSPAC Meetings

August 31, 2010
December 2, 2010
March 29, 2011
August 3, 2011
November 4, 2011
February 29, 2012
May 3. 2012
June 28, 2012
October 3, 2012
December 12, 2012

Subcommittee #1

June 7, 2011
July 8, 2011
October 25, 2011

Subcommittee #2

June 30, 2011
August 1, 2011
October 13, 2011
August 8, 2012

Subcommittee #3

June 29, 2011
February 28, 2012

Subcommittee #4

February 28, 2012
April 5, 2012
April 30, 2012
December 12, 2012

Subcommittee #5

February 28, 2012

Subcommittee #6

April 30, 2012

Subcommittee #7

June 26, 2012

Appendix 3

Subcommittee Reports

Water Supply Plan Advisory Committee

Subcommittee #1

Develop procedures for incorporating local and regional water supply plans into a state plan.

The subcommittee has three recommendations:

Recommendation #1 - Preliminary Outline: State Water Resources Plan

Local and regional water supply plans provide essential input to the state water resources plan (SWRP). In order to identify contributions of these plans to the state plan more specifically, a preliminary outline for the SWRP is presented below.

Local and regional plans will make their major contributions to outline sections V through VIII while the earlier parts of the outline will be based primarily on statewide data collection programs and water management activities. In the original SWRP, sections V-VIII will be more preliminary in nature than the earlier sections due to the need to resolve inconsistencies among plans, address lack of completeness, and correct inaccuracies. While many of the local and regional plans may not display these deficiencies, the potential for problems exists due to lack of experience with the planning process and the evolving nature of standards to guide planning efforts.

I. Overview of Virginia's water resources planning process
   a. Background
   b. The 2003 legislation
   c. Implementation of a continuous planning process and creation of a state water resources plan
   d. Planning precepts
   e. Role of planning in water management
      i. Role of local water resources plans
      ii. Role of the state water resources plan and its relation to water-use permitting

II. Virginia's water resources
   a. The State's hydrology and water budget
   b. Streamflows in principal rivers
   c. Ground water resources

III. Water use
   a. Water withdrawal and consumption
      i. Virginia's water use reporting system
      ii. History and current trends in offstream water use
      iii. Current water withdrawals and consumption

1. Public water supply
2. Self-supplied domestic use
3. Self-supplied industrial use
4. Energy-related use
5. Other use

iv. Instream/environmental water use
1. Water quality considerations
2. Fish and wildlife considerations
3. Recreational considerations
4. Special instream needs determinations

IV. Water management framework
a. Federal-state relationship
b. State water policy
c. State controls over water use
i. Virginia Water Protection Permit
ii. Surface Water Management Area Act
iii. Ground Water Management Act
iv. Virginia water quality programs

V. Comparison of water supply and water use
a. Identification of water planning areas
i. Hydrologic boundaries vs. political boundaries
b. Projections of future offstream water demand
c. Potential impact of climate change on water availability
d. Current and future supply/demand comparisons by water planning area

VI. Current and potential water supply problems
a. Types of conflict
i. Offstream water use conflict
ii. Offstream/instream water use conflict
iii. Ground water conflict
iv. Ground water use/surface water use conflict
v. Water quality impairment of water supply
vi. Reservoir site protection
b. Current means to resolve conflict
c. Water management limitations
i. Inconsistent/incomplete policy
ii. Data/data collection inadequacies
iii. Limitations on state authority to regulate water withdrawal

VII. Potential management strategies to address water problems
a. Increased conservation/water reuse
b. Regionalization/interconnection of water supplies

c. Increased storage
d. Water transfers
e. Desalination
f. Water quality protection

VIII. Issues of special concern
a. Water supply/environmental problems requiring early attention
b. Critical infrastructure deficiencies
c. Needed changes to address water management deficiencies

Recommendation #2 – Approval of Local Water Supply Plans and the State Water Supply Plan

The water supply plan approval process will occur in two phases.

I. Local/Regional Plan Approval

DEQ's review will result in a determination of whether the local/regional plan is consistent with the water supply planning regulation. If it is not consistent with the regulatory requirements, DEQ will send the locality or region a letter identifying the components that are missing or incomplete and asking for a revision.

DEQ will also conduct a cumulative impact analysis by watershed and identify potential issues raised by the plan such as flaws in the alternatives analysis, potential conflict, public concern, etc. Even though the plan may be consistent with the regulation, DEQ will outline these issues and request that the locality or region work to resolve them before the next plan submittal cycle.

The local/regional plans, along with DEQ's proposed findings, will be subject to public notice and comment. Following the public notice and comment, DEQ will issue the consistency determination letter. The local/regional plans will not be presented to the Board for approval.

II. State Water Resources Plan

DEQ shall evaluate the local/regional plans on a cumulative basis, by watershed. The data produced in the plans shall be included in DEQ's Hydrologic Model. The data will be used to complete the SWRP, which shall be based on the outline above. The SWRP shall be subject to public notice and comment. The State Water Resources Plan will be presented to the Board, but the Board will not take any formal action on the Plan.

Recommendation #3 – Permitting and Water Supply Planning

Permitting fact sheets should describe how local/regional water supply plans were evaluated in the permit process. Projects that require federal permits that have been included in the SWRP shall receive the full support of DEQ, and DEQ will serve as an advocate for such projects in the federal permitting process.

State Water Supply Plan Advisory Committee
Subcommittee #2
Report - November 2011

Focus: (Identification) Minimization of potential conflicts among various submitted plans

Subcommittee Members: John O'Dell, Tom Botkins, Rick Linker, Rob McClintock, Mark Mansfield, Chuck Murray/Traci Goldberg, Greg Garman, Donna Johnson

Subcommittee Concurrence:

A. Subcommittee #2 submits the following observations to support their recommendation:

- The water supply planning process is not intended to be an allocation process; the permitting process addresses allocations. Instead, the planning process should be a source of information to the permitting and planning processes, riparian landowners, grandfathered users, and other instream and offstream beneficial users.

- The water supply planning process should only inform the permitting process. The State Water Control Board (SWCB) is not required to consider a plan in relation to a permit request. While no criteria exist for the use of plans in a permitting decision, the SWCB could ask DEQ staff for water supply plan input. However, information from a plan may not be the sole basis for a permit denial or issuance.

- Regulations contemplate that the first round of plans need a completeness certification from DEQ. If a locality meets all the requirements of the water supply planning regulation, even if source conflicts exist (e.g. (i) a plan lists ground water as a future source but ground water is not available, (ii) the plan conflicts with another submitted plan or (iii) the plan conflicts with current uses), they will be deemed consistent. For revised or updated plans, DEQ could exercise two choices if a conflict exists, 1) deem the plan inconsistent with regulations if known conflicts are not identified, or 2) provide a consistency determination if the plan properly identifies conflicts and reports on the efforts to resolve the conflicts in the plan.

- The initial iteration of the State Water Resources Plan (SWRP) will identify conflicts and when the subsequent regional/local plans are submitted these conflicts should be addressed. Language authorizing DEQ to require localities to address conflicts is found in 9 VAC 25-780-140-G of the water supply planning regulation which provides:

  G. In conjunction with the compliance determination made by the board, the state will develop additional information and conduct additional evaluation of local or regional alternatives in order to facilitate continuous planning. This additional

information shall be included in the State Water Resources Plan and used by localities in their program planning. This information shall include:
1. A cumulative demand analysis, based upon information contained in the State Water Resources Plan and other sources;
2. The evaluation of alternatives prepared pursuant to 9 VAC 25-780-130 B and C;
3. The evaluation of potential use conflicts among projected water demand and estimates of requirements for in-stream flow; and
4. An evaluation of the relationship between the local plan and the State Water Resources Plan.

- The SWRP has no completion deadline and the SWCB is not required to approve the SWRP.

- These recommendations are based on the current regulatory/legal framework and the subcommittee recommends no changes to the regulation regarding conflict resolution at this time.

B. Subcommittee # 2 recommends that the conflict resolution process could include four steps:

- Conflict Identification – After all local/regional water supply plans are submitted and evaluated, the alternative sources presented will be modeled within river basins to determine the extent of hydrologic conflicts between localities, regions, existing users and other instream and offstream beneficial uses, and whether an optimum combination of alternatives can meet the basin need with the available supply. DEQ will issue a letter to the locality(ies) with identified conflicts and explain the identified conflict, recommend the involved parties work out the conflict before their next update of the local/regional water supply plan, explain the recommended conflict resolution process (informal), and identify who at DEQ can be contacted for assistance. DEQ will request that the locality(ies) address the conflict and report on the outcome in the next iteration of their local/regional water supply plan. Specifically, locality(ies) should identify the parties to the conflict and detail the final resolution or, if a resolution is not achieved, an explanation of attempts to resolve the conflict. These analyses will be included in the State Water Resources Plan, which will identify conflicts and efforts to resolve the conflicts.

- Informal party-to-party resolution – When conflicts are identified, attempts should be made to address the conflict at the local level, with informal facilitation with DEQ staff, localities, and water users.

- Formal conflict mechanism (cooperative body/commission) – For certain identified conflicts, it might be an option to engage or create a legislative or voluntary body (such as a river commission) to resolve the issue.

- Very formal/regulatory (Surface Water Management Area, regulatory action) – For certain identified conflicts, it might be an option to declare a surface water management area or take other regulatory action.

State Water Supply Plan Advisory Committee

Subcommittee #3

Final Report

March 13, 2012

Develop methodologies for calculating actual and anticipated future water demand.

Subcommittee members: Art Petrini, Beate Wright, Larry Dame/Mike Lang, Tom Roberts, Ed Tankard, Mark Bennett, Wes Kleene, Mike Lawless

Subcommittee #3 was charged with developing methodologies for calculating actual and anticipated future water demand. Early in the process the subcommittee agreed that methodologies available must be flexible and not overly prescriptive. The subcommittee conducted an inventory of demand projections used in the Local and Regional Water Supply Plans submitted to DEQ. A summary table is attached.

Based on that inventory it was concluded that the methodologies used to determine future water demand were diverse but well documented. The water demand projections are based on currently available data and predictions of residential, commercial and industrial growth. Due to the uncertainty in such predictions and the length of the 30 to 50 year planning period, the demand projections should be carefully evaluated during each plan review and resubmittal cycle.

The water demand projections are based on population projections and water use projections. The water use projections are based on the nature of the projected population growth including type (e.g., residential vs. commercial), location with regard to water source and infrastructure, and future land use patterns.

Sources of population data and associated projections include:

- US Census (2000 or 2010, depending on date of plan)
- Weldon Cooper Center
- Virginia Employment Commission
- Comprehensive Plans
- Historic Growth Rates

Water demand projection methods include:

- Per capita consumption (gross vs. disaggregated)
- Land use / zoning maps / complete or partial build out

The single greatest variable in demand projection calculation process was the values used for per capita consumption. The values varied from gross per capita consumption (248 gpd/person) to disaggregated residential usage (75 gpd/person). The sources of the data and assumptions used were well documented in the plans so the differences among the plans can be fairly evaluated.

An additional source of uncertainty in the water demand projections is lack of data on agricultural use and lack of data regarding groundwater availability and use.

The subcommittee reached the following conclusions:

- Demand projection methodologies should not be prescriptive.
- The methodologies should maintain adequate flexibility to address local circumstances.
- Methodologies, data sources and assumptions should be well documented in the plans.
- As the planning process matures, or potential water supply shortages or conflicts are identified, some degree of standardization of methodology and data sources and assumptions should be considered so accurate comparisons and conclusions can be drawn from the projections. Particular consideration should be given to data used for per capita consumption in such cases.
- Local governments and water providers within watersheds should cooperate in evaluating future water demand and available supply in order to accurately manage water resources.

Subcommittee #3 has fulfilled its charge and no longer needs to meet.

State Water Supply Plan Advisory Committee

Subcommittee #4

Final Report

December 12, 2012

Subcommittee members: Judy Dunscomb, Larry, Dame, Beate Wright, John Staelin, Tom Botkins, Rick Linker, Chuck Murray/Traci Goldberg, Scott Smith

Impact of consumptive use and reuse on water resources

All uses are consumptive to some degree. It is the difference between what is withdrawn and what is returned to the stream that determines the impact on water availability. Water reuse is one use that generally affects the volume of water returned to the stream. The impact of all consumptive uses on beneficial uses is and should continue to be evaluated in water supply planning and permitting. Currently the VWP regulation requires consultation with other agencies. The Water Reclamation and Reuse Regulation and its proposed amendments lack a requirement for agency consultation where there is a consumptive use which could result in failure to identify conflicts with other beneficial uses.

Recommendation:

- DEQ should require localities and regions to estimate consumptive uses by purpose and volume in the planning area, to the extent practicable.
- DEQ should ensure that agency consultation occurs where there is a consumptive use of concern.

Where consumptive uses are identified by DEQ as the source of conflict in a basin, the SWRP should include recommendations for what types of offsets for consumptive uses could occur, including construction of or financial contributions to reservoirs to be used for low flow augmentation.

Opportunities for use of alternative water sources

Water reclamation and reuse are alternative water sources that are useful and sometimes essential means of meeting water demand or other regulatory requirements. At the same time discharge of wastewater and ground water recharge are important sources of water to support instream and offstream beneficial uses. Existing permitted discharges under the VPDES system may constitute important sources of water to downstream users. Conversion of VPDES regulated discharges to water re-use could have significant impacts to other beneficial uses.

Stormwater runoff can have a significant impact on in stream hydrology. Stormwater reclamation and reuse efforts – including rainwater harvesting – are alternative water sources and may also have the potential to alter streamflow in ways that positively or negatively impact instream and offstream beneficial uses and groundwater. Currently there is not a strong regulatory connection between stormwater capture and instream flow protection. The issues associated with stormwater management require more thoughtful consideration and improved regulatory coordination.

Recommendations:

- The Committee supports the cumulative impact analysis included in the proposed amendments to the Water Reclamation and Reuse Regulation as a tool to address potential impacts of water reuse projects on downstream users.
- The Committee recommends that DEQ evaluate stormwater as an alternative water source and opportunities for improved regulatory consideration of stormwater management issues.

Environmental flows for protecting beneficial instream water use

Environmental flows can be described as the quantity and timing of water flows required to maintain the components, functions, processes and resilience of aquatic ecosystems and sustain the goods and services they provide to people (TNC). Environmental flows include the instream beneficial uses described in Virginia Code § 62.1-10-11.

Recommendations:

- DEQ should continue to evaluate impacts to instream and offstream beneficial uses in evaluating local and regional water supply plans and permits, and develop improved tools to quantify instream flow needs, non-permitted withdrawals and uses, groundwater discharge to streams and other critical information needs.

DEQ should evaluate impacts of climate change on a wide range of issues associated with water supply including sustainability, water quality, and demand patterns, as well as impacts to stream hydrology and biological communities

Subcommittees 5, 6, and 7 had no final report, but took discussion to the full committee for inclusion in this report. See Section 9.

Appendix 4

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