University of Richmond Law Review

Volume 50 | Issue 1 Article 14

11-1-2015

Virginia's Water Resource Law: A System of Exemptions and Preferences Challenging the Future of Public Health, the Environment, and Economic Development

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VIRGINIA'S WATER RESOURCE LAW: A SYSTEM OF EXEMPTIONS AND PREFERENCES CHALLENGING THE FUTURE OF PUBLIC HEALTH, THE ENVIRONMENT, AND ECONOMIC DEVELOPMENT

Jefferson D. Reynolds *

INTRODUCTION

There is plenty of water in Virginia. The problem is there are plenty of people, too. As population growth in the Commonwealth continues to place higher demands on water resources, competition among users naturally rises. Water for energy production, agriculture, domestic, industry, and other uses becomes more difficult to allocate, resulting in winners and losers based on availability of supply. Although Virginia has adopted a permitting framework[1] to improve water resource management, exemptions and preferential treatment provided to riparian landowners and historic users in the Virginia Code are increasingly problematic.[2] These classes benefit from preferred legal status for water without regard to water availability, effects on other users, or whether it is being put to the most beneficial use.

Virginia's population of approximately 8.2 million people is expected to grow by over 1.6 million by 2030,[3] requiring significant

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Special thanks to Lara Dresser, J.D., M.L.S, for the thoughtful insights and supporting research that made this article possible.

1. VA. CODE ANN. § 62.1-44.2 to -44.34:28 (Repl. Vol. 2014).

2. *See id.* § 62.1-82 (Repl. Vol. 2014) (Water Power Development); *id.* § 62.1-243 (Surface Water Management Areas); *id.* § 62.1-44.15:22 (Surface Water Withdrawals); *id.* § 62.1-259 to -270 (Groundwater Management Areas and Withdrawals).

3. *See* U.S. Census Bureau, Population Div., *State Interim Population Projections* tbl.1 (Apr. 21, 2005), http://www.census.gov/population/projections/data/state/projectionsagesex.html (showing Virginia's 2030 projected population to be 9,825,019); *About Virgin-*

additional water supply. In the most densely populated areas of Virginia, ground water aquifers are already under stress[4] and surface water use is under-regulated.[5] Unless riparian, exempt, and historic users will fully participate in a management framework for efficient water allocation, availability of the resource will be difficult to manage, and the Commonwealth will not fully realize improvements in public health, the environment, and economic development. This article discusses the influence of population growth on water supply with an emphasis on how some classes of water users have effectively preserved their future of water prosperity in the context of a growing demand for water. An analysis is provided on the following topics to support the foregoing statement: (1) the state of Virginia's water resource and projected population growth; (2) the foundation of law giving rise to preference for exempt riparian and historic users; (3) Virginia's constitutional premise to responsibly manage water; and (4) proposals to revise key sections of the Virginia Code to optimize and prolong the resource in support of Virginia's public health, environment, and long-term economic growth.

I. POPULATION GROWTH AND THE STATE OF THE RESOURCE

A. *Population in Virginia*

Spend a crisp autumn day in the endless color of the Shenandoah and it is easy to understand why people want to live in Virginia; this is a beautiful place. Along with the aesthetic quality, Virginia has a high standard of living, a remarkable education system, and a robust economy that exported $19.2 billion in goods in 2014,[6] contributing to a ranking in the top ten economies in the nation[7] and number thirty-five in the world.[8] The U.S. Census

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ia, General Information, VIRGINIA.GOV, http://virginia.gov/connect/about-virginia (last visited Oct. 1, 2015) (stating Virginia's current population as of 2012 to be 8,185,866).

4. *See* VA. DEP'T OF ENVTL. QUALITY, OFFICE OF WATER SUPPLY, STATUS OF VIRGINIA'S WATER RESOURCES: A REPORT ON VIRGINIA'S WATER RESOURCES MANAGEMENT ACTIVITIES 11–12, 14, 58–59 (2014), http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterSupplyPlanning/AWRP_090814FINAL.pdf.

5. *See id.* at 19, 61.

6. VA. ECON. DEV. P'SHIP, *Robust Economy*, YESVIRGINIA.ORG, http://www.yesvirginia.org/ProBusiness/RobustEconomy (last visited Oct. 1, 2015).

7. *See* U.S. DEP'T OF COMMERCE, BUREAU OF ECON. ANALYSIS, WIDESPREAD BUT SLOWER GROWTH IN 2013 (2014), bea.gov/newsreleases/regional/gdp_state/2014/pdf/gsp

Bureau reports that between 2000 and 2010, Virginia's population increased from 7.079 million to 8.001 million people.[9] Virginia's population is expected to reach 8.917 million by 2020 and 9.825 million by 2030.[10] Virginia's economic success story is tied to a growing population that generates a strong work force, income and consumer spending power, taxation and revenue for government services and infrastructure, high gross domestic product, and economic development. Without added population, it would be difficult for Virginia's economy to grow.

Growth trends are most prominent in those localities that already have a high population and make the highest contribution to Virginia's economy. Data for 2010 shows that the five most populous localities are Virginia Beach, 437,994; Norfolk, 242,803; Chesapeake, 222,209; Richmond, 204,214; and Newport News, 180,719.[11] Since the 2000 Census, Virginia Beach rose by 3.0%, Norfolk by 3.6%, Chesapeake increased by 11.6%, Richmond rose by 3.2%, and Newport News rose by 0.01%.[12] Having the largest population of 1,081,726, Fairfax County increased by 11.5%.[13] Significant rises in population also occurred in Prince William, with a population of 402,002, increasing by 43.2%; Chesterfield, with a population of 316,236, rose by 21.7%; Loudoun, with a population of 312,311, rose by 84.1%; and Henrico, with a population of 306,935, increased by 17.0%.[14]

0614.pdf (last visited Oct. 1, 2015).

8. Virginia's Gross Domestic Product was $426.133 billion in 2012 and estimated to be $426.423 billion in 2013. *Id.* Compared to all domestic and world economies, Virginia ranks number thirty-five. *Id.*; *see also The World Factbook*, Country Comparison to the World, CENT. INTELLIGENCE AGENCY, https://www.cia.gov/library/publications/the-world-factbook/fields/2195.html#top (last visited Oct. 1, 2015) (comparing country GDP).

9. U.S. DEP'T OF COMMERCE, VIRGINIA: 2010: POPULATION AND HOUSING UNIT COUNTS: 2010 CENSUS OF POPULATION AND HOUSING tbl.1 (2012), http://www.census.gov/prod/cen2010/cph-2-48.pdf.

10. *See* U.S. Census Bureau, Population Div., *Interim State Population Projections: Population Pyramids of Virginia* (Apr. 21, 2005), http://www.census.gov/population/projections/data/statepyramid.html.

11. U.S. DEP'T OF COMMERCE, *supra* note 9, at tbl.4.

12. *Id.* at tbl.5.

13. *Id.*

14. *Id.*

B. *Demand for the Resource*

Next to air, water is our most immediate and critical resource for survival. It is difficult to quantify how much water Virginia needs to stay healthy and keep growing. Virginia currently uses over 7 billion gallons per day ("gal/d") of water,[15] and an added population of 1.8 million by 2030 will certainly increase demand for water to some degree. Using data for two of the more critical areas of water use, domestic and energy, some projections can be stated:

Domestic Use Projection: Assume a person uses 69.3 gal/d of water for all types of domestic use.[16] Multiplying that figure with 1.8 million produces a projection of an additional demand of 118.8 million gal/d of water.

Energy Use Projection: Electricity use is generally measured by household. Assuming that with an average household of three people, a population increase of 1.8 million would result in an additional 600,000 households in Virginia. Each household uses an average of 30.25 kilowatt-hour ("kWh") of electricity per day.[17] An average of 25–60 gallons of water is required to generate one kWh of electricity, depending on the type of generation facility (i.e., coal fired, nuclear, natural gas).[18] The-

15. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 23.

16. This is a conservative estimate. *See Water Questions & Answers: How Much Water Does the Average Person Use at Home Per Day?*, U.S. GEOLOGICAL SURVEY ("USGS"), http://water.usgs.gov/edu/qa-home-percapita.html (last visited Oct. 1, 2015) (estimating each person uses approximately 80–100 gal/d of water); *see also* Am. Water Works Ass'n, *Water Use Statistics*, DRINKTAP.ORG, http://www.drinktap.org/home/water-information/conservation/water-use-statistics.aspx (last visited Oct. 1, 2015) (indicating that on average, people use water in the following daily quantities: showers (8.8 gal.), washing clothes (10 gal.), toilets (8.2 gal.), dishwashing (.7 gal.), baths (1.2 gal.), leaks (4.0 gal.), faucets (10.8 gal.), and other uses (1.6 gal.)).

17. U.S. DEP'T OF ENERGY, *Frequently Asked Questions*, ENERGY INFORMATION ADMINISTRATION, (2009 data), http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3 (last visited Oct. 1,, 2015). Heating and ventilation systems are the largest energy consumers accounting for 44% of the electricity consumed by a Virginia household, followed by appliances at 38%, and water hearing at 18%. *Household Energy Use in Virginia*, ENERGY INFORMATION ADMINISTRATION (2009), http://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/va.pdf.

18. U.S. DEP'T OF ENERGY, ENERGY DEMANDS ON WATER RESOURCES: REPORT TO CONGRESS ON THE INTERDEPENDENCY OF ENERGY AND WATER 38 tbl. V-1 (2006). *Cf.* Andrew R. Fishbein, *Public Water Energy Efficiency*, J. SCI. POL'Y & GOVERNANCE (2014), http://www.sciencepolicyjournal.org/uploads/5/4/3/4/5434385/ar_fishbein_2014_public_water_energy_efficiency..pdf.

> se estimates result in a projected increased electricity demand of 18.2 million kWh per day and an increased water demand of 453 million gal/d to 1.089 billion gal/d.

The total increase in daily demand for water to service power and domestic use is projected to be 571.8 million gal/d to 1.542 billion gal/d. In addition, there may also be increases in water demand for other uses, including agricultural and landscape irrigation, manufacturing, mining, and aquaculture.[19]

The environment is the highest user of water supply.[20] The Clean Water Act[21] and Endangered Species Act[22] mandate the protection of in-stream flow to support assimilative capacity for water quality and habitat, but levels of flow are not specifically quantified by statute, nor are they generally considered in water use reporting protocols to assure flow regimes are maintained.[23] Assimilative capacity is the ability of a stream to reduce the concentration of contaminants through natural physical, biological, and chemical processes.[24] Considering all uses of water supply, the potential increase in demand is significant.

The projected amount of water supply required to support growth in Virginia is reasonably accurate, but any method utilized to project water use is problematic. New technology development and improved water conservation methods are difficult to characterize and quantify. It is impossible to know if 1.8 million people will come to Virginia by 2030. Further, water is not consumed in the sense that it will never be available again; it is merely returned to the hydrologic cycle where it is redistributed

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19. USGS estimates water use for eight sectors, including public supply, irrigation, aquaculture, mining, domestic, livestock, industrial, and thermoelectric. U.S. GEOLOGICAL SURVEY, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2005: CIRCULAR 1344 5 fig.1 (2009).

20. As a necessary water user, the environment is absent from water-use data reported by the USGS and the Virginia Department of Environmental Quality ("DEQ"). *See id.*; VA. DEP'T OF ENVTL. QUALITY, *supra* note 4.

21. *See* 33 U.S.C. §§ 1251–1387 (2012). DEQ regulates pollutant discharges pursuant to a delegated state program known as the Virginia Pollutant Discharge Elimination System ("VPDES"). *See* VA. CODE ANN. § 62.1-254 (Repl. Vol. 2014); VA. ADMIN. CODE § 25-151-10 (2014).

22. *See* 16 U.S.C. §§ 1531–1544 (2012).

23. *See id.*; 33 U.S.C. §§ 1251–1387 (2012).

24. U.S. ENVTL. PROT. AGENCY, ENVIRONMENTAL COMPLIANCE WORKSHOP: CLEAN WATER (2009), http://archive.epa.gov/pesticides/region4/ead/news/web/pdf/cwa_corrections_ga.pdf.

and a water supply natural selection occurs. The rate of natural water recharge in the hydrologic cycle and the rate of consumption are highly variable on a year to year basis.[25]

Finally, aggregated national statistics for water demand can also be misleading. National trends indicate demand for water is leveling or decreasing slightly in comparison to an increase in national population.[26] The data, however, is easily misinterpreted because water-supply service is provided by local water-supply authorities at the county and city levels. Communities with large or growing populations and stressed water resources do not necessarily mirror water demand trends at the national level. In contrast to national statistics, local water suppliers are generally in the best position to accurately determine water supply demand based on localized resource conditions and population projections.

C. *Ground Water and Surface Water Resources*

The areas experiencing the highest demand for water are also experiencing the most population growth. All of the highest growth areas are located in a physiographic province overlying a groundwater source known as the Coastal Plain Aquifer System.[27] The aquifer system is the only source of ground water for the overlying localities.[28]

All of the communities withdrawing water from the aquifer system are part of an established Groundwater Management Area subject to water conservation measures pursuant to the Groundwater Management Act ("GWMA").[29] An expansion of this

25. *See* Heejun Chang et al., *Sensitivity of Urban Water Consumption to Weather and Climate Variability at Multiple Temporal Scales: The Case of Portland, Oregon*, 1 INT'L J. GEOSPATIAL & ENVTL. RES. 1 (2014); U.S. Geological Survey, *Natural Processes of Groundwater and Surface-Water Interaction: The Hydrologic Cycle and Interactions of Ground Water and Surface Water*, USGS (Jan. 11, 2013), http://pubs.usgs.gov/circ/circ 1139/htdocs/natural_processes_of_ground.htm.

26. U.S. GEOLOGICAL SURVEY, *supra* note 19, at 44 fig.13.

27. *See* VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 15 fig.6 (identifying Groundwater Management Areas of Virginia and the physiographic province of the Coastal Plain Aquifer System); *see also supra* text accompanying notes 11–14 (discussing population growth in Virginia).

28. *See* VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 15 fig.6.

29. VA. CODE ANN. § 62.1-254 to -254-270 (Repl. Vol. 2014). The Eastern Virginia Groundwater Management Area and Eastern Shore Groundwater Management Area were both established pursuant to 9 VA. ADMIN. CODE § 25-600-20 (2014).

management area was adopted in 2013 to include all localities serviced by the Coastal Plain Aquifer System, including Northern Virginia.[30] A second Groundwater Management Area covers the Eastern Shore.[31]

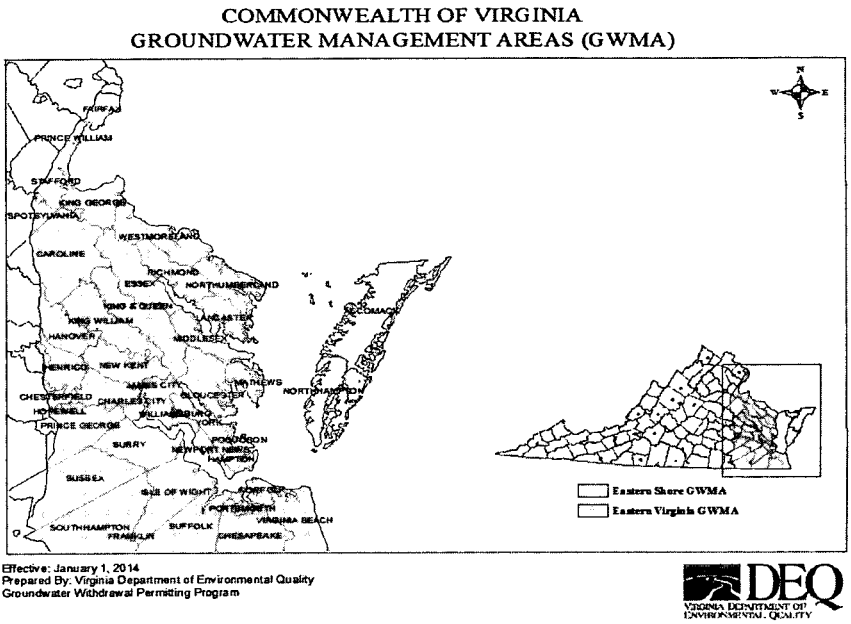

Figure 1. Virginia Groundwater Management Areas and the Coastal Plain Physiographic Province.

Although conservation efforts required by the GWMA are in place to help optimize and prolong the use of the aquifer system, recent data and modeling indicate that water withdrawals exceed the rate of recharge, and hydraulic head is in decline.[32] Even though Virginia averages nearly forty-three inches of precipitation annually,[33] the high rate of water withdrawals from a growing population will continue to degrade the aquifer system without more aggressive resource management. In addition, pumping

30. 9 VA. ADMIN. CODE § 25-600-20 (2014).

31. *Id.*

32. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 11–12, 58–59.

33. Bruce P. Hayden & Patrick J. Michaels, *Virginia's Climate*, UNIV. OF VA. CLIMATOLOGY OFFICE, http://climate.virginia.edu/description.htm (last visited Oct. 1, 2015).

has modified the original system conditions, causing land subsidence and a reduction in artesian pressure, known as "head."[34] Withdrawals occurring closer to the Atlantic Ocean are subject to salt water intrusion causing high concentrations of chloride contamination of fresh water supply.[35]

As early as 1996, hydrologists reported declining water levels in the Coastal Plain, with some hydrologists estimating a decline at a rate of 6.5 feet a year.[36] Land in the southeastern Coastal Plain subsided 24.2 millimeters at Franklin and 50.2 millimeters at Suffolk based on data reviewed for the period 1979 to 1995.[37] Cones of depression in the Piney Point, Aquia, and Potomac aquifers have reversed hydraulic gradients, resulting in saltwater intrusion.[38] Most recently monitored conditions indicate that water levels in some areas have declined more than 150 feet and water levels throughout the entire system continue to decline an average of 2.4 feet per year.[39] Data and trends for water demand indicate current rates of withdrawal from the aquifer system are not sustainable.[40] Sea level rise is also a significant contributing factor.[41]

In addition to ground water, communities in the Coastal Plain are serviced by surface water resources. As Figure 2 depicts, the primary river basins providing surface water include the Potomac, Rappahannock, York, and James. Areas with stressed surface water resources may be designated Surface Water Management Areas that require conservation measures.[42] Surface water and ground water are intimately linked in the hydrologic cycle.

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34. VA. WATER RESOURCE RES. CTR., A GUIDE TO VIRGINIA'S GROUNDWATER 16 (1997).

35. *See id.* at 19–20.

36. ROBERT E. MACE, PEER REVIEW OF VIRGINIA'S GROUNDWATER MANAGEMENT PROGRAM 3 (2011).

37. *Id.* at 4.

38. *Id.*

39. *Id.* at 12; *see also* VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 14.

40. MACE, *supra* note 36, at 4–6. The term "sustainable" is premised on a regulatory requirement that water levels cannot decline more than 80% of the difference between predevelopment water levels and the top of the aquifer. The standard is commonly referred to as the "80 percent criterion." 9 VA. ADMIN. CODE § 25-610-110.D.3(h) (2014). *See also* VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 59 (discussing potential effects of excessive water withdrawals).

41. *See* VA. INST. OF MARINE SCI., CTR. FOR COASTAL RES. MGMT., RECURRENT FLOODING STUDY FOR TIDEWATER VIRGINIA 85 (2013).

42. VA. CODE ANN. § 62.1-242 (Repl. Vol. 2014).

Reductions in available ground water frequently result in reductions to surface water because of lowering of the water table, increased infiltration, and reduced spring water production.[43] During extended drought, ground water may be the only source of water for stream flow.[44]

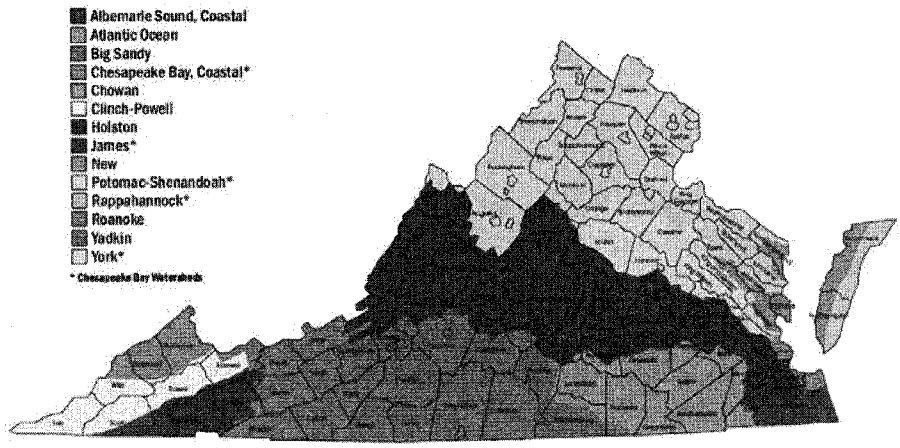

Figure 2. Virginia River Watersheds.

Although there are currently no Surface Water Management Areas in Virginia, this is not indicative of an abundance of surface water. As much as 90% of all existing surface water withdrawals in Virginia are excluded from permitting requirements and receive limited regulatory oversight.[45] As a result, there is limited consumer accountability, making management of surface water challenging and unpredictable.

D. *Monitoring Ground Water and Surface Water Resources*

Virginia's water resource monitoring system does not provide sufficient data for the areas where resource management is needed most. The Virginia Department of Environmental Quality

43. VA. WATER RESOURCE RES. CTR., *supra* note 34, at 8–9.

44. *Id.* at 10.

45. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 59. For a discussion of surface water withdrawal exemptions see Part II.C. *See infra* note 100; *see also* VA. CODE ANN. § 62.1-243 (Repl. Vol. 2014) (providing that a surface water withdrawal permit is not required for: (1) withdrawals of less than 300,000 gallons per month ("gal/m"); (2) withdrawals for non-consumptive use; and (3) any withdrawal in any area that has not been declared a Surface Water Management Area).

("DEQ") and the U.S. Geological Survey maintain a limited number of water monitoring stations to assess water supply.[46] Only ninety-eight surface water gauges were monitored for stream flow on an eight-week schedule for 52,232 miles of streams and rivers in nine major watersheds and 248 lakes covering approximately 162,000 acres.[47] A limited number of monitoring stations servicing large geographic areas does not produce sufficient, objective data sets over time, resulting in an inability to accurately evaluate water supply. There is a similar problem where ground water is concerned. Only 418 ground water monitoring stations are operating across the entire state.[48]

The number of water monitoring stations in Virginia for ground water and surface water has consistently declined over the last twenty years because of insufficient funding.[49] However, much like fuel or any other precious resource, accountability of water is required to fully understand supply, demand, pricing, and responsible management. Meaningful and sustained funding to support data collection and analysis is essential to accurately account for Virginia's water resources to project available supply.

The lack of monitoring by interested state and federal agencies is compounded by an inability to require comprehensive reporting of withdrawals from water users. DEQ adopted regulations in 1990 to require reporting of both surface and ground water withdrawals, but the regulations do not include enforcement authority.[50] As a result, many withdrawals continue to go unreported and unaccounted.[51] Legislation was introduced in the Virginia General Assembly during both the 2010 and 2011 sessions proposing

46. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 2.

47. *Id.* at 1–3.

48. *Id.* at 4.

49. *Id.* at 61–62.

50. DEQ has limited data for water withdrawals dating to as early as 1982 from voluntary reporting. VA. CODE ANN. § 62.1-44.38.C (Repl. Vol. 2014). Sections 25-200-20 to 25-200-30 of the Virginia Administrative Code require surface water withdrawal reporting for water resource management and formulation of "water supply plans . . . for consideration by the General Assembly and in delineating surface water management areas." 9 VA. ADMIN. CODE §§ 25-200-20–30 (2014). Agriculture withdrawals are required to report if their use exceeds 1 million gal/m. All other users with a withdrawal exceeding 300,000 gal/m must also report. *Id.* § 25-200-30 (2014).

51. Anyone withdrawing in one of the two existing Groundwater Management Areas is required to report how much water they withdraw, and the requirement does not apply outside of the management areas. VA. CODE ANN. § 62.1-244 (Repl. Vol. 2014).

more comprehensive reporting and clear enforcement authority.[52] Both measures failed,[53] suggesting opposition in some segments of the regulated community to require more comprehensive water accountability.

II. THE FOUNDATION OF LAW GIVING RISE TO EXEMPTION AND PREFERENCE

A. *Riparian Rights to Surface Water*

Since the earliest recorded history, there has been recognition that water should be managed as a precious public resource—"[b]y natural law the following things belong to all men, namely: mankind, the air, running water, the sea, and for this reason the shores of the sea."[54] In 528 A.D., Roman Emperor Justinian I ordered the first written compilation of laws that included sections for water resource management.[55] Emphasizing that water is a public resource placed in the government's trust to protect, the Justinian Code also provides the first evidence of riparian rights.[56] Water was vested in the public, but users living along shorelines retained the ability to use the water so long as it was returned in similar quality and quantity.[57] This legal principle is the foundation of English common law and subsequent American common law applied in Virginia.

The effect of the American Revolution on Virginia, as in other colonies, was the transfer of political power and sovereignty over land and water from the English Crown to the General Assembly

52. *See* H.B. 696, Va. Gen. Assembly (Reg. Sess. 2010); H.B. 1738, Va. Gen. Assembly (Reg. Sess. 2011).

53. *See* Va. Legislative Info. Sys., Bill List: Failed, H.B. 696 (Reg. Sess. 2011), https://lis.virginia.gov/cgi-bin/legp604.exe?111+lst+FAI; Va. Legislative Info. Sys., H.B. 1738 History: Vetoed by Governor (Reg. Sess. 2011), http://lis.virginia.gov/cgi-bin/legp604.exe?111+sum+HB1738 (last visited Oct. 1, 2015).

54. *See* 2 S.P. SCOTT, THE CIVIL LAW 33 (1932).

55. ROBERT SPEED ET AL., BASIN WATER ALLOCATION PLANNING: PRINCIPLES, PROCEDURES AND APPROACHES FOR BASIN ALLOCATION PLANNING 21 (2013).

56. *Id.*

57. S.P. SCOTT, *supra* note 54, at 34 ("The public use of the banks of rivers is also subject to the Law of Nations, just as the use of the river itself is; and hence anyone has a right to secure a vessel to them, to fasten ropes to trees growing there, or to deposit any cargo thereon, just as he has to navigate the river itself; but the ownership of the same is in those whose lands are adjacent, and therefore the trees growing there belong to them.").

"in trust for all the people of the state."[58] Whatever rights may have been conveyed in property or water by the English Crown, inclusive of grants and patents,[59] were subject to scrutiny because they were inconsistent with principles of *jus publicum* and the new democracy.[60] The authority to govern Virginia's resources was firmly placed in the General Assembly for the benefit of everyone in the new Commonwealth.[61] The independence of Virginia is also the point at which courts were no longer subject to the influence of the Crown, and an independent system of Virginia common law defining riparian rights began.

Riparian law in Virginia is premised on the principle that the surface water right is attached to the riparian land. Although there are similarities in application, riparian law does not apply to ground water.[62] The term "riparian rights" traditionally refers to a set of four common law benefits that accrue to the owner of land adjacent to water, including rights to: (1) access water and navigable channels; (2) build a pier to navigable water; (3) accretions or alluvium that may naturally occur; and (4) reasonable use of water without interfering with the reasonable use of others.[63] The fourth right is most relevant to water supply.

Riparian users have a tenuous and unpredictable hold on their water supply. A user's reasonable use is highly dependent on the reasonable use of others.[64] This is characterized as a usufructuary

58. ALVIN T. EMBREY, WATERS OF THE STATE, 135–36 (1931).

59. Crown grants and patents were introduced to the colonies to promote commerce and economic development. *Id.* at 130–34. The first Crown grants in Virginia were given by King James in 1606 with the instruction that the colony be "governed as near to the common laws of England, and the etiquely thereof." ALVIN T. EMBREY, HISTORY OF FREDERICKSBURG VIRGINIA 8 (1939). Language in Crown grants varies, but generally recognizes that riparian use is subject to "common" rights. Some Crown grants were specific to grant headwaters and segments extending from them, indicating the waterway and bottomland were part of the grant. This is rare. Generally, riparian rights were a vested right in the owner, but the right was also subject to the "commons" since waterways served as highways, sources of food, and were frequently used for commerce. EMBREY, WATERS, *supra* note 58, at 133–35.

60. EMBREY, WATERS, *supra* note 58, at 135–36.

61. *Id.*; *see also* Martin v. Waddell, 41 U.S. 367, 367–68 (1842) (explaining that water rights were vested in the people for their common use).

62. U.S. DEP'T. OF COMMERCE, PROCEEDINGS OF THE NATIONAL WATER CONSERVATION CONFERENCE ON PUBLICLY SUPPLIED POTABLE WATER 24 (1982).

63. Scott v. Burwell's Bay Improvement Ass'n, 281 Va. 704, 710, 709 S.E.2d 858, 861–62 (2011).

64. *See* DANTE A. CAPONERA, PRINCIPLES OF WATER LAW AND ADMINISTRATION 129 (1992).

or correlative right.[65] For example, in a long drought, users must share the burden of reduced in-stream flow by also reducing their proportional use. In practice, however, riparian use of water is not systematically coordinated or managed among users. Upstream riparian users may fail to accommodate usage reduction when required, leaving downstream users subject to loss of water supply and potential harm.

In this scenario, downstream users may pursue damages and equitable relief for the unfair treatment, but this requires complex, technical and sometimes lengthy litigation, the expense of which cannot usually be incurred by small users. If the conflict is litigated and a decision is rendered by a court, it has no res judicata.[66] In other words, there is no binding affect and there is no future application of the decision.[67] A court's decision would likely be limited to a determination of reasonable use among the parties for a specific set of water supply conditions and a specific set of uses.[68] The calculus for determining what is reasonable use is highly variable and uses that are adjudged reasonable one day may be unreasonable the next.[69] Finally, unless all riparian users in a stream segment are joined as parties to the litigation, a court's decision cannot comprehensively determine reasonable use and protect correlative rights.

Riparian users may change or increase their reasonable use.[70] As an example, a riparian farmer owns a 100-acre parcel near a stream for growing sweet corn. The farmer relies primarily on rain water to keep the field healthy and exercises his riparian right to irrigate the field only once or twice a year. The use main-

65. A. Dan Tarlock, *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881, 897 (2000).

66. Harold A. Ranquist, Res Judicata: *Will It Stop Instream Flows from Being the Wave of the Future?*, 20 NAT. RESOURCES J. 121, 123, 148 (1980).

67. *Id.* at 123.

68. *See* Davis v. Town of Harrisonburg, 116 Va. 864, 869, 83 S.E. 401, 403 (1914). The reasonable use of a stream is dependent on the physical qualities of the stream and the purposes it is made subservient. It is also dependent on "the ever-varying circumstances of each particular case. Each case must, therefore, stand upon its own facts, and can be a guide in other cases only as it may illustrate the application of general principles." *Id.*

69. Joseph W. Dellapenna, *Adapting Riparian Rights to the Twenty-First Century*, 106 W. VA. L. REV. 539, 558–61 (2004) (providing a discussion of legal and practical problems with riparian common law).

70. *See Davis*, 116 Va. at 868, 83 S.E. at 402–03 (discussing the increased withdrawal of a power company to generate power service to customers).

tains balance with other riparian users along the stream. Upon experiencing severe drought coinciding with the growing season, the farmer opts to irrigate the field three times a week. The result is a significant increase in the amount of water withdrawn from the stream and a reduction in the amount available to other riparian users. Overnight, the reasonable use of a riparian landowner may change and other riparian users may be required to adjust their reasonable use downward.[71] Adding to the problem, the other riparian users may also be affected by the drought and require more water. The combined increase may impact the physical, biological, and chemical qualities of the water, resulting in long term impairment of the resource for its users. This example demonstrates notable weaknesses in the riparian doctrine of law. There is no common law requirement for a riparian landowner to notify other users of an increase in water use. Additionally, there is no active management of increased water use to mitigate damage to the resource and other riparian landowners.

Perhaps, the most notable concern for riparian users is that their riparian rights are potentially subject to constructive loss through the continued expansion of water withdrawals under Virginia's water supply permitting program. The Virginia Water Protection ("VWP") permitting program is a statutorily mandated system supporting water supply management and planning. Generally, withdrawals above 1 million gallons per month ("gal/m") for agricultural producers and 300,000 gal/m for all other users require a VWP permit and reporting.[72] Administered by DEQ, the program provides a system of allocation and accounting of water supply through the use of individual permits specifying withdrawal rates and conditions to ensure balance with other users.[73] As more VWP permits are issued to allocate water supply, there is less water available for riparian landowners, resulting in water supply being constructively lost to permittees. Further, DEQ cannot fully account for the water supply needed by riparian landowners where those users do not register or report their water use.[74] The number of riparian withdrawals in Virginia is

71. *See id.*

72. 9 VA. ADMIN. CODE §§ 25-200-10–50 (2014); *id.* § 25-210-60.B (2014).

73. VA. CODE ANN. § 62.1-44.15:20 to :22 (Repl. Vol. 2014).

74. DEQ provides notice to interested parties, including riparian users, of agency permitting actions through individual letters, newspaper announcements, and internet posts to encourage riparian user involvement. *See* VA. CODE ANN. § 62.1-44.15:4 (Repl.

unknown, and there is no authority to regulate riparian users since they are managed under a common law system.[75] Awkwardly, the Virginia judiciary regulates a complicated riparian water supply with seventeenth century common law principles, while DEQ regulates non-riparian water supply on the basis of current science and engineering.[76]

Common law riparian rights and the VWP permitting program are inherently in conflict. Without comprehensive riparian registration and reporting, it is difficult to accurately predict available water supply, potentially resulting in permitting more users than the water source can actually supply. A riparian user has the right to challenge any state permitting action on the basis that it impairs their reasonable use and amounts to an unconstitutional taking of property.[77] However, such litigation may be complex, technical, lengthy, costly, and ultimately unsuccessful. If the riparian user challenges the validity of the permitting action, they must prove that the permitting action is not supported by substantial evidence or, stated differently, is "arbitrary and capricious."[78] This is a difficult standard for litigants, especially if all statutory and regulatory requirements to issue the permit pursuant to the VWP program have been followed and riparian users have not registered or reported to provide notice of their water use.[79]

Vol. 2014); VA. ADMIN. CODE § 25-210-140 (2014).

75. *See* Thurston v. City of Portsmouth, 205 Va. 909, 911–12, 140 S.E.2d 678, 680 (1965).

76. *See id.*

77. *See* State Water Control Bd., Dep't of Envtl. Quality v. Crutchfield, 265 Va. 416, 427–28, 578 S.E.2d 762, 768 (2003). *See generally* United States v. 30.54 Acres of Land, More or Less, Situated in Greene Cty., 90 F.3d 790, 795 (3d Cir. 1996) (discussing constitutional takings); *In re* Waters of Long Valley Creek Stream Sys., 599 P.2d 656, 676 (Cal. 1979) (discussing constitutional permissions regarding riparian rights).

78. Bowman Apple Products Co. v. Va. State Water Control Bd., 50 Va. App. 383, 393–94, 650 S.E. 2d 548, 553 (2007).

79. A similar outcome could potentially occur where DEQ issues a permit that impairs the water quality of a riparian user pursuant to the Virginia Pollutant Discharge Elimination Program. *See* VA. CODE ANN. § 62.1-44.15(5) (Repl. Vol. 2014); 9 VA. ADMIN. CODE § 25-31-20 (2014). As a practical matter, DEQ provides notice to interested parties, including riparian users, of agency permitting actions through individual letters, newspaper announcements, and internet posts to encourage outreach and riparian user involvement. *See* VA. CODE ANN. § 62.1-44.15:4 (Repl. Vol. 2014); 9 VA. ADMIN. CODE § 25-210-140 (2014).

Despite the weaknesses inherent to common law riparian rights, it is apparent that efforts have been made in the Virginia Code to preserve them. For example, Virginia Code section 62.1-44.44, concerning the formulation of policy and planning for water supply in Virginia, states that "[n]othing in this chapter shall be construed as altering, or as authorizing any alteration of, any existing riparian rights or other vested rights in water or water use."[80] Interpreted strictly, this section provides comprehensive protection to riparian rights where water supply planning is concerned. It would be impossible for Virginia to administer any water supply planning program without potentially "altering" riparian rights, particularly where VWP permits are issued. Curiously, it is also impossible to protect riparian rights from being altered unless those rights are somehow systematically registered and use is reported to the state agencies responsible for water supply planning and management.

Section 62.1-253 of the Virginia Code concerns permitting withdrawals in the Surface Water Management Areas described above. This section states that "[n]othing in this chapter shall be construed as altering, or authorizing any alteration of, any existing riparian rights except as set forth in permits issued pursuant to this chapter."[81] The construction of the statute appears to protect riparian users, even in a management area where water may be in low supply. The language is vague where permitting is concerned. Although unclear, it seems unlikely a riparian user would be required to obtain a permit without more specific statutory direction from the General Assembly on how to also avoid constitutional claims for taking. An alternative interpretation is that riparian users may simply be subject to whatever water supply remains as a result of permitting actions to non-riparian withdrawals in the management area. Virginia has not yet established a Surface Water Management Area and this issue would be considered *de novo* before Virginia courts.

Section 62.1-44.2 to 62.1-44.34:28 of the Virginia Code embodies the State Water Control Law and the VWP permitting program.[82] Noticeably absent in this part of the Code is any similar

80. VA. CODE ANN. § 62.1-44.44 (Repl. Vol. 2014).
81. *Id.* § 62.1-253 (Repl. Vol. 2014).
82. *Id.* §§ 62.1-44.2 to -44.34:28 (Repl. Vol. 2014).

reference attempting to preserve riparian rights.[83] The absence of a paramount riparian right in this section is not indicative of statutory authority to issue VWP permits trumping common law rights. Rather, it appears the General Assembly was silent on the matter. The absence of any direction on this issue potentially leaves riparian users at a significant legal and practical disadvantage. As permitting continues pursuant to the VWP program, riparian water rights will be constructively retired or users will be forced to challenge the VWP permits that impair their reasonable use. Riparian landowners could attempt to use language provided in section 62.1-44.15:22.A of the Virginia Code to defend their interest: *"existing beneficial uses shall be considered the highest priority uses."*[84] The phrase could reasonably be interpreted to establish preference for all existing users at their existing rates of withdrawal, including riparian users. Using other favorable language from the Code to determine the intent of the phrase, riparian users could attempt to leverage their common law riparian rights against VWP permittees. Such a theory could be difficult, however, where water supplies are declining and higher beneficial uses for water, like domestic use, are competing for the resource.[85] To the extent the statutory language in section 62.1-44.15:22 was designed to protect the doctrine of common law riparian rights, there can be little comfort that it is assured.

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83. Riparian users are identified in the notice section of the State Water Control Law. Although their rights are not specifically preserved, they may receive notice of permitting actions to determine any potential impairment to water quality or quantity that may occur. *See id.* § 62.1-44.15:4 (Repl. Vol. 2014); 9 VA. ADMIN. CODE § 25-210-140 (2014).

84. VA. CODE ANN. § 62.1-44.15:22.A (Repl. Vol. 2014) (emphasis added).

85. *See, e.g.*, Alliance to Save the Mattaponi v. Dep't of Envtl. Quality, *ex rel.* State Water Control Bd., 270 Va. 423, 621 S.E.2d 78 (2005), *cert. denied*, 547 U.S. 1192 (2006), *remanded to* 72 Va. Cir. 444 (2007). In considering a VWP Permit application for a reservoir project to service domestic water supply, State Water Control Board was required to balance the various competing uses and the statutory requirement to protect "existing beneficial uses." *Id.* at 437–38, 621 S.E.2d at 85–86. The court interpreted the phrase as requiring State Control Board

> to exercise its judgment to ensure that such uses be protected, not in an absolute sense and at the cost of rejecting any proposed future uses, but within a reasoned perspective in view of competing statutory considerations. Such exercise of discretion and judgment is a matter plainly contemplated by the Water Control Law and the Board's special level of competency in these matters.

Id. at 443, 621 S.E.2d at 89. Notably the Mattaponi Tribe did not specifically attempt to protect a riparian interest nor did the court incorporate into its analysis any section of the Virginia Code protecting riparian interests.

The riparian doctrine accommodated the needs of an agrarian society with little population early in Virginia's history; however, the increase in population and intensity of water use over time challenges the common law system's ability to adequately manage the resource, even among the community of riparian users. A riparian right is neither quantified nor fixed in time,[86] resulting in a fragile and unpredictable balance among other water users. There is no system actively managing riparian use, resulting in inefficiency and the potential for reasonable uses to exceed the capacity of the resource. The riparian doctrine does not recognize the need for minimum in-stream flow, potentially resulting in destructive practices that threaten water quantity and water quality for all users. Notably, public water suppliers require sufficient supply to service communities and industrial facilities require a predictable water supply to assure assimilative capacity for permitted pollutant discharge pursuant to the Clean Water Act.[87] The uncertainty of riparian uses ultimately threatens locality and industry investments in projects requiring assured water supply.

Riparian landowners can pursue legal relief to preclude VWP permits or seek damages for the taking of their riparian right, but they are subject to complex litigation, costs, legal scrutiny, no res judicata and a growing realization that equitable public resource management serves a broader interest. Statutes attempting to protect the riparian user in the Virginia Code are vague and generally unchallenged in Virginia courts. In the end, the rights of riparian landowners remain tenuous, the resource is inefficiently managed and maintenance of public health, the environment, and economic development is threatened by unpredictability.

B. *Withdrawals Outside Surface Water Management Areas*

Surface water withdrawals are permitted pursuant to the VWP program, a statutorily mandated permitting system supporting water supply management and planning. The program provides a system of allocation and accounting of water supply in each of Virginia's nine major basins.[88] Permits may limit the volume of

86. *See* Purcellville v. Potts, 179 Va. 514, 520–21, 19 S.E.2d 700, 702–03 (1942).

87. *See* 33 U.S.C. §§ 1251–1387 (2012).

88. VA. CODE ANN. §§ 62.1-44.15:20 to :22 (Repl. Vol. 2014).

water withdrawn and establish conditions to protect other beneficial uses.[89] Other beneficial uses may include protection of instream flow for habitat, assimilative capacity, recreation, and aesthetics, as well as public water supply, agriculture, power, and industrial use.[90]

Other than being a riparian landowner, the two ways to qualify for a VWP permit exemption are by rate of withdrawal or historic use. VWP permits are required for surface water withdrawals above 1 million gal/m for agricultural producers and 300,000 gal/m for all other users.[91] Stated another way, any withdrawal below these volumes does not require a VWP permit. DEQ reported in 2014 that there were only eighty-nine VWP permits in Virginia.[92] The second way to qualify for an exemption from permitting is to be a historic user.[93] The term "historic user" refers to withdrawals in existence on or before July 1, 1989.[94] Historic users do not require a VWP permit unless they decide to increase their withdrawal to the extent that it could influence the assimilative capacity of the water source and impair water quality.[95] As a practical matter, these users have an incentive to maintain their historic rate of use to avoid any influence on water quality and the necessity of a VWP permit. The identified groups of water users exempt from permitting contribute to the approximately 82%

89. *See* VA. CODE ANN. § 62.1-44.15:22.A (Repl. Vol. 2014).

90. According to section 62.1-44.3 of the Virginia Code, the term "beneficial use" means:

> [B]oth instream and offstream uses. Instream beneficial uses include, but are not limited to, the protection of fish and wildlife resources and habitat, maintenance of waste assimilation, recreation, navigation, and cultural and aesthetic values. The preservation of instream flows for purposes of the protection of navigation, maintenance of waste assimilation capacity, the protection of fish and wildlife resources and habitat, recreation, cultural and aesthetic values is an instream beneficial use of Virginia's waters. Offstream beneficial uses include, but are not limited to, domestic (including public water supply), agricultural uses, electric power generation, commercial, and industrial uses.

Id. § 62.1-44.3 (Repl. Vol. 2014).

91. *See* 9 VA. ADMIN. CODE §§ 25-210-50, 25-210-60.B.

92. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 19–20.

93. *See* VA. CODE ANN. § 62.1-44.15:22.B (Repl. Vol. 2014).

94. *Id.*

95. *Id.* § 62.1-44.15:22.B (Repl. Vol. 2014). Section 401 of the Clean Water Act requires pollutant dischargers to obtain a certification from the state where the discharge originates. 33 U.S.C. § 1341 (2012).

of existing surface water withdrawals in Virginia that do not require a permit.[96]

VWP permits are subject to lower priority in the system of water allocation. Where VWP permits are being considered for water withdrawals, section 62.1-44.15:22.A of the Virginia Code states that "*existing beneficial uses shall be considered the highest priority uses*".[97] As previously noted, the phrase could reasonably be interpreted to establish preference for all existing users at their existing rates of withdrawal, including riparian users. Riparian users could argue the phrase gives priority to their common law riparian rights in comparison to VWP permits impairing their reasonable use. The language is also flawed because it creates confusion when attempting to determine the highest beneficial use. The language implies that an existing recreational use, which is a "beneficial use" pursuant to section 62.1-44.3 of the Virginia Code,[98] could take priority over the installation of a new electric power generation facility to accommodate a growing population. The power facility takes lower priority to existing users pursuant to section 62.1-44.15:22.A of the Virginia Code.[99] The exemptions from the VWP program noted above combined with a reference giving priority and preference to "existing beneficial uses" creates confusion and reduces effective resource management.

C. *Withdrawals in Surface Water Management Areas*

There are currently no Surface Water Management Areas established in Virginia. The establishment of a Surface Water Management Area requires an assessment that: (1) low flow conditions threaten in-stream use of the water source; and (2) regulation is necessary for the protection of public health and the environment.[100] Withdrawal permits are required in Surface Water Management Areas to assist in management and responsible allocation of the resource.[101] However, statutory exemptions to permitting make it difficult to achieve these goals. For example, no

96. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 59.
97. VA. CODE ANN. § 62.1-44.15:22.A. (Repl. Vol. 2014) (emphasis added).
98. *Id.* § 62.1-44.3 (Repl. Vol. 2014).
99. *Id.* § 62.1-44.15:22.A. (Repl. Vol. 2014).
100. *Id.* § 62.1-246; *see* 9 VA. ADMIN. CODE § 25-220 (2014).
101. *See* 9 VA. ADMIN. CODE § 25-220-701.A. (2014).

permit is required for: (1) withdrawals that are less than 300,000 gal/m;[102] (2) beneficial consumptive withdrawals in existence on July 1, 1989, unless the withdrawal increases or is located in an established Surface Water Management Area;[103] and (3) locality and water company withdrawals in existence on July 1, 1989, unless the withdrawal increases or is located in an established Surface Water Management Area.[104] The last two exemptions correlate with the historic user exemptions in the VWP program described above. Notably, the exemptions also extend to riparian users. Section 62.1-253 of the Virginia Code states, "[n]othing in this chapter shall be construed as altering, or authorizing any alteration of, any existing riparian rights except as set forth in permits issued pursuant to this chapter."[105] These exemptions are operative in areas where low surface water flow threatens public health, the environment, and economic development.[106] It is counterintuitive that a statute presumably designed to optimize and prolong the water resource also "grandfathers" virtually any historic withdrawal existing prior to 1989, all riparian users, and then exempts all users less than 300,000 gal/m.

There are several problems with this approach. In densely populated areas the 300,000 gal/m or less exemption is typically composed of withdrawals from households, small developments, and businesses. As the population grows, so do the number of water users that qualify for a permit exemption. The growth of this class would place additional pressure on Surface Water Management Area water resources. In addition, so long as pre-1989 historic withdrawals maintain their rate of existing use, they are exempt from permitting.[107] This class of users acquires a right of preference that effectively locks in their rate of use, regardless of the in-stream condition of the resource or whether it impairs other beneficial uses.[108] In application, the framework of exemptions

102. VA. CODE ANN. § 62.1-243.A. (Repl. Vol. 2014).
103. *Id.* § 62.1-243.C. (Repl. Vol. 2014).
104. *Id.* § 62.1-243.B. (Repl. Vol. 2014).
105. *Id.* § 62.1-253 (Repl. Vol. 2014).
106. *See id.* § 62.1-242 (Repl. Vol. 2014).
107. *See id.* § 62.1-243.B(2) (Repl. Vol. 2014).
108. Section 62.1-242 of the Virginia Code defines "beneficial use" as:

> [B]oth instream and offstream uses. Instream beneficial uses include but are not limited to protection of fish and wildlife habitat, maintenance of waste assimilation, recreation, navigation, and cultural and aesthetic values. Offstream beneficial uses include but are not limited to domestic (including

serves to preserve water use levels at pre-1989 rates of withdrawal that presumably would have placed the resource at risk in the first place.

Similar to the VWP permitting program, management area permits are subject to lower priority in the system of water allocation. Where management area permits are being considered for water withdrawals, section 62.1-242 of the Virginia Code states, "[d]omestic and *other existing beneficial uses shall be considered the highest priority beneficial uses.*"[109] The phrase can be reasonably interpreted to establish preference for all existing users at their existing rates of withdrawal over a permitted withdrawal. Riparian landowners may also fall into the category of "other existing beneficial uses" using the phrase to prioritize their use over a permitted use. Finally, the language creates confusion when attempting to determine the highest priority beneficial use of the water. The language implies that a post-1989 withdrawal permit, even one necessary for new upgrades for power supply to a growing population, has a lower preference than pre-1989 and "existing" uses, regardless of whether those uses may be lower in importance than power supply. The exemptions from Surface Water Management Area permitting, combined with a reference giving priority and preference to "existing beneficial uses," creates confusion and challenges responsible management of the resource.

D. *Withdrawals Outside Groundwater Management Areas*

No permit is required to withdraw ground water in Virginia outside of a Groundwater Management Area.[110] Outside of a management area, common law principles of use apply. There are two common law bodies of law that have evolved in Virginia, the English Rule and the American Rule. The English Rule permits a landowner unlimited exploitation of the water found beneath the land.[111] The landowner may use as much of the ground water for

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public water supply), agricultural, electric power generation, commercial, and industrial uses. Domestic and *other existing beneficial uses shall be considered the highest priority beneficial uses.*

Id. § 62.1-242 (Repl. Vol. 2014) (emphasis added).

109. *Id.* § 62.1-242 (Repl. Vol. 2014) (emphasis added).

110. *Id.* § 62.1-259 (Repl. Vol. 2014).

111. *See* WATERS AND WATER RIGHTS § 7.02(c) (Amy K. Kelley ed., 3d ed. 2015).

any purpose irrespective of the effect on adjoining landowners.[112] The American Rule, the preferred rule among courts, permits the landowner to make reasonable use of ground water, but prohibits unreasonable withdrawals not connected with a beneficial use associated with ownership of the land.[113] An exception to the American rule is if the ground water is "percolating," which is water that is disbursed and not part of a discernible underground stream or body of water. If the ground water is percolating, then a landowner may make any reasonable use of the water even where a neighboring landowner may be entirely deprived of it.[114] Ground water in Virginia is generally presumed to be percolating under common law, unless proven otherwise by a landowner.[115]

The Virginia Department of Health has some authority over ground water and private wells pursuant to the Virginia Well Construction Act, but that authority emphasizes protection of personal health and hygiene rather than management of water supply. A "private well" means any well that "is usually intended for household, ground water source heat pump, agricultural use, industrial use, or other nonpublic water well."[116] All new wells require a permit.[117] Permits for private wells are issued to maintain drinking water and other public health standards without regard to any impairment to the ground water resource or if the water is being put to the highest beneficial use.[118]

The Virginia Department of Health indicates that private well use is on the rise:

> The majority of households in 60 of Virginia's 95 counties rely on private water supply systems. In 52 counties, the number of households using private wells is increasing faster than the number of households connecting to public water supply systems . . . . Of the

112. *See, e.g.*, *id.* § 20.03; *cf.* Heninger v. McGinnis, 131 Va. 70, 76–77, 108 S.E. 671, 673 (1921).

113. *See, e.g.*, Clinchfield Coal Corp. v. Compton, 148 Va. 437, 451–52, 139 S.E. 308, 313 (1927); Costello v. Frederick Cnty. Sanitation Auth., 49 Va. Cir. 41, 47 (1999) (Frederick County).

114. *Clinchfield*, 148 Va. at 446, 452–53, 139 S.E. at 311, 313.

115. *Id.* at 448, 139 S.E. at 311–12.

116. VA. CODE ANN. § 32.1-176.3 (Repl. Vol. 2011).

117. *Id.* § 32.1-176.5 (Repl. Vol. 2011).

118. *See id.* § 62.1-254 (Repl. Vol. 2014).

> more than one million households in Virginia using private wells, 92 percent also use septic systems.[119]

The high incidence of private wells used with septic fields requires careful operation of both systems to prevent contamination of ground water used for drinking and other domestic uses. There is no statutory requirement for private well users or commercial well drillers to report information concerning private wells, including location, construction, and water use.[120] Although the Department of Health shares information concerning private wells with DEQ to assist in water supply and water quality management, formalized reporting requirements would better accommodate protection of ground water resources to improve protection of ground water supply and public health.

E. *Withdrawals in Groundwater Management Areas*

In established Groundwater Management Areas, withdrawal permits are required to assist in management and responsible allocation of the resource pursuant to the Groundwater Management Act of 1992.[121] There are presently two Groundwater Management Areas in Virginia.[122] The establishment of a Groundwater Management Area requires an assessment that ground water levels are declining and that regulation is necessary for the protection of public health and the environment.[123] However, statutory exemptions provided in the Groundwater Management

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119. *Private Well Water Information*, VA. DEP'T OF HEALTH, http://www.vdh.state.va.us/EnvironmentalHealth/Onsite/regulations/PrivateWellInfo/ (last visited on Oct. 1, 2015).

120. The absence of a reporting requirement results in an inability to determine the impact of residential demands on local aquifer water supply. VA. DEP'T OF ENVTL. QUALITY, *supra* note 4, at 6. The Virginia Department of Health regulates private wells pursuant to sections 32.1-166.1 to 32.1-176.4 of the Virginia Code. VA. CODE ANN. §§ 32.1-166.1 to -176.4 (Repl. Vol. 2011). In an effort to ensure protection of public health and ground water quality for drinking water wells, the Virginia Department of Health requires a permit prior to the construction of any private well pursuant to section 32.1-176.5 of the Virginia Code. VA. CODE ANN. § 32.1-176.5 (Cum. Supp. 2014). A permit may also be required by DEQ if the well is located in a Groundwater Management Area. During Virginia's 2015 legislative session, the General Assembly passed H.B. 1871, amending section 62.1-258 of the Virginia Code to require certified well drillers to register wells being constructed in a Groundwater Management Area within thirty days of well construction. H.B. 1871, Va. Gen. Assembly (Reg. Sess. 2015).

121. *See* VA. CODE ANN. § 62.1-258 (Repl. Vol. 2014).

122. *See supra* notes 27–35 (discussing Virginia Groundwater Management Areas).

123. VA. CODE ANN. §§ 62.1-254 to -257 (Repl. Vol. 2014). *See generally* 9 VA. ADMIN. CODE § 25-610 (2014).

Act appear to run counter to the goal of responsible management and optimization of the resource. No permit is required for some types of withdrawals,[124] including withdrawals less than 300,000 gal/m.[125] In addition, historic users may continue to withdraw at their rate of historic use.[126]

The Groundwater Management Act begins with a protective statement of purpose; however, it provides little benefit to the resource where exemptions and preserved historic use is concerned. Section 62.1-254 of the Virginia Code says:

> [T]he continued, unrestricted usage of ground water is contributing and will contribute to pollution and shortage of ground water, thereby jeopardizing the public welfare, safety and health. It is the purpose of this Act to recognize and declare that the right to reasonable control of all ground water resources within this Commonwealth belongs to the public and that in order to conserve, protect and beneficially utilize the ground water of this Commonwealth and to ensure the public welfare, safety and health, provision for management and control of ground water resources is essential.[127]

A comparison of the stated intent of the Act runs counter to its required method of application. For example, the Groundwater Management Areas are established in the most densely populated areas of Virginia.[128] The 300,000 gal/m or less exemption is typically composed of household wells, small developments, and businesses. As the population grows, so does the number of water users that fall into this exempt class, placing additional pressure on ground water aquifer systems. Further, historic withdrawals acquire a right of preference that preserves their rate of use, regardless of whether it results in destruction of the aquifer system or whether it impairs other beneficial uses. Similar to the way surface water is required to be managed under the Virginia Code, the framework of exemptions and preserved historic uses for ground water serves to lock in water withdrawals at rates that

124. VA. CODE ANN. § 62.1-259 (Repl. Vol. 2014); 9 VA. ADMIN. CODE § 25-610-50 (2014).

125. VA. CODE ANN. § 62.1-259 (Repl. Vol. 2014); 9 VA. ADMIN. CODE § 25-610-50 (2014).

126. VA. CODE ANN. § 62.1-260 (Repl. Vol. 2014). The statute provides a methodology for ground water users to register their historic use and obtain a permit that adopts the rate of historic use. *See id.*

127. *Id.* § 62.1-254 (Repl. Vol. 2014).

128. *See supra* notes 27–35 and accompanying text for a discussion of Groundwater Management Areas and population.

pre-date the Groundwater Management Act. Those historic uses presumably contributed to the initial risk of over-allocation of the ground water resource. Further, the continued withdrawal of ground water at pre-1992 rates of use does nothing more than exacerbate the drawdown of the resource.

The problems with the Groundwater Management Act correlate with the condition of the Coastal Plain Aquifer System serving eastern and northern Virginia.[129] Although the Act was intended to help prolong water use, hydrologic modeling indicates withdrawals exceed the rate of recharge and the system is over allocated.[130] As the population continues to rise and more demands are placed on ground water, revisions in the law will be required to ensure the resource is responsibly managed and optimized for the benefit of all users.

III. THE VIRGINIA CONSTITUTION

The Virginia Constitution provides a clear ideological premise for responsible management of natural resources:

> To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources, [and] its public lands . . . . Further, it shall be the Commonwealth's policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth.[131]

A more powerful statement is provided by the Virginia General Assembly in section 62.1-44.36 of the Virginia Code, providing instruction on the content of water resource policy:

> Being cognizant of the crucial importance of the Commonwealth's water resources to the health and welfare of the people of Virginia, and of the need of a water supply to assure further industrial growth and economic prosperity . . . . In formulating the Commonwealth's water resources policy, the Board shall, among other things, take into consideration but not be limited to the following principles and policies: (1) *Existing water rights are to be protected and preserved subject to the principle that all of the state waters belong to the public*

129. *Id.*
130. VA. DEP'T OF ENVTL. QUALITY, *supra note* 4, at 11–12, 14, 58–62.
131. VA. CONST. art. XI, § 1.

> *for use by the people for beneficial purposes without waste*; (2) Adequate and safe supplies should be preserved and protected for human consumption, while conserving maximum supplies for other beneficial uses. When proposed uses of water are in mutually exclusive conflict or when available supplies of water are insufficient for all who desire to use them, preference shall be given to human consumption purposes over all other uses; (3) *It is in the public interest that integration and coordination of uses of water and augmentation of existing supplies for all beneficial purposes be achieved for the maximum economic development thereof for the benefit of the Commonwealth as a whole*; (4) In considering the benefits to be derived from drainage, consideration shall also be given to possible harmful effects upon ground water supplies and protection of wildlife; (5) The maintenance of stream flows sufficient to support aquatic life and to minimize pollution shall be fostered and encouraged.[132]

The referenced sections of Virginia's Constitution and Code assert invaluable evidence of the scope and purpose of water resource law in Virginia. However, it is impossible to achieve the desired "integration and coordination of uses of water" where the common law riparian system does not require it,[133] where codified law frustrates it, and where water users are well positioned to take advantage of it.[134] The Constitutional and policy premises are also in conflict with sections of the Code establishing water user preference. Those sections of the Code that provide exemptions, preclude alteration of riparian rights,[135] or that require preservation of historic use[136] are tailored for the narrow purpose of accommodating specific constituencies and to assure water prosperity to a limited number of users. This philosophy runs counter to the constitutional mandate to govern a publicly owned resource for the benefit of the entire Commonwealth.

There are few opinions from the Virginia judiciary that offer insight into how courts might view exempt riparian and historic users in conflict with other permitted users or users that do not have specific statutory protection. There is also little insight into

132. VA. CODE ANN. § 62.1-44.36 (Repl. Vol. 2014) (emphasis added).

133. *See supra* notes 70–79 and accompanying text for a discussion of the weaknesses of the common law riparian doctrine.

134. *See supra* notes 72–77 and accompanying text for a discussion of the absence of reporting and lack of enforcement of reporting.

135. *See supra* note 81 and accompanying text for a discussion of statutory protection of riparian users.

136. *See supra* notes 93, 103–04, 126 and accompanying text for a discussion of statutory protection of historic users.

how the protection of these users potentially conflicts with broad constitutional and policy statements tailored to the protection of water resources.

In an effort to promote responsible water management, state agencies, like DEQ, might defend its actions regarding the management of water resources through the assertion of constitutional authority. For example, police power provides sufficient authority to withstand a challenge from riparian or historic users for a taking[137] where a water supply program is properly administered to protect public health, the environment, or economic development. Private property rights, even water rights, are subject to extinction through police power for the common good of the public.[138] A key difference between the use of eminent domain and police power is that compensation is required when eminent domain is exercised to acquire property for public use while it is not required when police power is exercised for the purpose of public protection. In the event that the use of police power results in a reduction of property value, the landowner is not necessarily entitled to compensation or damages.[139] A state's police power is generally given the broadest application and courts are reluctant to place limits on it.[140] In practice, landowners have absolute title to their riparian property, but ownership is subject to the restriction that it cannot harm others and that the state may exercise police power to ensure protection of a public resource.[141] A pure and adequate water supply being so critical to the welfare of

137. Article I, section 11 of the Virginia Code states "[t]hat no person shall be deprived of his life, liberty, or property without due process of law; that the General Assembly shall not pass any law impairing the obligation of contracts . . . , [nor any law whereby] private property shall be damaged or taken for public use, without just compensation." VA. CONST. art. I, § 11. The term "public uses" contemplates acquisition by public entities such as localities and public utilities. VA. CODE ANN. § 1-219.1.A (Repl. Vol. 2014). The section does not contemplate a potential taking occurring under DEQ's VWP program to allocate water to both private and public users with competing interests.

138. *See* Commonwealth *ex rel.* State Water Control Bd. v. Cty. Util. Corp., 223 Va. 534, 542, 290 S.E.2d 867, 872 (1982) (citing Weber City Sanitation Comm'n v. Craft, 196 Va. 1140, 1148, 87 S.E.2d 153, 158 (1955)); *see* Baumann v. Smrha, 145 F. Supp. 617, 624 (D. Kan. 1956), *aff'd*, 352 U.S. 863 (1956) (acknowledging the power of the state to modify or reject riparian rights due to unsuitable conditions within the state); *In re* Hood River, 114 Or. 112, 163, 227 P. 1065, 1081 (1924).

139. *Commonwealth* ex rel. *State Water Control Bd.*, 223 Va. at 542, 290 S.E.2d at 872 (citing Bridgeport Hydraulic Co. v. Council on Water Co. Lands, 453 F. Supp. 942, 946 (D. Conn. 1977), *aff'd*, 439 U.S. 999 (1978)).

140. *Weber City Sanitation Comm'n*, 196 Va. at 1147, 87 S.E. 2d at 157–58.

141. *Id.* at 1148, 87 S.E.2d at 158.

the public may be protected through the use of police power, resulting in the limitation or even constructive retirement without compensation of those rights and uses currently exempt from regulation and receiving protection under the Virginia Code.[142]

IV. SUGGESTED REVISIONS TO THE CODE OF VIRGINIA

Protection of limited classes of water use will become more difficult to defend where constitutional and regulatory frameworks must favor an equitable approach to water supply management that recognizes water as a publicly owned resource. This approach does not necessarily require that any particular class of water user, whether exempt, riparian or historic, loses access to water. Instead, it is dependent on accurate accountability of the resource and an acknowledgment that accountability simply provides more effective resource management for the benefit of every current and prospective user.[143] In other words, accountability provides protection to the exempt, riparian, and historic users. Further, it helps to define reasonable use for riparian landowners while also providing data for more accurate projections of water supply for other prospective uses.

There are relatively simple statutory solutions to promote better resource accountability. The sections of the Virginia Code referenced above that provide protection to exempt, historical, and riparian users do not necessarily require substantial revision.[144] Expanded registration, permitting, and reporting requirements in the Virginia Code to include these users could improve resource management and allocation. In turn, all users would benefit from improved management through optimized and prolonged use of the resource.

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142. *Id.* at 1150, 87 S.E.2d at 159–60.

143. Economic development requires responsible water resource management. Water intensive industries are sensitive to water supply, premising planning and location decisions, as well infrastructure investment on a state's ability to provide adequate, long-term water supply. Where a manufacturer is part of the energy, paper, beverage, or another water intensive industry, water can be a determinative factor in the business model, influencing whether a facility can be developed. States having effective management over the resource can make investments in managing water resources to attract industry and promote economic development.

144. VA. CODE ANN. § 62.1-44.15 (Cum. Supp. 2014). Sections 62.1-253, 62.1-258, and 62.1-259 of the Virginia Code provide protection to riparian and historical water users. *Id.* §§ 62.1-253, -258 to -59 (Repl. Vol. 2014).

- Comprehensive registration and monthly reporting should be required for all surface and ground water withdrawals occurring outside management areas at or above 100,000 gal/m. Registration should include location and purpose of the withdrawal while monthly reporting should include frequency and volume of water used. For those users with withdrawals below 100,000 gal/m, primarily households, small developments, and small business, only registration should be required. Appropriate enforcement authority should be granted to interested regulatory agencies to assess fines to encourage compliance. Requiring comprehensive registration and reporting has several advantages, including evidence of reasonable use of a riparian right or historic use, protection of use in the context of other users, prevention of conflict and litigation, and a more efficient methodology for water allocation.

- While registration and reporting account for water withdrawals, monitoring accounts for how much water is available. One of the most important challenges to water resource management in Virginia is the availability of sufficient investment to monitor and characterize surface water and ground water. A meaningful state-wide monitoring program is required to determine the quantity and quality of water supply, particularly for ground water systems like the Coastal Plain Aquifer System. An effective monitoring network serves to provide accurate levels of available water in the context of required in-stream flow, minimum aquifer system levels, riparian and historic use, and permitted use. Ideally, monitoring networks provide a tool to adapt management of the resource to drought conditions, demand, and available supply. An investment in a comprehensive water-monitoring network achieves returns from an ability to more accurately predict availability for the benefit of public water supply, industry and other beneficial uses.

- Preservation of historic uses in Ground Water and Surface Water Management Areas does little to optimize and prolong the resource. Historic withdrawals maintain their rate of use, regardless of whether it results in destruction of the water resource or impairs other uses. The preservation of historic use, combined with an exemption from permitting in

the Virginia Code, serves to lock in water withdrawals, preclude responsible management, and protect historic rates of withdrawal that place water resources in peril. In addition, the Virginia Code provides a permit exemption for withdrawals of 300,000 gal/m or less. Since management areas are established in the most densely populated areas of Virginia,[145] the exemption is typically composed of household wells, small developments, and businesses. As a result, this is a growing group of exempt users placing additional stress on an already decreasing water supply. In an effort to effectively manage water in the most stressed areas of the Commonwealth, all withdrawals at or above 100,000 gal/m should be required to obtain a permit that includes conditions of conservation, regular monitoring and reporting. For those users with withdrawals below 100,000 gal/m, only registration of the withdrawal should be required. Requiring permitting of a larger class of withdrawals would improve accountability of the resource and potentially encourage economic development in more sparsely populated areas where water supply is available.

• As a final measure to promote comprehensive accountability of the resource and improved equity, all users should be required by the State Water Control Law to fully register and report usage, regardless of any existing common law right or statutory exemption. Common law riparian rights and the VWP permitting program are not necessarily in conflict, and riparian interests do not have to be placed at risk of constructive loss upon approval of each new VWP permit. Conversely, the VWP program is potentially protective of riparian interests. A requirement for riparian registration and reporting of water usage could presumably work to formally acknowledge and protect riparian interests in the context of a well-managed VWP program. Riparian participation in a managed system would promote accurate data development, assist in the prediction of available water supply and reduce the risk of permitting more users than the water source can supply. Compliance with such a requirement could affirmatively preclude any potential constructive loss through the

145. *See supra* notes 27–35 and accompanying text for a discussion of Groundwater Management Areas and population.

continued expansion of permitting and water withdrawals under the VWP program.

CONCLUSION

Water plays a critical role in Virginia, affecting the survival and livelihood of every individual. It is also increasingly important to attract business and to improve the success of the economy. As the population continues to rise in the most highly urbanized areas, effective planning and management of the resource will be required to accommodate the more than 7% increase in water demand over the next eighteen years. Areas that will have the highest water demand are already experiencing stressed water supply. Contributing to the challenge is an antiquated legal framework premised on seventeenth century riparian principles, exempt users, and protection of historic rights. These classes generally benefit from preferred legal status for water without regard to supply availability, effects on other users, or whether it is being put to the most beneficial use.

Preference for these users in the Virginia Code conflicts with well-established constitutional principles directing equitable management of water as a public resource. Further, limiting water prosperity and, by extension, economic security to limited groups of users is fertile ground for litigation and the exercise of state police power. As the water supply is diminished and closer management is required, the frequency of the use of police power may increase to ensure public access to the resource for the protection of public health. In the case of the Coastal Plain Aquifer System, the legal framework fails to protect the resource and arguably promotes drawdown. Unless fundamental changes to the Virginia Code are adopted and current management practices reconsidered, the aquifer system may continue to decline and water resources in Virginia will continue to be threatened for all users.