

Adaptive Planning for Flooding and Coastal Change in Virginia: Legal and Policy Issues for Local Government

**Framing the Legal Problems:
Is a Holistic Strategy for Managing Stormwater,
Flooding,
and the Bay TMDL Possible or Advisable?**

September 13, 2013

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I. INTRODUCTION²

Localities in Virginia will be taking on a greater, indeed leading, role in administering Virginia's stormwater management laws and regulations, and more stringent standards are still expected for post-development conditions and to further Chesapeake Bay cleanup objectives. As a result, stormwater management and regulatory programming continue to become increasingly intricate in Virginia. Compounding the difficulty of implementing these regulatory responsibilities and administering them programmatically are the current and projected impacts from relative sea level rise, such as recurrent flooding, affecting coastal properties and communities. For those interested in these issues – whether municipalities, industries, construction and development interests, environmental groups, and environmental agencies – the legal and technical challenges are therefore becoming more substantial. This outline provides an overview each of these topics as part of a larger examination of how a holistic strategy to addressing them may provide added benefits over a siloed approach to each.

II. STORMWATER PROGRAM OVERVIEW

In Virginia, regulatory programs to manage stormwater exist at the federal, state, and local levels. Some aspects are driven down from the federal down to the local, whereas some are more “homegrown” for Virginia.

A. **FEDERAL.** At the federal level, stormwater is mainly regulated through the federal Clean Water Act's (“CWA's”) National Pollutant Discharge Elimination System (“NPDES”) program.³ The NPDES stormwater discharge program, especially as supplemented by regulations promulgated by the U.S. Environmental Protection Agency (“EPA”), establishes a national

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² This outline is provided as an informational service and does not constitute legal counsel or advice, which can only be rendered in the context of specific factual situations. If a legal issue should arise, please retain the assistance of competent legal counsel.

³ See CWA § 402, 33 U.S.C. § 1312.

permitting regime to control discharges of pollutants to certain regulated waters from industrial, municipal, and construction-related activities.⁴

1. **General CWA prohibition against unpermitted discharges of pollutants.** As a general matter, “the discharge of a pollutant by any person” is prohibited unless an NPDES permit has been issued and except where certain exclusions pertain.⁵ The term “discharge of a pollutant” is defined by the CWA in relevant part as “any addition of any pollutant to navigable waters from any point source.”⁶ “Navigable waters” is in turn defined as “the waters of the United States, including the territorial seas.”⁷ “Waters of the United States” is broadly, but expressly, defined to flesh out the statutory term covers a wide array of subjects, including those that one might not expect to be considered “navigable waters,” waters otherwise under federal protection, or even “waters” at all. EPA defines “waters of the United States” as follows:⁸

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate “wetlands;”

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

⁴ See 40 C.F.R. § 122.26 (2013).

⁵ CWA § 301(a), 33 U.S.C. § 1311(a). Unlike some of the other words in this phrase, the term “person” is relatively problem-free in its meaning. It is defined as “an individual, corporation, partnership, association, State, municipality, commission, or political subdivision of a State, or any interstate body.” CWA § 502(5), 33 U.S.C. § 1362(5). EPA regulations define “person” somewhat differently as “an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.” 40 C.F.R. § 122.2 (2013).

⁶ CWA § 502(12), 33 U.S.C. § 1362(12).

40 C.F.R. § 122.2 (emphasis added).

⁷ CWA § 502(7), 33 U.S.C. § 1362(7).

⁸ 40 C.F.R. § 122.2.

- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

As is clear, the regulatory definition includes many open waters, streams, tributaries to these water bodies, and wetlands, but also seeks to include rather limited and temporary accumulations or flows of water in otherwise dry areas.⁹

2. **Stormwater Specific Permitting Provisions.** Congress and EPA have addressed stormwater discharges and permitting specifically as part of the CWA and in EPA regulations, respectively.¹⁰ To establish appropriate controls on, and to more efficiently regulate different types of, stormwater discharges, EPA has created two different types of NPDES permits – general and individual. These permits pertain to so-called “point source” discharges of stormwater, in reference to the definition of discharge of a pollutant noted above.¹¹ General permits are “ready-made” permits for certain specific categories of industrial activities, construction activities discharges, and small municipal separate storm sewer systems (“MS4’s”).¹² Individual permits are required for sources of stormwater discharge that do not fall within the various categories of discharges eligible for general permits or where a general permit may otherwise not be appropriate.¹³ Certain key exclusions can apply to specific types of stormwater discharges.¹⁴

B. **VIRGINIA.** Along with most other states, Virginia has obtained approval from EPA to implement its own NPDES program, called the Virginia Pollutant Discharge Elimination System

⁹ The debate over whether this definition is proper, or whether agency implementation of this definition is proper, has been the subject of much litigation.

¹⁰ See CWA § 402(p), 33 U.S.C. § 1342(p); 40 C.F.R. §§ 122.26.

¹¹ Non-point source of stormwater (typically in street runoff), on the other hand, do not require permits but are subject to further study and other program initiatives under the CWA. See CWA § 319, 33 U.S.C. § 1329. Such non-point sources are, however, substantial contributors of pollutants to water bodies.

¹² See 40 C.F.R. § 122.28 (2013).

¹³ 40 C.F.R. §§ 122.21(a), 122.1(b) and 122.28(b)(3) (2013).

¹⁴ See 40 C.F.R. §§ 122.3, 126(a)(2), 126(a)(7), and 126(g) (2013).

(“VPDES”).¹⁵ The VPDES program is implemented largely through the State Water Control Law (“SWCL”) and supporting regulations.¹⁶ Because it is a program authorized by EPA, the main elements are very similar to, or even the same as, the federal program, with one notable exception being the scope of regulated waters at the state level being far broader than that for federally regulated waters.¹⁷ However, EPA retains an oversight role and can step in under its own authority to enforce the federal program and permits issued through the VPDES program.¹⁸

The legal and operational framework for Virginia’s stormwater management program has varied through the years, most recently having been split into two different agency programs administered under different statutes, regulations and agencies. They were for the most part merged together as of July 1, 2013 by state legislation.¹⁹ Accordingly, the stormwater programs are now blended with other VPDES program elements under the SWCL, State Water Control Board (“SWCB”) regulations, and Virginia Department of Environmental Quality (“DEQ”) program administration, though some vestiges of the pervious regulatory structure remain for now.²⁰ As with the federal program, Virginia uses both general and individual stormwater discharge permits for the state stormwater program.²¹

The following stormwater discharges are prohibited unless pursuant to a permit issued under the VPDES program or a VSMP permit:

¹⁵ See CWA § 402(b), 33 U.S.C. § 1342(b). Such delegated state programs must be at least as stringent as the federal NPDES program in order for this delegation of authority to be granted and continue. *Id.* See also 40 C.F.R. §§ 123.23, 123.24, 123.25, and 123.27; *State Water Control Bd. v. Smithfield Foods, Inc.*, 261 Va. 209, 212, 542 S.E.2d 766, 768 (Va. 2001). See also 9 VAC 25-31-20; Va. Code Ann. (“Va. Code”) § 10.1-603.2 (Editor’s note).

¹⁶ Va. Code Ann. (“Va. Code”) §§ 62.1-44.2 *et seq.* (2006 Repl. & 2013 Cum. Supp.); 9 Va. Admin. Code 25-31 (scattered sections) (2012 & 2013 Cum. Supp.).

¹⁷ Under the State Water Control Law, “state waters” means “all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands.” Va. Code § 62.1-44.3 (2013 Cum. Supp.). Interestingly, though, current construction and MS4 stormwater regulation define stormwater as “precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.” 4 Va. Admin. Code § 50-60-10. “Waterways” is not defined, however, by the regulations, though that term arguably connotes something far more specific – and narrower – in meaning than “state waters.”

¹⁸ EPA can assert its own jurisdiction or enforce the state-level program should the state fail to do so. See CWA § 309, 33 U.S.C. § 1319; CWA § 402(c)(3), 33 U.S.C. § 1342(c)(3); CWA § 402(i), 33 U.S.C. § 1342(i).

¹⁹ 2013 Va. Acts ch’s 756 & 793. Previous to this consolidation, industrial stormwater discharges were administered pursuant to the VPDES program, while construction and MS4 permitting was under the Virginia Stormwater Management Program administrated by the Soil and Water Conservation Board and the Virginia Department of Conservation and Recreation.

²⁰ As to program laws transferred into the State Water Control Law, see, e.g., Va. Code Ann. §§ 62.1-44.15:24 through 62.1-44.15:50 (addressing construction activities) and §§ 62.1-44.15:51 through 62.1-44.15:66 (addressing erosion and sediment control) (2013 Cum. Supp.). Corresponding regulations were just adopted by the State Water Control Board on August 27, 2013. See

http://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\Meeting\103\20291\Minutes_DEQ_20291_v1.pdf (last viewed September 9, 2013). In the interim the existing related regulations of the Virginia Soil and Water Conservation Board were transferred to the State Water Control Board. See 2013 Va. Acts ch’s 756 & 793, ¶ 7. Certain ancillary and related programs, such as state-owned and golf course property nutrient management planning and agricultural resource management planning, will remain (at least for the time being) with the Soil and Water Conservation Board and Department of Conservation and Recreation. See, e.g., Va. Code §§ 10.1-104.4, 10.1-104.5, and 10.1-104.7 through 10-104.9 (2012).

²¹ See generally 9 Va. Admin. Code §§ 25-31-120; 25-151-10 *et seq.*; 25-870-10 *et seq.* (adopted by State Water Control Board August 27, 2013).

- A discharge into state waters of “sewage, industrial wastes, other wastes, or any noxious or deleterious substances;”
- Other actions that “alter the physical, chemical or biological properties of state waters and make them detrimental to the public health, or to animal or aquatic life, or to the uses of such waters for domestic or industrial consumption, or for recreation, or for other uses;”
- A discharge of “stormwater into state waters from Municipal Separate Storm Sewer Systems or land disturbing activities;”
- “A discharge [of stormwater] associated with industrial activity;”
- A discharge of stormwater that will “contribute to a violation of a water quality standard or is a significant contributor of pollutants to surface waters;” or
- A discharge of stormwater that causes a violation of any Total Maximum Daily Load for that stream or water body.²²

C. **LOCAL ROLE AND OBLIGATIONS.** Localities play an increasingly leading role in the management of stormwater discharges. The SWCL establishes procedures for localities with an MS4 to adopt a Virginia Stormwater Management Program (“VSMP”) to be approved by DEQ and to become effective no later than July 1, 2014.²³ Localities adopting such programs receive authority from DEQ to implement these aspects of the VSMP within their jurisdictions. A locality must develop and implement its own stormwater program consistent with its own MS4 permit requirements and its local erosion and sediment control program. Having received VSMP approval, a locality will take the lead in issuing general stormwater discharge permits for land-disturbing/construction related activities as of July 1, 2014.²⁴

Localities will therefore soon become the front line for most permitting, compliance and enforcement of construction stormwater program requirements, complementing their existing lead roles for erosion and sediment control and Chesapeake Bay Preservation Act program implementation.²⁵ In addition, the substantive stormwater discharge requirements at the federal level are evolving at this time with tougher standards being developed and even now promoted by EPA specific to Chesapeake Bay cleanup efforts.²⁶ In the midst of all this, localities

²² See Va. Code §§ 62.1-44:5.A and 62.1-44.15:34; 9 Va. Admin. Code § 25-31-50.A; 9 Va. Admin. Code § 25-31-120.A; 9 Va. Admin. Code § 25-151-50.B.3.d.

²³ This is carried over from prior authority and DCR oversight.

²⁴ See generally Va. Code § 62.1-44.15:27. See also 4 Va. Admin. Code §§ 50-60-10 *et seq.* (2009 & 2013 Cum. Supp.).

²⁵ DEQ will maintain authority to issue individual stormwater discharge permits for construction related activities. Va. Code § 62.1-44.15:26.B.

²⁶ See United States Environmental Protection Agency, “Urban Stormwater Approach for the Mid-Atlantic Region and the Chesapeake Bay Watershed,” 1-3 (July 2010), available at http://www.epa.gov/reg3wapd/pdf/pdf_MS4AOs/MS4GuideR3%20final07-29-10.pdf.

themselves are subject to continued state and even federal oversight themselves for their own stormwater management programs and MS4's.²⁷

With the additional duties come addition costs and manpower concerns for the localities. Because localities are still feeling the financial pinch of the recent recession, how localities will fund these efforts is still not fully clear. The stormwater program is intended to be largely self-funding through permit fees, and localities are authorized to assess specific service charges to pay for stormwater system improvements and operation, but there is concern that the fee structure will not cover all of the attendant costs and implementing service charges is proving to be a contentious course of action.²⁸ Whether supplemental CWA grant funding could make their way down to localities is unclear at this point.

II. CHESAPEAKE BAY TOTAL MAXIMUM DAILY LOAD OVERVIEW

A. TOTAL MAXIMUM DAILY LOAD GENERALLY. Under the CWA, states are required to designate certain uses for water bodies, set water quality standards accordingly, and periodically test the water body to assess compliance with the chosen water quality standard.²⁹ If a body of water does not meet applicable water quality standards, it is placed on an impaired waters list, and a plan must be put forward to return that water body to compliance with the water quality standards.³⁰ The chief mechanism to achieve this goal is a total maximum daily load (“TMDL”). It serves as a sort of pollutant diet, a cap on the amount of a certain pollutant that is allowed to discharge into that water body. Theoretically, the TMDL is set at a level that will allow the water quality to improve over time. The TMDL is actually the aggregate of a number of (i) more specific waste load allocations for various contributory sources of the pollutant causing the water quality standard violation, (ii) load allocations of the pollutant assigned to non-point sources; (iii) the background level of the pollutants; and (iv) a margin of safety.³¹

B. CHESAPEAKE BAY TMDL DEVELOPMENT. Longstanding efforts over several decades to improve water quality in the Chesapeake Bay had made some progress, but, as of 2008, the Bay and many of its tributaries still failed water quality standards for a variety of pollutants and water quality indicators, especially dissolved oxygen and turbidity. Algal blooms, dead zones with depleted oxygen, and other symptoms of these problems were common.³² Initial discussions of a Bay TMDL began in 2006-2007, and EPA gave notice to affected jurisdictions in 2008 of necessary plans to be submitted to facilitate development of the Bay TMDL.³³ Additional pressure for action came in a lawsuit filed against EPA in January 2009 due to

²⁷ See Va. Code § 62.1-44.15:38. Federal oversight is an extension of the authorization granted by EPA to Virginia to administer the NPDES stormwater program. See *supra* at note 18.

²⁸ Va. Code § 15.2-2114 (2012 Repl.).

²⁹ CWA § 303, 33 U.S.C. § 1313; 40 C.F.R. §§ 130.3 & 130.4 (2013).

³⁰ CWA § 303(d), 33 U.S.C. § 1313(d); 40 C.F.R. § 130.6 (2013).

³¹ CWA § 303(d)(1)(C), 33 U.S.C. § 1313(d)(1)(C); 40 C.F.R. § 130.7 (2013).

³² See United States Environmental Protection Agency, Fact Sheet - Chesapeake Bay Water Quality (October 19, 2009), available at http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/BayTMDLFactSheetBayWaterQuality.pdf.

³³ See Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment (“Bay TMDL”) at ES-2 – ES-4 (December 29, 2010), available at http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/FinalBayTMDL/BayTMDLExecutiveSummaryFINAL122910_final.pdf.

inadequate progress in cleaning up the Bay and by President Obama's Executive Order 13508 in May 2009 directing federal agencies to take new and coordinated steps to improve water quality in the Bay.³⁴ EPA settled with the litigants and moved forward with the TMDL development in furtherance of Executive Order 13508, issuing the final Bay TMDL rule in late December 2010.³⁵ The TMDL applies to and in each of the jurisdictions within the Bay watershed – Virginia, West Virginia, Washington, D.C., Maryland, Delaware, Pennsylvania, and New York – and is to be broken down into the established 92 segments of the Bay watershed.³⁶ In developing the TMDL itself, EPA required each affected jurisdiction to submit Phase I of a so-called Watershed Implementation Plan (“WIP”), which collectively formed the basis of the Bay TMDL rulemaking and initial pollutant loading reduction strategies and allocations for each such jurisdiction.³⁷ The Phase I WIPs focus mainly on timelines and basic actions and legal authority revisions to address reduction of nutrient (nitrogen and phosphorous) and sediment loads into the Bay watershed, which are accomplished by a variety of mechanisms and programs that vary some from jurisdiction to jurisdiction.³⁸

Shortly after the Bay TMDL was promulgated by EPA, a number of trade groups and other interested parties led by the American Farm Bureau Federation filed a suit challenging the Bay TMDL. These plaintiffs argue that EPA exceeded its authority under the CWA and other principles of law in the way the TMDL was structured and pollutant loads were allocated.³⁹ No decision has been issued yet by the Court, but neither has the Court stayed the Bay TMDL rule in the meantime, so the TMDL's implementation continues forward at this point.

C. IMPLEMENTATION OF THE BAY TMDL. Once the Phase I WIPs were approved by EPA, Phase II WIPs were reviewed and developed by each jurisdiction to provide more specific steps. Virginia's Phase II WIP, like those of other affected jurisdictions, is designed to implement a number of regulatory and technical program changes, frame local efforts and responsibilities, address efforts to control loading from agricultural activities, and refine the allocation of allowable nutrient and sediment loadings to various sources within Virginia.⁴⁰

³⁴ Executive Order 13508, 3 C.F.R. 2009 Comp. at 235-241 (2010). As to the settlement, *see* <http://yosemite.epa.gov/opa/admpress.nsf/0/ac46af32562521d48525772000591133>.

³⁵ *See* 76 Fed. Reg. 549 (January 5, 2011). However, the content of the TMDL rulemaking and process was so large and complex, EPA merely published notice of the rule in the Federal Register. The rule itself is available at http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/FinalBayTMDL/CBayFinalTMDLExecSumSection1through3_final.pdf. Supporting information is found at EPA's Bay Chesapeake Bay TMDL website at <http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html>.

³⁶ 76 Fed. Reg. 549; Bay TMDL at ES-2 – ES-6.

³⁷ *See generally* <http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/EnsuringResults.html?tab2=1>.

³⁸ *See e.g.*, Commonwealth of Virginia, Chesapeake Bay TMDL Phase I Watershed Implementation Plan (November 29, 2010), *available at* <http://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/Baywip/vatmdlwipphase1.pdf>.

³⁹ *See* Memorandum in Support of Plaintiffs' Joint Motion for Summary Judgment, American Farm Bureau Federation v. United States Environmental Protection Agency, No. 11-cv-00067-SHR (M.D. Penn. filed January 27, 2012).

⁴⁰ *See generally* Commonwealth of Virginia Chesapeake Bay TMDL Phase II Watershed Implementation Plan (March 30, 2012) (“Phase II WIP”). However, some aspects of the vetting of certain strategies with stakeholder had not been completed by the deadline for submission of the final Phase II WIP, and these steps were to be completed thereafter. *Id.*

One aspect of a TMDL is that the embedded waste load allocations for point sources implemented in large part through existing and future wastewater and stormwater discharge regulations and through permits issued for such discharges to covered water bodies. As a result, permits for such discharges into the Bay watershed will account for and include as necessary the limits on nutrient and sediment content and any other best management practices needed to reduce such content that the receiving water can comply with the TMDL. Accordingly, implementation of the Bay TMDL in Virginia (and other jurisdictions) entails changes to stormwater and wastewater discharge regulations permit terms to incorporate such limits and measures.⁴¹ To this end, steps taken already include major changes to Virginia's stormwater regulations.⁴² Many local responsibilities exist under the Phase II WIP and regulation changes as well, including duties to address agricultural practices, urban/suburban stormwater and erosion and sedimentation impacts, septic system releases, and some mineral extraction activities.⁴³ EPA has recently evaluated Virginia's progress in fulfilling the Phase II WIP steps and other obligations under the Bay TMDL, giving Virginia a generally good report, but citing some ongoing areas where EPA would like to see improvement and where it will continue to exercise close oversight.⁴⁴

These Bay TMDL action items by Virginia can be expected to increase the cost of activities depending on such discharges, whether they are industrial, construction, or MS4 discharges. However, expected benefits should include improved water quality in the Bay and its tributaries, which should in turn reduce costs for other activities such as raw water treatment for industrial and public water supplies and otherwise assist in meeting water quality standards for such designated uses as fishing and swimming in such waters.

III. RECURRENT FLOODING

A. NATURE OF PROBLEM.

Virginia's coastal communities have experienced a relative rise in sea level, as evidenced by higher average tide levels over many decades.⁴⁵ Regardless of the potential causes of this trend, localities and shoreline owners and stakeholders share a growing concern about the effects

⁴¹ See, e.g., Phase II WIP at 14 (nutrient trading regulations), 15-17 (stormwater), 21-24 (wastewater), 30 (septic systems).

⁴² 27 Va. Reg. Regs. 2738 (August 29, 2011), *codified at* 4 Va. Admin. Code § 50-60-10 *et seq.* (scattered sections).

⁴³ Phase II WIP at Appendices A-F; 4 Va. Admin. Code § 50-60-10 *et seq.* (scattered sections).

⁴⁴ See United States Environmental Protection Agency, Virginia Interim Assessment of 2012-2013 Milestones and WIP Progress (May 30, 2013), *available at* http://www.epa.gov/reg3wapd/pdf/pdf_chesbay/InterimAssessments/VA%20Interim%20Assessment%202012%202013%20Milestones%20and%20WIP%20progress.pdf.

⁴⁵ At Sewell's Point in Norfolk, Virginia, the 100-year average increase is nearly 1.5 feet. See "Mean Sea Level Trend 8638610 Sewells Point, Virginia, *available at*

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8638610. See also Mean Sea Level Trend 8638863 Chesapeake Bay Bridge Tunnel, Virginia, *available at*

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8638863; Mean Sea Level Trend 8637689 Gloucester Point, Yorktown, Virginia, *available at*

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8637689; Mean Sea Level Trend 8635750 Lewisetta, Virginia, *available at*

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8635750.

and probabilities of relative sea level rise in Virginia. A recently released study of recurrent flooding by the Virginia Institute of Marine Science, authorized by the General Assembly, gives more concrete reason for such concern, suggesting this trend will continue for decades, perhaps at an increasing rate.⁴⁶ Hand in hand with this trend is the problem of recurrent flooding resulting from relative increases in sea level are greater stormwater flows over the years caused by increased impervious surface area from expanding development. The combination of the two factors aggravates the difficulty of avoiding local flooding and the associated risks to property and community safety, as increased stormwater flow cannot be discharged freely into the receiving water due to higher tide levels or storm surges. However, at the state level, there is not yet a comprehensive, coordinated strategy to address these problems and risks.

Of course, shorelines are host to economically, environmentally and even militarily strategic industries, enterprises, facilities and features particularly vulnerable to relative sea level rise and recurrent flooding, such as terminal bulk storage and cargo facilities and ports; shipbuilding facilities; airports, transportation routes, ferry landings, and tunnels; commercial, retail and recreational uses; marinas and manufacturers; power stations; Department of Defense facilities; beaches; and wetland mitigation banks and habitat preserves.⁴⁷ In addition, public and industrial water supplies and agricultural irrigation water sources could face new or increased salt water intrusion with relative sea level rise pushing up into Virginia's tidal fresh and brackish rivers, at least up to the fall line. Rising sea level also could aggravate existing salt water intrusion into Coastal Plain groundwater aquifers used for public and industrial water supply. These effects, if realized, could change long-standing water supply planning assumptions of available water sources, especially when reservoir development and permitting has already become so uncertain and expensive.

Other complex and nuanced concerns exist as well. Financing or insuring property or projects that are within the projected reach of higher sea levels and that face increased risk of storm surges likely becomes a more tenable and, at minimum, expensive prospect. Investment and service by utilities to such areas may be reconsidered due to potential loss of capital and maintenance costs for infrastructure that can be expected to be flooded out regularly or eventually submerged. Fire, rescue and other safety and disaster relief services become more likely difficult and dangerous given these hazards and compromised access to such areas. Shoreline habitat and recreational areas are at greater risk of loss or compromise. Given these factors, it is reasonable to ask whether it make economic sense for a shoreline industry, retail center, or military installation to defend itself against sea level rise and whether the federal

⁴⁶ Virginia Institute of Marine Science, Recurrent Flooding Study for Tidewater Virginia (January 2013) ("VIMS Study"), available at http://ccrm.vims.edu/recurrent_flooding/Recurrent_Flooding_Study_web.pdf. Land subsidence is also factor in Hampton Roads. *Id.* at 12. Ocean currents may also play a role for Mid-Atlantic states generally, driving water into the Chesapeake Bay in ways that aggravate base-line sea level rise and subsidence effects. See T. Ezer, L. P. Atkinson, W. B. Corlett & J. L. Blanco, *Gulf Stream's Induced Sea Level Rise and Variability along the U.S. Mid-Atlantic Coast*, *J. Geophys. Res. Oceans*, 118, 685–697 (2013), available at <http://onlinelibrary.wiley.com/doi/10.1002/jgrc.20091/pdf>.

⁴⁷ The Norfolk Naval Base is retooling and reworking its facilities based on its analysis of potential loss of embedded infrastructure due to sea level rise. See Joseph F. Bouchard, Ph.D. (Captain, U.S.N. retired), "Naval Station Norfolk: The Experience with Elevated Sea Level Rise," presented at Sustainable Ocean Summit (April 24, 2013, Washington, D.C.), available at http://oceancouncil.org/site/summit_2013/Presentation%20PDFs/8-SEALEVELRISE%20SECURED%20PDFS/8-SEALEVELRISE_Bouchard_V5.pdf.

government and the Commonwealth will develop a coordinated recurrent flooding strategy and fund resources to assist localities in managing these risks.

How these questions are answered has potentially large economic, environmental and quality of life implications for a community, region and even the state, including marketability of some properties, at least in their current uses, and potential changes to the highest and best use for those properties. Such market evolution and land use planning could materially affect the tax base and demographics of that locality, given that shoreline property is often among the most valuable in many localities. A locality's response to such matters could accordingly drive substantial changes in the fiscal condition and functionality of the larger community.

Unfortunately, then, localities, coastal or shoreline property owners and businesses, and others with interests in shoreline preservation and habitat are presented with a fundamental and disturbing dilemma: they can ill afford to be wrong about the issue of sea level rise and therefore be unprepared for it in terms of land use and infrastructure planning, natural resource protection and preservation, and economic development. Ignoring or underestimating the significance of this issue could mean subjecting their property and communities to a host of problems that could have been minimized, mitigated or even avoided in some cases if proper evaluation and action had occurred.⁴⁸ On the other hand, even if localities do their best in this regard, the scale, timeline, and costs to assess and address sea level rise and recurrent flooding may be shocking and more than any one locality or even region can absorb on its own - in other words, they may not be able to afford being right about the issue either.⁴⁹ Difficult policy and business choices await, given the risks and uncertainties of sea level rise, unless a meaningful strategy to address it is employed.

B. REVIEW OF CURRENT LEGAL FRAMEWORK. There are some existing general policy and legal framework components addressing recurrent flooding risks and declaring actions to mitigate such risks within the public interest. A number of existing authorities address local flood control and stormwater management and, therefore, address stormwater flow in a manner that can help alleviate recurrent flooding. Other current laws provide potential options for land use controls, private and public sector collaboration and potential alternatives for financing responses to sea level rise and recurrent flooding. However, knitting these policies and laws together as part of an overall strategy to address relative sea level rise and recurrent flooding is not a straightforward or necessarily a certain solution. Forging a clearer and more cohesive set of legal authorities for the state and localities to manage these issues, and to do so in a

⁴⁸ One hindrance to localities in studying the effects of sea level rise and recurrent flooding on their communities is the continued lack of good detailed mapping of modeled sea level rise. Without knowing which neighborhood blocks or even specific parcels are likely to be negatively impacted, it is difficult to make informed decisions. New maps based on satellite imagery are due out later this year, and this could help this information gap. See VIMS Study at 8.

⁴⁹ By illustration, after evaluating the threats posed by sea level rise and recurrent flooding, the City of Norfolk, Virginia estimates that at about \$1 billion will be needed over the next several decades to address these issues when relying on a mix of defensive measures, accommodation and adaptation. See "Battleground Dispatches: Norfolk Readies for Future Storms, Sea Level Rise," aired on PBS (December 6, 2012), available at http://www.pbs.org/newshour/bb/politics/july-dec12/norfolk_12-06.html. See also Darryl Fears, "Built on sinking ground, Norfolk tries to hold back tide amid sea-level rise," *The Washington Post* (June 17, 2012), available at http://articles.washingtonpost.com/2012-06-17/national/35459771_1_sea-level-rise-sea-levels-hampton-roads.

collaborative and cooperative fashion with stakeholders, is therefore a necessary initial step for there to be reliably integrative mechanisms to address these issues. Three other key perennial factors to consider carefully when considering such measures are constitutional limits on state and local actions, the Dillon Rule and taking of private property.

Below are some of the potential options under existing law to consider:

1. Virginia Comprehensive Flood Control Program

- a. State interest in flood control (Va. Code § 10.1-658 (2012 Repl.)).
 - i. Acknowledges:
 - (A) Risks to life, property, sanitation, commerce and governmental services, creating a hazard to the health, safety and welfare of people living in flood-prone areas; and
 - (B) Flood waters don't abide by jurisdictional boundaries, and
 - (C) Management of flood-prone areas in a manner which prevents injuries to persons, damage to property and pollution of state waters is required as a matter of the public interest.
 - ii. Provides legislative support and encouragement for measures preventing, mitigating and alleviating the effects of stormwater surges and flooding.
 - iii. Declares that public funds and obligations used to develop flood control and public infrastructure that benefit a county, municipality or region are necessary expenses of local and state government.
- b. Flood protection programs; coordination (Va. Code § 10.1-659 (2013 Cum. Supp.)).
 - i. Stormwater, dam safety, soil and water conservation programs and the like are to be coordinated with federal, state and local flood prevention and water quality programs to minimize loss of life, property damage and negative impacts on the environment.
 - ii. The Chesapeake Bay Preservation Area criteria and local government assistance programs of the Virginia Soil and Water Conservation Board.
 - iii. DCR shall coordinate and cooperate with localities in rendering assistance to such localities in their efforts to comply with the planning, subdivision of land and zoning provisions.
 - iv. DCR shall cooperate with other public and private agencies having flood plain management programs, and shall coordinate its responsibilities under this article and any other law.
- c. Relevant elements of flood control program coordination include:
 - i. Flood prevention, flood plain management, small watershed protection, dam safety, soil conservation, stormwater management and erosion and sediment control programs;
 - ii. The construction activities of the Department of Transportation which result in hydrologic modification of rivers, streams and flood plains;
 - iii. The water quality and other water management programs of the State Water Control Board;
 - iv. Forested watershed management programs of the Department of Forestry;

- v. The statewide building code and other land use control programs of the Department of Housing and Community Development;
- vi. The habitat management programs of the Virginia Marine Resources Commission;
- vii. The hazard mitigation planning and disaster response programs of the Department of Emergency Management;
- viii. The fish habitat protection programs of the Department of Game and Inland Fisheries; the mineral extraction regulatory program of the Department of Mines, Minerals and Energy; and
- ix. The flood plain restrictions of the Department of Waste Management.

2. Flood Protection Planning (Va. Code §§ 10.1-602 through 10-603 (2012 Repl.).

- a. DCR to develop statewide flood protection plan.
- b. The flood protection plan is to include the following:
 - i. An inventory of flood-prone areas;
 - ii. An inventory of flood protection studies;
 - iii. A record of flood damages;
 - iv. Strategies to prevent or mitigate flood damage; and
 - v. The collection and distribution of information relating to flooding and flood plain management.
- c. DCR to provide funding and technical assistance to localities.

3. Local charter. For those localities that have charters granted by the General Assembly, careful examination of such powers may reveal authority (or potential limitations) to address sea level rise and recurrent flooding issues.

4. Planning, Zoning and Site Approvals.

- a. Comprehensive Planning (Va. Code §§ 15.2-2223 *et seq.* (2012 Repl. & 2013 Cum. Supp.)).
- b. Zoning (Va. Code §§ 15.2-2280 *et seq.* (2012 Repl. & 2013 Cum. Supp.)).
 - i. Overlay districts (to ensure sea level rise and stormwater management strategies implemented in any site development.)
- c. Subdivision and site plan approval (Va. Code §§ 15.2-2240 *et seq.* (2012 Repl. & 2013 Cum. Supp.)).

5. Purchase of property or preservaton of historical places.

- a. Purchase of real estate (Va. Code § 15.2-1800 (2012 Repl.)).
- b. Political subdivisions may acquire property from United States (Va. Code § 15.2-952 (2012 Repl.)).
- c. Authority to acquire and preserve places and things of historical interest (Va. Code § 15.2-944 (2012 Repl.)).

6. Eminent domain/Condemnation (Va. Code §§ 15.2-1900 – 15.2-1907.1 (2012 Repl. & 2013 Cum. Supp.)).

- a. Allowed “public uses” for eminent domain (Va. Code § 1-219.1 (2013 Cum. Supp.)):
- i. “Ownership, occupation, and enjoyment of property by the public or a public corporation;”
 - ii. “Construction, maintenance, or operation of public facilities by public corporations or by private entities provided that there is a written agreement with a public corporation providing for use of the facility by the public;”
 - iii. “Elimination of blight provided that the property itself is a blighted property;” and
 - iv. “Property is in a redevelopment or conservation area and is abandoned.”
- b. “Public facilities” includes (per Va. Code § 1-219.1):
- i. “Flood control, bank and shore protection, watershed protection, and dams;”
 - ii. “Parks so designated by the Commonwealth or by the locality in its comprehensive plan;”
 - iii. “Stormwater facilities;”
 - iv. “Transportation facilities including highways, roads, streets, and bridges, traffic signals, related easements and rights-of-way, mass transit, ports, and any components of federal, state, or local transportation facilities;” and
 - v. “Such other facilities that are necessary to the construction, maintenance, or operation of a public facility as [noted above].”

7. Authority to require removal, repair, etc., of wharves, piers, pilings, bulkheads, vessels or abandoned, obstructing or hazardous property (Va. Code § 15.2-909 (2012 Repl.)).

8. Capture and storage for floodwaters by riparian owners (Va. Code § 62.1-104 *et seq.* (2006 Repl.)).

9. Service districts (Va. Code §§ 15.2-2400 – 15.2-2413 (2012 Repl. & 2013 Cum. Supp.)).

- a. Purpose: “To provide additional, more complete or more timely services of government than are desired in the locality or localities as a whole.”
- b. Specific provision for stormwater management (Va. Code §§ 15.2-2403.3 (2013 Cum. Supp.)).
- c. Independent bond authority and revenue stream based in special assessments or stormwater fees.

10. Public-Private Partnerships.

- a. Urban Public-Private Partnership Redevelopment Fund (Va. Code § 15.2-2415 (2012 Repl.)).
- b. The Public-Private Education Facilities and Infrastructure Act of 2002 (Va. Code §§ 56-575.1 *et seq.* (2012 Repl. & 2013 Cum. Supp.)).

- 11. Miscellaneous.**
- a. Joint exercise of powers by political subdivisions (Va. Code § 15.2-1300 (2012 Repl.)).
 - b. Regional Competitiveness Act (Va. Code §§ 15.2-1306 – 15.2-1310 (2012 Repl.)).
 - c. Participation in certain federal development programs granting funds for housing, community development or economic development purposes (Va. Code § 15.2-956 (2012 Repl.)).

C. KEY LEGAL AUTHORITY ISSUES WHEN ADDRESSING RECURRENT FLOODING.

- 1. Scope of police powers** – is relative sea level rise and recurrent flooding a threat to public health and welfare?
- 2. Land use/zoning and site plan controls** – can a planning regime be developed to manage these issues strategically?
- 3. Best form of public entity** – is there a need for special governmental entity to address some of these issues?
- 4. Public finance mechanisms** – are there sufficient means of revenue generation to pay for sea level rise management activities?
- 5. The Dillon Rule** is always lurking for localities.
- 6. How should VIMS 2012 study be leveraged to inform decision-making?**