

**VIRGINIA:**

**IN THE CIRCUIT COURT OF THE CITY OF RICHMOND**

JEFF KELBLE OF THE	)	
POTOMAC RIVERKEEPER, INC.	)	
and MARK FRONDORF,	)	
THE SHENANDOAH RIVERKEEPER,	)	
	)	
Petitioners,	)	
	)	
v.	)	Case No. 760CL 13004387-00
	)	
COMMONWEALTH OF VIRGINIA, ex rel.	)	
VIRGINIA STATE WATER CONTROL BOARD	)	
and THE VIRGINIA DEPARTMENT OF	)	
ENVIRONMENTAL QUALITY,	)	
	)	
Respondents.	)	

**PETITIONERS' OPENING BRIEF**

**INTRODUCTION**

This case arises out of the gulf between the Commonwealth’s legal protections for the environment and the State Water Control Board’s improper execution of its duty to ensure that sewage sludge is regulated safely for human health and the environment. Environmental protections are of such importance to the Commonwealth that its Constitution codifies 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.” Va. Const. art. XI, § 1. Virginia places special environmental focus on the health of the Chesapeake Bay, as demonstrated by the goal of the 1988 Chesapeake Bay Preservation Act to protect and improve the water quality of the Bay. 9 Va. Admin. Code § 25-830-30. In furtherance of those goals, the Commonwealth has mandated that the State Water Control Board (“the Board”) regulate sewage sludge (commonly referred to by its promoters as

“biosolids”), a valuable agricultural fertilizer when it is stored and applied safely, in a manner that protects its citizens’ health and environment. The Board, however, has shirked its responsibility to Virginians’ health and the Commonwealth’s environment by approving regulations that allow sewage sludge and excess nutrients to enter the environment, pollute the Commonwealth’s waters, and endanger public health.

The State Water Control Law tasks the Board with adopting “regulations to ensure that . . . land application, marketing, and distribution of sewage sludge is performed in a manner that will protect public health and the environment,” and promulgating regulations “to ensure . . . the escape, flow, or discharge of sewage sludge into state waters in a manner that would cause pollution of state waters shall be prevented.” Va. Code Ann. § 62.1-44.19:3(B) (2016) (Exhibit 1). The challenged regulations violate this statutory mandate because they allow sewage sludge to be stored and applied on karst, a porous rock formation prevalent in Virginia through which sludge seeps and readily enters waterways. The regulations also permit the over-application of sewage sludge on crops, thereby allowing excess nutrients to enter the environment and ultimately endanger aquatic ecosystems and public health.

The Board had access to substantial evidence throughout the administrative record warning about these environmental and health risks. Nevertheless, the Board violated its statutory mandate and ignored its administrative duty to the public by promulgating non-protective regulations unsupported by explanation or justification. This case presents the Court with an opportunity to remand the regulations so the Board may ensure sewage sludge is stored and applied safely and consistently with Virginia’s environmental values and law.

## FACTUAL BACKGROUND

### I. Sewage Sludge in Virginia

#### A. The Sludge Regulations

The Commonwealth defines sewage as “human wastes from residences, buildings, industrial establishments or other places together with such industrial wastes and underground, surface, storm, or other water.” Va. Code Ann. § 62.1-44.3 (2016) (Exhibit 1). Sewage sludge is a semi-solid byproduct of sewage treatment that can be used as an agricultural fertilizer. Until 2007, the Virginia Department of Health (“VDH”) regulated the application, storage, and temporary staging of sewage sludge in Virginia. In 2007, authority over sewage sludge regulations was transferred from VDH to the Board.<sup>1</sup> The Virginia legislature, recognizing that sewage sludge application presents “perceived and possibly real health effects” and “a potential threat to the Commonwealth’s efforts to clean up the [Chesapeake] Bay and the southern rivers,” directed Commonwealth agencies to convene a Biosolids Expert Panel to study the impacts of sewage sludge on human health and the environment. H.J.R. 964, 2007 Leg. (Va. 2007), AR 1, Pet. App. 000001 (Exhibit 2). On February 28, 2011, the Board proposed amendments to the regulations (hereinafter referred to as the “Sludge Regulations,” or “the Regulations”). The Virginia Department of Environmental Quality (“DEQ”) convened a Technical Advisory Committee (“TAC”) to evaluate the Regulations, held a sixty-day public comment period, and conducted four public hearings. The Board voted to adopt the proposed Sludge Regulations, and the final Sludge Regulations were signed into law on June 12, 2013.

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<sup>1</sup> The State Water Control Board is one of three regulatory boards responsible for adopting Virginia’s environmental regulations. The Department of Environmental Quality (“DEQ”) administers the regulations as approved by these boards.

Two facets of the Sludge Regulations are relevant to this action. First, the Regulations allow the storage and application of sewage sludge in areas with karst formations. *See* Va. Code Ann. § 62.1-44.19:3(B) (2016) (Exhibit 1). Second, the Regulations remove the requirement for sewage sludge application to be limited to the agronomic rate limits for crops.<sup>2</sup> *See* Jeff Kelble, Public Notice Comment 159, at 5 (Apr. 29, 2011), AR 25, Pet. App. 000007 (Exhibit 3). In 2013, Petitioners (“the Riverkeepers”) filed this action in the Circuit Court of Virginia for the City of Richmond. *See* Pet. for Appeal, *Logan v. Virginia*, No. CL13004387-00 (Va. Cir. Sept. 25, 2013). In 2014, the Court denied the Commonwealth’s motion to dismiss this suit on the basis of an allegedly untimely appeal, finding that the Riverkeepers’ appeal was timely. *See* Decision and Order at 8, *Logan v. Virginia*, No. CL13004387-00 (Va. Cir. April. 4, 2014). The Riverkeepers allege the Sludge Regulations violate the State Water Control Law, and request the Court remand the Regulations to the Board. *See* Pet. for Appeal at 8-15.

### **B. The Composition and Impacts of Sewage Sludge**

Sewage sludge is a highly complex, biologically active mixture of organic materials and human pathogens. *See* ELLEN HARRISON ET AL., RUTGERS UNIV., GUIDELINES FOR APPLICATION OF SEWAGE BIOSOLIDS TO AGRICULTURAL LANDS IN THE NORTHEASTERN U.S. (Apr. 2007) (cited by Jeff Kelble, Public Notice Comment 159, at 1-2 (Apr. 29, 2011), AR 25, Pet. App. 000003-000004), Pet. App. 000008-000043 (Exhibit 19). Sewage sludge can contain thousands of industrial chemicals, including carcinogens, hormone disrupting chemicals, toxic metals, dioxins, radionuclides and other persistent bio-accumulative poisons. *See id.* Scientific studies show that

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<sup>2</sup> A permit is required to apply sewage sludge on agricultural lands, and a permit applicant must prepare a Nutrient Management Plan (“NMP”). Prior to the promulgation of these Sludge Regulations, NMPs required the applicant to confirm sewage sludge would not be applied in excess of crops’ agronomic rate limit, or the maximum amount of nutrients the crops are able to absorb. *See* 9 Va. Admin. Code § 25-32-600A.

these components of sewage sludge can significantly harm human health and the environment. *See* VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY, VIRGINIA WATER RESOURCES RESEARCH CENTER, PATHOGEN RESEARCH SYMPOSIUM SPECIAL REPORT: PATHWAYS AND MONITORING IN NATURAL AND ENGINEERED SYSTEMS (2007) (cited by Jeff Kelble, Public Notice Comment 159, at 2 (Apr. 29, 2011), AR 25, Pet. App. 4), Pet. App. 000044-000067 (Exhibit 33).

Sewage sludge also contains large concentrations of the nutrients phosphorus and nitrogen, which can render a water body harmful or detrimental to the health of animals, fish, and aquatic life. *See* ELLEN HARRISON ET AL., RUTGERS UNIV., GUIDELINES FOR APPLICATION OF SEWAGE BIOSOLIDS TO AGRICULTURAL LANDS IN THE NORTHEASTERN U.S. (Apr. 2007) (cited by Jeff Kelble, Public Notice Comment 159, at 1-2 (Apr. 29, 2011), AR 25, Pet. App. 000003-000004), Pet. App. 000008-000043 (Exhibit 19). Elevated phosphorous concentrations in surface waters increase the growth of phosphate-dependent organisms, such as algae and duckweed, which consume large amounts of oxygen and make the waters uninhabitable for other organisms. *See id.*

Karst, a geologic formation covering much of the western third of Virginia, poses unique concerns for sewage sludge. *See* Presentation of the Va. Dept. of Conservation and Recreation's Karst Program and Project Underground 6-9, 22 (2004) (cited by Frits van der Leeden et al., Public Notice Comment 162, at 4 (Apr. 28, 2011), AR 25, Pet. App. 000156), Pet. App. 000159-000187 (Exhibit 4). Karst is made up of carbonate rock, such as limestone or dolomite, and contains many sinkholes and fissures. *See id.* at Pet. App. 000159. Stormwater flows through karst directly into aquifers without the filtration and pollutant removal processes that normally occur during groundwater infiltration. *See id.* at Pet. App. 000162-000163.

## II. The Petitioners

Potomac Riverkeeper, Inc. (“PRK”) is a non-profit corporation headquartered in Washington, D.C. and licensed to do business as Shenandoah Riverkeeper in Virginia. *See* Pet. for Appeal at 3 ¶ 4 (Exhibit 20). PRK is dedicated to the protection and restoration of the Potomac River and its tributaries through citizen action, advocacy, education, and enforcement. *See id.* Shenandoah Riverkeeper (“SRK”), founded as a program of PRK in 2006, seeks to protect and restore water quality in the Shenandoah River watershed for people, fish, and aquatic life. *See id.* at 3 ¶ 5. PRK and SRK have more than one thousand members who use the Potomac and Shenandoah Rivers and their tributaries for swimming, fishing, boating, recreation, business, and drinking water.

PRK and SRK have standing to bring this action. The State Water Control Law provides judicial review under the Virginia APA to “any person who has participated, in person or by submittal of written comments, in the public comment process related to a final decision of the Board . . . if such person meets the standard for obtaining judicial review of a case or controversy pursuant to Article III of the United States Constitution.” Va. Code Ann. § 62.1-44.29 (2016). PRK and SRK have standing because they satisfy the statutory definition of “person,” *see* Va. Code Ann. § 62.1-44.3 (2016) (defining a “corporation, partnership, [or] association” as a person); their members provided public comments during the public comment period; and they satisfy the Article III standing requirements for representational standing as outlined in *Hunt*. *See Hunt v. Washington State Apple Advert. Comm’n*, 432 U.S. 333, 343 (1977).

Jeff Kelble is the President of PRK. Mr. Kelble worked as a full-time fishing guide on the Shenandoah River from 1999 to 2006, and frequently fishes and recreates on rivers throughout Virginia. *See* Pet. for Appeal at 3-4 ¶ 6 (Exhibit 20). Mr. Kelble has standing to

bring this action because he is a person who provided public comments, and he satisfies the Article III requirements as outlined in *Lujan*. See *Lujan v. Defs. of Wildlife*, 504 U.S. 555 (1992). Mark Frondorf is the Shenandoah Riverkeeper and is responsible for PRK’s work in the Shenandoah River valley. Mr. Frondorf has standing to bring this action because he is a person and he satisfies the Article III requirements as outlined in *Lujan*. Mr. Frondorf did not provide public comments because he was not employed as Shenandoah Riverkeeper during the public comment period. But his predecessor, Mr. Kelble, provided public comments, and Mr. Frondorf has assumed Mr. Kelble’s position of Shenandoah Riverkeeper with the same roles and responsibilities. See Consent Order Granting Motion to Substitute Named Petitioners, *Logan v. Virginia*, No. CL13004387-00 (Va. Cir. March 9, 2016). Together, the Riverkeepers bring this action in order to ensure the public’s continued use and enjoyment of safe and healthy rivers throughout Virginia.

### **STATUTORY BACKGROUND**

Virginia’s State Water Control Law requires the Board to “adopt regulations to ensure that . . . land application, marketing, and distribution of sewage sludge is performed in a manner that will protect public health and the environment.” Va. Code Ann. § 62.1-44.19:3(B)(ii). The statute also requires the Board to “adopt regulations to ensure that . . . the escape, flow, or discharge of sewage sludge into state waters in a manner that would cause pollution of state waters shall be prevented.” Va. Code Ann. § 62.1-44.19:3(B)(iii).

The Virginia Administrative Process Act (“VAPA”) authorizes judicial review of Commonwealth agency actions such as the Board’s promulgation of the Sludge Regulations. Va. Code. Ann. § 2.2-4027. Under VAPA, an agency action is found unlawful if the agency did

not act in accordance with the law or did not have sufficient evidential support for its findings of facts. *See Kepa, Inc. v. Virginia Dep't of Health*, 751 S.E.2d 671, 674 (Va. Ct. App. 2013).

### STANDARD OF REVIEW

Virginia courts review questions of law in an agency's decision *de novo*. *See Gordon v. Ford Motor Co.*, 685 S.E.2d 880, 886 (Va. App. 2009). Virginia courts review questions of fact in an agency's decision under the substantial evidence standard; the court must determine "whether there was substantial evidence in the agency record upon which the agency as the trier of the facts could reasonably find them to be as it did." Va. Code Ann. § 2.2-4027.

### ARGUMENT

#### **I. The State Water Control Law imposes clear requirements that the Board make certain the Sludge Regulations do not endanger public health or the environment.**

The State Water Control Law sets forth explicit duties for the Board in its promulgation of regulations, and the Court reviews *de novo* whether the Board has satisfied these statutory obligations. *See Gordon*, 685 S.E.2d at 886. The Board must "adopt regulations *to ensure that* . . . land application, marketing, and distribution of sewage sludge is performed in a manner that will protect public health and the environment; and . . . the escape, flow or discharge of sewage sludge into state waters, in a manner that would cause pollution of state waters, [is] prevented." Va. Code Ann. § 62.1-44.19:3(B)(ii-iii) (2016) (Exhibit 1) (emphasis added). These statutory obligations were designed specifically to address situations with an increased "risk that land application may adversely impact state waters." Va. Code Ann. § 62.1-44.19:3.

Because the statute does not define the term "ensure," it is appropriate to consult the dictionary definition to determine the scope of the Board's mandate. *See, e.g., City of Richmond v. Confrere Club of Richmond, Virginia, Inc.*, 387 S.E.2d 471, 473 (1990) (determining the General Assembly's intent from the plain meaning of the words used); *Harris v. Com.*, 650



S.E.2d 89, 92 (2007) (referring to the dictionary definition of a box cutter for the statute’s plain meaning); *Hill v. State Farm Mut. Auto. Ins. Co.*, 375 S.E.2d 727, 729 (1989) (consulting the dictionary definition of a motor vehicle for an undefined statutory term). To “ensure” means to make certain something will occur. See OXFORD ENGLISH DICTIONARY, available at <http://www.oed.com/view/Entry/62745>. Therefore, not only must the Sludge Regulations result in the protection of public health and the environment and the prevention of water pollution, but the Board also has an affirmative duty to make certain the regulations it promulgates will accomplish these outcomes. If, under any circumstances, the Sludge Regulations could fail to protect public health and the environment or prevent water pollution, the Board has violated its duties under the State Water Control Law.

First, the Board must make certain its Sludge Regulations “protect public health and the environment.” Va. Code Ann. § 62.1-44.19:3(B)(ii) (2016) (Exhibit 1). Although the statute does not define the term “protect,” the plain meaning of the word is “to defend or guard from danger or injury.” *Protect*, OXFORD ENGLISH DICTIONARY, <http://www.oed.com/view/Entry/153127> (last visited March 2, 2016). Thus, if the Sludge Regulations may endanger public health or the environment, the Board has violated its duty under the State Water Control Law. Second, the Board must make certain its Sludge Regulations prevent the “pollution of state waters.” Va. Code Ann. § 62.1-44.19:3(B)(iii) (2016) (Exhibit 1). Pollution is defined in the statute as the alteration of surface or ground water in a way that renders it “harmful or detrimental or injurious to the public health . . . or [the aquatic environment].” Va. Code Ann. § 62.1-44.3 (2016) (Exhibit 1).

These straightforward mandates give the Board clear direction in its promulgation of the Sludge Regulations. The Board is required to make certain that, under its regulations, public

health and the environment will be protected and water pollution will be prevented. As described below, the Board lacked substantial evidence in the record on which to base a conclusion that the Sludge Regulations would ensure these outcomes, and thus the Board has violated its statutory mandate.

**II. The Board violated the State Water Control Law because its Sludge Regulations endanger public health and the environment and cause water pollution.**

The Commonwealth entrusts the Board with promulgating regulations that both allow Virginia's agricultural industry to store and apply sewage sludge safely and satisfy the Board's aforementioned statutory mandates. The Board has failed its obligations to Virginians' health and the Commonwealth's environment by failing to ensure that harmful nutrients and chemicals will not enter the waterways. The Sludge Regulations make such pollution likely by permitting storage of sewage sludge on karst formations and by allowing the over-application of sewage sludge to crops. Despite having been provided with ample evidence about the likelihood and severity of the Sludge Regulations' environmental and health risks, the Board failed to engage with those issues and its ultimate determinations lacked substantial supporting evidence. In consequence, the Commonwealth's Sludge Regulations violate the State Water Control Law.

**A. The Sludge Regulations, by allowing the storage and application of sewage sludge in karst areas, will harm public health and the environment.**

The Board's Sludge Regulations will allow sewage sludge to pass through karst into ground and surface waters, ultimately harming public health and the environment. Karst formations exist throughout Virginia. *See* Presentation of the Va. Dept. of Conservation and Recreation's Karst Program and Project Underground 6-9, 22 (2004) (cited by Frits van der Leeden et al., Public Notice Comment 162, at 4 (Apr. 28, 2011), AR 25, Pet. App. 000157-000157), Pet. App. 000159-000161, 94 (Exhibit 4); *see also* VIRGINIA REGULATORY TOWN

HALL, FINAL REGULATION AGENCY BACKGROUND DOCUMENT 601 (Oct. 3, 2011), AR 31A, Pet. App. 000957 (Exhibit 9) (“[a]t least 29 counties support Karst terrain in western Virginia, and smaller Karst areas also occur in the Cumberland Plateau, Piedmont and Coastal Plain provinces”); Jeff Kelble, Bridgewater Public Hearing Transcript 71:19-24, AR 23, Pet. App. 001073 (Exhibit 21) (noting that for large portions of the Shenandoah Valley, geologic maps reflect karst terrain underneath most fields). Karst is characterized by numerous sinkholes and fissures “that allow stormwater to discharge directly to aquifers without the filtration and pollutant removal that normally would occur during groundwater infiltration.” Jeff Kelble, Public Notice Comment 159, at 2 (Apr. 29, 2011), AR 25, Pet. App. 000004 (Exhibit 3).

Thus, application of sewage sludge on karst areas allows sludge to flow nearly unimpeded into the aquifer below, contaminating groundwater, and in some cases surface water, with various toxic components. *See id.* “The extreme rapidity and distances, and unpredictable pathways of subsurface flow in these aquifers” makes application of sewage sludge on karst formations extremely dangerous. *See Philip Coulling, Public Notice Comment 162, at 2 (April 29, 2011), AR 25, Pet App. 000154 (Exhibit 23).*

When sewage sludge enters ground and surface waters, it endangers public health and the environment. Scientific studies show that when sewage sludge seeps into water, its chemicals and toxins enter the environment and, ultimately, humans’ bodies. *See Khalil Hassan, Public Notice Comment 28, at 1-2 (Mar. 27, 2011), AR 25, Pet. App. 000197-000198 (Exhibit 5).* Exposure to these chemicals can cause learning, developmental, and other health disorders. *See id.* Further, “[n]utrients (primarily nitrogen and phosphorus) are a primary concern for water quality,” as excess nutrients in lakes, rivers, and other water bodies can cause excessive algal growth that results in an ecosystem “no longer hospitable to fish and most other aquatic life.”

PANEL OF EXPERTS CONVENED BY THE SECRETARY OF NATURAL RESOURCES AND THE SECRETARY OF HEALTH AND HUMAN RESOURCES TO STUDY THE IMPACT OF THE LAND APPLICATION OF BIOSOLIDS ON HUMAN HEALTH AND THE ENVIRONMENT PURSUANT TO HJR 694, FINAL REPORT TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA, H. REP. NO. 27, at 16 (Va. 2008) (hereinafter “H. REP. NO. 27”), AR 4C, Pet. App. 000232 (Exhibit 10). In the Commonwealth, the Chesapeake Bay and its tidal tributaries have already been degraded by high nutrient levels. *Id.*

Likely for all of these reasons, the Sludge Regulations ban the temporary staging of sewage sludge on karst. *See* 9 Va. Admin. Code § 25-32-545(B)(2)(a) (“In areas of Karst topography, biosolids offloaded at a permitted land application field shall be land applied by the end of the business day.”). In contrast, the long-term storage of sewage sludge on karst, which presents an even greater risk to public health and the environment than short-term staging, *see* Jeff Kelble, Public Notice Comment 159, at 2 (Apr. 29, 2011), AR 25, Pet. App. 000004 (Exhibit 3), remains under-regulated in Virginia. These inconsistent regulations are unlawful, as they contravene the Board’s duty to make certain its regulations protect public health and the environment, and are not supported by substantial evidence in the record.

The Board had before it a thorough discussion of the health and environmental risks posed by storage and application of sewage sludge on karst. As noted, the Virginia legislature directed that a Biosolids Expert Panel be convened to study the impacts of sewage sludge on human health and the environment. H.J.R. 964, 2007 Leg. (Va. 2007), AR 1, Pet. App. 000001 (Exhibit 2). The Expert Panel on Biosolids “recognize[d] that some individuals residing in close proximity to biosolids land application sites have reported varied adverse health impacts,” and it “recognize[d] that odors from biosolids could potentially impact human health, well-being and

property values.” H. REP. NO. 27, at 12, AR 4C, Pet. App. 143 (Exhibit 10). The Panel also considered the adverse impacts of excess nutrients on water quality. *Id.* at 16, AR 4C, Pet App. 000232 (Exhibit 10).

In its consideration of these issues, the Panel had before it reports that warned the application of sewage sludge on karst could cause groundwater contamination. *See, e.g.,* Ian L. Pepper, *Sustainability of Land Application of Class B Biosolids*, 37 J. ENV. QUAL. 58, 58-62 (2008), AR 3E, Pet. App. 000351 (Exhibit 8) (stating, “ground water contamination from land application of biosolids does not appear likely—other than in areas where karst soils predominate with the potential for preferential flow”). The Panel discussed the fact that some sites are “particularly susceptible to nutrient loss to ground water or surface water,” including those that contain or drain to areas which contain sinkholes, fields where over a third of the area contains soils with high potential for leaching, or soils lying over fractured or limestone bedrock, and others. H. REP. NO. 27, at 17, AR 4C, Pet. App. 000233 (Exhibit 10). The Panel’s report noted that “[t]here was discussion among Panel members as to whether or not the existing criteria for determining what is an environmentally sensitive site should be expanded . . . and whether the application of biosolids should be prohibited or simply limited in some certain areas,” including karst topography. *Id.*

As part of this discussion, Panel member Henry Staudinger, a citizen representative, specifically requested input from DCR about new science regarding the buffer determinations on karst formations. He was told that the issue would be discussed by the Technical Advisory Committee (TAC) convened regarding the Sludge Regulations. Biosolids Expert Panel, Combined Meeting of the Environmental and Health Subcommittees (October 1, 2008), at 11-12, AR 2-k, Pet. App. 001254-001255 (Exhibit 24). Ultimately, the Panel did not reach a consensus

regarding the appropriate application restrictions on these sites, but recommended that the TAC consider this issue, *id.*, and give “special considerations . . . to the methods used to address circumstances such as . . . restrictions applicable to karst topography[.]” H. REP. NO. 27, at 20, AR 4C, Pet. App. 000236 (Exhibit 10).

The TAC, which notably had no representation from organizations representing the interests of the Commonwealth’s rivers or the Chesapeake Bay, STATE WATER CONTROL BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON SEPTEMBER 22, 2011, 1340-1345, 1628-42 (Va. 2011), AR 32, Pet. App. 000307, 000314 (Exhibit 7), engaged in limited discussion of the dangers of storing and applying sewage sludge in areas with karst formations. Information regarding the danger of storage and application on karst was before the TAC, including a document from the U.S. Environmental Protection Agency that explicitly recommended that, to prevent leaching of nutrients into water, sewage sludge should not be stored on soils “adjacent to or on limestone features such as sinkholes or rock outcrops.” United States Environmental Protection Agency, Office of Wastewater Management, Guide to Field Storage of Biosolids, Chapter 3, “Water Quality,” at 26 (July 2000), AR 4-d, Pet. App. 001426 (Exhibit 25). The same document further instructs that “[s]tockpiles do not belong on or adjacent to karst features such as sinkholes or rock outcroppings.” *Id.* at Chapter 5, “Recommended Management Practices,” at 42, Pet. App. 001442 (Exhibit 25). After an inconclusive discussion of the karst issue by the TAC, Board staff committed to examining what other states are doing to address the site-specific environmental conditions in karst areas. Biosolids Technical Advisory Committee, Final Meeting Notes (April 24, 2009), at 37, AR 12-b,

Pet. App. 001534 (Exhibit 26). The issue of storage and application of sewage sludge on karst did not receive additional treatment by the TAC.<sup>3</sup>

In addition to discussions by the Expert Panel and the TAC, Jeff Kelble, President of PRK, offered extensive comments to the Board about the nature of karst and its inability to contain sewage sludge. *See* STATE WATER CONTROL BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON SEPTEMBER 22, 2011, 1532-34 (Va. 2011), AR 32, Pet. App. 227 (Exhibit 7) (stating that “DEQ has provided absolutely no basis in the record for provisions they have provided for karstic features and the application of sludge over them”). The Board received numerous other public comments on this same issue. *See, e.g.*, Bridgewater Public Hearing Transcript, Comment from Mary Gessner, 49:11-14, AR 23, Pet. App. 001051 (Exhibit 21) (“Applications should not be allowed on fields containing karst features . . . .”); Bridgewater Public Hearing Transcript, Comment from Leslie Mitchell-Watson, 53:11-17, 54:22-55:2, AR 23, Pet. App. 001055-001056 (Exhibit 21) (noting that “although the use of sludge may be less risky in some regions of the Commonwealth, the proliferation of karst landscape characterized by sink holes, solution channels and caves makes areas such as the North For Watershed too risky for spreading sewage sludge,” and requesting complete exclusion of karst landscaped [sic] characterized by sink holes, solution channels and caves” from

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<sup>3</sup> Following the TAC meeting where this discussion occurred, the TAC’s three citizen members resigned from the committee, citing their conclusion that the TAC had “predetermined outcomes” about the effects of sewage sludge on health and the environment. Letter from Henry J. Staudinger, Chris Nidel, and Jo Overbey to Neil Zahradka, DEQ (May 18, 2009), Public Notice Comment 146-26 (Apr. 27, 2009), AR 25, Pet. App. 000999 (Exhibit 14). During the TAC committee meeting that followed the resignation of those members, a member of the public reiterated that the TAC had, to date, “not addressed the health and environmental issues raised by the citizens,” and that, because the “TAC ha[d] neither the relevant facts of citizen exposure and effects nor the expertise to objectively address the underlying issues,” the burden was on DEQ to address citizen health and environmental concerns. Biosolids Technical Advisory Committee, Final Meeting Notes (May 22, 2009), at 41-42, AR 13-b, Pet. App. 001584-001585 (Exhibit 27).

application of sewage sludge); Henry Staudinger, Public Comment 146-63, “Land Application of Biosolids: A Citizen’s Perspective,” 2004 VWEA Education Seminar, AR 25, Pet. App. 001090-001091 (Exhibit 22) (noting that “the design of buffers and application limits to address runoff and erosion were based on outdated science, especially with respect to karst,” and that, as of 2004, he had been waiting for follow-up on that issue for five years while “applications on karst have increased”); David Sligh, Public Comment 161, at 4, AR 25, Pet. App. 000203 (Exhibit 6) (“Because of its unique characteristics . . . karst terrain presents a very high risk of contamination of ground and surface waters”).

In contrast, the record contains no evidence explaining the departure of the Board from these recommendations and from its own recognition that staging on karst should not be allowed. Although the Board’s background document includes a section titled, “DEQ Response to Comments: Environmental Concerns: Water Quality, Karst Topography, TMDLs, Slope and Buffers,” that section failed to address the topic of sewage sludge on karst in any meaningful way. *See* VIRGINIA REGULATORY TOWN HALL, FINAL REGULATION AGENCY BACKGROUND DOCUMENT 423-24 (Oct. 3, 2011), AR 31A, Pet. App. 000779-000780 (Exhibit 9). Further, the Board’s decision to depart from its early statement that it intended to “offe[r] a little more flexibility with short term storage, but [be] a little bit more restrictive” with longer-term storage was also left unexplained. STATE WATER CONTROL BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON DECEMBER 14, 2009, 65-68, AR 18, Pet. App. 001587-001588 (Exhibit 28). Mr. Kelble pointed out these insufficiencies directly to the Board, stating that the agency “has provided absolutely no basis in the record for provisions they have provided for karstic features and the application of sludge over them.” STATE WATER CONTROL



BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON SEPTEMBER 22, 2011, 1532-34 (Va. 2011), AR 32, Pet. App. 000312 (Exhibit 7).

Apart from the vague comments in the DEQ Response, the Board's response to the numerous and substantive comments it received on the subject of karst appears to have taken only two forms: a requirement of certain setback distances between the application of sewage sludge and certain karst features, such as sinkholes and limestone rock outcrops, *see* 9 VAC 25-32-560(e), Table 1 (2016); and a catch-all provision vesting DEQ with authority to go beyond the requirements of the Sludge Regulations on a case-by-case basis. Neither satisfies the Board's statutory mandate nor are they supported by substantial evidence.

First, the setback distances in the Regulations fail to protect public health and the environment, and to prevent pollution. In general, setbacks do not address the vulnerability of the entire karst formation, virtually all of which is fractured and contains pathways that readily transport surface precipitation to groundwater. *See* Winfield G. Wright, *Ground-Water Hydrology and Quality in the Valley and Ridge and Blue Ridge Physiographic Provinces of Clarke County, Virginia*, U.S. Geological Survey, Water-Resources Investigations Report 90-4134, Pet. App. 000084-000089 (cited by Jeff Kelble, Public Notice Comment 159, at 2 n.6 (Apr. 29, 2011), AR 25, Pet. App. 000003-000004) (Exhibit 32). Moreover, the setbacks employed in the Regulations fail to protect public health because they do not require vegetated buffers. Scientific studies demonstrate that significant vegetated buffers are necessary to adequately protect the environment from contaminants in stormwater runoff. *See* Richard Lawrence et al., *Evaluation of Coastal Plain Conservation Buffers Using the Riparian Ecosystem Management Model*, 37(6) J. AM. WATER RESOURCES ASS'N 1445, 1445-55 (2001), Pet. App. 000135-000145 (cited by Jeff Kelble, Public Notice Comment 159, at 1-2 (Apr. 29,

2011), AR 25, Pet. App. 3-4) (Exhibit 11); *see also* Thomas E. Jordan et al., *Nutrient Interception by a Riparian Forest Receiving Inputs from Adjacent Cropland*, 22(3) J. ENV'T'L QUALITY 467, 467-473 (1993), Pet. App. 000146-000152 (cited by Jeff Kelble, Public Notice Comment 159, at 1-2 (Apr. 29, 2011), AR 25, Pet. App. 000003-000004) (Exhibit 12). Rather than requiring vegetated buffers, the Regulations permit a decrease in setback requirements when such buffers are employed, offsetting any gains. *See* 9 VAC 25-32-560(e), Table 1 (2016).

The Board's setback distances regarding sinkholes are also subject to waiver. The 50-foot setback requirement from a "closed sinkhole" can be reduced or waived by DEQ following evaluation by a professional soil scientist. *Id.* During the Board's final hearing on the Regulations, it acknowledged that this may result in application of sewage sludge on top of sinkholes that have simply been filled with soil and farmed over. *See* STATE WATER CONTROL BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON SEPTEMBER 22, 2011, 458-472 (Va. 2011), AR 32, Pet. App. 000285 (Exhibit 7). As noted, karstic formations and sinkhole formations are extremely large and often not evident from a casual inspection, and sewage sludge applied on top of sinkhole formations may flow unimpeded into groundwater. Thus, this approach fails to ensure that such setbacks will be sufficiently protective to meet the Board's statutory obligations.

And despite the Board's reliance on the TAC, the record does not reflect any follow-up regarding comparisons of other state programs for application and storage of sewage sludge on karst, as the TAC had recommended. Information on this precise issue, however, was provided to the Board by Jeff Kelble. Mr. Kelble noted in his public comments that "Ohio prohibits the application of sewage sludge within 300 feet of a sinkhole without a grass buffer, and within 100 feet of a sinkhole with a grass buffer," and that "[t]he Missouri Department of Natural Resources

best management practices also recommend prohibiting the application of sewage sludge within 300 feet of a sinkhole.” Jeff Kelble, Public Notice Comment 159, at 4 n.12 (Apr. 29, 2011), AR 25, Pet. App. 000006 (Exhibit 3). This information, expressly acknowledged as relevant by the Board, further demonstrates the inadequacy of the buffers employed by the Sludge Regulations.

The Board further weakened the stringency of its approach by adopting a catch-all provision that allows for case-by-case imposition of more stringent requirements for the use or disposal of sewage sludge. 9 VAC 25-32-315. The record is replete, however, with evidence showing the insufficiency of this *ad hoc* approach. As the Commonwealth acknowledged in its Notice of Intended Regulatory Action at the beginning of the process of promulgating the Sludge Regulations, establishing appropriate buffers *in the regulations* is important “due to the fact that not all concerns may be identified during the permitting process, and some issues that may not have been present prior to application may arise after land application has occurred.” Notice of Intended Regulatory Action (NOIRA) Agency Background Document, at 4, AR 5, Pet. App. 001601 (Exhibit 29) (emphasis added). Indeed, the Board had comments before it that noted the structural perils of a discretionary approach, *see Lynchburg Public Hearing Transcript*, 121:5-122:15, AR 21, Pet. App. 001724-001725 (Exhibit 30), and that expressly described DEQ’s past “reluctan[ce] to impose more than the absolute minimum,” even where other provisions allowed it to apply additional conditions. *Bridgewater Public Hearing Transcript*, Comment from Mary Gessner, 50:2-21, AR 23, Pet. App. 001052 (Exhibit 21). Jeff Kelble explicitly noted that DEQ had not previously exercised its discretion to “go further” regarding a permit, and expressed skepticism that the agency would have the resources to do so going forward. *Id.* at 72:19-73:9, Pet. App. 001074-001075. The Board failed to respond to evidence that its discretionary ability

to alter the requirements of the Sludge Regulations would be insufficient to meet its statutory obligations.

The record simply does not contain any evidence upon which a decision could have been made to permit storage and application of sewage sludge in areas of karst formation, particularly in light of the Board's ban on the staging of sewage sludge on those same areas. Because the record does not contain substantial evidence upon which the agency could reasonably find as it did regarding its allowance of application and storage of sewage sludge on karst areas, these elements of the Sludge Regulations should be remanded to the Board.

**B. The Sludge Regulations also endanger public health and the environment because they repeal the agronomic rate limit requirement for sludge application.**

The Board also violated the State Water Control Law by removing the requirement that sludge application be limited to agronomic rate limits, or the maximum amount of nutrients that crops are able to absorb, and thus allowing excess nutrients to pollute the environment. Prior to 2013, when the Sludge Regulations were adopted, the Virginia Board of Health ("VBH") required that sewage sludge application be limited to agronomic rate limits. *See* 9 Va. Admin. Code § 25-32-600A (repealed 2013) ("Section 600A"). But, in the most recent Sludge Regulations, the Board repealed Section 600A, enabling a sewage sludge applicator to apply more nutrients to crops than they can absorb. When excess nutrients are applied to crops, nitrogen and phosphorus run off the agricultural lands and seep into ground and surface waters. *See* STATE WATER CONTROL BOARD, EXCERPT FROM THE PROCEEDINGS OF THE STATE WATER CONTROL BOARD ON SEPTEMBER 22, 2011, 1579-1609 (Va. 2011), AR 32, Pet. App. 000313 (Exhibit 15); *see also, e.g.*, Dr. Lynton S. Land, Public Notice Comment 179 (Apr. 28, 2011), AR 25, Pet. App. 1000-1002 (Exhibit 16).

As noted previously, excess nutrients—especially phosphorous—harm human health and the environment. When phosphorous concentrations increase, phosphate-dependent organisms can take over a water body and reduce the amounts of oxygen and sunlight available to other aquatic organisms. *See* Jeff Kelble, Public Notice Comment 159, at 5 (Apr. 29, 2011), AR 25, Pet. App. 000007 (Exhibit 3). This process renders a water body harmful to the health of aquatic life as well as to the health of any nearby humans. *See id.* These effects are inconsistent with the Board’s statutory mandates to protect public health and the environment and prevent water pollution.

The Sludge Regulations provide for the use of Nutrient Management Plans (NMP) to regulate the use of nitrogen and phosphorus. The NMP does not provide the same safeguards as an agronomic rate limit, particularly with regard to application of phosphorus. The NMP allows for one of three methods can be used to calculate organic sources of phosphorus: an agronomic soil test, an environmental threshold soil test, or use of a P-index model. The Expert Panel Report notes that the soil test method is preferred by the Virginia Department of Conservation and Recreation, and is the simplest to implement. H. REP. NO. 27, at 17 (Va. 2008), AR 4C, Pet. App. 000233 (Exhibit 17). Nonetheless, the Regulations allow the use of the environmental threshold soil test and the P-index, despite concerns from the Commonwealth that such methods could cause environmental harms. In its Final Report, the Biosolids Expert Panel warned that use of the P-index “may significantly understate losses [of phosphorous to state waters] if a former agricultural field is subjected to land disturbance.” H. REP. NO. 27, at 18 (Va. 2008), AR 4C, Pet. App. 000234 (Exhibit 17). The Board ignored this warning and did not mention the Expert Panel’s concerns about excess nutrients and water pollution in the Agency Background document. *See* VIRGINIA REGULATORY TOWN HALL, FINAL REGULATION AGENCY BACKGROUND

DOCUMENT 423-24 (Oct. 3, 2011), AR 31A, Pet. App. 000779-000780 (Exhibit 9). Any explicit mention by the Board of the repeal of Section 600A is limited to a note that the “requirements [were] already addressed in other sections of the requirements.” *Id.* at 339, Pet. App. 000695. The Board thus approved regulations that may, in fact, significantly understate the pollution of phosphorus into the waters of the Commonwealth, in violation of its obligations under the State Water Control Law and unsupported by substantial evidence in the record.

The Sludge Regulations’ changes to the agronomic rate requirements also contradict the Commonwealth’s environmental efforts in the Chesapeake Bay. Virginia has spent decades trying to protect and improve the water quality of the Chesapeake Bay. In 1988, its legislature passed the Chesapeake Bay Preservation Act in order “to protect and improve the water quality of the Chesapeake Bay, its tributaries, and other state waters by minimizing the effects of human activity upon these waters.” 9 Va. Admin. Code § 25-830-30 (2016) (Exhibit 18). The federal government has also taken action to reduce pollution in the Chesapeake Bay. In 2010, the U.S. Environmental Protection Agency established the Chesapeake Bay Total Maximum Daily Load (TMDL), which sets limits for nitrogen, phosphorous, and sediment in the Chesapeake Bay, in order to meet water quality standards. *See* U.S. EPA, “Fact Sheet: Chesapeake Bay Total Maximum Daily Load (TMDL),” *available at* [https://www.epa.gov/sites/production/files/2015-07/documents/bay\\_tmdl\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2015-07/documents/bay_tmdl_fact_sheet.pdf) (Exhibit 31). By allowing excess phosphorus to pollute the Chesapeake Bay and harm public health and the environment, the Board’s Sludge Regulations not only violate the State Water Control Law, but are inconsistent with Commonwealth and Federal efforts to clean up the Chesapeake Bay. *See* REPORT OF THE JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION, REVIEW OF LAND APPLICATION OF BIOSOLIDS IN VIRGINIA, FINAL REPORT TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA, H. REP.

No. 89 (Va. 2005), AR 7-c, Pet. App. 001773 (Exhibit 34) (noting that “nutrient runoff from agricultural sites in the Commonwealth is considered a leading cause of impairment affecting the Chesapeake Bay and Virginia’s rivers and streams”).

### **CONCLUSION**

The State Water Control Law provides the Board with explicit duties to protect public health and the environment and prevent water pollution. In issuing regulations which allow the application and storage of sewage sludge in karst areas and the over-application of nutrients to crops, the Board has violated its statutory duties to Virginians’ health and the Commonwealth’s environment. There is a striking absence of substantial evidence in the record to support the Board’s determinations. Accordingly, this Court should remand the Sludge Regulations so the Board may satisfy its duties and promulgate safe regulations for the storage and application of sewage sludge in Virginia.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I, the undersigned, hereby certify that on May \_\_, 2016, true copies of the foregoing **Petitioners' Opening Brief** were served on the following parties by hand:

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