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Colonial Property, Private Dams, and Climate Change in Virginia

Jill Fraley¹

Abstract: Dams have been a significant part of flood prevention and management systems in the United States, dating back to the systematic efforts of the Tennessee Valley Authority and, less systemically, long before that. Dealing with flood management in Virginia presents unique challenges because of a colonial legacy that allows most dams in Virginia to be privately owned. Through a mechanism called King's Grants, some Virginia landowners hold title not simply to property surrounding a navigable waterway, but also to the soil beneath the river and to dams crossing the river. Such ownership of the soil of large, navigable waterways is unique to this particular type of land grant as it has been construed by the Virginia Supreme Court. Dam management is a significant issue for public safety for two reasons. First, roughly 20% of Virginia's dams fall within the high hazard category, which means that significant loss of life and property would result from a breach. With climate change indicating a greater likelihood of high magnitude storms, dam failures are all the more anticipated. Private ownership causes unique challenges in this regard because expenses of dam renovations tend to far exceed the means of private landowners who hold title to roughly three-fifths of the dams in the state. Second, flood management requires coordinated and comprehensive action, which is a far greater logistical challenge when dams are managed and operated by more than a thousand individual landowners within the state. Despite those challenges, this article argues that such a comprehensive approach is the only option in the face of significant storm risks and sea level rise.

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I. Introduction

Quite reasonably, few texts attempt to address the breadth and complexity of property rights created in the early American colonies. Charters and grants established property in North America just as many feudal systems of property were disappearing within England.² Additionally, the British Crown

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² Will Sarvis, *Land and Home in the American Mind*, 22 J. NAT. RESOURCES & ENVTL. L. 107, 116–17 (2008–09) (“To some extent the states of the eastern seaboard continued an ancient Anglo and European practice which, in some cases, had begun to disappear in the Old World.”).

repeatedly altered its approach to grants and charters to fit the types of resources and economies of its colonies by, for example, switching from initial claims to mines of silver and gold to seeking profits from agricultural activities.³ The inheritance of a system itself in a period of substantial transformation combined with an attitude of experimentation within the colonial enterprise to generate a rich variety of property rights within the new colonies.⁴ Some of those rights have decreased in significance over time, but in other circumstances unusual rights have remained or even increased in significance. One such example of the latter case is private ownership of navigable rivers and their subaquatic soils.

The point of departure within the British common law and also within United States law is that navigable waterways and their subaquatic soils are vested in the sovereign for the use of the public as a whole.⁵ Within Virginia, the state Supreme Court has held that such rights may have been alienated from the public prior to the American Revolution through a specific type of grant known locally as a King's grant.⁶ As a result, navigable rivers in Virginia may be claimed by private parties, who in many cases own private dams. This article describes the history of such private rights within Virginia and examines the consequences of private ownership and operation of dams for the management of floods and extreme storms, which are anticipated to increase substantially with climate change.

II. Unique Colonial Property: The King's Grant

A. Property in Rivers and Submerged Lands

Within the British common law at the time of the American Revolution, property rights in rivers, submerged waters, and fisheries depended primarily on the categorization of the river as navigable or non-navigable. As John Davies explained in 1762,

There are two kinds of rivers; navigable and non navigable. Every navigable river, so high as the sea flows and ebbs in it, is a royal river, and the fishery of it is a royal fishery, and belongs to the king by his prerogative; but in every other river non navigable, and in the fishery of such river, the ter-tenants on each side have an interest of common right.⁷

³ See Robert J. Miller, *The International Law of Colonialism: A Comparative Analysis*, 15 LEWIS & CLARK L. REV. 847, 869 (2011) (stating that the 1670 royal charter granted to the Hudson's Bay Company enabled the Company to make discoveries regarding minerals); see also Gary D. Libecap, Dean Lueck, and Trevor O'Grady, *Large-Scale Institutional Changes: Land Demarcation in the British Empire*, 54 J.L. & ECON. 5295, 5298 (2011) (starting in the mid-seventeenth century, the British refocused their attention on New World lands).

⁴ Olivier De Schutter, *The Green Rush: the Global Race for Farmland and the Rights of Land Users*, 52 HARV. INT'L L. J. 503, 528 (2011) (stating that the "unequal agrarian structures inherited from the colonial era" made titling lands in America more complex).

⁵ See *Martin v. Lessee of Waddell*, 41 U.S. 367 (1842) (stating that the land grant to the Duke of York is held by the king in trust for his people).

⁶ See *Kraft v. Burr*, 476 S.E.2d 715 (Va. 1996) (holding that the King had power to convey land under navigable waters to private persons).

⁷ JOHN DAVIES, A REPORT OF CASES AND MATTERS IN LAW: RESOLVED AND ADJUDGED IN THE KING'S COURTS IN IRELAND 152 (1762).

Thus, non-navigable rivers, by default, transferred with the surrounding property. Fishery rights naturally accompanied such rights to the underlying soils.⁸

Under British law, the basic approach to property was that the King “was the ultimate owner of all the lands he ruled.”⁹ Therefore, the navigable rivers were held in trust for the public as a whole by the King. While the King was owner of such property, “the common people of England have regularly a liberty of fishing in the sea, or creeks, or arms thereof, as a public common of piscary, and may not, without injury to their right, be restrained of it.”¹⁰ Such rights could be abrogated within “creeks or navigable rivers,” but only where “either the king or some particular subject hath gained a propriety exclusive of that common liberty.”¹¹ With the American Revolution, the King’s rights became vested in the newly created American states and “the people of each state became themselves sovereign; and in that character hold the absolute right to all their navigable waters and the soils under them for their own common use, subject only to the rights since surrendered by the Constitution to the general government.”¹²

This position is, of course, only a default. Such “soil below low-water mark is the subject of exclusive propriety and ownership, belonging to the State on whose maritime border, and within whose territory it lies,” but such public ownership remains “subject to any lawful grants of that soil by the State, or the sovereign power which governed its territory before the declaration of independence.”¹³ A private party may hold such lands “by the king’s charter or grant; and this is without question. The king may grant fishing within a creek of the sea, or in some known precinct that hath known bounds, though within the main sea. He may also grant that very interest itself, viz. a navigable river that is an arm of the sea, the water and soil thereof.”¹⁴ Both the default of public ownership and the possibility of private ownership were memorialized within the Virginia Code.¹⁵

The default of public rights had to be considered against claims of private owners to navigable rivers and their soils — an issue complicated by the long history of experimentation in the charters issued by the King for lands in North America.¹⁶ Over time, charters and their interpretations in North America followed a “trend downward toward easy tenures ... to the detriment of the king’s interests.”¹⁷ More and more commonly, rights that had been held to the King were, at least in part, transferred either to private parties or to governing persons or corporations within the colonies. Such trends are significant here only in that such variation among charters and grants across nearly two centuries of colonial government means that determining the precise character of rights acquired involves specific inquiries into each individual grant.

⁸ See WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND: BOOK THE SECOND 262 (5th ed. 1825) (“Yet it seems only to be reasonable, where the soil of the river is equally divided between the owners of the opposite shores: for if the whole soil is the freehold of any one man, as it must be whenever a several fishery is claimed, there it seems just (and so is the usual practice) that the eyotts or little island, arising in any part of the river, shall be the property of him who owneth the piscary and the soil.”).

⁹ Viola Florence Barnes, *Land Tenure in English Colonial Charters of the Seventeenth Century*, in ESSAYS IN COLONIAL HISTORY PRESENTED TO CHARLES MCLEAN ANDREWS 4 (Yale Univ. Press, 1931).

¹⁰ *Martin*, 41 U.S. at 412.

¹¹ *Id.*

¹² *Id.* at 410.

¹³ *Smith v. Maryland*, 59 U.S. 71, 74 (1855).

¹⁴ *Commonwealth v. Morgan*, 303 S.E.2d 899, 902 (Va. 1983).

¹⁵ See VA. CODE ANN. § 62.1-1 (1950).

¹⁶ See Barnes, *supra* note 9, at 4 (stating that charters are “not by any means all alike.”); see also CHARLES ANDREWS, THE COLONIAL PERIOD OF AMERICAN HISTORY: ENGLAND’S COMMERCIAL AND COLONIAL POLICY 4 (Yale Univ. Press, vol. 4 1938).

¹⁷ *Id.* at 10.

The process and corollary burdens of such inquiries are of considerable concern when it comes to navigable waters and submerged lands because those cut against the default position of public ownership. As the Supreme Court observed in 1847, “[t]he dominion and property in navigable waters, and in the lands under them, being held by the king as a public trust, the grant to an individual of an exclusive fishery in any portion of it, is so much taken from the common fund.”¹⁸ Thus, the Court held that “grants of that description are therefore construed strictly — and it will not be presumed that he intended to part from any portion of the public domain, unless clear and especial words are used to denote it.”¹⁹

Debates over the proper construction of grants that might or might not include a navigable waterway have continued for centuries now. By 1771, for example, the city of London claimed ownership of the soil of the river Thames, a claim that was later challenged by others.²⁰ Within the United States, following the rule of strict construction, the vast majority of cases involving private ownership of navigable waterways and their soils have found in favor of public ownership and refused to recognize the rights claimed by private parties by virtue of their King’s grants.²¹

B. King’s Grants in Virginia

The Virginia Supreme Court most recently addressed this issue in *Kraft v. Burr*, holding that the King could (and did) grant to private owners exclusive fishing rights in navigable rivers and, therefore, private property in the river bottoms.²² For a particular subset of grants, often referred to as King’s grants, this case had the effect of standardizing the Crown intent to privatize navigable waterways, effectively removing the burdens of proving private ownership.²³ The Virginia Supreme Court justified its opinion by finding that the U.S. Supreme Court, for its part, had recognized the rights of the states to interpret grants within their own territories, even where interpretations may remove lands from the public trust.²⁴ To determine whether such a right exists in Virginia landowners, the court simply looks to whether or not the predecessors in title appear to have received specifically a grant of the soil of the river.²⁵

In light of the article included in this symposium issue by James Jennings and Erin Ashwell entitled “English Common Law Grants under Virginia Law: Rivers, Tides and the Taking Clause,” no further history of the King’s grants will be provided here.²⁶ For the purposes of this article, the primary point is that the King’s grant in Virginia has allowed for private ownership of navigable waterways and the construction of privately owned and operated dams along those waterways.

¹⁸ *Martin*, 41 U.S. at 411.

¹⁹ *Id.*

²⁰ THE LONDON MAGAZINE, OR GENTLEMAN’S MONTHLY INTELLIGENCER, vol. 40 at 231–232 (1771).

²¹ See, e.g., *Den v. Assoc. of the Jersey Co.*, 56 U.S. 426 (1854) (refusing to find private title in lands below the low-water mark because the soil under the public navigable river belonged to the state); *Martin*, 41 U.S. at 412 (finding that a transfer of rights in the navigable water soils were held by the private party by virtue of his powers of government of a colony rather than as a private owner and therefore vested in the state with the American Revolution).

²² 476 S.E.2d 715 (Va. 1996).

²³ For a more extensive discussion of this history, see Larry W. George, *Public Rights in West Virginia Watercourses: A Unique Legacy of Virginia Common Lands and the Jus Publicum of the English Crown*, 101 W. VA. L. REV. 407 (1998).

²⁴ *U.S. v. Chandler-Dunbar Water Power Co.*, 229 U.S. 53 (1913).

²⁵ *Wallace v. Hoggard*, 66 Va. Cir. 369, 371 (2005).

²⁶ See, James W. Jennings and Erin B. Ashwell, *English Common Law Grants under Virginia Law: Rivers, Tides, and the Takings Clause*, 5 SEA GRANT L. & POL’Y J. 29 (2013).

III. Virginia Dams

A. Ownership

The Commonwealth of Virginia contains 1,637 regulated dams,²⁷ which gives it the eighteenth most dams per state.²⁸ Of those dams, 632 are managed by the Department of Conservation and Recreation.²⁹ The remaining dams are operated by private parties. Within Virginia, a total of 1,077 dams are owned privately.³⁰ Some of these are owned by sophisticated operators, such as companies producing hydroelectric energy.³¹ The remaining dams are owned by private parties who manage the dams primarily for another purpose, such as recreation. The Goshen Dam, for example, is owned by the Boy Scouts of America.³²

B. Operation and Management

As an initial point, the operation and management of dams depends on the type of structure. Some dams are simply earth and rock-fill embankments, which are virtually watertight and simply hold water to a certain point and release excess via an overflow channel or spillway. Other dams have much more sophisticated potential — the ability to create controlled releases of water, whether the water level is high or low. For example, Dominion Power in Virginia makes such controlled releases and provides public information on them via their website.³³ In Virginia, such decisions are primarily made by the private owner of the dam, subject only to state water quality requirements.³⁴ Anecdotal information suggests that private owners may also make controlled releases when requested by county emergency planners on an ad hoc basis.

From a regulatory perspective, dam management in Virginia is vested in the Virginia Department of Conservation and Recreation (DCR),³⁵ which is primarily tasked with monitoring dam safety and floodplain management.³⁶ Management is a limited task in Virginia. A primary part of this task is the

²⁷ VA. SECTION AM. SOC'Y CIVIL ENGRS, 2009 VIRGINIA INFRASTRUCTURE REPORT CARD 1 (2009), available at <http://www.ascevirginia.org/vainfwg/2009%20Infrastructure%20Report%20Card%20Documents/Forms/AllItems.aspx>.

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ See Va. Center for Coal and Energy Research, Va. Energy Patterns and Trends, *Location of Electric Power Generation Plants by Primary Fuel Consumed*, <http://www.energy.vt.edu/vept/electric/plantlocations.asp#Hydro> (last visited Jan. 9, 2013) (providing a map of all power plant locations in Virginia).

³² See Rex Bowman, *Rockbridge Co. Residents Worry about Dam's Safety*, THE ROANOKE TIMES, Aug. 31, 2010, <http://www.roanoke.com/news/roanoke/wb/258750> (setting forth the community's concern about Goshen Dam and providing facts). For a report on the safety and operation of this dam, see GOSHEN DAM, LAKE MERRIWEATHER, VIRGINIA, DAM SAFETY EVALUATION REPORT DECISION DOCUMENT, available at http://www.co.rockbridge.va.us/departments/emerg_man/Dam%20Safety%20Report1.pdf (last visited Dec 6, 2012) [hereinafter GOSHEN DAM SAFETY REPORT].

³³ See Dominion, *Projected Flow Releases*, <https://www.dom.com/about/stations/hydro/lake-gaston/projected-flow-releases.jsp> (last visited Jan. 9, 2013) (providing daily projected flow releases for Gaston Dam).

³⁴ See GOSHEN DAM SAFETY REPORT, *supra* note 32, at 1.

³⁵ Va. Dep't Conservation & Recreation, <http://www.dcr.virginia.gov/> (last visited Jan. 9, 2013).

³⁶ See Va. Dep't Conservation & Recreation, *Dam Safety, Dam Safety, Floodplain Management*, http://www.dcr.virginia.gov/dam_safety_and_floodplains/index.shtml (last visited Jan. 9, 2013) (stating the purpose of the Dam Safety Program).

classification of dams. Dams are classified based on potential loss of human life or property damage if it were to fail. "Hazard potential classifications" descend in order from high to low, high having the greatest potential for adverse downstream impacts in event of failure.³⁷ The Virginia Soil and Water Conservation Board has provided a "Guidance Document on Impounding Structure Hazard Potential Classifications," which contains procedures for determining the hazard class of a dam.³⁸

Regulations require that any owner of an impounding structure must obtain a Regular Operation and Maintenance Certificate every six years. Applications must contain such information as: an operating schedule including the operation of control gates, spillways and drains; a maintenance plan and schedule; an inspection schedule; inspection reports; and, in some cases, an Emergency Action Plan. An Emergency Action Plan (EAP) is required for each High and Significant Hazard Potential Dam. It is the dam structure owner's responsibility to develop, maintain, exercise and implement an EAP, which is submitted every six years.³⁹

IV. Privately Owned Dams and Climate Change

A. Operation of Private Dams in Virginia

Notably, what is not a part of the Virginia DCR structure of dam regulation/management at the state level are directives related to the management of water levels and controlled releases of the dam. Those are left within the control of individual owners. Upon initial examination this might not seem to have vast implications, as surely private dam owners can be expected to strive to prevent flooding if only to minimize the possibility of their personal liabilities.

The situation is, however, much more complex. First, there are multiple goals that may be obtained through the management of water levels and controlled releases. These include, for example, flood damage reduction, navigation, power production, water quality, water supply, and recreation. Without governmental direction as to how to prioritize these various goals, private parties are likely to make their own decisions about how to pursue these varied — and often competing — goals. For example, in the operation of the Goshen Dam, the private owner has "maximized existing spillway capacity" during the winter months for aesthetic and recreational reasons, which ultimately led to "detrimental water quality downstream ... due to the sediment-laden discharges that occur during the winter months."⁴⁰ With respect to water quality, there are regulations allowing the Virginia Department of Environmental Quality to direct a private owner to operate the dam differently. Such provisions do not exist systematically for other goals, such as flood damage reduction. Second, and more importantly, while an individual dam operator may attempt to minimize the likelihood of a dam contributing to flooding, or even attempt to proactively prevent flooding through lowering water levels in advance, such interventions would be, at best, ad hoc and unsystematic.

By way of contrast, consider, for example, the Tennessee Valley Authority's (TVA) complex system of river management.⁴¹ TVA uses reservoir operating guides to provide a system for moving water through the river network.⁴² The TVA also maintains a sophisticated River Forecast Center where

³⁷ 4 VA. ADMIN. CODE § 50-20-40 (2012).

³⁸ VA. DEP'T CONSERVATION & RECREATION, DAM SAFETY, VIRGINIA SOIL AND WATER CONSERVATION BOARD GUIDANCE DOCUMENT ON IMPOUNDING STRUCTURE HAZARD POTENTIAL CLASSIFICATIONS (Jan. 14, 2010) available at http://www.dcr.virginia.gov/dam_safety_and_floodplains/documents/dshazardpotentialpolicy01-14-10.pdf.

³⁹ 4 VA. ADMIN. CODE § 50-20-175 (2012).

⁴⁰ See GOSHEN DAM SAFETY REPORT, *supra* note 32, at 3.

⁴¹ See Tenn. Valley Auth., *River Management*, <http://www.tva.com/river/index.htm> (last visited Jan. 9, 2013).

⁴² Tenn. Valley Auth., *Reservoir Operating Guides*, <http://www.tva.com/river/flood/opguides.htm> (last visited Jan. 9, 2013).

“[r]iver schedulers continually monitor weather conditions and water quality data, as well as water availability and demand — all with the goal of routing water through the river system to provide the most public value given changing weather conditions and water needs.”⁴³ Networked or comprehensive management of the river system allows the TVA greater control and flexibility when approaching major storm events, which are likely to increase with global climate change. Individually controlled dams in Virginia leave a significant portion of Virginia’s dams (roughly three-fifths) unavailable to participate in such emergency management operations.

B. Possibilities of Public Ownership?

Given that private ownership of navigable waterways and their subaquatic soils continues to be a topic of debate and public concern in Virginia,⁴⁴ it is only natural to ask whether it is possible for the public to gain control over these waterways. In light of the Virginia Supreme Court’s current position on this issue, such governmental appropriation of private dams would be a taking. Takings are acceptable for “public uses,”⁴⁵ for which flood and storm control in times of disaster would qualify.⁴⁶ However, such takings would still require compensation.⁴⁷

In the next section, this article considers the liabilities of private dam owners both under traditional tort principles and under current Virginia regulations related to the safety and maintenance of dams, as well as the liabilities of governmental entities to consider whether it might be in the best interest of private land owners to consider a voluntary transfer to the state — or at least a voluntarily surrender of the operation of dams — allowing the state to set priorities for water management and to make a determination as to whether it would be in the state’s best interest to accept such transfers.

V. Dam Operation Liabilities: Incentives to Forego Property Rights?

A. Private Dam Owners’ Liabilities

An owner of a private dam in Virginia is defined as the owner of the land on which an impounding structure is situated, the holder of an easement permitting the construction of an impounding structure, or any person or entity agreeing to maintain an impounding structure.⁴⁸ According to the Virginia Dam Safety Act, “[t]he owner shall be responsible for liability for damage to the property of others or injury to persons, including, but not limited to, loss of life resulting from the operation or failure of a dam.”⁴⁹

Traditionally, a variety of common law claims have supported damages against dam owners or operators in the event of flooding. Luckily, there is not a wealth of case law available on dam failures within the United States. With that said, there are enough cases to outline the parameters of potential liabilities. First, strict liability may be available for an inherently or abnormally dangerous business operation. In *Clark-Aiken Co. v. Cromwell-Wright Co.*, a Massachusetts court permitted a strict liability

⁴³ Tenn. Valley Auth., *River Forecast Center*, <http://www.tva.gov/river/flood/center.htm> (last visited Jan. 9, 2013).

⁴⁴ Citizens, particularly fly fishermen, continue to challenge private ownership of navigable waterways. See, e.g., Roy A. Hoagland, *Anglers learn that fishing in some VA rivers is at their own risk*, BAY JOURNAL (Sept. 2011) http://www.bayjournal.com/article/anglers_learn_that_fishing_in_some_va_rivers_is_at_their_own_risk.

⁴⁵ *Kelo v. City of New London*, 545 U.S. 469, 472 n.1 (2005).

⁴⁶ In considering the public use of a property, factors would include a project’s economic, environmental, and social ramifications. *Id.* at 474 n.2.

⁴⁷ *Id.* at 472 n.1.

⁴⁸ See 4 VA. ADMIN. CODE § 50-20-30 (2012) (setting forth definitions for Impounding Structure Regulations).

⁴⁹ VA CODE ANN. §10.1-613.4 (2012).

claim in the case of dam failure where the impounding of water via a dam was determined to be an “abnormally dangerous activity.” Whether any activity is “abnormally dangerous” and thus subject to strict liability is to be determined on a case-by-case basis,⁵⁰ which considers (1) the degree of risk created by the activity, (2) the gravity of the harm that may result, (3) whether the risk cannot be eliminated by the exercise of reasonable care, (4) whether the activity is not a matter of common usage, (5) whether the activity is appropriate to the place where it is carried out, and (6) the value of the activity to the community as laid out by the Restatement 2d Torts § 520. Within the Commonwealth of Virginia, there are indications that strict liability would apply, at least in the event of the failure of a dam. *Akers v. Mathieson Alkali Works*, a 1928 Virginia case, cites to Shearman & Redfield on Negligence, 6 ed., Cyclopaedia of Law and Procedure (40 Cyc. 684), and Ruling Case Law (27 R.C.L. 1210) to establish strict liability in the case of dam failure.⁵¹

Second, if strict liability were not available, claimants could pursue an action for negligence. In order to show liability for dam failure on the basis of negligence the plaintiff must show that the alleged negligence in the construction or maintenance of the dam was the proximate cause of the plaintiff’s injury. The plaintiff must meet this burden by a showing that (1) the negligence of the defendant caused the failure of the dam and (2) the failure of the dam caused the damage complained of.⁵² In addition, it seems likely that a private party would be unable to delegate this duty to another who might be constructing or maintaining the dam. The Supreme Court of Appeals of Virginia held in *Bowers v. Town of Martinsville* that preservation of banks of a canal during construction of a bridge was a non-delegable duty.⁵³ Following this line of reasoning, a dam owner would remain liable even if a contractor or subcontractor acted negligently.

Third, trespass claims have also been found viable for water entries onto neighboring land. The Supreme Court of Virginia in *Cooper v. Horn* held that plaintiff’s theory of trespass to land by the discharge of a large volume of water constructed by the defendant was properly put before a jury.⁵⁴ Notably, a showing of negligence is not a required element of the cause of action for trespass.⁵⁵

One important consideration in these cases will be whether or not the defendant-dam owner can take advantage of the “act of God” defense. This defense may not apply when an owner has the option to control or mitigate circumstances and may not apply where human agency was a cause contributing to the flood damage.⁵⁶ Furthermore, and perhaps most importantly in light of increasing storm damage and frequency, the act of God defense may not apply if a storm is not unprecedented. Currently, Virginia requests capacity for a storm dropping 28–38 inches of precipitation within 24 hours. Additionally, recent history shows Virginia storms with 18 inches in 8 hours and 30 inches in 16 hours.

Finally, in addition to the potential for tort or statutory liability in the event of flooding, dam owners are also liable for bringing dams into compliance with state regulations, which are changing to accommodate more severe and frequent storms. Current estimated costs of bringing each private dam into compliance with regulations is at least \$1.75 million, but is more likely between \$4 and \$6 million. The average dam is 50 years old and costs will continue to increase with age. Dam owners will be required to face these costs even without the arrival of a disastrous event.

⁵⁰ *Clark-Aiken Co. v. Cromwell-Wright Co.*, 323 N.E.2d 876, 887 (Mass. 1975).

⁵¹ *Akers v. Mathieson Alkali Works*, 144 S.E. 492, 495 (Va. 1928).

⁵² See 19 AM. JUR. 2D *Proof of Facts* 75 (1979) (setting forth the burden of proof).

⁵³ 159 S.E. 196, 202 (Va. 1931).

⁵⁴ *Cooper v. Horn*, 448 S.E.2d 403, 406–07 (Va. 1994).

⁵⁵ *Id.* at 406.

⁵⁶ *Id.* at 408.

B. "Bystander" Liability of Private Dam Owners

An important distinction must be made between the potential levels of liability for the private dam owner. As noted above, traditional common law causes of action provide liability for dam failures as well as flooding resulting directly from the operation of the dam. A different question is presented by the lack of preventative actions or the mere existence or arrangement of the dam within the water system.

With that said, the most recent case on point suggests that such liability may well exist. In *Robinson v. United States*, the Fifth Circuit considered whether there could be liability for aggravating the effects of Hurricane Katrina. The Court noted that the size and configuration of the Army Corps of Engineer's interventions within the city of New Orleans had "aggravated the storm's effects on the city and its environs."⁵⁷ This approach to liability suggests that more than simply negligent activities may give rise to liability; dam owners and operators may have an affirmative duty to consider their role in the movement of water through the river system in the event of extreme weather events.

C. Governmental Liabilities

If the Commonwealth of Virginia took over operation and/or ownership of private dams, the state would not inherit the same liabilities as those of the private owner. Examining potential liabilities from design and construction of levees in the case of *In re Katrina Canal Breaches Litigation*, the Fifth Circuit found that the government, specifically the Army Corps of Engineers, could not be held responsible because of the discretionary function exception to the Federal Tort Claims Act.⁵⁸

In *U.S. v. Gaubert*, the U.S. Supreme Court established a two-part test for determining whether a government action is a discretionary function. Discretionary functions "involve an element of judgment or choice"⁵⁹ and "government actions and decisions based on considerations of public policy."⁶⁰ Such a definition is likely to fit governmental actions balancing the various priorities of managing the flow of a watercourse such as navigation, power production, recreation, and flood and disaster control.

VI. Conclusion

The colonial legacy of unique private property rights in Virginia raises a specific set of problems for climate change. Rising sea levels and storms of increasing frequency and magnitude demand detailed planning and preparation. Private dams, particularly when operated to maximize other social goods such as recreation, prevent optimal management of river systems within the state.

In light of the possibilities of systemized river management and the significant liabilities that dam owners do and will face with climate change, this article suggests that the Commonwealth needs to determine the degree to which storm surges and flooding could be managed through systemized regulation of the river system. If enough water can be controlled through private dams that have the capacity for controlled releases, the state may wish to consider a program to allow relinquishment to these dams that have the option of controlled releases. In such a program, the state would take possession, moving management to the DCR, and assuming liability and costs of currently needed repairs. Acting with discretion, the DCR would be unlikely to have liability for dam failures and the DCR

⁵⁷ *In re Katrina Canal Breaches Litigation*, 696 F.3d 436, 441 (5th Cir. 2012).

⁵⁸ *Id.* at 436.

⁵⁹ *United States v. Gaubert*, 499 U.S. 315, 322 (1991).

⁶⁰ *Id.* at 323.

would have the opportunity to work pro-actively, using system-wide management to deal with storms and flooding.