



August 30, 2011

Ms. Valerie Rourke
Virginia Department of Environmental Quality
629 E. Main Street
Richmond, VA 23219

Re: Comments on Draft Report
Water Reclamation and Reuse

Dear Valerie:

Mission H₂O appreciates the opportunity to provide comments on DEQ's initial draft report entitled "Expanding Water Reclamation and Reuse in Virginia." At the outset, Mission H₂O notes that the General Assembly requested a study. The report reads as though it is a given that water reclamation and reuse should be promoted. Instead, the report should provide a balanced evaluation of whether reclamation and reuse can achieve the benefits sought by the General Assembly. Along those lines, the title of the report should be "Evaluation of Water Reclamation and Reuse in Virginia" rather than "Expanding Water Reclamation and Reuse in Virginia."

Water reclamation and reuse is an issue of great importance to our membership, which is comprised of water providers, industrial and agricultural water users, and wastewater treatment facilities. Despite the diversity in our membership, there are several points of commonality on the water reuse issue.

1. Water reclamation and reuse cannot be considered in a vacuum. The impact of such projects must be evaluated both from a water quality and a water quantity perspective.
2. The distinction between consumptive and nonconsumptive reuse projects should be addressed.
3. Directing incentives toward water reclamation and reuse projects means that scarce resources would be diverted from maintenance of existing distribution and other infrastructure. Moreover, encouraging reuse as a solution to the water quality issues in the Bay is a significant departure from the Commonwealth's



policy decision to invest in wastewater treatment plant upgrades. Changing course now could detrimentally impact those investments.

As requested, we have provided comments in a redline format in the draft study report provided by DEQ. It should also be noted that the study committee spent a great deal of time discussing the fact that stormwater reuse may present the greatest opportunities both for nutrient reductions, public receptivity, and minimal impact on instream flow. Stormwater reuse should receive greater attention in the report.

Mission H₂O may have additional comments during the public comment period.

Thank you for your work on this study. Mission H₂O recognizes that DEQ is attempting to assimilate a large volume of information within a relatively short window. To the extent additional time is needed, the study report could identify additional areas for study and a timeline for completing those additional studies.

If you have any questions about these comments, please call Andrea Wortzel at 804-788-8425.

Sincerely,

A handwritten signature in blue ink that reads 'Andrea Wortzel'. The signature is fluid and cursive.

Andrea W. Wortzel

Attachment

cc: Mission H₂O Members

ExpandingEvaluating Water Reclamation and Reuse
in Virginia

Prepared by the

Department of Environmental Quality

and

Virginia Department of Health

September 2011

Expanding Evaluating Water Reclamation and Reuse in Virginia

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I. Executive Summary

This report has been prepared by the Department of Environmental Quality, Water Division (DEQ) and the Virginia Department of Health, Division of Environmental Health Services and the Office of Drinking Water (VDH) in response to a line item of the 2011 Appropriations Act (Department of Health, Item 290), a letter request from Delegate Harvey Morgan, and 2011 amendments to § 10.1-2129 of the Virginia Water Quality Improvement Act. The report (1) evaluates whether and how reclamation and reuse can be effectively used to reduce nitrogen discharges into the Chesapeake Bay; (2) identifies the types of reclamation projects that are most likely to benefit water quality in Virginia; (3) proposes criteria for ensuring that such projects are managed in a way that is not detrimental to water quantity; and (4) suggests incentives that could be implemented to encourage such projects. ~~focuses on opportunities to expand the reuse of wastewater (also referred to as water reclamation and reuse) with the goal of conservation and reducing nutrient pollution of the Commonwealth's surface waters.~~ As part of this effort, new Water Quality Improvement Fund criteria to financially incentivize water reclamation and reuse ~~were explored and are discussed~~ were considered. Alternatives in addition to water reclamation and reuse, capable of conserving water and/or reducing nutrient pollution to surface waters, are also described [is this necessary to include? Doesn't this go beyond the scope of the requested study?].

As directed by the 2011 Appropriations Act (Department of Health, Item 290), VDH and DEQ convened a committee of stakeholders to assist in completing this report. ~~identify potential opportunities to expanding water reclamation and reuse in Virginia.~~ The agencies met with the committee on August 9, 2011 to receive their input and suggestions. ~~Potential opportunities identified by the committee during the meeting, as well as those identified independently by the agencies, are ...~~ ~~[To be completed following input from committee, public comments and internal agency reviews.]~~ This report reflects the input from that committee, as well as public comment.

II. Background and Scope of Report

This report has been prepared as a result of ~~e-basis and scope of this report are provided in~~ a line item of the 2011 Appropriations Act (Department of Health, Item 290) (hereafter referred to as Item 290), a letter request dated February 24, 2011 to VDH and DEQ from Delegate Harvey Morgan, and 2011 amendments to § 10.1-2129 of the Virginia Water Quality Improvement Act. Copies of these items are provided in Attachment A of the report.

The language of Item 290 and Delegate Morgan's Letter is similar in most aspects and involves a joint effort by VDH and DEQ to:

- Explore opportunities to expand the reuse of wastewater with the goal of reducing nutrient pollution of the surface waters of the Commonwealth,
- Establish an appropriate committee of stake holders to assist in identifying potential opportunities [to expand water reclamation and reuse],

- Examine practices in other states ([specifically Florida and Georgia](#)) that have developed policies and programs to reduce surface water discharges through beneficial reuse of wastewater,
- Report recommendations
- Include conservation with reduced nutrient pollution of surface waters as a goal or basis to expand the reuse of wastewater, and
- Identify statutory and regulatory changes, including potential incentives, to reduce wastewater discharges to surface waters.

~~Regarding other states' policies and programs, those of Florida and Georgia are examined in this report.~~—Due to the focus of Item 290 and Delegate Morgan's letter, the report addresses water reclamation and reuse more extensively than other alternatives to reduce wastewater discharges to surface waters. Consistent with the goal of reducing nutrient pollution of surface waters in the Commonwealth, an alternative to discharge wastewater with reduced nutrient content to surface waters is also discussed in this report.

§ 10.1-2129 of the Virginia Water Quality Improvement Act addresses agency coordination and conditions for grants related to the Water Quality Improvement Fund (WQIF). As a result of 2011 amendments to § 10.1-2129, the Secretary of Natural Resources must develop additional written guidelines that “define criteria and financial incentives for water reuse”. The Secretary's Grant Guidelines already recognize water reclamation and reuse, by definition, as a form of nutrient reduction technology eligible for cost-share as part of a WQIF grant project. To date, two WQIF grants for discharging facilities have included reuse in the eligible project scope. While cost-effective use of WQIF grants is the primary focus of the cost-share program, it is likely that water reclamation and reuse will play a more important role in the future as treatment plant owners seek options to maintain their nutrient loading caps in the face of increasing flows and technology limitations. Because of the legislative mandate and the need to further define the eligibility of reuse under the WQIF, a discussion of recommended WQIF criteria and financial incentives for water reuse is included in this report.

III. Water Reclamation and Reuse as a Means of Reducing Discharges of Nutrients

[Insert paragraph or two about Virginia's investment to date in wastewater treatment technology to reduce nutrients; about how refocusing on water reclamation and reuse is a departure from that policy and could detrimentally impact those investments if implemented prematurely; and about the types of projects that would likely result in the greatest benefit to the Bay. Stormwater reuse projects should be emphasized].

The introduction should also note that the benefits of a project depend on several factors: whether the reuse serves an existing water need, thereby eliminating both a discharge and a withdrawal at the same time (essentially a one for one replacement), or whether the reuse project serves a new water user, which could thereby impact the system by eliminating a water discharge (and thereby a water source) without a corresponding decline in water withdrawal. Also may want to note that reuse may be a more viable option in areas where the water supply is more

limited, such as in groundwater management areas.

III. Water Reclamation and Reuse in Virginia Today

In Virginia, water reclamation and reuse essentially involves the treatment of wastewater to produce water of a quality that can be reused for a variety of purposes. Non-potable reuses of reclaimed water include, but are not limited to, crop and landscape irrigation, toilet flushing, fire fighting and protection, commercial and non-commercial car washing, landscape impoundments, stack scrubbing, boiler feed, cooling and various construction activities. Reclaimed water may also be reused for indirect potable purposes, but will generally require more advanced treatment before discharge to reservoirs or streams used for public water supply. Virginia currently has seven facilities permitted for water reclamation and reuse by the DEQ, and an additional four that were either grandfathered or excluded from the requirements of the Water Reclamation and Reuse Regulation (see Subsection **III.A**). This includes one of the oldest indirect potable reuse projects in the nation, which has augmented a water supply reservoir in Fairfax County since 1978.

A. Regulations and Guidelines

Water reclamation and reuse in Virginia is voluntary. Once implemented, however, it may be subject to state regulatory requirements or guidelines. More than one state agency can regulate water reclamation and reuse in Virginia, including DEQ, VDH and the Department of Conservation and Recreation (DCR). The jurisdiction of each agency is determined by the type of water to be reclaimed. For example, if the water to be reclaimed is domestic, municipal or industrial wastewater, the reclamation and reuse of that water will be regulated by DEQ in accordance with the Water Reclamation and Reuse Regulation (9 VAC 25-740). In contrast, VDH does not have regulations but has developed guidelines as required by § 32.1-248.2 for the reuse of gray water and for the use of harvested rainwater. DCR, which regulates discharges of storm water to surface waters excluding discharges of storm water associated with industrial activities, has the authority specified in § 10.1-603.4 of the Code of Virginia to develop regulations for the reclamation and non-potable reuse of storm water. Currently, DCR evaluates and regulates such proposals on a case-by-case basis.

The Water Reclamation and Reuse Regulation (9 VAC 25-740) went into effect on October 1, 2008. It specifies minimum reclaimed water standards and requirements for permit applications, monitoring, design, construction, operation and maintenance of water reclamation and reuse projects. As required by State Water Control Law and stated in 9 VAC 25-740-20, it is the purpose of the regulation to promote and encourage water reclamation and reuse in a manner that is protective of the environment and public health, and as an alternative to discharging treated effluent to state waters.

Associated with the Water Reclamation and Reuse Regulation, DEQ has developed guidance, GM 10-2001, for Water Division managers and permits writers to ensure proper and consistent implementation of the regulation. The guidance is available to the public on the DEQ website at <http://www.deq.state.va.us/waterguidance/permits.html>. DEQ also has a program page for water reclamation and reuse at <http://www.deq.state.va.us/vpa/waterreuse.html> that provides links to

the regulation, permit application forms, guidance, a possible source of project funding, and useful information and resources related to water reclamation and reuse.

B. Advantages and Disadvantages

Water reclamation and reuse has both advantages and disadvantages as an alternative to reduce surface water discharges. A few advantages of water reclamation and reuse include the following.

- In addition to reducing nutrient loads to surface waters, water reclamation and reuse can be used as a water supply planning tool to conserve potable water for human consumption and other purposes requiring a higher quality of water, and to supplement a community's overall water supply for other uses;
- Water reclamation and reuse can delay the need for and cost of new or expanded drinking water resources and infrastructure;
- Water reclamation and reuse provides an alternative affordable water source to end users that is less than or equal to the cost of drinking water; [\[NOTE: this is not always true; in many instances due to the infrastructure needed to implement it is more expensive. It may be less expensive for certain uses - this needs to be qualified\]](#)
- Water reclamation typically produces reclaimed water that has a more consistent quality and is a more reliable supply than [untreated](#) water withdrawn from surface waters; [\[NOTE: This is not always the case, and not for every water quality constituent.\]](#)
- Compared to other non-charging alternatives, many reuses of reclaimed water are not land- dependent (e.g., requiring land, such as irrigation);
- Irrigation with reclaimed water that contains nitrogen and phosphorus can reduce the amount and cost of commercial fertilizer applied to sites irrigated with reclaimed water;
- Irrigation with reclaimed water meeting Biological Nutrient Removal treatment as defined in the Water Reclamation and Reuse Regulation (reclaimed water with Total Nitrogen and Total Phosphorus concentrations less than or equal to 8 and 1 mg/l, respectively) will not, under most circumstances, require a nutrient management plan; and
- Supplemental irrigation rates required for irrigation with reclaimed water have a lower potential to release nutrients to groundwater and do not require groundwater monitoring.

[Some of A few the](#) disadvantages of water reclamation and reuse are as follows.

- Treated wastewater diverted from a surface water discharge to water reclamation and reuse can reduce minimum instream flow of the surface water, thereby potentially impacting beneficial uses downstream that rely on the water provided by the discharge, including water withdrawals for public water supply. This is concern to DEQ and VDH where based upon 2009 data of total water withdrawn by source in Virginia, 57% was from streams and 29 % was from surface water reservoirs. Surface water also provided 90.5 % of the water for public water supply compared to groundwater which provided approximately 9.4 % ⁽¹⁾. Consequently, proposals for water reclamation and reuse as an alternative to reduce surface water discharges will need to be evaluated for impacts to downstream beneficial uses due to the consumptive use of water reclamation and reuse.

Where impacts to beneficial uses are anticipated under specific flow conditions of the receiving surface water, it may be necessary to reduce the amount of water diverted to water reclamation and reuse and increase the discharge in order to prevent or minimize the impacts.

- In addition to impacting water availability to downstream users, water reclamation and reuse can affect the amount of flow available for use in assimilative capacity determinations.
- The distribution of reclaimed water to end users will, ~~in most cases,~~ require a system separate from a potable water distribution system if the reclaimed water is to be used offsite. The cost of reclaimed water distribution systems will be influenced by a variety of factors, and may be a significant portion of the overall project costs. [NOTE: reuse projects are typically not cost viable by themselves, but require a subsidy to make them appear to be economically viable. This increase the financial on the rate payers and likely the State as well. It is important to consider that the overall cost burden of reuse (to both the rate payers of the local water/wastewater systems and the downstream system rate payers) is dependent on many factors. These factors include whether the reuse is for a “new” customer or replacing an existing customer, the cumulative impact of water supply loss in the basin and the cost of developing new supply sources, and the hydrologic characteristics where the reuse occurs (i.e., surface water vs. groundwater, and location in the basin relating to other downstream users).
- Where the same entity is **not** both the water purveyor and reclaimed water agent or provider for a community, the water purveyor has less incentive to support water reclamation and reuse because it tends to reduce the amount of potable water used, thereby reducing the revenues generated by the sale of potable water. An exception would be indirect potable reuse of reclaimed water where the reclaimed water is discharged to a water supply reservoir and then withdrawn by the water purveyor for potable use following additional treatment.
- Irrigation reuse with reclaimed water is hydraulically limited to supplemental irrigation rates and will, in most cases, require more land area than other land-dependent, non-discharging alternatives, such as land treatment of wastewater, to eliminate the same volume of water. Supplemental irrigation is defined in the Water Reclamation and Reuse Regulation as irrigation, which in combination with rainfall, meets but does not exceed the water necessary to maximize production or optimize growth of the irrigated vegetation.
- Total reliance on irrigation reuse to reduce or eliminate a discharge may require a significant amount of land to manage and reuse all reclaimed water produced by the reclamation system.
- Where irrigation reuse is proposed to completely eliminate a discharge, storage or other non-discharging options to manage unused reclaimed water during “non-growing season” months will be necessary to ensure that reclaimed water is properly reused and not disposed at irrigation sites. It makes sense to store during the winter and use during the summer to mitigate downstream impacts. (Options for land-based disposal of treated wastewater are discussed in Subsection **VII.B**)
- For irrigation reuse with non-BNR reclaimed water (reclaimed water with Total Nitrogen and Total Phosphorus concentrations greater than 8 and 1 mg/l, respectively), some form of nutrient management is required.

C. Incentives

Section 62.1-44.2 of the Code of Virginia specifically states that it is the purpose of State Water Control Law (Law) to, among other things, “promote and encourage the reclamation and reuse of wastewater in a manner protective of the environment and public health”. To satisfy the purpose of the Law, DEQ promotes and encourages reclamation and reuse of wastewater (or water reclamation and reuse) through both regulatory and financial incentives.

1. Regulatory incentives. Regulatory incentives for water reclamation include the following:
 - a. Water Reclamation and Reuse Regulation (9 VAC 25-740)

The Water Reclamation and Reuse Regulation was developed in accordance with § 62.1-44.15(15) of the Code of Virginia to “promote and establish requirements for the reclamation and reuse of wastewater ... as an alternative to directly discharging pollutants into waters of the state”. The regulation achieves this objective by establishing minimum requirements for water reclamation and reuse that eliminate uncertainty for designers and permittees, and inconsistent project permitting and regulation by DEQ. During the development of reclaimed water standards contained in the regulation, existing treatment available at most wastewater treatment facilities (WWTFs) within Virginia was also considered. As a result, more WWTFs are capable of producing reclaimed water that meets the standards of the regulation without extensive changes to their existing treatment processes. [NOTE: The reuse regulation also exempts reuse by industrial facilities so long as such reuse takes place on-site. This should be highlighted, because it creates an incentive for industrial facilities to reuse water internally as much as possible before discharging. Many industrial facilities take advantage of this and reuse water multiple times before ultimately discharging it].

- b. Local and Regional Water Supply Planning (9VAC25-780)

The regulation for Local and Regional Water Supply Planning requires every county, city, and town to develop a water plan in accordance with established planning criteria. Where appropriate, the plan may consider nontraditional means of increasing supplies such as interconnection, desalination, recycling and reuse. Water reclamation and reuse is anticipated to play a greater role in water supply planning by conserving potable water and augmenting the overall water resources of localities and regions. NOTE: This isn't really an incentive, it is part of the existing regulatory framework. If mentioned, should also note that the plans must evaluate the impact of using reuse as an alternative water source both on the users within the jurisdiction, as well as downstream impacts.

- c. Sections 62.1-44.19:12 through 62.1-44.19:19 of the Code of Virginia

Sections 62.1-44.19:12 through 62.1-44.19:19 of the Code of Virginia allow for recycle or reuse of wastewater in lieu of the installation of required nutrient removal technologies for new and

expanding wastewater treatment facilities in the Chesapeake Bay watershed. The recycle or reuse project must remove an equivalent nutrient load.

d. Sewage Collection and Treatment Regulations (9VAC25-790)

Most reclaimed water is derived from municipal wastewater. Therefore, many of the treatment processes used to reclaim municipal wastewater are those used by municipal WWTFs. The Sewage Collection and Treatment (SCAT) Regulations contain design, construction and operation requirements for sewage or municipal WWTFs. Consequently, the Water Reclamation and Reuse Regulation contains several references to the SCAT Regulations related to the design, construction, operation and monitoring of reclamation systems for municipal wastewater.

The SCAT regulations also address land-treatment systems, including slow-rate irrigation, over land flow, and rapid infiltration basins. Most land treatment of wastewater differs from irrigation reuse of reclaimed water in that land treatment is considered a method to further treat and dispose of wastewater, while irrigation reuse is not intended to provide any additional treatment or disposal of reclaimed water. There is one exception where the SCAT Regulations indicate that rapid infiltration basins are to be designed, in part, to recover “renovated water using wells or under drains with subsequent reuse”.

2. Financial incentives. DEQ also provides some financial incentives for water reclamation and reuse that include:

a. Virginia Clean Water Revolving Loan (VCWRL) Fund

Low interest loans are available through the VCWRL Fund for water reclamation and reuse projects that are publicly-owned and involve the treatment and reuse of municipal wastewater or sewage. The fund offers 25 additional ranking points on the loans for projects that employ water reclamation and reuse technologies. Privately-owned or industrial facilities are not eligible to receive loans from the VCWRL Fund.

b. Water Quality Improvement Fund (WQIF) Grants

In the current Guidelines of the Secretary of Natural Resources for WQIF Grants (<http://www.deq.virginia.gov/export/sites/default/bay/WQIFGuidelinesNov2006.pdf>), water reclamation and reuse is already, by definition, recognized as a form of nutrient reduction technology (NRT) and eligible for cost-share as part of a WQIF Grant project. Like the VCWRL Fund, WQIF Grants are available to only publicly-owned wastewater treatment facilities, with an additional limitation that funds can only be used for design and installation of NRT. Additional WQIF Grant Guidelines that “define criteria and financial incentives for water reuse” are under development as discussed in Section **VI** of the report.

IV. Practices in Other States to Reduce Surface Water Discharges (*through beneficial reuse of wastewater*).

The following describes policies and programs that reduce surface water discharges through beneficial reuse of wastewater (or water reuse) in two states, Florida and Georgia, and provides a comparison of these policies and programs with those of Virginia.

A. Florida

Florida has a variety of laws and regulation that drive water reuse with the intended or unintended effect of reducing surface water discharges. They are described as follows.

Chapters 403.064 and 373.250 of the Florida Statutes (F.S.)

Sections 403.064(1) and 373.250(1), F.S. establish the encouragement and promotion of water conservation and reuse of reclaimed water as state objects and state that water conservation and reuse are in the public interest. Section 403.064(1) further states that the “Legislature finds that the reuse of reclaimed water to be a critical component of meeting the state’s existing and future water supply needs while sustaining natural systems” and “encourages the development of incentive-based programs for reuse implementation.” [373.250 also requires use of reclaimed water in critical water supply areas \(likewise, Virginia may opt to implement incentives for reuse in water stressed areas as determined by the state water supply plan or designated groundwater management areas\).](#)

Rule Chapter 62-610 and 62-40 of the Florida Administrative Code (F.A.C.)

To achieve the objectives of Sections 403.064(1) and 373.250(1), F.S., Rule Chapter 62-610, F.A.C. establishes design, operation and maintenance requirements for the reclamation of domestic wastewater for reuse. In addition, Rule Nos. 62-610.820 and 62-40.416, F.A.C. describe requirements for a detailed study on the feasibility of water reuse for the following facilities that apply for either a domestic wastewater treatment facility permit through the Florida Department of Environmental Protection (FDEP) or a consumptive use permit^a through any one of five Water Management Districts (WMDs) within the state: [\[Note: this report should provide additional details about the fact that Florida’s water withdrawal regulatory program distinguishes between consumptive and nonconsumptive uses. Only consumptive uses require a permit, and the applicant must evaluate the impact of the withdrawal on water resources. Although these provisions are not directly related to the reuse program, they do provide an example of how the instream impact / consumptive use issue could be addressed in Virginia’s reuse program\].](#)

1. Domestic wastewater facilities located within, serving a population within, or discharging within a designated water resource caution area (and area of the state designated by the WMD as having critical water supplies) unless:
 - a. The domestic wastewater facility has an existing or proposed permitted or design capacity less than 0.1 million gallons per day, or

^a Per Florida regulations, a consumptive use permit or water use permit is issued by a water management district to authorize water use. These types of permits allow water to be withdrawn from surface and groundwater supplies for reasonable and beneficial uses such as public supply (drinking water), agricultural and landscape irrigation, and industry and power generation.

- b. The permitted reuse capacity equals or exceeds the total permitted capacity of the domestic wastewater facility;
2. Domestic wastewater facilities proposing a new, relocated, or expanded discharge of advanced waste treated level effluent or higher into the Indian River Lagoon System, unless:
 - a. The proposed discharge is conclusively demonstrated not to result in violation of state water quality standards, either by itself or in combination with other discharges, and will not hinder efforts to restore the water quality of the Indian River Lagoon System; or
 - b. The discharge is an intermittent surface water discharge occurring during wet weather conditions subject to the requirements of FDEP rules;
3. Domestic wastewater facilities proposing a new, relocated, or expanded surface water discharge;
4. Facilities holding an FDEP permit authorizing a domestic wastewater discharge to an Ocean Outfall (specific to South Florida) as of July 1, 2008; or
5. Certain new consumptive or water use permit and permit renewal applicants (including water supply utilities, permitted water users, and utilities that are responsible for both water supply and wastewater management), as required by rules of the applicable water management district.

Once a reuse feasibility study has been conducted and submitted to the FDEP or WMD, Sections 403.064(14) and (15), F.S. place limitations on methods of effluent disposal, specifically surface water discharges, deep well injection and types of land application not defined as reuse, for domestic wastewater facilities located in a water resource caution area. Where the study concludes that reuse is feasible for these facilities using (or proposing to use) any of the above effluent disposal methods, the facilities must implement water reuse to the degree that it is determined to be feasible based on the feasibility study, and the disposal method may be used as a back up to a reclaimed water reuse system.

Rule Chapter 62-4 of the Florida Administrative Code (F.A.C.)

Florida's Antidegradation Policy contained in Rule Chapter 62-4, F.A.C. requires any applicant (regardless of location and size) for a new or expanded surface water discharge or relocation of an existing outfall to demonstrate that the resulting degradation to the surface water is necessary or desirable under federal standards and is in the public interest. As part of the demonstration, the applicant must complete a feasibility study showing the practicability of implementing water reuse in lieu of the proposed new or expanded surface water discharge. In accordance with Section 403.064(4), F.S., reuse must be given significant consideration if it is determined to be feasible.

Chapter 373.042 of the Florida Statutes (F.S.)

Chapter 373.042, F.S. requires that state WMDs or FDEP establish minimum flows and levels for aquifers, surface watercourses, and other surface water bodies to identify the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area. Minimum flows and levels are adopted into Florida Administrative Code and are used in the WMDs consumptive use or water use permitting program to ensure that withdrawals do not cause significant harm to water resources or the environment. Minimum flows and levels are

sufficiently strict to cause most localities to seek options other than surface or ground water withdrawals for water supply, such as desalination, or to conserve or augment their existing water supply through water reuse. In Florida, more than 90% of water supplies are groundwater based sources. The southern half of the state is subject to not net increases in pumping from groundwater including the South Florida Availability Rule and the Southwest Florida Most Impacted Area and Water Use Caution Area.

Rule Chapter 62-503 of the Florida Administrative Code (F.A.C.) and WMD Alternative Water Supply Funding

Florida further promotes reuse of reclaimed water through funding mechanisms such as the State Revolving Loan Program described in Chapter 62-503, F.A.C. Specifically, Rule No. 62-503(6)(a) assigns a higher base priority score for water reuse when determining the priority list of projects to receive funds from the program.

Also, Florida's WMDs have alternative water supply funding available from the Florida Water Protection and Sustainability Trust Fund that can be used to partially or completely fund water reuse project costs.

B. Georgia

Georgia has fewer regulations and a limited number of policies and programs in place to drive water reuse with the intended or unintended effect of reducing surface water discharges. They are described as follows.

Water Reclamation and Reuse Guidelines

Georgia has no laws or regulations that specifically promote or encourage water reclamation and reuse. Instead, the Watershed Protection Branch of the Georgia Environmental Protection Division (EPD) has developed various technical guidelines addressing water reclamation and urban water reuse, reclaimed water systems for buildings, and reclaimed water distribution by tanker truck.

Georgia Department of Natural Resources (DNR) Rule 391-3-6-.03

Georgia DNR Rule 391-3-6-.03 (Water Use Classifications and Water Quality Standards) contains a statewide antidegradation policy intended to protect and enhance the water quality of the state's rivers and streams by minimizing point source pollution and promoting "no discharge" alternatives for wastewater treatment and disposal that may include water reuse. In limited cases, however, economic grounds can be used to allow additional point source loadings to certain state waters if water quality standards can be met. To determine which projects qualify for this exception to the policy, the Watershed Protection Branch of the EPD provides technical guidance requiring permit applicants proposing an additional point source pollutant load to surface waters to perform an antidegradation review. This review includes an economic analysis to determine if the additional point source load is necessary to accommodate important economic or social development in the community and that it would be an economic hardship on the community to develop a "no discharge" alternative, such as land treatment or urban water reuse. Where the economic analysis determines that the costs incurred by implementing a "no discharge" alternative would not significantly interfere with the community's development, then

a permit for an increased point source discharge would not be considered.

Georgia DNR Rule 391-3-6.07 and Interim Minimum Stream Flow Protection Policy

Georgia DNR Rule 391-3-6.07 (Surface Water Withdrawals) essentially embodies Georgia's Interim Minimum Stream Flow Protection (IMSFP) policy that was adopted in April 2001. Specifically, Rule 391-3-6.07(4)(b) 9 (iii) requires persons withdrawing surface water to allow specified minimum flows to remain or pass "at or immediately downstream of the point of withdrawal, diversion or impoundment so long as it is available from upstream". This policy applies only to requests for surface water withdrawals made after March 30, 2001 by non-farm applicants on rivers that are not highly influenced by federal reservoirs. The policy does not apply to individual small water withdrawals that are less than 100,000 gallons per day, reasonable use for agricultural water users, any agricultural water use for capacity in place by 1988, and any water withdrawal used to pay off revenue certificates or general obligation bonds as of and prior to 1977. As with Florida's minimum flows and levels laws and regulations, Georgia's IMSFP policy is sufficiently strict to cause many localities to seek options other than surface water withdrawals for water supply, or to conserve or augment their existing water supply through water reuse.

State Water Plan

Georgia also encourages wastewater reclamation and reuse through its State Water Plan (SWP). The SWP is not a statute or regulation, but is a policy adopted by the Georgia General Assembly by joint resolution and signed by the Governor in 2008. One of the primary goals of the SWP is to minimize withdrawals and maximize returns to surface waters of the state. While this would appear to provide little or no incentive for wastewater reclamation and reuse, Section 14 (Regional Water Planning) of the SWP describes a process by which Regional Water Plans (RWPs) may identify management practices to conserve and protect water resources. Such management practices may include water reclamation and reuse, and are listed in the RWPs.

Section 50-23-5 of the Official Code of Georgia Annotated (O.C.G.A)

In Georgia, the Clean Water State Revolving Loan Fund (CWSRF) is administered by the Georgia Environmental Finance Authority (GEFA), a government entity established pursuant to § 50-23-5, O.C.G.A to finance various environmental projects. Specific types of water conservation projects can be funded by the CWSRF, including recycle and water reuse projects that replace potable sources with non-potable sources. The GEFA board of directors also approved a one percent interest rate reduction on all water conservation loans from the CWSRF that applies to all stand-alone water conservation projects.

[\[Should also note that Georgia has issued guidance and manuals for the use of reuse that discuss alternatives, incentives, and other options, thereby aiding the public in understanding the issues and also as an effective tool for entities interested in reuse\].](#)

C. Virginia Comparison

Virginia has policies, programs and circumstances that are both similar to and different from those of Florida and Georgia for the purpose of reducing surface water discharges through the beneficial reuse of wastewater. Some of the more significant differences between Virginia and

the other states are discussed below.

Florida and Georgia require a feasibility study for exclusively water reuse or non-discharging alternatives, including water reuse, in lieu of a surface water discharge for most domestic wastewater treatment facilities (WWTF). Currently in Virginia, water reclamation and reuse is voluntary and existing laws, regulations and policy to conserve water and to reduce nutrient loads to surface waters do not prescribe specific methods and alternatives by which localities are to achieve these goals. Instead, Virginia relies on a market-based approach, whereby localities determine independently the best alternative to achieve these goals based on their needs and available resources. This approach still allows surface water discharges with nutrient removal technology to be considered an acceptable alternative in addition to non-discharging alternatives to reduce nutrient loads to surface waters in Virginia. There is only one exception where 9VAC25-260-275 of the Virginia's Water Quality Standards requires that a permit application for a new or expanded discharge to or otherwise affecting Eastern Shore tidal waters include an analysis of wastewater management alternatives to the proposed discharge where the discharge would result in shellfish water condemnation.

Like Florida and Georgia, Virginia also has an antidegradation policy established pursuant to the Clean Water Act that serves to protect and maintain the quality of all state waters. Unlike the policies of Florida and Georgia, however, Virginia's antidegradation policy has not been used to require non-discharging alternatives for wastewater treatment and disposal. Although this policy requires an alternatives analysis for a permit application to discharge to surface waters where DEQ determines that the discharge will degrade a Tier II water, such analyses have never been used because DEQ determines the de minimus amount of a pollutant that can be discharged to avoid degradation of a Tier II water and sets discharge limits for the pollutants in the permit accordingly.

Florida and Georgia have laws and regulations limiting water withdrawals to maintain minimum flows or levels of surface waters and groundwater for the protection of other beneficial uses. This has had the effect of limiting new water withdrawals and increasing water conservation and water reuse. Wastewater diverted to reclamation and reuse has the subsequent effect of reducing discharges to surface waters. Although Virginia relies heavily on surface water for public water supply, Virginia does not have similar laws and regulations to limit surface water withdrawals. Consequently, Virginia lacks this mechanism to incentivize both water conservation and water reuse. [\[NOTE: Virginia does have the VWP permit program, which regulates water withdrawals. When issuing such permits, DEQ does evaluate the impact of a withdrawal on instream and offstream beneficial uses; additionally, Virginia has the water withdrawal reporting regulation which enables DEQ in evaluating withdrawal permit applications. While Virginia does not have an establishing minimum instream flow, it does make an instream flow determination on a case-by-case basis through the VWP permitting program\].](#)

Also in Virginia, water withdrawals owners that are located downstream of and are reliant upon the water from the surface water discharge of wastewater treatment facilities (WWTFs), have begun to express concern that water diverted to reclamation and reuse by upstream WWTFs will reduce the volume of water available to the downstream withdrawals, particularly during periods of drought. In this case, water reclamation and reuse may be considered a consumptive use

that impacts downstream communities. DEQ is attempting to address potential adverse impacts to downstream beneficial uses and users that may result from the consumptive use of water reclamation and reuse through proposed amendments to the Water Reclamation and Reuse Regulation. [NOTE: This change in the reuse regulations is not yet final; until it is, no such protection exists. Moreover, the proposed language requires a cumulative impacts analysis. It is not clear if this is sufficient to address the concern, and certainly should not be presumed to alleviate this issue. The instream flow impact of large reuse projects must be pointed out in this report]. It is not clear that Florida and Georgia are addressing the consumptive use of water reclamation and reuse to ensure minimum flows and levels of surface waters and groundwater. This difference between Virginia and the other states may be attributed again to Virginia's heavy reliance upon surface water for public water supply. [May want to note that because of this, reuse in groundwater management areas may be more successful; encouragement of reuse as a water planning tool should be focused on groundwater dependent areas of the state]

Like Florida and Georgia, Virginia can provide funding for water reuse projects that involve the reclamation of municipal wastewater or sewage through Clean Water Revolving (CWR) Loan Funds. However, Virginia awards far fewer priority points than Florida and does not reduce the interest rates on CWR loans like Georgia for water reuse proposals. Through changes to procedural guidelines of the CWR Loan Fund, DEQ could increase priority points for water reclamation and reuse projects. However, reducing interest rates on CWR loans for any type of project would reduce the fiscal soundness of Virginia's CWR Loan Fund. [NOTE: There needs to be recognition that increasing incentives for reuse projects will take away from other needed wastewater improvement projects, projects that are likely within the same water supply of another downstream water supply]

V. Opportunities to Expand Water Reclamation and Reuse to Achieve Goals

VDH and DEQ organized a committee consisting of 20 stakeholders and various technical support staff from VDH, DEQ and DCR to identify potential opportunities to expand water reclamation and reuse with the goals of water conservation and reducing nutrient pollution of the surface water of the Commonwealth. The committee was convened for one meeting on August 9, 2011 and was requested to identify or suggest potential opportunities to expand water reclamation and reuse in Virginia. All opportunities identified by the committee were noted. Each committee member was then asked to assign four points to one or more opportunities that they believed to be the greatest priorities among the opportunities listed. All opportunities sorted by group and in order of highest to lowest number of priority points received, including opportunities that received no points, are contained in Attachment **B** of this report.

Table 1 contains opportunities to expand water reclamation and reuse that were: (i) identified by the agencies independent of the committee, and (ii) identified and assigned at least one priority point by the committee. Opportunities identified by the committee and shown in Table 1 may be in different groups than those shown in Attachment **B** due to significant overlap that exists among some groups. Also contained in the table is a description of existing or currently proposed initiatives to implement these opportunities, and any further action that may be needed for implementation. There are six broad categories of "Further Action Needed" that include a

change to statute, a regulatory change, agency operational or process change, local government action, private sector action, and none. One or more of these is assigned to each opportunity.

Table 1. Potential Opportunities to Expand Water Reclamation and Reuse and Modes of Implementation
[consider combining “Existing or Potential Initiatives to Implement and Further Action Needed” into one column and adding a pro/con column to go along with each “opportunity” identified]

Opportunities <u>[These aren’t really opportunities - these are presented more as “Issues” - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
Identified by Agencies		
1. Give more priority points to water reclamation and reuse proposals that apply for Virginia Clean Water Revolving Loans	Would require change to VCWRL Fund procedural guidelines and approval by the State Water Control Board	Agency operational or process change (DEQ)
2. Develop a general permit for certain reclaimed water agents or distributor (i.e., tank trucks that deliver reclaimed water to end users other than themselves that are independent owners/operators)	§ 62.1-44.15 (15) of the Code of Virginia gives the State Water Control Board the authority to establish general permits for various potential categories of water reuse. This is currently not a high priority as reclaimed water bulk filling stations for tank trucks are planned but not yet constructed. As these facilities become more prevalent in the future, there will be a greater need for the general permit.	Regulatory change

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
3. Continue to <u>Provide</u> financially incentivizes <u>geared toward</u> the most cost effective option to achieve the goals	Currently, the sole purpose of the Water Quality Improvement Act is to provide WQIF funds for cost effective nutrient removal technology to reduce point source nutrient loads within the Chesapeake Bay Watershed. Payment of grants through WQIF is subject to the availability of funds appropriated by the General Assembly.	Change to statute? <u>Aren't there already grants that have been awarded to reuse projects that result in termination of nutrient discharges? Is a change needed? Or would the change provide greater incentives for reuse projects?</u>
Identified by Committee (Priority Items Only)		
Laws and Regulations		
4. Resolve issues that inhibit groundwater recharge with reclaimed water	DEQ has committed to publishing a Notice of Intended Regulatory Action in early 2012 to amend the Water Reclamation and Reuse Regulation and other regulations to address groundwater recharge with reclaimed water for reuse	Regulatory change; agency operational or process change (DEQ)

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
5. Consider what other states' regulations (e.g., Florida) require to promote and encourage water reclamation and reuse <u>[Suggest either deleting this row or changing to recommend a study to review other state programs and identify options that may be workable in Virginia]</u>	Although much of Virginia's Water Reclamation and Reuse Regulation was modeled after Florida's water reuse regulations, future amendments to the Virginia regulation may incorporate further requirements that are similar to those in the Florida regulation, particularly those related to groundwater recharge with reclaimed water.	Regulatory change
6. <u>Update</u> Look at other sections of Virginia Administrative Code [e.g., Uniform Statewide Building Code (or USBCs)] and eliminate conflicts that are obstacles to water reuse <u>[may be others beyond the building code]</u>	VDH and DEQ have been and will continue to be involved in the advisory committee assisting the Virginia DHCD with amendments to the USBCs. This process occurs every three years.	Regulatory change
7. <u>Identify opportunities for reuse of</u> Look at stormwater reclamation and reuse to achieve same goals	DCR has statutory authority to develop regulations for the reclamation and reuse of stormwater; examine procedures with respect to promoting practices	Regulatory change; agency operational or process change (DCR)
8. <u>Allow</u> Give stormwater volume and pollutant reduction credits to <u>for</u> LID (Low Impact Development) practices that harvest stormwater	These credits will be provided in DCR's final stormwater regulations expected to become effective on 10/24/11	Regulatory change (in progress); agency operational or process change (DCR)
9. <u>Establish a link between nutrient reduction goals in the Bay TMDL WIP and</u> Link water reclamation and reuse with TMDL Watershed Implementation Plan (WIP)	Water reclamation and reuse is identified as an option to meet waste load allocations for nitrogen and phosphorus in Phase I of the WIP	None

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
<p>10. Create demand for water reclamation and reuse ? <u>Is this the correct way to characterize this? Don't we mean something more like "Allow demand to drive reuse in areas with limited water supply" or "Direct incentives toward areas with limited water supply such as groundwater management areas"?</u></p>	<p>DEQ has already begun to limit the volume of groundwater that can be withdrawn within Groundwater Management Areas, thereby making water conservation and water reuse more attractive options. DEQ has also proposed amendments to 9VAC25-600 that, if adopted, will expand the Eastern Virginia Groundwater Management Area to include the remaining portions of Virginia's coastal plain. <u>[This reads as though DEQ has arbitrarily started limiting withdrawals in these areas. The point is that we are experiencing shortages in these areas due to over use and as a result these are areas where reuse projects are more likely to occur]</u></p>	<p>Regulatory change (in progress); agency operational or process change (DEQ); local government action; private sector action</p>
<p>Financial</p>		

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
11. End user must buy into this —pProvide tax incentives and tax credits <u>to create demand for projects [NOTE: This is an indicator that reuse projects are not independently economically viable]</u>	§58.1-3660 of the Code of Virginia gives the State Water Control Board authority to certify that specific equipment and facilities will abate or prevent pollution of state waters in order to qualify for certain tax exemptions. Addendum No.6 to DEQ Water Division Guidance Memo No. 92-006 describes agency procedures to certify water reclamation and reuse equipment and facilities for this tax exemption. Any state tax incentives and state tax credits for water reclamation and reuse would need to be approved by the General Assembly and localities.	Change to statute; local government action
12. Water supply and nutrient caps driving reuse – link funding to this <u>[NOTE: This is an indicator that reuse projects are not independently economically viable]</u>	Currently, the same priority points are given to water reclamation and reuse projects applying for VCWRL funds without regard to the primary purpose of the project (e.g., reduce nutrient pollution to surface water vs. water conservation)	None [Committee members – do you have any suggestions?]
13. Encourage or subsidize irrigation reuse for agriculture. Irrigation reuse can result in more efficient nutrient uptake, particularly during/after drought.	Investigate feasibility of subsidy	Change to statute
14. The state does not subsidize operation and maintenance costs for projects	Investigate feasibility of subsidy	Change to statute

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
Education		
15. Must have end users—need market and this needs education	Develop educational programs <u>to generate interest by end users and the public</u> [NOTE: <u>the education effort is two fold: one to explain the benefits/need for reuse and second to convince the public of the safety of it</u>]	Agency operational or process change (VDH, DEQ and DCR); local government action; private sector action
16. The State should do more to educate the public on water reclamation and reuse <u>[Many of these seem to be the same - suggest combining 15, 16, 17]</u>	DEQ currently has a water reclamation and reuse program page on the agency's website that provides information on the regulation, permit application forms, possible sources of funding and other resources; investigate other opportunities	Agency operational or process change (VDH, DEQ and DCR)
17. Develop public education information (e.g., brochures, etc.) to promote water reclamation and reuse	DEQ has developed a paper of frequently asked questions about water reclamation and reuse in Virginia that is available on the agency's website; investigate other opportunities	Local government action; private sector action

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
18. Water reclamation and reuse allows growth to occur. <u>[Consider deleting - this is part of the education process that needs to take place - this isn't really an "opportunity"]</u>	Educational information on water conservation and supply should include water reclamation and reuse among other options to allow more water to be available for growth to occur. <u>But these materials should explain both the pros and cons of reuse and conservation.</u>	Agency operational or process change (DEQ); local government action; private sector action
19. Work with engineering groups to promote water reclamation and reuse	DEQ and VDH are involved with the VA AWWA and VA WEA joint water reuse committee that represents largely utilities and their engineering consultants. DEQ also provides presentations on water reclamation and reuse at various training events and seminars sponsored by wastewater engineering groups and organizations.	Private sector action
20. Credits are available through LEED (Leadership in Energy and Environmental Design) certification	LEED is an internationally recognized green building certification system developed by the U.S. Green Building Council.	Private sector action

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
21. Some Home Owners Associations do not allow rain barrels; resolve this barrier. <u>[Is this a stand alone education "opportunity"? If we want to promote use of rain barrels, that's one thing - although that will likely not generate significant nutrient reductions]</u>	DCR is responsible for state design manuals and most regulations pertaining to stormwater runoff management and discharges. This could be addressed in the implementation guidance for the final stormwater regulations that are anticipated to go into effect on 10/24/11 and implemented in July 2014.	Agency operational or process change (DCR); local government action; private sector action
Water Resources		
22. Need to do watershed approach when considering water reclamation and reuse. This should include a mass balance. <u>[This is not an opportunity - it is more of a "con" of encouraging reuse]</u>	Proposed amendments to the Water Reclamation and Reuse Regulation will require cumulative impact analysis for new or expanding water reclamation and reuse proposals to determine impacts to beneficial uses. The unit of analysis will be a watershed.	Regulatory change (in progress); agency operational or process change (DEQ)
23. Look at projects as a whole to meet goals and look at in-stream impacts <u>[This is not an opportunity - it is more of a "con" of encouraging reuse]</u>	Proposed amendments to the Water Reclamation and Reuse Regulation will require cumulative impact analysis for new or expanding water reclamation and reuse proposals to determine impacts to beneficial uses.	Change to regulation (in progress); agency operational or process change (DEQ)

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
<p>24. Need <u>Create</u> a state fresh water management plan</p> <p><u>NOTE: In lieu of 22, 23, 24 - think about available options/opportunities. Some ideas:</u></p> <ol style="list-style-type: none"> <u>1. Create a stand alone reclamation/reuse permitting program (currently linked to either VPDES or VPA permits - doesn't fully address the impact on the water resource as a whole). Could apply solely to consumptive use projects.</u> <u>2. Amend the water supply planning regulation to increase emphasis on consideration of reclamation and reuse as an alternative water supply, along with criteria for when it is most appropriate and the type of analysis that should take place to determine whether it's appropriate</u> <u>3. Enact adequate public facility statute providing that new development cannot take place unless a determination is made that sufficient water is available to support it</u> 	<p>It is anticipated that the State Water Resources Plan resulting for the Local and Regional Water Supply Planning process will provide a much clearer hydrologic basis for identifying where greater encouragement of reuse would contribute to or detract from long term water availability.</p>	<p>Change to statute and/or regulatory change (pending completion of the State Water Resources Plan)</p>
<p>25. Need to consider water reclamation and reuse related to water supply</p>	<p>Water reuse is identified in the Local and Regional Water Supply Planning Regulation (9VAC25-780) as a nontraditional means of increasing water supplies.</p>	<p>None [Committee members – do you have any suggestions?]</p>
<p>Public health risks</p>		

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
26. Identify public health risks of water reclamation and reuse (all types of reclaimed water) ? ?	Standards for reclaimed water contained in Virginia's Water Reclamation and Reuse Regulation, were derived largely from EPA Guidelines for Water Reuse (2004), which address the public health risks for the reclamation of municipal wastewater. Requirements of the Water Reclamation and Reuse Regulation do not apply to reclamation and reuse of gray water and stormwater.	Agency operational or process change (VDH and DCR) (for reclamation and reuse of gray water and stormwater)
27. Need -Establish risk based decision process when evaluating impacts to public health <u>to ensure public that reuse is adequately regulated</u>	As required by the Water Reclamation and Reuse Regulation, public health risks for the reclamation and reuse of industrial wastewater and for reuses not listed in the regulation are evaluated on a case-by-case basis with input from VDH. Requirements of the Water Reclamation and Reuse Regulation do not apply to reclamation and reuse of gray water and stormwater.	Agency operational or process change (VDH and DCR) (for reclamation and reuse of gray water and stormwater)
Irrigation		
28. Reduce permitted limitations on irrigation rates and consider use of reclaimed water with higher nutrient levels	Existing agency guidance on irrigation reuse of reclaimed water may be amended to address this.	Agency operational or process change (DEQ)

Opportunities <u>[These aren't really opportunities - these are presented more as "Issues" - either rename column or rephrase the content as opportunities]</u>	Existing or Potential Initiatives to Implement	Further Action Needed
29. Storage of reclaimed water is an issue for end users <u>[Not an opportunity]</u>	Proposed amendments to the Water Reclamation and Reuse Regulation will significantly reduce the size of reclaimed water storage facilities required by end users.	Regulatory change (in progress); agency operational or process change (DEQ)
30. Use soil moisture gauges for irrigation reuse <u>[not an opportunity]</u>	Existing agency guidance on irrigation reuse of reclaimed water may be amended to address this.	Agency operational or process change (DEQ)
31. Don't over treat wastewater – make more nutrients available for irrigation reuse <u>[Not an opportunity]</u>	Existing agency guidance on irrigation reuse of reclaimed water may be amended to address this.	Agency operational or process change (DEQ)
32. Use same sites for reclaimed water and biosolids application <u>[Not an opportunity - all of these should be restated as affirmative options for encouraging reuse]</u>	Existing agency guidance on irrigation reuse of reclaimed water may be amended to address this.	Agency operational or process change (DEQ)

Summary

[NOTE: This section is extremely confusing. Recommend deleting this section and instead developing a recommendation based on the pros and cons in the “opportunities” table - what are the best opportunities given the current framework? What changes to the framework are recommended?]

Further action needed to implement potential opportunities listed in Table 1 is summarized below.

- Changes to statute (or General Assembly action) would be required for the following items:
 - Availability of grant funds for WQIF (item # 3)
 - Tax incentives and tax credits for water reclamation and reuse (item # 11)
 - Subsidy for agricultural irrigation reuse of reclaimed water (item # 13)
 - Subsidy for operation and maintenance costs of water reclamation and reuse projects (item # 14)
 - Establishment of priority areas to encourage water reuse pending State Water Resources Plan completion (item # 24)
 - Regulatory changes would be required for the following items*:
 - A general permit for reclaimed water agents that use tank trucks to distribute reclaimed water (DEQ) (item # 2)
 - Groundwater recharge with reclaimed water for subsequent reuse (DEQ) (item # 4)
 - Incorporation of further requirements in Virginia regulations that are similar to Florida regulations (DEQ) (item # 5)
 - Elimination of conflicts in USBCs that are obstacles to water reuse (DHCD, DEQ and VDH) (item # 6)
 - Regulations to promote stormwater reclamation and reuse (item # 7)
 - Stormwater volume and pollutant reduction credits for specific LID practices (DCR) (item #8)
 - Limited groundwater withdrawals within Groundwater Management Areas (DEQ) (item # 10)
 - Cumulative impact analysis for new or expanding water reclamation and reuse proposals (DEQ) (items # 22 and 23)
 - Identification and establishment of priority areas to encourage water reuse pending State Water Resources Plan completion (DEQ) (item # 24)
 - Size reduction of non-system storage for reclaimed water (DEQ) (item # 29)
- * A regulatory action is already in progress for item #s 8, 10, 22, 23 and 29 that provides or could provide the further action necessary to implement the opportunity.

- Agency operational or process change may be initiated for the following items:
 - Those to be implemented by DEQ include – revision of the VCWRL procedural guidelines (item # 1), revision of regulation implementation guidance (item #s 4, 10, 22, 23 and 28-32), and development of training and educational programs and materials (item #s 15, 16 and 18)
 - Those to be implemented by VDH include - development of training and educational programs and materials (item #s 15 and 16); and revision or development of guidance and procedures to address public health risks associated with gray water reclamation and reuse (item #s 26 and 27)
 - Those to be implemented by DCR include – revision or development of procedures to promote stormwater reclamation and reuse (item # 7), revision or development of regulation implementation guidance (item #s 8 and 21), development of training and educational programs and materials (item #s 15 and 16), and revision or development of guidance and procedures to address public health risks associated with stormwater reclamation and reuse (item #s 26 and 27)
- Local government action may be initiated for the following items:
 - Local ordinances that limit specific groundwater withdrawals (item # 10)
 - Tax incentives and tax credits for water reclamation and reuse (item # 11)
 - Development of training and educational programs and materials to promote water reclamation and reuse (item #s 15, 17, 18 and 21)
- Private sector action may be implemented for the following items:
 - Creating demand for water reclamation and reuse (item #s 10 and 18)
 - Development of training and educational materials to promote water reclamation and reuse (item # 15, 17, 18, 19, 20 and 21)
- No action is necessary to:
 - Further address water reclamation and reuse in the Watershed Implementation Plan (item # 9) and the **Water Supply Planning Regulation (item # 25)**
 - Prioritize funding of water reclamation and reuse projects through VCWRL based on the primary purpose of the project (e.g., reduce nutrient pollution to surface water vs. water conservation) (item # 12)

VI. Define WQIF Criteria and Financial Incentives for Water Reclamation and Reuse

During the 2011 General Assembly, the Water Quality Improvement Act (WQIA) was amended to require that WQIF grant guidelines of the Secretary of Natural Resources (SNR) “*define criteria and financial incentives for reuse*”. As mentioned in the Executive Summary, reclamation and reuse is already defined as nutrient reduction technology (NRT) in the WQIF point source grant program and two projects have received cost-share for some components making up the reuse process. One project involved reclaimed water used for agricultural spray irrigation and the other will provide water to a power generating facility for use as cooling water.

DEQ staff has recognized the need for further explanation and details on the elements of a reclamation and reuse system that would qualify for WQIF cost-share. In addition to revisions needed in the SNR's WQIF Grant Guidelines, further details will be added to a current DEQ Guidance Memorandum (#06-2012) that lays out the eligibility of individual unit processes in a wastewater treatment plant that are eligible components of an NRT system.

The WQIA specifies that amendments to the SNR's Guidelines must go through a public involvement process that includes:

- Use of an advisory Committee composed of interested parties (the group assembled to assist with this Report),
- A 60-day public comment period on draft guidelines, and
- Notice of availability of draft guidelines and final guidelines to all who request such notice.

In addition, the SNR must consult with various other Cabinet Secretaries and citizen boards when developing the WQIF Guidelines. This advice and consultation will be sought on the following draft proposed revisions to the Guidelines:

1. Define criteria for water reclamation and reuse:

- a. Must be authorized under a VPDES permit.
- b. The proposal must meet all other WQIF criteria for cost-effectiveness and reliability to meet performance limits.
- c. Any necessary contracts or agreements for long-term use of reclaimed water by end-users must be secured.
- d. The reuse must be consumptive (i.e., eligibility will be dependent on, and possibly reduced in proportion to, the amount of reclaimed water returned to the wastewater treatment facility).

2. Financial incentives:

- a. NRT components necessary to treat the wastewater to a quality required for its intended use (i.e., Standards for Reclaimed Water; Level 1 and Level 2) will be eligible for cost-share.
- b. In addition to in-plant NRT units, eligibility will be given to on-site storage, pumping and main-trunk transmission piping to deliver the reclaimed water to end users. Off-site storage, satellite pump stations and spur-line piping for expanded distribution systems are the responsibility of the grantee or end user.
- c. Minimum line-item eligibility will be 75% of the total cost for eligible components comprising the reclamation and reuse system. This eligible cost is then subject to the overall grant percentage for the project.
- d. Eligibility may be higher if it can be demonstrated that there are other benefits provided by reuse (e.g., assists in meeting an approved local or regional water

supply plan).

To-date, with the exception of the two projects previously mentioned, water reclamation and reuse has not been included as a part of WQIF grant-funded NRT projects. The availability and relatively low cost of potable water across the State for all uses appear, in part, to suppress the demand for reclaimed water as an alternative. [NOTE: The previous statement mischaracterizes the situation. Most (if not all) water systems set the cost of potable water to re-capture the associated expenses. Thus, an increase in water reuse projects will increase financial burden on the State and localities.] However, water reclamation and reuse has been included in a couple projects outside the WQIF program, and serious consideration is being given to water reclamation and reuse as a way to maintain nutrient waste load allocations at wastewater treatment facilities “capped” in the Chesapeake Bay watershed. As population increases in the future and wastewater treatment facilities become limited by the available nutrient treatment technology, water reclamation and reuse (either seasonal or year-round) may offer a viable alternative to surface water discharge and allow for design flow expansion. Therefore, it is likely that discharge “cap” maintenance will become a greater driver than financial incentives for water reclamation and reuse in the future.

VII. Other Alternatives to Reduce Discharges of Nutrients to Surface Waters in Virginia

There are alternatives in addition to water reclamation and reuse that are available to reduce nutrient pollution of surface waters from point source discharges in Virginia. A variety of factors, including environmental, economic and societal, should be considered by the applicant or permitted when determining the most appropriate alternative to implement. The following briefly discusses some of the more common alternatives and their advantages and disadvantages.

A. Discharging Alternatives

Section 101 (a) (1) of the federal Clean Water Act states that it is the objective of the Act “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”. In order to achieve this objective, the Act further states that “it is the national goal that the discharge of pollutants into navigable water be eliminated by 1985”. As reflected in various state laws and regulations governing point source discharges to surface waters, Virginia has interpreted this goal of the Clean Water Act to mean the elimination of pollutant discharges and not the elimination of water that may carry these pollutants in the discharge. Greater than 90 percent of Virginia’s public water supply is obtained from surface water⁽¹⁾, which consists in part of flows from upstream discharges to these waters, particularly during periods of drought. Consequently, eliminating or substantially reducing surface water discharges could adversely impact downstream beneficial uses, including water withdrawals for public water supply.

Wastewater treatment facilities can maintain a discharge of treated water to surface waters (thereby preserving instream flow) and reduce the discharge of nutrients by reducing the concentration of nutrients in the treated water. This can be achieved through specific wastewater treatment processes referred to as nutrient reduction technology.

1. Nutrient reduction technology

Most publicly owned wastewater treatment facilities (WWTFs) use biological processes to treat wastewater, and as a result achieve some degree of nitrogen and phosphorus removal just to meet secondary treatment levels. However, more stringent discharge limitations are being placed on WWTFs that require additional treatment processes in order to aid in restoring and maintaining water quality in the Chesapeake Bay watershed and other receiving waters impacted by excessive nutrient loads. Nutrient reduction technology (NRT) uses biological and physical or chemical processes to reduce nitrogen and phosphorus in the discharge of WWTFs, thereby allowing them to meet more stringent limitations.

Advantages and disadvantage of NRT are as follows:

a. Advantages

- Technology is well-known, effective and reliable;
- Improves the settling and dewatering properties of activated sludge;
- Typically has a smaller footprint compared to most non-discharging, land-based alternatives; and
- Can reduce electrical and chemical costs in addition to nutrients. Most plants are required to reduce ammonia-nitrogen discharge due to instream dissolved oxygen depletion or toxicity concerns. This is typically achieved through nitrification (conversion of ammonia to nitrate) using extensive aeration systems. After nitrifying, adding a denitrification process (conversion of nitrate to elemental nitrogen gas) has the advantages of not only reducing the total nitrogen in the discharge, but also reclaiming a portion of the oxygen used in aeration (lowering electrical costs) as well as alkalinity (reducing chemical costs);
- [Maintains flow levels for downstream use.](#)

b. Disadvantages

- More expensive to construct, operate and maintain than conventional secondary treatment processes.
- Requires more careful design and complex operation due to added recycles and chemical addition. However, improvements are being made in automated system control and remote monitoring to reduce this impact.
- Depending on supplemental carbon source used for denitrification (if needed), may be hazardous (e.g., methanol) is used or require post-aeration to maintain dissolved oxygen levels in the discharge.
- Phosphorus reduction is typically achieved by chemical precipitation. This increases the amount of biosolids requiring treatment, dewatering and disposal, and the amount of phosphorus in the biosolids, which may further limit the rate at which the biosolids can

be land applied on soils already high in phosphorus for beneficial use (e.g., turf production, hay, pasture, etc.).

B. Non-discharging Alternatives

There are a variety of non-discharging alternatives in addition to water reclamation and reuse that can be used to reduce nutrient pollution of surface waters from point source discharges. Some of the more common or increasingly popular alternatives among these are land treatment, conventional or alternative onsite sewage systems, and stormwater reclamation and reuse. While each of these alternatives has unique advantages, they share some common disadvantages.

Some non-discharging alternatives can support surface water flows and levels where the alternatives are designed to recharge groundwater that then provides base flow to surface waters. However, most non-discharging alternatives are likely to reduce surface water flows and levels, and could impact beneficial uses of these waters, particularly where the uses were previously supported by the flow of a discharge. This is a significant concern related to public water supply, which relies heavily on surface water withdrawals in Virginia ⁽¹⁾. Consequently, it may be necessary to maintain a surface water discharge in addition to a non-discharging alternative, determined by the type and extent of impacts to downstream beneficial uses that are anticipated under specific low flow conditions.

Non-discharging alternatives may not significantly reduce nutrient pollution of surface waters where they are not designed to remove nutrients or are not properly constructed, operated or maintained. This may result in nutrient pollution of groundwater and subsequently surface waters where the groundwater is hydrologically connected (e.g., provides base flow) to surface waters. Also, inspection and monitoring requirements to verify the performance of non-discharging alternatives vary widely. Therefore, it is difficult to quantify the relative nutrient pollution reduction to surface waters achieved by various non-discharging alternatives.

Lastly, the total maximum daily load for nutrients (nitrogen and phosphorus) developed by the U.S. EPA for the Chesapeake Bay will increasingly affect non-point sources of nutrients to the Bay, including non-discharging alternatives to manage and/or dispose of wastewater. This is likely to increase wastewater treatment requirements and the use of best management practices for non-discharging alternatives.

1. Land treatment

As described by the Sewage Collection and Treatment (SCAT) Regulations (9VAC25-790), land treatment involves the pretreatment of municipal wastewater by secondary treatment processes followed by the application of this partially treated wastewater to an approved site for further treatment and disposal. Treatment at the application site occurs through natural processes in the soil and nutrient uptake by vegetation (e.g., row crops, hay, turf, etc.) if planted at the site. Methods to apply wastewater to a land treatment site include slow rate irrigation, overland flow, and infiltration-percolation (e.g., rapid infiltration).

Land treatment is not the same as irrigation reuse. Land treatment is considered a method to

further treat and dispose of wastewater, while irrigation reuse is not intended to provide any additional treatment of reclaimed water or disposal. There is one exception where the SCAT Regulations indicate that a rapid infiltration basin (a method of land treatment) is to be designed, in part, to recover “renovated water using wells or under drains with subsequent reuse”. Also, land treatment typically has higher hydraulic loading rates than irrigation reuse, increasing the potential for groundwater contamination and, therefore, the need for groundwater monitoring. Irrigation reuse does not require groundwater monitoring. Lastly, land treatment of wastewater will require a permit from DEQ or VDH depending on the type and size of the land treatment system, while irrigation reuse of reclaimed water will not require most end users to obtain a permit.

Advantages and disadvantages of land treatment are as follows:

a. Advantages

- Can remove both nitrogen and phosphorus depending on the method of land treatment used,
- Typically allows higher hydraulic loading rates than irrigation reuse determined by on site conditions and the type of vegetation if used as part of treatment,
- Allows harvestable crops to be grown on treatment sites with some setbacks and restrictions for access and harvesting, and
- Can reduce the amount and cost of commercial fertilizer for crops grown on land treatment sites.

b. Disadvantages

- Nutrient loading rates at treatment sites will be limited by the concentration of nutrients in the effluent and in accordance with a nutrient management plan,
- Typically requires groundwater monitoring,
- Has greater potential for hydraulic overloading where the treatment sites are under common ownership or management with wastewater treatment works providing wastewater to the sites,
- May require a significant area of land for treatment and an extensive distribution system to deliver wastewater to the treatment sites,
- May require storage or other non-discharging alternative to manage or dispose of the partially treated wastewater during non-growing season months, and
- Is not considered a water supply planning tool to conserve potable water and to supplement a community’s overall water supply for other uses.

2. Conventional or alternative onsite sewage systems

Onsite sewage systems, often called “decentralized” sewage systems, are usually privately owned and serve a single household. There is no regulatory upper limit for the size of an onsite sewage system. Therefore, they can be designed to serve multiple households. In this situation, decentralized sewage systems are owned by homeowners associations, private utility companies or government entities. Onsite sewage systems employ some form of wastewater treatment, often a septic tank, before releasing partially treated wastewater into the soil environment for additional treatment and dispersal. Some onsite sewage systems utilize advanced treatment, producing wastewater of secondary or better quality. Most onsite sewage systems require unsaturated soil conditions below the soil treatment area (“drainfield”) because initial treatment is not adequate to fully renovate the wastewater and render it safe for incorporation directly into groundwater. The unsaturated soil in the drainfield provides additional treatment, or ‘polishing.’ Onsite sewage systems completely dispose of all wastewater in the soil and do not create a point source discharge.

As an alternative to reduce nutrient pollution to surface waters, onsite sewage systems are not a panacea. Because these systems are located in the upper part of the unconsolidated soil column, wastewater from onsite sewage systems that is not evaporated or taken up by plants percolates downward and combines with or rides atop the unconfined aquifer to eventually become part of surface water base flow. According to the U.S. EPA, 40 percent of nitrogen from a conventional onsite sewage system reaches a stream. Design choices can reduce the amount of nitrogen leaving an onsite sewage system. These include the use of treatment devices to reduce total nitrogen, and locating the system drainfield in a biologically active zone where plant uptake and denitrification may occur. Achieving near-zero nitrogen loss from an onsite sewage system is possible, but expensive.

Onsite sewage systems can be configured, through careful application of treatment technologies and proper operation and maintenance, for water reuse. Virginia Department of Health regulations do not prohibit water reuse for toilet flushing, and drainfields can be designed to function partially as irrigation systems for lawns, trees, shrubs, etc. Above ground irrigation and other uses such as car washing, laundry, etc. are currently not allowed. In the future, owners may be able to obtain permits issued jointly by VDH and DEQ that will allow other uses of reclaimed water from onsite sewage systems.

Onsite systems are distinguished from land treatment systems by several characteristics. First, land treatment systems may apply effluent above ground, while onsite sewage systems must keep all effluent under the ground surface at all times. Land treatment systems require storage for periods when effluent cannot be land applied due to seasonal conditions or other factors, whereas onsite sewage systems do not require storage. Land treatment systems that rely, in part, on vegetation at the site for nutrient removal prescribe effluent application rates in accordance with a nutrient management plan; onsite sewage application rates are based on soil long-term acceptance rates. Lastly, onsite systems are permitted by VDH pursuant to authorities established in Title 32.1 of the Code of Virginia, whereas land treatment systems are permitted by DEQ pursuant to authorities in Title 62.1 of the Code.

Conventional and alternative onsite sewage systems can be distinguished by certain design characteristics. Conventional systems use septic tanks for treatment and gravity distribution in

the drainfield. Alternative systems employ treatment other than septic tanks and/or pressurized distribution in the drainfield.

Advantages and disadvantages of onsite sewage systems (conventional and alternative) are as follows:

a. Advantages

- Modular concept allows the owner to build only what is needed,
- Do not require a large investment in a collection system,
- Can be configured to function as irrigation in the growing season and disposal in the non-growing seasons with no storage required,
- Can employ nitrogen-reducing strategies in the design, and
- Can be designed and operated for limited reuse.

b. Disadvantages

- Nitrogen discharges are not regulated (exception for alternative onsite sewage systems where the concentration of nitrate for systems over 1,000 gpd is limited to 5mg/l, which may be achieved by dilution),
- Increased operation and maintenance (O&M) costs due to travel and decentralized nature,
- Require relatively deep well-drained soils (applicable to conventional onsite sewage systems)
- Have regulated O&M requirements (applicable to alternative onsite sewage systems), and
- Contribute nitrogen to surface waters unless significant design modifications are made.

3. Storm water reclamation and reuse

[\[This section needs to be beefed up - describe the fact that the convergence of the stormwater permitting requirements and the Bay TMDL requirements creates an opportunity for innovative stormwater reuse projects. These aren't just rainwater harvesting projects, but finding means of capturing run off from impervious surfaces, etc. Also need to add advantages and disadvantages to this section\]](#)

Section § 10.1-603.4. charges the Virginia Soil and Water Conservation Board (Board) and the Department of Conservation and Recreation (DCR) to promote the reclamation and reuse of stormwater for uses other than potable water in order to protect state waters and the public health and to minimize the direct discharge of pollutants into state waters. As such, newly Board approved stormwater regulations encourage the harvesting of stormwater for the purposes of landscape irrigation systems, fire protection systems, flushing water closets and urinals, and other water handling systems to the extent such systems are consistent with federal, state, and local regulations. In doing so, DCR developed design specifications for rainwater harvesting

that allows the use of rainwater harvesting to meet stormwater water quality design criteria for new and redevelopment projects. These design specifications can be found at: http://vwrrc.vt.edu/swc/NonPBMPSpecsMarch11/DCR%20BMP%20Spec%20No%206_RAIN_WATER%20HARVESTING_Final%20Draft_v1-9-5_03012011.pdf. The new regulations will be effective in October 2011 and implemented in July 2014.

VIII. Public Comments on Second Draft Report

[Section reserved to summarize public comments received from 9/7 through 9/21/11 on 2nd draft report. Comments will be compiled in Attachment C.]

IX. References [This doesn't seem necessary to include given that there's only one document referenced.]

1. Virginia Department of Environmental Quality. 2010. Status of Virginia's Water Resources: A Report on Virginia's Water Resources Management Activities, available at http://www.deq.virginia.gov/export/sites/default/regulations/documents/2010_State_Water_Resource_Report.pdf.

Attachment A

2011 Appropriations Act, Department of Health (601), Item 290

Department of Health (601)

290.	Environmental Health Hazards Control (56500)	8,025,897	7,811,497
		8,140,522	8,842,294
	State Office of Environmental Health Services (56501)	4,330,585	4,330,585
		4,445,210	4,503,993
	Shellfish Sanitation (56502)	2,060,237	1,845,837
			1,995,987
	Bedding and Upholstery Inspection (56503)	260,872	260,872
			400,872
	Radiological Health and Safety Regulation (56504)	1,374,203	1,374,203
			1,941,442
Fund Sources:	General	4,897,583	4,683,183
			4,897,583
	Special	772,830	772,830
			1,182,255
	Dedicated Special Revenue	416,341	416,341
			714,155
	Federal Trust	1,939,143	1,939,143
		2,053,768	2,048,301

Authority: §§ 2.2-4002 B 16; 28.2-800 through 28.2-825; and 32.1-212 through 32.1-245, Code of Virginia.

A. Out of this appropriation, \$12,500 the first year and \$12,500 the second year from the general fund shall be provided for the activities of the Sewage Appeals Review Board.

B. The Commissioner shall work with the Director of the Department of Environmental Quality to review opportunities to expand the reuse of wastewater with the goal of reducing nutrient pollution of the surface waters of the Commonwealth. The review shall include the establishment of an appropriate committee of stakeholders to assist in identifying potential opportunities. The review shall include an examination of the practices in other states that have developed policies and programs to reduce surface water discharges by way of beneficial reuse of wastewater. The Commissioner shall report the recommendations to the Governor and General Assembly by October 1, 2011.



HARVEY B. MORGAN
POST OFFICE BOX 949
GLOUCESTER, VIRGINIA 23061
NINETY-EIGHTH DISTRICT

COMMONWEALTH OF VIRGINIA
HOUSE OF DELEGATES
RICHMOND

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COMMITTEE ASSIGNMENTS:
AGRICULTURE, CHESAPEAKE AND
NATURAL RESOURCES (CHAIRMAN)
APPROPRIATIONS
COMMERCE AND LABOR

February 24, 2011

Dr. Karen Remley, Commissioner
Virginia Department of Health
P.O. Box 2448
Richmond, VA 23218

David K. Paylor, Director
Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218

Dear Commissioner Remley and Director Paylor:

At the recommendation of the Committee on Agriculture, Chesapeake, and Natural Resources (ACNR), I write to request that jointly you explore opportunities to expand the reuse of wastewater with the goal of both conservation and reducing nutrient pollution of the surface waters of the Commonwealth. In doing so, I encourage you to establish an appropriate committee of stakeholders to identify potential opportunities. The review should examine practices in other states such as Florida and Georgia that have developed policies and programs to reduce surface water discharges through beneficial reuse of wastewater. Hopefully, the successful application of your findings can also assist in meeting Virginia Chesapeake Bay obligations.

Following deliberations, please prepare a report identifying statutory and regulatory changes, including potential incentives to reduce wastewater discharge to surface waters. I ask that you submit this report to me by October 1, 2011, as well as a copy to Senator Stuart, the patron of SB 1056.

The study can further the opportunity to employ reuse as a means of reducing pressure on other sectors to meet Virginia's Chesapeake Bay obligations.

I appreciate your attention to this request.

Sincerely,

Harvey B. Morgan

Cc: Mr. Marty Farber
The Honorable Richard H. Stuart

CHAPTER 189

An Act to amend and reenact § [10.1-2129](#) of the Code of Virginia, relating to incentives for water reuse.

[S 1427]

Approved March 15, 2011

Be it enacted by the General Assembly of Virginia:

1. That § [10.1-2129](#) of the Code of Virginia is amended and reenacted as follows:

§ [10.1-2129](#). Agency coordination; conditions of grants.

A. If, in any fiscal year beginning on or after July 1, 2005, there are appropriations to the Fund in addition to those made pursuant to subsection A of § [10.1-2128](#), the Secretary of Natural Resources shall distribute those moneys in the Fund provided from the 10 percent of the annual general fund revenue collections that are in excess of the official estimates in the general appropriation act, and the 10 percent of any unrestricted and uncommitted general fund balance at the close of each fiscal year whose reappropriation is not required in the general appropriation act, as follows:

1. Seventy percent of the moneys shall be distributed to the Department of Conservation and Recreation and shall be administered by it for the sole purpose of implementing projects or best management practices that reduce nitrogen and phosphorus nonpoint source pollution, with a priority given to agricultural best management practices. In no single year shall more than 60 percent of the moneys be used for projects or practices exclusively within the Chesapeake Bay watershed; and

2. Thirty percent of the moneys shall be distributed to the Department of Environmental Quality, which shall use such moneys for making grants for the sole purpose of designing and installing nutrient removal technologies for publicly owned treatment works designated as significant dischargers or eligible nonsignificant dischargers. The moneys shall also be available for grants when the design and installation of nutrient removal technology utilizes the Public-Private Education Facilities and Infrastructure Act (§ [56-575.1](#) et seq.).

3. Except as otherwise provided in the Appropriation Act, in any fiscal year when moneys are not appropriated to the Fund in addition to those specified in subsection A of § [10.1-2128](#), or when moneys appropriated to the Fund in addition to those specified in subsection A of § [10.1-2128](#) are less than 40 percent of those specified in subsection A of § [10.1-2128](#), the Secretary of Natural Resources, in consultation with the Secretary of Agriculture and Forestry, the State Forester, the Commissioner of Agriculture and Consumer Services, and the Directors of the Departments of Environmental Quality and Conservation and Recreation, and with the advice and guidance of the Board of Conservation and Recreation, the Virginia Soil and Water Conservation Board, the State Water Control Board, and the Chesapeake Bay Local Assistance Board, and following a public comment period of at least 30 days and a public hearing, shall allocate those moneys deposited in the Fund, but excluding any moneys deposited into the Virginia Natural Resources Commitment Fund established pursuant to § [10.1-2128.1](#), between point and nonpoint sources, both of which shall receive moneys in each such year.

B. 1. Except as may otherwise be specified in the general appropriation act, the Secretary of Natural Resources, in consultation with the Secretary of Agriculture and Forestry, the State Forester, the Commissioner of Agriculture and Consumer Services, *the State Health Commissioner*, and the Directors of the Departments of Environmental Quality and Conservation and Recreation, and with the advice and guidance of the Board of Conservation and Recreation, the Virginia Soil and Water Conservation Board, the State Water Control Board, and the Chesapeake Bay Local Assistance Board, shall develop written guidelines that (i) specify eligibility requirements; (ii) govern the application for and the distribution and conditions of Water Quality Improvement Grants; ~~and~~ (iii) list criteria for prioritizing funding requests; ~~and~~ (iv) *define criteria and financial incentives for water reuse.*

2. In developing the guidelines the Secretary shall evaluate and consider, in addition to such other factors as may be appropriate to most effectively restore, protect and improve the quality of state waters: (i) specific practices and programs proposed in any tributary strategy plan, and the associated effectiveness and cost per pound of nutrients removed; (ii) water quality impairment or degradation caused by different types of nutrients released in different locations from different sources; and (iii) environmental benchmarks and indicators for achieving improved water quality. The process for development of guidelines pursuant to this subsection shall, at a minimum, include (a) use of an advisory committee composed of interested parties; (b) a 60-day public comment period on draft guidelines; (c) written responses to all comments received; and (d) notice of the availability of draft guidelines and final guidelines to all who request such notice.

3. In addition to those the Secretary deems advisable to most effectively restore, protect and improve the quality of state waters, the criteria for prioritizing funding requests shall include: (i) the pounds of total nitrogen and the pounds of total phosphorus reduced by the project; (ii) whether the location of the water quality restoration, protection or improvement project or program is within a watershed or subwatershed with documented water nutrient loading problems or adopted nutrient reduction goals; (iii) documented water quality impairment; and (iv) the availability of other funding mechanisms. Notwithstanding the provisions of subsection E of § [10.1-2131](#), the Director of the Department of Environmental Quality may approve a local government point source grant application request for any single project that exceeds the authorized grant amount outlined in subsection E of § [10.1-2131](#). Whenever a local government applies for a grant that exceeds the authorized grant amount outlined in this chapter or when there is no stated limitation on the amount of the grant for which an application is made, the Directors and the Secretary shall consider the comparative revenue capacity, revenue efforts and fiscal stress as reported by the Commission on Local Government. The development or implementation of cooperative programs developed pursuant to subsection B of § [10.1-2127](#) shall be given a high priority in the distribution of Virginia Water Quality Improvement Grants from the moneys allocated to nonpoint source pollution.

Attachment B

~~Potential Opportunities~~ Issues Relating to Expand Water Reclamation and Reuse Identified by the Stakeholder Committee

August 9, 2011

[Need to add an opening paragraph - the committee met once. At the meeting, the committee was asked to identify impediments to water reclamation and reuse and possible solutions. The committee developed a laundry list of possible opportunities to overcome obstacles, without making any specific recommendations.]

1. Laws and Regulations (17 priority points)*

- Consider other states' regulations (i.e. Florida) (5)
- Look at other sections Virginia Code (3)
- Look at reclamation and reuse for stormwater (2)
- Storage is an issue (2)
- HOAs don't allow rain barrels; resolve this barrier (1)
- How will TMDL be met? (1)
- Use same sites for reclaimed water and biosolids application (1)
- Decrease permit fees, monitoring and reporting; streamline permitting time
- Let policymakers decide how to incentivize reclamation and reuse
- Limits in USBC for reuse of stormwater in homes and commercial buildings
- LEED vs. Code
- Initiative for water R/R (rain barrels)
- Think about need for water reclamation as part of planning & development
- Regional incentives related to water supply
- Eliminate storage requirements (seasonal storage) - document why it is needed
- Add something about exploring opportunities for water reclamation and reuse projects to participate in nutrient trading program

Discussion of laws and regulations

- Equity issues in distribution
- Demonstration of adequate long-term water supply
- Revisit water supply planning; re-emphasize greater role of R/R
- Change Code to require localities to look at water R/R in their CIP process or as part of an adequate public facilities requirement
- Storage for grey water issue in USBC – work w/ DHCD on changes to USBC
- Bits and pieces of conflicts & impediments throughout Code that may need to be fixed- a lot of research
- Acceptable offsets for discharges

2. **Groundwater** (6 priority points)

- Resolve groundwater recharge issues (6)
- Need more coordination between VDH and DEQ on groundwater withdrawals
- Groundwater recharge provides base flow for some surface waters
- Groundwater recharge to be revisited by DEQ
- Reclaimed water needed for groundwater recharge to stop salt water intrusion

No further discussion of groundwater

3. **Water Balance** (9 priority points)

- Need to do watershed approach when considering water reclamation and reuse. This should include a mass balance. (5)
- Look at projects as a whole to meet goals and look at in-stream impacts (2)
- Need a state fresh water management plan (2)

Discussion of water balance

- Water withdrawal regulations in Virginia are not the same as those of Georgia and Florida
- Encourage end user that reduce both a discharge and a water supply withdrawal
- There may be greater incentive to reclaim and reuse stormwater over municipal wastewater or sewage
- Look at consumptive use of new reclaimed water generators and their storage to offset consumptive use

4. **Public Health** (7 priority points)

- Identify public health risks of water reclamation and reuse (all types of reclaimed water) (4)
- Need risk based decision process when evaluating impacts to public health (3)
- Grey water reuse – public health risks
- Permit by rule for grey water – determined by quality of grey water
- Recycling can be simple for onsite use (low tech, but manage health risks)
- Look at existing/proposed regulations – public health risks with increased reuse

Discussion of public health

- Risk assessment – what would/should it involve
- Is there a need for risk analysis?
- Risk assessment – needed for GW recharge
- As we incentivize – need to consider public health risk
- If you make regulations less stringent – need more risk analysis

5. **Financial** (11 priority points)*

- End user must buy into this – provide tax incentives and tax credits (6)
- Water supply and nutrient caps driving reuse – link funding to this (3)
- State does not have money for operation and maintenance costs (1)
- Give credit to environmental benefits for wastewater treatment plants that reduce discharge due to water reclamation and reuse
- (Sticky note attached: Money is always an issue. PSAs and utilities required to operate in the black. County must operate in red. They do not charge enough to cover water costs. Do not charge enough for distribution to cover maintenance costs.)
- Localities need to be creative about costs/pricing
- Raise price of drinking water
- Not always most cost effective
- Cost effective component to generate nutrient credits
- Funding needed and monetary incentives
- How will costs /prices be set?
- What is actual benefit of tax credits?

Discussion of financial

- Make it free
- Money – biggest incentive
- Don't increase cost of other resources and services to pay for water reclamation and reuse, needs to support itself
- State tax credits for end users
- State buyback water rights to increase water reuse
- Tax incentive needs to be measured against cost avoidance (related to TMDL)
- Eliminate competition between purveyors and water generators
- Provide phase-out tax incentives (e.g., declining tax benefit with time)
- Charge true cost for potable water – appears to be a secondary issue relative to decreasing nutrient loads
- Look at reclaimed water as commodity
- When determining rates – different rates for rural vs. urban end-users

6. **Education** (8 priority points)*

- Do more to educate public (by state) (5)
- Work with engineering groups to promote water reclamation and reuse (1)
- Develop public education information (brochures, etc.) to promote water reclamation and reuse (1)
- Include Coop Extension in public education.
- Need to eliminate “fear factor” of water reclamation and reuse – need to educate
- Need public support
- Need Governor’s endorsement

Discussion of education

- Bay TMDL – drives need for education
- Educate potential end users
- Educate decision makers

7. **End Users** (11 priority points)*

- Must have end users – need market and this needs education (6)
- Necessity versus incentivize – water reclamation and reuse allows growth to occur (1)
- Need to consider for water supply (1)
- Create demand for reuse (1)
- Need end users –eliminate sales tax for infrastructure, provide tax credit, reduce rate, need to demonstrate long-term water supply ; water reclamation and reuse should be a component “water use wisely”, a public educational tool
- Look at industries that have year round use – incentivize this
- Flexibility in implementation

Discussion of end users

- Local leaders having difficulty supporting water reclamation and reuse – not cheapest option
- Strong relationship between education and end users
- Nutrients from irrigation reuse can conflict with other agricultural practices
- CAFOs – other potential end users
- Get large industrial end users
- What are factors to consider related to end users:
 - Disruption to existing infrastructure
 - Size and number of end users
 - Distance to deliver reclaimed water
 - Changing monitoring
 - Availability of water sources
 - Relative cost of reclaimed water
- Competition between water purveyor and reclaimed water generator for the same revenue where they’re not under same ownership
- Groundwater withdrawal restrictions would increase demand for reclaimed water
- Other restrictions affect industrial end user of reclaimed water (e.g., food processing industry may require water of a quality better than reclaimed water)
- Need to identify drivers to get end users to use reclaimed water
- Must convince locality that water reclamation and reuse is cost effective option
- [Perception that there is ample “clean” water available](#)

8. **Irrigation** (8 priority points)

- Reduce permitted limitations on irrigation rates and consider use of reclaimed water with higher nutrient levels (3)
- Use soil moisture gauges for irrigation reuse (2)
- Encourage or subsidize irrigation use for agriculture - more efficient nutrient uptake, particularly during or after drought (2)
- Don't over treat wastewater – make more nutrients available for irrigation reuse (1)
- Nutrient management programs need to address irrigation reuse

Discussion of irrigation

- Change application rates allowed for irrigation reuse
- Consider use of water with higher nutrient levels

9. **General** (0 priority points)

- Promote drug collection programs to reduce CECs at source
- Require certain operations to do water reuse
- Should use reclaimed water rather than groundwater when available
- Need regulatory change for water supply that puts water reclamation and reuse as a higher priority

No further discussion of general

10. **Other Factors and Incentives** (2 priority points)

- LID (Low Impact Development) practices give credit for stormwater harvesting (DCR) (credit for volume reduction and pollutants) (1)
- Credits are available through LEEDS (1)
- Sustainability needed
- Avoid Jargon such as “sustainability” - don't use “sustainability” in report

No further discussion of other factors and incentives

* The category received priority points in addition to individual items within the category

Attachment C

Public Comments on Second Draft Report