December 20, 2016

Report to the General Assembly

Long Range Plan for Onsite Sewage

§ 32.1-163.2 of the Code of Virginia

Prepared by:

Virginia Department of Health

Office of Environmental Health Services

Division of Onsite Sewage, Water Services,
Environmental Engineering, and Marina Programs

Contents

Acronyms as used in this report:

"AOSS" means alternative onsite sewage system.
"COSS" means conventional onsite sewage system.
"DEQ" means the Department of Environmental Quality.
"DPOR" means the Department of Professional and Occupational Regulation.
"Division" means the Division of Onsite Sewage, Water Supplies, Environmental Engineering, and Marina Program.
"GPD" means gallons per day.
"GWMA" means a Groundwater Management Area.
"IEN" means the Institute for Environmental Negotiation at the University of Virginia.
"lbs" means pounds.
"ODW" means the Office of Drinking Water.
"O&M" means operation and maintenance.
"OEHS" means the Office of Environmental Health Services.
"OSE" means licensed Onsite Soil Evaluator.
"PE" means licensed professional engineer.
"SHIFT" means the Safety and Health in Facilitating a Transition workgroup.
"TMDL" means total maximum daily load.
"VENIS" means the Virginia Environmental Information System.
"VDH" means the Virginia Department of Health.
"WIP" means the Watershed Improvement Plan.
"WQIF" means the Water Quality Improvement Fund.

Executive Summary

Virginia Code § 32.1-163.2 requires the Board of Health (the Board) to develop and revise a five-year plan for the handling and disposal of onsite sewage. The Board must report to the Governor and the General Assembly every five years on the status of the onsite sewage program in Virginia and the health department's long-range plan. This report describes the Virginia Department of Health's (VDH) onsite sewage and water supply program.

The activities of the Division of Onsite Sewage, Water Services, Environmental Engineering, and Marina Program's (the Division) directly support the mission of VDH (to promote and protect the health and wellbeing of all Virginians), as well as the vision of VDH (to make Virginia the healthiest state in the nation). By assuring that people have safe and adequate drinking water and safe recreational water, the Division intentionally improves health by preventing human exposure to disease from sewage or excessive nutrients. The Division measures success and outcomes, builds relationships, educates, and creates policies that improves health as it relates to water, sewage and nutrient pollution. The Division's values include:

- Providing excellent customer service, treating everyone with honesty, dignity and respect;
- Upholding VDH's ethical standards at all times;
- Enjoying our work serving individuals and communities;

- Understanding the limits of the Division's authority and always working within the law, regulation, and official agency policy.
- Always keeping people informed; and,
- Providing customers with due process to challenge adverse decisions.

The Division ensures that agency regulations and policies are enforced appropriately and consistently throughout the Commonwealth. This requires clarifying and standardizing processes based on appropriate goals and metrics, training staff based on the standardized processes, and performing quality assurance and control to ensure goals and metrics are met. To this end, the Division has a specific work unit focused on standardization, training, and quality assurance to ensure policies and procedures are adequately and appropriately adhered.

The agency strives to work with property owners to repair failing sewage systems within 60 days of discovery. Currently, about 45% of failing sewage systems are repaired within 60 days of discovery statewide. Data collection and dissemination will continue to improve over the next five years as staff applies more focus in this area. The Division has other goals over the next five years, including:

- Start accepting applications and payments online;
- Making onsite sewage system and private well records available online;
- Creating a complete electronic inventory and record of all onsite sewage systems and private wells in the Commonwealth;
- Expanding efforts to incorporate onsite sewage system and private well data into community health assessments; and
- Expanding opportunities to help low and moderate income populations with the repair of failing onsite sewage systems.

Over the next five years, the Division anticipates more resources and focus will be applied to issues of concern related to groundwater quality and management. Recently, the agency has been involved in such topics as uranium mining, coal ash disposal, impacts from industrial activities, lead in drinking water, fracking and natural gas development, groundwater depletion in the coastal plain physiographic province, water and graywater reuse, and a number of other topics of importance. To apply current resources in these emerging topic areas, the Division believes resources must be redirected away from providing soil evaluations and designs for onsite sewage systems and sanitary surveys for private well development.

For over 50 years local health departments throughout the Commonwealth have provided evaluation and design services for onsite sewage systems and private wells. However, this is changing. Over the last two decades site evaluations and designs for onsite sewage systems and private wells have slowly shifted toward more private sector service providers. During the 2016 session, the General Assembly passed House Bill 558 (HB 558) which required the State Health Commissioner to develop a plan to reduce and eliminate evaluation and design services provided by VDH for onsite sewage systems and private wells. As reported in VDH's response to HB 558 of the 2016 General Assembly Session:

The strategic vision of the Virginia Department of Health (VDH) is to shift evaluation and design services for onsite sewage systems (OSS) and private wells to the private sector in an orderly manner so limited VDH resources can be focused on improving public health and groundwater supplies. VDH should not provide evaluation and design services when and where a sufficient number of licensed private sector professionals are available to perform evaluation and design services. VDH should focus its limited resources on population health and strengthen its efforts in health monitoring, data collection and dissemination, community health assessments, creating a complete inventory of wells and sewage systems throughout the Commonwealth, understanding viral and nutrient impacts to drinking water and recreational water, providing quality assurance inspections of private sector work, educating the public on operation and maintenance needs and drinking water quality, developing necessary policies to improve health, and providing reasonable enforcement and programmatic oversight. VDH cannot currently perform these higher priority needs to the extent necessary because the law requires VDH to perform soil evaluations and designs.

The strategic vision encompasses VDH having a more traditional regulatory role. VDH is unique among state and federal agencies in that it provides some of the same services offered in the private sector. VDH's dual role of service provider and regulator creates numerous difficulties with enforcement, plan review, and work product expectations. The strategic vision includes VDH providing adequate programmatic oversight with a proper "check and balance" system.

Legislative changes over the past five years

There has been significant legislative activity over the past five years.

2012

Four bills pertaining to the onsite sewage program during the 2012 Session.

HB 942 and HB 1071 were considered but not approved. HB 942 addressed local requirements for AOSS and HB 1071 considered exempting owners from operation and maintenance requirements for AOSS. HB 1231 was enacted to require the certifying licensed professional engineer (PE) or onsite soil evaluator (OSE) must inspect an onsite sewage system at the time of installation and provide a report to VDH. VDH updated 12VAC5-610-330 to address this particular requirement. HB 1231 also allows the property owner to ask VDH to perform an inspection of the system and render a final case decision to approve or deny the sewage system's construction when the professional engineer (PE) or onsite soil evaluator (OSE) fails to inspect the system in a timely manner or declines to certify the installation.

Senate Bill (SB) 442 sought to establish a minimum inspection frequency of once every two years for alternative onsite sewage systems (AOSS) dispersing 1,000 gallons per day (GPD) or less. The inspection frequency for system dispersing more than 1,000 gpd would have been based on the designer's specifications and the specific daily flow volume from the system. This bill passed the Senate but failed to report out of committee in the House.

2013

The 2013 General Assembly considered several bills related to the onsite sewage and water service programs; HB 1448, HB 1505, HB 1611, and HB 1726.

HB 1448 amended Va. Code § 15.2-958.6 to authorize a locality by ordinance to enter into contracts with property owners for the repair of septic systems when all property owners were not available or known. The amendment specified several elements that must be included in the ordinance such as types of septic system repairs offered; source of loan funding; and interest rates and repayment timeframes; among other elements.

Gravelless Material Installation

HB 1726 directed the Board to promulgate emergency regulations for gravelless material and other effluent distribution system technologies deemed necessary by the Board. VDH convened a stakeholder group and final regulations became effective on August 25, 2016, and included requirements for drip dispersal technologies.

HB 1505, which was not approved, proposed to set aside up to 25% of the monies from the Onsite Sewage Indemnification Fund (Va. Code § 32.1-164.1:01) to provide or guarantee betterment loans to assist owners with the repair, replacement or upgrade of failing or noncompliant onsite sewage systems.

HB 1611, also not approved, would have reduced the inspection frequency for AOSS to once every two years. Under the AOSS Regulations, owners of AOSS with an average daily flow less than or equal to 1,000 GPD must have their system visited by a licensed operator at least once every 12 months.

2014

Several bills considered by the 2014 General Assembly impacted the onsite sewage and water service programs. These bills included HB 409, HB 1177, and HB 1217.

HB 409 was not approved and would have required VDH to convene another stakeholder group to examine onsite septic system services offered by VDH. Prior to the 2014 General Assembly session, VDH had convened a stakeholder workgroup, the Safety and Health in Facilitating a Transition (SHIFT), to advise the agency on how to maximize private sector participation in the onsite sewage program. The final SHIFT report was made available in January, 2014.

HB 1177 added Bedford County to the list of local governing bodies that may establish by local ordinance reasonable testing requirements for private wells before releasing a building permit.

HB 1217 amended Va. Code § 62.1-44.15:72 to allow a licensed operator or onsite soil evaluator (OSE) to document proof of a septic tank pump-out in localities within the Chesapeake Bay

Preservation Area. Localities within the Chesapeake Bay Preservation Area are required to establish a five-year pump-out requirement for onsite sewage systems by local ordinance. Local ordinances can also allow an inspection or installation of an effluent filter in lieu of a pump-out.

2015

The 2015 General Assembly considered several bills related to the onsite sewage and water service programs, including HB 1804, HB 1846, HB 1870, HB 1871, and HB 2078.

HB 1804 allows a property owner who received a repair waiver pursuant to Va. Code § 32.1-164.1:1 between July 1, 2004, and December 6, 2011, and who installed that repair, to also request a voluntary upgrade permit and waiver in accordance with Va. Code § 32.1-164.1:3. A voluntary upgrade waiver does not expire (unless the sewage system fails). A repair waiver expires at the time of property transfer, unless exempted. Both waivers allow an owner to avoid costs to install additional treatment or pressure dosing as required by regulations. With passage of HB 1804, a property owner meeting the above requirements can receive a voluntary upgrade permit or waiver following a repair waiver.

HB 1871 requires well drillers to register private wells constructed in a groundwater management area (GWMA) within 30 days of completing a well using a form jointly developed and approved by the Department of Environmental Quality (DEQ) and VDH. VDH and DEQ are required to annually submit records to each other regarding well characteristics and locations in a GWMA. VDH worked with DEQ to finalize a joint well completion form and assisted DEQ with development of an online platform, VA Hydro, for well drillers to submit well construction information electronically. Some well drillers began submitting records through VA Hydro in August, 2015, and many well drillers continue to provide hard copy reports to local health departments.

HB 1846 was not approved and would have required owners or operators of electric generating facilities and landfills that manage coal ash to test private wells and springs located near the facilities to determine the levels of heavy metals. VDH identified private wells near coal ash disposal facilities in Virginia based on electronic records since 2005. This issue is discussed in greater detail later in the report.

Several bills during the 2015 General Assembly were not approved but the underlying issues are likely to remain the subject of consideration. HB 1870 would have required the developer of a subdivision to apply for a groundwater withdrawal permit prior to subdivision plat approval when the subdivision was located in a groundwater management area (GWMA) and when the total groundwater withdrawal from private wells in the subdivision was projected to be 300,000 gallons or more for any month. Construction of a new private well in the subdivision would have been prohibited when it would cause groundwater withdrawal in excess of the permit, unless the State Water Control Board approved a permit amendment.

HB 2078 sought to establish a Community Wastewater Treatment Grant Program and Fund to provide matching grant funds to localities experiencing widespread onsite sewage system, pit privy, or alternative discharging system failure. The Board would have been directed to establish

guidelines setting out criteria for grant eligibility, grant conditions, distribution priorities and general grant requirements.

2016

A number of bills considered by the 2016 General Assembly significantly impacted the onsite sewage and water service programs, including HB 465, HB 558, HB 566, HB 648, HB 1080, and SB 407.

HB 558 directed the State Health Commissioner (the Commissioner) to develop a plan for VDH to stop providing evaluation and design services for onsite sewage systems and the placement of private wells on private property because licensed private sector service providers can provide these services. The Commissioner provided the plan to the General Assembly on November 28, 2016. More details regarding the plan are provided later in this report.

HB 566 removed outdated terms and improved clarity. In 2007, the General Assembly transferred oversight of "authorized" evaluators from VDH to the Department of Professional and Occupational Regulation (DPOR); DPOR created regulations for implementation and administration of "licensed" evaluators so the text changes in HB 566 updated the Code to reflect the prior change.

HB 648 required the Commissioner to develop a procedure for processing requests to approve an installed treatment works. The bill authorizes approval of an installed sewage system as "nonconforming" under certain conditions. In addition, the bill designates persons who may certify an installed sewage system as safe, adequate, and proper

SB 407 allows any locality to adopt an ordinance establishing a uniform schedule of civil penalties for violations of specified provisions for the operation and maintenance (O&M) of conventional onsite sewage systems (COSS) and alternative discharging systems, provided the locality has a record of locations, has notified system owners of their maintenance responsibilities, and has a method to identify property transfers.

HB 465 was not approved but sought to make private well permits valid for the same time period as permits for onsite sewage systems. Currently onsite sewage system permits are valid for 18 months with a one-time 18 month extension. By contrast, private well permits are valid for 54 months without the option for an extension.

HB 1080, was not approved but sought to establish new standards for sewage systems designed by a professional engineer pursuant to Va. Code § 32.1-163.6.

Regulatory Changes Since 2011

Sanitary Regulations for Marinas and Boat Moorings (12VAC5-570)

The Board's Marina Regulations establish minimum standards for sewage handling and disposal at regulated facilities. The marina regulations had not been updated since 1990 and were

overdue to address changes in the industry. The regulations ensure the number of sewerage fixtures at marinas is appropriate based on the number of slips and dry storage spaces and provides procedures for pump-out systems. The regulatory revisions took effect on December 16, 2015.

Sewage Handling and Disposal Regulations (12VAC5-610, the SHDR)

HB 1726 of the 2013 General Assembly session required the Board to promulgate regulations for gravelless material, and other technologies as deemed necessary (see Va. Code § 32.1-164.9). VDH convened two stakeholder technical advisory committees (TAC) to assist in the development of the emergency regulations; one to review gravelless material and another to review other technologies. Emergency regulations took effect on March 14, 2014 and final regulations became effective on August 25, 2016.

In addition to the revisions regarding gravelless material and drip dispersal, VDH initiated a periodic review of the SHDR on June 15, 2016, to determine whether the regulation should be repealed, amended, or retained in its current form. Three public comments were received. The Office of the Attorney General (OAG) noted that there were a number of citations to the Code that are now incorrect as Code sections have been modified. The OAG recommended that the regulations be amended to correct those errors. VDH plans to update the SHDR.

Regulations for Alternative Onsite Sewage Systems (12VAC5-613, the AOSS Regulations)

VDH adopted final regulations for AOSS on December 7, 2011. The regulations establish performance requirements for AOSS, including horizontal separations to protect groundwater and surface water. The AOSS Regulations also include inspection, sampling, and reporting frequencies. The AOSS Regulations are supplemental to the existing SHDR which contain permitting and enforcement procedures and other requirements for onsite sewage systems, including AOSS. The Board of Health approved fast track amendments to the AOSS Regulations on December 1, 2016, which are currently under executive branch review. In addition to the fast track amendments, a periodic review of the AOSS Regulations concluded in 2016, and VDH plans to work with stakeholders to consider other changes to the AOSS Regulations.

Authorized Onsite Soil Evaluator Regulations (12VAC5-615, the AOSE Regulations)

The Board of Health is seeking to repeal this regulation. The 2007 General Assembly enacted HB 3134, which transferred implementation, administration, and enforcement of licensing requirements for authorized OSEs from VDH to the Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Board at the Department of Professional and Occupational Regulation (DPOR). DPOR promulgated regulations for OSEs on July 1, 2009 (18VAC160-20). HB 3134 abrogated the Board's authority to license authorized OSEs. While Title 32.1 of the Code contains other references to the Board's regulation of authorized OSEs, VDH has successfully implemented those statutory provisions independent of the AOSE

Regulations. As such, the AOSE Regulations are no longer necessary and the Board does not have authority to implement the regulation.

Regulations Governing Fees for Onsite Sewage Disposal Systems, Alternative Discharge Systems, and Private Wells (12VAC5-620, the Fee Regulations)

Revisions to the Fee Regulations took effect on February 12, 2016. The fees for services are as follows:

SCHEDULE OF FEES	
Application or Service	**Fee**
Certification letter, no onsite soil evaluator/professional engineer (OSE/PE) documentation (no charge for well)	$350
Certification letter with OSE/PE documentation, ≤1,000 gpd	$320
Certification letter with OSE/PE documentation, >1,000 gpd	$1,400
Construction permit for treatment works only, no OSE/PE documentation	$425
Combined well and treatment works construction permit, no OSE/PE documentation	$725
Combined well and treatment works construction permit with OSE/PE documentation, ≤1,000 gpd	$525
Construction permit for treatment works only with OSE/PE documentation, ≤1,000 gpd	$225
Construction permit for treatment works only with OSE/PE documentation, >1,000 gpd	$1,400
Combined well and treatment works construction permit with OSE/PE documentation, >1,000 gpd	$1,700
Private well construction or abandonment permit, with or without OSE/PE documentation	$300
Closed-loop geothermal well system (one fee per well system)	$300
Alternative discharge system inspection fee	$75
Minor modification to an existing system	$100
Appeal before the Review Board	$135

Private Well Regulations (12VAC5-630, the Private Well Regulations)

The Private Well Regulations were adopted in 1990. Staff is currently engaged in a stakeholder process to update the regulations following a periodic review that concluded on October 10, 2016. Topics being considered include clarifying well abandonment procedures; modifying setback distances; incorporating existing policies into the regulation; clarifying and improving well construction requirements; clarifying license requirements for various activities; updating standards for sampling wells; and ways to improve water quality.

Alternative Discharging Sewage Treatment Regulations for Individual Single Family Dwellings (12VAC5-640, the Discharge Regulations)

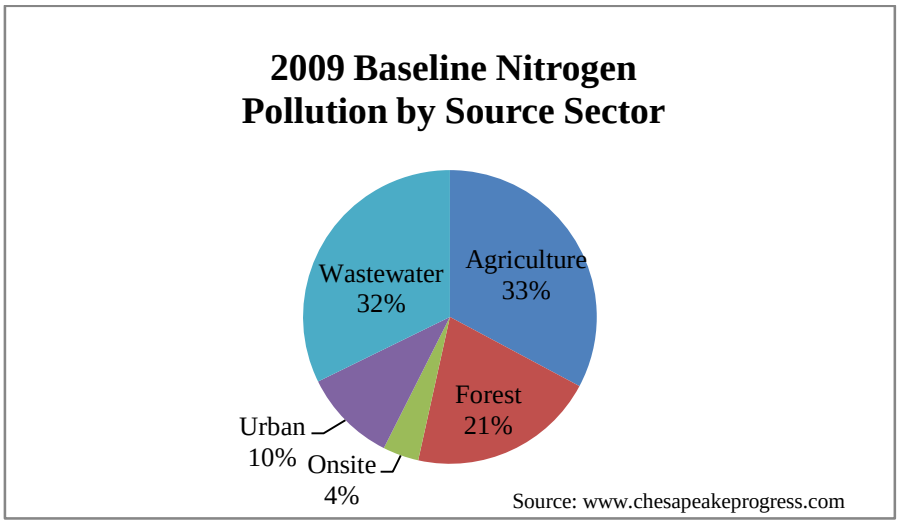
The Board adopted the discharge regulations in 1992. In the fall of 2010, a periodic review of the discharge regulations concluded and VDH determined the regulations needed amendments. VDH worked with stakeholders to revise the regulations; final amendments took effect on December 16, 2015.

Watershed Implementation Plan/Chesapeake Bay Restoration

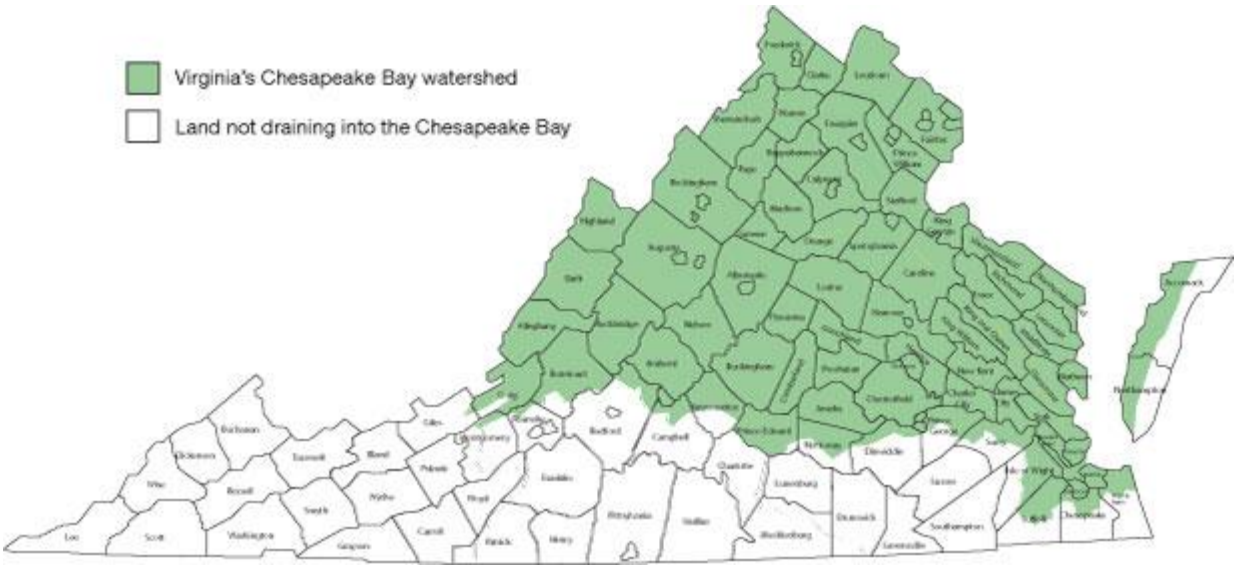
Onsite sewage systems contribute nitrogen to ground water typically in the oxidized form, NO_3^- (nitrate). Nitrogen in raw wastewater exists primarily as ammonia or ammonium at a concentration of about 40 mg/l. Through aerobic biological processes (nitrifying bacteria)

ammonia and ammonium ions are oxidized to nitrate. Some nitrogen escapes as gas through another biological process called denitrification through fluctuating aerobic and anaerobic environments. A properly functioning COSS achieves nearly the perfect conversion of ammonia and ammonium to nitrate in an unsaturated soil environment. Nitrate is highly soluble in water and unless captured by plants or denitrified by other bacteria, it leaches from onsite sewage systems into ground water and eventually into surface waters. Another byproduct of onsite sewage systems is phosphorous, which is retained in soil through chemical reactions on the surface of iron, aluminum, and calcium minerals. Phosphorous is not considered a significant pollutant from onsite sewage systems.

Onsite sewage systems are one of several sources of nitrogen pollution in the Chesapeake Bay. Excess nitrogen in surface waters can lead to a variety of problems including eutrophication and harmful algal blooms, with impacts to drinking water, recreation, and aquatic life. Onsite sewage systems contribute approximately 4% of the total nitrogen entering the Chesapeake Bay each year. A breakdown of nitrogen pollution by source sector is provided below.



The U.S. Environmental Protection Agency (EPA) estimates that 25% of individuals in Virginia are served by onsite sewage systems. There are approximately 536,000 onsite sewage systems in Virginia's portion of the Chesapeake Bay watershed, contributing roughly 2.9 million pounds of nitrogen pollution to the Bay each year. The following map shows the area that makes up Virginia's portion of the Chesapeake Bay watershed.



Source: DEQ

In 2010, the EPA established the Chesapeake Bay Total Maximum Daily Load (TMDL), which created a "pollution diet" to limit the amount of nitrogen, phosphorous, and sediment entering the Chesapeake Bay by the year 2025. Limits were developed for each nutrient source sector, with a goal of reaching those limits by the year 2025. The onsite sewage sector's nitrogen limit goal is 2.09 million pounds of nitrogen annually, which must include systems currently installed as well as account for all new growth.

In order to reach the goals of the Chesapeake Bay TMDL by 2025, with a mid-point assessment of progress in 2017, a Watershed Implementation Plan (WIP) was developed in 2010, and a Phase 2 WIP was developed in 2012. Section 7 of the Phase 2 WIP covered the onsite sector, with specific plans and recommended legislative actions needed to meet the nitrogen reduction goals in the TMDL. No legislative proposals have been presented to date that address the needs identified in the Phase 2 WIP; however, VDH will continue to regularly consider potential legislation that will further its ability to regulate nitrogen in onsite sewage systems.

AOSS within the Chesapeake Bay Watershed must reduce nitrogen by at least 50%. The AOSS Regulations also require annual O&M inspections for AOSS to ensure AOSS are properly functioning. O&M inspection reports are submitted by private sector service providers to VDH electronically. Following the 2017 mid-point assessment of the TMDL, installed best management practices (BMPs) will require verification through O&M reporting. For the onsite septic sector, O&M reports will be submitted to EPA as verification for AOSS. If a system does not receive an annual O&M inspection, the BMP credit will be removed from the Chesapeake Bay Model after the end of its anticipated lifespan (10 years for AOSS). Verification will not be required for septic tank pump-outs, which are an annual credit in the Chesapeake Bay Model.

The onsite sewage sector of the Chesapeake Bay TMDL currently has 22 approved BMPs, which fall into three main categories: 1) connection to public sewer systems (100% nitrogen reduction credit); 2) septic tank pump-out (5% nitrogen reduction credit); 3) and advanced treatment systems which reduce nitrogen (20%-69% nitrogen reduction credit). A BMP Expert Panel is

currently seeking approval for additional BMPs utilizing the latest nitrogen reduction technologies.

VDH reports the number of installed BMPs to the EPA each fiscal year to calculate the total nitrogen reductions from the onsite septic sector load allocation. Since 2011, VDH has reported nearly 50,000 pounds of total nitrogen reduced from the onsite septic load going into the Chesapeake Bay. The increasing trend in reductions could be a result of several factors: increased awareness and demand for nitrogen reducing onsite sewage systems; greater enforcement of five year pump-out requirements within Chesapeake Bay Preservation Act Areas; and improved tracking and reporting capabilities for BMPs within the statewide environmental health database.

Another recent development in the onsite septic sector is revising nitrogen attenuation rates in sewage system drainfields and surrounding soils. The EPA's Chesapeake Bay Model previously assumed that 40% of the nitrogen from each onsite sewage system found its way into the Chesapeake Bay. A recent literature review and expert panel report assigned a variable nitrogen attenuation rate dependent on dominant soil texture; as a result, there is a range of 25% to 65% for pounds of nitrogen entering the Chesapeake Bay from the onsite sewage system sector. These revised nitrogen attenuation rates will be incorporated into the new Chesapeake Bay Phase 6 Model set for release in early 2017.

Fiscal Year	Number of BMPs Reported			Total Nitrogen Reduced (lbs)
	Public Sewer Connection	Septic Tank Pump-out	Nitrogen Reducing Systems	
2012	16	901	508	4,568
2013	321	1118	446	11,345
2014	124	1295	521	7,774
2015	69	5246	622	12,296
2016	61	3750	733	13,236

Following the release of the revised Chesapeake Bay Model in 2017, all states in the Chesapeake Bay watershed will be required to develop a Phase 3 WIP. Virginia's Phase 3 WIP will serve as a road map for reaching the 2025 nutrient limits set by EPA. Local area participation and goals will be the primary focus, as well as updating statewide strategies laid out in the Phase 1 and Phase 2 WIPs. In Virginia, it is anticipated that all source sectors will need to increase nutrient reduction efforts by 10% or more to meet 2025 goals.

The Chesapeake Bay TMDL has set a nutrient limit for the onsite sewage sector of 2.09 million pounds of nitrogen annually by 2025. This limit incorporates all currently installed onsite sewage systems, and accounts for future population growth. The AOSS Regulations require 50% nitrogen reduction. In contrast, conventional onsite sewage systems (COSS) are still the most widely installed systems, and AOSS only account for about 10% of newly installed systems in the Commonwealth. In order to fully meet the TMDL nitrogen limit for the onsite sewage source sector, while also accounting for population growth, additional action would be required,

such as requiring all new (or existing) systems in the Chesapeake Bay Watershed to reduce nitrogen. However, this type of proposal would incur an enormous cost, not only to homeowners, but also to VDH in increased regulatory oversight.

NFWF Grant

In 2013, VDH received a Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant through the National Fish and Wildlife Foundation (NFWF) to provided financial incentives to encourage property owners to install AOSS to reduce nutrient and biological pollution to the Chesapeake Bay. The grant program targeted properties in the Three Rivers Health District, an area comprising ten counties located on the Middle Peninsula (between the York and James Rivers). The grant award was $399,595 and closed December, 2015. VDH assisted 48 homeowners repair failing onsite sewage systems and reduce nitrogen by at least 50%. Through the NFWF grant, VDH garnered significant interest from owners who had failing sewage systems, but were reluctant to come forward because they could not afford to reduce nitrogen or other pollutants. Working with partners like the Middle Peninsula Planning District Commission, the Southeast Rural Community Assistance Project, and private consulting firms, VDH fully utilized grant funding and found innovative solutions, which can be used again when additional funding is found.

Marina Program

The Marina Programs seeks to protect public health and the environment through the education of boaters and the regulation of marina operations. As the popularity of boating and other water related recreational activities increase, the proper disposal of sewage is critical. The Marina Regulations establish uniform requirements for the provision and operation of onshore sewage receiving and treatment facilities to protect public health and improve water quality. To assist in this endeavor, the Marina Programs administers two federal grants: the Clean Vessel Act and Boating Infrastructure Grant.

VDH is a direct service provider for numerous deliverables in the Marina Program. These services include the processing of construction applications and subsequent plan review for marina facilities in conjunction with other applicable state and federal agencies and private sector energy companies. The Marina Program conducts more than 1370 annual inspection of boating facilities and access ramps.

Among the challenges facing the recreational boater today are finding clean, convenient restrooms and reasonably priced sewage holding tank pump-out and dump station facilities. The Federal Clean Vessel

Act managed by VDH, partners with boating facilities by providing 75% of the funding to purchase and maintain pump-out equipment. The equipment is specifically designed to remove sewage from boats in an effort to avert the discharge of partially treated sewage into our waterways and shellfish growing areas. Clean Vessel Act funds have been used to install and maintain 247 pump-out and sewage dump station systems statewide. Between 2011 and 2015 the Clean Vessel Act grant funding has been used to assist in the installation of 11 new pump-out and sewage dump stations, replacement of 19 existing systems and maintenance of another 77 systems.

In 1996, pump-out education outreach programs were created to educate recreational boaters of the importance of properly disposing of vessel sewage. Between 2011 and 2015, the Tri-County Lakes Administrative Commission and the Smith Mountain Lake Association have partnered with the VDH Marina Programs to administer the Summer Vessel Pump-out and Education Program. Interns hired by the program visit marine facilities to engage boaters on the proper disposal of vessel sewage. Students use a mobile pump-out cart to demonstrate the appropriate method of removing sewage from a boat. Prior to 2012, interns also used a boat on Smith Mountain Lake to engage boaters. Numerous factors impact the number of boater contacts, including the number of individuals on each boat.

Smith Mountain Lake
Vessel Pump-out and Education Program

Year	Gallons of Vessel Sewage Pumped	Number of Boat Pump-outs	Number of Boater Contacts
2011	8,556	275	1,098
2012	4,735	265	578
2013	4,519	213	382
2014	4,254	242	539
2015	4,936	311	632

Between 2011 and 2015 the Hampton Roads Sanitation District Commission, City of Virginia Beach, City of Norfolk, and the City of Portsmouth partnered with VDH, Marina Programs to administer the Summer Vessel Pump-out and Education Program in the Hampton Roads, Tidewater, Peninsula, and Northern Neck regions. Like the Smith Mountain Lake Summer Vessel Pump-out and Education Program, interns visit marine facilities to engage boaters on the proper disposal of vessel sewage by use of a mobile pump-out system.

VDH – Hampton Roads Sanitation District Commission
Vessel Pump-out and Education Program

Year	Gallons of Vessel Sewage Pumped	Number of Boat Pump-outs	Number of Boater Contacts
2011	10,033	523	4,778
2012	12,329	566	7,586
2013	13,471	625	9,257
2014	9,913	514	2,148
2015*	18,797	811	2,622

*Started as year-round program

Historically, coastal and inland waterways in Virginia were the first highways along the state's shores and into the interior of the state. Virginians used boats almost exclusively for the transportation of people and goods. Today more than 188,000 recreational vessels are cruising and fishing Virginia's waterways. The purpose of the Boating Infrastructure Grant is to create dockage for recreational transient vessels thereby providing continuity of public access to shore-based recreational, historical, cultural, natural, and scenic resources. Monies spent by the transient boater stimulate economic development and add to local tax revenues. Between 2011 and 2015 the Marina Programs have reimbursed private and public owned boating facilities over $1,243,566 in Boating Infrastructure Grant funds. In turn, marina owners have invested close to $1,353,209 in the construction and installation of docks, bathrooms, fuel systems, bulkheads, wave attenuators, water supply systems, and electrical service for transient boaters. The Federal funds also assist in the maintenance of existing boating infrastructure including the installation of mooring buoys, dinghy docks, the development of feasibility studies, and advertising campaigns to alert transient boaters of the location of these facilities.

Current Services and Funding

Environmental Health (EH) staff at VDH provides services to the public in every county of the Commonwealth. These services include:

- Reviewing and processing applications for COSS and AOSS, alternative discharging systems, private wells, pump and haul, and privies.
- Performing site evaluations, designs, and sanitary surveys for sewage systems and wells.
- Providing engineering and site development reviews.
- Enforcing the regulations for failing sewage systems and providing administrative processes to resolve conflict, such as informal fact-finding conferences and formal hearings.
- Inspecting sewage systems, pump and haul trucks, and wells for compliance with applicable regulations and laws, including quality assurance checks of licensed designers and contractors.
- Performing complaint, lead poisoning, and rabies investigations.
- Offering plan review, pool, temporary food, milk plant, and restaurant inspections.
- Providing hotel, motel, campground, marina, summer camp, and migrant labor camp inspections.
- Planning for emergency preparedness (e.g., Zika, Ebola, and natural disaster response).
- Working with partners such as the EPA, Chesapeake Bay Foundation to improve water quality through the Total Maximum Daily Load (TMDL) program.
- Offering community assessments, data analysis, and other constituent assistance with high community interest, including water quality (e.g., coal ash disposal, uranium mining, and biosolids application).

A specific breakdown of funding allocations to the onsite sewage and water services program is difficult to compile because EH staff provide so many services in multiple program areas. In October, 2015, the Office of Environmental Health Services (OEHS) conducted a survey which asked EH Managers in each of VDH's 35 health districts to report on the percent of time each of their full time employees (FTEs) devoted to various EH programs. The survey found that 22.9%

of state funded FTEs were dedicated to the sewage system program and 6.9% of FTEs were dedicated to private wells. In total, the survey shows 29.8% of FTEs are dedicated to the onsite sewage and water services program. Total funding for EH services at the local health departments comes from a combination of general funds (47%), local match (32%), fee revenue (17%), and other local funding (4%).[1] This funding provides evaluation and design services, quality assurance reviews, training, management of program data, and the other programmatic duties previously described.

Shifting VDH Services

Over the last five years there have been two reports on shifting VDH evaluation and design services for onsite sewage systems and private wells to the private sector.

RD 32 Report

In 2011, HB 2185 would have mandated that all applications include supporting work from the private sector. To review this idea, VDH was asked to determine the best course for the Commonwealth's health and safety and also for the marketplace, and to examine the best means of accomplishing the transition of onsite sewage services to the private sector. VDH's report is found at Va. General Assembly, 2012, RD 32.[2] The report found that:

> *Virtually all [stakeholders] agreed VDH was an essential participant in making sure public health and groundwater supplies were protected. Many observed VDH's critical role in assuring adequate regulations and policies were in place to protect public health. Nearly every public meeting participant expressed the belief VDH should enforce requirements that protect public health. Other participants observed quality services must be provided in the private sector and that a "checks and balances" system was necessary to identify bad actors and subpar performance. Public meeting participants generally felt VDH should be the non-partisan reviewer of private sector work. All seemed to understand and recognize that sewage systems and water supplies must be properly designed, installed, inspected, operated, and maintained to protect the Commonwealth's environment and health.*
>
> *Despite areas of agreement, stakeholders also voiced differing ideas about the health department's role in protecting public health and the environment. Some believed VDH should provide all onsite services, including site and soil evaluations, operation and maintenance, and designs of alternative onsite sewage systems. Others thought VDH should no longer perform any direct service. Some suggested VDH should review all work submitted by the private sector as part of the checks and balances approach. Still other stakeholders thought VDH should not perform any quality assurance or quality control evaluation of private sector*

[1] Percentages based on fiscal year 2016 estimates.

[2] The HB2185 report is found at: http://leg2.state.va.us/dls/h&sdocs.nsf/4d54200d7e28716385256ec1004f3130/b758d93613af667f85257989006edacf?OpenDocument

work. Some participants opined health department fees for services were reasonable, while others felt they were unfair and needed change. Some service providers were willing to provide free services in limited circumstances while many were unwilling to provide any pro bono service. Mutual understanding and agreement among all stakeholders regarding how the private sector could provide all services was absent.

SHIFT

In 2013, the Institute for Environmental Negotiation (IEN) instituted the "Safety and Health in Facilitating a Transition" (or SHIFT) process. IEN worked with VDH to convene a group of 25 stakeholders to provide VDH with recommendations on how to maximize private sector input to the greatest extent possible, while protecting public health and the environment. The SHIFT process recommended a gradual, voluntary approach going forward, which would allow homeowners to choose, or not choose, to work with private sector professionals.

While the SHIFT process recommended a gradual, voluntary, and encouraging approach going forward, VDH has always required private sector work when the applicant has one or more of the following needs:

- A sewage system that serves a business or non-residential need.
- A sewage system that disperses over 1,000 gpd.
- An AOSS that disperses treated effluent into the soil.
- An alternative discharging sewage system.
- A sewage system that requires plans from a PE.
- A sewage system that is part of a new subdivision being reviewed by a local government.

When SHIFT explored whether additional mandated policies should be implemented (such as bare applications for conventional sewage systems), no agreement could be reached.

HB 558 Plan

HB 558 of the 2016 General Assembly session required the Commissioner to develop a plan for VDH to stop providing evaluation and design services for onsite sewage systems and the placement of private wells on private property. This was a VDH legislative proposal. The HB 558 plan was presented to the Governor and the General Assembly on November 28, 2016.[3]

VDH put forward a plan to shift evaluation and design services for onsite sewage systems and private wells to the private sector in an orderly manner so limited VDH resources can be focused on improving public health and groundwater supplies. VDH believes that it should not provide evaluation and design services when and where a sufficient number of licensed private sector professionals are available to perform evaluation and design services. VDH should focus its

[3] You can view the full report at http://leg2.state.va.us/dls/h&sdocs.nsf/4d54200d7e28716385256ec1004f3130/2d721257d696848385257fb7004f93b0?OpenDocument .

limited resources on population health and strengthen its efforts in health monitoring, data collection and dissemination, community health assessments, creating a complete inventory of wells and sewage systems throughout the Commonwealth, understanding viral and nutrient impacts to drinking water and recreational water, providing quality assurance inspections of private sector work, educating the public on operation and maintenance needs and drinking water quality, developing necessary policies to improve health, and providing reasonable enforcement and programmatic oversight. However, VDH cannot currently perform these higher priority needs to the extent necessary because the law requires VDH to perform soil evaluations and designs.

VDH provided 20 specific recommendations as part of the HB558 plan.

Recommendation #1

The General Assembly may wish to amend Va. Code §§ 32.1-163.5 and 32.1-163.6 to require private sector OSEs and PEs to verify system design options and disclose estimated costs to the property owner.

Recommendation #2

The General Assembly may wish to provide additional authority to the Department of Professional and Occupational Regulation in Title 54.1 of the Code to enhance dispute resolution between a property owner and a private sector service provider over services rendered.

Recommendation #3

The General Assembly may wish to amend Va. Code § 32.1-176.5:2.B to give well drillers the authority to perform sanitary surveys for locating wells and submitting work to VDH.

Recommendation #4

The General Assembly may wish to amend Va. Code § 32.1-163 to revise the definition of maintenance, such that paperwork is reduced for certain types of repairs or voluntary upgrades.

Recommendation #5

The General Assembly may wish to amend Va. Code § 32.1-164 to require operation and maintenance reporting for conventional onsite sewage systems, which will improve program oversight.

Recommendation #6

The General Assembly may wish to revise Va. Code § 32.1-164 to require the pump out or inspection of all conventional onsite sewage systems once every five years.

Recommendation #7

The General Assembly may wish to amend Va. Code §§ 32.1-163.5, 32.1-164, and 32.1-164.1.3 to shift onsite sewage system evaluations and design services which are not associated with a building permit or the repair of a failing system (i.e., subdivision reviews, certification letters, and voluntary upgrades) to the private sector by July 1, 2017.

Recommendation #8

The General Assembly may wish to amend Va. Code § 32.1-163.5 to shift new construction evaluations and designs which are not for a principle place of residence to the private sector by July 1, 2017.

Recommendation #9

The General Assembly may wish to amend Va. Code § 32.1-163.5 to require VDH to establish guidelines to help property owners with a specific hardship and be a provider of last resort.

Recommendation #10

The General Assembly may wish to amend Va. Code §§ 32.1-163.5, 32.1-165, and 32.1-176.5:2 to require applicants to petition VDH to provide evaluation and design services for new construction, repairs, and safe, adequate, and proper evaluations.

Recommendation #11

The General Assembly may wish to amend Va. Code §§ 32.1-163.5 and 32.1-176.5:2 and the Appropriation Act to ensure the orderly transition of evaluations and designs for new construction, repair, and safe, adequate, and proper evaluations over a five-year period based on a sliding scale of income eligibility.

Recommendation #12

The General Assembly may wish to amend Va. Code § 32.1-164 and the Appropriation Act to include additional fees which would allow the VDH to retain its current level of funding during and after the transition of direct services to private sector service providers. This recommendation would allow the VDH to maintain a staffing level to provide necessary oversight, improve operation and maintenance of AOSSs and alternative discharging sewage systems, improve management of onsite sewage system and private well data, and incorporate onsite sewage systems and private wells into community health planning.

Recommendation #13

The General Assembly may wish to create a fund to cover the cost of designing and installing repairs for failing onsite sewage systems and private wells for income eligible property owners.

Recommendation #14

VDH should revise agency regulations and policies to i) require VDH staff to inspect all onsite sewage systems and wells designed by the private sector, ii) clarify that a malfunction assessment must be completed as part of all repair and voluntary upgrade evaluations and designs, and iii) require an inspection of conventional onsite sewage systems within 180 days after the operation permit is approved.

Recommendation #15

VDH should expand efforts to educate the public concerning the design, operation, and maintenance of onsite sewage systems and private water supplies.

Recommendation #16

VDH should expand efforts to incorporate onsite sewage system and private well data into community health assessments.

Recommendation #17

VDH should enhance its quality assurance checks and inspection procedures for the review of private sector evaluations, designs, and installations, and update its quality assurance manual to reflect a change in the agency's business model.

Recommendation #18

VDH should consider whether to separate work unit functions regarding permitting and enforcement. Staff reviewing evaluations and designs for permitting purposes may need a separate and independent function from staff performing enforcement actions.

Recommendation #19

VDH should improve the collection and management of onsite sewage system and private well data, including i) creating a web-based reporting system for conventional onsite sewage system operation and maintenance, ii) accepting applications and payments online, iii) making onsite sewage system and private well records available online, iv) creating a complete electronic record of all permitted onsite sewage systems and private wells, and v) creating procedures for tracking Notices of Alleged Violations and corrective actions.

Recommendation #20

VDH should revise agency policies to allow the transfer of valid construction permits to new property owners.

Septage Disposal

VDH estimates there are about one million onsite sewage systems currently discharging about 82.5 billion gallons of wastewater into the soil each year. The onsite sewage disposal process also results in the accumulation of septage. The solids and grease that accumulate in the septic tank are referred to as septage. These residuals need to be periodically removed from the septic tank and disposed of properly (generally at wastewater treatment facilities). Accurate and meaningful estimates for septage disposal needs are difficult to determine because no comprehensive monitoring program exists to measure the volume of septage actually pumped. VDH continues to coordinate with other regulatory agencies and local wastewater authorities to correctly document the number of pump-outs occurring annually.

Septage generation is a function of the number of onsite systems, their size, and frequency of pumping. In theory, if every septic tank were pumped on a five-year cycle, approximately 205 million gallons of septage would be generated annually. Currently, only septic tanks within Chesapeake Bay Preservation Act localities (generally east of the I-95 corridor) require a pump-out every five years. Septic tanks outside of these localities do not have any required pump-out timeframe. However, one of the agencies recommendations in the HB 558 plan is to revise Va. Code § 32.1-164 to require the pump-out or inspection of all COSS once every five years.

In 2008, VDH developed guidance for dealing with the disposal of peat media. Peat is used by several manufacturers as a filter to achieve a higher level of treatment. However, the peat degrades over time and must be disposed. In 2014, VDH updated guidance to include onsite burial of spent peat media based on updated research conducted by Virginia Tech.

Private Wells and Water Supplies

A number of emerging public health and environmental issues are developing that involve the onsite sewage and water services program as described below.

Uranium Mining

In 2012, VDH staff participated in the Uranium Working Group to address concerns about proposed uranium mining in Southside Virginia. A number of stakeholders voiced concerns that the proposed uranium mining operations would impact the quality and quantity of private wells in the area. VDH held a series of public meetings to better understand stakeholder public and environmental health concerns. VDH provided recommendations for addressing stakeholder concerns as part of the Uranium Working Groups final report.[4] The General Assembly ultimately decided not to lift the moratorium on uranium mining in Virginia.

Coal Ash Disposal

In December of 2008, a dam at the Tennessee Valley Authority's Kingston Fossil Plant broke, releasing more than 1 billion gallons of coal ash slurry. The release damaged homes and

[4] To view the final report visit https://www.dmme.virginia.gov/Uranium/pdf/UWG%20Report%20-%20FINAL%2030Nov2012.pdf .

impacted nearby waterways. In February, 2014, a stormwater pipe underlying a Duke Energy coal ash storage facility discharged millions of gallons of coal ash slurry into the Dan River near Eden, North Carolina. This spill also impacted localities in Virginia.

In response to the Duke Energy coal ash spill, the General Assembly of North Carolina passed the Coal Ash Management Act, which directed owners of coal ash storage facilities to identify private wells near the facilities and test them for constituents associated with coal ash. As a result, all private wells within 1,000 feet of any coal ash storage facility in North Carolina were tested for heavy metals. The testing included two private wells in Virginia because of their proximity to the coal ash storage facility in North Carolina. For the two wells located in Virginia, VDH considered test results and provided advice to the property owners. Staff used public drinking water standards to assess the results.

OEHS, the Office of Drinking Water (ODW), and local health departments have identified public and private water supplies (private wells) within five miles of coal ash storage facilities in Virginia based on electronic records. In 2015, VDH considered concerns regarding groundwater and surface water impacts form coal ash disposal facilities at Possum Point in Prince William County and other locations. Specifically for Possum Point, OEHS, ODW, and the Office of Epidemiology evaluated well and surface water data, and fish tissue sample data from Quantico creek. Staff agreed with DEQ that the coal ash disposal facilities did not present a risk to public health. In 2016, Virginia Dominion Power agreed to assist certain owners with concerns about drinking water from nearby wells.

In addition, VDH reached out to 24 owners within 2,500 feet of the coal ash disposal facilities at Possum Point to better understand address resident concerns. VDH provided testing of private wells for seven property owners at Possum Point in Prince William County and one property owner near the Bremo Bluff facility in Fluvanna County. After taking samples and evaluating results, staff offered to meet with each property owner and resident to discuss results and answer questions.

Health Equity, Environmental Justice and Onsite Sewage Systems

OEHS introduced the term “wastewater island” to identify places where health equity and environmental justice issues might exist for property owners facing some or all of the following challenges: no access to centralized sewerage, soils not suitable for a COSS, which tends to be less expensive than an AOSS, sensitive receiving environments, actively failing sewage systems, small lot sizes, older homes and communities, low income and difficulty paying for installation or ongoing maintenance costs, historical inequities and lower education regarding environmental/public health issues.

While AOSS provide solutions where soil is unsuitable for a COSS, low income families find that the cost for an AOSS solution can be staggering and unattainable. Property owners with access to public sewer benefit from federal, state, and local financial support for the wastewater utility whereas rural property owners must personally maintain the entire cost for installation and ongoing O&M.

Virginians whose property lies within "wastewater islands" lack access to affordable wastewater solutions that are fully protective of public health and the environment, much as those living in "food deserts" lack ready access to fresh, healthy, and nutritious food. OEHS hopes that by identifying and defining the problem, the agency can facilitate a solution for Virginians affected.

Adequate funding for the repair of failing sewage systems and private wells is a key component of ensuring healthy communities. Currently, four local health districts are partnering with localities, planning district commissions, and soil and water conservation districts to help improve wastewater solutions from recent funding awarded through DEQ's Nonpoint Source Water Quality Improvement Fund (WQIF). The local health districts provided letters of support to several groups applying for funding through the WQIF earlier this year, and awards totaling more than $2.2 million were recently announced to provide improved wastewater solutions in Virginia. Projects include septic tank pump-out programs, identification and correction of straight pipe discharges, funding for repairs to failing septic systems, and installation of a town-wide sewer system. This funding is an excellent start to providing access to affordable wastewater solutions. VDH looks forward to increased support for similar programs moving forward since there are more than one million properties in Virginia that rely on onsite sewage systems.

Data Management

HealthSpace Integrated Solutions, Ltd. manages the Virginia Environmental Information System (VENIS), which is a software system for collecting, collating and reporting data from the department's environmental health programs. This electronic system is used by local health departments for data management in the onsite sewage and water programs as well as in the restaurant, rabies, shellfish, and migrant labor camp programs. VENIS employs a hierarchical approach rather than a relational approach to store and retrieve data.

In addition to data collection, VENIS also provides several mechanisms to retrieve and report data from the system. VENIS is also used to generate individual permits and letters, decreasing the need for paper files. The capacity to compare and contrast a range of data from across the Commonwealth leads to better and more data-driven response to customer needs and demands.

The database was implemented in local health departments across the Commonwealth in late 2003. In 2012, VDH completed a project to significantly overhaul the database to improve data entry, better integrate the data collected, and enable more reliable and precise reporting from the system. The overhaul was based on input from both OEHS and local health department staff and included a series of training videos and manuals to assist in implementation of the updates.

In the fall of 2010, VDH fully implemented a web-based reporting system for AOSS operation and maintenance, as required by Va. Code § 32.1-164. The system allows operators to enter their reports and pay the required report fee using a credit card. The reports are automatically distributed to the correct district health department database for review and follow up. VDH and HealthSpace have worked with two other software vendors to create a function that allows operators who choose to do so, to use separate proprietary software for their business but to periodically up-load data from those proprietary systems into the VDH database automatically.

Only 58% of AOSS in the VENIS database have an attached O&M report, even though all AOSS owners are required to submit an O&M inspection report annually. In total, VDH has received more than 50,000 O&M reports for about 18,000 systems. The following table shows the number of AOSS in each district along with the number of systems that have received an O&M inspection as of December 13, 2016.

Number of AOSS With and Without an O&M Report

District	Number of AOSS	Number of AOSS with O&M Report	Number of AOSS without O&M Report
Alleghany Roanoke	212	6	206 (97%)
Central	554	159	395 (71%)
Central Shenandoah	1248	922	326 (26%)
Chesapeake	447	172	275 (62%)
Chesterfield	1140	499	641 (56%)
Chickahominy	763	426	337 (44%)
Crater	353	76	277 (78%)
Cumberland Plateau	88	14	74 (84%)
Eastern Shore	1066	166	900 (84%)
Hampton	4	1	3 (75%)
Henrico	698	363	335 (48%)
Lenowisco	103	25	78 (76%)
Lord Fairfax	2668	1568	1100 (41%)
Mount Rogers	81	2	79 (98%)
New River	232	66	166 (72%)
Peninsula	195	85	110 (56%)
Piedmont	65	4	61 (94%)
Pittsylvania Danville	24	3	21 (88%)
Prince William	751	528	223 (30%)
Rappahannock	1737	880	857 (49%)
Rappahannock-Rapidan	740	375	365 (49%)
Southside	118	6	112 (95%)
Thomas Jefferson	580	94	486 (84%)
Three Rivers	3298	909	2389 (72%)
Virginia Beach	166	97	69 (42%)
West Piedmont	143	20	123 (86%)
Western Tidewater	708	106	602 (85%)
State Total	**18182**	**7572**	**10610 (58%)**

VDH continues to refine the database to better serve the Commonwealth. As previously noted, the HB 558 plan recommends that VDH improve the collection and management of onsite sewage system and private well data by i) creating a web-based reporting system for conventional onsite sewage system operation and maintenance, ii) accepting applications and payments online, iii) making onsite sewage system and private well records available online, iv) creating a complete electronic record of all permitted onsite sewage systems and private wells, and v) creating procedures for tracking Notices of Alleged Violations and corrective actions.

The following tables provide information regarding the number of applications for onsite sewage permits for each of the last five fiscal years.

Fiscal Year 2012 (July 1, 2011 to June 30, 2012)

Permit Type	# Applications	#Approved	# Denied	# Other	# OSE or PE Applications
Construction Permit	7405	6359	598	448	3767
Repair Permit	4473	3907	282	284	1560
Certification Letter	1198	1040	125	33	822
Courtesy Review	71	61	0	10	33
Safe, adequate, and proper evaluation	1632	1407	186	39	26
Subdivision Review	159	134	25	0	152
Total	***14938***	***12908***	***1216***	***814***	***6360***

Fiscal Year 2013 (July 1, 2012 to June 30, 2013)

Permit Type	# Applications	#Approved	# Denied	# Other	# OSE or PE Applications
Construction Permit	7069	6100	518	451	3750
Repair Permit	4339	3753	244	342	1532
Certification Letter	1243	1068	130	45	753
Courtesy Review	4	4	0	0	1
Safe, adequate, and proper evaluation	154	145	2	7	0
Subdivision Review	45	15	1	29	38
Total	***12854***	***11085***	***895***	***874***	***6074***

Fiscal Year 2014 (July 1, 2013 to June 30, 2014)

Permit Type	# Applications	#Approved	# Denied	# Other	# OSE or PE Applications
Construction Permit	7661	6651	591	419	4312
Repair Permit	4696	4028	322	346	1590
Certification Letter	1276	1092	131	53	739
Courtesy Review	0	0	0	0	0
Safe, adequate, and proper evaluation	0	0	0	0	0
Subdivision Review	21	8	1	12	20
Total	***11867***	***9992***	***1045***	***830***	***5134***

Fiscal Year 2015 (July 1, 2014 to June 30, 2015)

Permit Type	# Applications	#Approved	# Denied	# Other	# OSE or PE Applications
Construction Permit	7964	6850	701	413	4771
Repair Permit	4537	3928	259	350	1608
Certification Letter	1191	978	161	52	728
Courtesy Review	0	0	0	0	0
Safe, adequate, and proper evaluation	1	1	0	0	0
Subdivision Review	33	21	0	12	22
Total	***11839***	***9891***	***1121***	***827***	***7129***

Fiscal Year 2016 (July 1, 2015 to June 30, 2016)

Permit Type	# Applications	#Approved	# Denied	# Other	# OSE or PE Applications
Construction Permit	8632	7304	690	638	5296
Repair Permit	4506	3780	211	515	1642
Certification Letter	1164	896	171	97	719
Courtesy Review	0	0	0	0	0
Safe, adequate, and proper evaluation	0	0	0	0	0
Subdivision Review	64	14	0	50	62
Total	***14366***	***11994***	***1072***	***1300***	***7719***