REPORT OF THE
VIRGINIA DEPARTMENT OF HEALTH

Five Year Report on the Status of Onsite Sewage Handling and Disposal

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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January 4, 2002

TO: The Honorable James S. Gilmore, III

and

The General Assembly of Virginia

The report attached hereto is submitted in satisfaction of § 32.1-163.2 of the *Code of Virginia*.

This report constitutes the five year report of the Virginia Department of Health (VDH) on the status of onsite sewage handling and disposal in Virginia. This report focuses on specific regulatory programs and activities such as Authorized Onsite Soil Evaluators (AOSEs), Indemnification Fund, Alternative Technologies and recommended changes to laws. In addition, the report also contains VDH responses to the House Joint Resolution 771 Committee, including VDH's staffing report.

Respectfully Submitted,

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Acting State Health Commissioner

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Virginia Department of Health
Five Year Report on the Status of Onsite Sewage Handling and Disposal
January 2002

Section 32.1-163.2 of the *Code of Virginia* requires the Board of Health to develop and revise as may be necessary a five-year plan for the handling and disposal of onsite sewage. The *Code* also requires the Board to report to the governor and the General Assembly every five years, beginning in 1992, on the status of onsite sewage handling in Virginia and the progress in implementing its long-range plan.

The rapid development of onsite wastewater technologies continues to offer opportunities for addressing difficult site conditions in the Commonwealth. That same rapid development has raised concerns over the Virginia Department of Health's (VDH) approval processes for new technologies and designs. Some perceive that the processes are slow and burdensome; others believe that too many alternative systems adversely affect local government's ability to manage growth; many are concerned that advanced wastewater systems will not be properly operated and maintained by their individual owners. The report details the status of the onsite program in this area and explores related issues such as the move toward a performance-based regulatory program, the need for data on conventional and alternative system performance, and the need for appropriate operation, maintenance, and monitoring to assure the performance of alternative and conventional onsite wastewater systems.

Greater reliance upon technology and more private-sector involvement in the onsite program, particularly in the program for Authorized Onsite Soil Evaluators (AOSE), have increased the need for training and education for VDH staff and the private sector. VDH's program for AOSEs has been successful in speeding the application process for many citizens. However, it has also resulted in several instances where VDH approvals were revoked after it was discovered that AOSEs had not properly certified the affected sites. These relatively few incidents have affected relationships between some AOSEs, citizens and VDH. The report discusses the AOSE program and includes information presented to the HJR 771 subcommittee regarding suggested changes to the AOSE program and other areas of the onsite wastewater program.

VDH's 2002 report discusses significant improvements in environmental and public health protection that are being realized as a result of amendments to the *Sewage Handling and Disposal Regulations* and because of the increased use of advanced (secondary and better) wastewater treatment. Also included in the report are data that detail the 52,129 requests for onsite approvals received by VDH in fiscal year 2000. A number of related topics, including an Onsite Wastewater Training Center, retention of VDH environmental health staff, and the need for alternatives to criminal enforcement are also discussed.

Five Year Report on the Status of Onsite Sewage Handling
In Virginia
January 2002

Section 32.1-163.2 of the *Code of Virginia* requires the Board of Health to develop and revise as may be necessary a five-year plan for the handling and disposal of onsite sewage. The *Code* also requires the Board to report to the governor and the General Assembly every five years, beginning in 1992, on the status of onsite sewage handling in Virginia and the progress in implementing its long-range plan. The following report details the Virginia Department of Health's (VDH) progress, with respect to its existing long-range plan, and contains information about the current status of the onsite sewage program.

I. PROGRESS REPORT

VDH's 1997 report to the governor and the General Assembly contained a white paper entitled, *Managing Change in the Onsite Wastewater Industry*. In that report VDH attempted to identify issues and seek a range of solutions and began to try to develop internal consensus on its future direction in the onsite wastewater program.

In 1997 the rapid development of onsite wastewater technologies was a primary area of concern, as was training for VDH and private-sector consultants. These continue to be of primary concern to both VDH and the citizens of the Commonwealth today. Several other concerns listed in 1997 are still with us today:

- finding qualified people to operate and maintain onsite sewage systems;
- lack of infrastructure to assure that proper maintenance is performed;
- the need for performance data on all systems;
- the need for practical and appropriate enforcement options (civil penalties);
- options for solving onsite wastewater problems such as existing substandard housing; and
- the uses, performance, funding, and maintenance of *existing* onsite systems and technologies

The 1997 report remains a reasonable template for VDH action in the foreseeable future, and VDH is not proposing any significant changes at this time. The 1997 report recognized that a well-qualified and trained private sector could provide needed resources for the onsite wastewater program; it recognized that the trend toward greater reliance upon technologies will drive a movement to a performance-oriented program; and it asked questions about our knowledge of the performance of conventional onsite sewage systems and what level of potential those systems represent for causing disease or environmental harm.

Significant progress has been made in some areas identified in the 1997 report, and in some areas progress is conspicuously absent. Areas of significant progress include:

- private sector involvement;
- environmental and public health protection;
- availability and uses of advanced onsite wastewater treatment and dispersal technologies;
- data on performance of advanced treatment and dispersal systems;
- review and approval processes for new onsite wastewater technologies; and
- performance-based regulations.

Areas where progress is needed include:

- alternatives to criminal enforcement;
- data, including total numbers and locations, failure rates, longevity, and performance of "average" onsite systems;
- development of an Onsite Wastewater Training Center;
- retention of VDH staff;
- erosion of trust between VDH and private sector/citizens

A. Discussion of Significant Progress Areas

Private Sector Involvement. In 1994 the General Assembly created the program for Authorized Onsite Soil Evaluators (AOSEs), and two bills passed during the 1999 session further defined the roles and responsibilities of the AOSEs and VDH. The 1999 statutes require VDH to accept private evaluations and designs from an AOSE or from a Professional Engineer (PE) in consultation with an AOSE for all permitting and approval activities related to residential development. The new law does not require VDH to perform a field check of each site certified to meet the Board of Health's regulations for onsite wastewater systems, although it does require VDH to perform such checks as it deems necessary to protect the integrity of the environment. In addition, the 1999 law mandates specific time periods after which an application is "deemed approved" if VDH has not issued or denied the requested approval.

VDH began to implement the new AOSE program in July 1999 and the Board adopted emergency AOSE regulations January 3, 2000. The *Emergency AOSE Regulations* expired January 2, 2001, and the Board is in the process of promulgating replacement regulations. Draft regulations were published for public comment in early October 2001.

The AOSE program has been largely successful at shortening the application process for subdivisions, certification letters, and construction permits for those citizens who have taken advantage of the program. Local health departments have issued thousands of approvals based

on AOSE and PE certifications since the program began. VDH has not performed a field check of each AOSE site and instead has checked only a portion of the sites, typically after the approval has been issued.

In a small number of cases VDH's field checks have revealed that an AOSE certified a site that did not conform to the minimum requirements of the Board of Health's regulations for onsite sewage systems. In those cases VDH has found itself in the uncomfortable position of having to revoke an approval to prevent the installation of a sewage system that was a potential threat to groundwater resources and to public health.

As may be expected, VDH's actions to revoke approvals have had significant impacts on the individual owners of the affected properties. In one case, the owner's home was substantially complete at the time VDH discovered the problems with the approved site. In another case the owner was in the early stages of beginning construction. In both of those cases, as well as others, the owners obtained new permits for alternative-type systems. In some of the cases the owners chose not to seek a new permit, and one owner currently has a case pending in Circuit Court to challenge VDH's administrative decision to revoke the site approval. In some cases owners have complained that they were damaged financially by VDH's actions.

VDH has heard many complaints that revocation of approvals creates liabilities for AOSEs, property owners, and others associated with the real estate business such as realtors and banks. The 2001 General Assembly passed a bill, HJR 771, to appoint a joint subcommittee to review VDH permitting practices. That committee heard significant testimony from citizens regarding the AOSE program and also received information from VDH about the program. Appendix C provides additional information about the AOSE program.

Environmental and Public Health Protection. On July 1, 2000, amendments to the *Sewage Handling and Disposal Regulations* (*Regulations*) became effective. These amendments were the result of a regulatory process that began in 1991 with a task force appointed by the Secretaries of Health and Human Resources, Natural Resources, and Economic Development to study Virginia's onsite wastewater regulations. That group concluded that changes in Virginia's regulations were necessary and made 11 separate recommendations that included increasing the separation distance to groundwater and implementing nitrogen treatment requirements for mass sewage disposal systems. The task force concluded that the 2-to-3 inch separation allowed at that time in sandy soils was "the most lenient requirement[s] of this kind found anywhere in the country."

The July 2000 amendments brought needed improvements in public health and groundwater protection by increasing the required separation between septic system absorption trenches and seasonal groundwater to 18 inches in all soil types. The final amendments also improve the quality of treated wastewater discharged into the environment and expand the number of alternative systems available to the citizens of the Commonwealth through the

increased use of secondary wastewater treatment. Secondary treatment is also required when repairing a failed onsite sewage system where the minimum site and soil requirements of the new regulations cannot be substantially met (with an exemption clause for low-income owners).

One of the benefits of the July 2000 amendments is that they allow for the installation of alternative systems in many cases where septic effluent systems were previously prohibited. Examples include ultra-shallow installations where restrictions such as rock are found near the surface and special provisions for "sand on sand" fill systems in sandy soils with naturally high seasonal water tables.

As first proposed, the July 2000 amendments contained provisions for mass sewage disposal systems (MSDS) intended to provide greater protection of groundwater from the potential adverse effects of nitrogen and to reduce the potential for system failures by requiring hydro-geologic modeling and long-term operation and maintenance. The MSDS provisions, however, were withdrawn from the final amendments in mid-June, 2000 just prior to the effective date of the amendments in response to comments from citizens regarding the potential economic impacts of the MSDS regulations. The Board of Health initiated a new, separate regulatory action on June 4, 2001, to promulgate regulations for mass sewage disposal systems, and draft language was developed through a stakeholder committee which will be ready for transmittal to the Department of Planning and Budget in January of 2002.

Availability and Uses of Advanced Onsite Wastewater Treatment and Dispersal Technologies. As noted above, the July 2000 amendments to the *Regulations* provide new opportunities for advanced (secondary) treatment systems through the use of ultra-shallow designs, trenchless designs, sand on sand systems, and elevated fill (mound) systems. In January 2001 a private company, Bord na Mona USA, successfully completed experimental testing of its Puraflo® system. The Puraflo® system, a proprietary pre-engineered system, uses fibrous peat media to provide advanced secondary treatment. The system has performed successfully in site and soil conditions considerably more limited than those permitted in the *Regulations* as amended July 1, 2000. The Puraflo® system received general approval in January 2001.

In October 2001 another proprietary system, Advantex™, received provisional approval for installation in the Commonwealth on sites where conventional septic effluent systems would not have been allowed under the previous regulations or under the July 2000 amendments. Provisional approval of the Advantex™ system allows the parent company, Orenco Systems Incorporated, to market up to 1,000 systems in a five-year period. Both the Puraflo® and Advantex™ systems are approved to utilize an absorption area considerably smaller than required for conventional septic tank effluent systems.

Data on Performance of Advanced Treatment and Dispersal Systems. Largely as a result of the Puraflo® experimental protocol, VDH now has a wealth of data regarding the real-world

operation of advanced treatment systems in Virginia. Based on the results of that testing, the Board of Health is planning to promulgate new regulations for systems utilizing advanced wastewater treatment.

Ongoing research at VPI has produced data on the functioning of conventional (septic effluent) systems that has added to VDH's knowledge base and also supports the July 2000 amendments to the regulations regarding required soil separation distances. That research is showing that in the soils tested, between 12 and 18 inches of unsaturated soil is needed to fully renovate wastewater before it reaches groundwater or other limiting conditions in the environment. Another research project with VPI on a site in Augusta County has demonstrated the effectiveness of an experimental system from Aquarobic International on a difficult site that is characterized by fill soils and shallow-to rock conditions. That system has also shown some passive removal of nitrogen that suggests that nitrogen removal need not always be a costly proposition for onsite wastewater systems.

In a grant-funded research project that was concluded in December 2001, VDH utilized data loggers to continuously monitor the depth of free water in monitoring wells at several sites. That research demonstrated that the seasonal high water tables are often much shallower than indicated by the most commonly accepted indicators, gray mottles (redoximorphic features).

Improved Review and Approval Process for Alternative Onsite Wastewater Technologies. The July 2000 amendments to the *Sewage Handling and Disposal Regulations* contained a new category of system approvals called "provisional approvals." This new category was added to bridge the gap between the existing experimental category and the group of systems that is approved without limitation for statewide use. Under the new provisions, a product manufacturer or other proponent of a system type or design may submit data from 50 systems of identical design for VDH review. The data need not be from Virginia. If the proposed system type or design is approved by VDH, the manufacturer or proponent may then secure up to 1,000 construction permits during a five-year period. During the provisional approval period, certain testing information must be collected; however, the testing requirements are much simpler than for experimental testing. If the provisional system performs in accordance with the provisional approval requirements, the system may be granted general approval.

As noted above, in October 2001 the Advantex™ system became the first system to receive provisional approval. Three other manufacturers are currently seeking provisional approval under the new regulations.

Performance-Based Regulations. Two significant developments characterize VDH's current efforts in this area. First, VDH is currently managing a regulatory process that will most likely result in Virginia's first performance-based regulation for onsite wastewater. Second, VDH has partnered with the Department of Housing and Community Development and Charles City County in a pilot project that will demonstrate utility-style management of onsite wastewater systems in a performance-based regulatory environment.

When a system or process, such as the Puraflo® system, has successfully met the experimental requirements of the *Sewage Handling and Disposal Regulations* (*Regulations*), VDH is required to develop design and construction criteria in the *Regulations*. The Board of Health is currently engaged in the regulatory process and published a Notice of Intended Regulatory Action on June 4, 2001. The proposed amendments will revise the site and soil requirements for a treatment and disposal system when higher quality effluent treatment is utilized and will establish minimum design, construction, and performance requirements for such systems. To assure that public health and the environment are protected from the adverse effects of improperly treated sewage, the proposed amendments will establish requirements for maintenance, monitoring, and operation of those onsite systems utilizing secondary or advanced secondary treatment. The requirements will most likely be scaled according to the complexity of systems and the sensitivity of the receiving environment. The amendments may also contain requirements for maintenance of all onsite systems. This proposal is based in part on public comments received during the recent revisions to the *Regulations*.

In the last two years VDH has entered into discussions with several groups to explore the concepts of centralized management of onsite, or decentralized, wastewater systems. Under these concepts, a third party, such as a public service authority or a private utility, would take over the long-term operation and maintenance of onsite systems. VDH has been seeking a partner or partners for a pilot project in this area. Charles City County and the Virginia Department of Housing and Community Development have approached VDH with a proposal for such a pilot project. The project will bring indoor plumbing to several county residents as part of a community development block grant. VDH intends to enter into an agreement with Charles City County that will allow the installation of advanced treatment and dispersal wastewater systems in site and soil conditions otherwise prohibited by the *Regulations*. In order to assure that proper treatment is provided throughout the life span of the homes, the county will be legally and financially responsible for the operation and maintenance of the wastewater systems and in some cases may own the sewage systems. The residents will pay a monthly fee to the county for this service.

As more and more systems are installed in the Commonwealth that utilize advanced wastewater treatment, VDH recognizes that proper operation, maintenance, and monitoring of those systems becomes an increasingly important element of VDH's onsite wastewater program. All systems require some maintenance in order to function properly. VDH is moving from a program where the permitting requirements were entirely prescriptive to one where the requirements involve some measure of performance. Whether the performance involves advanced wastewater treatment or periodic inspection of components, compliance monitoring, data management, and enforcement are becoming increasingly important.

B. Areas Where Progress is Needed

Alternatives to Criminal Enforcement. VDH's current authority for enforcing the *Code* and the Board of Health's regulations is based on criminal penalties. Most violations of Virginia's onsite wastewater laws are Class I Misdemeanors, punishable by a fine up to $2,500.00 or up to 12 months in jail, or both. With the increased emphasis on performance of systems, as well as the performance of individuals, such as AOSEs, many believe that VDH needs an enforcement tool that is less threatening than criminal penalties. For example, although the failure to take a required monitoring sample or to report the results of a sample is potentially serious, in most cases it would not warrant a criminal action or even the threat of a criminal action. Civil penalties would offer an alternative to criminal actions. Giving VDH authority to assess civil penalties requires action by the General Assembly.

Data, Including Total Numbers and Locations, Failure Rates, Longevity, and Performance of "Average" Onsite Systems. Except for the research that is ongoing at VPI regarding the treatment capabilities of conventional septic effluent systems, VDH is not currently collecting data in a systematic way on sewage system failures, system longevity, or the performance of conventional onsite systems. Most local and district health departments collect information on the number of repair permits issued; however, there is no mandate at this time to collect or report information regarding failure rates, longevity, performance, or repair permits issued. VDH has entered into a contract with a private vendor to develop and implement an information management system that will possess the capability to collect and report information about repair permits and applications. However, generating reliable data on the longevity, or failure rates of systems, as well as the performance of systems will require some type of sampling tool that goes beyond simply counting the number of repair applications. Since repair applications count only those owners who approach VDH for solution to failing systems, an accurate assessment of the true performance of systems will necessitate in-the-field sampling of systems, an activity which currently exceeds the agency's resources. Unlike new products or designs, conventional onsite systems lack a company or other "sponsor" to promote them and finance the collection of performance data. Collecting the kind of information that is necessary to learn about the performance and longevity of conventional systems is viewed by many to be a public responsibility. VDH has been limited by the resources at its disposal.

Development of an Onsite Wastewater Training Center. VDH met with representatives from J. Sargent Reynolds Community College over a period of several months during 1997 and 1998 to discuss an onsite training center on college property. While the representatives expressed interest, the project never gained sufficient momentum to carry it through. VDH believes that there was not a large enough group of potential students to make the training center proposal economically viable for the college.

The *Code* provides that funds from the Onsite Indemnification Fund may be used to support training for AOSEs, and the Fund remains a potential source of funds for a training

center. However, in those states where training centers have been successfully created, there has been significant input from state regulatory agencies, the private sector, and in most cases a state university. Currently, in Virginia the private sector has not actively promoted a training center, nor have any academic institutions expressed serious interest. With the AOSE program now picking up momentum, there appears to be growing support among the private sector for a training center.

Retention of VDH Staff. VDH has begun to lose environmental health (EH) staff at alarming rates to the private sector and to other state agencies. At a management meeting in the fall of 2001, VDH EH managers identified high (and increasing) work volume and work-related stress, low pay, lack of opportunity for advancement, lack of continuing training, too many programs, and inequity with other state jobs as primary factors driving high turnover. In a few health districts, EH staff turnover has exceeded 15% per year.

Erosion of Trust Between VDH and Private Sector/Citizens. While the AOSE program has proved successful in some areas and for some citizens, there are significant issues that have appeared. The revocation of approvals and even the concept of reviewing an AOSE's work have sparked considerable community resentment and mistrust among AOSEs, citizens, and VDH. As noted elsewhere in this report, there are a few citizens who believe that they have been harmed by VDH through the revocation of approvals, even though those revocations occurred because of unacceptable work by the private sector. Some AOSEs have said publicly that VDH should not review their work at all, while others have commented that VDH should not have oversight for both the permitting of onsite wastewater systems and for regulating the AOSE community. VDH believes that a training center would help to establish the trust that is necessary for the AOSE program to reach its fullest potential by providing training opportunities for the AOSE program and by providing a forum for shared experiences and improved communication among VDH and AOSEs.

C. Onsite Indemnification Fund

The *Code* provides that any owner whose onsite wastewater system fails within 3 years of construction may apply for indemnification under the Onsite Indemnification Fund. The Commissioner shall indemnify an owner if the sewage system was permitted by VDH and if the failure results from VDH negligence.

From August 1997 through December 1, 2001 VDH has paid a total of $255,488.36 to 30 property owners from the Fund. There has been one Indemnification Fund case to date that resulted in an appeal to the Sewage Handling and Disposal Appeal Review Board. In that case the Appeal Review Board reversed VDH's denial and awarded the owner a total of $26,963.87.

II. INFORMATION PURSUANT TO § 32.1-163.2

A. Applications for Onsite and Alternative Discharging Systems

In FY 2000 (the only complete year for which data were available), VDH received 42,502 applications for onsite sewage system approvals (permits and letters) and 89 applications for alternative discharging systems. Of the total applications for onsite system approvals, 1,276 (3.0%) were filed with evaluations and designs by Authorized Onsite Soil Evaluators or by a Professional Engineer in consultation with an AOSE (AOSE/PE). Applications filed without AOSE/PE evaluations and designs are considered "bare applications" and require VDH to perform a site and soil evaluation prior to issuing or denying a permit. VDH is not required to perform a site and soil evaluation for those applications (for residential development) submitted with an evaluation and design by an AOSE/PE.

Onsite System "bare applications"	41,226
Onsite System Applications (AOSE/PE)	1,276
Total Onsite Applications	42,502
Alternative Discharging Systems	89
Total Applications	42,591

VDH and AOSE/PE Applications Approved

VDH issued a total of 31,254 construction permits for onsite sewage systems, 513 (1.6%) of which were evaluated and designed by an AOSE/PE. A total of 3,073 certification letters were issued, 437 (14.2%) of which were certified by an AOSE/PE. Certification letters (VDH and AOSE/PE) comprised 9% of the total approved applications. VDH issued 95 construction permits for alternative discharging systems.

Construction Permits (VDH)	30,741
Construction Permits (AOSE/PE)	513
Construction Permits (Total)	31,254
Certification Letters (VDH)	2,636
Certification Letters (AOSE/PE)	437
Certification Letters (Total)	3,073
Discharging System Permits	95
Total Approvals	34,422

Applications Denied

VDH denied 1,971 applications for onsite system approvals. Fourteen (0.7%) of those denials were certified by an AOSE/PE. The applications denied (VDH and AOSE/PE) comprised 4.6% of the total applications for onsite approvals.

Applications Denied (VDH)	1957
Applications Denied (AOSE/PE)	14
Applications Denied (Total)	1971

Subdivision Review

In addition to applications for permits, letters, and alternative discharging systems, VDH also approved a total of 9,538 subdivision lots for local governments, of which 1,603 (16.8%) were certified by an AOSE/PE.

Subdivision Lots evaluated by VDH	7935
Subdivision Lots certified by AOSE/PE	1603
Total Subdivision Lots	9,538

Total Requests for Services

The total of all applications received and all subdivision lots approved is 52,129. VDH also performed 35,354 inspections of onsite systems at the time of construction.

B. Number of Households Utilizing Onsite Sewage Systems Per Year

In its 1997 report VDH estimated that there were 847,400 households using onsite sewage systems in the Commonwealth. This estimate was based on data from the 1990 US Census, which identified 707,409 homes using a "septic tank or cesspool", and on VDH records, which indicate that approximately 20,000 systems per year are installed.

Although VDH is in the process of developing a statewide data collection and management system, there are still no reliable statewide data regarding the total number of onsite systems. The 2000 US Census did not report "septic tank or cesspool" use. Therefore, the best estimate of the number of households utilizing onsite sewage systems is obtained by taking the estimate from December 1997 and adding to it the estimated

number of onsite systems installed per year. Using the estimate of 20,000 systems installed per year, there are approximately 927,400 households using onsite sewage systems in the Commonwealth at this time.

C. Volume of Onsite Sewage to be Disposed of Per Year

VDH calculates the average annual volume of onsite sewage to be disposed of annually to be 74.5 billion gallons (7.45×10^{10} GPY) or 204 million gallons of wastewater per day. This estimate is based on the number of households using onsite systems and on an estimated average daily flow of 220 gallons of water use per system. This value is intended to be a realistic estimate of actual water use and is not an estimate of theoretical maximum potential use.

D. Available and Needed Capacity in the Commonwealth for Environmentally Sound Methods of Disposal of Septage in Sewage Treatment Plants, Other Approved Facilities, and by Land Application Per Year

Accurate and meaningful estimates for septage disposal needs are difficult to determine. No comprehensive monitoring program exists within the state to measure the volume of septage actually pumped. Septage generation is a function of the number of onsite systems, their size (relatively constant), and the frequency of pumping. No new data are available concerning septage in the Commonwealth. VDH's 1997 report stated the following:

> "In 1994, Virginia Tech studied one health district thoroughly. A copy of the December 8, 1994, study, entitled "Final Report to the Chesapeake Bay Local Assistance Department, Three Rivers Health District Septage Disposal Study," is available upon request. In that report, Virginia Tech concluded that there is excess septage disposal capacity in the Middle Peninsula and Northern Neck regions through at least the year 2010. However, the report stated that there was not sufficient septage hauling capacity to meet the hauling demands in 1995. That deficit could be remedied by the addition of three 1,000 gallon capacity trucks."

In theory, if every septic tank was pumped out on a 5 year cycle, approximately 184 million gallons of septage would be generated annually. On a statewide basis, it is assumed with confidence that the average time between pumpouts exceeds VDH's suggested five year interval. No reports have been received of areas with a chronic lack of septage disposal capacity; however, periodically, local sewage treatment plants refuse to take septage, causing intermittent, localized problems. Many of these problems could be avoided and septage disposal capacity expanded, especially in rural and potentially under served areas, by removing the prohibition on land application of lime stabilized septage found in the *Code of Virginia* (§ 32.1-164.4). Properly performed, lime

stabilization of septage is environmentally safe, does not pose a significant health risk, and has modest agricultural benefits."

E. Descriptions of Technology for Alternative Systems Including the Types of Soils and Condition Recommended as Appropriate for Such Alternative Systems

The July 2000 amendments to the *Sewage Handling and Disposal Regulations* incorporated into regulation many of the system designs that VDH had approved for use through various policy memoranda and also added systems such as "sand-on-sand" and elevated mounds with secondary treatment. The Puraflo™ system moved from experimental status to generally approved status. A brief description of alternative systems is contained in Appendix B of this report. This synopsis contains references to specific VDH policy memoranda, which contain detailed descriptions of each system and the types of soil and site conditions where each one may be used. These policies, and routine updates, are shared with each district office and may be found on the Internet (http://www.vdh.state.va.us/oehs/onsite/GMP.htm). Copies of the policies will be provided upon request.

F. Recommendations of Changes in the Laws or Regulations Pertaining to Onsite Sewage and the Permitting of Onsite Systems

As noted elsewhere in this report, civil penalties as an alternative to criminal enforcement require changes in statute. Also, the General Assembly may wish to consider changes that would enable third-party management entities, either private, public, or quasi-public to establish service areas for the management of onsite wastewater systems.

III. House Joint Resolution 771

The 2001 General Assembly passed HJR 771, a study bill, which reads in part:

"...That a joint subcommittee be established to study the organization, structure, regulations, and policies of the Department of Health and the Department of Environmental Quality relating to the management and treatment of wastewater...In conducting its study, the joint subcommittee shall consider (i) the policies and procedures of the Departments of Health and Environmental Quality relating to the management and treatment of wastewater, particularly in relation to permitting and regulating various treatment, disposal, and reuse technologies; (ii) the overlap in various sets of regulations of the Departments; (iii) the length of time taken in promulgating regulations; (iv) the need for wastewater treatment expertise at senior levels of management and on the Board of Health and the State Water Control Board; (v) the best way to streamline the regulatory and permitting process, including the consolidation of responsibilities into one agency; and (vi) such other issues as it deems necessary."

The subcommittee met five times between August 8, 2001, and December 13, 2001, to consider several onsite wastewater issues. The subcommittee heard testimony from the public and received responses from VDH on topics that included the AOSE program, VDH's procedures for reviewing and approving alternative systems, VDH staffing, and data collection. The material VDH presented to the subcommittee at its October 30 and November 27 meetings is included as Appendix C and D, respectively.

APPENDIX A
Statutory Requirements
Code of Virginia

§ 32.1-163.2. Long range plan for onsite sewage. In addition to the powers and duties provided in §32.1-164 the Board of Health shall develop and revise as may be necessary a five-year plan for the handling and disposal of onsite sewage. Such plan shall include (i) the number of applications for onsite sewage permits per year; (ii) the number of households or facilities utilizing onsite sewage systems per year; (iii) the volume of onsite sewage to be disposed per year; (iv) the available and needed capacity in the Commonwealth for environmentally sound methods of disposal of septage in sewage treatment plants, other approved facilities and by land application per year; (v) descriptions of technology for alternative systems including the types of soils and conditions recommended as appropriate for such alternative systems; and (vi) recommendations for changes in the laws or regulations pertaining to onsite sewage and the system of permitting onsite sewage systems. The Board shall also report every five years to the governor and the General Assembly, beginning in 1992, on the status of onsite sewage handling and disposal in Virginia and the progress in implementing its long range plan.
(1987, c. 223.)

APPENDIX B
Alternative Systems - Synopsis of Options
Referenced in Item V in §32.1-163.2 of the *Code of Virginia*

System Type	Brief Synopsis of Application
In-Ground Systems with secondary treatment	July 2000 amendments provide for installations at least 18" deep with reduction in vertical separation from 18" to 12".
Shallow-Placed Systems with secondary treatment	July 2000 amendments provide for installations at least 12" deep with reduction in vertical separation from 18" to 12".
Shallow-Placed Systems with secondary treatment	July 2000 amendments provide for installations less than 12" deep with reduction in vertical separation from 18" to 12"; must be time-dosed; may incorporate "trenchless" designs.
Fill Systems	Includes mounds (with or without secondary treatment, sand-on-sand (with or without secondary treatment, and mountain colluvium.
Puraflo™ (Irish peat system)	High water table, shallow installations, shallow depth to rock, limited area. Requires smaller absorption area. Status: General approval.
Chamber systems Infiltrator Envirochamber Cultec	These systems provide an alternative to gravel. Status: Conventional approval and permitting. See GMPs #64 and #86.

System Type	Brief Synopsis of Application
Drip Disposal Perc-Rite Whitewater	These systems provide an alternative to low pressure systems. The Whitewater system provides pretreatment which allows for shallower installation. Status: conventional approval and permitting. See GMPs #87 and #88.
Spray Irrigation	Spray systems allow wastewater treatment and dispersal on sites with as little as 12 inches of suitable soil, provided adequate land is available. Status: Conventional approval and permitting. See GMP #74.
Aquarobic Filter Bed	This system can be used in with site and soil conditions similar to a spray irrigation site. Status: Experimental approval and permitting. Data collection, necessary to consider conventional approval has started, total number of systems insufficient. See GMP #85
Advantex™	System may be used on sites similar to Puraflo™ system. Allows reduction in vertical separation distances, requires smaller absorption area. Status: Provisional approval.

APPENDIX C
HJR 771 Committee, Virginia Department of Health Response, October 30, 2001

This committee heard testimony on several different subjects during its public hearing on September 21, 2001, much of which concerned the Virginia Department of Health's (VDH) program for Authorized Onsite Soil Evaluators (AOSEs). And, much of the concern about that program centered around those issues related to VDH's revocation of approvals that were issued in reliance upon the certified evaluation and design of an AOSE. The committee also heard testimony from local government representatives and citizens who expressed sometimes conflicting views regarding alternative systems. They said that allowing alternative systems to be used on sites previously considered unacceptable for onsite systems is eroding local government's control over growth and development, and they also said that VDH's approach to approving new and innovative systems appears to be depriving landowners of options for developing their properties.

The committee heard that a conflict of interests exists when VDH is the evaluator and designer of sewage systems as well as the compliance enforcement agency for system performance. One speaker urged that we "decriminalize failed systems" so that VDH can then help citizens in their efforts to maintain sewage systems that function to protect public health and the environment. The committee asked VDH to prepare a presentation for its October 30, 2001, meeting with particular emphasis on the following points:

1. Review of the proposed AOSE regulations to replace the emergency regulations that expired January, 2001.

2. The need for design, or other standards, to eliminate or minimize the "subjectivity" of soil science.

3. An explanation of the process for revoking permits and other approvals and a discussion of alternatives to revocations.

4. The VDH policy on use of alternative systems.

5. AOSE disciplinary actions: should VDH have a role in these?

6. Staffing problems: is VDH adequately staffed to oversee Operation and Maintenance for sewage systems? What will it take to address staffing issues?

7. Data collection: what data is VDH currently collecting, what are we doing with it? (i.e. % of systems working/failing, processing times, AOSE success/denial ratios).

1. AOSE Program

The Board of Health has a statutory mandate under § 32.1-164.G of *the Code of Virginia* to "establish a program for qualifying individuals as authorized onsite soil evaluators." Pursuant to that mandate, the Board proposes to promulgate new regulations to replace the expired *Emergency Regulations for Authorized Onsite Soil Evaluators*. The committee heard testimony from several individuals suggesting that the AOSE program be moved to the Virginia Department of Professional and Occupational Regulation, however that suggestion is beyond the scope of the Board of Health given the current statutory requirement.

A number of changes are proposed in the new regulations for the AOSE program based on the recommendations of an ad hoc advisory committee convened in 2000 to provide recommendations for the new regulations and VDH's experience with the AOSE program from its inception July 1, 1999. One of the ad hoc committee's primary concerns was that its recommendations and the AOSE regulations "minimize the need for remedial action, which can be costly in terms of both dollars and time delays." The stakeholder advisory group made 22 specific recommendations, most of which have been incorporated into the proposed regulations, or will be incorporated into guidance documents and policies for implementing the program. The proposed regulations were published for public comment October 8, 2001.

Much of the ad hoc advisory committee's discussions focused on issues related to VDH oversight activities, including the revocation of approvals, the timing of field checks (level 2 reviews), potential liabilities for AOSEs, the potential for disagreement between VDH and AOSEs regarding the suitability of land for sewage systems (nit-picking, subjectivity, etc.), and assuring competency on the part of AOSEs conducting evaluations and providing designs. Many of the recommendations of the committee were intended to address these concerns. Some on the committee felt that VDH should be either barred from revoking an approval or conducting a field check after a certain period of time had passed after an approval. This idea appealed to many from the standpoint of protecting a property owner's financial interests. However, such a prohibition, while not only contrary to well-established legal principles, carries more ominous implications for public health and safety. There have been, and there will continue to be, instances when the essential governmental interests of protecting public health and safety will

require the revocation of a permit. Examples of such instances include sewage systems located too close to public or private water supplies, physical damage to approved sites, or when a sewage system has inadvertently been sited on the wrong property.

An Explanation of the Process for Revoking Permits and Other Approvals (from the owner's perspective) and a Discussion of Alternatives to Revocations.

All permit revocations, whether they involve AOSE-certified properties or those approved wholly by VDH, are case decisions and as such are governed by the Administrative Process Act (APA). The APA requires agencies such as VDH to make case decisions through the informal fact-finding process. Under the APA (§ 2.2-4019) the affected party is entitled to have reasonable notice of the proceedings, to appear in person or by counsel or other qualified representative for the informal presentation of factual data, argument, or proof, to have notice of any contrary fact basis or information in the possession of the agency that can be relied upon in making an adverse decision, to receive a prompt decision of any application for a license, benefit, or renewal thereof, and to be informed, briefly and generally in writing, of the factual or procedural basis for an adverse decision in any case.

If the local health department has determined that the facts appear to be sufficient to support a decision to revoke an approval, it has essentially two choices. It may make a case decision to revoke the permit by sending the proper notice to the affected party or it may hold an informal fact-finding conference to gather the essential facts prior to making a case decision. VDH encourages local health departments to utilize the informal fact-finding conference, however there have been instances where approvals were revoked without the informal conference. In those cases the affected party is given the opportunity to request an informal hearing to contest the decision.

In those cases where the local health department determines that more facts are needed before a decision can be made, it will need to notify the affected party of the informal fact-finding conference. However, in response to early complaints about procedures, local health departments are now advised to notify the affected party and the AOSE informally (usually documented with a follow-up letter) of the potential problem. The affected party and the AOSE then have an opportunity to respond to the local health department's concerns. If the situation is not resolved in this manner, the local health department sends written notice to the affected party of the time and location of an informal conference. The purpose and authority for the conference are clearly stated in the notice.

An informal fact-finding conference is held during which the affected party is afforded an opportunity to present evidence, argument and other proof for the agency's consideration. If the affected party desires, the AOSE may be present and may submit factual information. The

affected party may also bring other experts, such as another AOSE or engineer, to offer evidence. The local health department also presents its facts and arguments for the hearing officer who is usually the district health director. Following the informal fact-finding conference the district health director renders a case decision, which may be appealed by the affected party to the appropriate circuit court.

To date local health departments have completed actions to revoke 7 lot approvals (either permits, letters, or subdivision lots) and there are two subdivisions in the state where the local health department has notified the county zoning authority that it has withdrawn its approval for the entire subdivision. In one of the subdivision cases, the local health department worked with the owner and the AOSE to locate approved sites for all the lots and in the other case the AOSE and the owner are in the process of resubmitting revised site evaluations to address the local health department's concerns. One of the individual owners affected by the lot revocations has appealed the case decision to circuit court, however the case has not been heard at this time.

In some cases the local health department has conducted multiple site visits before giving notice to the affected party that revocation of an approval was imminent. Given the potential emotional and financial ramifications of the revocation process, VDH believes that it is important to determine with some certainty that the situation warrants official action before notifying the affected party. The downside of this strategy is that some citizens have reported that they felt they were treated unfairly and were not aware of problems until it was too late.

Much of the criticism leveled at the AOSE program to date has centered around the fact that the AOSE is not considered an affected party with respect to the case decision involving the revocation of a permit or other approval. The ad hoc committee recommended that AOSEs be given standing to challenge the factual basis for such case decisions. VDH believes that this is not a regulatory issue- the property owner (or in the case of subdivision review, the local government) is the party directly affected by a decision to revoke an approval and the Board of Health does not have authority to give legal standing to an AOSE in those matters.

The best alternative to revocation is prevention. The Department's AOSE program should be designed to prevent, to the greatest extent possible, those circumstances where revocation of a permit or other approval is necessary to protect public health and the environment. To this end, VDH has emphasized a high-quality work product as the most important aspect of the program. Improved education and experience requirements for AOSEs and courtesy reviews should work to improve the quality of the AOSE's work and reduce the need for revocations. A strategy for minimizing the impacts of minor differences of opinion regarding site and soil characteristics may also reduce revocations.

Another alternative for preventing the need for revocations is for VDH to perform a field check on every AOSE submittal. Most agree that this is not practical statewide given current

VDH staffing levels. It may be practical in some areas, however reviewing 100% of another's work product is seen in many industries as inefficient and counterproductive. Many within VDH and outside the agency believe that this kind of review encourages poor quality work, which is not a goal of the AOSE program.

Although not specifically an alternative to revoking approvals, the ad hoc AOSE advisory committee recommended that an AOSE perform final inspections of those systems installed pursuant to permits issued upon certification by that AOSE. This recommendation would affect the timing of Level 2 reviews, encouraging VDH to conduct its field checks before systems are installed. Most agree that if VDH is to discover potential defects in site conditions or designs, the earlier these are discovered the better. This recommendation was not incorporated into the proposed AOSE regulations, however, because VDH determined that the final inspection of systems was an essential function for ensuring adequate protection of public health and the environment.

In response to suggestions from the ad hoc committee VDH incorporated language into the proposed regulations that would change the timing of Level 2 field checks. Instead of performing these checks only after the issuance of an approval, the proposed regulations allow the field checks to be performed at any time, which includes the time prior to issuing an approval. The ad hoc committee recommended that VDH retain the same procedures and timelines for reviewing AOSE submittals, including the in-office Level 1 review, as outlined in the emergency regulations and VDH's current policies.

Another significant change in the proposed regulations was not recommended by the ad hoc committee but was initiated by VDH. This change would define revocations of permits, letters, or subdivision approvals as "permit denials" making it possible for the owner of the affected property to appeal the decision to the existing Sewage Handling and Disposal Appeal Review Board. This change will afford citizens the opportunity for an independent review of their cases. Under the current program an owner may appeal the revocation of a permit or other approval to circuit court. VDH expects this provision to address many of the concerns associated with revocations under the AOSE program because the Review Board is a citizen's Board with statutory authority to interpet the Board of Health's regulations. It acts in many ways as a moderating force, encouraging VDH to make good, consistent, and fair decisions.

One important change recommended by the ad hoc committee to address concerns about VDH oversight is the "professional courtesy review." Before an application for a permit, letter, or subdivision is filed, an AOSE may request a courtesy review. In those cases the health department may consult with the private evaluator regarding the site or soil feature in question. The AOSE will be responsible for identifying in advance those characteristics that appear to be questionable or marginal. Since courtesy reviews are to be requested prior to filing an

application, these requests will not be subject to counting for backlog calculations and there will not be any time limits for these reviews. A standard for "reasonableness" will apply to both the time in which courtesy field reviews are conducted and the frequency of requests by any individual.

In its Economic Impact Analysis of the proposed *AOSE Regulations* the Department of Planning and Budget recognized some of the potential liabilities associated with the AOSE program. DPB recognized that permits "being subject to revocation at all times may elevate the associated financial risks to property owners and AOSEs." But, at the same time DPB said that if VDH's ability to revoke approvals was limited, then "uncertainty for the property owner and AOSE is likely to be reduced, but public health risks may arise." DPB noted that three mechanisms- courtesy reviews, improved AOSE education, and "long-run free market forces"- are likely to help reduce the risks. Protecting the AOSE's and property owner's interests does not appear to be part of the Board of Health's primary public health mission, but perhaps a recovery fund or some other financial assurance mechanism could be put in place to further reduce the risks to AOSEs and others.

AOSE disciplinary actions: should VDH have a role in these?

Given the statutory mandate for qualifying individuals as AOSEs and for removing individuals from the list of qualified AOSEs, VDH believes that it must have a role in AOSE disciplinary actions.

As with decisions to revoke permits or other approvals, any VDH decision affecting an AOSE's status is a case decision and is subject to the requirements of the APA. VDH must give proper notice to the AOSE when it is contemplating action, it must inform the AOSE of the factual and legal basis for the contemplated action, it must afford the AOSE an opportunity for an informal fact-finding conference, and it must inform the AOSE, generally in writing, of the outcome of a contemplated action.

Since the program began in July, 1999, VDH has taken actions affecting four AOSEs. Two of those AOSEs signed consent orders and waived their right to a hearing after consulting with a private attorney. In the other two cases, informal fact-finding conferences were held. All four AOSEs had the right to appeal to the circuit court. One individual has exercised that right and that case is currently pending. In one case the AOSE was not suspended and was required to take additional training. In one of the consent orders the individual agreed to a 10-day suspension, additional training, and the payment of a $250.00 civil charge. In the other consent order the AOSE agreed to a suspension lasting a minimum of 12 months and also agreed to pay a civil charge of $500.00.

2. Standards to Eliminate or Minimize the "Subjectivity" of Soil Science.

In one of its recommendations the ad hoc AOSE committee suggested that there should be a "high-level test" for revocation of permits- beyond simple disagreement or interpretation of soil conditions. Another recommendation stated that the AOSE regulations should emphasize standard interpretation of terms throughout the state. The committee, recognizing that high standards for AOSE education, training, and experience would "establish a fair way of leveling the playing field" and "reduce the liability of AOSEs," also recommended higher levels of education and experience for AOSE candidates than those contained in the *Emergency Regulations*.

VDH recognizes that there is a certain degree of subjectivity inherent in the practice of soil science. However, to say that a particular site factor or condition is not important to the functioning of an onsite sewage system because its description or determination requires judgement or interpretation is to ignore the science that is being criticized. The site and soil evaluation criteria of the current *Sewage Handling and Disposal Regulations* are well-founded in research and in practice and they are accepted almost universally in those states where soil evaluation is used as part of the site selection process for onsite sewage systems. Uniformity of interpretation and standardization are necessary for the implementation of a regulatory program that is fair and consistent. VDH recognizes that, while it strives for such consistency, there is much room for improvement.

The proposed AOSE regulations do not contain the "high-level test" for decisions to withdraw or revoke approvals recommended by the ad hoc AOSE committee because such a test would change the regulatory standard for agency decisions that already exists via the Administrative Process Act. However, VDH is considering an implementation strategy that would allow for more discretion in the decision-making process. Under this concept, site and soil criteria would be divided into two or more categories. The categories would then be classified as to the potential for significant non-compliance to pose a direct and imminent threat to public health or the environment. For example, placing a sewage system too close to a well would be considered much more threatening than placing a system too close to a property line or building foundation. Revoking a permit would be necessary in the first instance, in the latter, notice to the owner with a possible suggestion for remedying the problem may be all that is required. In all cases an AOSE would still be responsible for complying fully with the Board's regulations; and, in both cases mentioned an AOSE might be subject to some form of disciplinary action, even though VDH would not have revoked the permit in the second case.

The professional courtesy reviews that are proposed in the AOSE regulations as well as the increased education and experience requirements should also alleviate some of the concerns about minor disagreements over site and soil characteristics. Another strategy for addressing the

potential for minor disagreements, or subjectivity, would be to establish a policy requiring internal review of any decision to revoke an AOSE-certified permit, letter, or subdivision prior to that decision taking effect.

Another potential tool for dealing with the issues of subjectivity and site evaluations is an Onsite Training Center. These centers have been created in other states and serve as a focal point for education and training in site and soil evaluation as well as for technology transfer. A training center can provide opportunities for hands-on experience in many onsite technologies in a non-regulatory environmnent where the regulated community and the regulators can share experiences.

3. VDH Policy on the Use of Alternative Systems

Since 1982 the Board's regulations have encouraged the development of innovative methods, processes, and equipment for the treatment and disposal of sewage and have contained procedures for the experimental testing of innovative systems. Because of the requirements for an approved backup system, bonding, and testing, few have taken advantage of the experimental provisions of the regulations.

Before 1993 onsite sewage systems in Virginia relied exclusively on the septic tank to provide initial treatment of wastewater before discharging to a soil absorption field. The septic tank provides only limited, anaerobic treatment of the wastewater. The soil in the absorption field is expected to provide the remaining treatment and to act as a dispersal vehicle for the treated effluent.

Secondary and advanced secondary treatments are attained through aerobic processes, both physical and biological, and produce higher quality effluents than anaerobic or septic treatment. Higher quality effluents make it possible to use soils for absorption fields that are not suitable for conventional septic systems because they are less likely to cause soil clogging and because the soils are not expected to perform as much of the treatment as in a conventional septic system. The Department is convinced that, with proper maintenance and monitoring, secondary and advanced secondary systems can be used on many sites that have previously been considered unsuitable for conventional septic systems while providing levels of public health and environmental protection equal to or exceeding current levels.

In 1993 the Department began to permit systems utilizing secondary or advanced secondary treatment in soils that did not meet the minimum requirements of the *Sewage Handling and Disposal Regulations*. Permits were issued under variances granted by the Commissioner. Final amendments to the *Regulations* effective on July 1, 2000, incorporated those systems into the *Regulations*. The July, 2000 amendments also made changes to the

procedures for testing alternative systems prior to acceptance as generally approved systems. A third category of approvals, provisional approvals, was added. Under the new procedures, a system design or product could be permitted in the Commonwealth, even though it had not been through the experimental testing procedures. The new procedures require that the applicant provide data from 50 systems installed and monitored in other states or countries showing successful operation of the system under the conditions for which approval is being sought. Since 1993 a number of other policies have been adopted allowing for the use of alternative technologies including drip irrigation, spray irrigation, and chamber systems.

In January 2001 a private company, Bord na Mona USA, successfully completed experimental testing of its Puraflo™ system. The Puraflo™ system provides advanced secondary treatment and performed successfully in site and soil conditions considerably-more limited than those permitted in the *Regulations* as amended July 1, 2000. When a system or process has successfully met the experimental requirements of the *Regulations* the Department is required to develop design and construction criteria in the *Regulations*. The Board of Health is currently engaged in the regulatory process and published a Notice of Intended Regulatory Action on June 4, 2001. The proposed amendments will revise the site and soil requirements for a treatment and disposal system when higher quality effluent treatment is utilized and will establish minimum design, construction, and performance requirements for such systems.

To assure that public health and the environment are protected from the adverse effects of improperly treated sewage the proposed amendments may also establish requirements for maintenance, monitoring, and operation of all onsite systems. The requirements will most likely be scaled according to the complexity of systems and the sensitivity of the receiving environment. This proposal is based in part on public comments received during the recent revisions to the *Regulations*.

In the last two years VDH has entered into discussions with several groups to explore the concepts of centralized management of onsite, or decentralized, wastewater systems. Under these concepts, a third party, such as a public service authority or a private utility, would take over the long-term operation and maintenance of onsite systems. VDH has been seeking a partner or partners for a pilot project in this area. Charles City County and the Virginia Department of Housing and Community Development have approached VDH with a proposal for such a pilot project. The project will bring indoor plumbing to several county residents as part of a community development block grant. VDH intends to enter into an agreement with Charles City County that will allow the installation of advanced treatment and dispersal wastewater systems in site and soil conditions otherwise prohibited by the *Regulations*. In order to assure that proper treatment is provided throughout the life span of the homes, the county will be legally and financially responsible for the operation and maintenance of the wastewater systems and in some cases may own the sewage systems. The residents will pay a monthly fee to the county for this service.

As more and more systems are installed in the Commonwealth that utilize advanced wastewater treatment, VDH recognizes that proper operation, maintenance, and monitoring of those systems becomes an increasingly important element of VDH's onsite wastewater program. All systems require some maintenance in order to function properly. We are moving from a program where the permitting requirements were entirely prescriptive to one where the requirements involve some measure of performance. Whether the performance involves advanced wastewater treatment or periodic inspection of components, compliance monitoring, data management, and enforcement are becoming increasingly important.

Currently, VDH's authority to enforce the laws and regulations regarding onsite wastewater systems is limited to criminal penalties or to civil actions such as injunctions and inspection warrants. Only with the consent of an affected party can VDH collect civil charges. Taking or contemplating criminal action against citizens for relatively minor performance violations, such as the failure to report a monitoring sample or to conduct an inspection, is viewed by many as excessively harsh enforcement. Allowing VDH to assess civil penalties for performance violations offers a workable alternative to the current situation.

4. Staffing Problems: Is VDH adequately staffed to oversee Operation and Maintenance for sewage systems? What will it take to address staffing issues?

Responding to the committee's inquiries regarding VDH staffing involves analysis on multiple levels. First, one must consider whether VDH is adequately staffed for its current mission. That mission includes the AOSE program as well as processing the applications and providing the inspections and other services that the public still expects from VDH. Then one must consider VDH's changing role- from the role of the service provider in a prescriptive program to the role of regulating the service providers in a performance-based program. This changing role involves oversight over the operation and maintenance of systems, alternative as well as conventional systems, and it includes VDH's monitoring and enforcement activities in the AOSE program. We are in a transition where there is still a strong public expectation that VDH will continue providing services in the accustomed manner, yet there is strong pressure for VDH to move into the functional areas of oversight. This will involve a much greater component of compliance monitoring and enforcement than the old model for VDH services.

In FY 2000 VDH received 52,129 requests for site approvals in the onsite program. This included all requests for construction permits, certification letters and subdivision lot approvals. In addition, VDH performed 35,354 inspections of onsite systems at the time of construction. AOSEs handled 5.5 % of the total requests for approvals- 16.8 % of the subdivision lots, 14.2 % of the letters, and 1.6 % of the construction permits. Although the data are not yet available, VDH believes that the AOSE percentages are increasing.

The central office is aware, anecdotally, of sporadic backlogs in some counties still. From this, one may conclude that VDH is still not adequately staffed for its present mission, even with the private-sector AOSEs handling a growing percentage of the submittals.

The few revocations that have been necessary have been resource intensive in those localities and districts where they have occurred. The central office has also committed considerable resources to the AOSE program, including disciplinary actions. While the resource demands in these areas have been high, VDH expects that these activities will level off as the program matures.

Moving staff from areas of relatively slow growth and activity to areas with high growth might enable the agency to more effectively manage staffing needs, however cooperative budgets and contracts for services tend to hamper such movements.

Adding several positions that could function statewide, or adding funding that would allow districts or localities to hire AOSEs during times of high demand are potential solutions to the current staffing problems.

As the onsite sewage program becomes more performance-oriented and as the private sector plays a greater and greater role in the program, VDH must allocate resources to those activities associated with regulatory oversight. This is a role that is different from VDH's traditional role. Some of the new activities include periodic inspections of systems, collecting monitoring samples, conducting field checks for AOSE submittals, and gathering supporting documentation when performance failures (systems, AOSE, monitoring and reporting, etc.) necessitate enforcement or disciplinary actions. These activities divert resources away from the agency's primary mission of processing applications for citizens and responding to environmental and public health complaints.

What is needed is a comprehensive assessment of the manpower requirements to continue to provide the traditional services expected by the public such as bare applications, inspections of systems installed, complaint investigations as well as the manpower requirements to transition to a performance-based program with more regulatory oversight and less direct delivery of services. Because VDH must essentially function in dual roles for the foreseeable future, the transition will require additional staffing resources and the flexibility to apply those resources where they are needed most- typically in areas with high rates of growth.

Staff retention is another area of growing concern. VDH has begun to lose staff to other state agencies and to the private sector at alarming rates. Double-digit turnover in the environmental health program is running about 15% for the last several years with some districts showing turnover rates as high as 25% or 35%. Individuals report that they are able to make more money and are subject to less stress when the leave the agency. VDH believes that one of the reasons for the increased stress, in addition to the change in VDH's mission, is the lack of training for VDH field staff. There are many educational opportunities available both in the

Commonwealth and in nearby states, however most Environmental Health Specialists do not take advantage of them because they are constrained by budget restrictions and because their absence from the locality results in unacceptable delays in providing services.

The staffing solutions must include adequate opportunities for training, adequate resources to take advantage of educational opportunities, and adequate salaries to retain qualified and trained individuals. At its management meeting in November, VDH will challenge its management and human resource staff to develop a list of the causes of the recent turnover rates and strategies for remedying the staff shortages.

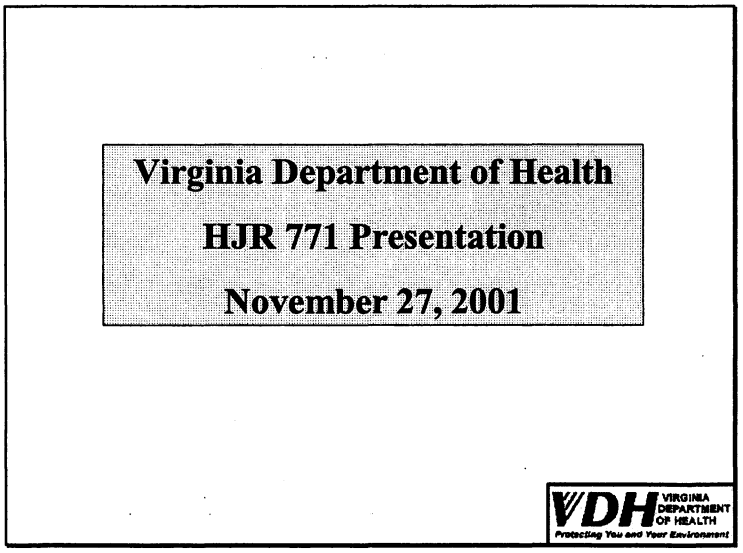
5. Data Collection: What data is VDH currently collecting, what are we doing with it? (i.e.: percent of systems working/failing, processing times, AOSE success/denial ratios).

VDH is not currently collecting data in a systematic way on sewage system failures, application processing times, or AOSE approval and denial rates. Local and district health departments for the most part collect such information, however there is no mandate to collect or report this information at this time. From time to time the central office requests that the districts report this information. These reporting activities have always been resource intensive since there has been no central data management capabilities to date.

The Department has entered into a contract with a private vendor to develop and implement an information management system that will possess the capability to collect and report most of the information mentioned above. However, generating reliable data on the longevity, or failure rates of systems, will require some type of sampling tool that goes beyond simply counting the number of repair applications. Since repair applications count only those owners who approach VDH for solution to failing systems, an accurate assessment of the true performance of systems will necessitate in-the-field sampling of systems, an activity which currently exceeds the agency's resources

APPENDIX D
HJR 771 Committee
VDH Presentation, November 27, 2001

Slide 1



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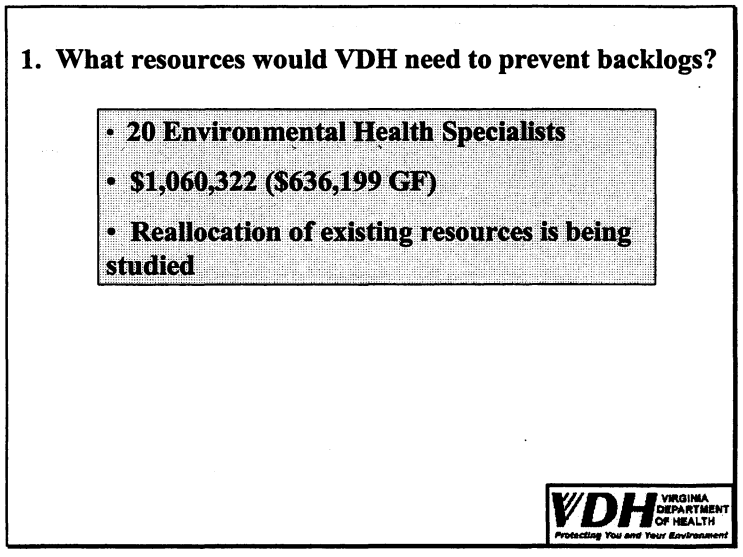

Slide 3

1. What resources would VDH need to prevent backlogs?

Turnover prevention - focus group results

- **High (and increasing) work volume and work-related stress**
- **Low pay**
- **Lack of opportunity for advancement**
- **Lack of continuing training (mostly for supervisors and managers)**
- **Too many programs to carry out**
- **Inequity with other state jobs (work volume, number of programs and pay)**

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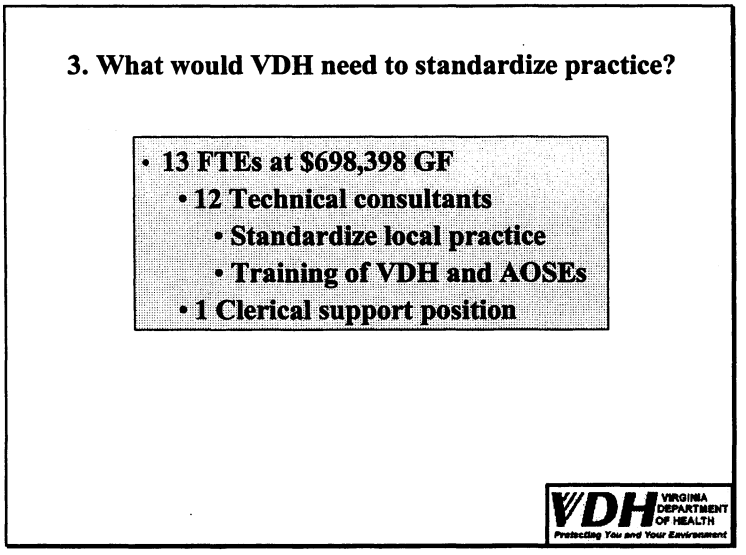
Slide 4

2. What would VDH need to provide AOSE support?

- **7 FTE's at $472,763 GF**
  - **2 VPI Soil Scientists**
  - **5 Ombudsmen**

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Slide 5



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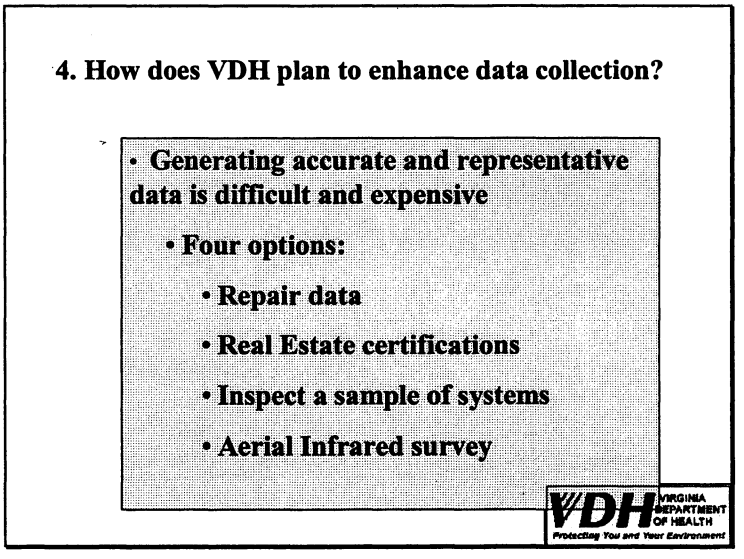

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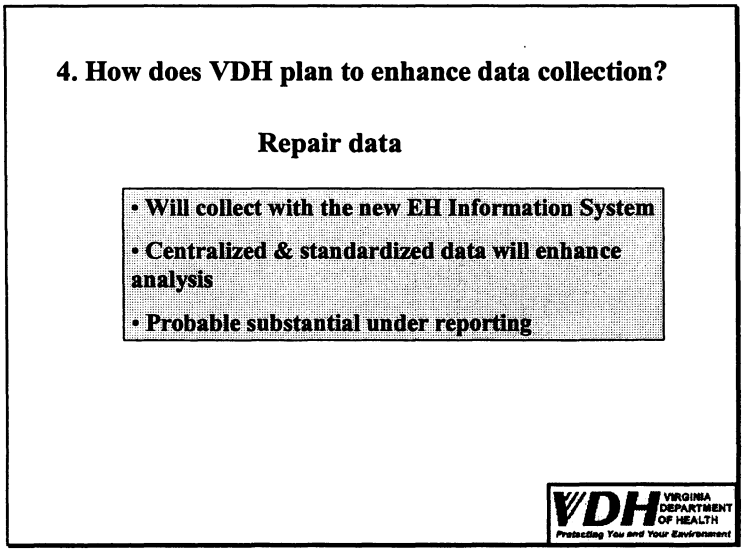

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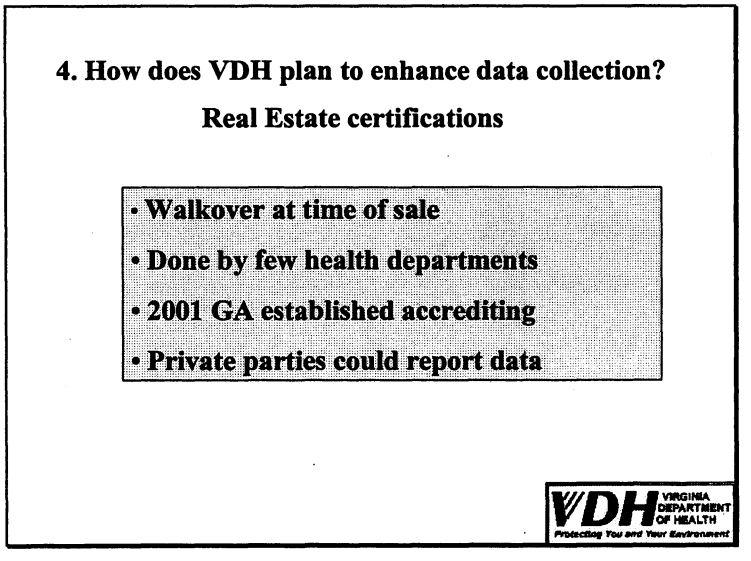

Slide 9

4. How does VDH plan to enhance data collection?

Real Estate certifications

- **In a district with 45,765 installed systems**
  - **314 repair permits issued in 2 years**
    - **A 0.34% annual failure rate**
  - **638 walkovers with 76 showing malfunction**
    - **A 6.0% annual malfunction rate**
- **A major shortcoming is that houses may be vacant**

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Slide 10

4. How does VDH plan to enhance data collection?

Inspect a sample of systems

- **To inspect 1% of the installed systems per year**
  - **7 - 10 inspectors**
  - **$372,000 to 531,000 GF per year**
  - **Code change needed to gain access**
  - **$100,000 GF water sampling enhancement**

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Slide 11

4. How does VDH plan to enhance data collection?

Aerial infrared survey

- **Preliminary testing shows some promise**
- **Would need to supplement by inspections.**
- **Insufficient experience to provide cost estimate.**
- **Pilot at $50,000 GF.**

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Slide 12

4. How does VDH plan to enhance data collection?

The "Ideal" System

- **Build on Option 3 but increase to 10% per year**
- **Combine monitoring, preventive maintenance, and data collection**
- **To visit every system once every ten years would cost between $3M and $5M GF yearly.**

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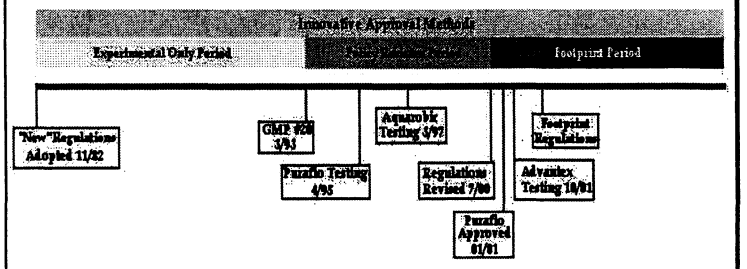
Slide 13

5.Why does it take so long to approve alternative systems?

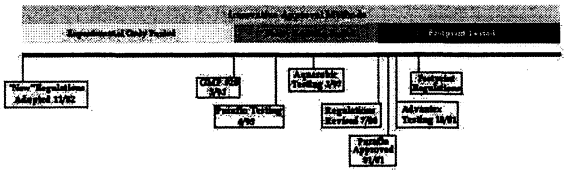
Innovative System Review
Timeline



Slide 14

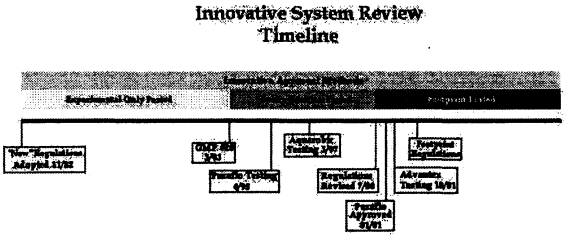
- Three "Eras" of VDH Approvals
  - Experimental Approvals
  - Policy Approvals
  - Provisional Approvals
- Footprint Era (proposed)

Innovative System Review
Timeline



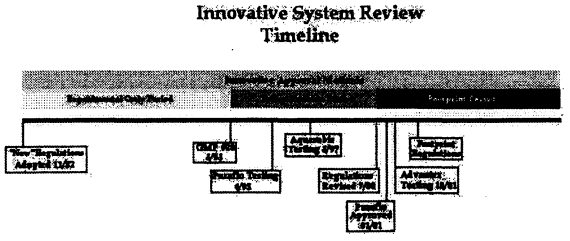
Slide 15

- Experimental Era (11/82-6/95)
  - Very few individual system approvals
  - Required 100% backup
  - 12 systems allowed statewide



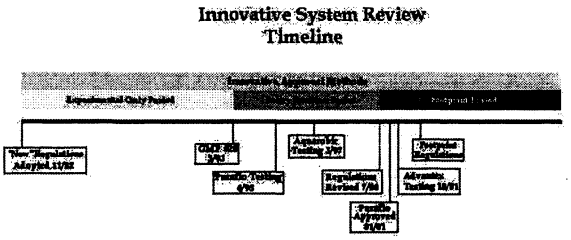
Slide 16

- The Policy "Era" (6/95-7/00)
  - 100% backup applied to experimental system
  - 500 allowed statewide, but only 100 until data
  - Three *experimental* approvals granted
    - Puraflo, Aquarobic, Alascan
  - Initial review (typ. 6 months)
  - Written Protocol Issued



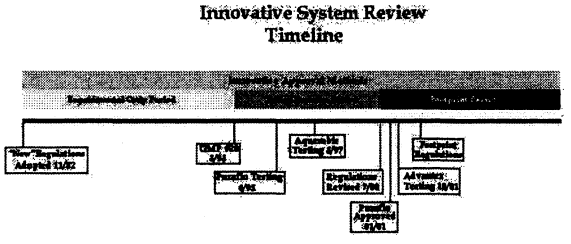
Slide 17

- The Policy "Era" (6/95-7/00)
  - Testing for 18 to 36 months
  - Only Puraflo has been completed
    - Took 4.5 years to install 24 systems and to generate 18 months of data



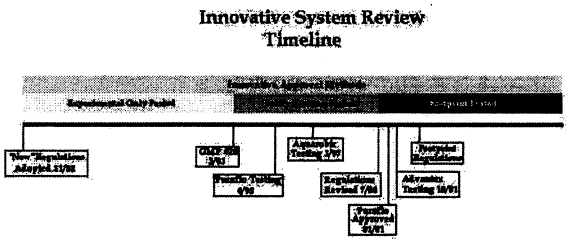
Slide 18

- The Provisional Approval "Era"
  - Bridged the gulf between experimental and general approvals
  - Provided criteria for waiving experimental status based on data
  - 50 systems, 3 years of data
  - Wisconsin Sand Mounds, 50% failed
  - 5 year testing period



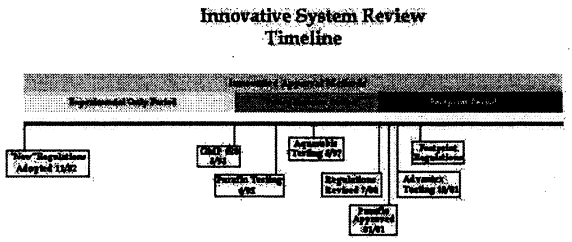
Slide 19

- The Provisional Approval "Era"
  - One approval
  - One denial
  - One under review
  - One withdrawal



Slide 20

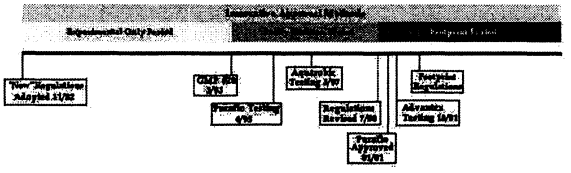
- The Footprint Era (proposed reg.)
  - Create classes of treatment levels
    - simplifies review and approval
    - adds consistency
    - improves appearance of fair treatment



Slide 21

- The Footprint Era (proposed reg.)
  - Performance based dispersal field design
    - Proprietary designs by private sector
    - No mandatory prescriptive VDH design criteria
  - Addresses system management

Innovative System Review Timeline



Slide 22

- Innovative Systems Review Problems
  - Lack of useable data
  - Confusion between policy and regulation
  - Asked to approve concepts without data

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Slide 23

- **Why does it take so long?**
  - **These are long-lived systems & need good testing**
  - **Systems need a 6 month start-up period**
  - **Testing needs to span all seasons**
  - **Testing needs to include various situations**
  - **It takes time to find suitable sites**
  - **Provisional regs allow quick approval with good data from other states.**
  - **Footprint regs should simplify the process**

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

VDH Staffing Report (November 27, 2001)

Position Description

Position	Purpose	Positions Needed	Working Title	Band/ level	Salary plus fringe
Environmental Specialist II (Soil Science Consultant)	These new positions would be used to provide consistent soil interpretations to AOSEs and to provide training to AOSEs and VDH staff. The Department currently contracts with VPI & SU for four soil scientists. These individuals provide introductory and advanced training and technical consulting to VDH staff. By expanding the roles of these employees to include courtesy reviews and expanded training roles to include AOSEs program consistency should be optimized and soil science based disputes should be minimized.	2 @ $70,001.00	Environmental Health Coordinator	5C	$140,002.00
Environmental Specialist II (Ombudsman)	The ombudsman would provide a point of contact for disenfranchised citizens and AOSEs and would be expected to be able to assist the public to understand the processes and basis for VDH's regulations and policies and be able to provide simple, clear direction regarding options and solutions available to them. The ombudsmen would also provide direction to VDH in how to develop simpler, user-friendly processes and functions to manage programs. One would be centrally placed to manage workload and provide guidance and supervision to the other four co-located in existing field offices across the state.	1 4 @ $65,690.00	Environmental Health Coordinator Environmental Health Specialists Consultants	5C 5A	$ 70,001.00 $262,760.00

Environmental Specialist II (Environmental Health Technical Consultant)	These positions will provide technical onsite expertise to district and local offices and AOSEs related to regulation and policy interpretation, system siting, design, installation, inspection and operation. The positions will require extensive travel within their local area of coverage (which may exceed a single district) and will require routine out of state travel to attend national conferences to maintain technical expertise and currency. Ten positions would be co-located in field offices across the state and managed centrally. Two positions would be located centrally to manage the program and provide technical assistance and generate supporting materials.	2 @ $70,001.00 10@ $56,590.00	Environmental Health Coordinators Environmental Health Specialist Consultants	5C 5A	$140,002.00 $565,900.00
Environmental Specialist I	These positions will interpret and apply environmental laws, regulations, policies and procedures in order to determine compliance and reduce risks to the public's health in relationship to inspection and operation of onsite systems in the districts and local health departments. The positions will be located in the local health departments and require travel within their local area of coverage.	20 @ $53,016.00	Environmental Health Specialist Sr.	4B	$1,060,332.00

Administrative and Program Specialist III (Clerical)	This position would perform a variety of secretarial support tasks such as typing, filing, reception, scheduling appointments, making reservations, sorting mail, in support of a higher level administrative, technical or professional. May conduct research and assemble information on behalf of another administrative, technical or professional staff member. This position would be located centrally and would provide support for the staff located centrally.	1 @ 32,498.00	Executive Secretary	3A	$ 32,498.00