Date of Meeting: May 13, 2016

1

BOARD OF SUPERVISORS
TRANSPORTATION & LAND USE COMMITTEE
ACTION ITEM

SUBJECT: **General Revision and Update of Chapter 1066 of the Codified Ordinances of Loudoun County**

ELECTION DISTRICT: Countywide

CRITICAL ACTION DATE: At the pleasure of the Board

STAFF CONTACTS: Jerry Franklin, Health Department
Dr. David Goodfriend, Health Department
Gwen Kennedy, County Administration

PURPOSE: To recommend amendments to Chapter 1066 of the Codified Ordinances of Loudoun County.

RECOMMENDATION: **Staff** recommends that the Transportation and Land Use Committee (TLUC) recommend that the Board forward amendments to Chapter 1066 of the Codified Ordinances of Loudoun County as found in Attachment 1 of the May 13, 2016 TLUC Item to a future Board Public Hearing.

BACKGROUND: Onsite sewage treatment systems are now accepted as a permanent and important means of sewage disposal. In the past, these systems were considered temporary solutions until connection could be made to a central sewage treatment plant. Onsite sewage treatment systems, when properly maintained, help recharge groundwater resources. Loudoun County has approximately 12,893 conventional systems, 1,715 alternative systems, 29 discharging and 129 pump and haul systems. These systems must be constructed, maintained and operated as important sewage treatment infrastructure.

Chapter 1066 of the Codified Ordinances of Loudoun County (Chapter 1066) regulates onsite sewage treatment systems. Authority for Chapter 1066 is found in §15.2-2157A of the Code of Virginia. Chapter 1066 was enacted in 1976, then amended and re-enacted in its entirety on February 16, 1994. Although Chapter 1066 has been amended several times (see Table 1 below), it has not had a comprehensive update since its enactment in 1976.

Table 1: Chapter 1066 Amendments

Date Amendment Approved	Description of Amendment
December 15, 2009	Provided requirements aimed at preventing septic tank collapse and leakage
May 4, 2010	Increased setbacks in Limestone Overlay District
October 4, 2011	Provided requirements for pump-out of septic tanks
September 9, 2015	Provided an inspection provision that may be utilized in lieu of the required five (5) year pump-out of septic tanks

In addition to Chapter 1066, there are additional state and local regulations that govern septic systems. The Virginia Administrative code (12VAC 5-610-10 et seq. and 12VAC5-613-10 et seq.) contains regulations governing onsite sewage treatment systems statewide that are more comprehensive than Chapter 1066. In addition, Chapter 1067 of the Codified Ordinances of Loudoun County regulates alternative onsite sewage systems. The requirements of Chapter 1066 are in addition to the requirements of Chapter 1067 of the Codified Ordinances of Loudoun County and are intended to implement the regulations of the State Board of Health regarding private sewage disposal systems.

On October 7, 2015, the Board approved (9-0) a work plan to amend Chapter 1066 (Attachment 2). Concurrent with the work plan, a series of stakeholder engagement meetings were held to receive comments on proposed ordinance changes and the ordinance as a whole. Stakeholder groups include the homeowners group, the environmental and conservation group, the building and development group, and the industry professionals group. A matrix documenting all of the stakeholder comments and staff responses can be found in Attachment 3.

ISSUES: There was agreement between all stakeholders and staff on a number of issues. There was also disagreement on some issues. Both sets of issues are provided below. In the cases of disagreement, staff provides the stakeholder perspective and staff response and justification regarding the recommendation.

Issues in which there was Agreement between Stakeholders and Staff

1. A requirement that pump-outs of sewage containment vessels be reported to the Health Department by the 15th of the following month. 1066.07(b)
2. A requirement that pumped material (septage) only be disposed of at approved receiving facilities. 1066.04 (b)
3. Deletion of the requirement for a license to conduct percolation tests. 1066.04 (c)
4. A requirement for operators to report alternative discharging system inspections on a form approved by the Health Director. 1066.04 (b)
5. Allowance for time dosing of soil absorption areas. Time dosing is a way of setting pump controls so that a given amount of effluent is pumped to an absorption area in a given time frame. 1066.10

6. Addition of the ability for a professional engineer (PE) to design a grinder pump exterior to the structure. 1066.10 (a)
7. A requirement that sewer lines have a minimum diameter of four inches (4") rather than three inches (3"). 1066.10 (c)
8. A requirement that distribution boxes be resistant to corrosion. 1066.10 (b)
9. A requirement that driveways and parking areas be a minimum of five feet (5') from sewage treatment systems. 1066.12 (a)(5) Appendix I
10. Clarification of when an easement may be used for a sewage disposal system to serve an existing lot of record 1066.12(b)
11. Codification of policy on reusing existing systems. 1066.14
12. A requirement that systems no longer used be abandoned. 1066.14
13. A requirement for buoyancy controls for tanks installed in water table. 1066.16 (d)
14. A reduction in the negative pressure required when vacuum testing a tank. 1066.16 (f)
15. A provision for the Health Director to waive portions of the ordinance. 1066.20
16. Addition of an administrative review process. 1066.21
17. A reduction of the distance to property lines from ten feet (10') to five feet (5') if a plat is provided and the line is survey staked in the field. Appendix I

Issues in which there was Disagreement between Stakeholders and Staff

Staff was unable to reach universal agreement with stakeholders on a number of issues. The top ten issues are described below. Additional issues related to off-site easements (1066.12 b), reserve area (1066.12 c), privies (1066.13), and setbacks (Appendix 1) are highlighted and addressed by staff as part of Attachment 3.

Issue 1- Intent 1066.001 Proposed amendments to Chapter 1066 include new language outlining the intent of the ordinance. The intent states that these regulations are intended to implement the State Board of Health Regulations regarding private sewage, and in cases where Chapter 1066 conflicts with any other state law or local regulation, the more stringent provision shall apply. In cases where Chapter 1066 applies to an alternative onsite sewage system (AOSS) and is deemed to be additional to or more stringent to the State requirements and standards, the Chapter applies to the greatest extent possible.

Industry Professionals, Building and Development, and Homeowners: There was disagreement on whether the County can have regulations more stringent than the State; and if so, the Commonwealth regulations should apply.

Staff Comments: Localities are allowed to promulgate ordinances that are more stringent than the Board of Health regulations under §15.2-2157A. However, §15.2-2157C does not allow localities to "prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." Also, §15.2-2157D does not allow localities, for alternative systems, to "require maintenance standards and requirements that exceed those allowed under or established by the State Board of Health pursuant to §32.1-164." The

proposed ordinance does not prohibit alternative systems or require additional maintenance standards beyond what the State requires.

Issue 2- Homeowners ability to install their System 1066.04 (a) Proposed amendments to 1066.04 (a) remove the homeowners ability to install their own system on their property.

Homeowners: Homeowners commented that they should be given the option and opportunity to repair or install their own septic systems. Some homeowners expressed concern that limiting the pool of contractors could increase prices. Some homeowners were agreeable to the change as long as the Health Director had the option to waive the installation license. This would allow homeowners an option to install their own system if they could demonstrate they were experienced in installation and/or repair.

Staff Comments: During the discussion with homeowners, staff explained that it wasn't clear whether the Virginia Department of Professional and Occupational Regulation (DPOR) would allow homeowners who were unlicensed to work on their own systems. If so, staff included Section 1066.20 which would allow the Health Director to waive the licensing requirement, allowing a homeowner to put in or repair their own system. However upon further research, staff learned that the Administrative Code of Virginia, 18VAC160-20-74C, prohibits non-licensed individuals from performing repair or maintenance work on onsite systems. This regulation applies to all types of onsite systems:

> 18VAC160-20-74C. No individual shall act as a conventional onsite soil evaluator, alternative onsite soil evaluator, conventional onsite sewage system installer, alternative onsite sewage system installer, conventional onsite sewage system operator, or alternative onsite sewage system operator without possessing a valid license issued by the board. Issuance of an alternative license shall void the previously issued conventional license and shall authorize the alternative licensee to perform duties on both conventional and alternative onsite sewage systems consistent with the license category. The board shall issue a license only after an individual has met all experience and examination requirements as set forth in this chapter.

In addition, the Code of Virginia in §54.1-2302 does not allow non-licensed individuals to install or operate alternative systems. Currently, all work needs a permit and is inspected by staff. Inspecting work done by unlicensed individuals potentially places staff's own professional licenses in jeopardy. Although staff is sympathetic with unlicensed owners who wish to do work on their own conventional systems, it is prohibited by the code of Virginia and the Virginia Administrative Code. This interpretation was confirmed through communication with DPOR staff.

Issue 3- Inspections of onsite sewage treatment systems by Heath Department staff 1066.05 Proposed amendments continue the requirement that the Health Department inspect 100 percent of the systems installed in the County. The current ordinance already allows the Health Department to inspect any system at any point in time.

Industrial Professionals: This group does not believe the County needs to do 100 percent inspections on installations. The Office of Environmental Health Services (OEHS) recommends that at least 10 percent of newly installed systems be inspected. Alternative Onsite System Evaluators (AOSEs) see it as a duplication of efforts since they are required to inspect and sign off on the systems.

Staff Comments: Health Department staff supports continuing the practices of inspecting 100 percent of all installations. The goal of the Health Department is to provide an independent standardized review of installations in order to protect groundwater.

Issue 4- Five Year Pump-Out Requirement 1066.07 (b) This section includes language passed in 2011 requiring homeowners to pump-out their septic tanks by a licensed cleaner at least once every five-years. An amendment was passed in September 2015, allowing homeowners to submit documentation that the system has been inspected, is functioning properly, and does not need to be pumped out for at least the next two (2) years. Documentation can be submitted every two (2) years until a pump-out is needed.

Homeowners: Some homeowners think the time frames related to the five year pump-out requirements are too short and should be tied to the use of the system. Many homeowners point out that having a small number of people in their home has led to insignificant amounts of solids in tanks when they are required to pump. Some homeowners cited sources that show estimated pumping frequencies to be much greater for their systems compared to the five-year requirement (see homeowner comments for reference – Attachment 3). Homeowners indicate that they take care of their systems by ensuring that garbage, baby wipes, and other materials are not put into their system. Homeowners feel they are required to pay for something that is not needed. The inspection provision, while helpful, still costs them additional money.

Staff Comments: A septic tank pumping chart was included for the Board's consideration at the time the five (5) year pump-out requirement was adopted. It is recognized that frequency varies based on the size of tank, occupants in the house and use of the system (use of garbage disposals increase the frequency). Five years was selected as a standard to match the pumping frequency in the Chesapeake Bay requirements and is a standard used industry wide as an upper limit for pumping. A two (2) year inspection allowance was recently added to the ordinance in an effort to extend the timeframe when systems show they are functioning properly and do not need their tank pumped out.

Issue 5- Connection to Public Sewer within 300 feet 1066.09 Section 1066.09 requires homeowners to connect to a public sewer if it is within 300 feet of any new building or structure. Proposed amendments require homeowners with onsite sewage treatment systems that "deteriorate to a point where there is a public health risk requiring substantial repairs to the system or replacement or enlargement of the soil absorption area" to connect to public sewer if it is within 300 feet of any new building or structure if the owner of the sewer allows such a connection. Current language requires this when the system is within 300 feet of a public sewer and "ceases to operate in a sanitary manner."

Industry Professionals, Building and Development, Homeowners: The industry professionals and building and development stakeholders group were concerned about current language that requires connection when the system ceases to operate in a sanitary manner because the ordinance does not define "sanitary manner." They also pointed out that it may be difficult to get easements from adjacent property owners to make the extension. They also thought that waiver elements for this section should be defined. Homeowners were concerned about the expense to connect and wanted to choose whether they connected to public sewer or retained their onsite septic system.

Staff Comments: New language clarifies when systems would be required to connect as outlined in the Comprehensive Plan. The goal is to connect homes to the central system that are within the boundaries of the suburban policy area and the Loudoun Water Service Area. Staff recognizes that it may be cost prohibitive to connect to the system or retain easements from neighbors. Proposed language in Section 1066.20 would allow the Health Director to grant waivers to this section in case of hardship.

Issue 6- Determining Suitability of Soil/Sites 1066.11 This section updates language and codifies policy that all proposed soil absorption sites be field reviewed with a backhoe by staff prior to permit issuance. Proposed language removes the prohibition on Class IV soils, and allows non-pad and non-trench systems on slopes greater than 25 percent. Current language restricts any subsurface absorption system on slopes greater than 25 percent.

Industry Professionals and Building and Development: The industry professionals were concerned that a backhoe is required for Health Department Soil Evaluations in places where they know there are good soils. They were also concerned that the Health Department is field reviewing 100 percent of absorption sites when the minimum requirement is 10 percent. Industry professionals and the building and development group were concerned with current language restricting subsurface absorption systems on slopes greater than 25 percent. The State allows some systems on slopes up to 50 percent.

Staff Comments: The Health Department has always conducted 100 percent field reviews of proposed onsite soil absorption areas. Although OEHS requires a minimum of 10 percent be field reviewed by staff, they encourage 100 percent review. The backhoe requirement has been a longstanding policy of the Health Department. Soils are highly variable, and due to the importance of soil based decisions, the use of a backhoe is appropriate in most cases. A waiver can be granted for the backhoe requirement. Staff has proposed changes that would allow non-pad and non-trench systems on slopes greater than 25 percent. Current language may be in conflict with §15.2-2157C of Virginia State Code which does not allow a locality to restrict alternative systems where the State would allow them. However, it is important to note that the Zoning Ordinance would still apply. The Zoning Ordinance limits onsite systems in hydric soils, floodplains, and slopes greater than 25 percent.

Issue 7- Distance to Rock 1066.12(a) Proposed amendments reduce the 48 inch standoff to rock in the Limestone Overlay District (LOD) to 36 inches if the effluent is pretreated to 30/30 (TL-2

effluent) and 24 inches if the effluent is treated to 10/10 with disinfection (TL-3 effluent)[1]. The minimum acceptable separation and distance for both vertical and horizontal areas in all other areas is 12 inches.

Building and Development: In relation to distance to rock, 12VAC5-613-80.13 states that "the following minimum effluent quality shall be met for the described vertical separation to limiting features as measured from the point of effluent application or the bottom of the trench or other excavation: 0-18 inches standoff to limiting feature with a minimum effluent treatment quality of TL-3 and disinfection." The group recommends considering 0-18 inches.

Environmental and Conservation: Some members of the group have groundwater protection concerns with reducing the standoff with pretreatment.

Staff Comments: Staff recommends that standoff remain at 12 inches minimum except in the LOD where it will vary from 48-24 inches based on treatment level. The LOD is very sensitive to groundwater contamination due to Karst geology. For this reason, the standoff to rock was increased in the LOD. By using pretreatment, wastewater can be substantially renovated and less soil standoff is required. With Loudoun's advanced alternative onsite operation and maintenance enforcement, systems are inspected and serviced by private operators annually. This greatly reduces the chance of a technology failure impacting ground water. With this oversight in place, staff supports reducing standoff to rock in the LOD with pretreatment.

Issue 8- Depth to Seasonal Water Table 1066.12 (a) (2) Proposed amendments reduce the 24 inch standoff to water table to 18 inches if the effluent is pretreated to 30/30, TL2 and 12 inches if pretreated to 10/10, TL3 with disinfection.

Industry Professionals and Building and Development: State regulations require only 18 inches as the minimum separation distance from the absorption trench bottom to the seasonal water table. In some cases, the State allows you a 0 inch standoff depending on pretreatment. Both groups do not think the County should be more stringent than the state.

Staff Comments: The Loudoun County Codified Ordinance since 1979 has included a 24 inch standoff to water table with septic tank effluent. In the late 1990s alternative systems became more commonplace and the Virginia Administrative Code (VAC) was revised in 2000 (12VAC 5-610 table 4.3) to establish a reduced 12 inch standoff to water table with secondary effluent. At that time, industry professionals began requesting waivers to the 24 inch standoff. This was eventually established by the Loudoun County Health Department as a blanket waiver to an 18 inch standoff with secondary effluent.

The 18 and 12 inch VAC standoffs were established partially in response to Virginia Tech

[1] *30/30 and 10/10 are standards of wastewater treatment with the first number being biochemical oxygen demand (BOD$^{5)}$ and the second number being total soluble solids (TSS). In both cases the lower the number the cleaner the effluent. These match standards in the Virginia Administrative Code.*

research.[2 3 4] This research was generally focused on the reduction of fecal coliform as effluent passed through soil columns. The research concluded that at least 18 inches (45 cm) of unsaturated soil was necessary to effectively mitigate fecal coliform (FC) bacteria in septic tank effluent. Additional pretreatment of effluent appears to substitute for soil depth. The study was conducted with septic tank effluent having relatively low FC counts of 35800 colony forming units (CFU) per 100 ml. when typical domestic septic tank effluent is 10^6 to 10^8 CFU's per 100 ml. Large continuous micropores, rock and other soil structure were not taken into account. The water table in Loudoun is generally determined at the shallowest depth of chroma 2 mottles. Chroma 2 mottles are gray colors in soil that form under extended periods of wetness. It is commonly known and substantiated by field research[5] that during the November to April timeframe water table rises substantially and for long periods above chroma 2 mottles. It is quite common for soil absorption systems to be installed deeper than permitted or for the removal of rocks and stumps to create voids in trench bottoms. The study was not able to examine long term performance that may impact treatment. Removal of enteric viruses, pharmaceuticals and other contaminants of emerging concern were not examined.

The standoffs found in the VAC were further reduced to as little as a 0 inch standoff with the adoption of 12 VAC 5-613 Table 2 with the addition of TL-3 (10/10 effluent with standard disinfection). TL-3 effluent with disinfection is highly treated, and if the system is operating according to design, can be discharged to streams in the State of Virginia. From information collected in Loudoun's onsite operation and maintenance program it is known that pretreatment systems commonly do not function as designed. When pretreatment is not adequately functioning, the increased standoff serves as a measure of protection to groundwater. Onsite systems are expected to treat all contaminants that come down the drain, not just fecal coliform. Soil and various methods of pretreatment vary in ability to reduce contaminants. Soil continues to have a role with some contaminants that the pretreatment unit may not be able to treat especially if it is not functioning as designed. It is recommended by staff that the 24 inch standoff to water table be maintained for septic tank effluent with reductions in standoff to 18 and 12 inches with increased levels of treatment.

Issue 9- Minimum Absorption Area Requirement 1066.12 (a)(4) Current ordinance language requires a minimum soil absorption area of 600 feet based on the square footage of the trench bottoms. Proposed amendments require drip and spray or other surface square footage designed system to have a minimum square footage of 1800 square feet.

Industry Professionals and Building and Development: State regulations found in § 12VAC5-610-950 state that the minimum absorption area for single family residential dwellings shall be

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[2] Renaue, R.B. 1991. *Wastewater Renovation as a Function of Soil Depth and Effluent Quality*. Report to the Virginia Department of Health Footprint Committee.

[3] Stolt, M.H. and Reneau, R.B. 1991 *Potential for Contamination of Ground and Surface Waters from On-Site Wastewater Disposal Systems*. Final Report to the Virginia Department of Health.

[4] Duncan, C.S., Reneau, R.B. and Hagedorn, C. 1992. *Impact of Effluent Quality and Soil Depth on Renovation of Domestic Wastewater.*

[5] Contra, J.F. 2015. *Health Risks of Using Gray Soil Colors to Determine Onsite Suitability*. Paper presented at the 2015 National Onsite Wastewater Recycling Association (NOWRA) conference.

400 square feet. §12VAC5-613-80 allows the absorption area to be as small as 50 square feet for a one (1) bedroom dwelling with TL-3 treatment, perc rate of 15 mpi or less and saturation conductivity of greater than 17cm/day. The Building and Development group recommends reducing the minimum absorption area to be more reflective of state regulations. The industry professional group pointed out that some systems can function at 320 square feet.

Staff Comments: The potential is increased for low flow designs, such as those serving one (1) bedroom, to be subjected to flows that exceed design capacity. Having a 600 square feet minimum beyond the VAC minimum of 400 square feet provides a margin of safety from overuse. This margin of safety is carried over into design footprints for drip and spray dispersal for the same reason.

Issue 10- Addition of a Schedule of Civil Penalties 1066.22 Proposed amendments to Chapter 1066 would establish a uniform schedule of civil penalties for multiple violations. Section 15.2-2157B of the Code of Virginia now gives localities the authority to promulgate civil penalties for alternative and conventional onsite sewage systems and alternative discharging systems.

Homeowners: Some homeowners are not in favor of civil penalties. They are concerned that it lowers the "burden of proof" for the County and encourages fines instead of taking someone to court. Some homeowners thought they should be able to go online and get information that the County has on tanks/systems, and should be able to receive electronic reminders about upcoming deadlines. Some homeowners recommended that the process be in place for a while prior to levying fines.

Staff Comments: Civil penalties are more appropriate remedies when regulating large numbers of people with relatively minor violations. Violations of Chapter 1066 currently have criminal remedies. The Virginia Department of Health has established a schedule of civil penalties in §12VAC5-650 et. seq. However legal support for the state schedule of penalties is limited. The passage of Senate Bill (SB) 407 in the 2016 legislative session amends §15.2-2157B allowing localities to promulgate civil penalties for conventional and alternative discharging systems. Civil penalties have proven essential to obtaining inspections and deficiency correction of alternative onsite systems in Loudoun County. Conventional and alternative discharging system management will also be improved with civil penalties. All civil penalties must be preceded by a notice of violation 30 days prior.

Over 50 percent of Health Department files are digitized and available at www.onlinerme.com. Owners are able to view Loudoun specific information about onsite sewage systems and register to receive e-mail rather than direct mailings by registering on www.loudoun.gov/onsite.

FISCAL IMPACT: No change in staffing levels is anticipated.

ALTERNATIVES:

1. The TLUC may recommend that the Board forward Chapter 1066 amendments as proposed to a future Board Public Hearing.

2. The TLUC may recommend that the Board forward Chapter 1066 as amended by the Committee to a future Board Public Hearing.

3. The TLUC may choose to not recommend the Board forward Chapter 1066 amendments to a future Board Public Hearing.

DRAFT MOTIONS:

1. I move that the Transportation Land Use Committee recommend that the Board of Supervisors forward amendments to Chapter 1066 of the Codified Ordinances of Loudoun County as found in Attachment 1 of the May 13, 2015 Action Item to a future Board of Supervisors Public Hearing.

OR

2. I move that the Transportation Land Use Committee recommend that the Board of Supervisors forward Chapter 1066 of the Codified Ordinances of Loudoun County as amended by the Transportation Land Use Committee on May 13, 2016 to a future Board of Supervisors Public Hearing.

OR

3. I move an alternate motion.

ATTACHMENTS:

1. Proposed Amendments to Chapter 1066
2. Work Plan to Revise Chapter 1066
3. Matrix on Stakeholders Comments
4. 2004 Pipeline Article Referencing Estimated Pumping Frequencies

CHAPTER 1066

~~Private~~ **Onsite** Sewage ~~Disposal~~ **Treatment** Systems

EDITOR'S NOTE: This chapter was re-enacted in its entirety by Ordinance 94-05, passed February 16, 1994.

1066.001 Intent.
1066.01 Definitions.
1066.02 Approved method of sewage disposal required.
1066.03 Permit required for individual systems.
1066.04 License ~~and bond~~ requirements.
1066.05 Inspections.
1066.06 ~~Neglect or misuse of systems~~ **Alternative discharging systems**.
1066.07 Responsibility of owner of system.
1066.08 Fees.
1066.09 Installation, replacement or repair of individual systems within 300 feet of a sanitary sewer.
1066.10 ~~Effluent pump systems.~~ **Construction requirements.**
1066.11 Determining suitability of **soil/sites for onsite sewage treatment** ~~subsurface disposal~~ systems.
1066.12 Design and location requirements for **onsite sewage treatment systems.** ~~subsurface disposal fields.~~
1066.13 **Privies and portable toilets.** ~~Permit required for pit privies.~~
1066.14 ~~Construction of other individual systems.~~ **Existing system reuse and abandonment.**
1066.15 ~~**Construction of other individual systems.**~~ **Community Systems.**
~~1066.15 Notice to correct~~.
~~1066.16 Equitable remedies.~~
1066.**16**~~7~~ Septic tanks, holding tanks, pump tanks, treatment units and tanks for other onsite wastewater uses.
1066.**17**~~8~~ Individual sewage ~~disposal~~ treatment systems within the limestone overlay district approved prior to February 17, 2010.
1066.18 Notice of violation.
1066.19 Equitable remedies.
1066.20 Waivers.
1066.21 Administrative reviews.
1066.22 Schedule of civil penalties.
~~1066.99 Penalty.~~
~~Appendix I: Bond requirements.~~
Appendix I~~I~~: Minimum distances.

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CROSS REFERENCES

Approval of sewerage systems by counties **and civil penalties** - see Code of Va. § 15.2-**2157**~~26 et seq~~.

Sewage Disposal - see Code of Va. §§ 32.1-163 et seq. and 12 Virginia Administrative Code5 § 610-10 and § 613-10 et seq.

Construction of sewers generally - see S.U. & P.S. Ch. 1060

Use of sewers; building sewers and connections - see S.U. & P.S. Ch. 1064

Pretreatment of wastewater - see S.U. & P.S. Ch. 1068

Sewerage facilities in subdivisions - see P. & Z. 1245.08

Alternative discharging systems - see 12VAC5-640 et seq.

Alternative system inspection and establishment of alternative discharging systems-see Ch. 1067

1066.001 INTENT.

The provisions of this chapter are in addition to the requirements of Chapter 1067 of the Codified Ordinances and are intended to implement the regulations of the State Board of Health regarding private onsite sewage treatment systems. To the extent that any provision of Chapter 1066 conflicts with any other provision of State or local law, the more stringent provision shall apply; provided, however that, to the extent that any provision of Chapter 1066 as applied to an alternative onsite sewage system (AOSS) is deemed to be additional to or more stringent than the requirements and standards for alternative onsite sewage systems of the State Board of Health, then this chapter shall apply to the greatest extent possible and the said State requirements and standards shall apply if (i) sewers or sewerage disposal facilities are not available in the area of the subject property, and (ii) the alternative onsite sewage system used on the subject site has been approved by the State Board of Health for use in the particular circumstances and conditions in which it is to be operating.

1066.01 DEFINITIONS.

As used in this chapter:

(a) **"Alternative discharging sewage system" shall mean any device or system which results in a point source discharge of treated sewage for which the State Board of Health may issue a permit authorizing construction and operation when such system is regulated by the State Water Control Board pursuant to a general Virginia Pollutant Discharge Elimination System (VPDES) permit issued for an individual single family dwelling with flows less than or equal to 1,000 gallons per day.**

"Alternative onsite sewage system AOSS" shall mean a treatment works that is not a conventional onsite sewage system or an alternative discharging sewage system.

~~"Approving authority" means the **Loudoun** County Health Director or his or her duly authorized agent.~~

~~(b)~~ "Approved method of the disposal of sewage" means water carriage disposal of sewage to an approved public or private sewage treatment system; water carriage disposal of sewage to an approved **onsite sewage** ~~septic tank system or other approved individual disposal~~ **treatment** system; or non-water carriage disposal of human excrement only to an approved pit privy**, portable toilet,** or other approved privy facility.

"Conventional onsite sewage system" shall mean a treatment works consisting of

one or more septic tanks with gravity, pumped, or siphoned conveyance to a gravity distributed subsurface drain field.
"County" means Loudoun County, Virginia.

~~(d)~~ "Cr~~R~~ horizon" means **weathered or soft bedrock and is used to indicate root restrictive layers of** bedrock **or** saprolite. ~~the mineral horizons or layers of **poorly** weathered bedrock and/**or** saprolite, such as granite or partly consolidated soft bedrock., such as sandstone, siltstone or shale, with bulk density or consolidation such that roots cannot enter. The material can be dug with difficulty with a spade. , and chunks of gravel size will disperse more or less completely in overnight slaking with water or sodium hexametaphosphate solution. The horizon layer is equivalent to the material underlying the paralithic contact of soil taxonomy.~~

~~(d)~~ "Drainage way" means the concave portion of the landscape in which surface water or rain water runoff gathers intermittently to flow to a lower elevation.
"Enhanced flow distribution" means a pumping system designed to have a minimum capacity of 36 gallons per minute at system head per 1200 linear feet of percolation piping.

~~(e)~~ "Flood plain" means the land bordering a stream, built-up to unconsolidated sediments from overflow of the stream and subject to inundation when the stream is at flood stage.

~~(f)~~ "Health Department" means the same as the ~~approving authority~~ **Health Director**.

~~(g)~~ "Health Director" **means the Loudoun County Health Director or his or her duly authorized agent.** ~~means the same as the approving authority.~~

~~(h)~~

~~(i)~~ ~~"Individual sewage disposal system" means a complete system for the collection, treatment and/or disposal of sewage.~~

~~(j)~~ "Inspection" means surveillance procedures as used by the Health Department to determine compliance with the provisions of this chapter **and State regulations**.

~~(k)~~ ~~"Limestone outcrop belt" means those areas underlaid by carbonate bedrock, including, but not limited to, Triassic-Jurassic Leesburg limestone conglomerate and Cambrian limestones and dolomites, and which have landscapes with carbonate bedrock outcrops, sinks, sinkholes and solution channels in bedrock, and which often exhibit aspects of Karst or Karren topography.~~

~~(l)~~ "Limestone Overlay District" means those areas of the County, as shown on the County's Zoning Map, which are subject to the Limestone Overlay Zoning District, as set forth in the Loudoun County Revised 1993 Zoning Ordinance, as amended from time to time.

~~(m)~~ "Lithic rock" means partially weathered rock material which cannot be bored using a standard, hand-operated three and one-quarter inch barrel auger and sixteen-inch cross handle.

~~(n)~~ ~~"Marshes and swamps" means periodically wet or continually flooded areas with the land surface not deeply submerged.~~
"Microbial induced corrosion" means corrosion caused or promoted by microorganisms, usually chemoautotrophs.

~~(o)~~ ~~"Micro-topography" means small-scale, local differences in topography, including mounds, swales or pits that are only a few feet in diameter and with elevation differences of up to six feet.~~
"Onsite Sewage Treatment System" means a complete system for the collection, treatment and disposal of sewage constructed on the property it serves or by easement on another parcel. ~~**This includes conventional, alternative and alternative discharging systems.**~~

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"Onsite soil evaluator" means a person licensed or certified under Chapter 23(§ 54.1-2300 et seq.) of Title 54.1 of the Code of Virginia

~~(p)~~ "Paralithic rock" means weathered rock material which may be found above lithic rock and below the natural soil ~~(surface and subsoil) and which conforms to the U.S. Department of Agriculture, Soil Conservation Service (USDA-SCS) definition of "CR horizon," excluding the slaking requirements~~.

~~(q)~~ "Percolation test" means a standardized water test used to determine the rate of water absorption by soil.

"Pit privy" means a pit for receiving non-water carriage of human waste, over which is placed a privy house with seats.

"Portable Toilet" means a manufactured, portable structure maintained by a licensed operator containing chemicals to neutralize odors, and made specifically for the use of waste disposal.

"Professional Engineer" means a person licensed or certified under Chapter 4 (§ 54.1-400 et seq.) as a professional engineer.

"~~Impervious~~ **Restrictive** strata" means soil or soil materials with an estimated or measured percolation rate in excess of 120 minutes per inch, including lithic rock, paralithic rock and Cr~~R~~ horizons.

~~(r)~~ ~~"Sanitary pit privy" means a pit and/or chamber for receiving non-water carriage of human waste, over which is placed a privy house with seats.~~

"Sanitary sewer or public sewer" is an underground carriage system specifically for transporting sewage from houses and commercial buildings through pipes to a public sewage treatment plant.

~~(s)~~ "Seasonal water table" means an observed water table and/or that portion of the soil profile where a color change has occurred as a result of saturated soil conditions. **Typically gray and other low chroma redoximorphic deletions as described in Munsell soil color charts.** ~~Typical colors are gray, black or less than Chroma 2 on the Munsell Soil Color Chart.~~

"Septage" means the mat of grease and scum on the surface of septic tanks, the accumulated sludge at the bottom of tanks and the sewage present at the time of pumping.

~~(t)~~ "Septic tank" means a settling tank in which part of the heavy solids are settled and the organic solids decompose by anaerobic bacterial action.

~~(u)~~ "Sewage" means human excrement and the liquid wastes derived from dwellings, business establishments, institutions and other structures or places used for human habitation, employment or congregation, exclusive of those wastes derived from industrial processes.

~~(v)~~ ~~"Sewage treatment system" means a complete system for the collection of sewage and the process of biological and/or chemical reduction of the waste with a subsequent discharge into a receiving stream.~~

~~(w)~~ "Slope" means the incline surface of a hill, mountain, etc., or any part of the surface of the earth. "Slope" also means the angle at which such surfaces deviate from the horizontal, commonly expressed in percent.

~~(x)~~ "Soil/**site evaluation** ~~**investigation**~~ ~~analysis~~" means a systematic approach to evaluation of soil conditions by a ~~qualified professional soils technician~~ **Commonwealth of Virginia Department of Professional and Occupational Regulation (DPOR) licensed onsite soil evaluator**.

~~(y)~~ "**Soil absorption area or soil absorption system"** ~~Subsurface disposal field (drainfield)"~~ means the ~~process of sewage disposal in which the effluent from a septic tank is applied to the land by distribution beneath the ground surface. p~~ **means a physical location in the naturally occurring soil medium where final treatment**

DRAFT

and dispersal of effluent occurs.

"Standard disinfection" means a disinfection process that results in a fecal coliform concentration of less than or equal to 200 colonies/100 ml.

"Stream" a body of water with a current that contains water year round during average rainfall conditions.

"Time dose distribution" means a pumping system designed to dose effluent evenly throughout a given time period.

"Treatment level 2 effluent" or "TL-2 effluent" means secondary effluent that has been treated to produce five-day biochemical oxygen demand BOD_5 and total suspended solids TSS concentrations equal to or less than 30 mg/l each.

"Treatment level 3 effluent" or "TL-3 effluent" means effluent that has been treated to produce BOD_5 and TSS concentrations equal to or less than 10 mg/l each.

~~(z) "Temporary privy" means a portable privy with a vault used for the collection and storage of human excrement for a specified period of time.~~

"Vault privy" means a watertight chamber for receiving non-water carriage of human waste, over which is placed a privy house with seats.

"Virginia pollutant discharge elimination system permit VPDES" means a permit issued by the State Water Control Board SWCB under the authority of the federal National Pollutant Discharge Elimination System NPDES program.

(Ord. 94-05. Passed 2-16-94; Ord. 10-02. Passed 2-17-10; Ord. 10-05. Passed 5-4-10.)

1066.02 APPROVED METHOD OF SEWAGE DISPOSAL REQUIRED.

(a) No person shall use or occupy, or rent or lease for use or occupancy, any house, trailer, mobile home, whether self-propelled or not, warehouse, public or private building or other structure or gathering place in which there is human habitation, employment or congregation, until such house, trailer, mobile home, warehouse, public or private building or other structure or gathering place is supplied with an adequate, approved method for the disposal of sewage as provided for in this chapter.

(b) Following the effective date of this chapter, no person shall construct a new dwelling unit unless and until it can be furnished with minimum sanitary facilities to include a toilet, hand lavatory, tub and/or shower and kitchen sink, inasmuch as these minimum facilities are necessary to **proper** ~~good~~ sanitation. All such fixtures shall be supplied with hot and cold running water, with the exception of the flush toilet. In new units intended for purposes other than use as dwelling units where tubs and/or showers are not necessary for sanitation, minimum facilities shall consist of at least a toilet and hand lavatory with hot and cold running water. (Ord. 94-05. Passed 2-16-94.)

1066.03 PERMIT REQUIRED FOR INDIVIDUAL SYSTEMS.

(a) General. No person shall install, construct, alter, repair or extend, or allow to be installed, constructed, altered, repaired or extended, any **onsite** ~~individual~~ sewage ~~disposal and/or~~ treatment system in the County without first applying for and obtaining a valid permit therefor in the name of a specific person for a specific location. Permits for installation, construction, alteration, repair or extension of **onsite** sewage **treatment** ~~disposal~~ systems shall be issued by the Health Department. In addition, no person shall change, renovate, alter or remodel any structure served by an ~~individual sewerage~~ **onsite sewage treatment** system unless and until such is done in accordance with a valid health permit or under written approval of the Health Department stating such will not cause **damage to or exceedance of the onsite sewage treatment system design capacity.** ~~an increased loading on the sewerage system.~~

DRAFT

(b) Application for Permit. Application shall be made on forms furnished by the Health Department and shall contain a clear description of the location and dimensions of the land or lot on which the sewage disposal system is to be installed, altered or repaired. ~~Transfer of property may include transfer of the permits provided that all conditions of the permit remain in effect and provided that any change in the proposal requires the written approval of the Health Department.~~ The Health Director shall require such tests, plans and/or specifications as the Health Director deems necessary to determine the adequacy and desirability of the proposed system, and such information shall be made a part of the permit records.

(c) Approval or Denial of Permit. When the Health Director is satisfied that a proposed system is adequate for the conditions under which a system is to be installed and used, a written permit to proceed with construction shall be issued. Otherwise, a permit shall be denied in writing stating the specific reason for denial.

(d) Voidance of Permits. Material changes in site conditions upon which a permit to install a sewage disposal and/or treatment system was based shall automatically void the permit. No person shall proceed with construction until such time as further written approval has been obtained from the Health Department, in accordance with this chapter. Notwithstanding any other provision of this chapter, permits **may** ~~shall~~ be ~~automatically~~ ~~cancelled~~ **voided** should the Health Director later determine that a potential health hazard would be created by continuing installation.

(e) Building Permit. No person shall be entitled to obtain a building permit in the County until such time as he has obtained a valid **onsite** sewage ~~disposal~~ **treatment system** permit from the Health Department where such a permit is required to provide for adequate sewage disposal. (Ord. 94-05. Passed 2-16-94.)

1066.04 LICENSE ~~AND BOND~~ REQUIREMENTS.

(a) Installation License. No person shall install, repair or contract to install or repair individual **onsite** sewage ~~disposal and/or~~ treatment systems or parts thereof without first obtaining an installation license therefor from the Health Department. ~~Such license requirement shall not apply to an individual person who installs not more than three~~ **one** ~~such systems on his own property within one year or twelve consecutive months.~~ The installation license is to be issued by the Health Department upon written application, payment of a license fee and presentation of **a Commonwealth of Virginia Department of Professional and Occupational Regulation (DPOR) installer's license.** ~~satisfactory evidence that the applicant has a working knowledge of the installation of sewage disposal and/or treatment systems as well as the provisions of this chapter, as shall be determined by the passage of a standard written examination administered by the Health Department, provided that bonding requirements as set forth in subsection (d) hereof have been met.~~

~~The aforesaid requirement of a written examination shall not apply to those persons who installed three systems approved by the Health Department within six months prior to the adoption of this chapter or to those persons who installed five systems approved by the Health Department within twelve months prior to the adoption of this chapter, provided that such persons comply with all other requirements of this chapter, provided, further, that such persons attend a special course in instruction as to the provisions of this chapter conducted by the Health Department, and provided, further, that such persons obtain their license within six months following the effective date of this chapter.~~

DRAFT

(b) Septic Tank Cleaner's License. No person shall engage in the business of cleaning septic tanks, settling tanks and/or vaults designed to hold or retain solids and/or liquids in conjunction with any sewage disposal system, by whatever name called, without first obtaining a septic tank cleaner's license from the Health Department. **All pump-outs of sewage containment vessels for onsite sewage treatment systems, alternative discharging sewage systems, pump and haul tanks and vault privies shall be reported to the Health Department in a manner acceptable to the Health Director.**

The septic tank cleaner's license shall be issued by the Health Department upon written application and payment of a license fee, provided that the applicant gives evidence that he can comply with the following requirements.

(1) Equipment requirements.

A. The tank into which sewage is pumped or delivered and carried is to be fully watertight.

B. All inlets and outlets to such tanks shall be fully enclosed and provided with watertight valves.

C. Suction and discharge hoses shall be watertight and provision shall be made for carrying such hoses in a manner that will prevent any spillage or leakage.

D. All exposed surfaces shall be painted and maintained in a clean and sanitary condition by frequent washings.

E. The name and address of the person owning or operating such equipment shall be ~~painted~~ **affixed** ~~on~~ **to** the vehicle in letters at least four inches high so as to be visible from either side of the vehicle.

F. A copy of the septic tank cleaner's license shall be carried in the glove compartment of each vehicle operated.

(2) Disposal sites. **Septage, sewage, grease or other material from septic or other sewage retention tanks may only be disposed of at receiving facilities approved by local wastewater authorities or the Health Department.** ~~(EDITOR'S NOTE: Paragraph (b)(2) was repealed by Ordinance 94-05, passed February 16, 1994.)~~

~~(c) License to Conduct Percolation Tests. No person shall conduct a percolation test for purposes of this chapter without first obtaining a percolation test license from the Health Department. Such license shall be issued upon written application and payment of a license fee, provided that the applicant has a satisfactory knowledge of percolation testing procedures, as shall be determined by the passage of a standard written examination to be administered by the Health Department.~~

~~(d) Bonding. All persons required to have a license under this chapter shall furnish bond payable to the County in the amount specified in Appendix I following this chapter for specific licenses, with surety approved by the Treasurer of the County and conditioned to indemnify and save harmless the County, as well as any other person, from all expenses and damages that may be caused by any neglect, omission or defective or inadequate work done by such licensee, his agent, employee or representative. Where such work is deemed defective or inadequate by the Health Department and is not corrected within ten days of written notice to do so, the Health Department may declare the bond forfeited and shall use the proceeds therefrom to correct such work and, in addition, to pay all damages which may have been occasioned to any person by reason of such neglect, omission or defective or inadequate work. Such bond shall be deposited with the County Treasurer and shall be in force for a period of not less than the period of the license.~~

DRAFT

~~(e) Revocation of Licenses. Any person having a license required by this chapter who is convicted of a violation of any of the provisions of this chapter or who fails to correct a violation of any of the provisions of this chapter, upon written notice to do so, shall, in addition to forfeiture of bond, be subject to a suspension or loss of his license and/or a refusal to renew his license by the Health Department.~~

(**c**~~f~~) Renewal of Licenses. All licenses are annual and shall be renewed between January 1 and January 15 of each year and are not proratable. A request for renewal is to be submitted to the Health Department in writing and is the responsibility of the license holder. ~~Examination shall not be necessary for renewal.~~
(Ord. 94-05. Passed 2-16-94.)

1066.05 INSPECTIONS.

The ~~County~~ Health Director may inspect the entire system of sewage ~~disposal and/or~~ treatment maintained at all premises in the County for the purpose of determining if such is being operated and maintained in a sanitary manner. Such inspection shall be done at reasonable times and, whenever practical, in the company of the owner or occupant of the premises. **Repairs, and significant component replacements of existing onsite sewage treatment systems shall be permitted and inspected by the Health Director.**

In addition, the Health Director or his authorized agent shall make such inspections as may be deemed necessary during the construction of any sewage ~~disposal and/or~~ treatment system installed in the County to determine compliance with ~~the requirements of~~ this chapter **and State Board of Health regulations**. No person shall use, allow to be used or cause to be used, any system until after the Health Department has inspected and approved the same in writing. No part of any system shall be covered until it is inspected and approved by the Health Department, and any such part which has been covered prior to inspection shall be uncovered for inspection upon order of the Health Director. In extraordinary circumstances, the Health Director ~~or his authorized agent~~ may ~~give final~~ **approval** ~~of any~~ system **installations**~~, although incomplete,~~ when reasonable professional judgment indicates a revisit is not practical or feasible **or an inspection has been conducted by an onsite soil evaluator or professional engineer.** The inspection form shall indicate such waiver **and the circumstances leading to the decision**.
(Ord. 94-05. Passed 2-16-94.)

1066.06 ~~NEGLECT OR MISUSE OF~~ **ALTERNATIVE DISCHARGING** SYSTEMS.

~~No owner, tenant or lessee of any premises properly supplied with an approved method of disposal of sewage shall misuse or neglect such a system or any part thereof so as to cause it to cease to be sanitary~~ **functioning as designed in a sanitary manner**~~.~~

Alternative discharging sewage systems shall be maintained in accordance with requirements of the State Board of Health, 12VAC5-640 et seq. or successor. Owners of Virginia Pollutant Discharge Elimination System (VPDES) permitted facilities up to a permitted limit of 40,000 gpd shall permit the Health Director to enter the property to inspect such systems and for alternative discharging sewage systems to determine whether such systems are installed, operated and maintained in accordance with the applicable regulations of the State Board of Health. Required reporting must be in a form approved by the Health Director.

DRAFT

1066.07 RESPONSIBILITY OF OWNER OF SYSTEM.

(a) **No owner, tenant or lessee of any premises properly supplied with an approved method of disposal of sewage shall misuse or neglect such a system or any part thereof so as to cause it to cease functioning as designed in a sanitary manner.** The issuance of a permit, subsequent installation and acceptance of the **onsite** ~~individual~~ sewage ~~disposal~~ **treatment** system upon inspection by the Health Department does not denote or imply any guarantee of **operation of** such system, and it shall be the responsibility of the owner, or any subsequent owner of the system, to maintain, repair or replace any system which has ceased to function **as designed** in a sanitary manner.

(b) Except as provided herein, for all individual sewage disposal systems not requiring a Virginia Pollutant Discharge Elimination System (VPDES) permit, the owner shall cause a maintenance pump-out of the septic tank of each such system to be performed by a septic tank cleaner licensed by the Loudoun County Health Department at least once every 5 years and shall provide documentation of the subject maintenance at the request of the County. Licensed septic tank cleaners shall report all pump-outs in a manner acceptable to the Loudoun County Health Department ~~on a biweekly basis~~ **by the 15th of the following month** and shall provide the homeowner with a copy of the information reported. Notwithstanding the foregoing, for Alternative Onsite Sewage Systems (AOSSs), in lieu of the required 5-year pump-out, the owner may submit documentation annually, certified by an individual who is licensed or certified under Chapter 23 (§ 54.1-2300 et seq.) of Title 54.1 of the Code of Virginia as being qualified to operate, monitor, and maintain an AOSS, that the system has been inspected, is functioning properly, and the tank does not need to be pumped out. For conventional systems, the owner may submit documentation certified by an individual who is licensed or certified under Chapter 23(§ 54.1-2300 et seq.) of Title 54.1 of the Code of Virginia as being qualified to operate, monitor, and maintain an AOSS or conventional system, that the tank has been inspected, is functioning properly, and the tank does not need to be pumped out for at least the next two (2) years. This documentation, including sludge and scum accumulation depths, must be submitted every two (2) years after the initial five (5)-year report ~~unless~~ **until** the tank is pumped. The Health Director may also develop procedures for granting waivers to this requirement. **Once the tank is pumped, the 5 year pump-out cycle is re-initiated with the inspection in lieu of pump-out option as stated herein.**
(Ord. 94-05. Passed 2-16-94; Ord. 11-12. Passed 10-4-11.)

1066.08 FEES.

The County shall establish, set and charge such fees as it deems necessary and reasonable to defray the cost of permits and/or licenses as are required to be issued under this chapter.
(Ord. 94-05. Passed 2-16-94.)

1066.09 INSTALLATION, REPLACEMENT OR REPAIR OF INDIVIDUAL SYSTEMS WITHIN 300 FEET OF A SANITARY SEWER.

If an approved public ~~or private~~ sewer is within 300 feet of any new building or structure for which sewage disposal is required, the property owner shall connect to the sewer, provided that the owner of the sewer permits such a connection.

Should an existing **onsite sewage treatment** ~~individual sewerage~~ system **deteriorate to a point where there is a public health risk** ~~cease to operate in a sanitary manner~~ **requiring substantial repairs to the system or replacement or enlargement of the soil absorption area**

DRAFT

~~or should alterations be required to provide safe and adequate treatment,~~ and the building or structure to be served is within 300 feet of an approved public ~~or private~~ sewer, the property owner shall connect to the sewer, provided that the owner of the sewer allows such a connection. (Ord. 94-05. Passed 2-16-94.)

1066.10 **CONSTRUCTION REQUIREMENTS** ~~EFFLUENT PUMP SYSTEMS~~

(a) Pump Systems. The use of sewage ejectors, lift stations or pumps on raw sewage lines to septic tanks **when exterior to the structure** are prohibited **unless designed by a professional engineer. Pumps must be hardwired outside the pump chamber. A flow velocity reducing device must be installed on force mains prior to entering the distribution box. For systems producing septic tank effluent, pump systems may be designed for time dose and/or enhanced flow distribution.** ~~This shall not apply to effluent from the septic tank which may be collected in a separate tank and pumped to the subsurface disposal field distribution box, provided a check valve and flow velocity reducing device are used prior to entering the distribution box. For lifts in excess of fifteen feet, the applicant may be required to submit plans and a manufacturer's guarantee of performance. All such installations shall provide for the ability to fill the subsurface disposal field tile to six-tenths capacity and shall be installed according to manufacturer's specifications.~~

(b) Corrosion of distribution boxes. All interior portions of distribution boxes must be resistant or treated to be resistant to corrosion including microbial induced corrosion. Treatments for corrosion shall incorporate a dye or inherent color to identify that treatment has occurred.

(c) Non-concrete distribution boxes. Header lines must be attached to the distribution box using approved fittings. Concrete shall be poured around the sides of the box from the base to the top of the box allowing room for the lid to be secured. The concrete shall surround the box completely.

(d) Gravity building sewers. Gravity building sewers shall have a minimum inside diameter (ID) of four inches.

(e) Sewer and conveyance lines. The minimum slope for four-inch gravity sewers is 1-1/4 inches per 10 feet, and for a six-inch sewer is ¾ inch per 10 feet. Ells on gravity sewer lines shall not exceed 45 degrees. Gravity conveyance lines shall have a slope of not less than six inches per 100 feet.

(Ord. 94-05. Passed 2-16-94.)

1066.11 DETERMINING SUITABILITY OF **SOIL/SITES FOR ONSITE SEWAGE TREATMENT** ~~SUBSURFACE DISPOSAL~~ SYSTEMS.

(a) Subdivisions. The owner shall submit plans and specifications of the sewage ~~disposal and/or~~ treatment system where such is required, together with the plans and specifications of the proposed water supply system, to the Health Department for approval, and such plans and specifications shall be approved prior to the start of any construction or building.

The ~~Director of~~ Health **Director** shall develop procedures to evaluate subdivisions served by on-site sewage ~~disposal~~ **treatment** systems, consistent with the ~~LSDO~~ ***Land Subdivision and Development Ordinance*** and ***Facilities Standards Manual.*** ~~Standard Regulations.~~

~~Approval of a lot by the Health Department does not denote, nor is it intended to imply, final approval; it merely represents initial findings in accordance with the criteria at such time.~~ Prior to construction on any lot, it shall be necessary to apply for and obtain a permit from the Health Department, and such permit shall be issued in accordance with the standards at the time

DRAFT

the application is made. The Health Department shall take into consideration the specific proposal and the previous findings, but shall not be obligated by those findings should it later be determined that a health hazard would result by allowing installation of a **soil absorption system** ~~subsurface disposal field~~.

(b) Individual Lots. A permit for construction of ~~a~~ **an onsite sewage treatment system** ~~subsurface disposal field~~ on an individual lot or property shall be issued after completion of a satisfactory ~~investigation~~ evaluation which indicates that such a system can be installed and is expected to perform in a sanitary manner so as not to create a health hazard. ~~The following information may be used in determining suitability:~~

~~(1) The experience of the Health Department as supported by field investigation and soil evaluations;~~

~~(2) Information submitted on behalf of an applicant by a qualified professional consultant in the field of waste disposal and/or treatment of domestic waste or related subjects, which information shall be evaluated by the Health Department, as submitted, prior to approval;~~

~~(3) Results of actual percolation tests conducted on the property in the area of the proposed subsurface disposal field, which tests are to be conducted by the Health Department or by a qualified field representative licensed to conduct such tests in the County; and~~

~~(4) Information on file with the Health Department as to previous evaluation and/or tests on the property.~~

(c) Evaluation~~.; Conflicts~~. Soil evaluations ~~for a subsurface absorption system shall follow a systematic approach.~~ ~~R~~ **r**eports submitted for **onsite sewage treatment system approval** ~~subsurface absorption systems~~ shall ~~be~~ **contain** detailed soil/site investigations, as described in subsection (~~h~~**g**) hereof. Evaluations shall indicate whether or not the soils meet the criteria specified herein for the installation of the type of on-site sewage ~~disposal~~ **treatment** system proposed. In addition to information gathered during the soil~~s~~ and geotechnical investigation, the topography, available area, proximity to ground and drinking water supplies, proximity to bodies of water, rates of water absorption by the soil horizon proposed for use, or a combination of any of the above, shall also be considered in such evaluation. If absorption rate problems are suspected ~~and there is no indication of a water table~~, percolation tests **or other infiltration tests** may be required, but their results shall not be presumptive, prima-facie or conclusive evidence as to the suitability for effluent absorption. **Soil reports shall be field reviewed by the Health Department unless administratively denied or deemed approved. Backhoes are required for Health Department soil/site evaluations and verifications of private sector submitted soil/site evaluations unless waived by the Health Department.**

~~When discrepancies exist between these and other State or local agency codes or regulations, the more restrictive will apply.~~

(d) ~~Site and~~ **Plot** and Structure Identification. A **plot** ~~site sketch~~**,** prepared by the applicant, is to accompany all applications for permits to construct on-site sewage ~~disposal~~ **treatment** systems and must show accurately:

(1) The dimensions of the property.
(2) Proposed and/or existing structures and driveways.
(3) Underground utilities.

DRAFT

(4) Adjacent **sewage treatment systems** ~~soil absorption sewage disposal systems.~~
(5) Bodies of water.
(6) Drainage ways **and floodplains**.
(7) Wells and springs within a 200-foot radius of the **edge** ~~center~~ of the proposed ~~drain field~~ onsite sewage treatment system.

(e) Physical Features.

(1) ~~Subsurface~~ **Pad and trench soil** absorption systems shall not be placed on slopes greater than twenty-five percent.

~~(2) Unfavorable micro-topography may preclude the use of certain sites which have otherwise favorable soil characteristics.~~

(3) Placement of subsurface soil absorption systems in **disturbed soil** ~~**non-engineered**~~ ~~fill~~ material is prohibited.

(4) Outside of the Limestone Overlay District no ~~individual sewage disposal~~ **onsite sewage treatment** system shall be placed closer than 100 feet from the low point of a sinkhole nor closer than fifty feet from the outer edge of a sinkhole. Sinkholes will be considered to exist with or without knowledge of the size, orientation or presence of subterranean voids, since the surface collapse evidences subsidence into such a void. Distances from rock outcrops may be imposed and additional geologic information required in accordance with a geotechnical report, as described in Section 6.150 of the Loudoun County *Facilities Standards Manual*, where limestone or other environmentally critical rock formations are encountered.

(5) Within the Limestone Overlay District no ~~individual sewage disposal~~ **onsite sewage treatment** system shall be placed closer than 100 feet from the rim of a sinkhole/swallet/closed depression, from a cave opening, or from a ~~P~~perennial ~~S~~sinking ~~S~~stream. **Nor shall an onsite sewage treatment system be placed closer than fifty feet from a rock outcrop, or underground solution channel within 45 feet of the surface.** ~~provided, however, that~~ ~~s~~ **S**uch setbacks may be reduced by up to fifty percent if a geophysical study, **as required by Section 4-1905 of the Revised 1993 Zoning Ordinance, as amended,** conducted in accord with Section 6.151 of the *Facilities Standards Manual*, concludes that the risks of collapse and groundwater contamination are non-existent or insignificant for the proposed location and use.~~,~~ ~~except that~~ ~~n~~ **No setback** reduction shall be allowed for any ~~P~~**p**erennial ~~S~~**s**inking ~~S~~**s**tream, nor for any ~~S~~**s**inkhole, ~~S~~**s**wallet, ~~C~~**c**losed ~~D~~**d**epression or ~~C~~**c**ave ~~O~~**o**pening that receives an intermittent or ~~P~~**p**erennial ~~S~~**s**inking ~~S~~**s**tream**. No onsite sewage treatment system shall be placed closer than: (1) one hundred (100) feet from a developed spring, measured from the first emergence of the spring or (2) two hundred (200) feet from a developed spring when the first emergence of the spring** ~~**is on a slope greater than 15% and**~~ **is downslope from the proposed sewage disposal system.** However, for a lot of record existing on February 17, 2010, an ~~individual~~ **onsite** sewage ~~disposal~~ **treatment** system for a principal residential structure may be permitted within the setback if it is constructed in compliance with all recommendations of the ~~G~~**g**eophysical ~~S~~**s**tudy and such ~~individual sewage disposal~~ system is sited on the lot so as to be located as far from the **feature** ~~rim of the sinkhole/swallet/closed depression, cave opening, or Perennial Sinking~~

DRAFT

~~Stream~~ as is feasible. No such ~~individual~~ **onsite** sewage ~~disposal~~ **treatment** system shall be allowed if the geophysical study shows subsidence or groundwater contamination poses a serious risk to public health or safety or to the safety of residents or users of the residential structure unless the design of the ~~individual sewage disposal~~ system is certified, both structurally and geotechnically, by a professional engineer.

~~(6) Within the Limestone Overlay District no individual sewage disposal system shall be placed closer than fifty feet from a rock outcrop, underground solution channel within 45 feet of the surface, or other Karst/Sensitive Environmental features, (except Springs or features identified in Section 1066.11(e)(5)). Distances from such features maybe reduced by up to fifty percent if a geophysical study, conducted in accord with Section 6.151 of the *Facilities Standards Manual*, concludes that the risks of collapse and groundwater contamination are not a concern for the proposed location and use. However, for a lot of record existing on February 17, 2010, an individual sewage disposal system for a principal residential structure may be permitted within the setback if it is constructed in compliance with all recommendations of the geophysical study and such individual sewage disposal system is sited on the lot so as to be located as far from the rock outcrop, underground solution channel within 45 feet of the surface, or other Karst/Sensitive Environmental feature, (except Springs or features identified in Section 1066.11(e)(5)), as is feasible. No such individual sewage disposal system shall be allowed if the Geophysical Study shows subsidence or groundwater contamination poses a serious risk to public health or safety or to the safety of residents or users of the residential structure unless the design of the drainfield is certified, both structurally and geotechnically, by a professional engineer.~~

~~(7) Within the Limestone Overlay District no individual sewage disposal system shall be placed closer than: (1) one hundred (100) feet from a spring, measured from the first emergence of the spring or (2) two hundred (200) feet from a spring when the first emergence of the spring is on a slope greater than 15% and is downslope from the proposed sewage disposal system. However, for a lot of record existing on February 17, 2010, an individual sewage disposal system for a principal residential structure may be permitted within the setback if it is constructed in compliance with all recommendations of a geophysical study conducted for such site, and such drainfield is sited on the lot so as to be located as far from the Spring, as is feasible. No such individual sewage disposal system shall be allowed if the geophysical study shows subsidence or groundwater contamination poses a serious risk to public health or safety or to the safety of residents or users of the residential structure unless the design of the individual sewage disposal system is certified, both structurally and geotechnically, by a professional engineer.~~

(f) Soil Profiles ~~and Patterns~~.

(1) Depth of profile hole. The minimum depth of the profile hole shall be six feet, **or deep enough to verify all stand offs** unless prevented or made unnecessary by some physical feature of the soil, such as ~~gray coloration~~ **redoximorphic features**, rock or when a potential horizon is found at a lesser

DRAFT

depth. When a potential soil horizon is considered for use, the soil evaluation shall be extended below the soil horizon, with potential for use, to insure that there is no interference with seasonal water tables, lithic rock, paralithic rock or other impervious strata **within the vertical offset limitation**.

(2) Number and location of profile holes. A minimum of five holes is necessary to determine the design requirements of an area for the placement of any **soil** absorption **area.** ~~trenches. The size of the area investigated shall be based on the soil class encountered.~~ Holes shall be evenly placed to bound the area under consideration with one hole installed in the center. If more than one area is required in which to install the **soil** absorption **area** ~~trenches~~, each area shall be evaluated with at least three soil borings. The actual area and number of borings necessary shall be determined on a case-by-case basis.

~~(g) Characteristics of Soils That Determines Suitability.~~

(**3**~~1~~) ~~Estimation of soil texture. The soil texture shall be estimated by field testing. The field test that shall be applied is contained in Appendix F of the Sewage Handling Regulations and is entitled "Field Guide to Soil Texture Classes." Laboratory estimation of texture by sieve and sedimentation and analysis may be substituted for the field test at the owner's request and expense. Samples shall be collected by the laboratory under supervision of the local Health Department or the Department of Environmental Resources.~~

~~(2) CR horizons. See the definition in Section 1066.01(c).~~

~~(3) Class IV soils. The use of soils exhibiting characteristics of Class IV soils, as described in the Interpretive Guide to the Use of Soils Maps, Loudoun County, Virginia, for on-site sewage disposal systems, is prohibited.~~

(**g**~~h~~) Requirements for a ~~D~~**d**etailed ~~S~~**s**oil/~~S~~**s**ite **evaluation**~~Investigation~~. Detailed soil/~~-~~site ~~investigation~~ **evaluation** reports generated for any proposed on-site sewage **treatment system** ~~disposal facility~~ are required by and are to be submitted to the ~~Loudoun County~~ Health Department. ~~A detailed soil/-site investigation report is required for any land development sewage effluent proposals and may be required by the Health Department for any other on-site sewage disposal facility which is not exclusively regulated by the State. Technical standards for such investigations are contained in this chapter and current State regulations on this subject. This investigation shall be submitted to the Health Department for review and recommendation in accordance with Section 8.110.D.2 of Chapter 8 of the Loudoun County Facilities Standards Manual.~~ A detailed investigation may also be required by the **Health** Director for specialized land use applications such as solid waste operations, composting facilities or other similar uses.

The detailed soil/site ~~investigation~~ **evaluation** report should include the following, where appropriate, unless determined by the **Health** Director, at the request of the developer, to be inapplicable based upon sound engineering principals:

(1) Results of field investigation.

A. A map, drawn to 1:2,400 scale (1 inch = 200 feet) and larger, as requested on a sheet twenty-four inches by thirty-six inches. Where small tracts are involved, an eight by eleven-inch sheet may be acceptable, provided it complies with all other requirements set forth herein.

B. Existing water supplies within ~~2~~**1**00 feet of the property and **200 feet of** sewage **treatment** ~~disposal~~ systems on the property.

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C. The location of all borings and backhoe pits. Test holes/pits are to be numbered and located dimensionally, including surface elevations.

D. The location of all numbered proposed on-site **soil absorption areas** ~~sewage disposal systems~~, if applicable. All ~~subsurface~~ soil absorption **areas** ~~systems~~ must be shown ~~i~~**o**n contour and delineated by five borings or pits. In addition, site locations within the Limestone Overlay District and those underlaid by limestone/limestone conglomerate, shall be examined in cross section to a depth of 45 feet minimum, using technology such as electrical resistivity, to determine the presence of karst features. Karst features, such as voids and solution channels, may be grounds for denial of the site.

E. The following items as they relate to the proposal, if required:

1. The landscape type and position, the slope**, topography** and the surface drainage.
2. The soil morphology, including the texture, color, structure, consistency, depth, lithologic discontinuities, boundaries, etc.
3. The permeability, internal drainage and perched water tables.
4. The parent material and associated problems.
5. Restrictive strata ~~layers~~.

F. The soil evaluation form.

~~(2)~~G. ~~Recommendation and conclusions.~~

(2)~~A.~~ The following items shall be ~~included~~ **required** in the report when ~~drainfields~~ **soil absorption areas** are proposed:

~~1~~**A**. ~~Recommendations for use as on-site sewage disposal sites, including~~ ~~d~~**Depth** of installation, type of system, relative suitability and modifications.

~~2~~**B**. Recommendations and conclusions for repairing **existing** malfunctioning on-site sewage **treatment**~~ disposal~~ systems~~ or designing modified on-site sewage disposal systems.~~

~~3. Where on-site sewage disposal is proposed, p~~ **P**otential impacts on ground and surface water~~, loading rates and vegetative cover~~.

~~B. The following shall be included in the report where applicable to other proposed uses:~~

~~1. Recommendations for vegetative stabilization (lime, fertilization/seeding types and rates, stockpiling topsoil).~~

~~2. Conclusions on soil mineralogy.~~

~~3. Recommendations on the suitability of the site for land application of Class A sewage sludge. (See Article 7 of the Virginia Sewerage Regulations and Chapter 1090 of these Codified Ordinances.)~~

~~4. Conclusions on soil chemistry.~~

~~5. Recommendations regarding the suitability of the site for spray irrigation.~~

~~6. Recommendations for additional tests for geotechnical study.~~

(3) ~~Appendix A: field logs~~ **Field logs**. Soil profile descriptions taken from soil boring/backhoe pits **shall** ~~should~~ include:

A. The boring/pit number.

B. The depth, thickness and description of each horizon, including paralithic

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and lithic contacts encountered.

C. Locations of all samples taken and analyses to be conducted on each sample.

D. The depth to perched water and/or the ground water table if observed (or if indicated by soil color patterns).

E. The name of the person responsible for the description and sampling.

(4) ~~Appendix B: f~~ **F**ield testing. If field tests, such as percolation test**s** or **other** permeability tests, have been conducted, the results **shall** ~~should~~ be included.

A. Percolation tests.

B. Permeability tests, including a description of the profile.

C. Piezometer observations, including readings, depth, date of readings, rainfall data and soil profile (if available for the site).

(5) ~~Appendix C: l~~ **L**aboratory data. Laboratory data produced to support the report shall be included.

(Ord. 94-05. Passed 2-16-94; Ord. 10-02. Passed 2-17-10; Ord. 10-05. Passed 5-4-10.)

1066.12 DESIGN AND LOCATION REQUIREMENTS FOR **ONSITE SEWAGE TREATMENT SYSTEMS** ~~SUBSURFACE DISPOSAL FIELDS~~.

(a) Design.

(1) Distance to rock. The minimum acceptable separation distance, both vertical and horizontal, from the absorption trench bottom and sidewalls to lithic rock, rock outcroppings, C**r**~~R~~ horizons and pans, is **12 inches** ~~one foot~~. However, in the limestone **overlay district** ~~outcrop belt~~, horizontal and vertical separation between **limestone** lithic rock and trench bottoms and sidewalls is ~~four feet~~ **48 inches for septic tank effluent, 36 inches for TL-2 effluent and 24 inches for TL-3 effluent with ultraviolet or other approved standard disinfection**. ~~(see Table 4.4 of the Virginia Sewage Handling and Disposal Regulations, "Minimum Separation Distances")~~.

(2) Depth to seasonal water table. ~~As used herein, "seasonal water table" means that portion of the soil profile where a color change has occurred in the soil as a result of saturated soil conditions or where soil concretions have formed. Typical colors are gray mottlings, solid gray or black. The depth in the soil at which these conditions first occur is termed the "seasonal water table."~~ The minimum separation distance from the absorption trench bottom **or point of effluent release** to the seasonal water table is ~~two feet~~ **24 inches for septic tank effluent, 18 inches for TL-2 effluent, and 12 inches for TL-3 effluent with ultraviolet or other approved standard disinfection**.

(3) **Blasting of lithic rock prohibited**. ~~Blasting.~~ The use of ~~any~~ explosive materials **for the purpose of removing lithic rock** within 100 feet of the soil **absorption area** ~~disposal system~~ or within fifty feet of any remaining portion of the sewage conveyance, treatment or dosing system **in the limestone overlay district** is specifically prohibited. Lithic rock encountered **in the soil absorption area** during installation **at any location** will necessitate a redesign of the system permitted and will be handled on a case-by-case basis.

(4) Size. The size of the ~~subsurface disposal field~~ ~~shall be~~ ~~when~~ **soil absorption area** based on the square footage of the trench bottoms ~~and~~ shall consist of a

minimum of 600 square feet. ~~(300 linear feet on a twenty-four inch trench) of subsurface disposal trench bottom.~~ **Drip and spray or other surface square footage designed systems shall have a minimum square footage of 1800 sq. ft.**

(5) **Driveways and parking areas.** **Driveways and parking areas shall be a minimum of 5 feet from onsite sewage treatment systems except for sewer and conveyance lines crossing the area and soil absorption areas designed to be placed under paved surfaces.**

(6) Minimum location requirements. Minimum location requirements as set forth in Appendix I, following this chapter shall be met.

(b) **Off Site Easements** ~~Location. The location and installation of the sewage disposal system and each part thereof shall he such that, with reasonable maintenance, the system will function in a sanitary manner and will not create a nuisance or endanger the safety of any domestic water supply. In determining a suitable location for the system, consideration shall be given to the size and shape of the lot, the slope of the natural and finished grade, the depth of the ground water table, the proximity to existing or future water supplies and the possible expansion of the system. Minimum location requirements, as set forth in Appendix II, following this chapter, shall be met.~~

Where ~~a~~ **an onsite** sewage **treatment** ~~disposal~~ system is located by easement off the lot of the structure it serves, the Health Director ~~or his or her designee~~ shall establish special design and performance standards, procedures and forms necessary to ensure identification, protection and maintenance of the **onsite** sewage **treatment** ~~disposal~~ system to be located on that easement.

The ~~subsurface disposal field~~ **onsite sewage treatment system** shall be located on the lot, tract or parcel of land which it serves. However, ~~subsurface disposal fields~~ **onsite sewage treatment systems** on off-site easements may be permitted in the following situations:

(1) A permit was issued for the **onsite** sewage ~~disposal~~ **treatment** system prior to January 17, 1989.

(2) The **onsite** sewage ~~disposal~~ **treatment** system is proposed to replace a failing **onsite** sewage ~~disposal~~ **treatment** system.

(3) The lot was shown to be served by the off-site easement on a preliminary plan of subdivision approved prior to January 17, 1989.

(4) The lot was shown on a preliminary plan of subdivision or plan of family subdivision accepted for review by the Department of Planning, Zoning and Community Development prior to January 17, 1989.

(5) The **onsite** sewage ~~disposal~~ **treatment** system is proposed to serve an existing lot of record as of January 17, 1989, for which no approved on-site ~~disposal~~ **sewage treatment** system **approvable for a minimum design of 450 gallons per day** can be found.

(6) **Onsite** ~~S~~ **s**ewage ~~disposal~~ **treatment** systems ~~shall~~ **may** be situated on permanent, dedicated open space, but only where specifically permitted by the Subdivision Regulations and the Zoning Code of the County.

(7) Multiple existing structures on any parcel currently served by on-site sewage ~~disposal~~ **treatment** systems may use easements for **onsite** sewage **treatment** ~~disposal~~ systems if a division of that parcel cannot be reasonably accomplished without the use of easements.

DRAFT

~~(8) For lots in the A-3 or A-10 Zoning District on which an approved sewage disposal site exists, an off-site easement on an adjacent lot located along the common property boundary line may be approved if, in the determination of the Planning Commission, use of such easement will better meet the intent of the Subdivision Regulations through the creation of more orderly lot configurations, better dwelling locations, better buffering between lots or improved road configuration or access.~~

(c) Reserve Absorption Area Sites. Sufficient suitable soils shall be available on each lot, or available to each lot by easement or other device approved by the **Health Department** ~~Director~~, to allow repair and/or extension of the on-site sewage ~~disposal~~ **treatment** system for a period of time equal to:

(1) The reasonably anticipated life expectancy of the structure (interpreted as 100 percent repair area); or

(2) In an area designated by an adopted area plan for future central sewer service by ~~the~~ Loudoun **Water** ~~County Sanitation Authority~~ or an incorporated town, the planned availability date of that sewer service or fifty percent of the originally required soil area, whichever is greater. Soil **absorption areas** ~~disposal systems~~ are considered, for purposes of this section, to have a life expectancy of thirty years. Lots proposed for approval in these areas shall contain sewer utility easements designed to facilitate future sewer line construction and installation. ~~Evidence of~~ **Design** consultation ~~regarding design~~ with ~~the~~ Loudoun **Water** ~~County Sanitation Authority~~ or **other local** sewage **authorities** ~~treatment plant operator~~ is required prior to Health Department approval.

(d) Site Preparation and Alteration.

(1) Removal of vegetation. Vegetation, such as maples, willows and other plant species with extremely hydrophilic (water loving) root systems, shall be **re**moved at least ten feet from the actual absorption areas. All trees should be removed from the absorption area. The local agent of the Virginia Department of Forestry will arbitrate any dispute as to the hydrophilic nature of any tree or shrub.

~~(2) Field marking of pretreatment and distribution systems. The preferred method of permanent marking of pretreatment and distribution components is with a ferrous metal pipe sleeve within a corrugated PVC drain pipe to permit electromagnetic location by metal detector.~~

~~(3) Drainage. No person shall divert water from his or her property onto that of another person, other than into natural drainageways, unless site grading plans, as described in Chapter 5.000 of the Loudoun County Facilities Standards Manual, are prepared and approved by the Directors of the Departments of Health and Building and Development.~~

~~(4) Grass swale. A shallow, man-made drainageway designed to divert and channel surface water run-off, especially sheet flow, covered with permanent vegetation, such as sod or grass, shall be prepared, where necessary. Cross-sectional dimensions are normally six feet wide by one foot deep.~~

~~(5~~2) Placement of utilities.

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~~A.~~ Subsurface soil absorption systems shall not be placed in an underground utility easement. No buried utility services, water lines, electrical lines, gas lines, etc., shall traverse the subsurface soil absorption system area, nor shall the buried service be closer than ten feet to the system~~.~~

~~B. The placement of subsurface soil absorption systems under overhead utility lines is prohibited where heavy equipment must traverse the system in order to service and maintain the utility line. (Ord. 94-05. Passed 2-16-94.)~~

1066.13 ~~PERMIT REQUIRED FOR PIT~~ PRIVIES **AND PORTABLE TOILETS**.

No person shall erect, install or allow to be erected or installed a pit **privy except to repair or replace an existing pit privy. A permit for such is required from the Health Department.** ~~without first obtaining a permit therefor from the Health Department in accordance with the following provisions.~~

~~(a) Private Individual Residences; Business Establishments. Subsequent to the effective date of this chapter, no person shall construct pit privy facilities for sanitary waste disposal in an individual residence or business establishment, inasmuch as a complete plumbing system with appropriate fixtures is necessary to good sanitation, and it shall not be satisfactory to the intent of this chapter to construct a dwelling or other structure which should have plumbing and household waste fixtures, in total or in part, present or future, which cannot and will not be able to provide for such wastes. This section shall not apply to the repair of or replacement of existing privies, nor shall it apply to the construction of new facilities where such construction is a temporary method of waste disposal not to exceed six months, in conjunction with a construction site or like use. All privies shall be constructed or repaired in accordance with plans and specifications as provided by the Health Department and are to be inspected and approved by the Health Department prior to use.~~

(a) Portable Toilets. Portable toilets may be used for temporary uses such as construction sites, special events, and emergencies. They may not be used to facilitate new development or expansions of existing facilities or as a permanent means of sewage disposal. The tank shall be cleaned at least once weekly or more often as necessary to prevent the contents from filling the tank above two-thirds of its capacity. Cleaning of the tank shall be done by a licensed ~~contractor~~ septic tank cleaner with approved equipment as required in Section 1066.04(b). Chemicals approved by the Health Department shall be added as often as necessary to liquefy wastes and prevent objectionable odors. Daily washing of the toilet seat and the inside of the building shall be required. Toilet tissue and hand sanitizer shall be provided at all times. The privy shall be maintained in such a way that it will not endanger public health or create a nuisance.

(b) ~~Temporary~~ **Vault** ~~Pit~~ Privy Use. ~~In lieu of a permanent type of structure and for the purpose of disposal of human excrement for temporary use, the following type of holding~~ **Vault privies** ~~y~~ may be used for a specified period of time at a specific location as prescribed by the Health **Department** ~~Officer~~ **on a case by case basis**.

(1) Building; vents and door. A building ~~may~~ **must** be used which may be on skids for movability, so constructed as to be ~~flytight~~ fly tight and ~~rodentproof~~ rodent proof, with vents near the ceiling covered with sixteen mesh copper wire screen, or equivalent, and with a self-closing, ~~flytight~~ fly

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tight door.

(2) Seat box, hole and vent. The seat and seat box shall be ~~so~~ constructed ~~as~~ to be easily cleanable and to cover completely **the opening of** a corrosion-resistant, waterproof, ~~metal or other approved material~~ tank of sufficient capacity. The tank shall have **an** ~~all~~ opening directly under the seat hole. Where necessary, an approved sleeve shall be provided between the seat and the tank. The tank shall be vented through ~~or near~~ the roof with a sixteen mesh screen **or other approved** covering.

(3) Maintenance. The tank shall be cleaned out at least once weekly or more often as necessary to prevent the contents from filling the tank above two-thirds of its capacity. Cleaning of the tank shall be done by a licensed ~~contractor~~ **septic tank cleaner** with approved equipment as required in Section 1066.04(b). ~~Chemicals approved by the Health Department shall be added as often as necessary to liquefy wastes and prevent objectionable odors.~~ Daily washing of the toilet seat and the inside of the building shall be required. Toilet tissue **and hand sanitizer** shall be provided at all times. The privy shall be maintained in such a way that it will not endanger the public health or create a nuisance.

(Ord. 94-05. Passed 2-16-94.)

1066.14 EXISTING SYSTEM REUSE AND ABANDONMENT

Existing systems being reused for a new purpose (also known as: change of use, or safe adequate and proper evaluations) may be approved on a case by case basis provided they received previous Health Department approval. A comprehensive evaluation is required, and all components must be in good repair prior to use. Systems may not be used for increased flow or higher strength waste than specified in the original design unless an application and approvable redesign is submitted prior to permit issuance. Systems that are disused, or serving structures to be connected to public sewer are to be abandoned according to procedures approved by the Health Department.

1066.15 COMMUNITY SYSTEMS

Reserved

~~1066. 15~~4 ~~CONSTRUCTION OF OTHER INDIVIDUAL SYSTEMS.~~

~~Plans for any sewage disposal and/or **onsite** sewage treatment system not specifically covered by this chapter shall be submitted in triplicate to the County Health Department for approval. Such systems shall be permitted only when the manner of disposal and/or treatment **and dispersal** is satisfactory to the Health Department and, in the case of discharges, is satisfactory to the Health Department and the State Water Control Board, so as not to create a health hazard and/or undue stream quality degradation, provided that such systems can be demonstrated to provide adequate and safe sewage disposal and/or treatment **and dispersal**.~~

~~(Ord. 94-05. Passed 2-16-94.)~~

~~1066.15 NOTICE TO CORRECT.~~

~~If the Health Officer finds a violation of any of the provisions of this chapter or a violation of any of the provisions of a permit and/or license as issued under this chapter, he shall direct the owner or person to whom the permit and/or license was issued, by written notice, to make the~~

DRAFT

~~necessary corrections within such reasonable period as specified therein. No person shall fail to comply with such notice within such period.~~
~~(Ord. 94-05. Passed 2-16-94.)~~

~~1066.16 EQUITABLE REMEDIES.~~

~~In addition to the penalty provided in Section 1066.99, the Health Director may initiate injunction, mandamus, abatement or any other appropriate action to prevent, enjoin, abate or remove a violation of any of the provisions of this chapter.~~
~~(Ord. 94-05. Passed 2-16-94.)~~

1066.1**6**~~7~~ SEPTIC TANKS, HOLDING TANKS, PUMP TANKS, TREATMENT UNITS AND TANKS FOR OTHER ONSITE WASTEWATER USES.

(a) Depth **and size**. The maximum cover over a tank containing wastewater shall not exceed 48 inches. **In no case shall septic tank capacity be less than 750 gallons.**

(b) Location. Tanks shall not be placed in ~~low~~ **concave** areas or **drainage ways.** ~~swales subject to drainage, channeling of rainfall, or ponding of water.~~ Tanks shall be protected with controlled backfill when shrink-swell soil **or rock** is present. If water table indications are observed or measured above penetrations or tank seams, a water table reduction system must be installed to lower the water table below the seam or penetration.

(c) Structural Soundness. Tanks shall be structurally sound as determined by an engineer design with appropriate safety factors, and watertight verified through appropriate testing and compliance monitored by the ~~Loudoun County~~ Health Department. All tanks shall be designed and certified by a professional engineer, licensed and qualified to perform structural design in the ~~State~~ **Commonwealth** of Virginia. The engineer shall contemplate all reasonably expected loading conditions, including burial depth, tank full to top of riser, an empty tank installed with water table at top of ground, vehicular traffic and any other reasonable expected loading conditions. The manufacturer shall certify that all tanks manufactured meet the engineer design. Tanks may only be installed in accordance with the design standards specified.

(d) Buoyancy. Septic tanks and pump chambers ~~are required to~~ shall implement buoyancy controls if seasonal water table or wetness indicators are present in the soil between the ground surface and the tank bottom.

(~~d~~**e**) Penetrations. All tank lids shall be manufactured with **the first section of** riser~~s~~ pre-cast into the top of the tank. Risers shall terminate a maximum of six inches below finished grade. Manufacturers shall install watertight boots at all penetrations. Boots for all tanks must meet ASTM C-923. Boots for concrete tanks must meet ASTM C-923 and have a clamp assembly to resist pipe deformation.

(e) **(f)** Tank Testing. All tanks shall be watertight, including inlet and outlet pipe penetrations, and the riser assembly. The installer shall, on all watertight tanks, complete one of the following tests during, or in conjunction with a ~~Loudoun County~~ Health Department or other approved construction inspection. In high water table

DRAFT

conditions the Health Director is authorized to require a water tightness test of the entire treatment and conveyance system.

(1) Water test procedure. A water test is to be performed by installing the tank, connecting inlet and outlet piping ~~(with caps)~~, installing risers as necessary, and filling with water ~~two inches~~ above tank **top outer surface** into the riser for 24 hours. The tank penetrations **and seams** must be visible. The water level is to be marked in the riser. The tank is to be refilled to the mark and observed for one hour. If the level has not dropped the tank passes.

(2) Vacuum test procedure. A vacuum test is performed by plugging inlet and outlet piping, installing risers, and using a vacuum pump to pull a negative pressure of **two and one half (2.5)** ~~four~~ inches of mercury. The tank must hold this vacuum for five minutes with no more than a 10% variation in pressure.

If tanks fail either test, repairs must be completed **using manufacturer approved materials** and the test repeated until satisfactory.
(Ord. 09-19. Passed 12-15-09.)

1066.17~~8~~ INDIVIDUAL SEWAGE ~~DISPOSAL~~ **TREATMENT** SYSTEMS WITHIN THE LIMESTONE OVERLAY DISTRICT APPROVED PRIOR TO FEBRUARY 17, 2010.

After February 17, 2010 all individual sewage ~~disposal~~ **treatment** systems within the Limestone Overlay District shall be installed in conformance with the setback provisions of this chapter except for any ~~individual~~ **onsite** sewage ~~disposal~~ **treatment** system approved by the ~~Loudoun County~~ Health Department prior to February 17, 2010 by (i) a Sewage Disposal System Construction Permit; (ii) a Health Department Certification Letter; or (iii) a written approval from the Loudoun County Health Department to satisfy subdivision submission or review requirements.
(Ord. 10-02. Passed 2-17-10; Ord. 10-05. Passed 5-4-10.)

1066.18 NOTICE OF VIOLATION.

If the Health Director finds a violation of any of the provisions of this chapter or a violation of any of the provisions of a permit and/or license as issued under this chapter, he shall direct the owner or person to whom the permit and/or license was issued, by written notice, to make the necessary corrections within such reasonable period as specified therein. No person shall fail to comply with such notice within such period.
(Ord. 94-05. Passed 2-16-94.)

1066.19 EQUITABLE REMEDIES.

In addition to the penalties provided in Section 1066.22, the Health Director may initiate injunction, mandamus, abatement or any other appropriate action to prevent, enjoin, abate or remove a violation of any of the provisions of this chapter.
(Ord. 94-05. Passed 2-16-94.)

DRAFT

1066.20 WAIVERS

Upon petition by the property owner in cases of hardship or in order to provide enhanced protection for public health the Health Director has authority to grant waivers to;

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Appendix I

1066.21 ADMINISTRATIVE REVIEWS

(a) Any person aggrieved by the contents of a notice of violation or enforcement action issued or conducted under this ordinance may submit a written request for administrative review with the Health Director. The request shall be submitted on a standard form provided by the Health Department. The request shall detail and specify the basis for appeal to the Health Director and requesting the action to be reviewed.
(b) A written application for administrative review shall be submitted to the Health Director within 30 days of the enforcement action. Upon receipt of such request the Health Director or designee shall notify the person of the date, time and location of such review, which shall be set at a mutually convenient time between 5 and 15 days from the date the ~~order~~ application for administrative review was received.
(c) The Health Director will issue a written decision concerning the disposition of the administrative review within 30 days of the review date.

1066.22 SCHEDULE OF CIVIL PENALTIES

(a) There is hereby established a uniform schedule of civil penalties for the following violations of these regulations.

(1) Failure by an operator to submit a pump-out report within the required time frame in accordance with 1066.07(b) - fifty dollars ($50.00) for each summons.

(2) Failure by an owner to pump-out a septic tank within the required time frame in accordance with 1066.07(b) - one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

(3) Failure by an owner to maintain, repair or replace any conventional or alternative discharging system which has ceased to function as designed

DRAFT

in a sanitary manner in accordance with Section 1066.07(a) - one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

(4) Failure by an owner and/or installer to obtain the approval of the Health Department for any modification, alteration, or expansion of an onsite sewage treatment system in accordance with 1066.03(a) - one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

(5) Failure by an operator to obtain a septic tank cleaners license before cleaning septic tanks, settling tanks and or vaults designed to hold or retain solids and/or liquids in conjunction with any sewage disposal system - one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

(6) Failure by an operator to dispose of septage, sewage, grease or other material from septic or other sewage retention tanks at an approved septage receiving facility- one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

(7) Failure by the owner of an alternative discharging sewage system to procure and file an inspection report or required sampling results as required in 1066.06 - one hundred dollars ($100.00) for an initial summons and one hundred fifty dollars ($150.00) for each additional summons.

Each day during which the violation is found to have existed shall constitute a separate offense. However, specified violations arising from the same operative set of facts shall not be charged more frequently than once in any ten-day period, and a series of specified violations arising from the same operative set of facts shall not result in civil penalties exceeding a total of three thousand dollars ($3,000.00). If the violation is not abated after the imposition of the maximum fine, the locality may pursue other remedies as provided by law. Designation of these particular ordinance violations for a civil penalty are in lieu of criminal penalties, except for any violation that contributes to or is likely to contribute to the pollution of public or private water supplies or the contraction or spread of infectious, contagious, and dangerous diseases.

The Health Department may issue a civil summons ticket as provided by law for a scheduled violation. Any person summoned or issued a ticket for a scheduled violation may make an appearance in person or in writing by mail to the Treasurer of Loudoun County, Virginia, prior to the date fixed for trial in court. Any person so appearing may enter a waiver of trial, admit liability, and pay the civil penalty established for the offense charged.

If a person charged with a scheduled violation does not elect to enter a waiver of trial and admit liability, the violation shall be tried in the general district court in the same manner and with the same right of appeal as provided for by law. In any trial for a scheduled violation, the locality shall have the burden of proving by a preponderance of the evidence the liability of the alleged violator. An admission of liability or finding of liability under this section shall not be deemed an admission at a criminal proceeding.

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(b) Except as otherwise provided in this section, whoever violates any provision of this ordinance is subject to the General Code Penalty provisions in Section 202.99 of the Codified Ordinances of Loudoun County.

(c) In addition to the enforcement of the penalties provided in this section, the Health Director may bring a civil action for injunction, abatement or any other legal or equitable remedy to prevent, enjoin, abate or remove a violation of the provisions of this chapter.

~~1066.99 PENALTY.~~

~~(EDITOR'S NOTE: See Section 202.99 for general Code penalty if no specific penalty is provided.)~~

~~APPENDIX I~~

~~Bond Requirements~~

~~Installation license~~	
~~Bond requirement~~	~~$10,000.00~~
~~Septic tank cleaner~~	
~~Bond requirement~~	~~3,000.00~~
~~Percolation test license~~	
~~Bond requirement~~	~~2,000.00~~

~~Note:~~

~~1. Licenses are issued annually and are not proratable.~~

~~2. Permit fees are not charged when existing, in-use sewage disposal facilities are being upgraded or replaced.~~

~~(Ord. 94-05. Passed 2-16-94.)~~

DRAFT

APPENDIX II

Minimum Distances

	~~Wells (Water Sources) (in ft.)~~ ~~***~~**Active Driveways Parking areas (in ft.)**	Impound-ed Waters (in ft.)	Streams (in ft.)	Property Lines, (in ft.)	~~Base-ments~~ Inground **Pools (in ft.)**	Top Edge of Banks and Cuts (in ft.) **>3:1**	~~*~~Sinkholes; Cave Openings; & Perennial Sinking Streams (in ft.)	~~*~~Other Karst/sen-sitive Features (except **developed** ~~S~~springs) (in ft.)
Subsurface Disposal Field	~~100~~ **5 c**	50	50 **d**	10 **b** ~~**~~	20	20 **d**	100 **a**	50 **a**
Septic Tank	~~50~~ **5 c**	50	50	10 **b** ~~**~~	10	10	100 **a**	50 **a**

Note: The above distances are the absolute minimum; where deemed necessary to protect the environment and public health, the Health Department may require greater distances.

a See Section 1066.11(e)(5) for reduction

~~applicable only within the Limestone Overlay District; such setback shall be reduced by up to 50% if the geophysical study, as required by Section 4-1905 of the Revised 1993 Zoning Ordinance, as amended, concludes that the risks of collapse and groundwater contamination are non-existent or insignificant for the proposed location and use, except that no reduction shall be approved for any perennial sinking stream, nor for any sinkhole, swallet, closed depression or cave opening that receives either a perennial or intermittent sinking stream. However, for a lot of record existing on February 17, 2010, an individual sewage disposal system for a principal residential structure may be permitted within the setback if it is constructed in compliance with Section 1066.11(e)(5) or 1066.11(e)(6), as applicable. Other Karst/Sensitive Features shall include Rock Outcrops, Underground Solution Channels within 45 feet of the surface, and other underground features that may affect the proposed development.~~

~~In addition, within the Limestone Overlay District subsurface disposal fields and septic tanks shall be located at least 1) one hundred (100) feet from a spring, measured from the first emergence of the spring or 2) two hundred (200) feet from a spring when the first emergence of the spring is on a slope greater than 15% and is downslope from the subsurface disposal field or septic tank, as applicable. However, for a lot of record existing on February 17, 2010, an individual sewage disposal system for a principal residential structure may be permitted within the setback if it is constructed in compliance with Section 1066.11(e)(7).~~

~~~~ b Distances to property lines may be reduced to 5 feet if a survey plat is provided and the applicable property lines are clearly marked in the field by a licensed surveyor both during permitting and construction.**

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~~*~~ c See 1066.12(a)5**

d Distance may be reduced to minimums in the Virginia Administrative Code (VAC) if effluent is pretreated to TL2 or TL3.

~~In such installations where Class I or Class II wells (as per Section 1040.12(b) of this Streets, Utilities and Public Services Code) are constructed, the 100 feet distance between the well and the subsurface disposal field may be reduced, provided that geological conditions indicate that such would be satisfactory.~~

(Ord. 94-05. Passed 2-16-94; Ord. 10-02. Passed 2-17-10.)

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Work Plan- Chapter 1066 Ordinance Amendments

WORK PLAN COMPONENTS	TARGET COMPLETION DATE
Transportation & Land Use Committee- Work Plan Approval Staff will present the Work Plan for approval by the Transportation and Land Use Committee. The Work Plan will provide the process for amending the Ordinance to include stakeholder engagement, staff review, TLUC review, and a Board Public Hearing.	September 18, 2015
Board of Supervisors Business Meeting- Work Plan Approval Staff will present the Work Plan to the full Board of Supervisors for approval.	October 7, 2015
Stakeholder Engagement Staff will hold multiple sessions with different groups of stakeholders to review proposed changes and get input on additional changes from each stakeholder group. Upon completion of individual sessions, the entire group will meet to provide input on all proposed changes. Stakeholder groups include industrial professionals, business and development groups, homeowners with well and septic systems, and environmental and conservation groups.	February 2016
Staff Updates and Review Staff will draft changes based on stakeholder engagement comments to be reviewed by the County Attorney.	April 2016
Transportation & Land Use Committee Meeting- Review Draft Changes Draft changes will be presented to the committee for review. Staff will request to forward to a Board Public Hearing.	May 2016
Board of Supervisors Meeting- Draft Changes Staff will request the Board forward draft changes to the July Public Hearing.	June 2016
Board of Supervisors Public Hearing The public will have opportunity to comment on the proposed draft ordinance changes.	July 2016

Attachment 2

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	General	Renters got evicted even though there were some issues; before could get a preliminary subdivision plan every property had to be up to code. Could we make it record plat instead of preliminary?	This is a Health Department policy issue that should be addressed separately from 1066 revisions.
Homeowners	General	Question: If there are all these different types of systems, how can they be regulated in the same way, if they are working differently? The point of the regulation is to treat everyone the same. They have to meet the same requirements no matter what type of system.	Both chapter 1066 and 12VAC5-613 define alternative systems as a treatment works that is not a conventional onsite sewage system and does not result in a point source discharge. While some systems may need more maintenance than others, localities are not allowed to require more or less than the minimum as per the Code of Virginia 15.2-2157 D.
Homeowners	General	Seems like we are getting more regulatory and administrative burden even though we have a system that works well. If a person has a working system, there should be provisions that allow them to be grandfathered in. Homeowners should not be required to retrofit and bring it up to code until significant maintenance is required.	12VAC5-613-180 requires that all components of an AOSS be inspected so buried, components must be uncovered or provided access in order to be inspected. Alternative systems that were installed prior to access requirements therefore must either be uncovered annually or access provided. This requirement is also found in Chapter1067.04b which is not part of Chapter 1066.
Homeowners	General	Were there any AOSS homeowners in the stakeholder meetings? (1700 of us out of 13000 ought to count for something).	Yes, alternative onsite sewage treatment system owners are important stakeholders in this process and were encouraged to attend; we had at least two alternative system owners in the meetings. We had the final stakeholder meeting 4/7/16. All the meetings have been very productive and for the most part we have consensus among all groups for the proposed amendments.
Homeowners	General	Develop some items on the cards about maintaining their system to help educate the homeowner.	The annual reminder postcards provide a link to system maintenance information. The Health Department continually strives to educate homeowners and prospective homeowners.

ATTACHMENT 3

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	General	As a land owner as well as septic system owner on my property what, in PLAIN English does these septic changes mean to me, bottom line. As I have read all the proposals but no where have I seen what, as a septic tank owner, will I need to do. I have followed every regulation when my system was installed/inspected by the county, including regular clean outs and introduction of bacteria for break down of solids every month, these 2 later items of my own accord. As an FYI I have a concrete holding tank and distribution box not this plastic/fiberglass/steel or whatever tank that collapses on occasion or designed life is 20-25 years. So again in PLAIN English what are the changes and how may I be affected.	The ordinance does not have many changes that effect owners with existing conventional systems. Currently the ordinance requires owners to pump their septic tanks every 5 years or be inspected to determine if pump-out is necessary every 2 years. The current penalty for owners not doing this is a criminal penalty of a class one misdemeanor. The amendment will change the criminal penalty to a civil penalty with a fine of $100.00. Civil penalties can only be levied 30 days after notification with a notice of violation. Significant proposed changes are documented on the web at www.loudoun.gov/septicamendments. The requirements in 1066.16 appear to have reduced issues with septic tanks since they were enacted in 2010.
Homeowners	General	As any significant amount of authority for interpreting, modifying or waiving language regarding my septic system does NOT appear to have been delegated to the County Health Department by the State, does this new language mean regulation of AOSS systems are or will be taken on by Richmond?	You are correct, regulation of alternative systems on the state level is through the Virginia Administrative Code 12VAC5-613. Loudoun can't have an ordinance less strict than 12VAC5-613. The county regulates alternative systems through Loudoun County Codified Ordinance Chapter 1067. Both require an annual inspection for alternative systems, so no matter how Chapter 1067 is modified, an annual inspection would still be required by the state. Additionally, amendments made to Chapter 1066 must be within the constraints of the Code of Virginia §15.2-2157. That Code section gives localities the authority to have local ordinances as long as they do not prohibit alternative systems "that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." and "A locality shall not require maintenance standards and requirements for alternative onsite sewage systems that exceed those allowed under or established by the State Board of Health...".

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	General	Alternative systems: Please let me preface this by saying I own an Aquarobic system in Ontario, Canada. They are a wonderful system if built well. My cousin installs them so I am very familiar with proper construction and maintenance. There are glaring differences between my system in Canada, and my system as installed in Purcellville. I watched three get built in Purcellville and they were not built properly in regards to soils and the strata construction. Yet they were signed off on by the Inspectors. Failures were inevitable and occurred. The result is that in Virginia, there is no warranty on these systems. Licenses and fees and penalties are levied because these are such important (and expensive in Virginia) health systems for the owners. The only quasi-guarantee is that a builder must repair a system if it is within 6 months of construction. Note that this is not even after six-months of use. So, a family moves in to a new house eight months after it is built only to find out that the new homeowner is responsible for the failure of such an important public health system. In a bigger context, Virginia does not even have an enforceable home construction warranty. Builders ARE allowed in Virginia to build, sell, and go. Bad houses get built and inspections get passed even though they should not be. To mitigate the bad builders who over charge and to protect homeowners from an insidious builder/inspector relationship, Ontario requires Septic system installers to provide a 20 year guarantee on their work on the discharge area. Ontario considers these to be very important public health systems. The fact that we have a 25 year old system on top of granite that is operating in much harsher conditions is a testament to the people who built it. I believe the fact that they were required to warrant their work was an important influence on their construction. Yet Loudoun County does not require any warranty to speak of and is even now going to release these firms from posting performance bonds. Loudoun should integrate an enforceable warranty for the duration of a period that Loudoun thinks that these systems are important (20-years seems to work good for Ontario) and require companies to maintain bonds for the duration of the warrantee periods. The alternative is that fly by night companies will continue to build very overpriced and bad systems in Loudoun.	Comment noted.
Homeowners	General	How do I discern where authority lies for future changes to AOSS rules that unfortunately for me in the past resulted in a levied requirement (under threat of civil penalty) for a new inspection scheme to prove my once properly designed, approved and functioning septic system is still "in-bounds"? I know my inspection results are filed with the county but where is the demarcation line between state and county health authorities when it comes to AOSS oversight?	The Loudoun County Health Department operates under a local government agreement between the State and the County and specifies that we will administer pertinent requirements on both the State and County levels. Changes to Chapter 1066 and 1067 must stay within the limited authority granted in §15.2-2157.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	General	Though it quite likely may hurt me in the future should I decide to sell my house, I think prospective buyers considering a property with an AOSS should have it disclosed in advance that their alternate septic system imposes higher regulatory scrutiny (e.g. inspections and possible code mandated retrofits) than does their neighbors' conventional systems. This is alluded to in the stakeholders comments but I didn't see a reference or link to any proposed language.	A key role of the Health Department is to educate owners and prospective owners about care for onsite sewage treatment systems, whether they are conventional or alternative, so they can best understand the costs of ownership and the steps they can take to minimize repair and replacement expenses. We do annual training for realtors, maintain information on Loudoun.gov and are have contributed to articles for local newspapers and blogs. In addition a disclosure statement is recorded on property deeds for all alternative systems in an attempt to alert homeowners. The onsite industry does a tremendous amount of education also. Additionally, HB1264, initiated by Loudoun County, passed the general assembly this year which will strengthen the disclosure language all prospective owners are handed concerning onsite systems. It will now read: 8. The owner makes no representations with respect to the presence of any wastewater system, including the type or size thereof or associated maintenance responsibilities related thereto, located on the property and purchasers are advised to exercise whatever due diligence they deem necessary to determine the presence of any wastewater system on the property and the costs associated with maintaining, repairing, or inspecting any wastewater system, including any costs or requirements related to the pump-out of septic tanks, in accordance with terms and conditions as may be contained in the real estate purchase contract, but in any event, prior to settlement pursuant to such contract;
Homeowners	1066.001	Against the language within the intent that would make the more stringent language apply in cases where Chapter 1066 conflicts with the State code. If the language is more stringent in the County than the Commonwealth standard, the Commonwealth standard should apply.	Chapter 1066 provides additional protection for Health and the Environment. This is allowed in the Code of Virginia in 15.2-2157A.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.001	There has been discussion that VDH will state that more stringent County regulations are not going to be accepted. It has been challenged in three Counties. Some AOSE's want only State regulations to apply; the County should check into this.	Localities are permitted to have more stringent ordinances as per 15.2-2157A.
Building and Development Group	1066.001	Since it is a Dillon Rule State, why are we setting up an ordinance that is more stringent especially when you have the Attorney General opinion? Are we going to highlight for the Board that the ordinance may be in direct conflict with State code, setting the County up for litigation? This is setting up for conflict because you have to debate the system because you are discussing whether it is more stringent instead of saying that it is.	Localities are allowed to promulgate ordinances that are more stringent than Board of Health regulations by §15.2-2157A. However they are not allowed to "prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." §15.2-2157C Localities are also not allowed to "require maintenance standards and requirements that exceed those allowed under or established by the State Board of Health pursuant to §32.1-164."
Building and Development Group	1066.001	If you can meet the code, but it costs the landowner more, than you are saying that is okay? If this is the case, you are potentially taking the ability of uses for that property because it is to expensive to implement.	The cost of systems varies based on the soil and site conditions present. Increased requirements both state and local impact the type and expense of the system required. Proposed changes to Chapter 1066 impose no greater regulations on the siting of onsite systems than the previous ordinance and in fact propose additional options for property owners to be able to utilize onsite systems.
Building and Development Group	1066.001	Attorney General Opinion and Matrix was provided; three justification letters.	Comments from the matrix are incorporated. Letters can be found at: https://www.loudoun.gov/DocumentCenter/View/120191
Building and Development Group	1066.001	Shall apply to the greatest extent possible- how would the County decide what is considered "to the greatest possible"? Is there a policy in place?	Decisions have been and are likely to continue to be made on a case by case basis since the variables are so numerous. One of the most common scenarios is the increased standoff to water table countywide or rock in the LOD. These issues can be overcome with increased pretreatment and or the use of a mound as described in 12VAC 5-610-597.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.001	Are you saying that the intent is that the County can have something stricter than the state code? Do you have something from the Attorney Generals Office that states that you can do that?	Localities are allowed to promulgate ordinances that are more stringent than Board of Health regulations by §15.2-2157A. However they are not allowed to "prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." §15.2-2157C Localities are also not allowed to "require maintenance standards and requirements that exceed those allowed under or established by the State Board of Health pursuant to §32.1-164."
Building and Development Group	1066.001	Discussion from AG letter about not having maintenance standards that are more stringent than State Code. Discussed the intent of the General Assembly that language was added in C to prohibit localities from outlawing alternatives as a way to exercise land use control to make tracks of record to be unbuildable.	The proposed standoffs to restrictions and water table stem from public health and groundwater concerns based on research.
Building and Development Group	1066.001	Section A is related to only conventional systems? Section A gives authority and does not allow you to prohibit alternatives. Why does the attorney general's opinion not apply? There is question that within the intent if the County truly has the ability to be more stringent. Some don't agree with the language within the intent and would like to understand; don't agree that the locality has the ability to be more stringent.	§15.2-2157C does not allow localities to prohibit alternative systems where they would otherwise be allowed. However, requirements short of prohibition are not disallowed.
Building and Development Group	1066.001	It makes it seem like if you don't want things to be more strict, than you don't care about the environment which is not the case at all. Everyone has the same set of rules to play with in the state.	Comment noted.
Env & Conservation Group	1066.01	Are all the changes staff supported?	Yes.
Env & Conservation Group	1066.01	Agreed with staff on the change from disposal system to treatment system	Comment noted.
Env & Conservation Group	1066.01	Had a discussion on the number of privies in the County. Provide privy report from Needs Assessment Report.	The report is available at https://www.loudoun.gov/DocumentCenter/View/113269
Env & Conservation Group	1066.01	What is the new definition in (a) related to the alternative discharging system systems? Is it newer? Weaker? Replacing something?	It was pulled out of the state code and added to the local ordinance as civil penalties may now be used to ensure maintenance and repair.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.01	If it is in the state code, don't reprint it in. As they change it would make the ordinance obsolete. Only put in definitions you think are absolutely necessary for the state code. From efficiency standpoint it might be better when state code changes. Loudoun Water just states the citation; what on top might apply.	Including definitions that are also found in the Virginia Administrative Code fixes the meaning of the term in Chapter 1066. If the definition were left to change in other documents it could change the meaning of Chapter 1066 in ways not intended by the Board of Supervisors.
Building and Development Group	1066.01	By changing the definition to onsite sewage treatment system from individual sewage disposal system, does that mean conventional system will start having maintenance requirements? Conventional systems should have the same requirements as alternative systems. They should have to be inspected; something that has oversight. Only currently have oversight over 10% of what is out there instead of the other 90%. However the cost of regulating conventional systems may be expensive. Want to mitigate the discussion by some that alternatives are "bad"; what about the conventional systems? Think alternative systems are environmentally better; if treatment systems are better, why wouldn't we test conventional systems.	No, this does not mean conventional systems will start having maintenance requirements beyond the already included pump-out requirements in 1066.07. Conventional systems clearly also require maintenance. Comment noted.
Building and Development Group	1066.01	There still isn't common ground on what is considered minor repairs and performance things. What if it is a safety issue and it is not a performance issue? Evaluating existing systems will be a priority for Health Department because repairing to the greatest extent possible does not work now; you have to fix it and you have to fix it to today's standards. This has an affect on real estate.	Staff requires safety issues to be corrected as well as repairs and performance issues. New performance standards cannot be retroactively applied to previously existing systems. 12VAC5-613-30 C.
Building and Development Group	1066.01	Last line in "alternative onsite sewage system." is more of a comment than anything else.	Agreed. Last line will be deleted.
Building and Development Group	1066.01	Under portable toilet, suggestion to add the word temporary before waste disposal.	Some portable toilets are used in a permanent setting. Adding temporary would not enhance the definition.
Building and Development Group	1066.01	Under vault privy, need to spell out acronyms. Make sure they are spelled out throughout the document.	Agreed. NPDES will be spelled out.
Building and Development Group	1066.01	When you use individual onsite, it does not prohibit the use of system in hamlets in open space? Want to make sure it doesn't preclude what is in the zoning ordinance. May need to see if "individual" should be removed given. Don't want to preclude allowing drainfields and reserve to be in the open space areas in case of hamlets as allowed in the Hamlet Ordinance. Think definition addresses it, but want to make sure we are not precluding that issue.	"On another parcel" will be added to the definition of Onsite Sewage Treatment System. No changes in the ordinance are intended to limit the use of onsite systems serving hamlets.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.03	Are repair permits still going to require an AOSE or is that a case-by-case basis? It is not specifically included. It might be good to add language that states you need a permit by a licensed AOSE and list the things that someone can do. It is confusing on what is considered a repair or maintenance. Specific examples of when permits are needed from an AOSE; that way can clarify what an installer can do. What is the difference between maintenance or repair? Can the County provide a guidance memorandum? Need to determine what is acceptable from a maintenance provider or AOSE.	The use of an Onsite Soil Evaluator is always encouraged by staff. Repair permits requiring an alternative system require an Onsite Soil Evaluator or Professional Engineer. Minor repairs that are not "like for like" also require an Onsite Soil Evaluator or Professional Engineer. The scope of work allowed by OSE's and operators is determined by the VA Department of Professional and Occupational Regulation (DPOR). For minor repairs such as distribution box replacements, broken lines, tank replacements and T replacements staff recommends that permits and inspections be done by the Health Department to reduce costs to homeowners and discourage illegal repairs. If private inspector costs are added to these repairs it is feared that repairs will go undone or uninspected.
Building and Development Group	1066.03 (b)	Why are you striking the language?	Open permits are no longer transferable; certification letters are transferable.
Industry Professionals	1066.03 (c)	Was the language that is stricken been moved to another place? The language was added in another place.	The language was moved to 1066.11 (c).
Env & Conservation Group	1066.04	Discussion on legislation that would require the private sector to provide all permits for work.	HB558, which passed the House and Senate, directs the State Health Commissioner to develop a plan for the orderly reduction and elimination of evaluation and design services by the Department of Health for onsite sewage systems and private wells, which shall provide for the protection of the public health as the Department transitions to accepting only applications that are supported by private site evaluations and designs from a licensed professional engineer or licensed onsite soil evaluator or, for any work subject to regulations governing private wells in the Commonwealth, by a licensed water well system provider. The Commissioner shall report to the Governor and the General Assembly by November 15, 2016.
Industry Professionals	1066.04	Why is there still an installer license that is equivalent to a conventional installer license? Suggest dropping installers license since there is an equivalent license from the State (DPOR license).	The installer license is relatively easy to get, especially with the bond requirement dropped. It requires that new installers become familiar with local requirements before attempting installation. It allows the Health Department to develop a list of installers that is useful to owners. It also serves as a way to verify that installers have a DPOR license.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.04	One person commented that an installer license from the County is good because there are different County ordinances; would enforce that they need knowledge of the ordinance.	Agreed. Staff strongly recommends that installers become familiar with local requirements before attempting installation.
Industry Professionals	1066.04	Should remove the language "Such license requirement shall not apply to an individual person who installs not more than one such system on his own property within one year or 12 consecutive months" This applies to individual homeowners. DPOR has ruled that homeowners cannot install systems.	Agreed. Language removed. This section would require anyone installing a system to have a DPOR and County license.
Building and Development Group	1066.04	Do we have to get separate license from County? You still need installer and tank cleaner license. If you have a Class A license, then County should not ask for additional license. If you have B or C, then you should have it. Plus DPOR licenses installers. There is no state license for sewage handling permit.	The requirement for local licensing of persons conducting percolation tests will be dropped as will the bonding requirement for all licenses. Staff recommends that licensing of septic tank cleaners continue to prompt inspection of trucks and maintain local control over septic tank cleaners. Licensing of installers is recommended to continue to help insure installers are made aware of local requirements, DPOR licenses are confirmed, and installer lists are available to the public.
Building and Development Group	1066.04	County attorney should weigh in if it is violation of state code, and it is not duplicated in the County Code, if the County couldn't use the local ordinance to enforce it or their powers under the Code of Virginia. County has not incorporated state code into local code. Should it just be incorporated into the local ordinance, maybe include it by reference.	The State Code is currently not incorporated into the County Ordinance. The County cannot use the local ordinance to enforce state code or regulations unless the item is also explicitly addressed in the County ordinance.
Homeowners	1066.04	I wish the county would keep in mind that not everyone who lives in Loudoun is wealthy and changes that impact the owners have dire consequences to those who are retired and on a fixed income. I have issue with terminating the owner's ability to repair or install their own septic system. We should be given the option and opportunity to make this decision and your concern should be that the correction and installation is according to the regulations. I also believe that anyone having a class A building license certainly should be allowed to perform this. I fear the county limiting the pool of contractors to the cronies who are currently licensed to provide septic tank maintenance will cause the costs to soar and given the fact that the fee to pump out my septic went from $125 to $295 proves my point. I also have concern over changes to requirements for driveways and parking and hope that existing situations are grandfathered in otherwise the cost to conform may be too great.	Installers and operators are licensed by the Department of Professional and Occupational Regulation, DPOR. Unlicensed installation appears to be prohibited by 18VAC160-20-74C, which states that no individual shall act as a conventional onsite soil evaluator, alternative onsite soil evaluator, conventional onsite sewage system installer, alternative onsite sewage system installer, conventional onsite sewage system operator, or alternative onsite sewage system operator without possessing a valid license issued by the board. The 5' to driveways would apply only to new construction of onsite treatment systems or driveway/parking lots.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.04	I have been a county resident 48 years I recently had to make repairs to my septic system. I used a professional as I did not have time to do myself. I do not believe the ability to do repairs or installations should be taken from home owners. Example, do to inspections my elderly neighbor had to have extensive repairs done to her septic also about same time as me. She could not afford the 5 plus thousand dollars the "professionals" wanted lucky for her her son was able to do the work with some help from friends. It got inspected and approved by the county. The elderly and less affluent residents of this county can barely make ends meet as it is with out having to fork out money to "professionals". If a home owner has the means to install and or repair their own septic system they should be allowed to and not be at the mercy of the "professionals". From what I've seen are not very professional. It is the county and its inspectors responsibility to assist and give advice to home owners if they require it and not cut them out all together and take their money.	Installers and operators are licensed by the Department of Professional and Occupational Regulation, DPOR. Unlicensed installation appears to be prohibited by 18VAC160-20-74C, which states that no individual shall act as a conventional onsite soil evaluator, alternative onsite soil evaluator, conventional onsite sewage system installer, alternative onsite sewage system installer, conventional onsite sewage system operator, or alternative onsite sewage system operator without possessing a valid license issued by the board.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.04 1066.07	My wife and I raised a family of 4+ in our residence. We moved into the home in 1990 when the home was just 2 years old. We have a septic tank that is pumped to a drain field that is higher than the tank. I have serviced the pump and floats on a couple occasions since that time. When the new regulations came out I had a local company pump the tank in Dec over 2013 for the first time ever. The septic pumper said the holding tank was only about 1/3 with sediments at that time. We do not have a garbage disposal nor do we flush household waste, wipes, feminine hygiene products or other trash into drains. As a result, our system has functioned perfectly for over 28 years, breaking down human waste and toilet tissue. 1. I do not believe that there should be a requirement to pump tanks every 5 years. For some folks who flush garbage and have disposals on their systems 5 years may not be enough. For those of us who do not do such things, 5 years is much too frequently. 2. For those like myself, having to pay for unnecessarily frequent pumping is costly and unfair. 3. Package waste systems are much more prone to fail and need frequent inspections and maintenance. 4. Perhaps the county should consider banning the installation or use of garbage disposals on all homes not connected to a sanitary sewer system. 5. An alternative to unnecessary periodic pumping would be to have the county require and perform an inspection of the site and drain field on a periodic basis. Just because the tank is pumped doesn't mean the drain field hasn't failed. 6. Homeowners should not be prohibited from doing maintenance or repair of septic systems. If the county chooses they can require such things to need a permit and can inspect the work as needed to ensure it complies with all requirements.	1) Five years is a general higher end number code and industry. Staff agrees it may be too often for some systems and not often enough for others. The ordinance does include the two year inspection provision. 2) Comment noted. 3) Staff, and industry agree that alternative systems need more frequent inspection and maintenance as required in 12 VAC5-613 and Chapter 1067. 4) Comment noted. The challenge is that garbage disposals are so easily added after construction that it is difficult to enforce restrictions. 5) Staff agrees. Periodic inspection of conventional systems is worthy of consideration. 6) 18VAC160-20-74 appears to prohibit non-licensed individuals from performing repair or maintenance work on onsite systems. Staff included language in the ordinance prohibiting unlicensed individuals from working on onsite systems with the intent that if the VA Department of Professional and Occupational Regulation (DPOR) rules differently, then waivers to this prohibition can be granted. Currently all work needs a permit and is inspected by staff.
Building and Development Group	1066.04 (b) (1)	Look at equipment requirements within state code to see if it is necessary.	This section is very similar to 12VAC5-610-1020 thru 12VAC5-610-1070 but is being maintained to protect against changes in standards from the state and enable local legal resources in case of violation.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Env & Conservation Group	1066.05	What is the result for this section? Is the County still going to do 100% inspections? What has been the experience of the inspections?	Currently the County is proposing retaining 100% inspection as it is in the current ordinance. County staff does tank water tightness testing that the private sector is not familiar with; private sector has not done these prior since County completed them. The experience has been that the Health Department inspection has occasionally identified issues that could have resulted in greater expense to the owner if not addressed prior to operation.
Env & Conservation Group	1066.05	Think it is good to have someone do inspections that doesn't have a financial interest	Comment noted.
Industry Professionals	1066.05	The County has been directed to inspect all the systems, instead of having just AOSE inspect them. Nothing in any DPOR or Health Dept regulations require full 100% inspection by the Health Department. Other than Fauquier, most jurisdictions review 10% of individuals work in the field; level two review of a drainfield site. Requires an additional person to look at it before you can cover it up; do it within three days. Creates inefficiency.	Comment noted.
Industry Professionals	1066.05	When does the County inspect the system? Can you inspect it again? Are they are at random? Verification inspections. Direct notice is given to property owners.	This question is in regards to inspections conducted in support of Chapter 1067. Verification inspections of alternative systems are random and notice is given to property owners.
Industry Professionals	1066.05	How can the County do an inspection when they are not a licensed operator? You are going back and stating that the operators report is insufficient.	This observation is in regards to inspections conducted in support of Chapter 1067. Verification inspections do not involve operation of the system and are to verify the observations in the submitted report. An operators license is not required by staff for these inspections.
Industry Professionals	1066.05	Can operators do closing inspection? The regulation precluding that has sunsetted.	This is a question for Department of Professional and Occupational Regulation.
Industry Professionals	1066.05	The only time conventional systems get inspected is for real estate closings. Why aren't these inspections included in online RME? It is not a requirement of DPOR. Pump out requirements are recorded in RME.	There is not a current requirement for these inspections to be submitted to OnlineRME.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.05	Is the County still interested in 100% review of construction inspections? Think it is inefficient. Inclement weather could come and the AOSE could clear it but they are waiting for the Health Department; in the absence or inability to make it out the Health Department can come out and render a case decision. Could you add a provision on "case-by-case basis"- could we cover it up when the AOSE has approved it? Soften last two sentences. Installer is required to contact Health Department, but they can waive and inspect. Would put additional onus on the AOSE.	Agreed. The language has been adjusted to allow more flexibility for inclement weather when private inspections have been completed.
Building and Development Group	1066.05	You have "may" in one paragraph and "shall" in another; it is contradictory. Are you trying to clarify that you can do more than the final inspection? Maybe we can switch the sentence so it states that the director may do additional inspections. This goes back where HD was only one to inspect which is not the case now. Needs to be more consistent oversight; a waiver of inspection could be helpful. It may be "may" now instead of "shall" because of the time that has passed by. Does the Board still want us to inspect everything?	The word "may" in the first paragraph is for existing systems and the word "shall" in the second paragraph is for newly constructed systems. Staff recommends that required staff inspections of new and existing systems continue in order to provide oversight to enhance the continued integrity of the onsite sewage treatment infrastructure in the county.
Env & Conservation Group	1066.07	Who decides whether the tank needs to be pumped out or not? And that the system is working okay?	Your operator makes this determination.
Env & Conservation Group	1066.07	What is the cost differential for inspection or pump out? How many systems on average need to pumped out? What is average rate for pump out?	Loudoun County has approximately 13,000 conventional and 1,700 alternative onsite sewage treatment systems. Pump-out costs range from $250 to $450. Inspection costs range from $0 to $200. 3,227 tanks were reported as pumped out in Loudoun County in 2015. Of these, 411 were alternative and 2,004 were conventional with the balance being pump and haul tanks.
Industry Professionals	1066.07	Does Chapter 1067 require the 5 year pump out? The pump out on an AOSS is dependent on the inspection. They liked this because it depends on how the system is operating. Current letters use language such as "catastrophic issues", even when it related to pump outs which is considered maintenance. Could you change wording so that it does not scare homeowners and is more reflective of the issue? Could we work on characterizing issues with systems? Can you help define failure, maintenance etc. for a property owner?	The five year pump-out requirement is in 1066.07. Staff continues to work with owners and contractors to improve communications. The letters requiring correction of deficiencies in alternative systems is in support of Chapter 1067. The term "catastrophic issues" is not used in any letters.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.07	How are property owners notified? What is the consequence if you do not pump your tank? Some do not like the idea of civil penalties on the property owners. Any kind of penalty is bad. Maybe the County could have it done and then put a lien on the property. Very few people get fines because they call to get the items fixed.	Property owners are notified by post card. Under Chapter 1066 now the remedy is a Class 1 misdemeanor. If Chapter 1066 is amended to include the civil penalties, the remedy would be a civil penalty of $100 followed by penalties of $150. All civil penalties must be preceded 30 days minimum by a notice of violation informing the owner of the violation and providing for correction prior to the penalty. Using a lien is administratively difficult and more demanding of staff resources.
Building and Development Group	1066.07	Like the idea of the legislative program including the disclosure language for a buyer beware on the costs of owning a system.	Comment noted. HB1264 changing the disclosure language passed the General Assembly in 2016.
Homeowners	1066.07	Like the idea of giving pumpers until the 15 of the month to put in reports. There is an issue where the pumper has to put in the report of inspection, but the customer may have not paid them.	The idea of giving until the 15 of the following month will standardize the deadline with alternative operator reports. Payment is an issue between the operator and owner.
Homeowners	1066.07	In the conclusions found in "A Study of Onsite Sewage Containment Vessel Replacements in Loudoun County, Virginia 5/1/2000 to 2/1/2016" dated February 2016, prepared by Jerry Franklin and staff from the Division of Environmental Health, Loudoun County Health Department, the report states that *"Tanks that are largely empty, such as pump chambers, ATU's and pump and haul tanks, represented a larger proportion of failures."* It further states that "*It is presumed that the lack of interior liquid to resist outside pressure causes more stress on tank structure."* My comment is based on that study and the fact that I know my septic tank was pumped five years ago (the septic field is conventional and originally built in 1990 for a 5 bedroom home) and within the past five years all my children have grown and live elsewhere and my spouse is also deceased so I am the only one living in the home. <u>My question is: Can the county assure me that based on the conclusions in the study cited, that the county is not subjecting me to a septic tank failure based on the low volume that will reside in the septic tank after pumped and will remain at a low level for a long period of time based on the tank size and there being only one person now in the household?</u>	A licensed operator is able to pump out a tank while avoiding having an empty tank, such as by running water from the house into the tank after pumping to partially fill the tank with clean water or by performing an inspection of the tank in lieu of a pump out. If exterior water pressure and buoyancy are concerns pumping can be scheduled in dryer seasons.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.07	In a previous response to comments, Loudoun staff commented that for conventional systems, an operator is required to either pump the septic tank every five years or inspect the tank to determine if pump-out is required at two year intervals. Based on the new farm brewery legislation that allows my neighbor with ten acres of land to produce up to 15,000 barrels of beer a year while imposing water table constraints on our rural community by consuming up to 7 gallons of water for each gallon of beer produced (consumption figure from the 2011 study by the Beverage Industry Environmental Roundtable (BIER)) while hosting up to 300 vehicles a day on their property to consume their beer; BUT the county has no more stringent septic system regulations for them than the one person homeowner living on the property next to them with the same (or less) acreage of land. My questions are: (1) Why hasn't the county included a matrix that levels the playing field for septic system regulations and captures load capacity rates based on tank and drain field size? Doesn't that factor into how often the tank would require pumping or inspected? (2) If the US Census just reported the number of people living at a household as one and the number of hours that person is at work – versus home – is 60 hours out of every week of the year, shouldn't that information be relevant when writing a regulation that imposes a $200 expense (previous staff response to comments - pg 34) to be paid every two years by the homeowner to a licensed septic operator just to inspect the system to stay in compliance?	A septic tank pumping chart was included for the Board of Supervisors consideration at the time the 5 year pump-out requirement was adopted. It is recognized that frequency varies based on the size of tank, occupants in the house and use of the system (use of garbage disposals increase the frequency). Five years was selected as a standard to match the pumping frequency in the Chesapeake Bay requirements and is a standard used industry wide as an upper limit for pumping. A two year inspection allowance was recently added to the ordinance.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.07	In previously recorded staff responses to comments, it was stated that Loudoun County has approximately 13,000 conventional and 1,700 alternative onsite sewage treatment systems and that 3,227 tanks were reported as pumped out in Loudoun County in 2015. My question is: Can you tell me what was the volume of the 3,227 tanks pumped out and where it was disposed?	Loudoun county septage and sewage in 2015 was predominantly disposed of at Loudoun Water's Broad Run Wastewater Reclamation septage receiving facility or the Colvin Run facility in Fairfax County (5,133,314 combined reported gallons). The Colvin Run site was manned starting in August 2015. Septage from Loudoun and other jurisdictions was refused from that point forward. Smaller quantities of septage were taken to Rippon, WV (84260 gallons), and the Remington Wastewater Treatment Plant (7100 gallons). Wastewater authorities from Fairfax and Loudoun met in spring of 2015 to discuss septage disposal. Consideration has been given to dropping jurisdictional restrictions on septage receiving. However it is suggested that tipping fees be adjusted at all facilities to ensure cost recovery and that sufficient capacity be available at all sites before restriction elimination is considered. Advantages of dropping jurisdictional septage receiving boundaries would include reduced truck traffic, lower costs, and more efficient routing for septage haulers.
Homeowners	1066.07	I found the table of recommended pumping frequency at http://loudoun.granicus.com/MetaViewer.php?view_id=46&clip_id=4089&meta_id=84325 (see Attachment # 4, Figure #1 (page 16 of 38)) which shows the category my household falls in with a recommended pumping frequency of 15.6 years. I also found a more recent publication http://www.goodmansanitation.com/pumping-frequencies and it still shows 15.6 years. Many homeowners like myself with conventional systems do not have garbage disposals and that decision was made specifically because we knew there would be an increased load on the septic system. Therefore I would appreciate you presenting the pumping frequency table from one or both of those documents as part of the homeowner comments for the Board of Supervisors to take note of those timelines again, including the need to re-inspect conventional systems. Based on the criteria for type system, tank size, and household size presented in the tables, (and the answer to Comment # 3), the county timelines are too short.	Agreed. A tank pumping frequency chart will be included in the attachments to the board item.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.07 (b)	I live in Taylorstown and have a septic system meant for a 5 bedroom home. Now that most of my children have moved out, we are really living in a 2 bedroom house with much lesser use of our septic system. The pumping requirements and frequency of pumping should somehow be tied to use. The last time my tank was pumped I was told it really didn't need to be. If the county is requiring this maintenance, it would be nice to have a county service cover it.	Comment noted.
Homeowners	1066.07 (b)	Issue with having to pump system every five years when there is a limited amount of people in the home. Do not think the County should require the pump out.	Comment noted.
Env & Conservation Group	1066.08	What are the fees for? Do the fees change? Are they set annually?	Fees are set by both the State and Loudoun County. They are meant to recover costs associated with Health Department permitting and inspections. Fee reviews are done every ten years by Loudoun County.
Industry Professionals	1066.09	Have you defined "a sanitary manner"? It hasn't been defined. There are difference between failure, malfunctioning, or not functioning as designed. If it just needs repair, does that mean they have to hook up to sewer? It makes sense that you would make them connect if there is failure and no reserve. If malfunction with no means of repair, then should have to connect. Connecting is very expensive, and there could be a potential that there is no available easement. Have to be careful of whether discharge systems are allowed; discharge systems are allowed for repair.	Language from the Comprehensive Plan has been included. The direction of the comprehensive plan and the intent of this section is that systems that have failed or need substantial repairs to function as designed will connect to public sewer if it is available within 300 ft. and the owner allows connection. If the expense is excessive or easements cannot be obtained the owner has the option of requesting a waiver from the Health Director.
Building and Development Group	1066.09	What is an example of substantial repair that you would need to do that is short of a leach field failure? Is there one? Even if you have reserve, it requires you to use the public sewer? Or that should be option if you can't find an absorption area. Reserve area should be fair play. "Requiring substantial repair" needs to be defined. Sometimes getting sewer is more substantial, plus it may require and easement which may or may not be granted by a neighbor. Maybe potentially strike the section. Check language of the Comprehensive Plan and VA Administrative code that discusses hook ups.	An example of a substantial repair short of an absorption field failure would be a crushed septic tank and pump chamber with crushed distribution box and headers or spent peat and a crushed tank etc. The comprehensive plan states that "The county will require existing communities or residences to hook to a nearby public water or sewer system when an on-site water supply or waste treatment capacity has deteriorated to a point where there is a public health risk." This section has been adjusted to reflect this language for repairs within 300 ft. of sewer. These cases are examined on a case by case basis with allowances based on easements and extreme cost. The Health Director is proposed to have the ability to waive this section. See 1066.20

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.09	What is considered a private system? Do we have any? Maybe we should call it public collection and treatment system.	Private sanitary sewer systems systems do exist in Loudoun. Language removed to avoid confusion.
Building and Development Group	1066.09	What happens if there is a repair and see that it is not approved system. Does that require a hook up? It may not be failing but it isn't an approved system	These situations are examined on a case by case basis. The possibility of a permit existing for the unapproved system would be taken into account.
Building and Development Group	1066.09	This provision reflects the long standing policy to cause the use of nearby collection systems, where a property's onsite system is failing. Where it is found that an opportunity for making service connection to an existing collection system is within 300 feet of the building, the feasibility of doing so varies from straight forward and cost effective to expensive and/or virtually impossible. Where a given project falls on this spectrum of feasibility depends largely on the ownership of the intervening property. A second big factor is whether or not the applicant for service would need to extend the collection system, in order to make a service connection. Where a public collection system must be extended, such entails that the applicant for service cause the design and construction of the extension of public main, furnishing a bond to guarantee performance of the public portion of the work. Where land of others would need to be traversed, easement acquisition also becomes the responsibility of the applicant for service. Lastly, the intervening topography or terrain can be a factor. As such situations arise, staff at Environmental Health are called upon to determine the feasibility to the property owner, of making connection to the nearby collection system. This occasionally becomes a difficult matter. Would staff be interested in further text to supplement the 300 foot rule, as a basis for enforcement of this provision?	The language as newly drafted requires connection within 300 ft., however the Health Director has the ability to waive the requirement. This should be the right balance of having the requirement but having flexibility when the connection is impossible or extremely expensive.
Industry Professionals	1066.10	We should make it a requirement to do time dosed. Much better chance of catching issues before hydraulic failure or malfunction when using time dose. Enhanced flow should be only be allowed otherwise.	The language has been revised to allow for time dose designs or enhanced flow.
Industry Professionals	1066.10	Why are there no requirements for inspections when you have panels, pumps…anything not gravity flow should be inspected. Some need to pump on volume and time; it is a design issue. You can have a demand dose panel; do not need to do time dose only. Do time dose and/or demand and enhanced flow. May not work for some when volume is low.	Requiring inspections for conventional systems with pumps would require additional resources and should be considered separately by the BOS. The language has been revised to allow for time dose or enhanced flow designs.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.10	Is there a reason why sewage injector pumps were not allowed in the County? 80% of new houses have injector pumps; would you rather have that or tanks buried deeply. Allow sewage ejector pumps with alarm provision. Is it beyond scope of this ordinance? It would be nice if the option was available. We should not try to pump raw sewage; but we could have technical memorandum on best practices. We could have guidance but not a regulation. The reliability of ejector pumps has improved substantially.	Sewage ejector pumps are allowed by the building department when interior to the building and are heavily used in new construction. This language only applies to sewage ejector pumps placed exterior to the building and has been revised to have an exception when designed by a professional engineer as is similar to state guidance.
Homeowners	1066.10	I would like to call to your attention what appears to be contradictory guidance in paragraph 1066.10 of the draft septic system ordinance changes. The first sentence (starting after "(a) Pump Systems") prohibits the use of pumps on raw sewage lines to septic tanks. However, the next sentence says that pumps must be hardwired outside the pump chamber. If pumps are prohibited, why does the draft provide instructions for how to wire them? Also, the language in the next sentence is a bit awkward. May I suggest that the last part read:. . . must be installed on the line before it enters the distribution box. Question: Would the prohibition on pumps cover pumps required on fixtures in basements to bring effluent up to existing drain lines that are above the level of the basement floor? We have considered putting a toilet and sink in our basement and have been told that they would have to be equipped with some sort of pump to get the effluent up to the main drain lateral which is about six feet above the current floor.	The prohibition on pumps is between the house and septic tank and is meant to prevent flushing solids and grease out of the tank into the rest of the treatment system. Pumps can be used after the septic tank on effluent rather than raw sewage so the hard wiring section applies to them. The Health Department does not have jurisdiction inside the house so it would not prohibit interior sump pumps pumping into a gravity sewer line. Interior sump pumps tend to have low gallons per minute and small volumes. They also typically only serve a small portion of the sewage flow from a residence. Exterior sump pumps can be used if part of an engineer design. Other than the exterior engineer designed sump pump this is all current practice, so it is only codifying what is currently done by policy and clarifying code.
Env & Conservation Group	1066.10 (a)	Could you have performance criteria that said when you could use sewage ejectors or pumps for raw sewage?	12VAC 5-610-880 B6 prohibits pumps unless they are open face centrifugal. They are allowed under an engineer design. 1066 is being changed to reflect State regulations.
Building and Development Group	1066.10 (a)	What type of pumps are being addressed in the second sentence? It should be a designer's option of what to use; could be injector that is not under purview. Maybe strike first sentence.	Sewage ejector pumps are allowed by the building department when interior to the building and are heavily used in new construction. This language only applies to sewage ejector pumps placed exterior to the building and has been revised to have an exception when designed by a Professional Engineer as is similar to State practice.
Industry Professionals	1066.10 (b)	Does this apply to just concrete? What about plastic? It most likely will not have an inherent color to identify. More of a manufacture requirement; would need to make sure the appropriate box is used.	Plastic boxes are resistant to corrosion. The dye or inherent color requirement would only apply to concrete boxes.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.10 (b)	Are the local precasters able to make distribution boxes resistant or treated for corrosion?	Products are available to local precasters for making distribution boxes more corrosion resistant. This is estimated to cost between 15 and 25 dollars per box.
Env & Conservation Group	1066.10 (c)	Would having a sewer less than 4 inches in diameter just be asking for it to clog?	Less clogging is anticipated with 4" building sewers. 3" building sewers are allowed by the state in 12VAC5-610-730. Virtually all sewers installed in Loudoun are 4" now.
Industry Professionals	1066.10 (c)	Does gravity need to be included? What is the reason for not also specifying material? Why not use 3,000 lb. crush strength? May not want to fall back to state regs which allows cast iron and terracotta.	Fall is addressed in 1066.10e. Specifying material may create conflicts with future technological advances and is addressed in 12VAC5-610-750. Vitrified clay and cast iron is not encountered in new construction due to the cost and ease of current materials. Language was clarified to apply to gravity building sewers.
Building and Development Group	1066.10 (c)	Is not in conformance with State Code.	State code allows 3" minimum ID building sewers 12VAC5-610-870. 3" sewers are more prone to clogging than 4" sewers. Localities are allowed to have a local ordinance concerning onsite sewage systems as stated in the Code of Virginia §15.2-2157A.
Industry Professionals	1066.10 (d)	Is this the only box we have to do this with? Only should need to set d-boxes in concrete; not concrete in concrete.	This is only for non-concrete boxes.
Industry Professionals	1066.10 (e)	Is section e totally like State regs? Is it needed since it is includes in State regs? Also need to add gravity prior to sewers in €.	This is identical to the Virginia Administrative code in 12VAC5-610-740 and 12VAC5-610-870 and is intended to reduce creative designs submitted by professional engineers. Gravity was added prior to sewers for clarity.
Building and Development Group	1066.10 (e)	The slopes are less than the building code would require. Establish minimum to plumbing code. Might want to check with building department on how the building code applies to treatment system. 1/4 inch to the foot, 1/8 inch to the foot, 1/16 inch to the foot for 4 ft, 6 ft, and 8 ft.	This language mirrors the language in the Virginia Administrative Code. Staff recommends it remain unchanged.
Building and Development Group	1066.10 (e)	Consider using the minimum slopes for building sewers as established in the International Plumbing Code. This would be consistent with the Virginia Uniform Building Code, and with practice on building sewer installations not subject to this ordinance.	Since 1066 works in conjunction with 12VAC5-610 rather than the plumbing code, it is important that 12VAC5-610-730 thru 760 be the reference document.
Env & Conservation Group	1066.11	In what floodplains are systems allowed to be placed? Are they allowed to be placed in minor floodplains? Not comfortable with any drainfield or septic tank in a floodplain, especially not an alternative system that is above ground.	According to a 2006 zoning determination the zoning ordinance drainfields in the floodplain "would only be permitted in cases where it serves a use that is permitted in the FOD." (floodplain overlay district) 12VAC5-610-593 7. Prohibits subsurface soil absorption systems in flood plains subject to annual or more frequent sustained (24 hours) flooding.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.11	Backhoe is not defined. Define it by minimum bucket size. Does it keep us from looking at repairs with auger to verify? Include some wiggle room to address the issue.	Staff recommends language remain as is. Waivers can be granted by policy. Minimum bucket size would be difficult to enforce.
Industry Professionals	1066.11 (c)	Is the backhoe requirement new? Backhoe's shouldn't be required for every lot. Why not save the homeowner money when an industrial professional knows the soils are nice? If AOSE uses a backhoe, why must there be another for the County? Like the idea that it is required, but you can get a waiver. Maybe you could include a waiver policy to describe when it can be waived. A subdivision definitely will need to use a backhoe for the soils tests.	The backhoe requirement has been longstanding by policy and is here being codified. A waiver provision is included. Soils are highly variable and due to the importance of soil based decisions the use of a backhoe is appropriate in most cases.
Industry Professionals	1066.11 (d)	Loudoun has not allowed site sketches per se; it always has been surveyed plat. Are you going to allow site sketches (no). If you say surveyor you are going to need a certified land surveyor. Don't use survey term or plat term. Work around would be plot or map.	1066.11 (d) (8) is to be deleted. Regulated also by Virginia Department of Health General Memorandum and Policy- GMP 2015-01. Owner has to sign a statement on application that easements are shown.
Building and Development Group	1066.11 (d)	Hard to prove a negative related to easements; no one does a title search. Survey plat is required under Health Regs. Always contentious. Encumbrances is open-ended; what is the definition? Easements and other encumbrances known by preparer. What type of easements? Not all easements are recorded. Limit it publically recorded if you have to do it. Have you had past issues with this? If you have not had an issue with it, then maybe it should be stricken. Make sure civil engineers look at this.	1066.11 (d) (8) is to be deleted. Regulated also by VDH GMP 2015-01. Owner has to sign a statement on application that easements are shown.
Industry Professionals	1066.11 (d)(1-8)	Dimensions of the property. Depending on the size, it would be difficult to survey the whole property. Do we have to do boundaries of parcels when you are only doing one particular section? Dimension of property line within a certain number of feet. Similar to wells. Need some type of dimension from system or property line. Whichever may be closer.	This section has not been interpreted in the past to prohibit in certain circumstances surveys of just relevant portions of the property. Regulated also by VDH GMP 2015-01.
Industry Professionals	1066.11 (d) (8)	This would require a title report. May be difficult to determine where they are exactly. Needs to be there, but there has to be an easier way to do it. Title searches are expensive when trying to determine where easements are on title report. What are existing, installed easements? Use language of easements to the extent practical. Do not use.	1066.11 (d)(8) is to be deleted. See VDH GMP 2015-01.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.11 (e) (1)	State is 50% slope, and Loudoun is only 25%; a lot of the Counties require 25%, but now with the drip tubing you can go to 50% as what the state said. Now you are being stricter than the alternative regs. Mountainside Overlay District plays a role and Steep Slopes standard. The ordinance should be revised to exclude drainfields and allow slopes up to 50% and we should not have a minimum square footage requirement.	Language will be amended to prohibit trench and pad based systems on slopes greater than 25% but would allow drip and other trenchless distribution systems.
Building and Development Group	1066.11 (e) (1)	Matrix: 12VAC5-610-593 3 states "that subsurface soil absorption trench systems shall be placed on slopes greater than 50% unless terraced. Criteria for other types of onsite systems are contained in Tables 4.3 and 4.4". Recommend consider allowing systems on up to 50% slopes.	Language will be amended to prohibit trench and pad based systems on slopes greater than 25% but would allow drip and other trenchless distribution systems.
Industry Professionals	1066.11 (e) (2)	Can unfavored micro-topography be defined in any way? Remove.	Removed.
Industry Professionals	1066.11 (e) (5)	More stringent requirement for springs in limestone overlay district. Would be okay with develop or strike it. In ZO it says from any spring. In cases of some developed springs; need in house policy on what needs to be done with the spring; concrete in or pull the pump. What is requirement from it going from developed to non-working? Maybe we can say that the pipe is removed; concreting over is excessive.	"Developed" will be inserted. Undeveloped springs are typically not used as a drinking water source. The method of spring abandonment is best addressed in policy.
Building and Development Group	1066.11 (f)	Matrix: Recommend remove section CR horizons since it is not addressed in the State Code.	Language removed from section.
Industry Professionals	1066.11 (f) (1)	Why not make it 24 inches below trench bottom instead of six feet. If you do inches it is plus or minus 1/2 inch. If it 6 foot it is plus or minus 2 ft. plus or minus a 1/2 foot. Need to consider what we want it to read.	Language changed to be 6' or deep enough to verify all standoffs.
Env & Conservation Group	1066.11 (f) (3)	What is the removal of prohibition on Class IV soils?	Loudoun County has a guide "Interpretive Guide to the Use of Soils Maps" with different classes of soils. One of these types of soils is Class IV. The VA Administrative Code would allow installation in some of the soils in this class and alternative systems can overcome some of the limitations. Staff recommends this prohibition be dropped.
Env & Conservation Group	1066.11 (f) (3)	Do not feel good about being able to place systems in hydric soils or in floodplains.	The prohibition of installing onsite systems in hydric soil, floodplains and on slopes greater than 25% is still found in the zoning ordinance.
Industry Professionals	1066.11 (f) (3)	Do we have problems about sieve analysis? Not a normal practice; not many people do it. Some use ultrasonic vibrator.	Section removed.
Industry Professionals	1066.11 (g) (1) (b	We need to fix. Needs to say within 200 ft. of drainfield or 100 ft of property line. Need to be the same as what is required on plot or map.	Changed.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.11 (g) (2)	Why are we including may instead of shall? It should be shall.	Changed.
Industry Professionals	1066.11 (g) (2) (2	Add existing between malfunctioning and on-site.	Changed.
Building and Development Group	1066.11 (g)(3)	Matrix: Class IV soils should be able to be utilized in some instances. State code allows any texture group to be utilized for absorption trench systems installed between 12 inches and 18 inches. The state does include prohibitions on Texture Group Iib, III, and IV soils for sand-on-sand systems.	Loudoun County has a guide with different classes of soils. One of these types of soils is class IV. The VAC would allow installation in some of the soils in this class and alternative systems can overcome some of the limitations. Staff recommends this prohibition be dropped.
Env & Conservation Group	1066.12	See how research at VA Tech was done related to the water table and depth to water table. The population is much greater for septic tank development; have to protect people. They are on side of caution; make it protective as possible to reduce risk to the homeowner.	VA tech and other research on this subject has been examined. Concerning remediation of fecal coliform the conclusion was that where septic tank effluent "is applied to the soil we would recommend that at least 45 cm of unsaturated soil be present." 45 cm=18" In the study abnormally low fecal coliform counts were present in the applied wastewater. Dr. Reneau stated "waste water with higher initial FC counts might result in higher FC counts at various depths." Additional factors not taken into account are the effect of "large continuous macropores" Other factors 1) Systems are commonly installed slightly deeper than permitted. 2) Studies have shown that water table rises above chroma 2 mottles for extended periods from November through April. 3) Viruses were not included in the study. 4) The influence of rock in the profile was not studied. 5) The study did not continue long term. 6) Contaminants of emerging concern were not considered. ie. fire retardants, pain killers, hormones, antibiotics, heavy metals and nanoparticles. 7) Pretreatment does not always work. 8) Water table mounding can occur under soil absorption systems.
Env & Conservation Group	1066.12	There are some existing graphics from the 2008 Comprehensive Watershed Management Plan which show septic risk density.	Noted. Loudoun has different prescriptive depths to rock in the Limestone Overlay District from the depth in other parts of the county.
Env & Conservation Group	1066.12	Has WRTAC looked at this or reviewed it?	Staff provided a briefing to the Water Resources Technical Advisory Committee on the amendments at their 3/21/16 and 4/25/2016 meetings
Env & Conservation Group	1066.12	Doesn't make sense to have a prescriptive depth to water table and depth to rock across the Commonwealth; it doesn't even make sense within Loudoun County itself due to the hydrogeology across the County.	Noted. Loudoun has different prescriptive depths to rock in the Limestone Overlay District from the depth in other parts of the county.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Env & Conservation Group	1066.12	Do you think we could be more specific about by type of soil where they should be allowed? Staff thinks there could be legal trouble with prohibiting systems in Class IV soils where the state would allow them. Difference between different Counties with allowing systems to be up to 50% slopes.	Localities have limited authority in regulating siting of alternative systems as per 15.2-2157C. A Local Ordinance can not prohibit alternative systems where they are allowed by the Virginia Administrative Code (VAC).
Env & Conservation Group	1066.12	Could you see specific standards for prohibiting in zoning ordinance? Most of the items in Clarke County are included in zoning ordinance.	Enforcement can be more difficult in the zoning ordinance. The Health Department is the lead agency in constructing and maintaining onsite systems. The Zoning Ordinance is not enforced by the Health Department although they do closely cooperate with Zoning.
Env & Conservation Group	1066.12	Is there any restriction of the configuration of the septic tank/field from a house itself?	Onsite sewage treatment systems must be 10' from houses on slab or crawl space and 20' from basements.
Industry Professionals	1066.12	Review definition of CR.	The definition matches that in the Virginia Administrative Code 12VAC5-610-120.
Industry Professionals	1066.12 (a) (1)	Reword to say 4 ft between limestone lithic rock and not just lithic rock.	Changed.
Building and Development Group	1066.12 (a)(1)	Matrix: In relation to distance to rock, 12VAC5-613-80.13 states that "the following minimum effluent quality shall be met for the described vertical separation to limiting feature as measures form the point of effluent application or the bottom of the trench or other excavation: 0 to 18 inches standoff to limiting feature with a minimum effluent treatment quality of TL-3 and disinfection". Recommend considering 0-18".	Staff recommends that the standoff remain at a 12" minimum except in the LOD where it will vary from 48" to 24" based on treatment level.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.12 (a) (2)	Don't like that it is 18 inches when we use pre-treatment; more stringent than the state requirement. Why is it 24 inches? Is this water table or is this with constructed material? The County is still 6 inches more than the state. What is the justification for that? The fluctuating water table is an opinion; it is not a justification. There is no proof or empirical data that 24 data is any better than 18 which is the State requirement. There is question on 18 inches from water table when water table fluctuates. Consider the 24 inches to be arbitrary.	Research was conducted at Virginia Tech focused on the treatment of wastewater in onsite sewage systems in the early to mid 1990's. It concluded that at least 18" (45 cm) of unsaturated soil was necessary to effectively mitigate fecal coliform (FC) bacteria. Additional treatment of effluent appears to substitute for soil depth. The study was conducted with effluent having relatively low FC counts of 35800 CFU per 100 ml. when typical domestic septic tank effluent is 1,000,000 to 100,000,000 CFU's per 100 ml. Large continuous micropores, rock and other soil structure were not taken into account. Water table in Loudoun is generally called at first depth of chroma 2 mottles. It is commonly known and substantiated by field research that during the November to April timeframe water table rises substantially and for long periods above chroma 2 mottles. It is quite common for soil absorption systems to be installed deeper than permitted or for the removal of rocks and stumps to create voids in trench bottoms. The study was not able to examine long term performance that may impact treatment. The effect of soil macropores and rock content was not examined. Removal of enteric viruses, pharmaceuticals and other contaminants of emerging concern were not examined. For these reasons it is recommended by staff that the 24" standoff to water table be maintained for septic tank effluent with reductions in standoff to 18" and 12" with increased levels of treatment.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Building and Development Group	1066.12 (a)(2)	Matrix: In relation to depth to seasonal water table, 12VAC5-613-80.13 states that "the following minimum effluent quality shall be met for the described vertical separation to limiting feature as measures form the point of effluent application or the bottom of the trench or other excavation: 0 to 18 inches standoff to limiting feature (including water table) with a minimum effluent treatment quality of TL-3 and disinfection. Additionally, where direct dispersal of effluent to groundwater occurs, effluent quality shall be governed by 12VAC5-613-90 C: If the concentration of any constituent in groundwater is less than the limits set forth at 9VAC25-280, the natural quality for the constituent shall be maintained; natural quality shall also be maintained for all constituents not set forth in 9VAC25-280. Recommend considering 0-18".	Research was conducted at Virginia Tech focused on the treatment of wastewater in onsite sewage systems in the early to mid 1990's. It concluded that at least 18" (45 cm) of unsaturated soil was necessary to effectively mitigate fecal coliform (FC) bacteria. Additional treatment of effluent appears to substitute for soil depth. The study was conducted with effluent having relatively low FC counts of 35800 CFU per 100 ml. when typical domestic septic tank effluent is 1,000,000 to 100,000,000 CFU's per 100 ml. Large continuous micropores, rock and other soil structure were not taken into account. Water table in Loudoun is generally called at first depth of chroma 2 mottles. It is commonly known and substantiated by field research that during the November to April timeframe water table rises substantially and for long periods above chroma 2 mottles. It is quite common for soil absorption systems to be installed deeper than permitted or for the removal of rocks and stumps to create voids in trench bottoms. The study was not able to examine long term performance that may impact treatment. The effect of soil macropores and rock content was not examined. Removal of enteric viruses, pharmaceuticals and other contaminants of emerging concern were not examined. For these reasons it is recommended by staff that the 24" standoff to water table be maintained for septic tank effluent with reductions in standoff to 18" and 12" with increased levels of treatment.
Env & Conservation Group	1066.12 (a) (3)	Wanted to clarify on why using absorption area instead of disposal system. Are you trying to speak about a particular part of the system?	The absorption area and disposal area address the same system components. It is now recognized that systems must treat effluent for bacteria, enteric viruses, nutrients, pharmaceuticals, chemicals, nano particles and other contaminants of emerging concern. For this reason staff is attempting to move away from the idea of just disposal and see onsite systems as a way to treat rather than simply dispose of effluent.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.12 (a) (3)	What is blasting? Fireworks, explosive materials? Use to blow up the shale. It used to be a problem at some point.	Blasting during site construction can have an impact on lithic rock especially in the limestone overlay district. The section has been modified to clarify intent.
Industry Professionals	1066.12 (a) (4)	Why do we have to have a minimum of 600 feet? Why do we have a minimum set up unless it is specific to a conventional system? They say alternative systems can function at 320 square feet. 600 feet is arbitrary for alternative systems. Doubling the size of alternative systems. What is the last sentence getting at... should say when drip irrigation is used. What does "original ground surface area" mean? Clarify difference between drip and trench systems.	The potential is increased for low flow designs to be subjected to flows that exceed design capacity. Having a 600 sq. ft. minimum beyond the VAC minimum of 400 sq. ft. provides a margin of safety from overuse. This margin of safety is carried over into design footprints for drip and spray dispersal for the same reason. The language was also clarified.
Building and Development Group	1066.12 (a)(4)	Matrix: Code section 12VAC5-610-950 states that the minimum absorption are for a single family residential dwellings shall be 400 square feet. Section 12VAC5-613-80 states the absorption area could be as small as 50 square feet for 1 bedroom dwelling with TL-3 treatment, perc rate of 15 mpi or less and sat conductivity of greater than 17 cm/day. Recommend reducing minimum absorption area of 600 square feet of subsurface disposal trench bottom.	The potential is increased for low flow designs to be subjected to flows that exceed design capacity. Having a 600 sq. ft. minimum beyond the VAC minimum of 400 sq. ft. provides a margin of safety from overuse. This margin of safety is carried over into design footprints for drip and spray dispersal for the same reason. The language was also clarified.
Env & Conservation Group	1066.12 (a) (5)	Like addition of language. Think it should be 10 feet.	Staff thinks that five feet is sufficient as the protection is for vehicles that inadvertently rather than intentionally leave the paved surface.
Industry Professionals	1066.12 (a) (5)	Happy that this language is included.	Noted.
Env & Conservation Group	1066.12 (b)	Why did you delete language on location of off-site easements? Maybe leave the language in to address issues raised on where/how drainfields are configured.	The language wasn't regulatory in nature, it was more explanatory.
Industry Professionals	1066.12 (b)	If you could get one bedroom, then you couldn't use an offsite easement. Allow easement for a four bedroom drainfield. This needs to be made more clear. Shut down new development on easements. Have recordation or a lot that existed before such and such a time? Needs to be realistically buildable lot. If you have a lot prior to 89, you should be able to have an easement. Allowance needs to be allowed for Hamlets (6).	Staff proposes allowing easements to lots of record prior to January 17, 1989 if an onsite sewage system serving a minimum of 450 gpd (three bedrooms) cannot be found on the existing lot. Hamlets are allowed under 1066.12(b) 7.
Building and Development Group	1066.12 (b)	Matrix: The state does not prohibit sub-surface disposal fields on off-site easements in any case. Recommend conforming to state Code.	The use of easements for onsite sewage treatment systems on other lots can be very problematic due to access and protection of the site from damage. It is not prohibited by this section but is restricted. Staff recommends these restrictions stay in place with the exception of #8 which no longer applies under current zoning.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Env & Conservation Group	1066.12 (b)(1)	What is the significance of the date?	This is the date this section of the ordinance was incorporated. It serves as the cutoff date for onsite sewage easement creation that does not meet these conditions.
Env & Conservation Group	1066.12 (b)(6)	Do not allow onsite sewage treatment systems on rural economy lots because it negates the point of using it for rural economy purposes; Although they still may have conservation purposes they are not meeting the purposes for rural economy. Rural economy lot and absorption lot should be different.	Soil absorption areas in hamlet common space are subject to damage from equipment from farming operations and therefore limit the use of open space for agricultural activity. Soil absorption areas are prohibited on rural economy lots by the zoning ordinance.
Env & Conservation Group	1066.12 (c)	Keep the reserve at 100%	Staff agrees.
Building and Development Group	1066.12 (c)(1)	Matrix: State repair areas is required when the rate is above 45 minutes per inch (mpi). No reserve is required if the rate is 45 mpi or below.	Staff recommends keeping the 100% reserve requirement. Soil absorption areas continue to fail and owners should not be left without recourse to a full repair area.
Industry Professionals	1066.12 (c) (2)	100% reserve required unless designated in an area for future sewer. If you can get them to commit to, then it is 50%. Make it 100% and then allow for waivers	Staff recommends retaining the 100% reserve area unless the conditions in 1066.12C 2 exist.
Building and Development Group	1066.12 (c)(2)	This provision allows for a reduction in reserve area where the future arrival of a public collection system is anticipated. The certainty and timing of this future arrival typically remains speculative, until such time as the contemplated facility has been designed, and the developer of the extension posts a performance guarantee. Where the extension of the public main is being undertaken by the utility or other public entity, certainty typically attaches when the Board of that entity approves the project's construction. Given these facts, would staff be interested in additional text, to require that the projected date of arrival has been based on more than pre-project speculation?	Staff met with a representative from Loudoun Water and agreed to the draft language. This provision is very rarely used.
Env & Conservation Group	1066.12 (d)	Can we try to minimize removal of vegetation?	Trees that are left in an absorption area usually die due to root damage. Trees that are left and survive or regrow can cause substantial damage if windthrown. Drip and spray systems can sometimes be installed to work around a few trees.
Industry Professionals	1066.12 (d) (2) (A)	Just say it has to be 10 feet from an easement. Maybe we could delete it all together because it is usually above the drainfield (up slope or running beside it); just usually a trench and sometimes it will go through rock. Won't be placed in an underground easement; can go up to it and that is it.	Staff recommends keeping the existing language to require a 10 foot distance from the actual buried service to the soil absorption area and no installation in the easement.
Env & Conservation Group	1066.12 (d)(2-4)	Why did you delete this language?	Staff removed it because it either lists a preference or other agencies regulate it.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Env & Conservation Group	1066.12 (d) (2) B	Recommend keeping language that states "The placement of subsurface soil absorption systems under overhead utility lines is prohibited where heavy equipment must traverse the system in order to service and maintain the utility line."	This prohibition was recommended to be removed by B&D group. The state regulations allow installation in certain circumstances for overhead utility easements. See policy 1993-06; The state has no prohibition for installation under service lines to houses where no easement exists. Staff acknowledges that damage can and does occur to systems under utility lines. It also occurs from vehicles in areas not under utility lines. Staff recommends that owners be aware of and protect their systems from damage. Staff recommends the prohibition be removed.
Building and Development Group	1066.12 (d)(2) B	Matrix: State does not prohibit subsurface soil absorption systems under overhead utility lines. Recommendation conforming to state Code.	Language has been deleted in draft. This prohibition was recommended to kept by the environmental and conservation group. The state regulations allow installation in certain circumstances for overhead utility easements. See policy 1993-06 The state has no prohibition for installation under service lines to houses where no easement exists. Staff acknowledges that damage can and does occur to systems under utility lines. It also occurs from in areas not under utility lines. Staff recommends that owners be aware of and protect their systems from damage.
Env & Conservation Group	1066.13	Is there a density of use for a portable toilet? Have you discussed this with the portable toilet businesses?	Staff has not contemplated a density of use for portable toilets. The weekly cleaning requirement will be discussed with portable toilet providers.
Building and Development Group	1066.13 (a)	Matrix: The Uniform Statewide Building Code of Virginia normally prohibits pit privies at new homes. In case of hardship, unsuitable soil conditions or temporary recreational use, a privy can sometimes be constructed after obtaining the approval of the building official with approval of the health departments. However, a sewage disposal system has to be provided to treat other sewage generated activities such as laundering, bathing, hand washing and cooking. Recommend conforming to state code.	Staff recommends that pit privies not be erected or installed except to repair or replace an existing pit privy. The Board has given direction to staff to implement a privy action plan that would eliminate many privies currently located within the County.
Env & Conservation Group	1066.13 (b)(3)	Think saying "as often as necessary" is better language.	A weekly minimum is established but under heavy use portable toilets may need hourly cleaning. Staff agrees.
Env & Conservation Group	1066.14	Okay with doing it on a case by case basis.	Noted.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.14	Comprehensive evaluation required is now called safe, adequate and proper. Then we know what it is. Case by case is open; maybe you could put an age of system. Instead of increase flow or higher waste strength, usually labeled increase in bedroom size or change of use.	Safe adequate and proper language is included. Staff is reluctant to include age of system since some systems may not be used as heavily as others.
Industry Professionals	1066.15	What is point of the section? Why not put it up front; or not need it. County wanted authority to not allow it. Don't need it or take out part of it and move to front.	Staff recommends deleting this section as localities have limited ability to disapprove new technology.
Env & Conservation Group	1066.16	Discussion about buoyancy and issues when it rains prior to the tanks being covered.	Tank buoyancy can be a major cause of failure and expense to owners. If tanks shift location leaks in the tank risers and cracks in connecting plumbing occurs. Staff has included buoyancy language in the ordinance and has discussed the issue with all major tank manufacturers supplying Loudoun County. If this language is included in the ordinance manufacturers will be asked to provide guidance on how to prevent buoyancy issues with their tanks.
Industry Professionals	1066.16 (b)	Change low areas to concave area or strike out "in low areas" - Don't mind doing water table reduction system; why can't we send email. Why do we have to provide a piece of paper. If it is water tight; then you need to accept it. Why aren't the tanks inspected by the health department prior to when they are put in the ground?	Low areas replaced with concave areas. All tanks are vacuum or water tested on site by the Health Department at time of inspection.
Industry Professionals	1066.16 (c)	Inspectors are looking for structural soundness. Hard to look at structural soundness once it is buried.	Tanks are left partially uncovered at inspection so seams and penetrations can be examined for leaks but may be partially covered to minimize damage from weather events.
Industry Professionals	1066.16 (d)	What are buoyancy controls? There are instructions on how the tank should be installed. Winchester is discussing buoyancy control for concrete tank.	Buoyancy controls may be as simple as ensuring adequate cover to prevent floating or it may involve anchoring devices to prevent the tank from moving. Buoyancy is a factor in plastic tank replacements.
Industry Professionals	1066.16 (e)	The riser is part of the structure. Risers supposed to pre-cast. Doesn't say what is actually out there. You would have to have one 30 inch. Maybe say minimum six inches.	Staff recommends that "the first section of" be added before riser.
Industry Professionals	1066.16 (f)	Most leave it to the County to test the tanks. They haven't been doing it because county is doing it. Okay with 2.5 inches of mercury.	Noted.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Industry Professionals	1066.17	Is there any reason for this section? If it has to comply with the chapter, why do we say it. Gives provisions prior to February 7, 2010. Looking at electronic resistivity requirements. Is (i) still applicable? Is system in the Overlay district considered non-conforming; systems with permits prior to something in 2010. Pre-existing systems should be exempt; repairs should not have to comply to new regulations.	Staff recommends that section stay as is in order to retain exemptions to LOD requirements prior to Feb 17, 2010. Resistivity testing is useful in the limestone overly district to prevent contamination of groundwater and damage to systems.
Env & Conservation Group	1066.20	Do you have any performance criteria for defining hardship? Had discussions on waivers, including maybe waiving a larger system if a deed restricts the number of household members.	Hardship is left to a case by case decision with room for a policy if needed.
Env & Conservation Group	1066.20	What is the percentage of waivers given per the number of waivers requested?	This is a new section so waivers have not been granted under it yet.
Industry Professionals	1066.20	Make sure sections can waive should be all listed. Say all standards subject to waiver. Don't want them asking for waivers on some of the items.	Amendments made.
Industry Professionals	1066.21	Think this is important; there is a standard of 30 calendar days instead of 15 days for violations of zoning ordinance.	Staff recommends changing 15 business days to 30 calendar days.
Industry Professionals	1066.22	Where is the time frame; make it more consistent with AOSS regs to make it the 15th of the following month.	This comment concerns 1066.07(b). Staff recommends changing to the 15th of the following month.
Industry Professionals	1066.22	What do you do with the money you get for the fines? The fine money should go to something to assist in septic related in items other than the general fund.	Staff recommends fines continue to be directed to the general fund.
Homeowners	1066.22	If owners are going to be fined for not pumping within certain time limits, then before those fines are put in place the administrative support for them to know what the County records say should be in place. (1) There needs to be a consistent identification of systems known to the pumpers/maintainers. I'm sure there are many odd situations... for example, I have one piece of property with two homes on it, two different addresses, and two tanks. I've had both tanks pumped on the same call and got copies of reports that both had my address on them. (2) The homeowner should be able to go online and see info County has about tanks/systems. (3) The owner should be able to get electronic reminders about upcoming deadlines. (4) To avoid confusion and unfair fines, the end-to-end process should be running for several months to a year before fines are levied.	1. The database of conventional systems in Loudoun County is improving rapidly, but is likely several years away from being reliably accurate. The database for alternative systems, while not perfect, is very accurate. 2. Homeowners are able to view Health Department files and system maintenance records including pump-out records in OnlineRME.com. 3. Owners who register on Loudoun.gov can receive electronic notices rather than direct mailings. 4. The pumping program has been phased in over the last four years. Staff agrees that the program should continue for some time before increased enforcement is contemplated.
Homeowners	1066.22	There should be a warning period where those deemed in need of a fine should be given a citation that their situation is in violation and will result in fines after date X.	The Code of Virginia provides that a Notice of Violation be sent 30 days prior to a civil penalty informing the citizen of the violation.

CHAPTER 1066 AMENDMENTS
STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.22	Not in favor of civil penalties. Concerned that it lowers the burden of proof for the County and encourages fines instead of taking someone to court. Do not like lowering the bar from a criminal penalty.	Civil penalties are more appropriate when regulating the behavior of large numbers of people as this ordinance does. They are a more efficient use of staff than criminal penalties. Civil penalties are more appropriate for violations such as not submitting reports, not pumping tanks and not performing maintenance.
Homeowners	1066.22	Owning a septic system can be expensive and requires a homeowner to set money aside in case there is an issue with the system. Do not want additional opportunities for someone to fine a homeowner when things aren't really causing harm.	Failing and poorly operating systems can degrade ground and surface water resources that many are dependent upon for drinking and recreation. Homeowners are notified of needed corrections well before civil penalties are assessed providing ample opportunity to avoid the penalty.
Homeowners	1066.22	What is the process now when a pumper is not in compliance? How would that change with civil penalties?	Currently when pumpers do not report, a criminal summons is sought and the defendant is brought to court. The penalty for violation is a class 1 misdemeanor. With civil penalties, the pumper could be given a ticket and given the option to appear in court or pay the fine.
Homeowners	1066.22	If money from civil penalties goes to the general fund, what precludes the County from writing tickets for funds to the general fund.	The intent of the civil penalties is to encourage compliance not generate funds.
Industry Professionals	1066.22 (a)	Structure for maximum amount of fine on a daily basis.	Fine frequency is limited by the Code of Virginia §15.2-2157B.
Homeowners	1066.22 (a) (1)	Could the County pursue a non-monetary penalty? For example, could the County withhold the license if they are not complying with reporting instead of applying a monetary fine. Although it doesn't affect the homeowner, they would encourage another process outside of a monetary penalty.	Restricting the ability of a company to conduct business by invalidating a license is much more disruptive to the business than a civil penalty.
Homeowners	1066.22 (a) (2)	Not in favor of a civil penalty when the homeowner is not doing harm. Seems like there should be other ways than civil penalties to address infractions around not following a schedule. If it is bad enough, then it should be a criminal penalty.	Civil penalties, by the Code of Virginia 15.2-2157B, must be preceded by a notice of violation at least 30 days prior. Owners have ample time to comply prior to a penalty. Without an inspection, the operational status of the system is unknown so it is impossible to know if harm is being done. For most violations civil penalties rather than criminal are more appropriate. Criminal penalties can be used in lieu of civil penalties if the situation warrants it. Not pumping septic tanks as needed can shorten system life leading to failure, increase system replacement costs, and increase demands on capital budgets as communal or central wastewater may need to be extended.
Industry Professionals	1066.22 (a) (3)&(4)	What is the time frame of repairing of a failing system?	As long as owners make progress and communicate with the Health Department fines are generally not levied.

CHAPTER 1066 AMENDMENTS

STAKEHOLDER COMMENTS ON PROPOSED CHANGES BY SECTION

Stakeholders Group	Code Section	Stakeholders Comments	Staff Comments
Homeowners	1066.22 (a) (3-6)	These penalties make sense because they could cause harm.	Comment noted.
Industry Professionals	Appendix I	Discussion on ** Property lines to five or ten feet can make a big difference. We waive it to five feet if you are marked; why not make it five feet. It gives a little leeway to go to five. Why not get rid of the waiver and then just go to five feet. Need margin of safety.	Staff recommends 10' with provision to 5' with survey as stated.
Industry Professionals	Appendix I	Marsha Degan gave an opinion. Can do from vertical cut it was 20 foot from bottom. Top edge of banks and cuts.	Staff recommends that Appendix I be modified to 20' from greater than a 3:1 slope.
Industry Professionals	Appendix I	Do you want to cross out basements; state code already has it covered. In Pools do you want it 20 feet no matter what depth; for 4 foot pool at edge of pool. Should be 20 feet from where it matches the trench bottom. Discussion on 3:1 or 2:1; prefer 2:1. Would you be okay if it says steeper than 3:1.	Staff recommends distance stay at 20' for pools in line with unwritten guidance from state. Changed to be 3:1.
Building and Development Group	Appendix I	Matrix: Recommend 5 foot setback from property line to absorption area.	Proposed changes include reducing setback to 5 feet if a survey plat is provided and applicable property lines are clearly marked in the field both during permitting and construction.
Building and Development Group	Appendix I	Matrix: Section 12VAC5-610-10 of State Code allows set back distances from streams to be reduced to 10 feet in Group III and IV soils and 20 feet in Group I and III soils if the subsurface soil absorption system is designed to produce unsaturated flow condition in the soil. Recommend considering a reduction to 10' or 20'.	This is found in Table 4.2 of VAC5-610-597. Appendix I is recommended to allow reduction to conform with the VAC provided that effluent is pretreated to TL2 or TL3. The concern is that a failing system in close proximity to a stream can run off or be flushed into the stream by rainfall. It the effluent is pretreated and the system is consistently operated and maintained, this concern is greatly lessened.
Building and Development Group	Appendix I	Matrix: 12VAC5-610-10 Part IV General criteria for the selection of a wastewater treatment and disposal system based on site conditions Table 4.2 Minimum Separation Distances specify 10 feet setback to drainage ditches. Recommend setback be 10'.	Personal observation by LCHD staff has seen effluent breaking onto the ground surface at greater than 10' on road cuts. Appendix I has been amended to require 20' only if cuts are more than 3:1, otherwise the state minimum of 10' would apply.

CHAPTER 1066 AMENDMENTS
ENVIRONMENT AND CONSERVATION STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.01	Are all the changes staff supported?	Yes.
1066.01	Agreed with staff on the change from disposal system to treatement system	Comment noted.
1066.01	Had a discussion on the number of privies in the County. Provide privy report from Needs Assessment Report	The report is available at https://www.loudoun.gov/DocumentCenter/View/113269
1066.01	What is the new definition in (a) related to the alternative discharging system systems? Is it newer? Weaker? Replacing something?	It was pulled out of the state code and added to the local ordinance as civil penalties may now be used to ensure maintenance and repair.
1066.02	No Comments	
1066.03	No Comments	
1066.04	Discussion on legislation that would require the private sector to provide all permits for work	HB558, which passed the House and Senate, directs the State Health Commissioner to develop a plan for the orderly reduction and elimination of evaluation and design services by the Department of Health for onsite sewage systems and private wells, which shall provide for the protection of the public health as the Department transitions to accepting only applications that are supported by private site evaluations and designs from a licensed professional engineer or licensed onsite soil evaluator or, for any work subject to regulations governing private wells in the Commonwealth, by a licensed water well system provider. The Commissioner shall report to the Governor and the General Assembly by November 15, 2016.
1066.05	What is the result for this section? Is the County still going to do 100% inspections? What has been the experience of the inspections?	Currently the County is proposing retaining 100% inspection as it is in the current ordinance. County staff does tank water tightness testing that the private sector is not familiar with; private sector has not done these prior since County completed them. The experience has been that the Health Department inspection has occasionally identified issues that could have resulted in greater expense to the owner if not addressed prior to operation.
1066.05	Think it is good to have someone do inspections that doesn't have a financial interest	Comment noted.
1066.07	Who decides whether the tank needs to be pumped out or not? And that the system is working okay?	Your operator makes this determination.
1066.07	What is the cost differential for inspection or pump out? How many systems on average need to pumped out? What is average rate for pump out?	Loudoun County has approximately 13,000 conventional and 1,700 alternative onsite sewage treatment systems. Pump-out costs range from $250 to $450. Inspection costs range from $0 to $200. 3,227 tanks were reported as pumped out in Loudoun County in 2015. Of these, 411 were alternative and 2,004 were conventional with the balance being pump and haul tanks.

CHAPTER 1066 AMENDMENTS
ENVIRONMENT AND CONSERVATION STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.08	What are the fees for? Do the fees change? Are they set annually?	Fees are set by both the State and Loudoun County. They are meant to recover costs associated with Health Department permitting and inspections. Fee reviews are done every ten years by Loudoun County.
1066.10 (a)	Could you have performance criteria that said when you could use sewage ejectors or pumps for raw sewage?	12VAC 5-610-880 B6 prohibits pumps unless they are open face centrifugal. They are allowed under an engineer design. 1066 is being changed to reflect State regulations.
1066.10 (c)	Would having a sewer less than 4 inches in diameter just asking for it to clog?	Less clogging is anticipated with 4" building sewers. 3" building sewers are allowed by the state in 12VAC5-610-730. Virtually all sewers installed in Loudoun are 4" now.
1066.11	What floodplains are systems allowed to be placed? Are they allowed to be placed in minor floodplains? Not comfortable with any drainfield or septic tank in a floodplain, especially not an alternative system that is above ground	According to a 2006 zoning determination the zoning ordinance drainfields in the floodplain "would only be permitted in cases where it serves a use that is permitted in the FOD." (floodplain overlay district) 12VAC5-610-593 7. Prohibits subsurface soil absorption systems in flood plains subject to annual or more frequent sustained (24 hours) flooding.
1066.11 (f) (3)	What is the removal of prohibition on Class IV soils?	Loudoun County has a guide "Interpretive Guide to the Use of Soils Maps" with different classes of soils. One of these types of soils is Class IV. The VA Administrative Code would allow installation in some of the soils in this class and alternative systems can overcome some of the limitations. Staff recommends this prohibition be dropped.
1066.11 (f) (3)	Do not feel good about being able to place systems in hydric soils or in floodplains	The prohibition of installing onsite systems in hydric soil, floodplains and on slopes greater than 25% is still found in the zoning ordinance.
1066.12	See how research at VA Tech was done related to the water table and depth to water table. The population is much greater for septic tank development; have to protect people. They are on side of caution; make it protective as possible to reduce risk to the homeowner	VA tech and other research on this subject has been examined. Concerning remediation of fecal coliform the conclusion was that where septic tank effluent "is applied to the soil we would recommend that at least 45 cm of unsaturated soil be present." 45 cm=18" In the study abnormally low fecal coliform counts were present in the applied wastewater. Dr. Reneau stated "waste water with higher initial FC counts might result in higher FC counts at various depths." Additional factors not taken into account are the effect of "large continuous macropores" Other factors 1) Systems are commonly installed slightly deeper than permitted. 2) Studies have shown that water table rises above chroma 2 mottles for extended periods from November through April. 3) Viruses were not included in the study. 4) The influence of rock in the profile was not studied. 5) The study did not continue long term. 6) Contaminants of emerging concern were not considered. ie. fire retardants, pain killers, hormones, antibiotics, heavy metals and nanoparticles. 7) Pretreatment does not always work. 8) Water table mounding can occur under soil absorption systems.
1066.12	There are some existing graphics from the 2008 Comprehensive Watershed Management Plan which show septic risk density	Noted. Loudoun has different prescriptive depths to rock in the Limestone Overlay District from the depth in other parts of the county.

CHAPTER 1066 AMENDMENTS
ENVIRONMENT AND CONSERVATION STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12	Has WRTAC looked at this or reviewed it?	Staff provided a briefing to the Water Resources Technical Advisory Committee on the amendments at their 3/21/16 and 4/25/2016 meetings
1066.12	Doesn't make sense to have a prescriptive depth to water table and depth to rock across the Commonwealth; it doesn't even make since within Loudoun County itself due to the hydogeology across the County.	Noted. Loudoun has different prescriptive depths to rock in the Limestone Overlay District from the depth in other parts of the county.
1066.12	Do you think we could be more specific about by type of soil where they should be allowed? Staff thinks there could be legal trouble with prohibiting systems in Class IV soils where the state would allow them. Difference between different Counties with allowing systems to be up to 50% slopes.	Localities have limited authority in regulating siting of alternative systems as per 15.2-2157C. A Local Ordinance can not prohibit alternative systems where they are allowed by the Virginia Administrative Code (VAC).
1066.12	Could you see specific standards for prohibiting in zoning ordinance? Most of the items in Clarke County are included in zoning ordinance	Enforcement can be more difficult in the zoning ordinance. The Health Department is the lead agency in constructing and maintaining onsite systems. The Zoning Ordinance is not enforced by the Health Department although they do closely cooperate with Zoning.
1066.12	Is there any restriction of the configuration of the septic tank/field from a house itself?	Onsite sewage treatment systems must be 10' from houses on slab or crawl space and 20' from basements.
1066.12 (a) (3)	Wanted to clarify on why using absorption area instead of disposal system. Are you trying to speak about a particular part of the system?	The absorption area and disposal area address the same system components. It is now recognized that systems must treat effluent for bacteria, enteric viruses, nutrients, pharmaceuticals, chemicals, nano particles and other contaminants of emerging concern. For this reason staff is attempting to move away from the idea of just disposal and see onsite systems as a way to treat rather than simply dispose of effluent.
1066.12 (a) (5)	Like addition of language. Think it should be 10 feet.	Staff thinks that five feet is sufficient as the protection is for vehicles that inadvertently rather than intentionally leave the paved surface.
1066.12 (b)	Why did you delete language on location of off-site easements ? Maybe leave the langauge in to address issues raised on where/how drainfields are configured	The language wasn't regulatory in nature, it was more explanatory.
1066.12 (b)(1)	What is the significance of the date?	This is the date this section of the ordinance was incorporated. It serves as the cutoff date for onsite sewage easement creation that does not meet these conditions.
1066.12 (b)(6)	Do not allow onsite sewage treatment systems on rural economy lots because it negates the point of using it for rural economy purposes; Although they still may have conservation purposes they are not meeting the purposes for rural economy. Rural economy lot and absorption lot should be different.	Soil absorption areas in hamlet common space are subject to damage from equipment from farming operations and therefore limit the use of open space for agricultural activity. Soil absorption areas are prohibited on rural economy lots by the zoning ordinance.
1066.12 (c)	Keep the reserve at 100%	Staff agrees.

CHAPTER 1066 AMENDMENTS
ENVIRONMENT AND CONSERVATION STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12 (d)	Can we try to minimize removal of vegetation?	Trees that are left in an absorption area usually die due to root damage. Trees that are left and survive or regrow can cause substantial damage if windthrown. Drip and spray systems can sometimes be installed to work around a few trees.
1066.12 (d) (2) B	Recommend keeping language that states" The placement of subsurface soil absorption systems under overhead utility lines is prohibited where heavy equipment must traverse the system in order to service and maintain the utility line."	This prohibition was recommended to be removed by B&D group. The state regulations allow installation in certain circumstances for overhead utility easements. See policy 1993-06; The state has no prohibition for installation under service lines to houses where no easement exists. Staff acknowledges that damage can and does occur to systems under utility lines. It also occurs from vehicles in areas not under utility lines. Staff recommends that owners be aware of and protect their systems from damage. Staff recommends the prohibition be removed.
1066.12 (d)(2-4)	Why did you delete this language?	Staff removed it because it either lists a preference or other agencies regulate it.
1066.13	Is there a density of use for a portable toilet? Have you discussed this with the portable toilet businesses?	Staff has not contemplated a density of use for portable toilets. The weekly cleaning requirement will be discussed with portable toilet providers.
1066.13 (b)(3)	Think saying "as often as necessary" is better langauge	A weekly minimum is established but under heavy use portable toilets may need hourly cleaning. Staff agrees.
1066.14	Okay with doing it on a case by case basis	Noted.
1066.16	Discussion about buoyancy and issues when it rains prior to the tanks being covered	Tank buoyancy can be a major cause of failure and expense to owners. If tanks shift location leaks in the tank risers and cracks in connecting plumbing occurs. Staff has included buoyancy language in the ordinance and has discussed the issue with all major tank manufacturers supplying Loudoun County. If this language is included in the ordinance manufacturers will be asked to provide guidance on how to prevent buoyancy issues with their tanks.
1066.20	Do you have any performance criteria for defining hardship? Had discussions on waivers, including maybe waiving a larger system if a deed restricts the number of household members.	Hardship is left to a case by case decision with room for a policy if needed.
1066.20	What is the percentage of waivers given per the number of waivers requested?	This is a new section so waivers have not been granted under it yet.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
General	Renters got evicted even though there were some issues; before could get a preliminary subdivision plan every property had to be up to code. Could we make it record plat instead of preliminary?	This is a Health Department policy issue that should be addressed separately from 1066 revisions.
1066.00	There has been discussion that VDH will state that more stringent County regulations are not going to be accepted. It has been challenged in three Counties. Some AOSE's want only State regulations to apply; the County should check into this.	Localities are permitted to have more stringent ordinances as per 15.2-2157A.
1066.01	No Comments	
1066.02	No Comments	
1066.03 (c)	Was the language that is stricken been moved to another place? The language is located was added in another place	The language was moved to 1066.11 (c)
1066.03	Are repair permits still going to require an AOSE or is that a case-by-case basis? It is not specifically included. It might be good to add language that states you need a permit by a licensed AOSE and list the things that someone can do. It is confusing on what is considered a repair or maintenance. Specific examples of when permits are needed from an AOSE; that way can clarify what an installer can do. What is the difference between maintenance or repair? Can the County provide a guidance memorandum? Need to determine what is acceptable from a maintenance provider or AOSE.	The use of an Onsite Soil Evaluator is always encouraged by staff. Repair permits requiring an alternative system require an Onsite Soil Evaluator or Professional Engineer. Minor repairs that are not "like for like" also require an Onsite Soil Evaluator or Professional Engineer. The scope of work allowed by OSE's and operators is determined by the VA Department of Professional and Occupational Regulation (DPOR). For minor repairs such as distribution box replacements, broken lines, tank replacements and T replacements staff recommends that permits and inspections be done by the Health Department to reduce costs to homeowners and discourage illegal repairs. If private inspector costs are added to these repairs it is feared that repairs will go undone or uninspected.
1066.04	Why is there still an installer license that is equivalent to a conventional operator license? Suggest dropping installers license since there is an equivalent license from the State (DPOR license).	The installer license is relatively easy to get, especially with the bond requirement dropped. It requires that new installers become familiar with local requirements before attempting installation. It allows the Health Department to develop a list of installers that is useful to owners. It also serves as a way to verify that installers have a DPOR license.
1066.04	One person commented that an installer license from the County is good because there is different County ordinances; would enforce that they need knowledge of the ordinance	Agreed. Staff strongly recommends that installers become familiar with local requirements before attempting installation.
1066.04	Should remove the language "Such license requirement shall not apply to an individual person who installs not more than one such sysem on his own property within one year or 12 consecutive months" This applies to individual homeowners. DPOR has ruled that homeowners cannot install systems.	Agreed. Language removed. This section would require anyone installing a system to have a DPOR and County license.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.05	The County has been directed to inspect all the systems, instead of having just AOSE inspect them. Nothing in any DPOR or Health Dept regulations require full 100% inspection by the Health Department. Other than Fauquier, most jurisdictions review 10% of individuals work in the field; level two review of a drainfield site. Requires an additonal person to look at it before you can cover it up; do it within three days. Creates inefficiency.	Comment noted.
1066.05	When does the County inspect the system? Can you inspect it again. Are they are at random? Verification inspections. Direct notice is given to property owners.	This question is in regards to inspections conducted in support of Chapter 1067. Verification inspections of alternative systems are random and notice is given to property owners.
1066.05	How can the County do an inspection when they are not a licensed operator? You are going back and stating that the operators report is insufficient.	This observation is in regards to inspections conducted in support of Chapter 1067. Verification inspections do not involve operation of the system and are to verify the observations in the submitted report. An operators license is not required by staff for these inspections.
1066.05	Can operators do closing inspection? The regulation precluding that has sunsetted.	This is a question for Department of Professional and Occupational Regulation.
1066.05	The only time conventional systems get inspected is for real estate closings. Why aren't these inspections included in online RME? It is not a requirement of DPOR. Pump out requirements are recorded in RME.	There is not a current requirement for these inspections to be submitted to OnlineRME.
1066.05	Is the County still interested in 100% review of construction inspections? Think it is inefficient. Inclement weather could come and the AOSE could clear it but they are waiting for the Health Department; in the absence or inability to make it out the Health Department can come out and render a case decision. Could you add a provision on "case-by-case basis"- could we cover it up when the AOSE has approved it? Soften last two sentences. Installer is required to contact Health Department, but they can waive and inspect. Would put additional onous on the AOSE.	Agreed. The language has been adjusted to allow more flexibility for inclement weather when private inspections have been completed.
1066.06	No Comments	
1066.07	Does Chapter 1067 require the 5 year pump out? The pump out on a AOSS is dependent on the inspection. They liked this because it depends on how the system is operating. Current letters use language such as "catastrophic issues", even when it related to a pump outs which is considered maintenence Could you change wording so that it does not scare homeowners and is more reflective of the issue? Could we work on characterizing issues with systems? Can you help define failure, maintenance etc. for a property owner?	The five year pump-out requirement is in 1066.07. Staff continues to work with owners and contractors to improve communications. The letters requiring correction of deficiencies in alternative systems is in support of Chapter 1067. The term "catastrophic issues" is not used in any letters.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.09	Have you defined "a sanitary manner"? It hasn't been defined. There are difference between failure, malfunctioning, or not functioning as designed. If it just needs repair, does that mean they have to hook up to sewer? It makes sense that you would make them connect if there is failure and no reserve. If malfuntion with no means of repair, then should have to connect. Connecting is very expensive, and there could be a potential that there is no available easement. Have to be careful of whether discharge systems are allowed; discharge systems are allowed for repair.	Language from the Comprehensive Plan has been included. The direction of the comprehensive plan and the intent of this section is that systems that have failed or need substantial repairs to function as designed will connect to public sewer if it is available within 300 ft. and the owner allows connection. If the expense is excessive or easements cannot be obtained the owner has the option of requesting a waiver from the Health Director.
1066.10	We should make it a requirement to do time dosed. Much better chance of catching issues before hydrolic failure or malfunction when using time dose. Enhanced flow should be only be allowed otherwise.	The language has been revised to allow for time dose designs or enhanced flow.
1066.10	Why are there no requirements for inspections when you have panels, pumps…anything not gravity flow should be inspected. Some need to pump on volume and time; it is a design issue. You can have a demand dose panel; do not need to do time dose only. Do time dose and/or demand and enhanced flow. May not work for some when volume is low.	Requiring inspections for conventional systems with pumps would require additional resources and should be considered separately by the BOS. The language has been revised to allow for time dose or enhanced flow designs.
1066.10	Is there a reason why sewage injector pumps were not allowed in the County? 80% of new houses have injector pumps; would you rather have that or tanks buried deeply. Allow sewage ejector pumps with alarm provision. Is it beyond scope of this ordinance? It would be nice if the option was available. We should not try to pump raw sewage; but we could have technical memorandum on best practices. We could have guidance but not a regulation. The reliability of ejector pumps has improved substantially.	Sewage ejector pumps are allowed by the building department when interior to the building and are heavily used in new construction. This language only applies to sewage ejector pumps placed exterior to the building and has been revised to have an exception when designed by a professional engineer as is similar to state guidance.
1066.10 (b)	Does this apply to just concrete? What about plastic? It most likely will not have an inherent color to identify. More of a manufature requirment; would need to make sure the appropriate box is used.	Plastic boxes are resistant to corrosion. The dye or inherent color requirement would only apply to concrete boxes.
1066.10 (c)	Does gravity need be included? What is the reason for not also specifying material? Why not use 3,000 lb. crush strength. May not want to fall back to state regs which allows cast iron and terricata	Fall is addressed in 1066.10e. Specifying material may create conflicts with future technological advances and is addressed in 12VAC5-610-750. Vitrified clay and cast iron is not encountered in new construction due to the cost and ease of current materials. Language was clarified to apply to gravity building sewers.
1066.10 (d)	Is this the only box we have to do this with? Only should need to set d-boxes in concrete; not concrete in concrete	This is only for non-concrete boxes.
1066.10 (e)	Is section e totally like State regs. Is it needed since it includes in State regs. Also need to add gravity prior to sewers in (e)	This is identical to the Virginia Administrative code in 12VAC5-610-740 and 12VAC5-610-870 and is intended to reduce creative designs submitted by professional engineers. Gravity was added prior to sewers for clarity.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.11 (c)	Is the backhoe requirement new? Backhoe's shouldn't be required for every lot. Why not save the homewoner money when an industrial professional knows the soils are nice? If AOSE uses a backhoe, why must there be another for the County? Like the idea that it is required, but you can get a waiver. Maybe you could include a waiver policy to describe when it can be waived. A subdivision definitely will need to use a backhoe for the soils tests.	The backhoe requirement has been longstanding by policy and is here being codified. A waiver provision is included. Soils are highly variable and due to the importance of soil based decisions the use of a backhoe is appropriate in most cases.
1066.11 (d)	Loudoun has not allowed site sketches per se; it always has been surveyed plat. Are you going to allow site sketches (no). If you say surveyor you are going to need a ceritified land surveyor. Don't use survey term or plat term. Work around would be plot or map.	1066.11 (d) (8) is to be deleted. Regulated also by Virginia Department of Health General Memorandum and Policy- GMP 2015-01. Owner has to sign a statement on application that easements are shown.
1066.11 (d)(1-8)	Deminsions of the property. Depending on the size, it would be difficult to survey the whole property. Do we have to do boundaries of parcels when you are only doing one particular section? Dimension of property line within a certain number of feet. Similar to wells. Need some type of dimension from system or property line. Whichever may be closer	This section has not been interpreted in the past to prohibit in certain circumstances surveys of just relevant portions of the property. Regulated also by VDH GMP 2015-01.
1066.11 (d) (8)	This would require a title report. May be difficult to determine where they are exactly. Needs to be there, but there has to be an easier way to do it. Title searches are expensive when trying to determine where easements are on title report. What are existing, installed easements? Use language of easements to the extent practical. Do not use	1066.11 (d)(8) is to be deleted. See VDH GMP 2015-01.
1066.11 (e) (1)	State is 50% slope, and Loudoun is only 25%; a lot of the Counties require 25%, but now with the drip tubing you can go to 50% as what the state said. Now you are being stricter than the alternative regs. Mountainside Overlay District plays a role and Steep Slopes standard. The ordinance should be revised to exclude drainfields and allow slopes up to 50% and we should not have a minimim square footage requirement	Language will be amended to prohibit trench and pad based systems on slopes greater than 25% but would allow drip and other trenchless distribution systems.
1066.11 (e) (2)	Can unfavored micro-topography be defined in any way? Remove	Removed.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.11 (e) (5)	More stringent requirement for springs in limestone overlay district. Would be okay with develop or strike it. In ZO it says from any spring. In cases of some developed springs; need in house policy on what needs to be done with the spring; concrete in or pull the pump. What is requriment from it going from developed to non-working? Maybe we can say that the pipe is removed; concreting over is excessive.	"Developed" will be inserted. Undeveloped springs are typically not used as a drinking water source. The method of spring abandonment is best addressed in policy.
1066.11 (f) (1)	Why not make it 24 inches below trench bottom instead of six feet. If you do inches it is plus or minus 1/2 inch. If it 6 foot it is plus or minus 2 ft. plus or minus a 1/2 foot. Need to consider what we want it to read.	Language changed to be 6' or deep enough to verify all standoffs.
1066.11 (f) (3)	Do we have problems about sieve analysis? Not a normal practice; not many people do it. Some use ultrasonic vibrator.	Section removed.
1066.11 (g) (1) (B)	We need to fix. Needs to say within 200 ft. of drainfield or 100 ft of property line. Need to be the same as what is required on plot or map.	Changed.
1066.11 (g) (2)	Why are we including may instead of shall. It should be shall.	Changed.
1066.11 (g) (2) (2)	Add exising between malfunctioning and on-site.	Changed.
1066.12	Review definition of CR	The definition matches that in the Virginia Administrative Code 12VAC5-610-120.
1066.12 (a) (1)	Reword to say 4 ft between limestone lithic rock and not just lithic rock	Changed.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12 (a) (2)	Don't like that is 18 inches when we use pre-treatment; more stringent than the state requirement. Why is it 24 inches? Is this water table or is this with constructed material? The County is still 6 inches more than the state. What is the justification for that? The fluctuating water table is an opinion; it is not a justification. There is no proof or imperical data that 24 data is any better than 18 which is the State requirement. There is question on 18 inches from water table when water table fluctuates. Consider the 24 inches to be arbitrary.	Research was conducted at Virginia Tech focused on the treatment of wastewater in onsite sewage systems in the early to mid 1990's. It concluded that at least 18" (45 cm) of unsaturated soil was necessary to effectively mitigate fecal coliform (FC) bacteria. Additional treatment of effluent appears to substitute for soil depth. The study was conducted with effluent having relatively low FC counts of 35800 CFU per 100 ml. when typical domestic septic tank effluent is 1,000,000 to 100,000,000 CFU's per 100 ml. Large continuous micropores, rock and other soil structure were not taken into account. Water table in Loudoun is generally called at first depth of chroma 2 mottles. It is commonly known and substantiated by field research that during the November to April timeframe water table rises substantially and for long periods above chroma 2 mottles. It is quite common for soil absorption systems to be installed deeper than permitted or for the removal of rocks and stumps to create voids in trench bottoms. The study was not able to examine long term performance that may impact treatment. The effect of soil macropores and rock content was not examined. Removal of enteric viruses, pharmaceuticals and other contaminants of emerging concern were not examined. For these reasons it is recommended by staff that the 24" standoff to water table be maintained for septic tank effluent with reductions in standoff to 18" and 12" with increased levels of treatment.
1066.12 (a) (3)	What is blasting? Fireworks, explosive materials? Use to blow up the shale. It used to be a problem at some point.	Blasting during site construction can have an impact on lithic rock especially in the limestone overlay district. The section has been modified to clarify intent.
1066.12 (a) (4)	Why do we have to have a minimum of 600 feet? Why do we have a minimum set up unless it is specific to a conventional system? They say alternative systems can function at 320 square feet. 600 feet is arbitrary for alternative systems. Doubling the size of alternative systems. What is the last sentence getting at... should say when drip irrigation is used. What does "original ground surface area" mean? Clarify difference between drip and	The potential is increased for low flow designs to be subjected to flows that exceed design capacity. Having a 600 sq. ft. minimum beyond the VAC minimum of 400 sq. ft. provides a margin of safety from overuse. This margin of safety is carried over into design footprints for drip and spray dispersal for the same reason. The language was also clarified.
1066.12 (a) (5)	Happy that this language is included	Noted.
1066.12 (b)	If you could get one bedroom, then you couldn't use an offsite easement. Allow easement for a four bedroom drainfield. This needs to be made more clear. Shut down new development on easements. Have recordation or a lot that existed before such and such a time? Needs to be realistically buildable lot. If you have a lot prior to 89, you should be able to have an easement. Allowance needs to be allowed for Hamlets (6)	Staff proposes allowing easements to lots of record prior to January 17, 1989 if an onsite sewage system serving a minimum of 450 gpd (three bedrooms) cannot be found on the existing lot. Hamlets are allowed under 1066.12(b) 7.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12 (c) (2)	100% reserve required unless designated in an area for future sewer. If you can get them to commit to, then it is 50%. Make it 100% and then allow for waivers	Staff recommends retaining the 100% reserve area unless the conditions in 1066.12C 2 exist.
1066.12 (d) (2) (A)	Just say it has to be 10 feet from an easement. Maybe we could delete it all together because it is usually above the drainfield (up slope or running beside it); just usually a trench and sometimes it will go through rock. Won't be placed in an underground easement; can go up to it and that is it.	Staff recommends keeping the existing language to require a 10 foot distance from the actual buried service to the soil absorption area and no installation in the easement.
1066.13	No Comments	
1066.14	Comprehensive evaluation required is now called safe, adequate and proper. Then we know what it is. Case by case is open; maybe you could put an age of system. Instead of increase flow or higher waste strength; usually labeled increase in bedroom size or change of use	Safe adequate and proper language is included. Staff is reluctant to include age of system since some systems may not be used as heavily as others.
1066.15	What is point of the section? Why not put it up front; or not need it. County wanted authority to not allow it. Don't need it or take out part of it and move to front.	Staff recommends deleting this section as localities have limited ability to disapprove new technology.
1066.16 (b)	Change low areas to concave area or strike out " in low areas" - Don't mind doing water table reduction system; why can't we send email. Why do we have to provide a piece of paper. If it is water tight; then you need to accept it. Why aren't the tanks inspected by the health department prior to when they are put in the ground?	Low areas replaced with concave areas. All tanks are vacuum or water tested on site by the Health Department at time of inspection.
1066.16 (c)	Inspectors are looking for structural soundness. Hard to look at structural soundness once it is buried.	Tanks are left partially uncovered at inspection so seams and penetrations can be examined for leaks but may be partially covered to minimize damage from weather events.
1066.16 (d)	What are buoyancy controls? There are instructions on how the tank should be installed. Winchester is discussing buoyancy control for concrete tank.	Buoyancy controls may be as simple as ensuring adequate cover to prevent floating or it may involve anchoring devices to prevent the tank from moving. Buoyancy is a factor in plastic tank replacements.
1066.16 (e)	The riser is part of the structure. Risers supposed to pre-cast. Doesn't say what is actually out there. You would have to have one 30 inch. Maybe say minimum six inches.	Staff recommends that "the first section of" be added before riser.
1066.16 (f)	Most leave it to the County to test the tanks. They haven't been doing it because county is doing it. Okay with 2.5 inches of mercury.	Noted.

CHAPTER 1066 AMENDMENTS
INDUSTRY PROFESSIONALS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.17	Is there any reason for this section? If it has to comply with the chapter, why do we say it. Gives provisions prior to February 7, 2010. Looking at electronic resistevity requirements. Is (i) still applicable? Is system in the Overlay distict considered non-conforming; systems with permits prior to something in 2010. Pre-existing systems should be exempt; repairs should not have to comply to new regulations.	Staff recommends that section stay as is in order to retain exemptions to LOD requirements prior to Feb 17, 2010. Resistivity testing is useful in the limestone overly district to prevent contamination of groundwater and damage to systems.
1066.20	Make sure sections can waive should be all listed. Say all standards subject to waiver. Don't want them asking for waivers on some of the items.	Amendments made.
1066.21	Think this is important; there is a standard of 30 calendar days instead of 15 days for violations of zoning ordinance	Staff recommends changing 15 business days to 30 calendar days.
1066.22	Where is the time frame; make it more consistent with AOSS regs to make it the 15th of the following month	This comment concerns 1066.07(b). Staff recommends changing to the 15th of the following month.
1066.22	What do you do with the money you get for the fines? The fine money should go to something to assist in septic related in items other than the general fund.	Staff recommends fines continue to be directed to the general fund.
1066.22 (a)	Structure for maximum amount of fine on a daily basis.	Fine frequency is limited by the Code of Virginia §15.2-2157B.
1066.22 (a) (3)&(4)	What is the time frame of repairing of a failing system?	As long as owners make progress and communicate with the Health Department fines are generally not levied.
Appendix I	Discussion on ** Property lines to five or ten feet can make a big difference. We waive it to five feet if you are marked; why not make it five feet. It gives a little leeway to go to five. Why not get rid of the waiver and then just go to five feet. Need margin of safety.	Staff recommends 10' with provision to 5' with survey as stated.
Appendix I	Marsha Deagan gave an opionion. Can do from vertical cut it was 20 foot from bottom. Top edge of banks and cuts.	Staff recommends that Appendix I be modified to 20' from greater than a 3:1 slope.
Appendix I	Do you want to cross out basements; state code already has it covered. In Pools do you want it 20 feet no matter what depth; for 4 foot pool at edge of pool. Should be 20 feet from where it matches the trench bottom. Discussion on 3:1 or 2:1; prefer 2:1. Would you be okay if it says steeper than 3:1	Staff recommends distance stay at 20' for pools in line with unwritten guidance from state. Changed to be 3:1.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.001	Since it is a Dillon Rule State, why are we setting up an ordinance that is more stringent especially when you have the Attorney General opinon? Are we going to highlight for the Board that the ordinance may be in direct conflict with State code, setting the County up for litigation? This is setting up for conflict because you have to debate the system because you are discussing whether it is more stringent instead of saying that it is	Localities are allowed to promulgate ordinances that are more stringent than Board of Health regulations by §15.2-2157A. However they are not allowed to "prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." §15.2-2157C Localities are also not allowed to "require maintenance standards and requirements that exceed those allowed under or established by the State Board of Health pursuant to §32.1-164."
1066.001	If you can meet the code, but it costs the landowner more, than you are saying that is okay? If this is the case, you are potentially taking the ability of uses for that property because it is to expensive to implement	The cost of systems varies based on the soil and site conditions present. Increased requirements both state and local impact the type and expense of the system required. Proposed changes to Chapter 1066 impose no greater regulations on the siting of onsite systems than the previous ordinance and in fact propose additional options for property owners to be able to utilize onsite systems.
1066.001	Attorney General Opinion and Matrix was provided; three justification letters	Comments from the matrix are incorporated. Letters can be found at: https://www.loudoun.gov/DocumentCenter/View/120191
1066.001	Shall apply to the greatest extent possible- how would the County decide what is considered "to the greatest possible". Is there a policy in place?	Decisions have been and are likely to continue to be made on a case by case basis since the variables are so numerous. One of the most common scenarios is the increased standoff to water table countywide or rock in the LOD. These issues can be overcome with increased pretreatment and or the use of a mound as described in 12VAC 5-610-597.
1066.001	Are you saying that the intent is that the County can have something stricter than the state code? Do you have something from the Attorney Generals Office that states that you can do that?	Localities are allowed to promulgate ordinances that are more stringent than Board of Health regulations by §15.2-2157A. However they are not allowed to "prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." §15.2-2157C Localities are also not allowed to "require maintenance standards and requirements that exceed those allowed under or established by the State Board of Health pursuant to §32.1-164."

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.001	Discussion from AG letter about not having maintenance standards that are more stringent than State Code. Discussed the intent of the General Assembly that langauage was added in C to prohibit localities from outlawing alternatives as a way to exercise land use control to make tracks of record to be unbuildable	The proposed standoffs to restrictions and water table stem from public health and groundwater concerns based on research.
1066.001	Section A is related to only conventional systems? Section A gives authority and does not allow you prohibit alternatives. Why does the attorney general's opinion not apply? There is question that within the intent if the County truly has the ability to be more stringent. Some don't agree with the language within the intent and would like to understand; don't agree that the locality has the ability to be more stringent.	§15.2-2157C does not allow localities to prohibit alternative systems where they would otherwise be allowed. However, requirements short of prohibition are not disallowed.
1066.001	It makes it seem like if you don't want things to be more strict, than you don't care about the environment which is not the case at all. Everyone has the same set of rules to play with in the state	Comment noted.
1066.01	If it is in the state code, don't reprint it in. As they change it would make the ordinance obsolete. Only put in definitions you think are absolutely necessary for the state code. From efficiency standpoint it might be better when state code changes. Loudoun Water just states the citation; what on top might apply.	Including definitions that are also found in the Virginia Administrative Code fixes the meaning of the term in Chapter 1066. If the definition were left to change in other documents it could change the meaning of Chapter 1066 in ways not intended by the Board of Supervisors.
1066.01	By changing the defintion to onsite sewage treatment system from individual sewage disposal system, does that mean conventional system will start having maintenance requirements? Conventional systems should have the same requirments as alternative systems. They should have to be inspected; something that has oversight. Only currently have oversight over 10% of what is out there instead of the other 90%. However the cost of regulating conventional systems may be expensive. Want to mitigate the discussion by some that alternatives are "bad"; what about the conventional systems? Think alternative systems are environmentally better; if treatment systems are better, why wouldn't we test conventional systems.	No, this does not mean conventional systems will start having maintenance requirements beyond the already included pump-out requirements in 1066.07. Conventional systems clearly also require maintenance. Comment noted.
1066.01	There still isn't common ground on what is considered minor repairs and performance things. What if it is a safety issue and it is not a performance issue? Evaluating existing systems will be a priority for Health Department because repairing to the greatest extent possible does not work now; you have to fix it and you have to fix it today's standards. This has an affect on real estate.	Staff requires safety issues to be corrected as well as repairs and performance issues. New performance standards cannot be retroactively applied to previously existing systems. 12VAC5-613-30 C.
1066.01	Last line in "alternative onsite sewage system." is more of a comment than anything else	Agreed. Last line will be deleted.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.01	Under portable toilet, suggestion to add the word temporary before waste disposal	Some portable toilets are used in a permanent setting. Adding temporary would not enhance the definition.
1066.01	Under vault privy, need to spell out acronyms. Make sure they are spelled out throuhout the document	Agreed. NPDES will be spelled out.
1066.01	When you use individual onsite, it does not prohibit the use of system in hamlets in open space? Want to make sure it doesn't preclude what is in the zoning ordinance. May need to see if "individual" should be removed given. Don't want to preclude allowing drainfields and reserve to be in the open space areas in case of hamlets as allowed in the Hamlet Ordinance. Think definition addresses it, but want to make sure we are not precluding that issue	"On another parcel" will be added to the definition of Onsite Sewage Treatment System. No changes in the ordinance are intended to limit the use of onsite systems serving hamlets.
1066.02	No comment	
1066.03 (b)	Why are you stricking the language?	Open permits are no longer transferable; certification letters are transferable.
1066.04	Do we have to get separate license from County? You still need installer and tank cleaner license. If you have a Class A license, then County should not ask for additional license. If you have B or C, then you should have it. Plus DPOR licenses installers. There is no state license for sewage handling permit	The requirement for local licensing of persons conducting percolation tests will be dropped as will the bonding requirement for all licenses. Staff recommends that licensing of septic tank cleaners continue to prompt inspection of trucks and maintain local control over septic tank cleaners. Licensing of installers is recommended to continue to help insure installers are made aware of local requirements, DPOR licenses are confirmed, and installer lists are available to the public.
1066.04 (b) (1)	Look at equipment requirements within state code to see if it is necessary.	This section is very similar to 12VAC5-610-1020 thru 12VAC5-610-1070 but is being maintained to protect against changes in standards from the state and enable local legal resources in case of violation.
1066.04	County attorney should weigh in if it is violation of state code, and it is not duplicated in the County Code, if the County couldn't use the local ordinace to enforce it or their powers under the Code of Virginia. County has not incorporated state code into local code. Should it just be incoporated into the local ordinance, maybe include it by reference.	The State Code is currently not incorporated into the County Ordinance. The County cannot use the local ordinance to enforce state code or regulations unless the item is also explicitly addressed in the County ordinance.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.05	You have "may" in one paragraph and "shall" in another; it is contradictory. Are you trying to clarify that you can do more than the final inspection? Maybe we can switch the sentence so it states that the director may do additional inspections. This goes back where HD was only one to inspect which is not the case now. Needs to be more consistent oversight; a waiver of inspection could be helpful. It may be "may" now instead of "shall" because of the time that has passed by. Does the Board still want us to inspect everything?	The word "may" in the first paragraph is for existing systems and the word "shall" in the second paragraph is for newly constructed systems. Staff recommends that required staff inspections of new and existing systems continue in order to provide oversight to enhance the continued integrity of the onsite sewage treatment infrastructure in the county.
1066.06	No comment	
1066.07	How are property owners notified? What is the consequence if you do not pump your tank? Some do not like the idea of civil penalties on the property owners. Any kind of penalty is bad. Maybe the County could have it done and then put a lien on the property. Very few people get fines because they call to get the items fixed.	Property owners are notified by post card. Under Chapter 1066 now the remedy is a Class 1 misdemeanor. If Chapter 1066 is amended to include the civil penalties, the remedy would be a civil penalty of $100 followed by penalties of $150. All civil penalties must be preceded 30 days minimum by a notice of violation informing the owner of the violation and providing for correction prior to the penalty. Using a lien is administratively difficult and more demanding of staff resources.
1066.07	Like the idea of the legislative program including the dislcose language for a buyer beware on the costs of owning a system	Comment noted. HB1264 changing the disclosure language passed the General Assembly in 2016.
1066.08	No comment	
1066.09	What is an example of substantial repair that you would need to do that is short of a leach field failure? Is there one? Even if you have reserve, it requires you to use th public? Or that should be option if you can't find an absorption area. Reserve area should be fair play. "requiring substantial repair" needs to be defined. Sometimes getting sewer is more substantial, plus it may require and easement which may or may not be granted by a neighbor. Maybe potentially strike the section. Check language of the Comprehensive Plan and VA Administrative code that discusses hook ups.	An example of a substantial repair short of an absorption field failure would be a crushed septic tank and pump chamber with crushed distribution box and headers or spent peat and a crushed tank etc. The comprehensive plan states that "The county will require existing communities or residences to hook to a nearby public water or sewer system when an on-site water supply or waste treatment capacity has deteriorated to a point where there is a public health risk." This section has been adjusted to reflect this language for repairs within 300 ft. of sewer. These cases are examined on a case by case basis with allowances based on easements and extreme cost. The Health Director is proposed to have the ability to waive this section. See 1066.20

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.09	This provision reflects the long standing policy to cause the use of nearby collection systems, where a property's onsite system is failing. Where it is found that an opportunity for making service connection to an existing collection system is within 300 feet of the building, the feasibility of doing so varies from straight forward and cost effective to expensive and/or virtually impossible. Where a given project falls on this spectrum of feasibility depends largely on the ownership of the intervening property. A second big factor is whether or not the applicant for service would need to extend the collection system, in order to make a service connection. Where a public collection system must be extended, such entails that the applicant for service cause the design and construction of the extension of public main, furnishing a bond to guarantee performance of the public portion of the work. Where land of others would need to be traversed, easement acquisition also becomes the responsibility of the applicant for service. Lastly, the intervening topography or terrain can be a factor. As such situations arise, staff at Environmental Health are called upon to determine the feasibility to the property owner, of making connection to the nearby collection system. This occasionally becomes a difficult matter. Would staff be interested in further text to supplement the 300 foot rule, as a basis for enforcement of this provision?	The language as newly drafted requires connection within 300 ft., however the Health Director has the ability to waive the requirement. This should be the right balance of having the requirement but having flexibility when the connection is impossible or extremely expensive.
1066.09	What is considered a private system? Do we have any? Maybe we should call it public collection and treatment system.	Private sanitary sewer systems systems do exist in Loudoun. Language removed to avoid confusion.
1066.09	What happens if there is a repair? See that it is not approved system. Does that require a hook up? It may not be failing but it isn't an approved system	These situations are examined on a case by case basis. The possibility of a permit existing for the unapproved system would be taken into account.
1066.10 (a)	What type of pumps are being addressed in the second sentence? It should be a designers option of what to use; could be injector that is not under perview. Maybe strike first sentence	Sewage ejector pumps are allowed by the building department when interior to the building and are heavily used in new construction. This language only applies to sewage ejector pumps placed exterior to the building and has been revised to have an exception when designed by a Professional Engineer as is similar to State practice.
1066.10 (b)	Are the local precasters able to make distribution boxes resistant or treated for corrosion?	Products are available to local precasters for making distribution boxes more corrosion resistant. This is estimated to cost between 15 and 25 dollars per box.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.10 (c)	Is not in conformance with State Code	State code allows 3" minimum ID building sewers 12VAC5-610-870. 3" sewers are more prone to clogging than 4" sewers. Localities are allowed to have a local ordinance concerning onsite sewage systems as stated in the Code of Virginia §15.2-2157A.
1066.10 (e)	The slopes are less than the building code would require. Establish minimum to plumbing code. Might want to check with building department on how the building code applies to treatment system. 1/4 inch to the foot, 1/8 inch to the foot, 1/16 inch to the foot for 4 ft, 6 ft, and 8 ft.	This language mirrors the language in the Virginia Administrative Code. Staff recommends it remain unchanged.
1066.10 (e)	Consider using the minimum slopes for building sewers as established in the International Plumbing Code. This would be consistent with the Virginia Uniform Building Code, and with practice on building sewer installations not subject to this ordinance.	Since 1066 works in conjunction with 12VAC5-610 rather than the plumbing code, it is important that 12VAC5-610-730 thru 760 be the reference document.
1066.11	Backhoe is not defined. Define it by minimum bucket size. Does it keep us from looking at repairs with auger to verify? Include some wiggle room to address the issue	Staff recommends language remain as is. Waivers can be granted by policy. Minimum bucket size would be difficult to enforce.
1066.11 (d)	Hard to prove a negative related to easements; no one does a title search. Survey plat is required under Health Regs. Always contentious. Encumbrances is a open-ended; what is the definition? Easements and other encumbrances known by preparer. What type of easements? Not all easements are recorded. Limit it publically recorded if you have to do it. Have you had past issues with this? If you have not had an issue with it, then maybe it should be stricken. Make sure civil engineers look at this	1066.11 (d) (8) is to be deleted. Regulated also by VDH GMP 2015-01. Owner has to sign a statement on application that easements are shown.
1066.11 (e) (1)	Matrix: 12VAC5-610-593 3 states "that subsurface soil absorption trench systems shall be placed on slopes greater thatn 50% unless terraced. Criteria for other types of onsite systems are contained in Tables 4.3 and 4.4" Recommend consider allowing systems on up to 50% slopes	Language will be amended to prohibit trench and pad based systems on slopes greater than 25% but would allow drip and other trenchless distribution systems.
1066.11 (f)	Matrix: Recommend remove section CR horizons since it is not addressed in the State Code.	Language removed from section.
1066.11 (g)(3)	Matrix: Class IV soils should be able to be utilized in some instances. State code allows any texture group to be utilized for absorption trench systems installed between 12 inches and 18 inches. The state does include prohibitions on Texture Group Iib, III, and IV soils for sand-on-sand systems.	Loudoun County has a guide with different classes of soils. One of these types of soils is class IV. The VAC would allow installation in some of the soils in this class and alternative systems can overcome some of the limitations. Staff recommends this prohibition be dropped.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12 (a)(1)	Matrix: In relation to distnace to rock, 12VAC5-613-80.13 states that "the following minimum effluent quality shall be met for the described vertical separation to limiting feature as measures form the point of effluent application or the bottom of the trench or other excavation: 0 to 18 incues standoff to limiting feature with a minimum effluent treatment quality of TL-3 and disinfection. Recommend considering 0-18"	Staff recommends that the standoff remain at a 12" minimum except in the LOD where it will vary from 48" to 24" based on treatment level.
1066.12 (a)(2)	Matrix: In relation to depth to seasonal water table, 12VAC5-613-80.13 states that "the following minimum effluent quality shall be met for the described vertical separation to limiting feature as measures form the point of effluent application or the bottom of the trench or other excavation: 0 to 18 inches standoff to limiting feature (includign water table) with a minimum effluent treatment quality of TL-3 and disinfection. Addtionally, where direct dispersal of effluent to groundwater occurs, effluent quality shall be governed by 12VAC5-613-90 C: If they concentration of any constituent in groun water is less than the limits set forth at 9VAC25-280, the natural quality for the constituent shall be maintained; natural quality shall also be maintained for all constituents not set forth in 9VAC25-280: Recommend considering 0-18"	Research was conducted at Virginia Tech focused on the treatment of wastewater in onsite sewage systems in the early to mid 1990's. It concluded that at least 18" (45 cm) of unsaturated soil was necessary to effectively mitigate fecal coliform (FC) bacteria. Additional treatment of effluent appears to substitute for soil depth. The study was conducted with effluent having relatively low FC counts of 35800 CFU per 100 ml. when typical domestic septic tank effluent is 1,000,000 to 100,000,000 CFU's per 100 ml. Large continuous micropores, rock and other soil structure were not taken into account. Water table in Loudoun is generally called at first depth of chroma 2 mottles. It is commonly known and substantiated by field research that during the November to April timeframe water table rises substantially and for long periods above chroma 2 mottles. It is quite common for soil absorption systems to be installed deeper than permitted or for the removal of rocks and stumps to create voids in trench bottoms. The study was not able to examine long term performance that may impact treatment. The effect of soil macropores and rock content was not examined. Removal of enteric viruses, pharmaceuticals and other contaminants of emerging concern were not examined. For these reasons it is recommended by staff that the 24" standoff to water table be maintained for septic tank effluent with reductions in standoff to 18" and 12" with increased levels of treatment.
1066.12 (a)(4)	Matrix: Code section 12VAC5-610-950 states that the minimum absorption are for a single family residential dwellings shall be 400 square feet. Section 12VAC5-613-80 states the absorption area could be as small as 50 square fooet for 1 bedroom dwelling with TL-3 treatment, perc rate of 15 mpi or less and sat conductivity of greater than 17 cm/day. Recommend reducing minimum absorption area of 600 square feet of subsurface disposal trench bottom.	The potential is increased for low flow designs to be subjected to flows that exceed design capacity. Having a 600 sq. ft. minimum beyond the VAC minimum of 400 sq. ft. provides a margin of safety from overuse. This margin of safety is carried over into design footprints for drip and spray dispersal for the same reason. The language was also clarified.
1066.12 (b)	Matrix: The state does not prohibit sub-surface disposal fields on off-site easements in any case. Recommendation conforming to state Code	The use of easements for onsite sewage treatment systems on other lots can be very problematic due to access and protection of the site from damage. It is not prohibited by this section but is restricted. Staff recommends these restrictions stay in place with the exception of #8 which no longer applies under current zoning.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.12 (c)(1)	Matrix: State repair areas is required when the rate is above 45 minutes per inch (mpi). No reserve is required if the rate is 45 mpi or below.	Staff recommends keeping the 100% reserve requirement. Soil absorption areas continue to fail and owners should not be left without recourse to a full repair area.
1066.12 (c)(2)	This provision allows for a reduction in reserve area where the future arrival of a public collection system is anticipated. The certainty and timing of this future arrival typically remains speculative, until such time as the contemplated facility has been designed, and the developer of the extension posts a performance guarantee. Where the extension of the public main is being undertaken by the utility or other public entity, certainty typically attaches when the Board of that entity approves the project's construction. Given these facts, would staff be interested in additional text, to require that the projected date of arrival has been based on more than pre-project speculation?	Staff met with a representative from Loudoun Water and agreed to the draft language. This provision is very rarely used.
1066.12 (d)(2)(B)	Matrix: State does not prohibit subsurface soil absorption systems under overhead utility lines. Recommendation conforming to state Code.	Language has been deleted in draft. This prohibition was recommended to kept by the environmental and conservation group. The state regulations allow installation in certain circumstances for overhead utility easements. See policy 1993-06 The state has no prohibition for installation under service lines to houses where no easement exists. Staff acknowledges that damage can and does occur to systems under utility lines. It also occurs from in areas not under utility lines. Staff recommends that owners be aware of and protect their systems from damage.
1066.13 (a)	Matrix: The Uniform Statewide Building Code of Virginia normally prohibits pit privies at new homes. In case of hardship, unsuitable soil conditions or temporary recreational use, a privy can sometimes be constructed after obtaining the approval of the building official with approval of the health departments. However, a sewage disposal system has to be providd to treat other sewage generated activities such as laundering, bathing, hand washing and cooking. Recommend conforming to state code.	Staff recommends that pit privies not be erected or installed except to repair or replace an existing pit privy. The Board has given direction to staff to implement a privy action plan that would eliminate many privies currently located within the County.
Appendix I	Matrix: Recommend 5 foot setback from property line to absorption area	Proposed changes include reducing setback to 5 feet if a survey plat is provided and applicable property lines are clearly marked in the field both during permitting and construction.

CHAPTER 1066 AMENDMENTS
BUSINESS DEVELOPMENT STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
Appendix I	Matrix: Section 12VAC5-610-10 of State Code allows set back distances from streams to be reduced to 10 feet in Group III and IV soils and 20 feet in Group I and III soils if the subsurface soil absorption system is designed to produce unsaturated flow condition in the soil. Recommend considering a reduction to 10' or 20'	This is found in Table 4.2 of VAC5-610-597. Appendix I is recommended to allow reduction to conform with the VAC provided that effluent is pretreated to TL2 or TL3. The concern is that a failing system in close proximity to a stream can run off or be flushed into the stream by rainfall. It the effluent is pretreated and the system is consistently operated and maintained, this concern is greatly lessened.
Appendix I	Matrix: 12VAC5-610-10 Part IV General Criteria for the Selection of a Wastewater Treatment and Disposal System Based on Site Conditions Table 4.2 Minimu Speartions Distances specify 10 feet setback to drainage ditches. Recommend setback be 10'	Personal observation by LCHD staff has seen effluent breaking onto the ground surface at greater than 10' on road cuts. Appendix I has been amended to require 20' only if cuts are more than 3:1, otherwise the state minimum of 10' would apply.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
General	Question: If there are all these different types of systems, how can they be regulated in the same way, if they are working differently? The point of the regulation is to treat everyone the same. They have to meet the same requirements no matter what type of system.	Both chapter 1066 and 12VAC5-613 define alternative systems as a treatment works that is not a conventional onsite sewage system and does not result in a point source discharge. While some systems may need more maintenance than others, localities are not allowed to require more or less than the minimum as per the Code of Virginia 15.2-2157 D.
General	Seems like we are getting more regulatory and administrative burden even though we have a system that works well. If a person has a working system, there should be provisions that allow them to be grandfathered in. Homeowners should not be required to retrofit and bring it up to code until significant maintenance is required.	12VAC5-613-180 requires that all components of an AOSS be inspected so buried, components must be uncovered or provided access in order to be inspected. Alternative systems that were installed prior to access requirements therefore must either be uncovered annually or access provided. This requirement is also found in Chapter1067.04b which is not part of Chapter 1066.
General	Develop some items on the cards about maintaining their system to help educate the homeowner	The annual reminder postcards provide a link to system maintenance information. The Health Department continually strives to educate homeowners and prospective homeowners.
General	Were there any AOSS homeonwers in the stakeholder meetings? (1700 of us out of 13000 out to count for something)	Yes, alternative onsite sewage treatment system owners are important stakeholders in this process and were encouraged to attend; we had at least two alternative system owners in the meetings. We had the final stakeholder meeting Thursday night. All the meetings have been very productive and for the most part we have consensus among all groups for the proposed amendments.
General	As a land owner as well as septic system owner on my property what,in PLAIN English does these septic changes mean to me, bottom line. As I have read all the proposals but no where have I seen what , as a septic tank owner,will I need to do. I have followed every regulation when my system was installed/inspected by the county, including regular clean outs and introduction of bacteria for break down of solids every month, these 2 later items of my own accord. As an FYI I have a concrete holding tank and distribution box not this plastic/fiberglass/steel or whatever tank that collapses on occasion or designed life is 20-25 years. So again in PLAIN English what are the changes and how may I be affected.	The ordinance does not have many changes that effect owners with existing conventional systems. Currently the ordinance requires owners to pump their septic tanks every 5 years or be inspected to determine if pump-out is necessary every 2 years. The current penalty for owners not doing this is a criminal penalty of a class one misdemeanor. The amendment will change the criminal penalty to a civil penalty with a fine of $100.00. Civil penalties can only be levied 30 days after notification with a notice of violation. Significant proposed changes are documented on the web at www.loudoun.gov/septicamendments. The requirements in 1066.16 appear to have reduced issues with septic tanks since they were enacted in 2010.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
General	Alternative systems: Please let me preface this by saying I own an Aquarobic system in Ontario, Canada. They are a wonderful system if built well. My cousin installs them so I am very familiar with proper construction and maintenance. There are glaring differences between my system in Canada, and my system as installed in Purcellville. I watched three get built in Purcellville and they were not built properly in regards to soils and the strata construction. Yet they were signed off on by the Inspectors. Failures were inevitable and occurred. The result is that in Virginia, there is no warranty on these systems. Licenses and fees and penalties are levied because these are such important, (and expensive in Virginia), health systems for the owners. The only quasi-guarantee is that a builder must repair a system if it is within 6 months of construction. Note that this is not even after six-months of use. So, a family moves in to a new house eight months after it is built only to find out that the new homeowner is responsible for the failure of such an important public health system. In a bigger context, Virginia does not even have an enforceable home construction warranty. Builders ARE allowed in Virginia to build, sell, and go. Bad houses get built and inspections get passed even though they should not be. To mitigate the bad builders who over charge and to protect homeowners from an insidious builder/inspector relationship, Ontario requires Septic system installers to provide a 20 year guarantee on their work on the discharge area. Ontario considers these to be very important public health systems. The fact that we have a 25 year old system on top of granite that is operating in much harsher conditions is a testament to the people who built it. I believe the fact that they were required to warrant their work was an important influence on their construction. Yet Loudoun County does not require any warranty to speak of and is even now going to release these firms from posting performance bonds. Loudoun should integrate an enforceable warranty for the duration of a period that Loudoun thinks that these systems are important (20-years seems to work good for Ontario) and require companies to maintain bonds for the duration of the warrantee periods. The alternative is that fly by night companies will continue to build very overpriced and bad systems in Loudoun.	Comment Noted
General	How do I discern where authority lies for future changes to AOSS rules that unfortunately for me in the past resulted in a levied requirement (under threat of civil penalty) for a new inspection scheme to prove my once properly designed, approved and functioning septic system is still "in-bounds"? I know my inspection results are filed with the county but where is the demarcation line between state and county health authorities when it comes to AOSS oversight?	The Loudoun County Health Department operates under a local government agreement between the State and the County and specifies that we will administer pertinent requirements on both the State and County levels. Changes to Chapter 1066 and 1067 must stay within the limited authority granted in §15.2-2157.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
General	As any significant amount of authority for interpreting, modifying or waiving language regarding my septic system does NOT appear to have been delegated to the County Health department by the state, does this new language mean regulation of AOSS systems are or will be taken on by Richmond?	You are correct, regulation of alternative systems on the state level is through the Virginia Administrative Code 12VAC5-613. Loudoun can't have an ordinance less strict than 12VAC5-613. The county regulates alternative systems through Loudoun County Codified Ordinance Chapter 1067. Both require an annual inspection for alternative systems, so no matter how Chapter 1067 is modified, an annual inspection would still be required by the state. Additionally, amendments made to Chapter 1066 must be within the constraints of the Code of Virginia §15.2-2157. That Code section gives localities the authority to have local ordinances as long as they do not prohibit alternative systems "that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating." and "A locality shall not require maintenance standards and requirements for alternative onsite sewage systems that exceed those allowed under or established by the State Board of Health...".

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
General	Though it quite likely may hurt me in the future should I decide to sell my house, I think prospective buyers considering a property with an AOSS should have it disclosed in advance that their alternate septic system imposes higher regulatory scrutiny (e.g. inspections and possible code mandated retrofits) than does their neighbors conventional systems. This is alluded to in the stakeholders comments but I didn't see a reference or link to any proposed language.	A key role of the Health Department is to educate owners and prospective owners about care for onsite sewage treatment systems, whether they are conventional or alternative, so they can best understand the costs of ownership and the steps they can take to minimize repair and replacement expenses. We do annual training for realtors, maintain information on Loudoun.gov and are have contributed to articles for local newspapers and blogs. In addition a disclosure statement is recorded on property deeds for all alternative systems in an attempt to alert homeowners. The onsite industry does a tremendous amount of education also. Additionally, HB1264, initiated by Loudoun County, passed the general assembly this year which will strengthen the disclosure language all prospective owners are handed concerning onsite systems. It will now read: 8. The owner makes no representations with respect to the presence of any wastewater system, including the type or size thereof or associated maintenance responsibilities related thereto, located on the property and purchasers are advised to exercise whatever due diligence they deem necessary to determine the presence of any wastewater system on the property and the costs associated with maintaining, repairing, or inspecting any wastewater system, including any costs or requirements related to the pump-out of septic tanks, in accordance with terms and conditions as may be contained in the real estate purchase contract, but in any event, prior to settlement pursuant to such contract;
General	Develop some items on the cards about maintaining their system to help educate the homeowner	The annual reminder postcards provide a link to system mantenance information. The Health Department continually strives to educate homeowners and prospective homeowners.
1066.001 Intent	Against the language within the intent that would make the more stringent language apply in cases where Chapter 1066 conflicts with the State code. If the language is more stringent in the County than the Commonwealth standard, the Commonwealth standard should apply	Chapter 1066 provides additional protection for Health and the Environment. This is allowed in the Code of Virginia in 15.2-2157A.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.04	I wish the county would keep in mind that not everyone who lives in Loudoun is wealthy and changes that impact the owners have dire consequences to those who are retired and on a fixed income. I have issue with terminating the owner's ability to repair or install their own septic system. We should be given the option and opportunity to make this decision and your concern should be that the correction and installation is according to the regulations. I also believe that anyone having a class A building license certainly should be allowed to perform this. I fear the county limiting the pool of contractors to the cronies who are currently licensed to provide septic tank maintenance will cause the costs to soar and given the fact that the fee to pump out my septic went from $125 to $295 proves my point. I also have concern over changes to requirements for driveways and parking and hope that existing situations are grandfathered in otherwise the cost to conform may be too great.	Installers and operators are licensed by the Department of Professional and Occupational Regulation, DPOR. Unlicensed installation appears to be prohibited by 18VAC160-20-74C, which states that no individual shall act as a conventional onsite soil evaluator, alternative onsite soil evaluator, conventional onsite sewage system installer, alternative onsite sewage system installer, conventional onsite sewage system operator, or alternative onsite sewage system operator without possessing a valid license issued by the board. The 5' to driveways would apply only to new construction of onsite treatment systems or driveway/parking lots.
1066.04	I have been a county resident 48 years I recently had to make repairs to my septic system. I used a professional as I did not have time to do myself. I do not believe the ability to do repairs or installations should be taken from home owners. Example, do to inspections my elderly neighbor had to have extensive repairs done to her septic also about same time as me. She could not afford the 5 plus thousand dollars the "professionals" wanted lucky for her her son was able to do the work with some help from friends. It got inspected and approved by the county. The elderly and less affluent residents of this county can barely make ends meet as it is with out having to fork out money to "professionals". If a home owner has the means to install and or repair their own septic system they should be allowed to and not be at the mercy of the "professionals". From what I've seen are not very professional. It is the county and its inspectors responsibility to assist and give advice to home owners if they require it and not cut them out all together and take their money.	Installers and operators are licensed by the Department of Professional and Occupational Regulation, DPOR. Unlicensed installation appears to be prohibited by 18VAC160-20-74C, which states that no individual shall act as a conventional onsite soil evaluator, alternative onsite soil evaluator, conventional onsite sewage system installer, alternative onsite sewage system installer, conventional onsite sewage system operator, or alternative onsite sewage system operator without possessing a valid license issued by the board.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.04 1066.07	My wife and I raised a family of 4+ in our residence. We moved into the home in 1990 when the home was just 2 years old. We have a septic tank that is pumped to a drsin field that is higher than the tank. I have serviced the pump and floats on a couple occasions since that time. When the new regulations came out I had a local company pump the tank in Dec over 2013 for the first time ever. The septic pumper said the holding tank was only about 1/3 with sediments at that time. We do not have a garbage disposal nor do we flush household waste , wipes, feminine hygiene products or other trash into drains. As a result, our system has functioned perfectly for over 28 years, breaking down human waste and toilet tissue. 1. I do not believe that there should be a requirement to pump tanks every 5 years. For some folks who flush garbage and have disposals on their systems 5 years may not be enough. For those of us who do not do such things, 5 years is much too frequently. 2. For those like myself, having to pay for unnecessarily frequent pumping is costly and unfair. 3. Package waste systems are much more prone to fail and need frequent inspections and maintenance. 4. Perhaps the county should consider banning the installation or use of garbage disposals on all homes not connected to a sanitary sewer system. 5. An alternative to unnecessary periodic pumping would be to have the county require and perform an inspection of the site and drain field on a periodic basis. Just because the tank is pumped doesn't mean the drain field hasn't failed. 6. Homeowners should not be prohibited from doing maintenance or repair of septic systems. If the county chooses they can require such things to need a permit and can inspect the work as needed to ensure it complies with all requirements.	1) Five years is a general higher end number code and industry. Staff agrees it may be too often for some systems and not often enough for others. The ordinance does include the two year inspection provision. 2) Comment noted. 3) Staff, and industry agree that alternative systems need more frequent inspection and maintenance as required in 12 VAC5-613 and Chapter 1067. 4) Comment noted. The challenge is that garbage disposals are so easily added after construction that it is difficult to enforce restrictions. 5) Staff agrees. Periodic inspection of conventional systems is worthy of consideration. 6) 18VAC160-20-74 appears to prohibit non-licensed individuals from performing repair or maintenance work on onsite systems. Staff included language in the ordinance prohibiting unlicensed individuals from working on onsite systems with the intent that if the VA Department of Professional and Occupational Regulation (DPOR) rules differently, then waivers to this prohibition can be granted. Currently all work needs a permit and is inspected by staff.
1066.07	Like the idea of giving pumpers until the 15 of the month to put in reports. There is an issue where the pumper has to put in the report of inspection, but the customer may have not paid them	The idea of giving until the 15 of the following month will standardize the deadline with alternative operator reports. Payment is an issue between the operator and owner.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.07	In the conclusions found in "A Study of Onsite Sewage Containment Vessel Replacements in Loudoun County, Virginia 5/1/2000 to 2/1/2016" dated February 2016, prepared by Jerry Franklin and staff from the Division of Environmental Health, Loudoun County Health Department, the report states that *"Tanks that are largely empty, such as pump chambers, ATU's and pump and haul tanks, represented a larger proportion of failures."* It further states that "*It is presumed that the lack of interior liquid to resist outside pressure causes more stress on tank structure."* My comment is based on that study and the fact that I know my septic tank was pumped five years ago (the septic field is conventional and originally built in 1990 for a 5 bedroom home) and within the past five years all my children have grown and live elsewhere and my spouse is also deceased so I am the only one living in the home. <u>My question is: Can the county assure me that based on the conclusions in the study cited, that the county is not subjecting me to a septic tank failure based on the low volume that will reside in the septic tank after pumped and will remain at a low level for a long period of time based on the tank size and there being only one person now in the household?</u>	A licensed operator is able to pump out a tank while avoiding having an empty tank, such as by running water from the house into the tank after pumping to partially fill the tank with clean water or by performing an inspection of the tank in lieu of a pump out. If exterior water pressure and buoyancy are concerns pumping can be scheduled in dryer seasons.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.07	In a previous response to comments, Loudoun staff commented that for conventional systems, an operator is required to either pump the septic tank every five years or inspect the tank to determine if pump-out is required at two year intervals. Based on the new farm brewery legislation that allows my neighbor with ten acres of land to produce up to 15,000 barrels of beer a year while imposing water table constraints on our rural community by consuming up to 7 gallons of water for each gallon of beer produced (consumption figure from the 2011 study by the Beverage Industry Environmental Roundtable (BIER)) while hosting up to 300 vehicles a day on their property to consume their beer; BUT the county has no more stringent septic system regulations for them than the one person homeowner living on the property next to them with the same (or less) acreage of land. My questions are: (1) Why hasn't the county included a matrix that levels the playing field for septic system regulations and captures load capacity rates based on tank and drain field size? Doesn't that factor into how often the tank would require pumping or inspected? (2) If the US Census just reported the number of people living at a household as one and the number of hours that person is at work – versus home – is 60 hours out of every week of the year, shouldn't that information be relevant when writing a regulation that imposes a $200 expense (previous staff response to comments - pg 34) to be paid every two years by the homeowner to a licensed septic operator just to inspect the system to stay in compliance?	A septic tank pumping chart was included for the Board of Supervisors consideration at the time the 5 year pump-out requirement was adopted. It is recognized that frequency varies based on the size of tank, occupants in the house and use of the system (use of garbage disposals increase the frequency). Five years was selected as a standard to match the pumping frequency in the Chesapeake Bay requirements and is a standard used industry wide as an upper limit for pumping. A two year inspection allowance was recently added to the ordinance.
1066.07	In previously recorded staff responses to comments, it was stated that Loudoun County has approximately 13,000 conventional and 1,700 alternative onsite sewage treatment systems and that 3,227 tanks were reported as pumped out in Loudoun County in 2015. My question is: Can you tell me what was the volume of the 3,227 tanks pumped out and where it was disposed?	Loudoun county septage and sewage in 2015 was predominantly disposed of at Loudoun Water's Broad Run Wastewater Reclamation septage receiving facility or the Colvin Run facility in Fairfax County (5,133,314 combined reported gallons). The Colvin Run site was manned starting in August 2015. Septage from Loudoun and other jurisdictions was refused from that point forward. Smaller quantities of septage were taken to Rippon, WV (84260 gallons), and the Remington Wastewater Treatment Plant (7100 gallons). Wastewater authorities from Fairfax and Loudoun met in spring of 2015 to discuss septage disposal. Consideration has been given to dropping jurisdictional restrictions on septage receiving. However it is suggested that tipping fees be adjusted at all facilities to ensure cost recovery and that sufficient capacity be available at all sites before restriction elimination is considered. Advantages of dropping jurisdictional septage receiving boundaries would include reduced truck traffic, lower costs, and more efficient routing for septage haulers.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.07	I found the table of recommended pumping frequency at http://loudoun.granicus.com/MetaViewer.php?view_id=46&clip_id=4089&meta_id=84325 (see Attachment # 4, Figure #1 (page 16 of 38)) which shows the category my household falls in with a recommended pumping frequency of 15.6 years. I also found a more recent publication http://www.goodmansanitation.com/pumping-frequencies and it still shows 15.6 years. Many homeowners like myself with conventional systems do not have garbage disposals and that decision was made specifically because we knew there would be an increased load on the septic system. Therefore I would appreciate you presenting the pumping frequency table from one or both of those documents as part of the homeowner comments for the Board of Supervisors to take note of those timelines again, including the need to re-inspect conventional systems. Based on the criteria for type system, tank size, and household size presented in the tables, (and the answer to Comment # 3), the county timelines are too short.	Agreed. A tank pumping frequency chart will be included in the attachments to the board item.
1066.07 (b)	I live in Taylorstown and have a septic system meant for a 5 bedroom home. Now that most of my children have moved out, we are really living in a 2 bedroom house with much lesser use of our septic system. The pumping requirements and frequency of pumping should somehow be tied to use. The last time my tank was pumped I was told it really didn't need to be. If the county is requiring this maintenance, it would be nice to have a county service cover it.	Comment Noted.
1066.07 (b)	Issue with havining to pump system every five years when there is a limited amount of people in the home. Do not think the County should require the pump out.	Comment Noted.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.10	I would like to call to your attention what appears to be contradictory guidance in paragraph 1066.10 of the draft septic system ordinance changes. The first sentence (starting after "(a) Pump Systems") prohibits the use of pumps on raw sewage lines to septic tanks. However, the next sentence says that pumps must be hardwired outside the pump chamber. If pumps are prohibited, why does the draft provide instructions for how to wire them? Also, the language in the next sentence is a bit awkward. May I suggest that the last part read:. . . must be installed on the line before it enters the distribution box. Question: Would the prohibition on pumps cover pumps required on fixtures in basements to bring effluent up to existing drain lines that are above the level of the basement floor? We have considered putting a toilet and sink in our basement and have been told that they would have to be equipped with some sort of pump to get the effluent up to the main drain lateral which is about six feet above the current floor.	The prohibition on pumps is between the house and septic tank and is meant to prevent flushing solids and grease out of the tank into the rest of the treatment system. Pumps can be used after the septic tank on effluent rather than raw sewage so the hard wiring section applies to them. The Health Department does not have jurisdiction inside the house so it would not prohibit interior sump pumps pumping into a gravity sewer line. Interior sump pumps tend to have low gallons per minute and small volumes. They also typically only serve a small portion of the sewage flow from a residence. Exterior sump pumps can be used if part of an engineer design. Other than the exterior engineer designed sump pump this is all current practice, so it is only codifying what is currently done by policy and clarifying code.
1066.22	If owners are going to be fined for not pumping within certain time limits, then before those fines are put in place the administrative support for them to know what the County records say should be in place. (1) There needs to be a consistent identification of systems known to the pumpers/maintainers. I'm sure there are many odd situations... for example, I have one piece of property with two homes on it, two different addresses, and two tanks. I've had both tanks pumped on the same call and got copies of reports that both had my address on them. (2) The homeowner should be able to go online and see info County has about tanks/systems. (3) The owner should be able to get electronic reminders about upcoming deadlines. (4) To avoid confusion and unfair fines, the end-to-end process should be running for several months to a year before fines are levied.	1. The database of conventional systems in Loudoun County is improving rapidly, but is likely several years away from being reliably accurate. The database for alternative systems, while not perfect, is very accurate. 2. Homeowners are able to view Health Department files and system maintenance records including pump-out records in OnlineRME.com. 3. Owners who register on Loudoun.gov can receive electronic notices rather than direct mailings. 4. The pumping program has been phased in over the last four years. Staff agrees that the program should continue for some time before increased enforcement is contemplated.
1066.22	There should be a warning period where those deemed in need of a fine should be given a citation that their situation is in violation and will result in fines after date X.	The Code of Virginia provides that a Notice of Violation be sent 30 days prior to a civil penalty informing the citizen of the violation.
1066.22	Not in favor of civil penalties. Concerned that it lowers the burden of proof for the County and encourages fines instead of taking someone to court. Do not like lowering the bar from a criminal penalty	Civil penalties are more appropriate when regulating the behavior of large numbers of people as this ordinance does. They are a more efficient use of staff than criminal penalties. Civil penalties are more appropriate for violations such as not submitting reports, not pumping tanks and not performing maintenance.
1066.22	Owning a septic system can be expensive and requires a homeowner to set money aside in case there is an issue with the system. Do not want additional opportunities for someone to fine a homeowner when things aren't really causing harm.	Failing and poorly operating systems can degrade ground and surface water resources that many are dependent upon for drinking and recreation. Homeowners are notified of needed corrections well before civil penalties are assessed providing ample opportunity to avoid the penalty.

CHAPTER 1066 AMENDMENTS
HOMEOWNERS STAKEHOLDER GROUP - COMMENTS ON PROPOSED CHANGES

Code Section	Stakeholders Comments	Staff Comments
1066.22	What is the process now when a pumper is not in compliance? How would that change with civil penalties?	Currently when pumpers do not report, a criminal summons is sought and the defendant is brought to court. The penalty for violation is a class 1 misdemeanor. With civil penalties, the pumper could be given a ticket and given the option to appear in court or pay the fine.
1066.22	If money from civil penalties goes to the general fund, what precludes the County from writing tickets for funds to the general fund.	The intent of the civil penalties is to encourage compliance not generate funds.
1066.22 (a) (1)	Could the County pursue a non-monetary penalty? For example, could the County withhold the license if they are not complying with reporting instead of applying a monetary fine. Although it doesn't affect the homeowner, they would encourage another process outside of a monetary penalty.	Restricting the ability of a company to conduct business by invalidating a license is much more disruptive to the business than a civil penalty.
1066.22 (a) (2)	Not in favor of a civil penalty when the homeowner is not doing harm. Seems like there should be other ways than civil penalties to address infractions around not following a schedule. If it bad enough, than it should be a criminal penalty.	Civil penalties, by the Code of Virginia 15.2-2157B, must be preceded by a notice of violation at least 30 days prior. Owners have ample time to comply prior to a penalty. Without an inspection, the operational status of the system is unknown so it is impossible to know if harm is being done. For most violations civil penalties rather than criminal are more appropriate. Criminal penalties can be used in lieu of civil penalties if the situation warrants it. Not pumping septic tanks as needed can shorten system life leading to failure, increase system replacement costs, and increase demands on capital budgets as communal or central wastewater may need to be extended.
1066.22 (a) (3-6)	These penalties make sense because they could cause harm	Comment noted.

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Vol. 15, No. 4

Pipeline

Small Community Wastewater Issues Explained to the Public

Maintaining Your Septic System—A Guide For Homeowners

Buried beneath your back yard, it is out there—constantly working. When you're at work, it is working. When you're eating dinner, it continues working. And when you're sleeping, it's still out there in the dark—working. What is it? Your septic system. It may be the most overlooked and undervalued utility in your home; but with proper care and maintenance, your septic system can continue to work for you for at least 25 to 30 years.

If you are like most homeowners, you probably never give much thought to what happens when waste goes down your drain. But if you rely on a septic system to treat and dispose of your household wastewater, what you don't know *can* hurt you.

Proper operation and maintenance of your septic system can have a significant impact on how well it works and how long it lasts, and in most communities, septic system maintenance is the responsibility of the homeowner.

Preventing groundwater pollution from failing septic systems should be a priority for every community and every homeowner. Contamination of the groundwater source can lead to the pollution of local wells, streams, lakes, and ponds—exposing family, friends, and neighbors to waterborne diseases and other serious health risks.

When a septic system fails, inadequately treated domestic waste can reach the groundwater. Bacteria and viruses from human waste can cause dysentery, hepatitis, and typhoid fever. Many serious outbreaks of these diseases have been caused by contaminated drinking water.

Nitrates and phosphates, also found in domestic wastewater, can cause excessive algae growth in lakes and streams called algal blooms. These blooms cause aesthetic problems and impair other aquatic life. Nitrate is also the cause of methemoglobinemia, or blue baby syndrome, a condition that prevents the normal uptake of oxygen in the blood of young babies.

In addition, a failing septic system can lead to unpleasant symptoms, such as pungent odors and soggy lawns.

This issue of Pipeline is an update to the Fall, 1995 issue, Vol. 6, No. 4.

Why Maintain Your System

There are three main reasons why septic system maintenance is so important. The first reason is money. Failing septic systems are expensive to repair or replace, and improper maintenance by homeowners is a common cause of early system failure. The minimal amount of preventative maintenance that septic systems require costs very little in comparison to the cost of a new system. For example, it typically costs from $3,000 to $10,000 to replace a failing septic system, compared to $100 to $300 average per year costs to have a septic system routinely pumped and inspected.

The second and most important reason to properly maintain your system is the health of your family, your community, and the environment. When septic systems fail, inadequately treated household wastewater is released into the environment. Any contact with untreated human waste can pose a significant risk to public health. Untreated wastewater from failing septic systems can contaminate nearby wells, groundwater, and drinking water sources.

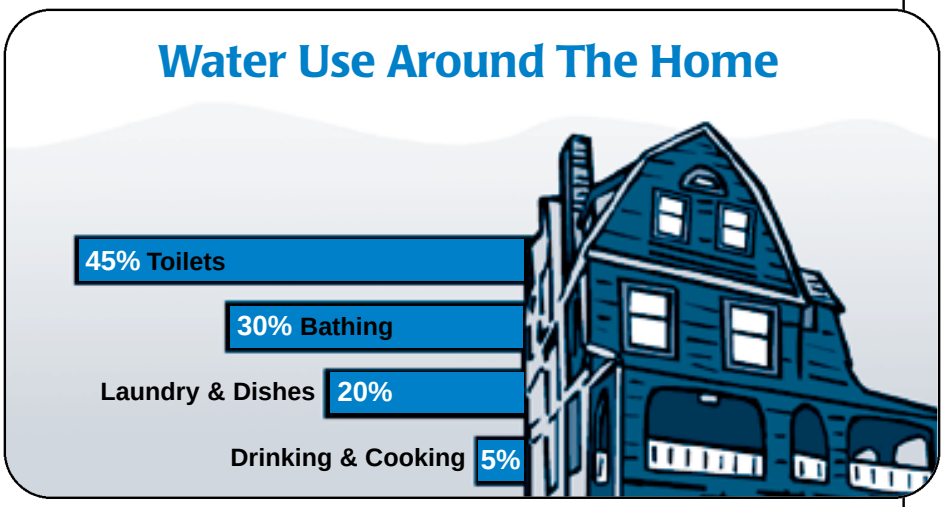
What's Inside...

Maintaining Your Septic System....1
What Not to Flush.....4
Modern Appliances that Affect Septic Systems 5
How Your Septic System Works....6
Use Water Wisely All Around the House 6
Septic System Dos and Don'ts 7
Related Products 8

ATTACHMENT 4

Chemicals improperly disposed of through a septic system also can pollute local water sources and can contribute to early system failures. For this reason it is important for homeowners to educate themselves about what can and what cannot be disposed of through a septic system.

A third reason to maintain your septic system is to maintain the economic health of your community. Failing septic systems can cause property values to decline. Sometimes building permits cannot be issued for these properties. Also, failing septic systems may contribute to the pollution of local rivers, lakes, and shoreline that your community uses for commercial or recreational activities.



How to Maintain Your System

Septic system maintenance is often compared to automobile maintenance because only a little effort on a regular basis can save a lot of money and significantly prolong the life of the system.

Annual inspections of your septic system are recommended to ensure that it is working properly and to determine when the septic tank should be pumped. Systems that have moving parts may require more frequent inspections. By having your system inspected and pumped regularly, you can prevent the high cost of septic system failure.

A professional contractor can do a thorough inspection of the entire system and check for cracked pipes and the condition of the tees or baffles and other parts of the system.

A thorough septic system inspection will include the following steps:

1. Locating the system.
Even a professional may have trouble locating the system if the access to your tank is buried. One way to start looking is to go in the basement and determine the direction the sewer pipe goes out through the wall. Back outside, the inspector will use an insulated probe inserted into the soil to locate the buried piping. Once the system components are found, be sure to sketch a map and keep it on hand to save time on future service visits.

2. Uncovering the manhole and inspection ports.
This may require some digging in the yard. If they are buried, it will help future inspections if elevated access covers or risers are installed to make it easier to access the ports and manhole.

3. Checking connections.
Flushing the toilets, running water in the sinks, running the washing machine through a cycle will help to determine if the household plumbing is all going to the system and working correctly.

4. Measuring the scum and sludge layers.
The inspector will measure the scum and sludge layers with special tools inserted through the inspection port. A proper inspection will also include a visual observation of the scum and sludge layers. (The sludge layer is the heavier solids that have settled down to the bottom of the tank. The scum layer is made up of grease and light solids that float near the top of the tank.)

If the sludge depth is equal to one third or more of the liquid depth, the tank should be pumped. Also, the tank needs to

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be pumped when it is 1/3 full. See the table below for estimated pumping frequencies. But be aware it is most prudent to conduct regular inspections and pump when the inspection says the tank needs to be pumped.

Remember that toxic gases are produced by the natural treatment processes in septic tanks and can kill in minutes. Even looking into the tank can be dangerous. Leave inspections to the trained professionals.

5. Checking the tank and the drainfield.
The inspector will check the condition of the baffles or tees, the walls of the tank for cracks, and the drainfield for any signs of failure. If the system includes a distribution box, drop box, or pump, these need to be checked too.

How often the tank needs to be pumped depends on the tank size, the number of people living in your home, and the habits of your particular household. Garbage disposals and high-water-use appliances, such as a hot tub or whirlpool, also affect the pumping frequency.

When it's time to pump, be sure to hire a licensed contractor. He or she will have the appropriate equipment and will dispose of the sludge at an approved treatment site. You can find listings for licensed pumpers and haulers in the yellow pages, or contact your local health department or permitting agency for assistance.

It's a good idea to be present when your tank is being pumped. Make sure that the contractor uses the manhole, not the inspection ports, to pump the tank to avoid damaging the baffles or tees. Also make sure all of the material in the tank is removed. It is not necessary to leave anything in the tank to "restart" the biological processes, but it is also not necessary to scrub or disinfect the tank.

Pumping your septic tank is probably the single most important thing that you can do to protect your system. If the buildup of solids in the tank becomes too high and solids move to the drainfield, this could clog and strain the system to the point where a new drainfield will be needed.

Figure 1.
Estimated septic tank pumping frequencies in years. These figures assume there is no garbage disposal unit in use. If one is in use, pumping frequency may need to be increased.
(Source: Pennsylvania State University Cooperative Extension Service.)

Tank Size (gals.)	Household Size (number of people)					
	1	2	3	4	5	6
500	5.8	2.6	1.5	1.0	0.7	0.4
750	9.1	4.2	2.6	1.8	1.3	1.0
900	11.0	5.2	3.3	2.3	1.7	1.3
1000	12.4	5.9	3.7	2.6	2.0	1.5
1250	15.6	7.5	4.8	3.4	2.6	2.0
1500	18.9	9.1	5.9	4.2	3.3	2.6
1750	22.1	10.7	6.9	5.0	3.9	3.1
2000	25.4	12.4	8.0	5.9	4.5	3.7
2250	28.6	14.0	9.1	6.7	5.2	4.2
2500	31.9	15.6	10.2	7.5	5.9	4.8

Recordkeeping

It is very important to keep a detailed record of all inspections, pumpings, permits, repairs, and any other maintenance to your system along with a sketch of where your septic system is located. Having this information on hand for service visits can save you both time and money.

Learn the location of your septic system, and keep a diagram or sketch of it with your maintenance records.

Inspecting your septic system annually is a good way to monitor your system's health. Inspections can reveal problems before they become serious, and by checking the levels of sludge and scum in your tank, you can get a more accurate idea of how often it should be pumped.

Protect the tank and drainfield

Protect your septic system from potential damage. Don't plant anything but grass near your septic system—roots from shrubs and trees can cause damage—and don't allow anyone to drive or operate heavy machinery over any part of the system. Also, don't build anything over the drainfield. Grass is the most appropriate cover for the drainfield.

Sound septic system operation and maintenance practices include conserving water, being careful that nothing harmful is disposed of through the system, and having the system inspected annually and pumped regularly.

By educating everyone in your household about what is and what isn't good for septic systems, they can begin to develop good maintenance habits.

What Not To Flush

What you put into your septic system greatly affects its ability to do its job. Remember, your septic system contains living organisms that digest and treat waste. As a general rule of thumb, do not dispose of anything in your septic system that can just as easily be put in the trash. Your system is not designed to be a garbage can and solids build up in the septic tank that will eventually need to be pumped. The more solids that go into the tank, the more frequently the tank will need to be pumped, and the higher the risk for problems to arise.

In the kitchen, avoid washing food scraps, coffee grinds, and other food items down the drain. Grease and cooking oils contribute to the layer of scum in the tank and also should not be put down the drain.

The same common-sense approach used in the kitchen should be used in the bathroom. Don't use the toilet to dispose of plastics, paper towels, facial tissues, tampons, sanitary napkins, cigarette butts, dental floss, disposable diapers, condoms, kitty litter, etc. The only things that should be flushed down the toilet are wastewater and toilet paper.

When used as recommended by the manufacturer, most household cleaning products will not adversely affect the operation of your septic tank. Drain cleaners are an exception, however, and only a small amount of these products can kill the bacteria and temporarily disrupt the operation of the tank.

Household cleaners such as bleach, disinfectants, and drain and toilet bowl cleaners should be used in moderation and only in accordance with product labels. Overuse of these products can harm your system. It makes sense to try to keep all toxic and hazardous chemicals out of your septic tank system.

To avoid disrupting or permanently damaging your septic system, do not use it to dispose of hazardous household chemicals. Even small amounts of paints, varnishes, paint thinners, waste oil, anti-freeze, photographic solutions, pharmaceuticals, antibacterial soaps, gasoline, oil, pesticides, and other organic chemicals can destroy helpful bacteria and the biological digestion taking place within your system. These chemicals also pollute the groundwater.

Even latex paint is unhealthy for your septic system. To reduce the cleanup of these products, squeeze all excess paint and stain from brushes and rollers on several layers of newspaper before rinsing.

To help prevent groundwater pollution, be sure to dispose of leftover hazardous chemicals by taking them to an approved hazardous waste collection center. For more information, contact your local health department.

Additives/System Cleaners

While many products on the market claim to help septic systems work better, the truth is there is no magic potion to cure an ailing system. In fact, most engineers and sanitation professionals believe that commercial septic system additives are, at best, useless, and at worst, harmful to a system.

There are two types of septic system additives: biological (like bacteria, enzymes, and yeast) and chemical. The biological additives are harmless but some chemical additives can potentially harm the soil in the drainfield and contaminate the groundwater.

While there hasn't been extensive study on the effectiveness of these products, the general consensus among septic system experts is that septic system additives are an unnecessary evil.

Be aware that the extended use of strong pharmaceuticals and personal care products may harm the working bacteria population in the tank. The total effects are unknown at this time.

Modern Appliances May Affect Your Septic Tank

Hot Tubs/Whirlpools

Hot tubs and whirlpools have become more common today in the home as a source of relaxation and therapy. While the soothing, swirling waters of a spa may be good for a homeowner, unfortunately, the large amounts of water that drain from the hot tub are not good for your septic system.

Emptying large quantities of water from a hot tub into your septic system can overload a system and stir the solids in the tank, pushing them into the drainfield, eventually causing it to fail.

Hot tub water should instead be cooled and then drained onto turf or landscaped areas of your property well away from the septic tank, drainfield, and house in accordance with local regulations.

Garbage Disposals

Garbage disposals can increase the amount of solids in the tank up to 50 percent and should not be used. Eliminating a garbage disposal can greatly reduce the amount of grease and solids that enter the drainfield.

Because a garbage disposal grinds kitchen scraps into small pieces, once they reach the septic tank, they are suspended in the water. Some of these materials are broken down by bacterial action, but most of the grindings must be pumped out of the tank.

As a result, use of a garbage disposal will significantly increase the amount of sludge and scum in your septic tank. Therefore, many states require a larger minimum size septic tank if there will be a garbage grinder/disposal unit in operation in the house.

Water Softeners

Some freshwater purification systems, including water softeners, needlessly pump hundreds of gallons of water into the septic system all at once. This can agitate the solids and allow excess to flow into the drainfield. Consult a plumbing professional about alternative routing for such freshwater treatment systems.

Water softeners remove hardness by using a salt to initiate an ion exchange. The backwash to regenerate the softener flushes pounds of this used salt into the septic system. There is some concern that these excess salts can affect the digestion in the septic tank or reduce the permeability in the soil dispersal system.

The Winter 2001 issue of *Pipeline* gives additional information about water softener use.

How Your Septic System Works

There are two main parts to the basic septic system: the septic tank and the drainfield.

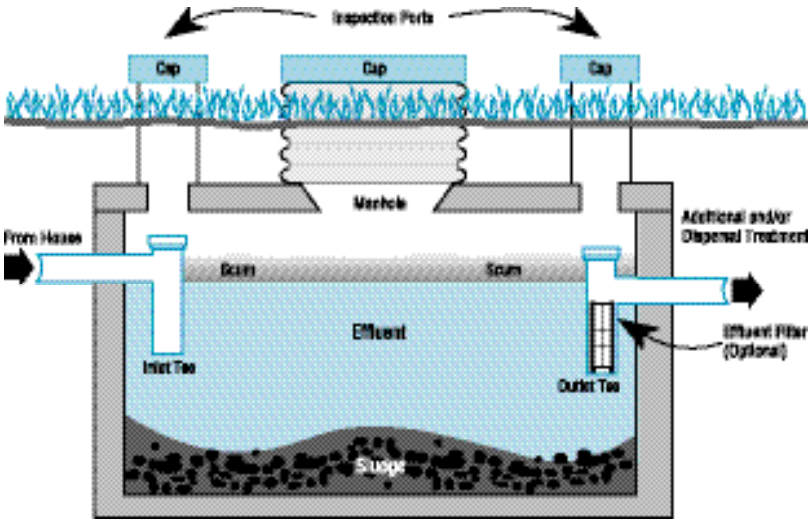
Household wastewater first flows into the septic tank where it should stay for at least a day. In the tank, heavy solids in the wastewater settle to the bottom forming a layer of sludge, and grease and light solids float to the top forming a layer of scum.

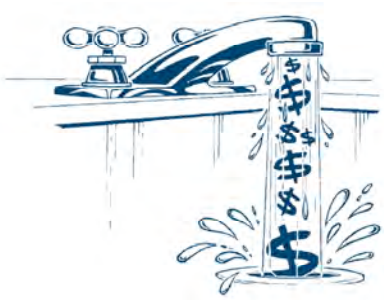
The sludge and scum remain in the tank where naturally occurring bacteria work to break them down. The bacteria cannot completely break down all of the sludge and scum, however, and this is why septic tanks need to be pumped periodically.

The separated wastewater in the middle layer of the tank is pushed out into the drainfield as more wastewater enters the septic tank from the house. If too much water is flushed into the septic tank in a short period of time, the wastewater flows out of the tank before it has had time to separate. This can happen on days when water use is unusually high, or more often if the septic tank is too small for the needs of the household. Homeowners should stagger their laundry throughout the week and try to do no more than two wash loads per day.

When wastewater leaves a septic tank too soon, solids can be carried with it to the drainfield. Drainfields provide additional treatment for the wastewater by allowing it to trickle from a series of perforated pipes, through a layer of gravel, and down through the soil. The soil acts as a natural filter and contains organisms that help treat the waste. Solids damage the drainfield by clogging the small holes in the drainfield pipes, and excess water strains the system unnecessarily.

Conventional septic systems are a very simple way to treat household wastewater. They contain no moving parts and are easy to operate and maintain. Although homeowners must take a more active role in maintaining septic systems, once they learn how their systems work, it is easy for them to appreciate the importance of a few sound operation and maintenance practices.





Use Water Wisely All Around The House

Water conservation is very important for septic systems because continual saturation of the soil in the drainfield can affect the quality of the soil and its ability to naturally remove toxics, bacteria, viruses, and other pollutants from the wastewater.

The most effective way to conserve water around the house is to first take stock of how it is being wasted. Immediately repair any leaking faucets or running toilets, and use dishwashers only when full.

Laundry

You can also cut down on water use by selecting the proper load size for your washing machine. Washing small loads of laundry with large quantities of water is a waste of both water and energy.

Also doing laundry all in one day might seem like a good use of time, but it could be harmful to your septic system. By doing several loads in succession, the septic system does not have time to adequately treat wastes. You might be hydraulically overloading your septic system, causing it to pass solids into the drainfield.

Newer energy-efficient clothes washers use 35 percent less energy and 50 percent less water than a standard model. Look for appliances that display the Energy Star symbol. This indicates they meet strict

energy efficiency guidelines set by the EPA and the U.S. Department of Energy.

Use only nonphosphate or low phosphate laundry detergents. Powder detergents with low inert (clay) content are also easier on the septic system.

Bathrooms

In a typical household, most of the water used indoors is used in the bathroom, and there are several little things that can be done to conserve water there.

For example, try to avoid letting water run while washing hands and brushing teeth. Avoid taking long showers and install water-saving features in faucets and shower heads. These devices can reduce water use by up to 50 percent. Low-flush toilets use 1.6 gallons per flush compared to the three to five gallons used by conventional toilets. Even using a toilet dam or putting a container filled with rocks in the toilet tank can reduce water use by 25 percent.

It is also important to avoid overtaxing your system by using a lot of water in a short time period, or by allowing too much outside water to reach the drainfield. Try to space out activities requiring heavy water use over several days. Also, divert roof drains, surface water, and sump pumps away from the drainfield.

Reprint Info

Readers are encouraged to reprint *Pipeline* articles in local newspapers or include them in flyers, newsletters, or educational presentations. Please include the name and phone number of the National Environmental Service Center (NESC) on the reprinted information and send us a copy for our files. If you have any questions about reprinting articles or about any of the topics discussed in this newsletter, please contact the NESC at (800) 624-8301.

Septic System Dos and Don'ts

Do learn the location of your septic tank and drainfield. Keep a sketch of it handy with your maintenance record for service visits.

Do have your septic system inspected annually.

Do have your septic tank pumped out by a licensed contractor, approximately every three to five years, or as often as is appropriate for your system

Do keep your septic tank cover accessible for inspections and pumping. Install risers if necessary.

Do call a professional whenever you experience problems with your system, or if there are any signs of system failure.

Do keep a detailed record of repairs, pumping, inspections, permits issued, and other maintenance activities.

Do conserve water to avoid overloading the system. Be sure to repair any leaky faucets or toilets.

Do divert other sources of water, like roof drains, house footing drains, and sump pumps, away from the septic system. Excessive water keeps the soil in the drainfield from naturally cleansing the wastewater.

Don't go down into a septic tank. Toxic gases are produced by the natural treatment processes in septic tanks and can kill in minutes. Extreme care should be taken when inspecting a septic tank, even when just looking in.

Don't allow anyone to drive or park over any part of the system.

Don't plant anything over or near the drainfield except grass. Roots from nearby trees or shrubs may clog and damage the drain lines.

Don't dig in your drainfield or build anything over it, and don't cover the drainfield with a hard surface such as concrete or asphalt. The area over the drainfield should have only a grass cover. The grass will not only prevent erosion, but will help remove excess water.

Don't make or allow repairs to your septic system without obtaining the required health department permit. Use professional licensed onsite contractors when needed.

Don't use septic tank additives. Under normal operating conditions, these products usually do not help and some may even be harmful to your system.

Don't use your toilet as a trash can or poison your septic system and the groundwater by pouring harmful chemicals and cleansers down the drain. Harsh chemicals can kill the beneficial bacteria that treat your wastewater.

Don't use a garbage disposal without checking with your local regulatory agency to make sure that your septic system can accommodate this additional waste.

Don't allow backwash from home water softeners to enter the septic system.

The Summer 2004 issue of *Pipeline* provides more information about septic tanks for homeowners.

NESC Products related to Septic Systems

Conventional Onsite Sewage Disposal System: Your Septic System, What it is and how to take care of it. Video.
WWVTPE61 .....$10.00

Your Septic System: A Guide for Homeowners. Video.
WWVTPE16 .....$10.00

Pumping Your Septic Tank. Brochure.
WWBRPE71 .....$0.40

Septic System Maintenance.
Fact sheet.
WWFSPE73 .....$0.80

Onsite Wastewater Treatment Systems: Operation and Maintenance.
Fact sheet.
WWFSOM45.....$1.00

Homeowner's Manual for the Operation, Monitoring, and Maintenance of a Gravity Onsite Sewage Treatment and Disposal System Manual.
WWBLOM47.....$13.00

Homeowner's Manual for the Operation, Monitoring, and Maintenance of a Proprietary Device Onsite Sewage Treatment and Disposal System Manual.
WWBLOM48 ..... $13.00

Homeowner's Manual for the Operation, Monitoring, and Maintenance of a Pressure Distribution Onsite Sewage Treatment and Disposal System Manual.
WWBLOM49.....$13.00

Homeowner's Septic Tank Information Package.
WWPKPE28 .....$2.25

Homeowner Onsite System Recordkeeping Folder.
WWBLPE37 .....$0.45

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