FINAL PUBLIC RESPONSIVENESS SUMMARY
TO
COMMENTS ON THE WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES
March 27, 2002
RULE #2

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EXECUTIVE SUMMARY:

The Agency proposed revised rules regulating potable water supplies and wastewater systems during October of 2001. Ten informational meetings and two formal hearings were held to receive public comment. Many pages of written comments were also received. There were many general comments and specific technical or editing comments as well. Where comments were extremely similar we have consolidated them and made a very general count of the number of individuals making that specific comment, to give some idea of the emphasis made on the point. The numbers are included in parentheses after the comment. Example: (3). A comment made by an organization is considered an individual comment. We have made efforts to distill the point of each comment, include it in the list, and respond. We have tried diligently to capture the essence of concerns in specific instances. If you feel your specific comment was not adequately translated, we apologize and ask you to please contact the Agency and get a further explanation of our position. Please note that in rewriting the proposed rules to respond to the comments received, other revisions had to be made in order for the rules to make sense. As a result, not all of the changes between the proposed rule and the final proposed rule are identified in this responsiveness summary.

Comments received at the informational meetings and the responses are posted on the Agency web site at http://www.dec.anr.state.vt.us/regulate.htm. These comments with those made at the formal hearings are also included in this public responsiveness summary.

The major focal points of comments were: closure of the 10-acre exemption and the corresponding build-out period, the municipal planning requirements and their associated timeframe, the changes in separation distance to groundwater for treatment systems, innovative systems, and design flows, particularly the definition of bedroom that establishes the basis for the design flow determination. Items in our responses to comments believed to be of particular note have been italicized.

Closure of the 10-acre exemption.

As originally proposed, the rule would close the 10-acre exemption on 9/1/2002. Ten-acre lots could be created until that date and could be built on until that date. Lots created and improved before 9/1/2002 would be exempt in the future unless they were subdivided or had something other than a single family residence with its potable water supply and wastewater system constructed on them.

The Agency received considerable comment on the rule. There was about a five-to-one ratio of comments in favor of closing the exemption, however many felt that the one-summer build-out provision was so unreasonable as to be no build-out period at all. There were also some individuals who felt that the exemption should never be closed. Many commenters were concerned about the fragmentation of habitat and agricultural lands, the proliferation of spaghetti lots, and the inequity of having a lot with 9.9 acres require a permit but one with 10.1 acres not require one. This last point was made specifically by

commenters who believe that ten-acre lot owners next to them have created wastewater systems that may threaten their permitted lot's water supply.

The Agency maintains its position that all potable water supply and wastewater systems should meet public health standards. The State of Vermont and one county in Texas are the only entities that do not require this of all systems. This has been a main point in the struggle for revision of the on-site statutes and rules. During the discussions in the legislature, a main request has been that the Agency not close the ten-acre exemption until the technical standards are revised. Coincident with closing the exemption in Rule #1, in Rule #2 the Agency proposed to allow new technologies and modify siting conditions based on the current science of on-site systems.

Based on the comments received, the Agency has changed the build-out provision of the final proposed rule to allow development until 9/1/2004. At the same time, we kept the closure date for creating new lots. New exempt ten-acre lots may not be created after 9/1/2002.

Municipal Planning Requirement

The Agency has made a significant change in the proposal regarding the use of modified site conditions in towns without land use controls. The proposed rules modify the minimum site conditions required for soil-based systems to be allowed, by increasing the allowable slope and decreasing the depth of natural soil required. These changes are expected to allow considerable new development. The proposed rule allowed towns that have acceptable land use controls to use the modified site conditions right away and allowed them to be used state-wide after five years, whether or not a town had such land use controls. **Based on comments received and further evaluation by the Agency, the final proposed rule has no five-year phase-in period. Modified site conditions will only be usable in towns that have or create adequate land use controls, as specified.** The Vermont League of Cities and Towns has agreed that an indefinite extension of the five-year phase-in period is acceptable, although they oppose the inclusion of transportation construction standards and provisions that encourage growth in designated growth centers as planning requirements for these rules.

The Agency received many comments on this issue indicating concerns over rampant sprawl, loss of wildlife habitat, degradation of natural resources from more development. These commenters pointed out that Agency should be concerned about the long-term effects of our programs. While they did not feel that we should require towns to do planning, neither should we let them ignore planning while providing an encouragement to scattered development that could affect the health of Vermont's natural resources even though the public health and welfare was not compromised. These arguments hold considerable merit. We do not want the technical standards kept more stringent than the current science allows simply to provide land use control. However neither does the Agency wish to ignore the potential effects of these changes on other natural resources. Under the provisions of 3 V.S.A. section 2293, agencies are also required to consider the effects of their programs on traditional settlement patterns, the working and rural

landscape, strong communities and a healthy environment. **In light of these comments and considerations, the Agency has revised the final proposed rule as described above.**

Technical Standards/Design flow

The majority of comments regarding design flows were actually about the definition of bedroom that is the basis for design flow calculations for residential units. The Agency recognizes the reality that large houses often have rooms that would meet the definition of bedroom as originally proposed but that are not and would not be used as bedrooms. We believe we have modified the definition of bedroom to allay the majority of those concerns. We do not believe that houses with rooms not now being used as bedrooms when they could be used as bedrooms should be deducted from the count. These permits run with the land and systems must be sized to serve the number of occupants the building could reasonably sustain at a customary lifestyle rather than the number that may be living there at any specific time or who are perhaps using a very little water. The reductions in design flows for campgrounds and residences on large systems remain.

The significant changes in the technical standards proposed by the Agency were to increase the allowable slope and reduce the required depths to groundwater and bedrock under certain conditions. These changes were based on discussions in the Technical Advisory Committee and review of other state's standards and scientific studies available to the Agency. All this information indicated that the majority of treatment for pathogens occurs in the clogging mat and the unsaturated soil beneath the system. Organic treatment may be obtained in pretreatment units such as a sand filter or other mechanical device. In endeavoring to relax the standards to the minimum requirements necessary to provide acceptable health and environmental protection based on scientific principles, we made two basic assumptions: that effluent would not surface or be discharged to surface waters. To do this we propose that effluent not be allowed to come closer than 6 inches to the surface of the ground.

Rule #2 also proposed that higher degrees of treatment allow a reduction in the required depth to groundwater. Although these units have not been shown to consistently reduce pathogens, the Agency felt that decreasing the area to which the effluent is applied would increase the time spent in the unsaturated zone in order to offset the potential of transmission of pathogens into the groundwater.

We received many comments over these issues from people with backgrounds in the field. Many of the comments indicated that the 6 inches to the ground surface is a very narrow safety factor and will be hard to maintain given the inaccuracies of the contours and the difficulty of fine-tuning construction. The Agency agrees that special care will be required by designers, hydrogeologists, and installers to meet designs crafted to these minimum requirements. However, designers may use their best judgment in deciding how close to the minimum a satisfactory design should be. We did not change the "6 inches below the ground surface" requirement.

Another major concern was the reduction of the required separation distances to groundwater. Many comments indicated that reducing the requirement for two feet of unsaturated soil did not allow a sufficient safety factor for public health protection. There were lengthy discussions of the capillary actions of soils, the major fluctuations of groundwater levels that may be unaccounted for by one spring's monitoring and the absence of a clogging mat to retard wash through of viruses in these high treatment units. We were aware that we were pushing the envelope with these proposals, and are pleased that so many people provided their feedback in this area.

The Agency believes that these arguments are compelling and has removed the reduction in separation distances due to higher degrees of treatment from the final proposed rule. We have, however, allowed the necessary native soils beneath the system to be reduced in some instances and fill to be added to achieve the required separation.

The Agency also proposed changes in the slope allowed. Most of the comments in this area commented on the increased erosion that could be generated by this change. Rather than amend the slope, we will require projects on slopes greater than 20% to provide construction erosion control plans for the wastewater system.

Highly conservative design flows for residential units connected to large wastewater systems or having a large number of bedrooms have been moderated to be more reflective of actual flows experienced while maintaining a reasonable safety factor. Design flows for public water systems are regulated by the Water Supply Rules and are not necessarily the same as the flows for wastewater disposal systems.

Review of the camping industry indicates that campgrounds now have "seasonal" sites, some campgrounds are open year round, and cabins of various sizes with and without plumbing are being placed on sites. Design flows for wastewater systems have been revised to account for these changes in use. Highly conservative design flows have been moderated to be more reflective of flows actually experienced in the industry while maintaining a reasonable safety factor.

Existing systems will not automatically be allowed to add new connections just because the design flows per connection are reduced. Many existing systems are substandard in depth to bedrock, depth to seasonal water table, isolation to water supplies, and other factors. Increasing flows to these systems is unacceptable. Use of the proposed design flows requires use of a system based on the same set of rules because the design flow assumptions are based on the complementary system design requirements. Older systems often allowed for much higher gallons per square foot per day loading rates. Current technical information suggests that systems using these old higher loading rates might not function well at the full design flows allowed in the old original designs, but are functioning satisfactorily at the lower actual flows being experienced by those systems. We do not want to allow more connections to these systems unless the new design requirements are met.

Innovative systems

In general people were supportive of including innovative systems in the rules and the Agency made no significant changes from the proposed rules. There was some concern about the need for good maintenance and operation in order to make sure consistent quality of treatment is maintained. People are worried that the Agency may not enforce the operating requirements. The Agency did not change these provisions of the rules. We intend to create a reporting and tracking system to monitor those systems that require operating contracts. We do not have such a tracking system now. We will enforce the requirements as it appears appropriate to do so.

There was also concern that the new systems would be far more expensive than the ones allowed by the current rules. These more complex systems may be more expensive than some systems, however, they generally fall into the range of costs for mound systems. In any case, they are an additional choice for permittees; they are not required.

Certification of installations, Designers, Installers

The Agency made no significant changes in the proposed rules regarding designers. Several comments were received that the Agency should license installers. We cannot do so without a statutory change. We believe that the intermediate step of requiring the owner to submit a certification by a designer or installer verifying that the installation was in accord with the approved plans will be a significant improvement in this area.

RESPONSIVENESS SUMMARY TO COMMENTS ON RULE #2

Closing the ten-acre exemption:

1. Why two rules? Both rules should be combined. If Rule #1 is not adopted how do we know you will continue with Rule #2? This is just the same proposal that has been being made for years. If S.27 passes will the 10-acre exemption still close?

   The Agency has been working to close the ten-acre exemption and revise the technical standards for on-site systems for many years. Several commenters do not want the 10-acre exemption closed (7). Others feel that it is appropriate to close the exemption if the new technical standards and innovative systems are allowed by the rules. Last year the Governor stated that if S.27 was not passed the Agency would close the 10-acre exemption by rule. S.27 provides for many other changes to be made to the program by consolidation of four statutes and providing for delegation of the permit program to qualified municipalities. We are delaying the adoption of Rule #2 until the end of the legislative session so that we may incorporate any such changes in these rules. The Agency has been very straightforward in its presentation of the rules to the legislature and intends to go forward with Rule #2 as promptly as we can after we understand what the Legislature intends to do or not do, or when S.27 is passed if that should happen sooner. S.27 as currently drafted includes closure of the 10-acre exemption at a delayed timeframe.

1. Why is it so important to close the 10-acre exemption? We do not need more state bureaucracy in hard times. It is not necessary to do this now. There is no health threat from 10-acre lots. How many 10-acre lots have failed systems? The 10 acre exemption is a 30 year commitment of the state to its citizens that they will always be able to build on their property. The state should not go back on its word. ANR is just trying to get more taxes and institute statewide zoning. State employees have been known to just approve the projects they like and turn down those they don't.

   The Agency believes that all buildings that require potable water supplies and wastewater systems should meet the appropriate public health standards for those systems. The size of a lot should not determine whether those standards have to be met. The exemption also is inequitable because it allows an owner of a large lot to construct non-complying systems nearby an owner of a small lot whose systems must comply.

   The Agency also believes that the 10-acre exemption works against good land use practices. Originally it was thought that a house in the center of a ten-acre square would not be likely to cause a problem to neighbors. That has been demonstrated not to be the way the ten acre lots are configured, as many spaghetti lots are created where all the development is at the road frontage in close proximity to each other, while the remaining acres are narrow strips unusable for anything, including farming. Owners often purchase large lots

simply to avoid contacting the state, whether or not the lot qualifies for a permit. This causes fragmentation of agricultural and forestry land as well as wildlife habitat. The Agency believes that closing the exemption will encourage the smaller lots, leaving more land in other uses.

When the 10-acre exemption was accepted as a compromise for Act-250 passage, it was believed that a ten-acre lot would provide for a suitable septic system that would not endanger water supplies. It has been shown that that is not true and that in addition the evasion allowed by the creation of the 10-acre lots significantly promotes bad land use practices. We believe a lot should not be developed for housing if it is unsuitable for water supply and sewage disposal systems that protect the public health and environment. Buildings not requiring water supply and sewage disposal may be built on such properties if they meet other permitting requirements. The Agency believes that science should dictate the places where soil-based water supplies and septic systems may be placed, and we are modifying the rules to be as reasonable as possible in that regard. We also believe that towns should appropriately plan for significant increases in development that could occur due to those changes in the rules. We believe that the comment regarding state employees was actually a reference to an employee of an old Natural Resource Conservation District program that was eliminated some years ago. Agency employees' actions are subject to an informal appeal process and a formal appeal process that can eventually be taken to the Water Resources Board, if necessary. It is unlikely that an employee could pick and choose among projects without an owner or a consultant being able to point that out very quickly and remedy the situation.

2. Is this rule a law? What is your authority to close the 10-acre exemption? If the Legislative Committee on Administrative Rules does not accept the rule, can the Agency adopt it anyway? Does this rule have to be approved by the House and Senate? What statute allows the agency to assign its responsibility for rule administration to someone other than the agency? Has this policy been signed by the Government Operations committees and signed into law?

   The Agency has authority to close the exemption by rule. The Agency's general rulemaking authority is provided by 3 V.S.A. §2803 and 2822. The original rulemaking authority for subdivisions was given to the Agency when the subdivision program in 18 V.S.A. §1218 was transferred from the Department of Health to the Agency in 1979. At that time the Agency was given authority to create and amend rules relating to subdivisions in 18 V.S.A. section 1218(b).

   The Agency has proposed closing the 10-acre exemption in various bills to the legislature for nearly 10 years. The House has passed two bills closing the exemption and the senate has passed one, in various sessions. These bills extended the timeframes for closing the exemption until the Agency prepared rules providing for the use of new technologies. Last year at the beginning of the legislative session, the Governor announced that if the legislature did not act to

close the exemption during the session, he would direct the Agency to close the exemption by rule. The Agency is not assigning its rule administration to others. Rulemaking is in the purview of the Executive Branch and does not need to be signed by the Government Operations Committees.

3. The 10-acre exemption should not go first (2). The legislature will oppose this action. The new technologies will not be available until after the 10-acre exemption closes. We oppose Rule #1, it does not include modern technologies.

   Although Rule #1 is expected to be through the adoption process by the end of May 2002, it does not close the exemption for creating exempt 10-acre lots until September 1, 2002, after the date that we expect the new technologies to be available under Rule #2. The lots may be built on until 9/1/2004. A few of the new technologies have already been approved and others are in the pipeline.

4. ANR should only make technical decisions not land use policy decisions. The marketplace will eliminate the need for the 10-acre exemption if the new systems are available, so there will be no need to close it by rule. Will closing the 10-acre exemption encourage smaller lots?

   The Agency believes that closing the 10-acre exemption by applying the technical standards for potable water supplies and wastewater systems to development on those lots is eliminating a convenient evasion route rather than establishing land use policy. Many 10-acre lot owners create these lots simply to avoid having to meet the rules, whether or not the lot can meet the standards. We expect in many cases that smaller lots will be created, if an owner cannot conveniently avoid the permit process by creating a large lot.

5. Can lots still be created and constructed on before 9/1/2002? It is not clear that the exemption does not close until 9/1/2002 even though the rule is adopted in February or March. That should be highlighted.

   The exemption is not being closed for ten-acre lots created before 9/18/69 or for 10-acre lots created by 9/1/2002 that have been developed by 9/1/2004. Those landowners do not have to revise their systems nor do they have to get a permit unless their property is further subdivided, even if their system fails. New ten-acre lots may be created until September 1, 2002 and those lots and existing ten-acre lots may be built upon and keep their exempt status as long as the house and its septic system and potable water supply are all substantially complete by 9/1/2004.

6. Closing the 10 acre exemption will drive a lot of development between now and 9/1/2002. Act 250 will prevent a run on lots being created. Many people will throw up shacks just to beat the deadline (2). It will cost more to hire an engineer than to get a junk trailer installed on a lot.

People will react differently to the new rules depending on their specific circumstances. Certainly some people may put residences and substandard systems on lots just to circumvent the new requirements. The lots will have to have a substantially completed potable water supply and wastewater system on the lot as well, not just the trailer. The build-out deadline has been extended to 9/1/2004.

7. The 9/01/2002 date for build-out is unreasonable (3). Builders are booked solid. This is not a window. The exemption should not be closed for existing 10 acre lots that are undeveloped. It should be extended for existing 10-acre lots for about three years (2), especially since other existing lots stay exempt. Rule #2 should be modified to provide a longer phase out of the exemption. Use the timeframes included in S.27. The ability to create more 10-acre lots should be closed immediately but build out on existing lots should be extended.

   S.27 allowed ten-acre lots to be created until the rules for technical standards for system design were effective and for those lots to be built upon for another two years after that. Many people were concerned that this would lead to a great deal of development, in the meantime, that would not have to meet the standards for safe potable water supplies and septic systems. After the legislative session, the Governor decided to set September 1, 2002 as the appropriate date for closing the ten-acre exemption and allowing build-out on ten-acre lots. Based on public concern, the build-out date has been amended to 9/1/2004. The closure date remains at 9/1/2002 for creating new exempt 10-acre lots.

8. The exemption should not be closed in towns that do not have planning until the 5-year planning period is over and the new systems are available to them.

   The innovative systems will be available in all towns when Rule #2 is adopted. That is expected to be before September 1, 2002 when the exemption closes. The five-year delay before using the modified site conditions without adequate planning and zoning has been extended permanently.

9. We support closing the 10-acre exemption (25). It is necessary to stop spaghetti lots. It is necessary to prevent health hazards. It will reduce fragmentation of wildlife habitat. It will promote smaller lots. Why have you waited so long to close the 10-acre exemption? Lots have been developed around the septic standards. There should have been land use controls instead. You say you don't want your rules to control land use. Look at the Mobile Home Park Rule. It controls the size of sites, landscaping, traffic control, things that have nothing at all to do with sewage.

   The Agency has been working on revising the rules and closing the 10-acre exemption for over 9 years. We agree that the current rules have influenced the land use patterns. We consistently encourage towns to do local planning and zoning, however it is not a requirement. The Agency has restricted the use of the modified site conditions in towns that have not created the land use controls in

an effort to address this concern. The Mobile Home Park rule reflects statutory language. S.27 would modify the Mobile Home Park rule to eliminate much of that language and place regulation of those conditions in mobile home parks unrelated to water supply and wastewater systems with the Agency of Commerce and Community Development which regulates other conditions in mobile home parks.

10. The ten-acre exemption should be closed at a date certain, in the future. Will a buyer of a 10-acre lot have recourse against the seller if the lot turns out to not be developable?

    The exemption is being closed on 9/1/2002. Build-out on such lots is extended to 9/1/2004. The seller of a lot is not responsible for the actions of a state agency that influence the development of a lot. The seller is responsible only for any data regarding the current restrictions and physical characteristics of the lot that he/she may need to represent to the buyer.

11. Will the Agency have the necessary staff to process the increased number of permits closing the exemption will create?

    The Agency will need to change the way some of the work is handled in order to accommodate the new influx of permits. We have been considering several ways to do this including doing less technical review and relying more on the certifications of projects by the designers, as well as moving to general permits or permits by rule where that is possible. The Agency will continue to focus its efforts on review of the soils early in the project design. That is crucial to project success. We are committed to administering this significant public health and environmental protection program appropriately and will take the actions necessary in FY 2003 to do so.

12. We would like a comprehensive reform package that reforms the entire program as well including licensing of installers, delegation to municipalities, etc.

    The Agency will continue its nine year effort to work with the legislature on S.27, the current proposal that incorporates the comprehensive reform, consolidates the four statutes, eliminates many of the isolated exemptions, provides for statewide technical standards for systems, licenses installers and allows for municipal delegation.

13. If good science will not allow a system to be built then no system should be allowed. (3) There should be one construction standard for these systems for all lots (2). A system isn't necessarily substandard just because it doesn't meet the rules.

    The Agency agrees that all systems should meet standards that protect the public health and the environment. Closing the exemption will bring another 1/3 of new systems into compliance with these standards. While systems can be constructed

that will work well and not precisely meet some particular item in the rules, the Agency believes that these rules reflect a good minimum standard for construction of potable water supply and wastewater systems.

14. It is inequitable for a person with a small lot to have to comply when a person with a large lot can build right next to them, perhaps even compromising the small lot owner's water supply, and not have to comply.

    The Agency agrees that this is a major inequity perpetrated by the existence of the 10-acre exemption. Several commenters spoke of personal experience in this regard.

15. People use the 10 acre exemption just to avoid the state. How will you let them know it will be easier to meet the rules?

    There will be several workshops held on the new rules after they are adopted. We expect that interested parties such as the real estate industry will also "get the word out" when the rules are adopted.

16. Has anyone thought about giving tax credits when the 10-acre exemption is closed?

    Towns can make that choice now by deciding on the highest and best use categories. If no development can occur on a parcel, the town can decide to tax it as less valuable land if they choose, similar to the current use program.

17. If you close the 10-acre exemption, there will be a lot of more work that a site technician cannot do.

    We expect that there will be a lot of additional permits being sought. Site technicians are restricted by statute to preparing the applications for one-lot subdivisions and to designing potable water supplies and wastewater systems with flows up to 600 gallons per day. Some of the new work will be within their purview. The Agency has proposed in S.27 to moderately extend the Site Technicians' authorities.

COMPLETE RE-WRITE OF THE SMALL SCALE RULES

GENERAL COMMENTS:

1. What has been the feedback on S.27. Under S.27 will a failed system need a permit on an old lot? Will the rules be the same if S.27 passes?

   S.27 has had extremely varied reactions; however, the Agency feels that it is a reasonable compromise that significantly improves the public health and welfare of the people of Vermont. Under S.27 a failed system on an old lot would need a permit. It would be able to get a "best fix" system as failed systems under state jurisdiction are allowed now. Under the new rules, even without S.27, the incremental cost of improved public health and environmental protection may be considered in the analysis of the 'best fix" required. We expect to change Rule #2 to include changes to the program made by S.27 if that bill is enacted into law. We do not expect major changes to the technical standards will be necessary under S.27.

2. Can ANR go back to the old method of rulemaking with these rules (which starts out with concepts for discussion rather than draft rules going out to the public)? You did not hold many meetings in South Central VT. Several towns here have poor soils and would probably have been interested in a meeting in their location. Why are you delaying the adoption of Rule#2? What are the chances of the legislature consolidating the program as you are suggesting?

   The Agency rulemaking process requires that the Agency go to the public and receive comment on concepts proposed, before beginning to draft the rules. These rules have been a part of an extensive public process for the past nine years, including three advisory committees and three legislative sessions. They have been the subject of 10 informational meetings, two formal hearings and quite a bit of news coverage. The Agency felt that the intent of the Agency's rulemaking process has been more than met through this process. The House Natural Resources Committee has been reviewing S.27 and has shown some interest in the consolidation of the various statutes.

3. The secretive nature of this rule disturbs me. The focus on the technical details brushes aside the discussion of the impact and whether it is good for VT.

   As noted in 2. above, the rule has been the subject of many public meetings and several news commentaries. We fail to see how it can be characterized as a secretive process. The original impetus for the technical revisions was to disengage the science of wastewater systems from land use control. Certainly throughout this process there has been considerable discussion of the issue of increased development and how that should be controlled. The rules take that into account by not allowing the modified site conditions to be used in communities that do not do the appropriate planning and zoning.

We have considered the number and depth of comments regarding minimum site conditions and have decided not to reduce separation distances to groundwater for highly treated effluent because of those concerns. We will revisit that proposal when more data regarding the effects of such systems on pathogens is available.

4. If Rule #2 is adopted, will the new technical standards be in effect? Could the technical standards be different in the end? Could Rule #2 jurisdictions be different in the end?

   The new technical standards, other than revised minimum site conditions, will go into effect statewide when the rule is passed, including the use of innovative systems. The Agency believes that the technical standards have been modified to the extent reasonable to provide safe, reliable potable water supplies and wastewater systems, based on considerable discussion in the Technical Advisory Committee and based on the considerable comment received. Therefore, we do not expect many changes in the proposed technical standards over the course of the legislative session. The technical rules have been provided now so that the legislature could know what the Agency proposed before S.27 is taken up this session. The jurisdictions could be changed by legislative action.

   The standards will be in effect upon adoption for state permits, and for town permits upon the adoption of new ordinances incorporating them. *Because of our concern over new development, the new standards for minimum site conditions will not go into effect in towns that do not address land use controls in their local planning and zoning process. The modified site conditions never go into effect in those towns unless they create appropriate land use controls. This is a change from the proposed rule, which allowed the new site conditions to be used statewide after five years.*

5. How many septic systems are there in VT? How many fail annually? How many failed systems actually make someone sick? It doesn't seem to be a real problem. My family used a privy and used its waste to grow their garden, and they lived until their 80s. The health risk from these systems is very overstated. Pooling on the surface isn't a real problem. Doesn't it just evaporate anyway? Will there be more detection of failures? The problem from failing septic systems does not warrant the relaxed standards in Rule#2.

   The Agency has determined through a survey of towns and through its own surveys that approximately 5% of the septic systems in VT are failing. About 35% of the systems constructed in these towns were replacements for failed systems. At an average of 6 per town that is 1500 failed systems per year. It is not possible to quantify the number of illnesses annually that are attributable to failed systems. However, Health Department epidemiological studies indicate that failed systems are a source of concern in VT, particularly for at risk populations such as young children and the elderly. Effluent that pools on the

surface of the ground is a contact point for animals and people. While there will be some evaporation on hot dry days, the evaporation actually occurs from capillary action and plant uptake more than direct evaporation. Evaporation does not eliminate pathogens. This type of evaporation can still go on without the need to expose the sewage to the ground surface.

We do not expect an increase in the number of failures detected. As older systems are replaced it is anticipated that the number of failures will decrease over time. The relaxed standards are not related to the failed septic systems.

6. This proposal does address some of the concerns voiced by legislators. This is a good job of solving an issue that should have been resolved 30 years ago. The rules are long overdue.

   The Agency has worked hard to create rules that will meet the major concerns of the legislators who have been working on this issue for the past 9 years.

7. There should be more research and public education about septic systems.

   We agree that additional information and education on the health issues as well as ways to care for septic systems and protect water supplies is necessary and very useful in promoting the public health and welfare.

8. What is the purpose of these changes? They may be possible but are not practical for most homeowners. The legislature should approve them so there will be a more constructive review.

   The Agency has proposed Rule #2 as a total rewrite of the existing rules in order to consolidate a complex program as much as possible within our existing statutory authority and to update old technical standards. Many of the systems are similar in complexity or cost to the sandfilter systems or mound systems. They are not required but are an additional option for many people. We are bringing the draft rules to the Legislature so that they can see how the rules coordinate with the provisions in S.27.

9. The rules are far too complex (2). There has been no improvement. The 1996 rules are quite good and should be modified only slightly. The rules will result in more cost to the applicant in both design and construction making everything less affordable.

   The Agency has been unable to significantly reduce the complexity of the rules because several statutory revisions are necessary before the four programs can be combined and streamlined. We have made as many revisions as we can based on existing authorities. We believe that there is good reason for the legislature to work with us on S.27 to make a clearer, more understandable program.

The requirement to provide a system that meets standards for a lot previously unregulated will result in new costs to a landowner, to the degree that the old systems failed to meet the requirements. However, these are good choices for new projects and will not cost significantly more for sites that were suitable for development. For lots previously unable to be developed, the cost of one of these systems should be offset by the value of a lot that can be developed.

10. Please withdraw Rule #2 (8) until there is a thorough assessment of effects of the additional development (2). Rule #2 is premature and ill-advised (3). It should not be adopted because it will promote sprawl (6). It will threaten natural areas. How much land will be developable that is not developable now? Doesn't this promote sprawl/development? Doesn't this mean farmers can create more lots?

The Agency recognizes that Rule #2 provides additional opportunity for development due to changes in site limitations and with new technologies. We have addressed that concern in two ways. First, we will not allow the new site conditions to be used in towns that have not planned for the development that could occur. Second, at the Agency level, we will be proposing changes in funding priorities that will encourage development in growth centers. We believe that the rules will allow sprawl and discourage sprawl depending on specific circumstances. If the new rules allow in-fill of small lots in villages or allow a 1-acre lot instead of a 10-acre one, this will reduce sprawl. If 10-acre lots are each replaced by five 2-acre lots, then the new rules will be seen as allowing sprawl. The Agency believes that the septic design standards should be based on scientific principles and land use decisions should be made separate from the science of sewage disposal. These rules work toward that goal.

Many estimates have been made of the amount of new land that will be able to be developed that is not developable now. The Agency believes that the 50% estimate is quite high and several commenters agreed. Others have noted that if towns do not update their sewage ordinances, then none of the new development will occur in that town, since the town standards will be more strict than the state standards. S.27 would establish state-wide technical standards and towns would not be allowed to have technical standards more strict than the state standards. The Agency is encouraging development in growth centers and has required towns to do appropriate planning in an effort to moderate the growth in development and its attendant effect on natural resources.

The availability of new treatment systems does not necessarily result in large numbers of new sites being developed. A review of the number of new systems that have been built since the rules were updated in 1996 show 246 new systems: sand filters (79), at-grade systems (70) and steep slope mounds (97) out of 4813 lots. This means that new treatment systems affected only 2-3% of the lots. This number is probably high because it is likely that some of these lots could have met the previous rules.

11. It will result in a flood of new applications, which ANR is not equipped to handle (3) even with the new staff (3). ANR has too many initiatives going. There will not be enough staff to operate these and other programs effectively. There are 1000 expired stormwater permits. Regional Office permits are too slow already. How will you do it all? Will it be dumped on the towns? How will the regional office staff roles change? I've heard you (the Commissioner) think that the Regional Office staff should not be in the field, that they should stay in the office. There is not enough technical assistance being offered for the programs you have now, and you want to add more? ANR should not take staff from other programs to staff this program if positions are not provided or funded by the legislature. That would leave other programs understaffed. ANR's program must include early site analyses and inspection of completed systems.

    The Agency is committed to this important public health and environmental protection program and will take whatever steps are necessary to properly administer it. The Agency will need to change how we "do business" in order to create an effective expanded program. We, including the Commissioner, believe that the most effective way to ensure well-functioning septic systems is to be sure that the original soils are suitable for sewage disposal. Agency staff will continue to focus their efforts on initial site visits and soils reviews. We intend to rely more heavily on the designers to do the engineering designs and will hold them more accountable for that work. We have agreed with the Board of Professional Engineering to send significantly deficient designs to them for review and action. ***The Agency does little inspection of completed systems now and is not planning on increasing its inspection of completed systems.***

12. Rule #2 should be modified to provide a longer phase out of the exemption. Use the timeframes included in S.27.

    The Agency has considered this issue. Please see our response to Rule #1.

13. The new TMDL and phosphorus requirements will be costly for municipalities and they may not be able to accept new connections. What are you doing to see that this doesn't fuel development in rural areas?

    Many municipal treatment facilities are well below their design capacity and will have little trouble adding connections. The new construction required for meeting TMDLs and phosphorus would not affect the individual connections to the facility unless they were at or very near their design capacity. In any case, the towns may choose to issue new connections at their discretion within their design capacity. At the Agency level, we will be proposing changes in funding priorities that will encourage development in growth centers. It is well-known that scattered development in rural areas results in far higher costs to municipalities to provide other services such as roads, and fire safety than the cost to provide central sewage treatment.

14. You are changing site conditions. Are you changing setback requirements also?

    The setback requirements have not been changed.

15. There will not be enough oversight and enforcement (5). ANR should inspect more than 1 in 10 installations (3). ANR should be provided with more funds for enforcement. Permit fees need to take into account increased oversight needs. Towns will be stuck with enforcement. Towns are reluctant to do enforcement. There is too little enforcement of the existing rules that have better safety factors and there are still problems. The state doesn't have enough staff to track enforcement properly now, and new systems will fall through the cracks.

    The Agency recognizes that there will be some increased need for enforcement and the changes in the permit review process should allow additional time to be spent in this area. The Agency enforcement division has had adequate time in the past to pursue the Department's referrals and we expect they will be able to continue to handle the workload. The towns will not be required to do any more enforcement than they are currently required to do. The new ability for the Agency to directly enforce against designers is expected to create a significant improvement in the work performed, which should keep increased enforcement to a minimum. In addition, owners will be more aware of the need to get a certification of the installation at the time of construction completion. The new focus on permit requirements by banks and real estate agents will also help keep the standard of quality high and reduce the need for enforcement.

16. Will town rules be exempted 5 years from now? Do towns have to have regulations? Can towns pick and choose from the rules? Towns should not have to accept the more lenient standards. What if towns do not adopt the new regulations? Will towns be allowed to keep their current regulations? Even if they are stricter than the state rules? Towns should have a choice (2).

    The minimum site conditions will not be available in towns that do not have planning and zoning; other provisions of the rules will apply statewide. In towns where the new standards apply, town permits must be at least as stringent as these rules. They may be stricter, if the town desires. If the town ordinance is not updated, a town may be approving a design that will violate the state requirements. Towns cannot choose only parts of the rules. If S.27 passes as proposed, towns will not be able to have stricter technical standards than the state standards.

17. How many towns have sewage ordinances? Towns without ordinances should only be allowed to use the new rules when there is no other solution for a failed system Towns may have a reduced role when the state takes jurisdiction over 10+ acre lots. Do the new rules supercede the current town ordinances? Towns with a duly adopted sewage ordinance and a trained official for administration should be exempt from state review. They should be given a year to adopt an ordinance that complies with

state standards. Towns with adopted sewage regulations and a health officer could be allowed to use alternative systems.

About 40% of the towns have sewage ordinances now, although many have not been updated to incorporate the 1982 or the 1996 rules. About 30% of the towns have planning and zoning. Some towns may decide that they do not wish to have land use controls. The minimum site conditions will not be able to be used in those towns. The Agency's planning division will work with towns and encourage proper planning through other methods than the on-site regulations. Planning and zoning are difficult issues for a town to struggle with, however, towns may work with the Agency of Commerce and Community Development to receive assistance in accomplishing these goals. Innovative systems will be able to be used statewide. They do not significantly contribute to new sites being developed that cannot be developed now.

18. How will the town and the state coordinate permitting? Will there still be duplicate permits? Sometimes people don't know that they need to get state permits when they have town permits. Will towns be able to take delegation of the permitting program? Can ANR just decide not to issue permits in municipalities that have their own permit programs? The Agency does not have to and should not review permits in towns that have a sewage ordinance and permitting program.

    The new rules do not eliminate duplicate permitting by the towns and the state in certain circumstances. That cannot be accomplished without statutory changes in S.27. S.27 would allow towns to accept delegation of the program. Under the current statutes, the Agency cannot delegate the program to a town and stop issuing permits in that town. Issuing permits based solely on the town's review without delegation of the permitting program is not appropriate oversight of the program.

19. Have you made any estimates of the energy required for these more complex systems if many of them are constructed? If development is increased by 50% how much additional energy will be needed?

    A collective estimate has not been made. A single system with pumps may have a $10-20 monthly bill. A system with blowers perhaps $50 per month. The operating costs may limit the number of systems that are installed. Mound systems also require pumping, and have operating costs of $10 per months in that regard. There are presently about 2000 subdivision and wastewater permits issued per year. If as many as one third of them were systems that required blowers that would be 667 systems. At $50 per month x 12 months at $.15 per kilowatt-hour, that is 2,668,000 kilowatt/hrs per year. If an average home has an electric bill of $75/month (6000 kw-hrs), that is the power use equivalent of 445 homes. If 2-3% of them were such systems, that would be equivalent to the power use for 40-60 homes.

20. How does the rule “Insure the availability of an adequate supply of potable water?”

    These rules insure that the water supplies are located correctly so that they will be potable. If an adequate supply is not provided, the system is a failed system and the Agency can require replacement of the supply for projects where it has jurisdiction. For large systems, the flow is tested to make sure that the quantity is acceptable also.

21. These rules cover water supplies. Is that a change? Will the rules allow a dug well? Must a dug well be done by a person licensed by the state? A lot of farmers use dug wells. This will be a public relations issue. You need to get the word out. Are the on-site rules duplicating the water supply rules? Will two permits be required to design and install a potable water supply?

    These rules have always regulated water supplies as well as wastewater systems. There is no duplication of the permit for design and installation. Large public water systems must also get an operating permit from the Water Supply Division. Dug wells continue to be allowed by the rules. The dug well must be located by a designer. It may be dug by the owner. We plan to hold several workshops on the new rules after their adoption.

22. 1-502(7) How is “failed potable water supply” defined?

    See the definition on page 12 of the rules.

23. The new rules are inadequate to protect water supplies. We do not know enough about pathogens to make these reductions. A two-year time of travel should be used to protect water supplies. Water sources should be required to be located with a Global Positioning System and the tag number from the drilled well should be recorded. The information should then be placed on the Geographic Information Mapping System. The static level of the well should be corresponded with the depth of the SHWT to insure protection of the water supply.

    The current rules require set back distances from these small wastewater systems of 500 feet for shallow wells and 200 feet for drilled wells. A 100 feet separation distance for small wells was increased to 200 feet in the 1994 Water Supply Rules. A two-year time of travel is required for large indirect systems. A two-year time of travel to any water supply would eliminate the possibility of siting any septic systems in many areas of the state because of the large distances involved, sometimes miles. These setback distances have been working well and the Agency does not believe it is necessary to change them at this time. *The Agency has taken the reductions in separation to groundwater based on higher degrees of treatment out of the proposed rules in response to these and other comments regarding water supply protection.*

The Agency does not yet require wells for single family residences to be located by a GPS. The Water Supply Division requires GPS locations for public community wells, and other wells must be located on a map. We recommend to well drillers that other wells be located by GPS, but it is not a requirement. Permits for some wells are issued before the well is drilled. We do not require the static level of the well to be known before the permit is issued. The original design should take the location of the septic system and the type of well into account when providing appropriate protections.

24. If cluster systems are the best community solution, is there funding available?

The Agency currently has funding mechanisms that allow Revolving Loan Funds to be passed through municipalities to owners of small systems for construction, with certain requirements for municipal oversight, under 24 V.S.A. Chapter 120.

MUNICIPAL PLANNING REQUIREMENTS

1. What are the planning requirements for the municipalities to qualify to use the revised site conditions during the first 5 years after rule adoption? Who will decide what is satisfactory planning? How ironclad are these requirements? Are there any carrots or sticks to get towns to do the planning for land use changes? Do not use sewage standards as land use controls. Let the Legislature deal with planning issues.

   The following items are proposed for planning requirements for towns to qualify for use of the revised minimum site conditions.

   a) a confirmed planning process
   b) zoning bylaws and subdivision regulations
   c) standards for transportation construction and maintenance
   d) flood management protection
   e) soil and erosion control
   f) provisions to encourage growth in designated growth centers, villages and downtowns

   The Agency of Commerce and Development will determine whether towns meet most of these requirements. Towns will self-certify that they meet the requirements for soil and erosion control and growth in designated growth centers, villages and downtowns. At the moment the only carrot/stick proposed is the use of minimum siting conditions for wastewater systems in the town if there is appropriate land use control.

   The Agency agrees that the sewage rules should not be used as land use controls, however, it is also important that the Agency not encourage uncontrolled growth before the towns are ready to direct that growth within their town. The Vermont League of Cities and Towns has asked that we make sure that towns have the time to take action if they choose. Other interested groups have indicated that the relaxing of the more strict siting conditions will have as much influence on growth (and the natural environment) as providing infrastructure.

2. The use of the new site conditions should always be linked to towns having planning and zoning (8). Why are you delaying the use of the modified site conditions? The new standards should be available to all from day one (4). The planning and zoning requirements to offset the reduced siting requirements are not adequate. Can everyone use the new site conditions after 5 years, whether or not the town has land use planning? The new rule will result in increased developed land without the safeguard of towns having appropriate land use controls (8). If towns do not do planning and land use control, they should not be allowed to ever use the modified site conditions. Let's get the politics out of this! If towns don't act, let them take the consequences!

   The Agency received many comments relating to planning and zoning. Several commenters do not want towns to be allowed to use the modified site conditions

unless they adopt proper land use controls to regulate the resulting development. (8) Others felt that a 10-year pilot program in growth centers would be appropriate. (9) A smaller group felt that towns should be able to decide whether they want to plan or not and that the technical standards should no longer be used as *de facto* land use control. (5) This has been a major discussion point during the many years that septic reform has been considered. The Agency's proposed rule provided a compromise in several ways. One, the modified site conditions would not be usable for five years unless the town had acceptable planning and zoning. This would provide a window for towns to control development if they chose. Second, the Agency would change its infrastructure funding to encourage growth centers and discourage expansion in ways that result in strip development. Three, towns that adopt satisfactory planning and zoning and amend their sewage ordinance before the five-year period is up could then use the new site conditions. Finally, the standards would be available statewide after the five-year period regardless of whether towns chose to plan for increased development. This would leave planning as a local control choice and divorce the sewage technical standards from land use control.

There was considerable public concern (18) about the long-term effect of the modified site conditions and innovative systems creating significant development in areas that would be detrimental to Vermont, particularly the steep slopes with marginal soils. *The Agency has therefore modified the planning requirement to remove the phase-in provision. This means that towns must have appropriate land use controls in order to use the modified site conditions. The modified site conditions will not phase-in after the five-year delay.*

3. The planning standards need to be clear (3). What tools will the towns use to establish planning and zoning requirements? When different standards are used for depth to groundwater for a build-out analysis, then the build out analysis changes.

   The requirements for planning are discussed in item 1 above. Towns self-certify to two standards and Agency of Commerce and Community Development (ACCD) tracks the other six. The standards for the planning items are included in several programs that have been active for several years. For example the Agency of Transportation has a checklist for determining whether a town complies with their requirements. The most recent list from the ACCD (January 02) indicates that about 177 towns have completed the AOT planning requirement to date. Thirty-seven communities on the list appear to meet the six planning requirements tracked by ACCD. Fifteen are missing only the sewage ordinance, and another 13 are missing only zoning bylaws. The planning process that has been is use for many years has tools available for towns to initiate or revise their plans. Build-out analyses used as a basis for plans will have to compare build-out based on the existing standards to build-out with the revised standards allowed in the towns. Such an analysis is crucial to decisions on zoning.

4. Can towns use the innovative system rules? Innovative systems could be used as an incentive to do planning.

   Towns will be able to use the innovative system rules immediately as soon as they update their sewage ordinance to include them. Because the new systems simply increase treatment rather than change the methods of disposal, they can be used where a sand filter may be used now. There did not seem to be a need to restrict use of these approved systems for a phase-in period or use them as incentives.

5. If some towns are allowed to use the new rules without planning, there will be uneven implementation of the rules. Development in these towns will affect towns downstream unfavorably, and unfairly. New development adds other costs to towns such as education and road maintenance. Town planning is a 4 to 5 year process. There is unlikely to be funding to assist even those towns who wish to do planning. The state should provide funding (2), and encourage land use planning.

   The Agency recognizes that there will be uneven effects of development between towns that choose to plan and those that do not. We also realize that development increases the cost to towns for roads and education. However, the proper venue to address these issues is through regional associations and with proper planning.

   S.27 supports the position that planning funds be appropriated to assist towns in undertaking the necessary planning.

6. The planning requirements for a confirmed planning process, zoning bylaws subdivision regulations and a flood control ordinance are appropriate. Flood management is unclear. Transportation and growth center requirements are not appropriate, particularly since the state is changing its funding structure for municipal infrastructure. We would not object to the extension of the five-year window indefinitely.

   The Agency has not changed the requirements for what constitutes acceptable planning and land use controls. Many of the standards for flood management and transportation have been in place for several years and some towns already have plans and/or requirements that address these issues. The five-year window has been eliminated as discussed above.

7. I support VNRC's suggestion of a 10 year pilot program focusing use of the new rules in growth centers (5).

   The Agency does not believe that a pilot program is required in areas where planning and zoning are in effect. The rules have been changed to not allow the modified site conditions to be used unless the town has appropriate land use controls. In addition the changes to minimum separation distances to groundwater based on treatment levels have been removed.

8. Must towns do the planning? Do they need zoning or just a sewage ordinance? Zoning costs money. Many towns do not want the state telling them what to do about land use. Some towns may not be ready to address the need for planning. Can towns who are not ready choose to wait to implement the rule? Ninety percent of the towns won't qualify to use the site conditions on the effective date of the rule. How many towns will qualify to use the new site conditions right away? If you allow the new site conditions without planning, towns will be likely to pass ordinances if they don't have one so that they can use the new technical standards. If our town doesn't have any planning now, why shouldn't we just wait for the 5 years and then the rules will be in effect anyway. Most towns will sit it out. It takes 5 years to do the planning anyway. It takes too long to even get sewage ordinances passed. Planning is too hard.

   The Agency recognizes that planning is a long and arduous process. The requirements for planning are outlined in the rules. Towns do not have to do planning unless they wish to use the modified site conditions in their community. Innovative systems will be available for use when the rules go into effect. The proposed rules have been changed so that the revised site conditions will not be available after a five-year wait. We believe that several towns will be able to qualify immediately for the revised site conditions after they upgrade their sewage ordinance.

   Some towns may choose to not have planning or zoning in their community. Development will be able to continue with the currently available technologies, new innovative technologies and the existing siting standards, so there will not be a reduction in the amount of development available, other than ten-acre lots that cannot meet the requirements.

9. The 50% estimate of land opened to development is probably quite high. In these 4 counties there are 1.3 million acres. A half million acres have poor soils. These soils are predominantly farmland and will not be developable even under these rules. This will create a moratorium on development in some towns. The new rules will not be usable in Windham County.

   The Agency agrees that the estimate of 50% more available land being opened to development is probably too high. However, we do believe that there will be additional lots available in places with marginal soils. We also point out that not every lot will be able to be built upon, and we believe that lots that cannot meet these more moderate rules should not be developed

PERMITS:

1. Existing camps should be grandfathered. Seasonal camps on tiny lots. Can they become year round residences?

   Lots created prior to 9/18/69 remain exempt as long as they contain only one single family residence, which may be a camp. Camps with permits must amend the permit if they convert to year round use. Undeveloped 10-acre lots created after 9/18/69 will not require a state permit if they are improved with a camp or other single family residence prior to 9/1/04.

2. Page 46: add an additional exemption for seasonal structures not being occupied more than 2 months a year.

   The Agency believes that all residential structures that are inhabited should have adequate potable water supplies and wastewater systems regardless of the duration of the occupancy. The Agency has declined to make the change suggested.

3. Page 39 1-405 What is the intent of the limited conditional amnesty section?

   This is existing amnesty established by statute. It allows subdivision violations occurring before July 1, 1999 to be cured if certain conditions exist. The Agency feels it is important to continue that portion of the program. It is contained in S.27 as well.

4. Page 41 1-406 So many different dates are confusing. This should be cleaned up to the September 1, 2002 date.

   These are existing exemptions that remain in effect. They cannot be consolidated unless there are statutory changes. S.27 is drafted to correct some of these conflicts.

5. If I split off a piece of a large lot to give to a family member, why should I have to get a permit? There is no need for a septic system. Why can't I just put the deferral language in the deed? Can we still have deferral of permits? Why must the wording be in the deed? Let the buyer beware. At the time of subdivision the applicant may not know where the house will be constructed. If you approve the septic location and they want to relocate the house site you may need a new septic system design. It would be better to sell without defining the system location. Why not just require a permit when someone decides to build? The need to get a permit will require an owner to hire an engineer; that will cost a lot of money and price kids out of the market.

   The Agency does not believe that the size of a lot should determine whether a permit is required. The Agency has eliminated the need to get a deferral of

permit for a lot that does not require a septic system. However when a developed lot is subdivided, even if the new lot does not require a system, the remaining property must demonstrate that splitting off the new lot does not diminish the capability of the remaining land to provide a replacement system. If neither the new lot or remaining land is developed, the transaction may take place as long as the deferral language is placed in the deeds for the two lots.

Unless you plan for the septic system prior to subdivision, you may not retain enough land to support the septic system and its replacement area in the original subdivision. This could result in the creation of a lot that cannot support a septic system. If an existing permit designates a system location, the owner will have to amend the permit to designate a new location. The Agency believes that it is appropriate and necessary to show the location of the septic system and the potable water supply on a property, even on large lots, unless there is deferral language in the deed. It is important that buyers know whether the property can be developed and that they do not locate buildings in the area of the proposed water supply or septic and replacement systems. Too often people have located their new house in an area that means they cannot come into compliance with the rules, and they have unsatisfactory systems and/or a clouded title.

The "buyer beware" system has proven to be a source of much heartache for buyers who were unaware of the requirement to get a permit and find many years later that they cannot meet the rules and build on their lot. Most states require every residence to comply with the rules in place at the time of construction, and do not exempt single family residences from needing to get permits for potable water supplies and wastewater systems. The Agency believes that it is appropriate to require deferral language to be placed in the deeds to property that has not received a permit, so that buyers have a clear understanding of future requirements.

The cost of hiring a designer and knowing that a safe potable water supply and wastewater system can be constructed on a lot before you build a house on it seems to be relatively inexpensive way of assuring that the house you build will have ongoing value. The cost of securing an adequate design should be offset by the value of the property to sustain development.

6. I have a 20-acre lot with only a septic system and a well. What will I have to do? I have a 10-acre lot with improvements, if I do not have a failed system what do I have to do? I have an exempt 10-acre lot. If I expand the house will I need a permit?

When a 10-acre lot is created before September 1, 2002 and built on before September 1, 2004, no permit will be required. An owner of an undeveloped lot or a lot with only a well and a wastewater system, created since 9/18/69, will need to get a permit after September 1, 2004 to construct a building on it. Developed 10-acre lots will remain exempt and will not have to get a permit even if their system fails or they expand their house. This is the same as other exempt lots.

7. There should be a de minimus increase in flow for large projects that does not require a permit revision, maybe 1%.

   These permits run with the land. The Agency cannot envision a program that incrementally increases flows to a project that could be equitably administered through all the unique situations that would inevitably arise.

8. It appears that pre-1969 lots are being regulated. Do pre-existing lots need a permit to fix a failed system?

   Lots of any size created prior to September 18, 1969, which have been developed with only one single family residence, are not being regulated, and do not need a permit to fix a failed system, unless the lot is further subdivided.

9. What is the definition of an improved lot?

   To be considered an "improved lot", a lot must have a substantially completed building and its associated substantially completed potable water supply and wastewater systems. Substantially completed means a structure, building, potable water supply, or wastewater system that is sufficiently constructed so that it can be used for its intended purpose with no further construction.

10. If I have an exempt 10-acre lot, if I expand the house do I need a permit?

    If the lot is exempt, it remains exempt unless further subdivided.

11. If you have an existing lot, can you subdivide leaving only the existing system on the original lot?

    Any subdivision requires a permit for the original lot and a permit, or deferral language filed in the deed, for the new lot.

12. What happens with existing lots with non-state approved designs for systems?

    Lots with state permits may build in accord with those permits unless the town permits require stricter standards. The Agency does not agree that a project with a town permit should be automatically approved based simply on the existence of the permit. Construction of additional dwellings or other structures may require approvals per Subchapter 5 of the proposed rules.

13. What if you put your septic system on the neighbor's land by mistake and the neighbor doesn't want to sell you enough land to meet the necessary setback requirements?

Setback requirements have not been modified by these rules. If the neighbor does not wish to sell enough land you will need to get an easement or find some other way to come into compliance, as you would need to do today in a similar situation.

14. What will be the new permit fees in the rules?

    There are no new fees considered in these rules. Fees are established by statute. (See 3 V.S.A. section 2822.)

15. If you have a permit, do you need to get an engineer to add a bedroom to your house?

    If the property currently has a permit, then a designer must be engaged to design any changes to the permit, including increasing the design flow by adding a bedroom. This designer may be either a Site Technician or a Professional Engineer depending on how the property qualifies under the authorities in the statute. This has not changed in the proposed rules from what is required by the current rules.

16. The permits for public buildings should be filed on the public records as subdivisions have to be. It is a real problem for title attorneys not to be able to find this information. How can we get data on old permits that are not in land records?

    The new rules require all permits to be filed on the land records. The Agency files are open to the public to research old permits. Eventually we hope to have the old files available electronically on the Web.

17. How will a small business owner find designers to prepare permit applications?

    The current designers are expected to expand their businesses. The availability of more lots will make more competition and should encourage new designers to work in the area. Site Technicians will be able to use innovative systems that have approval for general use.

18. Will permit issuance times go down? Won't you need more staff to process a lot more permits? How will you keep up with the workload? What if the legislature won't approve more staff?

    The current average is 20 days for the Agency's portion of the process time. It is not expected to change significantly. There will be changes to our methods of review to accommodate the new work. We are regulating more systems. We have proposed several changes to improve efficiency. We need statutory changes to complete the revisions to the program to allow the most efficiencies to be gained such as delegation to municipalities etc. We will take whatever actions are necessary to properly administer this program.

19. Is a lot exempt or just as long as the current owner owns it?

    The exemptions apply to the lot, not the owner of the land.

20. If you make additions to a house, a family room and a den, will you need amend the permit and upgrade the system?

    Expanding a house in a manner that increases the design flows requires a permit or an amendment to the existing permit, unless the lot is exempt from review. The definition of bedroom has been modified in the final rule to clarify when additions are considered to increase the design flow.

21. I have a spring that I want to make deeper. Do I need a permit?

    The Agency has included in these rules a clarification of a practice that we have been using since the program began. If a minor repair is undertaken to remedy a problem, and the system is unchanged, a permit is not required. The rules explain how such a determination is considered. If the location of a spring or a drilled well is not changed, making it deeper would be considered a minor repair that does not need a permit. The definition of minor repair has been changed to reflect this.

22. The permit process will cost $5000.

    The fee for a permit for a single family residence is about $190. The cost of a design will depend on whether an engineer or site technician does the design, and the specifics of the individual lot and its data. The cost of the system design and construction should not be considered to be part of the permit process. Average design cost would be between $1000 and $2000.

23. What if I already have a state permit?

    State permits do not expire. Existing state permits based on old rules will able to be used for construction, unless the town has stricter requirements.

24. Old designs are still being used by towns that issued permits long ago. If the new standards are in place, will the old permits have to be upgraded to the new standards for people who haven't built under their old permit? Towns must adopt the new standards in their ordinances, so when you build the new rules will apply to your system because of the town requirements even if the state would allow you to use the old town permit. If lots greater than 10 acres have a town permit to develop, how will this affect them? Existing town permits should be honored (3). It is not fair to ignore them when towns had a sewage program.

    Holders of town permits will have until September 1, 2004 to construct a project in accord with that permit. We believe that all systems should meet these minimum standards in order to provide safe water supply and appropriate

sewage disposal. They will have the same build out period as projects that do not have town permits. Towns that update their ordinances will be applying the new standards to all projects in their towns.

25. Dairy farms milk houses are currently regulated under Title 6, Chapter 151, Section 2701. The technical reference for regulating dairy products is "Grade A Pasteurized Milk Ordinance", 1999 revision, by the U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration.

    Dairy farms are defined by statute as: A dairy farm is any place or premises where one or more cows, dairy goats or sheep are kept and where a part, or all of the milk from the animals is sold or offered for sale. All other farms that require wastewater or potable water supply systems would require a permit from your division.

    Non-sewage milkhouse waste should be defined as: Shall mean all wastewater associated with the operation and cleaning of milking equipment, milk storage tanks, and milking parlors.

    Page 46 1-501, 1-503 (9) Suggested rule language is: 1-501 Special permitting standards for agriculture:

    - All dairy farm water supply and wastewater disposal systems are regulated under the VT Dept of Agriculture, Food and Markets. No permits shall be required from the WWMD.
    - All wastewater flows excluding toilet wastes, showers and laundry facilities from milkhouses, barns, and/or other animal enclosures or confinement areas shall be considered a non-sewage waste and shall be suitable for treatment under NRCS practice standards. No permits shall be required from the WWMD for these practices.
    - Toilet waste, showers, and laundry facilities from all farms shall be treated in accordance with Subchapter 8 of these rules.
    - Only those structures on non-dairy farms built after 1970 that modify their water supply or wastewater disposal systems after the effective date of these rules will require a permit.
    - All new non-dairy construction of a water supply or wastewater disposal system will require a permit.

    The Agency is always concerned about overlapping jurisdictions and reviews. The Agriculture Department has long regulated the waste disposal and water supplies for dairy farms, however they have not required the domestic water supplies and wastewater systems to meet specific technical standards. The potable water supplies and domestic wastewater systems for residences and public buildings on farms are required by statute to meet the requirements of these rules. The Agency believes that the language suggested does not sufficiently regulate domestic wastewater disposal. We believe that employees on farms should be provided the same public health protection as employees of other businesses. We have incorporated the language with several modifications. The

farm buildings that accommodate employees, since 1970, have been considered to be, and still are, public buildings under the rule and will be treated as other public buildings with regard to their potable water supplies and wastewater systems.

Farmhouses, buildings or structures that are used only as single family residences or home occupations with their own potable water supplies and wastewater systems will be treated as single family residences or home occupations. We have made this clear in the rule.

26. How will the division handle the backlog of farms that are not in compliance? Will you provide amnesty? The lack of a permit may be a title issue. Can the rules be written to only require a permit for farms that make changes to what they currently have after the rules go into effect?

Farms that have modified their buildings, lots or potable water supply or wastewater system prior to the effective date of the rules do not require a permit if no action is taken after that date that triggers the need for a permit. Farms that qualify as single family residences and/or home occupations will be regulated under the same provisions as those entities. Farms that have received a permit must continue to comply with the requirements of the permit.

INNOVATIVE SYSTEMS

1. Who will review the innovative systems? You will need more staff to do it.

   Innovative systems will be reviewed for approval as general, pilot, or experimental systems by the central office staff. Individual projects using systems approved in a category will be reviewed by the Regional Office staff, using the approval document for guidance. The Agency will take whatever actions are necessary to properly administer this program.

2. How soon will there be approvals of innovative systems? Are there engineers designing these systems now? You need to allow these kinds of systems. You can't prevent landowners from developing their land forever. When will alternative systems be available for use? Will the state maintain a list of innovative systems approved for general use? Towns without planning/zoning/ordinances should not be allowed to use new technologies.

   One innovative system (Advantex) currently has general use approval under the interim guidance so any site where there is a two-year time of travel from the leachfield to any water supply can use that innovative system. We have amended the interim guidance so that a two-year time-of-travel is no longer required, because the proposed rules do not support that requirement. A system based on peat moss is expected to be approved shortly. One or two additional systems are waiting their turn for review. Additional systems will be reviewed on an ongoing basis as they apply for approval. A list of approved systems will be maintained.

   Approved systems will be useable as soon as Rule #2 becomes effective. Because the innovative systems have little effect on whether a particular lot can be developed or not, there is no reason to link their use to town land use planning issues.

3. I support the use of innovative systems. VT is far behind other states in this matter and needs to catch up. (2)

   We agree and propose to move forward with approval and use of innovative systems.

4. Add a section in General Use, Pilot Projects and Experimental Designs that restricts their use to locations in village or town centers designated under local zoning provisions, on sites that have identified water quality contamination from on site sewage disposal systems, or on a previously subdivided lot.

   The Agency does not agree with this approach. These systems have little effect on whether a lot can be developed, because they generally are used where a sand filter can be used now. The systems should be used wherever they will result in

safe and effective systems. We will require towns to have requirements promoting growth centers in place prior to allowing site condition changes to be effective in their community.

5. Will there be more effective systems? Will failures be reduced?

   The innovative systems will tend to reduce failures on sites with very slow percolation rates. They will also reduce failures of replacement systems that do not have enough room to build a full sized conventional system.

6. Systems with highly treated wastes do not need replacement areas. It is sometimes hard to find even the primary areas. This is an unnecessary safeguard.

   While treatment systems reduce the number of failures related to organic overloading, they do not change the hydraulic capacity of a site to move the required volume of water away from the system. The proposed rules reduce minimum site conditions associated with selecting the original disposal site and the Agency does not want to remove the safety factor associated with having a replacement area. The replacement area also provides a second chance when the primary area is built on or otherwise damaged. This issue will be revisited when there is more experience with installation and operation of the new systems.

7. Innovative/alternative systems will increase the risk of groundwater pollution(3).

   The Agency does not believe that innovative/alternative systems will increase the risk of groundwater pollution. These systems will be evaluated to determine whether they are as reliable and provide satisfactory treatment compared to conventional systems. Most of the systems will be similar to sand filters. We are not changing the loading rates for these systems or making other extensive revisions to the siting standards at this time beyond those that also apply to conventional systems. Therefore the risk to groundwater from these systems is not increased over the existing levels. The requirement for a maintenance and operation contract to be constantly in force will also help ensure that groundwater protection is maintained. We have changed the proposed rules to eliminate the treatment index approach to separation to groundwater.

8. How will you incorporate the systems demonstrated at the Small Flows Clearinghouse workshop last month into these rules?

   Each system will need to apply for review and approval in one of the three categories. Many systems will be able to provide sufficient testing and research information to make a decision without further testing. The Agency will accept the manufacturer performance claims that have been verified by the Small Flows Clearing House and other acceptable testing agencies.

9. Municipal wastewater treatment facilities bypass untreated sewage sometimes. These systems will sometimes fail too. When a high tech system fails and a project needs to replace it with a sand filter, the owners has to pay for two systems. That should not happen.

   While all systems are subject to failure, most failures can be repaired without replacing the treatment system. A system in the pilot or experimental category would require that a potential user be well informed of the risks associated with using that system and the user could decide if the risk were appropriate. Systems that receive general use approval would be expected to be systems that could be operated and maintained with the same expectation of reliable service as the currently approved systems.

10. Did you check what other states are doing in this area?

    We did check with what other states are doing in this area. Many of the criteria for approving innovative systems are drawn from the current rules of Rhode Island and New Hampshire.

11. How many types of systems are in the new rules? How many are approvable now? How about composting toilets? If composting toilets are used can you get a reduction in the design flow?

    The conventional systems include standard in-ground systems, mound systems, and at-grade systems. Conventional systems also include advanced treatment systems using recirculating and intermittent sand filters. Any type of system meeting the performance criteria may be approved under the current rules. Composting toilets can be used under the new rules. There are three levels of approval, experimental, pilot and general use. Larger reductions in design flow can be granted for some types of uses upon justification by the designer, though residential use will require the ability to expand the system to full size.

12. 1-309 (1) What are the performance criteria that must be met? They need to be detailed and not left for vague interpretations. Otherwise we may have no systems approved for general use.

    The basic performance criteria that innovative systems must meet are those that conventional systems must also meet: no discharge to surface waters; no pooling of effluent on the surface of the ground; and the effluent must stay 6 inches below the ground surface. They must also adequately reduce the organic loading and provide treatment equivalent to that provided by adequate exposure to unsaturated soils. To be considered a high degree of treatment and benefit from reduced leachfield size, the system must reduce five-day bio-chemical oxygen demand (BOD) and total suspended solids (TSS) to 30 mg/l or less for each. They must also be reliable and be simple enough to operate that a homeowner can reasonably be expected to provide longterm operation of the system, through a

contract operator if necessary. The Agency has purposely left the criteria somewhat flexible so not to inadvertently exclude promising systems from being unnecessarily excluded from approval.

13. What aerobic systems are being proposed as innovative systems? Many systems approved in the 1960s are very good.

    No one has requested approval of an aerobic system under the interim guidance currently in place. It is likely that someone will and that some will be approved

14. Is a fully complying system required for replacement of an alternative system as it is for an experimental system? Why aren't there cheap septic systems?

    Yes, but, because the leachfield for final disposal of the treated effluent is the same regardless of the treatment device, any lot approved with an innovative system will always qualify for a sand filter system if needed. All of the innovative systems are used to deal with difficult sites and difficult sites require complex systems which are always more expensive than the current systems. If large numbers of the systems are installed, the price may come down some from the current levels.

15. Aren't the highly treated standards very expensive to meet?

    Costs are expected to range from $5,000 to $15,000 depending of the type of system used. For all practical purposes, these systems are about equal in the level of treatment so the less expensive systems will be mostly likely to be used. The cost of the system will in many cases be offset by the less expensive final disposal field.

16. Will these new systems really be feasible? Will they have quality control? How will ANR know that the on-site systems being proposed will meet the performance standards in the future? How will you know they are okay if they are buried? If a system fails, who is responsible, the owner or the designer?

    Systems will only be approved for general use when there is a significant record of success, either in Vermont or in other jurisdictions where independent data has been gathered. Systems with limited information will be approved as pilot or experimental and extensive supervision and testing will be required. Because of the nature of the systems, a system that works well in the short term is highly likely to work well in the long term, if maintained. The permit will require a maintenance contract for all innovative systems. The responsibility for a failed system will depend on the circumstances. Most systems will have a warranty for some period of time. The people doing the design and installation will need to exercise to usual level of de care in design and installation for these systems that they have to provide for other more conventional systems. When the failure

is not related to design or installation and the warranty has expired, the owner would be responsible.

17. Why did you limit the number of experimental systems to 5 and the pilot systems to twenty-five (2)?

The limit refers to the number of a particular brand and type of system. Each type would be allowed up to 5 or 25 examples, respectively. This has been clarified in the rules. There are no limits to the number of experimental or pilot types allowed. There could be several different systems in the experimental or pilot program at the same time

18. Do these systems need to be installed by an engineer? Is ANR going to allow the engineers to practice their profession or continue to micromanage the site plans and designs?

Once the systems have general use approval they can be included as part of a design by either engineers or site technicians. The development through the experimental and pilot phases where the engineering factors are developed will require engineering supervision. The Agency wants to concentrate on site review to ensure that each approved site can sustain appropriate water supply and wastewater disposal systems. The Agency has revised the rules to provide for more reliance on the technical expertise of the licensed designers while requiring them to be more accountable for their work. This will reduce the detailed technical reviews that we have done in the past, referred to as "micromanagement" in your comment. This concept has met with general approval from the design community.

19. Innovative systems will eventually fail (2) and there may be inadequate backup replacement areas. Adequate soil depth is a good additional safety factor. Household chemicals, pathogens and viruses may be an issue with these systems.

Because the final disposal system requirements will be common to all types of treatment systems, there should always be an adequate replacement area if the site and soil assessment is done correctly. If the assessment is not done correctly, even conventional in-ground systems will fail. Discharge of non-domestic wastes into any system is a problem that must be addressed with better training and education of the system users.

20. These new systems need oversight. Innovative systems should not be allowed for single family residences. They should only be allowed for community systems and failed systems as a last resort. Based on our history of operation and maintenance of complex systems the necessary O&M will not be maintained. Proper maintenance should be required. These systems need lifetime contracts for maintenance. Systems should not be allowed that require operating permits (2).

The general use approval will have appropriate requirements to ensure proper operation and maintenance of the system. A system that requires a lot of oversight will have more rigorous permit requirements. Systems that have a high degree of built-in reliability will be less expensive to maintain and operate and will be preferred by owners. Maintenance contracts will be required for the life of the system. Requiring the owner to secure a contract for operations is not the same as an operating permit. Operating permits are permits that must be renewed by the owner and require the owners to submit annual operating fees to the Agency.

21. What is the timeframe for a manufacturer's technology to obtain approval in VT? If a manufacturer has engineered a system from the beginning and says that far higher loading rates are satisfactory, why isn't ANR accepting these higher loading rates?

The timeframe for general use approval will depend on the completeness of the application and when they apply. The process would likely range from 30-120 days assuming the applicant furnishes the required information promptly.

There are unresolved issues related to pathogen removal in the soil when high loading rates are used. The literature indicates that high loading rates tend to wash viruses through the soil and into the water table. This issue is being researched and the Agency will continue to look at the results, as they become available. If the evidence supports higher loading rates, the rules will be revised in the future.

22. If pathogen transmission is the issue, there are ways to disinfect. Why not allow disinfection rather than restrict the loading rates?

As a matter of policy, the Agency does not accept disinfection as a treatment method for discharge to groundwater. Disinfection is not considered to be sufficiently reliable. Even municipal treatment plants with professional supervision have problems maintaining the disinfection system. It is not acceptable to rely on these types of facilities for groundwater protection in small residential or business wastewater systems. Once the untreated effluent reaches the groundwater, there is no way to recover it and only time will deactivate the pathogens. This is also an issue that will be followed and if sufficiently reliable technology becomes available the concept will be reconsidered. We will allow disinfection to be used as an added layer of protection for a failed system when circumstances seem to support its use, such as at a camp with a lot of water-based recreation nearby.

23. Towns will not have the expertise or staff. What provisions has ANR made to be sure that they are properly tracked? How will a town afford a reviewer? How will ANR oversee a site technician who reviews designs prepared by a licensed engineer?

The approved innovative systems will be on a list that identifies appropriate permit conditions for the system. The process is no different than that used now for conventional systems and the work being performed at the town level should be no more difficult than what is currently done. Towns can either hire people with the required knowledge or contract with someone, just as they do now. Review of site technicians' work is through their licensing process and based on complaints received by the Agency.

DESIGNERS, INSTALLERS

1. Can a contractor be a licensed designer? Will state employees inspect installations? What is the installer certification process? ANR doesn't follow-up on installation inspections now. Will you require a bond to be filed until the installation is complete? You could require a letter of credit until the system is installed and certified.

   A contractor, i.e. an installer, could be a designer if he/she took the necessary steps to become one. It is unlikely that many will choose to do so. State employees may inspect some installations on their own initiative or if a complaint is received; however there should be less need, because the installers or designers will be certifying that the systems are installed according to the approved plans. An incorrect certification could be subject to penalties and/or fines. The Agency has not required bonds to be filed regarding the installations. Financial sureties such as bonds or letters of credit are not easily available to small firms or individual designers and could reduce the available pool of designers or installers. While that has been a subject of discussion over the years, we prefer to see how this new level of attention to installations works before taking such an additional step for the entire program.

2. Shouldn't engineers be more accountable for their work? Can you enforce against good and bad designers? Why be involved in a civil process between the owner and the engineer. You have no business doing that. Engineers don't trust ANR. ANR has no business reviewing engineering designs without staff that have equal training. ANR's review process checks plans, has site visits, issues permits. What good is my Professional Engineering and Site Technician certification if you check it all anyway?

   The Agency does feel that designers should be more accountable for their work, a situation many designers have agreed with over the past few years. The Agency plans to reduce its review of the technical details of this work and focus more on the initial site conditions. The proposed rules require designers and installers to certify that, in the exercise of their reasonable professional judgment, their work complies with the rules. The Agency can enforce against designers that provide incorrect certifications. Formerly we could enforce only against the permittee.

   The Agency will not be involved in a civil process between the owner and the engineer. Any action of the Agency will be on behalf of the Agency based on the Agency's view of the significance of the incorrect certification and the integrity of the Agency program. We will not be providing legal services for the landowner. The landowner will retain any rights they have for redress under civil statutes.

   The Agency believes that the staff we have working in the program have equal or better expertise in the program as the engineers and site technicians whose work is being reviewed. Given the level and type of errors we have routinely found over the years, our staff has provided the public with a significant service.

The proposed rules provide an opportunity for the engineering profession to demonstrate that the level of review can be decreased without reducing the protection of the public health and environmental protection, because their work has fewer errors than in the past.

3. The certification by engineers should not be required. It interferes with their ability to get adequate liability insurance coverage (2) It is unclear whether any designer selected by the applicant may supervise the work or it must be the designer who prepared the design. Only the contractor can take the responsibility for certifying the work was installed in compliance with the plans and specifications. The designer can oversee the work and report that the work is in substantial conformance with the plans and specifications, but cannot reasonably offer any further certification. We recommend that the language be changed as follows, "When the secretary determines that the scope, complexity, or size of the proposed facility justifies it, *the permit shall require that* construction shall be accomplished under the supervision of a designer. *In such cases,* the *supervising* designer shall report in writing to the Secretary that the construction was completed in *substantial* conformance with the approved plans and specifications, or the designer shall specify any *observed* deviations from the approved plans, specifications or permit conditions along with recommendations that the project be accepted as is based on compliance with the rules or that alterations be made to bring the project into compliance with the rules."

   The certification is a requirement of the current rules. It has been required for many years. It is very similar to wording that has been acceptable for years in the contracts for design of municipal facilities. We have discussed the issue with professional engineers and a representative of the errors and omissions insurance industry and believe that the certification requirement will not pose a problem for securing errors and omissions insurance. There have been modifications in the wording as a result of these conversations.

4. Can a non-professional make a professional judgment? That is a legal question that needs to be answered.

   For the Agency's purposes Site Technicians are considered "professionals" and will have to certify in their " professional judgment."

5. How will a small business owner find a designer? It is hard to find designers in this area. It takes 3 months to get a permit, starting with design. Can site technicians use the new technologies? Why is the 5-acre limit in the description of the site technician authority? What difference does it make what size the lot is? Why is there a flow limit on site technician work? How did you decide on 600 gallons per day? The limitation of site technicians for design should change to 900 gpd for single lots and 1500 gpd for subdivisions. Site technician work should be scaled back.

   The Agency believes that the increased demand will spark interest in new designers to become involved with the program. These rules allow Site

Technicians to use sand filters in their designs and Site Technicians may also use the new technologies that have been approved for general use in their designs. The Agency currently licenses Site Technicians under the provisions of 3 V.S.A. section 2827, which limits the scope of their work. We cannot expand their jurisdiction without a statutory change. S.27 proposes to increase their jurisdiction.

6. The engineering community may not assume additional responsibility, especially since liability is increased. Paid consultants will have a conflict of interest in designing sewage systems and certifying they will work as designed and are built as designed. No threat of penalty after the system is in place and the house is built will remedy this. Correcting deficiencies after system construction is very expensive.

   If consultants wish to continue working in the program, they will have to accept the responsibilities inherent in it. The Agency does not agree that consultants have a conflict of interest in designing these systems, if they are required to design them according to the rules and can be penalized for not doing so. These designers have the expertise to design appropriate systems according to customary and usual practices.

   Most designers try to do the very best and cost effective design possible. Designers that are incompetent should be prevented from continuing to work in the field.

   It is true that correcting deficiencies later is very expensive. The Agency believes that this new accountability will improve the quality of designs submitted to the Agency and should also improve the attention to satisfactory installations.

7. Page 12 1-302 Why does the state want additional authority beyond the existing means for disciplining an engineer or site technician or contractor. We will fight any proposal that allows ANR to assess fines against professional engineers. We believe this usurps the professional engineers licensing statute. There is a court system that anyone aggrieved can use. ANR will have to go to court to enforce this provision. This system sets up free legal services for anyone who knows about it. What is the expense to the state to do this? How many personnel are required to implement this program? Will an aggrieved permittee write the state, allege a problem and then have the state pay the legal bill? This gives ANR immense power and opportunity for abuse of the power. We suggest you change the language to read "If the Secretary finds that a statement by a Professional Engineer submitted under these rules is incorrect, he/she will immediately file a written complaint to the licensing board for professional engineers for disciplinary action."

   We rely on current licensing of the Professional Engineers by the Board of Professional Engineering for disciplinary action relating to engineering practice. Still, as with all environmental laws, we need to be able to enforce the standards and ensure compliance. The Agency will be able to take an enforcement action

against designers who provide inaccurate certifications. Previously, the Agency was able only to act against the permittee/landowner if the design was incorrect. Many times this was felt to be an inequitable situation. The Agency will assess the alleged deficiencies to determine whether it is appropriate to act on behalf of the state program in such cases. It will not be up to the landowner to make that decision. The landowners will retain their options for civil actions. Several designers have agreed that the Agency should be able to hold a designer rather than the landowner accountable for poor design work. Our final course of action will be to seek compliance. Fines may be used when appropriate. Alleged misconduct, negligence, incompetence will be referred to the licensing agency, the Board Of Professional Engineering for engineers, the Agency of Natural Resources for Site Technicians.

8. Will installers be licensed? You should license installers. (2) We oppose expanding enforcement capability to allow enforcement against installers. How can you impose penalties on installers when you do not require certification statements from installers no do you have any licensing authority over installers anywhere in the rules? We recommend you change 'designer or installer" to "Certified Site Technician".

   The Agency and the Technical Advisory Committee agreed that licensing installers would be one of the most effective methods of improving the life of on-site systems, however the Agency cannot license installers without a statutory change. One of the most significant reasons for failed systems is improper installation. Currently there is no way to require installers to assure their work meets the plans and specifications. Owners must submit a statement from either the installer or a designer certifying the installation of a system. Under these amendments, if an owner receives a statement from the installer that certifies his/her work, the Agency will be able to take an enforcement action against an installer who provides an inaccurate certification. Previously, the Agency was able only to act against the permittee/landowner if the installation was incorrect. Many times this was felt to be an inequitable situation. The Agency will assess the alleged deficiencies to determine whether it is appropriate to act on behalf of the state program in such cases. It will not be up to the landowner to make that decision. The landowners will retain their options for civil actions.

9. A statement should be included that systems over 600 gallons per day must be designed by a VT registered professional engineer. A statement that VT registered engineers knowledgeable in the field of sanitary engineering may prepare the technical evaluations and designs required by these rules should be incorporated in these rules as it is in the current rules

   The definitions of designer and the Site Technician licensing sections adequately describe these requirements.

10. Designers need adequate training in soils identification.

The Agency agrees that soils identification is a skill critical to competency in this program. The rules require that a designer have that skill or secure the services of someone with that skill in order to submit applications under this program.

CAMPGROUNDS

1. 1-101 The scope of rules indicates mobile home parks, tent and trailer campgrounds. There are other camping units such as RVs and lean-tos. It would be clearer just to say campgrounds. I suggest the definition of campground be changed to read: "Campground" means any lot of land occupied by more than three (3) camping units such as: tents, yurts, teepees, lean-tos, camping cabins or recreational vehicles including motor homes, folding camping trailers, conventional travel trailers, fifth wheel travel trailers, truck campers, van campers and conversion vehicles designed and used for travel, recreation, and camping.

   The language has been modified to include a broader description of camping units.

2. The requirement for an on-site dump station does not seem necessary to meet the purpose of the rules.

   Because the existing and proposed rules have an exception for campgrounds when all sites are connected directly to a wastewater disposal system or when all sites are limited to tents, we presume the comment suggests that any campground could operate without supplying a dumping station; and that anyone with a camping unit with interior plumbing and holding tanks could discharge the sewage somewhere outside of the campground. We do not agree with this comment. The rules for all types of uses, such as residential and commercial, require that potable water is supplied and wastewater is disposed of as part of the project. The Agency believes that failing to provide such facilities would tend to encourage illegal dumping and/or transfer the burden to other camping facilities with dumping stations.

3. The statute required the Secretary of Natural Resources to consult with representatives of the VT Private Campgrounds Association before revising the rules. We would like to be consulted before the revised draft rules regarding campgrounds take their final course.

   The referenced statutory language was specifically related to the design flows in Chapter 7 of the existing rules. The Agency did consult and meet with campground owners and did review the design flows from the specified states in addition to information from other states. Based on this the proposed design flows have been significantly reduced from the current levels.

   The proposed rules also are intended to standardize and clarify the language among the subdivision, public building, campground, and mobile home park Subchapters. Definitions are being added and clarified throughout the rule including the campground Subchapter. The intent is to continue with the current approach to these issues, some of which have not been clearly stated in the rules. Clearly stating all of the current policies and procedures in the rules

should make the rules easier to use. As part of this process campground owners have identified some changes in the industry, such as cabins with plumbing and kitchen facilities and RV rental units, that need to be classified under the rules. Based on input received from the campground owners and the Department of Forest, Parks, and Recreation, the Agency will revise the definitions and classifications to include the changes occurring in the industry.

4. 1-601(a) Permitting is for the campground. Since campsites are the component element of a campground the wording "permitting requirements for campgrounds including campsites" seems redundant.

   We wish to be clear that there are requirements for campsites as well as for the campground as a whole.

5. 1-601(b) It would be useful to note here when Subchapter 4 applies or at least reference the appropriate subsection.

   Subchapter 4 is the proper reference. This is just a housekeeping reference to remind people that more than one permit may be required under the existing and proposed rules for a particular use. The Agency will continue to pursue its request to the Legislature to approve statutory changes that would eliminate the need for separate permits.

6. 1-602 definitions. Since all types of camping units are not listed perhaps "camping units" would be a better term.

   The definitions have been revised to be clear which types of camping units are regulated under Subchapter 6 and those other types of camping units regulated under Subchapter 5.

7. "for a brief period for vacation or recreational purposes" is a useable description for transient use but does not seem to allow for common practice of the "seasonal" rentals where units are left in place from year to year on the same site. It may be useful to include the existing sentence excluding mobile homes "used as a residence" here.

   The language has been revised to allow for longer-term use of a particular site by a particular user. The intent is that the usage remain the same with similar units and uses. Campsites used as a residence are not regulated under the campground Subchapter. They are regulated under Subchapters 4 and 5.

8. The statement "Campground does not mean a lot of land occupied by a Park Model recreational vehicle or mobile home" is more confusing than enlightening. Park Model recreational vehicles are customarily placed in campgrounds, RV parks, or RV resorts. You mentioned mobile homes used in campgrounds for vacation use should be regulated differently than the above recreational vehicles that are more transient. I

feel more complete information is needed from definition to design flow to make your intentions understandable.

The language has been be revised to reflect how Park Model units and mobile homes are be regulated. The main reasons are the different interior plumbing that is similar to conventional residential units as opposed to the traditional very low water use RV units, and the likelihood of long term residential use as opposed to transient use.

9. A campsite might be more usefully defined as that 2500 square feet of land in a campground intended for use by a single camping unit. It seems there should be a distinction between a site suitable for one tent and for one RV, since several small tents could be accommodated on a 2500 square foot site that would only marginally accept a large RV.

   This is an existing requirement intended to limit the density of the campground, which is similar to the lot size requirement for mobile home parks.

10. There is a concern about the requirement of a dump station for campsites serving persons who have no bathroom or kitchen facilities integral to their camping unit. Persons must therefore use the central facilities and not need a dump station. One could make a case that RVs and trailers that do have such units could agree to use the central facilities rather than their holding tanks. The rules as written exclude many camping units from a campground without a dumping station for no good reason.

    The language has been modified to say that dumping stations are not required for campgrounds that allow only tents or camping units that do not have interior plumbing, even though it seems unlikely that a campground owner would wish to allow only limited forms of camping units.

    We do not agree that it is likely that persons with RVs and trailers that do have holding tanks are likely, in general, to use the central facilities.

11. 1-603 (a) (2) is not required; it is included in (a)(1).

    We believe it is clearer to make a distinction between the campground as a whole and individual campsites.

12. 1-604 It is unlikely that any campground existing in 1970 has not modified one or more individual campsites.

    The language has been changed to cover only modifications that affect the potable water supply or the wastewater systems, that result in relocation of the campsite, or that result in the campsite not meeting the basic requirements for a campsite.

13. 1-605 The 400 foot distance seems too arbitrary and could be made more flexible. Dry, clean and well drained must mean in normal conditions since there are always occasional soggy conditions.

    In order to be enforceable there must be a specific distance. The number was selected as a reasonable distance to walk to use the toilet facilities. At 400 feet, a trip to and from the facilities is about 1/5 mile.

    The language has been changed to make it clear that a site must be designed to be dry, clean and well drained during normal weather conditions.

14. "Campers" should be rephrased. In this case it could be misconstrued to mean people.

    The language has been rephrased.

15. I suggest the phrase "A dumping station must be provided if camping units are not required to use the centralized facilities or are provided with individual sewer hookups at sites used by units with integral facilities"'

    The language has been modified to not require a dumping station if only camping units without interior plumbing are permitted within the campground. It is not reasonable to expect that people with camping units with interior plumbing will not use the interior plumbing.

16. Campground flows are based on a maximum design of 4 people per site but it is not clear that the 75 gpd is per site not per person. A travel trailer park comfort station (without individual hookups) needs to deal with 50 gpd per trailer space, which is 1/3 less than a campground site that might be occupied by a tent. Those with individual hookups have the same requirement as for a campground site. Tent campers probably consume much less than an average of 20 gpd per site. A distinction should be made here between those with and without integral facilities.

    The design flow table has been revised for clarity. The basic requirement for all campsites is 75 gal/day/site if showers are available and 60 gal/day/site without showers. The flow may be apportioned between a dumping station and central facilities, entirely associated with the central facilities, or entirely associated with the campsite depending on the nature of the particular campground. Design flows are also different for sites used year round rather than 7 months or less per year.

FAILED SYSTEMS:

1. What if my existing system fails? Will I have to move my house? Can towns require correction of failed systems? What if you have a town permit? A state permit?

   If your system fails, for systems under its jurisdiction, the Agency will allow a "best fix" that protects the public health and the environment, and under the new rules the incremental cost of improved public health and environmental protection may be considered in the analysis. The Agency has never required a person, with a legally constructed building, to move the residence if the system fails. Towns may require the correction of failed systems and the Agency can require correction of failed systems under its jurisdiction. If an owner has a town permit, then that permit must be amended to replace the failed system; the same as with a state permit. If there is a difference between the standards of the town and the state for the same system, the system must meet the stricter standards.

2. Will a failed system need a permit on an old lot? What about existing small lots? What is "best fix"? What if you can't afford to fix it?

   Pre-1969 exempt lots and existing exempt lots that are developed with only a single family residence prior to September 1, 2004 retain their exemption and do not need a permit even if their system fails. Lots with permits must meet the requirements of the current rules for replacement systems. We have always allowed a "best fix" closest to compliance with the rules that protects human health and the environment. These proposed rules allow the incremental cost of improved public health and environmental protection to be considered in the analysis of what is the "best fix." The ability of the homeowner to pay for the replacement of the system is not included in the determination of what is the best fix, although it may play a part in the determination of the timeframe allowed for coming into compliance with the rules. The Agency has been dealing with these situations during the history of the program. These rules provide a degree of additional flexibility for the Agency and the owner.

3. Existing systems don't require a replacement area. ANR needs to act much more quickly with a failed system. Systems designed from 1969 to 1982 are failing every day. They are a health hazard. Towns respond very quickly. Towns should be able to handle these systems under their own regulations without state involvement.

   These rules do not change the requirements for exempt lots. You may act immediately for those systems. Those under our jurisdiction qualify for a "best fix" with cost being a consideration for the incremental improvement in public health or environmental protection. Variances are allowed as necessary. The Agency recognizes the health hazard involved and places a high priority on permitting replacements for failed wastewater systems. We act promptly on failed systems now; although it is not always done in a week, we make every

effort to meet the needs of the people involved. If a state permit is required, we do not agree that the town should have jurisdiction simply because it is a failed system.

4. A general variance section should be provided for all systems, not just for replacement systems.

   If the rules reflect the minimum requirements necessary, then those requirements should be met by all new systems. If the minimum requirements should be different, then the rules should be changed. There are specific sections where judgments may be made that allow a range of designs based on justifications.

TECHNICAL STANDARDS/DESIGNFLOWS

1. Do you intend to have statewide standards in 5 years?

   No. The Agency feels that the changes in the minimum site limitations in the proposed rules should not be implemented except in towns with appropriate planning and regulation. This will ensure that revised site limitations do not result in development with excessive erosion or in areas otherwise unsuitable for development. The proposed rules do allow for towns to have more stringent technical standards. S.27 would not allow towns to have more stringent standards.

2. You have made a lot of changes to the technical standards. Were they too strict before? Why are you going to the leading edge for site conditions in the rules? When there is little margin for error, some systems will fail. Aren't you pushing the envelope too far? Shouldn't you phase this in more slowly after the changes are shown to work? Do not implement these rules until the changes are fully proven. (5)

   The Agency has not updated the technical standards significantly since 1982. Technology has changed considerably in the intervening years, and the Agency needs to allow proven technologies to be used in VT as they are used elsewhere. The original On-site Committee was concerned with this issue and it has been a driving force pushing on-site reform for the past nine years.

   In addition, the Agency feels that the site conditions required for sewage disposal unreasonably restrict development in many areas of the state. The standards have been used as land use controls and have been more stringent than they need to be to protect the public health and the environment. The Agency began investigation of the limits for changes by establishing certain minimum criteria: no discharge to waters of the state and no surfacing of effluent. We began with the assumption that designing systems to keep the effluent 6 inches below the surface of the ground would be a sufficient safety factor to assure that it will not surface. Our second concern was that the depths to groundwater and bedrock be moderated, but that the effluent receive approximately the same treatment that currently allowed systems provide with the current treatment processes and separations to groundwater. There is very little quantitative data on the reduction of bacteria and virus in conventional systems. However nearly all the studies indicate that reductions are determined by the length of time spent in unsaturated soils, by biological treatment in clogging mats and exposure to warmer temperatures.

   In cases where the Agency has allowed reductions in separation to ground water, it has required dosing to be confined to smaller areas per orifice. Such dosing is expected to spread the effluent more evenly over the surface area of the disposal system and increase the time spent by the effluent traveling through the unsaturated zones.

3. Where is the language on minor projects? I can't find it.

   The concepts used in the old "minor projects" section are now incorporated in sections 1-301(c) and 1-303(c)(8) of these rules.

4. Have you considered separating greywater from blackwater and using it for toilet flushing and for irrigation. It reduces load on the system.

   Systems are currently allowed to separate greywater from blackwater and use it for toilet flushing in public buildings. There are two such systems that have been permitted. The need for separate plumbing is a great deterrent to this type of system. Greywater is considered to be as much of a health risk as blackwater and its use for irrigation is not allowed.

5. Page 14 1-302(c)(2) G, H, I All the wetlands need to be mapped on a parcel. This is very costly for large lots and is only needed in the project area. You are requiring designers to flag the leachfield areas. This makes an extra trip with its associated cost. NH simply requires benchmarks to be established so the locations in the field can be created when required. Limit the location of waters, flood prone areas etc to the immediate project area on large parcels. "Prone" is far in excess of researching the FEMA maps. Wetlands are often defined as having less than 18" to groundwater. These rules will create many more conflicts with the wetlands rules.

   The rules have been revised to clarify that wetlands and other plan elements need be mapped only when they affect the design of the potable water supply or the wastewater system. Designers will have to be aware of the requirements for both the wetlands rules and these rules and be sure that the projects they design meet both sets of requirements. .

6. These rules will jeopardize undefined Class I and Class II groundwater that 10 V.S.A. Chapter 48 requires ANR to protect. This rule should be more thoroughly evaluated by the Water Quality and Water Supply divisions.

   The Agency has not begun to define Class I and II groundwater areas, except as potable water supplies are constructed. Septic systems are specifically designated as an accepted use in Class III groundwater areas and these rules with the Water Supply Rules define the required standard of protection when potable water supplies are being sited. The Groundwater Rule and Strategy allows Class II and Class I areas to be requested and established but specifically does not allow them to be set aside without a classification process. Given the "first in time" preference given to permit requests, these rules should not be held in abeyance for future groundwater classifications.

7. Septic tanks and leach fields are gravity fed. What if there is an electrical grid

failure for a system dependent on electricity? What will be the effect on water quality?

Systems will be reviewed for the average length of electrical outages in their area and storage in pump stations will also be required to take that into consideration. It is unlikely that there will be concern for water quality. The system is more likely to back up into the house than to discharge to surface waters. A severe outage will cause significantly more concern for water supply or heat than for the functioning of the wastewater system. In some cases, stand-by generation may be required.

8. There should be a definition for induced water table.

A definition of induced groundwater mounding has been included in the rules.

9. Does on-site mean that the homeowner has to own the site?

No. On-site means a soil-based system rather than a sewer connection. The homeowner must have permanent access to the site by easement or lease.

10. We oppose the definition of bedroom. (3) It is far too open-ended. (3) A bedroom should be a room that has a closet that is designed, configured and arranged to accommodate clothing and personal items. A permit should incorporate the number of bedrooms and perhaps reference the number of occupants. Section 1-403 (a) (7): There should be a way to allow minor modifications to the site plan such as driveway location, building dimensions etc as long as isolation distances are met. Often with subdivisions the details are not fully developed at the time of application. Why do you need a definition of a bedroom? You never had one before. Isn't the definition of bedroom too broad? The definition of bedroom is unworkable. There are title problems when the permit and the sale agreement do not agree on the number of bedrooms. Declare the number of bedrooms when the house is constructed, don't count the number of rooms that could become bedrooms. Real estate sales will control this. Don't put it into the rule if it will not be enforced. How many people are assumed per bedroom to calculate design flows? ANR should only regulate on the number of rooms actually used as bedrooms, not potential ones. How will a designer know what to design to? Will they need floor plans? I would rather have no definition. Why can't just the designer decide. If ANR does not check at the site there will be no enforcement.

The bedroom definition has been revised to allow for more flexibility in determining if a particular room should be considered a bedroom. This will allow for home offices, libraries, and other types of uses without requiring an increase in the design flow. The number of bedrooms is the industry standard for sizing water and wastewater systems for residential units because there is, on average, a relationship between the capacity of the

building and the number of occupants. The rules have been revised to reduce the amount of design flow for units with more than 3 bedrooms.

11. There needs to be a definition of modification.

There is a definition of minor repair that identifies when a modification is sufficiently insignificant to not require a permit. Any other change to a system is a modification that requires a permit. We believe that the rules are sufficiently clear in this regard.

12. What is the definition of a home? Something that can't be moved?

No. A mobile home is a home, as is any other structure being used as a residence.

13. Is a lot with a septic system and a well "developed"?

No. A lot must have a substantially complete single family residence with its associated substantially complete potable water supply and wastewater system to be considered developed as relates to the continuation of the 10-acre exemption. Lots with public buildings are also considered developed.

14. Page 8 1-201 (n) (2) 1-314 should read 1-313

We have made the correction.

15. Page 8 1-201 (o) Does the hydrogeological analysis only require conductivity data? If so the name should be changed to Rough estimate of a single soil characteristic. It states that test pits should be examined yet suggests that site specific tests are not performed. This is an added expense, not now a part of the program. Frequently hydrogeologists do not visit the site, now they will have to do so. Please quantify the expense to the applicant.

A hydrogeological analysis requires other information such as slope, depth of transmission layer, and the length along contour that is available. The soil analysis is the portion of the work that is often done by a specialist in the current rules. In the future it is expected there will be some situations where the analysis will be supported with very conservative assumptions and these will be in large part prepared by designers with limited hydrogeological experience. As the site limitations require working closer to the hydraulic capacity of the site and the decisions on soil characteristics become more critical, the work will be done by people with a higher degree of training and experience. There will only be additional costs involved when the project is one that could not be approved under the current rules and the additional cost will be offset by the additional value of the land because the proposed rules allow for approvals that cannot be currently obtained.

16. Page 8 1-201 (s) What generally accepted assumptions regarding the hydraulic capacity of soils are involved with the enhanced prescriptive design? This is very vague. Is it the intent that all systems with other than 24" to seasonal high water table require either assumptions (not defined at all) or a desktop study? What are the assumptions for otherwise, the state has the authority to mandate desktop studies. Please quantify the expense to the applicant. ANR should move toward using soil classifications rather than percolation tests. (2) Because we are making such drastic changes in the separation distances, we should be making this improvement in site characterization also.

The generally accepted assumptions are those related to conductivity values for various soil types. The Agency is working with the Technical Advisory Committee to develop some standards that will be appropriate for Vermont. This approach is already used under the current rules and has been part of the Agency review process since hydrogeologic analyses were first used. All systems with less than 24" of naturally occurring soil above the seasonal high watertable will require a determination that the site has enough hydraulic capacity to accept the effluent while maintaining at least 6" of unsaturated naturally occurring soil downhill of the disposal field.

The Agency intends to move toward using soil classifications in a future version of the rules. At present there are not many licensed designers fluent with the soil classification guidelines. We believe that there should be a period of education in soil classification available to licensed designers before the rules are changed.

17. Page 8 1-201 (t) Failed supply This not clear as to what is minor or permit required. Is drilling the well deeper a minor, or permit required activity? How about hydrofracturing? This should be brought to the technical advisory committee for discussion.

This section clarifies the concept the Agency has been operating with since the program began. Drilling the well deeper or hydrofracturing is not considered a modification that would require a permit. The Agency does not believe that this question requires additional Technical Advisory Committee discussion. A definition of minor repair has been included that clarifies this.

18. Page 9 1-201 (u)(2)(A) Failed system. The distinction between a minor and permit required is not clear. There are times when the pressure distribution pipe could be clogged, the mound material clogged merely needing replacement, etc. A permit should only be required when the system cannot be resurrected in its present location or form. Furthermore the addition of a septic tank to a dry well system does not constitute a failure. Please revise.

This section clarifies the concept the Agency has been operating with since the program began. Our intent is to not require a permit when the system can be returned to normal satisfactory operation without work on the leachfield or major renovation of the remainder of the system. Replacing mound sand is a major revision to the system. Cleaning out the distribution pipe would be a minor repair; replacing it with an increased size of pipe would require a permit. Dry wells are no longer permittable disposal systems for new projects.

19. Page 9 1-201 (z) There is confusion over the terms hydrogeologist, Qualified hydrogeologist and designer. Page 9 1-201 (z) Qualified hydrogeologist an engineer must rely on the expertise of a hydrogeologist. What education is required to become a "qualified" hydrogeologist? What proof of experience is necessary to be a "qualified" hydrogeologist? If an engineer must use an independent consultant in certain instances, then what are the credentials? Will you impose fines and penalties on an engineer for an error by a subcontractor hired by the applicant? Does this prohibit the owner from having their own hydrogeologist with a report furnished to the engineer?

A designer is responsible for the overall project as completed including the work the designer accepts from others. The designers will have to consider the experience and training of the hydrogeologist they choose to be associated with as they have to do with soil scientists, engineering technicians or other non-licensed persons working in the field. This is no different than the current rules. The owner may provide a report from his/her own hydrogeologist to the designer. The designer will have to decide whether to use the data, as they can and do now.

20. Page 9 1-201 (ff) If it is a design, then there is no "hydrogeology". "Hydrogeologists' are not designers. A performance based design is one based on less than 24" of separation from the bottom of the crushed stone and the seasonal high water table. Only professional engineers may provide a performance based design and this section should so state.

A designer may be a hydrogeologist or may rely on the information provided by a hydrogeologist. A performance based design is one that is based on less than 24 inches of native soil above the seasonal high water table. Description of the designer authorities is included elsewhere in the rules. It is unnecessary to include it in this definition. Site Technicians may provide performance based designs.

21. Page 11 1-201 (nn) "normally" has no scientific basis. This suggests that there is a range of water elevations that can be above 'normal' and may cause failure. The SHWT should be established and there should be 2 feet of unsaturated soil between ground surface and the SHWT. (2)

The word "normally" has been removed from the definition. The usual method of determining the watertable elevation is through examination of mottling. Mottling shows the elevation of the water table that is maintained for a period of time sufficient to allow for bio-chemical actions to remove iron and manganese from existing compounds. This means that the water table may briefly rise above the level of the mottles, particularly when the ground temperature is below about 40 degrees Fahrenheit and biologic activity is minimal.

22. Page 11 (oo) the meaning of this is not clear. The agency sets a dangerous precedent when the Secretary may designate someone to be their designated representative. This reference should be omitted.

This is existing rule language. It is authorized and governed by Supreme Court decisions regarding delegation of authority within state agencies.

23. Page 11 (rr) Site technician The definition should be correct in reflecting that site technicians may only do one lot subdivisions for land based wastewater disposal systems for up to four bedrooms, only. In many instances, those referring to the definitions may not understand the actual limits on the site technicians. They should not be required to wade through all the regulations.

The definition has been modified to direct persons to section 1-313 of the rules.

24. Page 12 1-301 (a) Will the specialist 'certify" that no other permits are required? Will their decision be final and if the specialist fails to note a permit is required, is the applicant then not obligated to acquire such a permit?

The Permit Specialists advise applicants to their best knowledge and ability of the permits that may be required, based on the discussion and data presented to them. The Agency does not have the authority to abolish the requirement for a permit established by statute simply because the Permit Specialist may not have advised the applicant that the permit is required. Permit Specialists are persons with general knowledge of Agency programs, provided by the Agency to help applicants because applicants often do not understand the Agency's requirements. They also discuss other state permits that may be required. Their decisions are not final and applicants are required to obtain all required permits even if Permit Specialists do not point them out. This statement is included on the permit review form. The program staff rather than the Permit Specialist are the final word on permit requirements. We have been using Permit Specialists for this kind of assistance for many years and problems such as this occur very infrequently. We feel that their assistance is very valuable in most cases and certainly

outweighs the occasional circumstance where they may miss pointing out a required permit.

25. Page 12 1-301 (b) Technical assistance and project review please change "should" to "may", otherwise this is a mandate not an option. Again the word "all" implies the decision of the specialist is complete, therefore, any omitted findings will be overlooked by the state at anytime in the future.

In these rules "should" is optional, "shall" is mandatory. The Agency hopes that "all" potential requirements will be identified in this process. That is the purpose. The wording has been changed slightly to reflect the subtle difference.

26. Page 12 1-301 (c) The state should not abdicate its responsibility to assure that the application and the supporting documentation is in conformance with the rules. The designer is not a state regulator and cannot make findings with respect to the rules, the designer should prepare a design based on their interpretation. The state needs to determine regulatory compliance. Is it true that only one permit has been issued since 1982 using this provision? How many permits have been issued using this program? If it has failed in the past why mandate it now? A similar ability should be in place for applications that have been permitted at the local level by a municipality with an on-site sewage ordinance or site plan review in place.

This is current rule language for using the "minor project" approach. Occasionally there are situations where the equitable thing to do requires that a permit be issued without Agency review, if there is reason to believe that the permit will conform to the regulations. In addition, this is the direction that the Agency has been encouraged to go in relying on the designers' expertise rather than checking every detail. As a balance, under these rules, the Agency will have the ability to enforce against designers that submit incorrect designs. This section allows designers to file an application without the additional documentation required for other applications provided that they make the necessary certification and the Agency agrees that the project has a negligible impact. It is an accommodation rather than a requirement that an applicant may choose the "minor project" approach. We do not have a record of how many projects have been submitted under this provision.

The Agency does not agree that a project with a town permit should be automatically approved based simply on the existence of the permit. Projects with town permits that do not need state permits will have the same build out period as exempt lots. If towns update their ordinances all projects in those towns will have to meet the new standards anyway. This is the way that most zoning and planning requirements are applied. In general, projects that have not been permitted at the time new ordinances go into effect are required to

meet the new standards. Construction of additional dwellings or other structures may require approvals under Subchapter 5 of the proposed rules.

27. Page 12 1-302 (b) (1) re the designer's certification: If a designer is taken to court defendant's counsel will assert that this constitutes a guarantee by the professional. If ANY ONE THING in the design was non-conforming, then the consultant has violated the statement that he/she signed.

If the designer is taken to court it is unlikely that their counsel will be making the assertion that this constitutes a guarantee. In any case, the guarantee is "in the exercise of my reasonable professional judgment" which relates to the expected level of expertise for one practicing in the field.

28. Page 12 1-302 (b) (1) Will the Agency certify (guarantee) that the proposed rules are without ANY conflict within themselves? Will the Agency certify (guarantee) that the rules are not out of compliance with ANY federal, state and local laws and regulations? Will the Agency certify (guarantee) that the proposed rules are not subject to ANY interpretation? Will the Agency certify that the rules are clear and concise in ALL respects, and are without any need for interpretation or judgement? Will the Agency certify that judgement exercised by Agency personnel is ALWAYS 100% correct and consistent with the rules under all circumstances? Will the Agency certify (guarantee) that if the rules are implemented as written, that failure of a water supply or wastewater disposal system WILL NOT occur? Will the state certify (guarantee) that the proposed rules meet ALL technical standards, are the latest in technology and meet good engineering practices? Will the state certify that the proposed rules are economical to implement? Will the Agency INDEMNIFY AND HOLD HARMLESS all applicants, professional engineers, contractors, attorneys and any & all others involved in the permitting process, from ANY damages arising from the STATE'S actions related to the rules? If the state will not do these things why should any designer or contractor certify (guarantee) their work?

The Agency has rewritten these rules to make them as conflict free as possible. We certainly hope that the public review has found the most serious conflicts that may have escaped our recognition. We also endeavor to our best ability to make sure that they comply with all federal, state and local laws that apply. Rules are always subject to interpretation, and we have included many historical interpretations formerly in use in these rules so they are no longer stand-alone documents.

The Agency endeavors to make its rules as clear and concise as possible. We have proposed statutory changes that would allow the rules to be less complex, but those statutory changes have not been passed. Agency personnel try to interpret the rules accurately, but occasionally interpretations vary between the Regional Offices or from final official policy. That is why there is an informal appeal process included in the rule,

so applicants that feel they have been aggrieved by a decision can get clarification. The Agency believes that the rules include acceptable technical standards and provide methods for incorporating the latest technology through the innovative system approval process. The proposed rules allow existing systems to be used in the same circumstances as they may currently be used. The new rules allow additional options for wastewater systems. Therefore the new rules should be at least as economical as the existing ones. Other systems may be more expensive, but the ability to develop a site under the new rules may make the cost of a more expensive wastewater system worthwhile. The Agency does not indemnify applicants or others from damages resulting from the permitting process. Neither is it asking the designer or installer to indemnify and hold anyone harmless, it is asking that the consultant state that the information he/she submits is true and accurate and that in the exercise of his/her reasonable professional judgment that it is in compliance with the rules.

29. Page 12 1-302 (b)(3) You are requiring designers to flag the leachfield areas. This makes an extra trip with its associated cost. NH simply requires benchmarks to be established so the locations in the field can be created when required. Is the owner required to maintain flagging until the buildings are built? Sometimes that is over 10 years. Perhaps a condition requiring the location to be established prior to construction and that the location be made a part of the final certification would be a better approach. The areas must be flagged before application. Changes to design due to review require reflagging. Please clarify the additional cost of this to the applicant.

The Agency feels that it is necessary for the leachfield and the replacement area to be permanently identified until they are constructed. Far too frequently, a landowner constructs the house in one of these areas creating a situation where at best the system must be relocated and at worst, no complying solution can be found. We do not mean temporary flagging that must be continually maintained, but permanent markers such as stakes that will remain in place. The cost of an additional site visit if required will be different for each project based on the distance, time and price of the designer involved.

30. Page 14 1-302 (c)(1) (L) This is too open ended, subject to interpretation and abuse, which cannot be tolerated under these rules. Please omit.

That is existing rule language. The Agency recognizes that occasionally there is specific information about an unusual project that the Agency would need to make a permit determination that is not required by these rules. This allows us to request that data. We are unaware of instances of abuse of this provision.

31. Page 14 1-302 (c) (2) Plot plan: A scale of 1” = 100’ may not be large enough to

ensure compliance with the rules or of an adequate scale to construct the project. This requires additional expense to the applicant that is not necessary. I assume that the photogrammetric contours will meet the definition, therefore, the blanket approval.

Detailed plans may also be required as noted in 1-303 (c)(3). This is all existing language that has just been collected into one place in the proposed rules for easier use.

32. Page 14 1-302(c)(2)(B) Plans submitted should contain an original signature rather than a photocopy or computer generated signature.

Any legal signature will be accepted, including copies and facsimile. Persons submitting the plans may decide whether they wish to submit only an original signature.

33. Page 14 1-302 (c) (2) (D) If contour lines are accurate to ½ a foot and the seasonal HWT can be 6 inches from the surface then the systems could be installed with a construction accuracy that allows the SHWT to be at the surface. The SHWT can fluctuate up to 5 feet in VT. With only two groundwater monitoring wells, systems can meet the rules and still be designed to fail. Six inches of freeboard in insufficient. Undulating topography makes construction tolerances very important. All site plan contours should be 1 foot contours. (2) They are only required for at-grade systems. Where necessary, trenches should follow the contours instead of being parallel to each other.

This is existing language in Appendix 1-7E of the 1996 Rules which states that contours must be accurate to ½ a contour interval not ½ a foot. Contour information needs to be collected by the designer in a manner sufficient for its intended use. The standards are only the minimum that is acceptable and the designer must be responsible for determining when more detailed information is required. A note will be added to the rules that makes this clear to designers.

34. Page 14 1-302 (c)(2)(F) Please be advised that site technicians are prohibited from engaging in engineering including design of any of these items listed.

Title 26 V.S.A. 1163(b) states that 26 V.S.A section 1162 (regarding the practice of engineering) does not prohibit acts constituting the practice of any other legally recognized profession or occupation, including the activity of Site Technicians licensed by the Agency.

35. Page 14 1-302(c)(2) (H) Please be advised that site technicians are prohibited from engaging in engineering including design of any of these items listed.

Title 26 V.S.A. 1163(b) states that 26 V.S.A section 1162 (regarding the practice of engineering) does not prohibit acts constituting the practice of any other legally recognized profession or occupation, including the activity of Site Technicians licensed by the Agency.

36. Page 15 1-302 (c), (c)(7) (D) What is meant by building plans? Building sites or envelopes should be sufficient. (2) Will the permittee be required to submit plans for an addition of a porch, a new wing?

Building plans do not mean the plan for the building itself other than the building site plans. This has been clarified. Site plans for a new porch or wing will be required if it affects the water supply or wastewater system or the replacement area.

37. Page 15 1-302 (c) (3) (A) The requirement to locate ALL existing foundations and former excavations is difficult with years of wood duff etc over old foundations from the 1700s. Will the designer be subjected to fines and penalties for failing to locate all these items? Page 16 1-302 (c) (6) Will a new meter or a meter tested by a plumber be considered accurate? Will the designer be subjected to fines and penalties if the new meter was not accurate? What tolerance is granted? Will the applicant be allowed to read the meter? If not this will add to the expense of operation of any system!

The requirement to locate foundations is existing language. The language, however, has been clarified to state that it is only foundations that may be potentially affected by the project or that potentially affect the project design. The designer is expected to perform within the bounds of usual and customary engineering practice. The designer is responsible for the information but may choose to use information collected by others. Once again, the designer is expected to perform within the bounds of usual and customary engineering practice.

This is to determine metered flows to establish a basis of design, not for continuing operation.

38. Page 16 1-302 (c) (7) (E) Must these be bound or may they be included on the plans. Do the specifications extend to beyond technical information?

This is an existing requirement in the rules. Specifications are not required to be bound.

39. Page 16 1-302 (c) (7) (F) The notation is “all”. Does this imply “every “component? If so, this is way too encumbering!

This is existing language in Appendix 1-7E.

40. Page 16 1-302 (c) (7) (H) This is way too open ended, subject to interpretation or misinterpretation. Please omit.

This is existing language in Appendix 1-7E.

41. Page 16 1-302 (c) (8) How will a negligible potential be determined? Is an application required first? If something is waived will it be in writing? How fast will this be determined/ While I like the concept, this is not clear and is subject to interpretation.

This is an existing condition reflected in section 1-201 (M)(2) of the existing regulations.

42. Page 16 1-302 (c) (9) Please do not require every plan to have the same details in the same location on every sheet. Designers must prepare the plans as they see fit. Construction plans should meet the contractors' needs not necessarily the permit reviewers needs. Please omit.

The Agency has not yet determined that such conformity is useful to the program, however, if it should become useful, the Agency wants the ability to require it without amending the rules.

43. Page 17 1-302 (d)(2) 60 days is way too long to wait for a decision. 60 days is too long for a determination that an application is incomplete.

This is existing language. The average Agency review time in 2000 for all subdivision projects was 15.85 days. The average log-in time for a project is less than 6 days, which includes a determination of completeness.

44. 1-303 and 1-502(c) The requirements for filing should be in statute.

While the Agency would not object to this, it is not necessary to allow the Agency to require such a filing and the Agency is proposing to require filing of all permits.

45. Page 17 1-302 (d)(3) a review letter must be responded to within 30 days. This is too much time to wait for a review.

Most projects should be approvable with their initial submission and no review letter should be required. When review letters are required the average time to reply is much less than 30 days. This indicates the maximum time the Agency expects to take.

46. Page 21 The timeframes for review under section 1-302(d) should apply to all permits in the Rules. They should not apply just to innovative systems.

The timeframes for review in paragraphs 1-3 of 1-302(d) do apply to all permit applications. Paragraph 4 reflects a statutory provision that applies only to subdivisions. Requests for approval of innovative systems are not permit applications.

47. Page 18 1-303 (c) Does the designer have any responsibility for the installation and operation of the wastewater system?

If the designer certifies the installation of the system is in accord with the approved plans and oversees the tests, then they are responsible to the degree that the certification is incorrect. In addition, Subchapter 8 requires certifications by designers for certain situations.

48. Page 21 Section 1-306(d) The determination of party status is too loose. It should be confined to persons whose property is directly affected by the permitted project. Party status should automatically include the municipality in which the project is proposed or built to the extent that they wish to be included.

This is existing language. There are occasionally persons who are affected that do not own property directly affected by the permitted project. The Agency has not determined any reason to alter this section except to add a section that states that a municipality has party status in all cases.

49. Page 24 The language in Section 1-309 (a) (3), 1-310(a)(2) and 1-311(a)(3) should be more clear on protection from health hazards. It could mean that a conventional backup system needs to be installed to "protect" people.

The rules require provision for a fully complying replacement system to be available. That system could be a conventional system.

50. Page 25 Excessive information is requested in sections 1-312(d)(1) and (d)(2) as well as 1-312(e)(2) and (e)(3). An applicant can not be expected to find all approvals, denials, jurisdictions etc. where a system has been installed or used. Information requested in 1-312(j) should be for information only and not used to deny applications.

These sections have been clarified to show that they are directed to the manufacturer or vendor of the system that is being reviewed for approval as an innovative system, not to a permit applicant. The Agency agrees that the costs related to an innovative system should not prevent its approval as an acceptable system.

51. Page 45 (4)(A) You mention only one type of apartment, What about the other types of apartments that are required by statute to be permitted?

10 V.S.A. section 1954(2) limits the acceptable residential units that may be approved under this section by excluding two of the criteria described in 24 V.S.A. section 4404(4)(D)

52. 1-501(d) and 1-701(d) Delete the qualifier "that require municipal land use permits". It may give the impression that compliance is limited to only land use permits.

This has been done.

53. Page 44 1-503 and 1-506 Both include provisions and definitions for home occupations Is one redundant?

This language has been revised so that certain home occupations are exempt under section 1-503 and there is no longer a stand-alone home occupation section.

54. Page 44 1-503 (a) (2) Please clarify this time. Should this read a single family residence existing at the time of these regulations?

No. Single family residences are exempt from the requirements for a water supply and wastewater permit. They do, however, require a subdivision permit unless they are exempt from the subdivision permitting requirements.

55. Page 45 1-503(a)(6) This is a new requirement. Water supply rules do not as far as we know apply to single family residences with their own water supplies or anything serving less fewer than 25 persons or 15 connections.

This is required by 10 V.S.A. section 1954(d), effective July 1, 1998.

56. Page 45 1-503(a)(7) Municipalities need to be the sole entities issuing permits for connections to municipal sewer systems. The agency needs only to receive notice of any connection that will result in use of capacity.

At the moment, a permit from the Agency is required. We do not believe that we can change this requirement without a statutory change.

57. Page 47 1-506 Permitting of home occupations is a municipal function not a state function.

Some home occupations are operated in a manner that means the public is affected. The Agency is responsible to see that the potable water supply and wastewater system that serves the public in any way meets the necessary requirements. Certain home occupations are exempt under these rules. Municipalities can and should permit such businesses under their local ordinances.

58. Page 50 1-509 (b) If this regulation is acceptable for schools, why not for other systems?

This is existing language that reflects a statutory directive for schools.

59. Pages 55 and 57. 1-705(a) and 1-707(a) are misplaced in a state on-site sewage regulation.

We agree these requirements have nothing to do with wastewater disposal. These requirements are some of the ones that the Agency is trying, by the consolidation proposed in S.27, to eliminate or transfer the authority to regulate to the Agency of Commerce and Community Development, which regulates mobile home parks. They are presently required by statute and cannot be changed by rule.

60. Page 59 and others There is too much potential for erosion and stream pollution to change the allowed slope to 30%, (9) especially with a lack of state supervision. It threatens water supplies. Twenty five percent should be the maximum, mounds 20% at-grade trenches with intermittent sand filters 25%. Twenty percent is the maximum. Please restrict slopes to 15%. Section 1-802 (a) (3) Wording should read "Unless otherwise restricted by these rules…as 1-811(q) and 1-811(c)(2) have other limits. The septic system is not the only potential for erosion, there are the driveways, stormflows, etc.

The Agency notes that the slope referred to here is the slope of the area where the wastewater system is being constructed, not the slope of the entire parcel. We believe that the suitability of the site for constructability should be left to the designer. Therefore, we will allow even higher slope sites to be used with satisfactory justifications. We recognize the concerns of individuals regarding erosion and have amended the rules to require erosion control plans for construction of wastewater systems on slopes steeper than 2o%. The rules do not require erosion control for the entire project area. Those controls should be in the local ordinances or other regulations such as Act 250.

61. Page 59 and others Reducing the separation distances from sewage to groundwater, bedrock and ground surface reduces the margin of safety and has inherent risk. (2) What is the basis for these reductions? There needs to be additional state and town oversight. Please maintain a separation to groundwater of 2 feet. (2) The design tolerances for separation distances in the new rules are unrealistic from a construction standpoint and pose too much risk. (2) Safety margins should not be decreased, (2) be increased not decreased, especially as development becomes denser. There are other standards that could be applied that would accomplish your goals without increasing the health risk. Most of VT should have a separation to groundwater of 18 inches. Flat clay soils should have

a reduction to 6 inches with a hydrogeological analysis. Sand filters should have 12 inches to the seasonal high water table and 18 inches to ledge. Page 109 Adjusting areal loading rates based on organic strength of pretreated effluent is reasonable. Reducing the vertical depth of unsaturated material is not since it is travel distance and probability of encountering adsorption sites that matters for pathogen removal; the longer and more tortuous the better. There needs to be at least 24 inches of unsaturated media to account for all the vagaries of effluent flow paths and individual pathogen contact with adsorption site, including de-adsorption and re-adsorption. Given our site assessment techniques and the inaccuracies introduced in plan preparation and construction, the three foot of unsaturated media allows for a one foot overall estimate of actual unsaturated media as seen by the effluent. Sewage effluent vertical travel through two feet of unsaturated material is all that is required to allow for more sites without substantially increasing the risk to public health due to contaminated groundwater and surfacing effluent. While coarse grained materials are not ideal for treatment, they still provide a matrix for biologic growth and adsorption sites, and could be allowed for some or all of the required two feet of truly unsaturated treatment media. You could also allow capillary breaks to guarantee unsaturated treatment media, and constructed effluent dispersion mats to convey effluent /groundwater to a discharge zone at least 25 feet from the edge of the system. Clogging mats and the aerobic areas below them in the unsaturated soils are the primary treatment method of leachfields. The clogging mat treats the organic loading and the unsaturated aerobic zone treats the pathogens. High flushing rates may wash pathogens through the first foot of unsaturated soils, but they are generally re-adsorbed in the second foot. Unsaturated soil is determined by seasonal high water table evaluations, which is underestimated because methods do not account for capillary action. Imprecise design surveys and construction methods result in a low degree of assurance that current systems have even two of the required three feet of separation distance required. Reducing the unsaturated zone will only result in decreased public health protection. Higher treatment levels beyond secondary should have no effect on leachfield sizing. The degree of waste stabilization also should not have any effect on the depth of unsaturated soil above groundwater or ledge. There is no science to support this. Why not require a total of three feet of unsaturated material in any combination of natural or imported? This would open up as many sites, provide optimum pathogen removal and higher loading rates would reduce fill costs. Data collected by the Indirect discharge section appears to support 230-250 mg/l as the average for residential domestic strength septic tank BOD. The TSS average appears much lower than 150 mg/l, 75 mg/l is representative. If you assume that 0.5 gpd/ft2 is the appropriate application rate for high strength septic tank effluent, (i.e. > 230 mg/l) a calculation of the lbs/day for biochemical oxygen demanding substances applied for each of the treatment levels reveals that the application rate for domestic strength septic tank effluent is approximately 40% too high. This is because the bar has been set too low for high strength septic tank effluent or the application rate for domestic strength septic tank effluent should be lower (around 0.6 gpd/ft2). Again, if you assume that 0.5 gpd/ft2 is the appropriate application rate

for high strength septic tank effluent, the lbs/day for biochemical oxygen demanding substances applied for the T3, T4 and T5 levels are all less than the application rate for high strength septic tank effluent indicating that these application rates have been set too low or the application rate for high strength septic tank effluent has been set too high. The IDR will require disinfection of effluent for high rate disposal systems discharging tertiary treated effluent (Advanced Treatment). The application rates will be five times that allowed for septic tank effluent in the same soils. Permits for these systems will also need to incorporate a turbidity effluent limitation to ensure that the treatment provided also allows for effective UV disinfection. The maximum permitted application rate for a T2 treatment level should not be applied to subsurface disposal fields. Well drained sands and gravels often occur in limited areas. Such lots that now pass for simple disposal fields (using a higher loading rate than 1.0 gdsf) would then have to upgrade to a T3 level of treatment at a substantially higher cost. There are two inherent differences between mounds and subsurface disposal systems regarding the 1.0 gpdsf loading rate. A mound is 'socially" dosed with somewhat large volumes of effluent and the compaction of sand fill within a mound is inconsistent, thereby justifying (the need for0 distribution over a large area.

The Agency has amended the proposed rules to remove the reduction to less than 24" between the bottom of the installed system and the induced groundwater mounding based on levels of treatment that exceed 30 mg/l of BOD and TSS.

62. If separation distances are reduced but operation inspections are only quarterly or annually, can we afford the risk of failed systems lasting undiscovered up to a year?

See the response to Comment 61.

63. You should consult with Richard Otis at the University of Wisconsin about these standards.

We have reviewed several other state's standards, including those of Wisconsin as we considered the changes to these regulations. While the Agency has not directly contacted Mr. Otis, several of his papers have been reviewed as part of this process.

64. Is the requirement to have dual alternating systems for flows over 5000 gpd gone? The use of dual alternating systems at 5000 gpd makes an easier transition to the Indirect Discharge rules. This requirement has been removed. However, they are required for at grade systems over 3000 gpd. Systems often fail during the winter or late spring months when treatment is slowed and it is the worst time to be determining the cause of failure or to construct a replacement system. An alternating system is valuable at such times. The biomat acts like a fixed film

reactor and never really disappears. It rebounds fairly quickly when effluent is applied again. There seems to be no scientific analysis behind the change in the rules. Given the proposed changes in design flows and the increased loadings, it would be prudent to keep the requirement for dual alternating systems, especially for large systems.

The use of dual alternating systems was originally proposed as a method of prolonging the life of systems and to ensure that a backup system was available at any time if the system in use had problems of any sort. While this has advantages there are concerns about the cost of constructing two systems and about the biomat that forms in a leachfield receiving septic tank effluent. There does not appear to be much evidence that suggests the occurrence of failure of systems that are not alternated is so high that the cost of two systems is justified. Our track record for systems of three or four thousand gallons per day does not appear to be any worse than systems larger than 5000 gallons per day. Because the biomat is considered to be an important part of the treatment process that protects groundwater and because it can take several months to fully develop a biomat, annual alternation may result in a less effective biomat for at least a portion of each year. There does not appear to be much information about how much a biomat breaks down during a year of rest so it is not clear how much treatment is lost during the period when the rested portion of the system is first reactivated. Under the Indirect Discharge Rules all systems have a two year time of travel requirement that protects water supplies so any question of reduced treatment with alternated systems is less important. This is a subject that should be further reviewed.

If the initially installed system fails and a replacement system must be constructed, the initial system can be rested and eventually an alternation program can be started if it seems appropriate.

From an overall perspective it seems reasonable to delete the dual alternating requirement for most system.

The at-grade system is a special case in that relatively few systems have been installed and the system has only been used in Vermont since 1996. These rules also allow for a major increase in slope from 12% to 30%. Because there is not as much operational background in Vermont for this type of system as for the others, it seems reasonable to require the dual alternating approach until the record becomes clear.

65. There should be documentation of the science behind the long term loading rate.

Agreed. This is a topic that will be reviewed during subsequent revisions of the rules. There is ongoing research in this area that will clarify the issue.

66. Page 61 1-802 (b) The 18 inches should be above seasonal high groundwater. It is not practical to allow a landowner to comply with the replacement system using a performance based system. If the prescriptive approach fails then the homeowner is tied to an expensive high maintenance system. The permit requirements should be a notification requirement prior to any sale or transfer.

The prescriptive approach is related to determining if a site has hydraulic capacity to move the effluent away from the site. A conventional mound system can be constructed on a site using this approach. If the system fails, what ever was approved for a replacement system may be installed. The permit requirements will continue to require that permits and plans be shown to the purchaser.

67. Page 61 1-802 (c) (2) The 6 inches is not accurately measurable; this is not feasible or defendable. How can you be sure that the effluent remains 6 inches below the surface?

The designer can calculate the expected hydraulic flow of the water by means of standard scientific equations related to the specific soil characteristics and slope of the site. It will be imperative that installations be done very precisely and carefully.

68. Page 61 1-802 (c) (2) paragraph 2, I could not find the definition of a hydrogeological study. Please incorporate the definition that is in the old rule. How much does a desk-top hydrogeological study cost? The phrase desktop hydrogeological analysis should be changed to reflect the elements actually incorporated.

Section 1-302 (b)(2) defines who can do the work. Language has been added to give some direction on what may be required as part of the study. Cost will vary depending on the specifics of the project. We have specifically allowed for desk-top studies in most cases because detailed studies with in-the-field testing are not usually required.

Design Flow

Design flow in this section relates to the design of wastewater disposal systems. The design flow for public water systems is regulated by the Water Supply Rules and is not necessarily the same as the flow for wastewater disposal systems. ***Existing* systems will not automatically be allowed to add new connections just *because the design flow per connection is reduced.* This is made clear in Table 1. Many existing systems are substandard in depth to bedrock, depth to seasonal water table, isolation to water supplies, and other factors. Increasing flows to these systems is unacceptable. Use of the proposed design flow requires use of a system based on the same set of rules because the design flow assumptions are based on the complementary system design**

requirements. Current technical information suggests that systems using these old higher loading rates might not function well at the full design flows allowed by the old original designs, but are functioning satisfactorily at the lower flows being experienced by those systems. We do not want to allow more connections to such systems unless the new design requirements are met.

69. Page 61 Design flows should not be changed. They are consistent with Ten State Standards and real estate practice. We disagree with the projected flows in Table 1 page 62. There should be a study committee to work on flows. Costs for the homeowner associated with flows may be excessive. You may fail to maximize any public infrastructure that may be involved.

The design flow issues were reviewed by the Technical Advisory Committee. The proposed changes are consistent with current literature. The proposals result in the same or reduced cost. In the long run, public infrastructure is limited by the actual use, not the design flow. As soon as a project is constructed the flow reservation carried by the town is removed and the impact of the project is measured by the flow meters at the treatment plant.

70. Design flows should not be reduced unless there is pressure distribution.

Design flow reductions for residential systems due to numbers of systems using a single disposal system are limited to clusters of five or more homes. Most systems large enough to handle the flows from five or more homes already require dosing of the leachfield. In addition, all systems using advanced treatment require pressure distribution in the leachfield.

71. Page 61 1-803 Design flows are more related to number of residents, water-using appliances and lifestyles than the number of units. You should look at the 2000 Census data and make sure that your proposal is based on correct residents and/or bedroom calculations.

We have looked at the most recent data (1990 and 2000) and design flows for projects connected to large, municipal type systems are based on these numbers. When designing for a single unit, an allowance must be included to allow for higher than average use. The goal is to have all systems sized large enough, not just the average system. We believe that these modified flows still have an appropriate safety factor.

72. The transition for design flows should be smoother.

The chart has been changed to smooth the transition between 5 and 20 houses. Less than five is too few to place much reliance on the averaging effect.

73. The 3.5 gallons per flush number is in error, they are not water saving devices. How does the 10% credit apply to 1.6 gal units? Is there still the 10% credit for low flow devices?

Because the rules are used for replacement systems as well as for new systems the various flows for toilets used over the past years must be considered. Some existing buildings are still using 5 gallon per flush toilets. While there may be other ways to make the calculation, this is existing language and there has not been enough time to do the work needed to determine if there is a better way to make the calculations.

Therefore, the 10% low flow credit does continue to apply for design flows except for residential units. Residential units have had their design flows adjusted. Most systems involving residential flows are for new systems, primarily approved as part of a subdivision process.

Additional work is needed on design flows for future rule revisions.

74. Footnote b to Table 1 needs some work.

Changes have been made.

75. Our firm is designing systems for numbers of residences now for spring construction. Such changes in design flow could allow us to design smaller systems. We are caught in the middle. Our firm is designing a municipal project. The $150 cost of each connection for dozens of connections is very expensive. Can a municipality require hook-ups? Will they be more expensive than owning your own on-site system?

It is true that if the rules were in place now, you could design smaller systems. However, when they are in place the systems as designed will have a larger reserve capacity and therefore may have an ability to accommodate additional development. ***Existing systems will not automatically be allowed to add new connections just because the design flows per connection are reduced.*** **Many existing systems are substandard in depth to bedrock, depth to seasonal water table, isolation to water supplies, and other factors. Increasing flows to these systems is unacceptable. Use of the proposed design flows requires use of a system based on the same set of rules because the design flow assumptions are based on the complementary system design requirements. Current technical information suggests that systems using these old higher loading rates might not function well at the full design flows allowed by the old original designs, but are functioning satisfactorily at the lower flows being experienced by those systems. We do not want to allow more connections to such systems unless the new design requirements are met.**

The rules propose that initial connections to new municipal systems or new sections of municipal systems, made by the municipality at the time of the original construction of the system or portion of the system, not require a permit, as long as the connection is reviewed as part of an approval by the Facilities Engineering Division of the Department of Environmental Conservation. Section 1-503 affirms by rule a thirty-year practice by the Department not to require individual permits for these connections. It eliminates the problems created when the Bianchi ruling regarding title defects placed these properties in jeopardy because they did not have the required permits.

A municipality is allowed to require sewerage connections under the authority of 24 V.S.A. Chapter 101. The Agency has determined that the average cost of municipal connection is less than the average cost of installing and properly maintaining an on-site system over twenty years.

76. We use a way to calculate design flows by 150 square feet per person for commercial buildings. How would you incorporate that design when applied to these rules? What is the definition of "municipal" for reductions in design flow? Do you mean municipally owned small cluster systems? In the metered flow section of the rules…Why not change the formulas so they reflect the actual flows from the project? Structures that had a flow of 405 gpd with the low flow credit now have 420 gpd. If the new flows are in place can existing systems expand? ANR should not care if existing systems expand within their existing allocated flows.

The rules only propose a gallons per square foot of floor space for some store categories. Your approach might be proposed as a design factor for certain projects and would be considered as a request to use an alternative design flow. It could be approved with sufficient justification.

Our use of the word "municipal" was meant to define a type of system large enough to provide averaging effects. The municipal wording has been changed and a minimum size established to allow connections to any system of sufficient size to use the minimum design flow, though few private systems will be large enough to take full advantage of the averaging effect.

Design flows will always be higher than average project flows in order to ensure adequate systems for those projects with flows at the high end of the range of actual flows.

***Existing systems will not automatically be allowed to add new connections just because the design flows per connection are reduced.* This has been incorporated in Table 1. Many existing systems are substandard in depth to bedrock, depth to seasonal water table, isolation to water supplies, and other factors. Increasing flows to these systems is unacceptable. Use of the**

proposed design flows requires use of a system based on the same set of rules because the design flow assumptions are based on the complementary system design requirements. Current technical information suggests that systems using these old higher loading rates might not function well at the full design flows allowed by the old original designs, but are functioning satisfactorily at the lower flows being experienced by those systems. We do not want to allow more connections to such systems unless the new design requirements are met.

77. Here are some modified sections of chapter 8 regarding design flow and distribution systems. Please consider them.

These comments were received prior to the current draft and the current approach for residential units was chosen instead.

78. Table 1 says 70 gpd per person. And the first 3 bedrooms at 2 people per room (420 gpd). The chart says a subdivision per lot at 450 gpd. Also does any single unit connected to a municipal sewer get rated at 210 gpd not 420 or 450 gpd?

Any single family unit will be able to use the 210 gallons per day per unit flow when connected to a system of appropriate size. See # 76 above.

79. Page 67 1-805(a) should say "shall include" to conform to the following two paragraphs.

All projects may not require every item listed here. Where they are necessary they must meet the requirements in the following paragraphs.

80. Page 67 1-805 (a) areas; that may

This wording has been revised.

81. 1-806(e) Please read this carefully. Are there conflicts here?

Item (e)(1) has been revised to read "the top of the effluent plume shall never be less than 6" from the ground surface."

82. Page 68 1-806 How many groundwater level monitoring wells are required at any one site? Replace in its entirety with the Indirect Discharge Rules (14-C-102C), not only for consistency, but a better technical approach. This will only work for the Prescriptive Approach to minimum site conditions where there is a safety factor that can cover the error introduced by equating free groundwater surface with elevation of soil saturation, and short-term exceedance of specified levels by actual readings. For Enhanced Prescriptive only a small level of exceedance can be permitted, and for Performance Based no exceedances can be permitted. Page 68 1-806 the depths and time periods are incorrect. The Indirect Discharge Rules

have appropriate criteria. Page 68 1-806 (c) The time period description corrupts the data and is confusing. A simpler method is needed. 1-806 (c) This is very hard to understand.

The groundwater monitoring section has been rewritten.

83. Page 68 1-806 (d) The groundwater monitoring requirements allows the critical level to violate the 24" of unsaturated soil requirement periodically. That should not happen. There should be 24" of unsaturated soil at all times even if fill has to be hauled in on site. Application of such vague requirements will allow for continuous quibbling rather than environmental protection.

The normal basis for determination of seasonal high water table is identification of mottling. The highest elevation of the mottles is assumed to be the water level. It is clear that the water table is above the level of the mottles for short periods of time and the groundwater monitoring requirements have been set to approximate this. If systems designed using mottling are successful even though the water table comes above the mottles periodically, systems based on ground water level monitors should also be successful.

84. Can you build up a site to get vertical separation? Will you allow more sand? Filling of sites should not be allowed. Only allow sites filled before 1970 or as a last option for a failed system.

All sites must have the minimum amount of naturally occurring soil. Fill cannot be used to replace this. Fill can be used to provide the separation between the bottom of the leachfield and the water table or bedrock in mound type systems when the naturally occurring soil meets the minimum site requirements but does not meet the separation between the bottom of the leachfield and the restrictive layer.

85. Page 69 1-806 (d) (1) Is critical level the same as critical depth?

The wording has been revised to clarify this requirement.

86. Page 69 1-806 (h) should be (f) last sentence "may" should be "shall"

This allows the designer to choose the appropriate method of analysis from those authorized. No change has been made.

87. Page 69 1-806 (e) The concept of enhanced prescriptive design and designs based on specific hydrogeologic approach are too loose.

The Agency believes the concepts are acceptable minimum requirements. Designers must evaluate each site to determine if a system designed to the minimum requirements is appropriate for that particular site.

88. Page 70 1-804 What is the basis for the increased septic tank size? We believe the decision on whether to increase the septic tank size should be left to the homeowner. Steel septic tanks rust out and collapse. (2) Why has the minimum size for septic tanks been increased to 1500 gallons? I think it is a good idea. This will increase the cost. Is it really necessary? What about double compartments? Page 70 1-807 Effluent filters should be required. (3) for community systems and required for single family residences. Filters are a very useful protective device for leachfields. Encouraged for single family residences. Filters should be an option instead of a larger septic tank. Garbage grinders should be prohibited for on-site systems. (2)Composting should be strongly encouraged. (2) We are concerned that the access risers to grade may be a child safety issue.

The Agency believes that, although there is a cost increase involved for the change from a 1000 gallon septic tank to a 1500 gallon one, this cost will be recouped in the extended time between pump-outs that the larger size will allow. The larger tank also provides some additional treatment. In addition the larger size takes into account the increased solids received when garbage grinders are used, something that is occurring in many new installations. We are amending the rules to note that garbage grinders are not encouraged. Two compartment tanks are not thought to improve the quality of the discharge over single compartment tanks in any significant way. Septic tank filters are a good preventive maintenance device. The Technical Advisory Committee indicated that they should be required, and the Agency decided to require them. Access risers need to be designed, using bolts, locks or some other device, to prevent access by children.

89. Page 70 1-807. Appendix 1-A-106 needs to be included. What about testing other tankage besides septic tanks?

A leakage testing specification has been added for all tankage.

90. Page 70 1-808 (b) The grease interceptor design specifications have been replaced with a performance based standard of 25 mg/l for the effluent. What is the basis for this? Is there a design reference to size a grease trap so that it meets this standard? Will the specifications be replaced in future revisions?

This is related to the definitions of low and moderate strength wastewater in the sand filter section. The Agency will develop guidance on this subject.

91. Page 71 1-809 (c) Why has the maximum difference been changed from 15% to

10%? This will be hard to achieve especially on sloping sites where trenches are stepped down the slope. Keep the 15%. Will the minimum dosing volume and the minimum number of cycles conflict in some size systems and designs?

The 10% maximum difference in discharge between orifices is within any one trench or bed. The 10% difference between overall discharge to different trenches and beds should be manageable with hole spacing and diameter variations. The ability to use smaller orifices should offset the increased requirements for dosing and cycle times.

92. Page 71 1-809(f) Is the 1/8" orifice too small? There are problems with the less than 3/8" ones. Will the effluent filters do the job? What about biologic growth, mineral build-up and platy deposits?

Systems need to be designed with access so that distribution lines can be flushed. The small diameter holes are currently in use in sand filter distribution systems. Flushing does appear to be sufficient to restore the function of the system if needed. In any case, this is only a regulatory minimum, any designer can and should use larger orifices if they have any concerns about small ones.

93 Page 71 1-809 (g) Are we approving chambers? Do they need additional detailed specifications?

We are continuing to approve chambers. The specifications are the same as current specifications plus an explicit statement that distribution piping is required within the chambers.

94. Page 72 1-810(k). You should reduce the width of trenches.

The evidence is not yet clear that this is necessary when considered as part of the Vermont design system. If design flows and loading rates are revised in future this issue must be also considered at that time.

95. Page 73 1-810, 1-811, et al replace the percolation test and field loading curves with section 14-C-107 of the Indirect Discharge Rules. This is a much superior system and allows designers of differing training and experience to use the approach most familiar to them. It does not penalize the soil competent professional by requiring the use of labor intensive and inaccurate percolation tests when soil description and morphology are quicker and more accurate means of characterizing soil and sizing systems.

There is a much larger group of people designing systems under these rules than work with the Indirect Discharge Rules, including grandfathered Site Technicians. It would not be prudent to allow people to decide for themselves if they can adequately describe soils, so a training and testing

program should be implemented prior to making the transition. While the Agency intends to move to a soil analysis approach, additional work is required prior to making the change.

96. Page 73 1-810 (n) Is there a potential for freezing with an at grade access for the D-box?

Yes, there is a potential. The design should include appropriate precautionary measures.

97. Page 73 1-810(o) Remove this incentive to build deep leach fields, which do not give optimum treatment.

The Agency will consider such a change in the future. For this amendment to the rules, the Agency does not intend to remove any options for systems available under the current rules, other than removing the drywell option for new systems.

98. Page 74 Please omit beds from the proposed rules. At least they should be no wider than 10 feet. Limit to no wider than 48 inches. Most of the failures I have observed for systems designed under the '82 rules have been beds. As flows approach design flows, the beds currently okay may also fail. Treated effluent may not have the oxygen transfer rate problem that regular effluent has, and could be accommodated.

The Agency will consider such a change in the future. For this amendment to the rules, the Agency does not intend to remove options for systems available under the current rules, other than removing the drywell option for new systems.

99. Page 76 1-812 Spray irrigation is not appropriate for small-scale systems. Ten-State standards are not appropriate for small-scale systems. Just use the Indirect Discharge Rules.

The IDR program is based on operating permits, with many additional design factors in place. Without making a full transition to this concept, the Agency will not remove safeguards that are in the current rules.

While no spray system has been approved under the Small Scale Rules, the Agency is not removing any existing options from the rules except for removing the drywell option for new systems.

100. 1-812(e) Given the low sprayfield application rate we have found that a 12 hour rest period is sufficient between spray applications.

Because a permit has never been issued for a system of less than 6500 GPD, this issue was not reviewed as part of the rules process. This issue should be reviewed in some detail prior to making any changes. With the lack of use it seems reasonable to retain the current standard until a future rule update, when it can be studied in detail.

100. 1-812(c) A spray site to be used year round needs to be a forested site. The rule should allow for a seasonal use of a non-forested site (for example for summer use only)

Because a permit has never been issued for a system of less than 6500 GPD, this issue was not reviewed as part of the rules process. This issue should be reviewed in some detail prior to making any changes. With the lack of use it seems reasonable to retain the current standard until a future rule update, when it can be studied in detail.

101. 1-813(b) An operator licensed under the VT Wastewater Facility Operator Certification regulations is required. Why does the rule refer to a septic tank disposal system in 1-813(a)?

The comment related to 1-813(b) is a wording change that has been made. Section 1-813 (a) relates to general requirements for monitoring and operation and it is therefore appropriate to address septic tank operations in this section.

102. 1-815(d) Under excessive slopes the IDRs restrict the applicability of such modifications to soils with percolation rates of 0-30. There is a tendency of tighter soils to slough especially when disturbed. The graphic says natural slope more than 20%, the text in this section says slopes exceeding 30%. Should these correspond?

A requirement that the design specifically address potential for slumping has been be added to the requirements. The notes and the text agree in the draft rules. In both cases they deal with the fact that some towns will use 20% and some use 30% depending on compliance with designated planning factors.

103. 1-816(e)(5)(B) There is no maximum number of doses. The IDRS set a maximum of 4 doses per day which allows aerobic activity at the sand/stone interface, where a number of small doses might not.

Language has been added to limit dosing to once every 30 minutes. Testing has been done that supports a large number of very small doses.

104. Page 77 1-812 (c)(3) change bedrock recharge areas to groundwater recharge areas within bedrock.

The language has been revised.

105. Page 77 1-812 (d) (2) At least 3 groundwater monitoring wells are required to determine the direction of groundwater travel.

The Agency agrees with this assertion.

107. 1-812 (f) Is this isolation distance upgradient or down gradient?

The isolation distance applies in either direction because it is related to movement of airborne pathogens.

108. Page 79 1-812 (h) Is 30 days storage adequate for winter and high seasonal ground conditions? The existing regulations call for 60 days**.**

The 30 day requirement is only for seasonal spray systems and is existing language.

109. Page 79 1-813 This needs strengthening; it reads as enabling legislation. It needs to make it clear that mechanical treatment plants will have routine operating, monitoring and reporting requirements, and that periodic replacements will be necessary.

Agreed. Language has been added.

110. Page 79 1-813 (b) groundwater monitors should be groundwater monitoring wells or piezometers.

The proposed language is appropriate and covers both wells and piezometers.

111. Page 80 1-816(a)(3) remove this loophole; even voluntary site modifications should be properly applied and designed.

The existing section only ensures that restrictions that are important when the initial site is limited are not required for sites that are not limited. Any modification needs to be included as part of a proper design and this section does not eliminate the need to do so.

112. Page 81 1-816(b)(5)(A) reconsider this statement. Once the design is approved for a drain, the design should optimize drainage by orientation along the groundwater contour. Just limiting the mound to two trenches doesn't really get to that idea.

Mounds are required to be built along the ground surface contour under the current and proposed rules. The Agency will only approve a drain that is

oriented in a manner that the Agency believes will result in proper performance.

113. Page 82 1-816(c) The reference to USDA Soil Conservation Service is antiquated.

This has been corrected to the USDA Natural Resources Conservation Service.

114. Page 83 1-816(d) Something is wrong with the use of all the "alter" terms in this section.

The language has been clarified in the opening statement and the indexing of the paragraph corrected from numbers to letters.

115. Page 90 1-816(e)(5)(D) Remove "untreated building paper"

This has been done.

116. Page 90 1-816 (e) (5) (C) Why has the maximum difference been changed from 15% to 10%? This will be hard to achieve especially on sloping sites where trenches are stepped down the slope. Keep the 15%. 5 times the pipe volume may be hard to achieve with 4 doses per day.

The 10% maximum difference in discharge between orifices is within any one trench or bed. The 10% difference between overall discharge to different trenches and beds should be manageable with hole spacing and diameter variations. The ability to use smaller orifices should offset the increased requirements for dosing and cycle times.

117. Appendix 5-A Mound setbacks need to match requirements under Mound Design criteria.

Agreed, though there are no apparent conflicts in the current draft.

118. Small orifices may be clogged by a biological growth. For such piping leachfield laterals should be equipped with at grade access for jetting or with a high residual pressure.

Language has been added related to the cleaning.

119. Page 81 1-816 (b) (5) (A) Limiting a system to two trenches with a SHGW table will require longer systems that may not fit on the site. Three trenches have been allowed since 1986. Why is this being changed? I recommend that the existing regulations be kept the same for this condition.

The 1996 rules limited this to two trenches.

120. Page 82 1-816 (c)(1) Present regulations allow draining to lower the GW table from 18 to 24 inches for systems up to 600 gpd without testing. This will add delays and costs for these small systems. Maintain the existing regulation.

The proposed regulations do not change the existing requirement. A reference line has been added to reflect this requirement.

121. 1-816(e)(4)(C) Why would a filtrate effluent require a foot less vertical separation; the point is pathogen removal.

This is an existing design factor in the 1996 rules. Filtrate disposal systems require pretreatment of the effluent prior to disposal and some reduction in pathogens occurs in the treatment systems. Filtrate disposal systems require pressure distribution and the more even distribution allows for better treatment than in a gravity flow system.

122. Page 89 1-816(e)(5)(B) A maximum number of doses need to be set in the rule so not to promote anaerobic conditions by too frequent dosing. There may not be adequate volume in doses to insure equalization.

Language has been added to the reference section to limit dosing to once in 30 minutes. Systems with very small doses, such as in some innovative systems may function well with more frequent dosing.

123. Page 81 1-816 (e) (5) (D) Orifice shield will add additional cost without any significant improvement in system performance. (2)

There is some evidence that installing the holes up results in less clogging of the system and the shields are relatively inexpensive.

124. Page 83 1-816 (4)(D) If a septic system is going in the static water level of the well should be required.

Shallow ground water levels are not really static. They fluctuate depending on the time of year and level of precipitation. Any monitoring is related to what is happening in the proposed leachfield area and is regulated under the ground water monitoring section, 1-806.

125. Page 90 1-816(e)(5)(D) Match filter fabric requirements throughout mounds and at grade systems. (2)This appears to be a new orifice design. With crushed stone does it really matter if the orifices are up or down, and what does the shield really do?

The filter fabric requirement has been revised to be standard for all systems. The hole orientation is related to operation with a belief that less clogging

occurs with the holes up. The shield prevents stone from obstructing the orifice.

126. 1-816(e)(5)(F) Should storage volume for pump stations be required to give some cushion in the event of pump failure, as is required for sand filters?

Language related to pump storage is included in the design guidelines 1-A-04.

127. 1-816(f) last sentence-does this imply compaction of the fill?

The fill should not be compacted unless the designer specifies it.

128. Page 92 1-816 (g)(1) there is no Figure 8.1

It has been corrected to Figure 8.3.

129. 1-816(g)(4)(B) In the Design Flow Analysis memorandum 0.75 gpd/sf is mentioned as the maximum application rate, so why 1.0 for at grade systems?

Because there was little change in the design flow for an individual household the loading rate was not revised.

130. 1-816(g)(4)(D) The meaning of the statement concerning individual infiltration areas and separation is not very clear. Should the word figure be capitalized?

This has been revised to clarify the statement. The labels on figures have been standardized.

131. 1-816(g)(4)(E) The specification for cover material uses soil descriptions, but these rules do not require designers to understand such descriptions.

The existing rules use similar language that requires some distinction; however, the required information is far less than what would be required for a determination of a soil's capacity to support a wastewater disposal system.

132. Page 93 1-816(g)(4)(K) This entire section is confusingly worded. Does the exception at the end refer to the need for a hydrogeological study specific to the design, for considering the "system's" together, or for the 25' separation distance?

The language states that systems less than 25' apart are considered together for the purposes of determining whether a dual-alternating system is required, unless a hydrogeological study shows that the systems are hydraulically independent. The wording has been revised to clarify the section.

133. Page 98 1-816(g)(4)(L) Can these isolation distances be reduced based on the hydrogeologic study?

No. The primary and replacement systems do not operate at the same time so hydrogeological capacity is not an issue. This isolation distance is related to preserving the dispersal area around, and particularly downhill of the system.

134. Page 95 1-816(g)(5) There is no section O

This has been corrected

135. 1-816(g)((5)(H) The upper cover specification is inconsistent with that in 1-816(g)(4)(E) and in the mound specification in 1-816(e)(6)(F)

They have been revised to be consistent.

136. Page 106 subsection (6) should be (4)

This has been corrected

137. 1-817 (a)(2)(A) The word soil does not seem appropriate in the term "sand filter soil media.

This section was specifically constructed based on soil media. The section also allows for other media to be considered and approved. This is existing language.

138. 1-817(a)(5)(B) Why must the access diameter be the same as the vault? What does "from an elevation equal to that of a gravity discharging sand filter" mean? This entire subsection looks like a proprietary specification.

The section has been rewritten to better clarify the requirements that the access allow for equipment service and replacement. This language requires that the pump vault be designed so that the water level in the sand filter does not rise above the underdrain system because that could reduce the treatment occurring in the sand filter. This is existing language in the 1996 rules and does not appear to be proprietary.

139. 1-817 (c)(2)(B) 1-817 (a)(2)(A) The word soil does not seem appropriate in the term "sand filter soil media".

This section was based on using soil as the media. The section also allows for other media to be considered and approved. This is existing language.

140. 1-817(c)(2)(c)(ii) What are the measurements units for BOD5? What are the overall dimensions for this equation?

The measurement units for BOD5 is mg/l. Both the 1150 and the BOD components are in mg/l and the units cancel. The 1150 number is the loading rate of 5 gallons/sgft/day allowed in the recirculating sand filter times the 230 mg/l of expected BOD strength for low strength wastewater as given in section 1-817 (a)(1).

141. 1-817(c)(3)(A) Should there be specifications for orifice diameter and splash/dispersion shields?

This has been done.

142. 1-817(c)(6)(B) Are the specified numbers absolutes? Would ranges be more appropriate?

The numbers were intended as absolutes for the prescriptive design. Subsection (F) allows for consideration of other parameters.

143. 1-818(d)(2) Does this statement need a slope component?

We are unable to determine what this comment refers to.

144. 1-818(d)(2)(A) What is the specification for the fill?

Because this would be a mound type disposal system it would be the specific fill for mound systems.

145. 1-818(d)(2)(B) Define the boundaries of the filtrate disposal system.

The use of the term "toe" seems adequate.

146. 1-819 Reference subsection 1-820 for design standards for holding tanks.

This has been done.

147. 1-820 Recognize marine holding tanks by referencing 1-819

This has been done.

148. 1-820(c)(1) What is meant by "expected flow"? Design, metered, guessed?

It means design or metered flows that may have been adjusted to best reflect the expectations for the particular project. Because this is not an approval for new construction except in very limited circumstances, it makes sense to

use a number that is closer to the average or expected flow from the building with a permit condition to require expansion of the holding tank if actual use requires it. For the limited new construction situations, design flows will normally be used unless there is strong evidence to the contrary.

149. There are referral errors in sections: 812(g), 812(I), 815, 816(g)(4)(H), 817(a)(sic) p 42, 817(c), 817(d)

The errors have been corrected.

150. Page 111 1-818(d)(1) there is no section 1-818(f) as mentioned here.

The reference should be 1-816 (f)

151. Page 121 k=0.534x10-6; k=0.371x 10-3

The typos have been corrected.

152. Minor repair should be included in all sections not just in the subdivisions section.

We agree. This has been done.

153. Maintenance and management should be required just as the materials are specified. (2) Adequate maintenance could be ensured by rural wastewater utilities. Pumps should be inspected annually.

The Agency believes that for most systems an education and training approach is appropriate while more complex systems need an assurance that maintenance will be done. Towns have several options for organizing maintenance districts, including rural utilities, if they wish to do so.

154. Check the percolation rate to loading rate to assure that the maximum 1.5 is maintained.

We have checked this item.

155. The maximum loading rate still exceeds the 1.0 gpd recommended by the Committee as prudent.

The overall loading rate issue was not resolved. The proposed rules continue with the existing approach. This issue needs to be reviewed again in the next revision of the rules.

156. What is the limitation on holding tanks? Allow holding tanks with the State having access, inspection, and pumping rights at the homeowners expense.

The Agency is not willing to take on the role of becoming a maintenance utility without additional staffing and funding which is not likely to occur. Even if the staffing and funding was available, it is not clear that this would be a good choice for use of state resources.

157. Can pre-treated effluent be discharged to mound systems to use minimum site conditions?

Yes it can.

158. Have you changed the sewer line infiltration standard? The Appendix A limits on infiltration allowances should be in guidance. You should be able to create prescriptive standards for different pipe materials.

The guidelines have not been revised except to make it clear that a particular situation might justify a lower design flow. The recent standards from the New England Interstate Water Pollution Control Commission (TR-16) and the Ten States Standards (1998 version) still retain the existing standard. This is another topic that could be reviewed in a future rule revision. Because this is a guideline, the topic could also be dealt with in a guidance document from the Agency if practicable prior to the next rule revision