

**ANNUAL REPORT OF THE  
TECHNICAL ADVISORY COMMITTEE  
FOR 2013**

Established by Act 133 of the 2001 Adjourned Session

REGARDING OVERSIGHT AND IMPLEMENTATION OF THE

**WASTEWATER SYSTEM AND POTABLE WATER SUPPLY  
RULES**

**January 15, 2014**

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## **Annual Report of the Technical Advisory Committee**

### **Purpose:**

The Technical Advisory Committee was created by Act 133 of the 2001 Adjourned Session of the Legislature and incorporated into the Vermont Statutes as Chapter 64, Section 1978(e)(2) which appears as:

*The secretary shall seek advice from a technical advisory committee in carrying out the mandate of this subdivision. The governor shall appoint the members of the committee and ensure that there is at least one representative of the following entities on the committee: professional engineers, site technicians, well drillers, hydrogeologists, town officials with jurisdiction over potable water supplies and wastewater systems, water quality specialists, technical staff of the agency of natural resources, and technical staff of the department of health. Administrative support for the advisory committee shall be provided by the secretary of the agency of natural resources.*

Section 1978(e)(3) required the preparation and submission to the legislature of an annual report in several specific categories related to the adoption and revision of rules, approval of innovative alternative systems, and a summary of permits issued and denied during the year. The requirement to submit an annual report was eliminated by legislative action during the 2012 session; however the Technical Advisory Committee decided that a summary of their work should be prepared. This report is a summary of the work by the Technical Advisory Committee and the recommendations made by the Committee during 2013.

### **Technical Advisory Committee Members:**

Members of the Technical Advisory Committee are recommended by the Secretary of the Agency of Natural Resources and appointed by the Governor. The TAC added Gunner McCain as a new member during 2013. The full list of Technical Advisory Committee Members, and their contact information, is attached as Appendix A.

### **Executive Committee and Subcommittees:**

The TAC has an Executive Committee with three members and four alternates that are available to answer questions or provide testimony to the Agency or the Legislature. There were also 5 standing subcommittees during 2013. The list of Subcommittees and members is included in Appendix A. In addition special subcommittees were appointed to address a specific topic such as review of a particular advanced treatment system. The members of these subcommittees are included in the monthly minutes of the Technical Advisory Committee which are available

online at <http://wastewater.vt.gov/wastewaterdisposaltac.htm> under the heading “Technical Advisory Committee.”

### **Meetings:**

Twelve meetings were held by the TAC in 2013, on January 8, January 25, February 12, April 16, May 21, June 18, July 16, August 27, September 10, October 15, November 12, and December 11. A meeting scheduled for March 19<sup>th</sup> was cancelled due to bad weather.

The meetings were held at the Department of Liquor Control Conference Room in Montpelier and at the Winooski Conference Room and the National Life Building in Montpelier. Meeting attendance ranged from 10 to 19 with an average attendance of 16 people.

The full minutes of each meeting are available on-line at <http://wastewater.vt.gov/wastewaterdisposaltac.htm> under the heading “Technical Advisory Committee.”

### **Activities of the Technical Advisory Committee (TAC):**

- 1. General Comments:** The Technical Advisory Committee and the Department of Environmental Conservation (DEC) were both very active during 2013. The DEC worked on revisions to the Underground Injection Control (UIC) Rules, the Water Supply Rules, and the Wastewater System and Potable Water Supply Rules. Drafts of these rules have been reviewed at most of the TAC meetings during 2013 with many substantive comments that have been included in the ongoing revisions. DEC expects to move into the formal rulemaking process for each of these rule revisions during 2014.
- 2. Underground Injection Control (UIC) Rules:** The DEC and the TAC devoted an extensive amount of time to the UIC Rules during 2012 and continued to do so during 2013. The topic was discussed in detail at both of the January meetings and at the February, April, May, and September meetings. The existing UIC Rules and the supporting Vermont Statutes (10 V.S.A. §1263) are very broadly written and cover almost any situation where any material is placed into any hole in the ground, unless that activity is subject to another permit issued by the Agency of Natural Resources. Examples include drywells for filter backwash from household water treatment systems, small stormwater infiltration systems, water from gravel washing operations, and water from stone cutting and polishing operations.

The DEC proposes to create conditional exemptions for the majority of discharges that have been determined to present a low risk to the environment. The conditional exemptions operate by allowing discharges without a permit, when the discharges occur as described in the specific conditional exemption for that discharge. The specific conditional exempt may limit the amount of the discharge and/or prohibit discharge of

any contaminants that could present more than a minimal risk. The rules also allow for the Secretary of the Agency of Natural Resources to, at any time when there is evidence that a problem may exist, review a particular operation and require that the discharge cease or become subject to a permit which would impose monitoring and operational requirements. The advantages of a conditional exemption are that the State of Vermont still retains control over what can be discharged into the ground without requiring a landowner to obtain an Underground Injection Control Permit. Strict application of the current UIC Rules would require hundreds or maybe thousands of permits each year that would be expensive to apply for and which by federal law must be renewed at least every five years. This proposed approach will result in the vast majority of injection wells operated in Vermont being subject to a conditional exemption. The TAC supports this approach.

The TAC does continue to have concerns about how the groundwater public trust statute will be implemented relative to the UIC Rules. The public trust concept is new for groundwater and the statutory language does not give detailed instruction on its application. The issue has been discussed at several meetings and there are concerns about getting this resolved as it is a necessary part of revising the UIC Rules. The Agency of Natural Resources is working with a special committee to look at the public trust issue as it applies to the many programs across the Agency. The Agency hopes to develop a single standard that can be applied to all programs, rather than embedding requirements in individual programs, so that as understanding of the law develops it will be automatically applied to all programs without requiring a rule revision process.

Several members of the TAC also expressed concerns about very broad access to private property the Agency proposes to give itself as described in section 11-303(c) of the August 26, 2013 draft. This section of the rules was only recently written and not discussed by the TAC until the September meeting where it was observed that this type of access usually requires either the landowner's permission or a court order.

### **3. Potable Water Supply Rules:**

General Comments:

The DEC is proposing to update the Water Supply Rules in a way that allows for the requirements for Potable Water Systems to be a stand-alone section. This section would then be moved from the Water Supply Rules into the Wastewater System and Potable Water Supply Rules. This will allow all of the rules that are administered through the Regional Offices to be in one set of rules and hopefully a little more user friendly.

The TAC discussed the Water Supply Rules for potable water systems at the January, May, June, July, August, October, November, and December meetings. The review was comprehensive and included review of isolation distances, methods for reduction in separation between wells and sources of contamination, changes in well drilling methods,

and water treatment systems. The committee and DEC worked hard to ensure that each section of the rules is clearly stated, that the requirements in any guidance documents that have been adopted are included in the revised rules, and that the rules flow in a logical progression from site selection, to testing, to construction, and finally to operation.

There is a current statutory exemption (10 V.S.A. § 1974) from the Wastewater System and Potable Water Supply Rules for water treatment systems that are related to Potable Water Systems. The exemption is currently limited to systems that treat for hardness, secondary standards, bacteria or other pathogens, as well as radon, lead, and arsenic. The TAC supports expanding the exemption to include fluoride, manganese, radium, uranium, nitrate, and nitrite as these are all naturally occurring contaminants found in Vermont which may exceed drinking water standards or recommendations. If the drinking water is not treated, all of the contaminants will be discharged back into the ground through the household waste water disposal system. If the groundwater is treated, some of the contaminants will be returned to the ground as part of the water treatment system filter backwash. The TAC believes that the risk of returning these naturally occurring contaminants to the ground presents a low risk to public health and the environment. Considering the significant health benefits associated with treating the water for these contaminants, the TAC supports an expanded exemption in the Water Supply Rules as well as a conditional exemption for the disposal system in the UIC Rules.

The TAC also discussed well grouting issues. A majority of the TAC does not support a requirement that all wells be grouted in the sense that cement or bentonite must be placed around the outside of the well casing to prevent water movement up or down the outside of the casing. Down-well camera views of existing Vermont wells find that the standard drilling methods with a drive shoe at the base of the casing seated into competent bedrock and the filling of any void space around the casing with the drill cuttings routinely provides a good seal against unwanted flow of groundwater into the well bore. Certain site specific situations involving a reduction in isolation distance or presence of groundwater contamination would still require grouting of the well bore.

The TAC discussed regulation of naturally overflowing wells. A significant percentage of wells drilled in Vermont overflow the top of the well casing. In most cases the overflow is a small flow of less than a few gallons per minute and in some cases the overflow is only seasonal. In a few cases the overflow is large, 100 gallons per minute or more. This amount of overflow can cause erosion and flooding problems for the owner and/or neighbors. The TAC also discussed the question of groundwater depletion from overflowing wells. It is possible for all overflowing wells to be controlled to eliminate any overflow; however, the cost of doing so depends on many geologic factors as well as how the initial well drilling is done. There are well construction methods that when applied at the start of the drilling process can make the process of restricting the well easier and less costly but these methods are more expensive to begin with. After considerable discussion the TAC recommends:

- A. that wells should be controlled to prevent discharges of more than 10 gallons per minute, and
- B. because the decision to apply special well drilling methods to enable control of the overflow is very site specific it should be left to the well driller and the well owner to decide. The well driller should inform the well owner about their responsibility to control the well flow and the options and the associated costs they have prior to commencing drilling.

There is a public trust question related to overflowing wells. Depending on how the question is answered, there may be other regulations that allow more or less, or possibly no, overflow from drilled wells.

The TAC continued the discussion from last year of when it might be acceptable to reduce the prescriptive isolation distances between wells and sources of contamination, particularly between wells and leachfields. It was decided that when there is a soil layer with slow vertical permeability, with a thickness of at least 8' that extends over the full distance between the well and the leachfield, the isolation distance may be reduced to a minimum of 75' for a new source. In addition to situations where the existence of the slowly permeable soil layer can be determined by digging test pits, the TAC also supports this isolation reduction when a well is drilled through a slowly permeable soil layer that is at least 8' thick and the water level in the well under pumping conditions is at least 8' above the boundary between the source aquifer and the bottom of the slowly permeable soil layer. The TAC recommended that the wells for each situation be grouted.

#### **4. Innovative/Alternative Systems:**

The TAC discussed I/A issues at eight of the twelve meetings and covered the following topics:

- A. The DEC provided updates of ongoing application reviews for both advanced treatment systems and dispersal technologies. A TAC subcommittee was formed to review four advanced treatment systems (Delta Ecopod, Anua Platinum, Jet Inc., and Bluewater ATU). The subcommittee recommended that DEC approve the Jet system and identified issues that DEC included in their review letters for the other systems. Another TAC subcommittee reviewed the Anua Puraflo system that would discharge to a stone bed while a third subcommittee reviewed the Oakson Inc. system that would discharge septic tank effluent to their proprietary drip dispersal system. Reviews are continuing for these systems. The Cromaglass and the Aquapoint-Bioclere renewal requests have been approved. Two new versions of the Orenco Advantex System (AX-100 and AX-max) have also been approved.

In addition, the DEC received three applications in the experimental category. The first is for an evapo-transpiration (E-T) bed to serve some remote cabins at the Mount Ascutney State Park. The second is from an individual homeowner proposing a different type of gray water system. The third is the use of a Moving Bed Biological Reactor (MBBR) for use at a livestock slaughterhouse.

The DEC is also reviewing the Presby Simple Septic and the Eljen Matis alternative dispersal systems.

A full list of system approvals and renewals is available at:

<http://wastewater.vt.gov/wastewaterdisinnovativelist.htm>

- B. The TAC discussed issues related to energy use which varies greatly among systems. There was strong support for including energy use in the review process and for providing more information about energy use in the product approval to better inform designers and homeowners.

The TAC also discussed the potential use of I/A systems to renovate failed systems and/or to extend the life of marginal systems. The TAC believes that there should be some minimum standards, such as isolation to groundwater and wells, and that the systems should be permitted prior to installation. This topic will be pursued in the coming year. Associated with this discussion are questions about systems that inject chemicals and/or bacteria into the waste stream. These need to be evaluated prior to any approval for use in Vermont.

There were also general discussions about improving the process for review, approval, and ongoing monitoring of systems within the three categories (general use, pilot, experimental) of Innovative Alternative Systems.

## **5. High Strength Wastewater:**

The TAC started discussing the issue of high strength wastewater in 2012 and continued with the issue this year. The committee found that in addition to wastewaters that are high in biological oxygen demand (BOD) and total suspended solids (TSS) there are other factors that cause premature failures of wastewater disposal systems. When food wastes are involved fats, oils, and grease (FOG) are often at high levels. This is a problem of both quantity and type. Some forms of FOG are successfully removed using a grease trap approach; others pass through a grease trap and flow to the leachfield and cause its failure. Convenience stores and coffee shops have emerged as a concern because they dump large quantities of unsold coffee which has very high BOD and the associated milk/cream that is high in FOG. In addition, there are cleaning products, such as quaternary ammonia, which is an excellent cleaning and disinfection product, that also

kills the biologic activity in septic tanks and advanced treatment systems. As the committee reviewed the literature, they determined that it would be more accurate to describe the issue as problematic wastewaters rather than simply high strength wastewaters.

The committee was concerned that the current Wastewater System and Potable Water Supply Rules do not routinely require a determination if problematic wastewater is present and, if present, do not specifically require modifications to the treatment and disposal system except for operations with food preparation. A subcommittee was appointed to consider the issues and to make recommendations for possible rule revisions. However, when the committee considered the issue in detail, it became clear that it would be extremely difficult to write a rule that would identify every situation where a problematic wastewater would be found or to set standards for how to treat the wastewater. The subcommittee concluded that it would be more effective to create an informational package that would remind designers and users to examine their individual project for potentially problematic wastewaters and to design an appropriate treatment system. Some Committee members support additional requirements in the Rules as well. The DEC has worked on developing this informational package in consultation with the TAC and the results will be published soon. The DEC also co-sponsored a training workshop on “Identifying and Analyzing High Strength Wastewater” presented by two trainers from the New England Onsite Wastewater Training Center at the University of Rhode Island and administered by the Vermont Technical College. The DEC is also looking at the I/A approvals and working on some approval conditions for this equipment.

## **6. Installer Training:**

The DEC reported that an installer training program is being developed. Meetings were held in four locations around the state with 22 installers, 6 product vendors, 2 installers, and Regional Office staff in attendance. There is wide support for a training program with a recommendation from those attending the meetings that there be at least two categories; one for passive systems that do not require routine inspections and one for the advanced treatment systems that do require at least an annual inspection. The DEC is proposing this as a voluntary certification program, however there is quite a bit of support among installers for making this mandatory. The installers do not support an education or previous experience requirement in order to obtain certification but do support an examination. The TAC supports the development of an installer training program as a way to educate installers about the increasingly complex mechanical and electronic systems associated with wastewater treatment and disposal systems. The training sessions would also allow for education about siting issues such as erosion control, wetlands, stream corridors, and shorelands.

## 7. Compliance Program:

The DEC started to focus on tracking compliance with permit conditions, particularly related to installation and maintenance reports. A position was created that will work 60% of the time on Regional Office permits and 40% of the time on Water Supply permits.

The Regional Office staff and Licensed Designers were consulted about the obstacles to ensuring that the required inspections are done and that the information is available for use by the staff and the public. The main problem that was identified is the electronic data base. There are separate systems for each Regional Office and the information from the five systems must be manually collated for system wide analysis. The DEC determined that creating a unified data base is a priority. The DEC initially attempted to find out-of-the-box software or a private sector contractor to write the software. The costs and lack of assurance that the software would be maintained and could be modified as needed in the future led to a conclusion that the project should be done by DEC staff and a person has been assigned to this project. The DEC will also create a standard method of data entry that will be used by all of the Regional Offices so that data extracted from the new data base will be consistent across the Regional Office programs. The new system will also increase the amount of data that can flow from electronically filed permit applications directly into the data base. This will save time for the Regional Office Staff and eliminate errors associated with keyboarding data into the data base. The Regional Office staff are reviewing the application form with an eye to reducing the amount of information required, which will reduce the burden on Licensed Designers and applicants. Simplification of the form may also increase the electronic filing of applications which is an ongoing goal for the Regional Office programs.

The new system will be able to create lists of permits with inspection requirements and flag those that are missing information. The projects that are flagged can then be checked to see if they have been constructed, in which case the DEC will contact the landowner and work with them to complete any missing installation or maintenance reports. The system will also be able to collect information about the problems listed in maintenance reports so that problems that are common to a particular product or type of system can be identified and corrective action taken. DEC uses a voluntary compliance approach and therefore any financial penalties would be rare and only when a person refuses to take corrective action or is a repeat offender.

The best estimate is that about 3,500 systems using Innovative/Alternative technologies were approved for construction since 2002 when the Wastewater System and Potable Water Supply Rules were amended to include these technologies. It is not known how many were actually constructed.

The DEC also decided to allow ongoing maintenance inspections to be performed by service providers without requiring that the service providers also be Licensed Designers or to work under the supervision of a Licensed Designer. This change will increase the

number of people who are allowed to do the required inspections and is expected to improve compliance with the permit conditions. This change will also save costs for the landowners with I/A systems because they will not need to pay both the service provider and the licensed designer to inspect the same system.

The TAC is supportive of these changes. The TAC also supports any possible reduction of inspection requirements. One specific area is the current requirement that any system approved using the Performance Based Approach in the Wastewater System and Potable Water Supply Rules be inspected annually for at least 3 years after installation. This requirement has been in effect since the new design approach was added to the rules in 2002. The TAC believes that the track record of the last 11 years demonstrates that the Performance Based Approach is sound and does not result in an increased number of failed systems. Removing this requirement would save landowners the cost of the inspection and not result in permit violations/title defects for those who fail to do the inspections.

#### **8. H.526 Shorelands Bill:**

This bill would require the Agency of Natural Resources (ANR) to adopt by January 1, 2015 rules establishing shoreland protection standards for areas - known as protected shoreland areas - within 250 feet of the mean water level of a lake.

DEC staff met with the TAC to discuss portions of the bill, §1446 and §1447, that would affect the construction of new and replacement water and wastewater systems within the protected shoreland areas. While §1446 exempts water and wastewater systems permitted under the Wastewater System and Potable Water Supply Rules, §1447 then goes on to require that each application for a water or wastewater system located within the protected shoreland area be subject to a consultation with the Lakes and Ponds program on how to reduce any environmental impact on the shoreland area. The bill also allows for the consultation process to be formalized in a guidance document or internal Agency procedure.

TAC members expressed concerns about the delays that might be associated with this process. The committee commented that the Lakes and Ponds programs are already carrying a heavy load with some wetland determinations and permitting decisions taking up to 100 days. This could be a major issue for replacement of system failures that occur in the fall when weather conditions could preclude construction work until the following year.

TAC members also discussed the proposed guidance materials. These materials need to be clear and comprehensive so that landowners and Licensed Designers understand the requirements. In particular, there will be a need to balance the cost of construction with the goal of achieving a particular level of protection. One example that was discussed was a situation where a 100' setback to the lake is desirable and the cost of moving from 88' to the lake back to 100' from the lake adds \$20,000 to the construction cost.

DEC staff said that the bill would not make any lots unbuildable but might restrict the location where construction could occur and size of the footprint of the development.

TAC expressed an interest in being involved in the development of this bill. DEC staff suggested waiting until after the bill is passed when TAC would be consulted during the development of the general permit. TAC members suggested that this would be too late in the process as the bill would have already defined the parameters of the general permit.

## **9. Service Providers:**

The DEC started an outreach program to service providers, people who do operational inspections and maintenance work on wastewater systems. This work is particularly important for advanced treatment systems that often depend on pumps, electronic controls, and controlled biologic activity in order to operate in compliance with the Wastewater System and Potable Water Supply Rules and associated permit conditions. The DEC proposes a larger role for service providers by eliminating the requirement that annual operating inspections of advanced treatment systems be done by Licensed Designers. The TAC discussed this issue and agrees that service providers, because they specialize in oversight and operation of systems, should be well qualified to complete the annual inspection requirements.

The DEC invited all of the service providers to a meeting and most attended. The group discussed ways to standardize the reporting process with a cover sheet that would be submitted with all inspection reports. This cover sheet would flag both individual systems that are not in compliance with their permits and ongoing problems with a particular brand or type of system. Those in attendance said they would support having at least an annual meeting to share information and to improve the inspection process. Service providers will play an important role in helping improve the installation processes for new advanced treatment systems and with compliance issues.

## APPENDIX A

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**UIC Rules**

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood, Cindy Parks, John Beauchamp, Gail Center

**Wastewater Strength**

Mary Clark, Cindy Parks, Peter Boemig, Bill Zabiloski, Roger Thompson, John Akielaszek,

**Bottomless Sand Filters**

Peter Boemig, Mark Bannon, Cindy Parks, Mary Clark, Denise Johnson-Terk, Craig Heindel, Ernie Christianson

**Seasonal High Water Table Monitoring**

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox, Mary Clark

## Appendix B

### Performance Standards for Regional Office Permits

#### Performance Standards for Permits Issued During 2007-2012

	# of Permits Issued	# of Permits Meeting PEP Standards	% of Permits Meeting PEP Standards	Average DEC Days	Average Total Days	# of Permits That Exceeded Standards
2007	3746	3691	98.5%	16.8	48.2	55
2008	3435	3418	99.5%	12.3	62.1	17
2009	2691	2672	99.3%	11.8	41.6	19
2010	2621	2600	99.2%	11.9	35.2	21
2011	2289	2279	99.6%	13.2	29.8	10
2012	2472	2444	98.9%	12.7	29.6	28
2013	2449	2400	98.0%	14.0	28	49

Note: The performance standard for DEC days is 30 days for one-lot subdivisions and projects with a design flow of 500 GPD or less. The performance standard for other projects is 45 days.

#### Permit Information for 2013

Regional Office	Permits Issued to Repair Failed Wastewater Systems	Permits Issued for Innovative/Alternative Wastewater Systems	Applications Denied
<b>Barre</b>	102	109	0
<b>Essex</b>	90	104	2
<b>Rutland</b>	91	64	0
<b>St. Johnsbury</b>	48	29	2
<b>Springfield</b>	105	198	0
<b>Total</b>	436	504	4

### Licensed Designer Program Education Opportunities

	DEC Sponsored Classes	Licensed Designers Trained
<b>2010</b>	5	120
<b>2011</b>	4	110
<b>2012</b>	7	215*
<b>2013</b>	12	273*

\* DEC co-sponsored with the Vermont Technical College and the University of Rhode Island courses in “Innovative/Alternative Technologies” and “Bottomless Sand Filters” in 2012, and “Pumps and Pump Controls” and Identifying and Managing High Strength Wastewater” in 2013.