

**ANNUAL REPORT TO THE LEGISLATURE OF THE  
TECHNICAL ADVISORY COMMITTEE  
Established by Act 133 of the 2001 Adjourned Session**

**REGARDING OVERSIGHT AND IMPLEMENTATION OF THE  
WASTEWATER SYSTEM AND POTABLE WATER SUPPLY  
RULES**

**January 15, 2010**

Submitted by:



Craig Heindel

For Members of the Technical Advisory Committee:

Gail Center, VT Health Department  
David Cotton, P.E., Hydrogeologist  
Philip Dechert, Town Planner  
Brad Aldrich, P.E.  
Kim Greenwood, Water Quality Specialist  
Spencer Harris, Licensed Designer B  
Craig Heindel, Hydrogeologist  
Alan Huizenga, P.E.

Gerald Kittle, Licensed Designer B  
Lance Phelps, P.E.  
Rodney Pingree, DEC, WSD  
Stephen Revell, Hydrogeologist, LD B  
Roger Thompson, DEC, WWMD  
Jeff Williams, Well Driller  
Barbara Willis, Licensed Designer B  
Alt.: Justin Willis, Licensed Designer B

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**Purpose:** This report on implementation of the Wastewater and Potable Water Supply Rules is the annual report required by Section 1978(e)(3) of 10 V.S.A., as established by the Act, focused on the need for the technical standards to be updated immediately to include new technologies and for revisions to the technical standards to be routinely accomplished in order that the standards remain current with known and proven technologies regarding potable water supplies and wastewater systems. The Act 133 of the 2001 Adjourned Session established a Technical Advisory Committee (TAC) to advise the Vermont Agency of Natural Resources (ANR) regarding the technical standards and implementation of Act 133. This report covers the Committee work for the years 2008 and 2009 because the reporting requirement lapsed in 2007 and was re-established in 2009.

The annual reports of the TAC are required to include information on the following topics:

- Implementation of the statute and the rules adopted under the statute,
- Number and type of alternative/innovative systems approved for general use, approved for use as a pilot project, and approved for experimental use,
- Functional status of alternative/innovative systems previously approved for use as a pilot project or for experimental use,
- Number of permit applications received during the previous year,
- Number of permits issued during the previous year,
- Number of permit applications denied during the previous year, including a summary of the basis for denial.

Annual reports from previous years are available at the website listed below under “Minutes”.

## **Sixth Report of the Technical Advisory Committee to the Vermont Legislature**

**TAC Members:** Appointments to the TAC expired in January 2007. DEC requested that the TAC continue to meet on an informal advisory basis, and many previous members continued to participate in TAC meetings in 2007 through 2009. In 2009, there were 17 regular members of the TAC, and two alternates (see list on cover page, and details in Appendix D). The numbers of members and alternates were similar in 2007 and 2008.

Frank O’Brien, P.E., Wastewater Management Division, was a regular participant at TAC meetings who always offered cogent and helpful suggestions. TAC members and members of the wastewater community were saddened by Frank’s untimely death in 2007. His contributions to the profession, the state of Vermont, and the TAC will be sorely missed.

**TAC Chairperson:** The TAC agreed that it is advisory to both the ANR and the State Legislature. In that capacity, TAC members determined that the TAC should be chaired by someone who is not affiliated with ANR or the legislature. Accordingly, from 2007 until December 21, 2009 John Forcier, P.E. continued his role as elected Chair of the TAC. A new chair will be selected at the new committee meeting.

**TAC Executive Committee and Sub-Committees:** The TAC has an Executive Committee (5 members, 4 alternates), and several sub-committees whose members focus on specific topics on an as-needed basis. In 2007 – 2009, two new sub-committees were created whose members met

several times (Water Supply, and Water Treatment). Members of these sub-committees are listed in Appendix D.

**Meetings:**

- Nine meetings were held by the TAC in 2007, on January 16, February 13, March 20, April 17, May 15, June 12, October 9, November 13, and December 11, 2007.
- Nine meetings were held by the TAC in 2008, on January 8, February 19, March 18, April 15, May 20, June 27, July 22, August 19, and September 16, 2008.
- Two meetings were held in 2009, on November 24 and December 8.

Meetings were held at the state complex in Waterbury, and were generally about 3 hours in length. Meeting attendance in 2007 ranged from 8 to 12 members (generally about 10). In 2008, attendance ranged from 4 to 12 (generally about 8). In 2009, attendance ranged from 6 to 8. A variety of guests attended and participated in many meetings, including Frank O'Brien (P.E., Wastewater Management Division), Anne Whiteley (ANR attorney), Scott Stewart (Water Supply Division) and Bruce Douglas (P.E. and Hydrogeologist). DEC Commissioner Pelosi attended on June 27, 2008, and other DEC and Health Department staff members also occasionally attended. Also attending the TAC meetings were a number of professionals from related industries, including well-drillers (frequently, Jeff Williams and Claude Chevalier) and water treatment specialists (frequently, John Beauchamp and Gary Adams).

Full minutes of each meeting are contained in Appendix A, and can also be viewed on-line at <http://www.anr.state.vt.us/dec/ww/EngServ.htm#tech> under the heading Technical Advisory Committee.

**Implementation of the statute and the rules adopted under the statute:**

**TAC RECOMMENDATIONS to ANR in 2007 through 2009 regarding statutes and rules:**

The TAC made the following recommendations during the course of its meetings in 2007 through 2009. Each item is followed by the meeting dates when related discussions were held.

1. **Annual Report to Legislature:** The TAC submitted its Fifth Annual Report to the Legislature to the Legislature on January 15, 2007. In late January 2007, TAC representatives testified at the Senate and House Natural Resources Committees regarding this report. For this current report on activities for 2007 - 2009, the TAC recommended the addition of performance-time data to the summary table on WW-WS permit applications in Appendix C (12/08/09).
2. **Revisions to EPRs, Ch. 1, Wastewater System and Potable Water Supply Rules:** The TAC provided advice and recommendations to DEC at most of its meetings in the first half of 2007 regarding revisions to the rules. Major TAC recommendations included eliminating the requirement for a replacement disposal area for mound systems and for in-ground systems constructed at 150% size; revised mound-sand specifications; allowable slope increasing to 30%; reduced minimum design flow (allowing 2-bedroom single-family residence designs); and the "clean slate" concept. A member of the TAC

Executive Committee (Steve Revell, Hydrogeologist) testified in support of the rule revisions at the LCAR hearing on June 27, 2007. The revised rules were adopted, and became effective on Sept. 29, 2007. The TAC also reviewed and commented on the draft Guidance Document on Replacement of Failed Systems (10/9/07).

3. **Time-of-Sale Inspections:** The TAC offered advice and technical comments on the concept of time-of-sale inspections, including a detailed inspection checklist (1/16/07). This concept was being considered by DEC and one or more advisory bodies, but was not ultimately adopted.
4. **Revisions to Water Supply Rule (WSR):** The Water Supply sub-committee met several times throughout 2007 – 2009 to review various components of revisions to the WSR under consideration by the Water Supply Division. Technical standards for “potable water systems” (formerly called “small-scale water systems”) are contained in the WSR, although this Rule primarily focuses on public (generally larger-scale) water systems. The full TAC discussed and offered advice on some WSR revisions at several meetings (1/16/07, 5/15/07, 10/9/07, 12/11/07, 1/8/08). Sub-committee work is ongoing on Water Supply Rule revisions, and this will also be a major topic to be addressed by the TAC in 2010.  
Specifically:
  - A. The TAC supported the current isolation distances from wells, without revisions. If reductions in isolation distances are proposed in the future, the TAC recommends thorough consideration by TAC (12/11/07, 1/8/08).
  - B. The TAC discussed the current regulations which allow well isolation zones to extend off the property on which the well is located. TAC consensus supported this current concept (12/11/07, 1/8/08).
  - C. The TAC does not support a policy change by DEC which allows multiple water sources on the same property in order to avoid classification as a Public Water System (8/19/08).
5. **Well Drillers as Special Class of Licensed Designers:** The TAC provided advice on this topic. It supports the concept of well-drillers being a special class of Licensed Designers for the limited purpose of designing replacement drilled wells for failed water supply systems, and recommends DEC provide opportunities for adequate training for well-drillers (3/20/07, 4/17/07). Ultimately, statutory and regulatory exemptions from permitting were instituted for the replacement of single-family wells, so there was no need to designate well-drillers as a special class of Licensed Designers.
6. **Change in statutory definition of “failed wastewater system and water supply”:** The TAC provided advice to DEC in 2007, and ultimately supported the adopted change in this definition (2/13/07, 3/20/07).
7. **Design and Permitting of Water Treatment Systems for Single-Family Residences with own well, and other non-Public water systems (“Potable” Water Systems):** The TAC spent a great deal of time and energy on this topic from mid-2007 through the end of

2009, including creating a new sub-committee (Water Treatment). TAC agreed with DEC that a change in the current statute and rules is necessary, because beginning with universal permit coverage as of July 1, 2007, the current language requires that all new water treatment systems must be designed and permitted, and only P.E.s are currently allowed to design or apply for permits, including for single-family residences on their own wells, and non-public water systems (called “potable water systems” in the current Wastewater System and Potable Water Supply Rules). Most members of the TAC and DEC management agree that non-P.E.s should be able to design water treatment systems to treat some classes of water quality parameters in certain types of non-public water systems. The TAC conducted detailed review and discussions at many meetings on this topic, including inviting participation from other professionals in this area (well drillers, water treatment specialists who are not P.E.s, engineers) (in 2007: 4/17, 5/15, 6/12, 11/13; in 2008: 2/19, 3,18, 4/15, 5/20, 6/27, 7/22, 8/19, 9/16; in 2009: 11/24, 12/8, and several email exchanges between DEC and TAC members in mid-December). TAC’s recommendations as of 12/08/09 are listed below, as modified by DEC in response to mid-December 2009 email exchanges. These recommendations represent the majority opinion of TAC members; unanimous concurrence by all TAC members did not occur on the recommendations listed below, except regarding hardness:

No permit from DEC should be needed to install or operate a water treatment system for any non-public water system, including a single-family residence on its own well, whose design purpose is to treat for:

- A. hardness;
- B. parameters with secondary drinking water standards unless the parameter also has a primary standard;
- C. pathogens, provided the system treats all of the water used for drinking, washing, bathing, the preparation of food, and laundering;
- D. Arsenic, Radon, or Lead; or
- E. As part of a response action overseen by the Secretary due to contamination or the threat of contamination of any non-public water system by a release or threat of a release of a hazardous material or any other source of contamination.

TAC members supporting the above recommendations also unanimously and strongly supported the concurrent recommendation that the above-listed permit exemptions be accompanied by substantial and readily available educational and information materials, workshops, and advice from state agencies by telephone, walk-in and the internet.

Discussion also occurred at several meetings regarding whether water treatment systems whose purpose is to treat parameters that have a primary drinking water standard should be able to be installed or operated by non-P.E.s. Opinions of TAC members were divided on this topic, with no clear consensus reached.

8. **Water Quality Testing Requirement for non-public wells at various points:** The TAC discussed and provided advice on whether there should be requirements for water quality testing of all wells including single-family residential and non-public wells at various points, such as 1) immediately after drilling, deepening or hydro-fracturing; and/or 2) at time of sale of the property or building served by the well (6/12/07, 9/16/08, 11/24/09).

There is a general consensus among many TAC members that some sort of this type of testing requirement is appropriate, although there are number of technical and regulatory complications with such a requirement.

9. **Licensed Designer Training:** The TAC recommended that training opportunities for Licensed Designers be better coordinated with other organizations offering similar training, such as ACEC (6/12/07).
10. **Innovative or Alternative Technologies:** No proposals for review or adoption of Innovative or Alternative Technologies were brought by DEC to the TAC in 2007 – 2009.
11. **Participation in TAC:** The TAC noted (12/8/09) that participation as of January 2007 is voluntary (not appointed by ANR, the legislature or Governor’s office, as has been the case in the past), so we recommended that the previous distinction between “members” and “guests” is no longer appropriate. TAC members encouraged the pursuit and active participation in TAC by more P.E.s.

Appendix A  
**APPROVED MINUTES FOR TECHNICAL ADVISORY COMMITTEE MEETINGS  
(2007, 2008, 2009)**

Approved Minutes of the Technical Advisory Committee Meeting  
January 16, 2007

**Members present:** Roger Thompson                      Kim Greenwood  
                         Jeff Williams                                      Steve Revell  
                         John Forcier    Craig Heindel  
                         Barb Willis    Rodney Pingree  
                         Phil Dechert    Bernie Chenette

**Others present:** Frank O'Brien

**Scheduled meetings:**

February 13, 2007	1-4 PM	Hazen's Notch Room
March 20, 2007	1-4 PM	Appalachian Gap Room

**Review of agenda**

Added a topic for well driller's training. Requested that the two topics lists be synchronized.

**Review of minutes**

The draft minutes of the December 19, 2006 meeting were circulated by e-mail and with no comments the minutes were included in the annual report as final.

**March meeting rescheduled**

It was decided to reschedule the meeting that had been set for March 13, 2007. The new date is March 20, 2007. Roger will arrange for the room and notify people.

**Well Driller's Training**

It was decided to hold the training on March 12<sup>th</sup> and March 19<sup>th</sup>. The sessions will last about three hours and are scheduled for the morning. Roger will find rooms. Rodney and Roger will prepare and outline and some handouts for use. Anne will be working on some language for the well driller's authority.

**Time of sale inspections**

At the moment, it appears that the Department is not supporting making the time of sale inspection mandatory.



## Appendix A

Treatment of water supplies, and the disposal of the resultant waste material are significant issues. If all water systems must be tested, a significant number will be found with levels of contamination exceeding drinking water standards. The obvious choice may be to install a treatment system, but if there will be a filter backwash it must be disposed of in compliance with the rules. Radionuclide treatment may be a significant problem, though Craig noted that he had recently read about a treatment process that did not have a backwash component. Arsenic will normally be treated with cartridge type filters which can usually be disposed of in landfills.

There have been extensive meetings with an ad hoc group of attorneys, bankers, realtors, and engineers over what questions would need to be answered for a time of sale inspection that would satisfy all parties. The issues are complicated because different parties have particular interests and addressing all of the issues would require a costly site inspection. The Department approach would be to deal only with the minimum needed to determine that the water and wastewater systems are not failed at the time of sale. Any determination about whether the system will be suitable for the prospective purchaser would be something arranged between the parties involved in the particular sale.

The time of sale inspection need not be linked to clean slate. Each topic can stand alone from a statutory or rule basis.

John reviewed the clean slate concepts. There would be a specific date, maybe January 1, 2007 and everything in existence as of the date would be considered legitimate. Any failed system or supply, or any alterations that are a permit trigger after the clean slate date would require a permit. This has the potential of greatly reducing the effort by the Agency, and the private sector, related to record searches at the time of sale. Universal jurisdiction would ensure that any water or wastewater systems constructed in violation of the rules could not continue to be used if the systems fail.

### **Technical review checklist**

Roger reviewed how this process is expected to work. The list would provide consistent reviews, regardless of who does them. It would also serve as a guide for designers.

Craig suggested several changes. Mounds should have a plan reference to a specified distance above ground surface instead of an absolute elevation. The same concept should be applied to pump stations with floats a specified distance above the pump chamber floor. Some of the conditions are not clear as to whether issues related to advanced treatment systems apply to both primary and replacement systems. Specifications are needed for the water supply testing.

### **Water Supply Rules**

Rodney said that Scott Stewart has continued to work on updating the Water Supply Rules, and is in particular trying to create separate sections for each class of supply with all of the information for that class contained within that section. This would allow for separation of the non-public supplies from the public supplies if it was decided to add the water supply requirements to the Wastewater System and Potable Water Supply Rules. Scott is also developing guidance for using the variance process that would indicate the order in which isolation distances should be reduced if full compliance cannot be obtained. Scott will attend the February 13<sup>th</sup> TAC meeting.

## Appendix A

Steve noted that designers could benefit from education by the well drillers, and asked about a “best fix” guidance.

Rodney said he wanted to address abandoned wells in the rules. Roger noted that if a person needing a regional office permit proposed to abandon a well, the permit would require compliance with the Water Supply Rules. This does not happen often as the well owner claims intent to use the well for irrigation or standby.

Jeff noted that the problem with overflowing wells can be dealt with if the well driller is prepared for it and takes extra steps when drilling. It is difficult to deal with if the well is drilled with standard practices and a high pressure aquifer is found.

John and Rodney talked briefly about consecutive water systems. These are distribution systems, such as might be found within a large subdivision, that get their water from a public water system. There are many reasons to eliminate this approach to the extent possible, including confusion over which party is responsible and having sufficient resources to maintain the system.

Kim noted that since testimony was taken by the Groundwater Committee, an interim report has been filed. Kim will circulate the report to TAC members. Kim noted there is support for a statewide effort to map groundwater aquifers.

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

1. Revisions to mound sand specification
2. Lake water systems

## Appendix A

Topics list - items not ready for drafting for inclusion in rule revisions

1. Drip disposal
2. Changing the 20% slope restriction to 30%
3. Replacing perc test with soil identification approach
4. Defining when effluent is no longer wastewater
5. Disinfection
6. Colorado Rule – reduction in isolation distance to wells based on construction methods
7. Certification and audit approach to permitting
8. Field change policy
9. Revise existing desktop hydro chart
10. Conversion of use policy, including grandfathered flows
11. Revise design flows
12. Increased loading rate
13. Wells shields across property lines
14. Whether less than 12” of sand should be allowed under mound systems

### **Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### **Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller’s knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Legislative field trip – Phil Dechert, Gerry Kittle, Dave Cotton, Roger Thompson

Lake water – Alan Huizenga, Gail Center, Rodney Pingree, Lance Phelps

Surfacing systems – Craig Heindel, Steve Revell, Frank O’Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Appendix A  
Approved Minutes of the Technical Advisory Committee Meeting  
February 13, 2007

**Members present:** Roger Thompson                      Rodney Pingree  
                                 Craig Heindel                      Kim Greenwood  
                                 Gail Center                      Jeff Williams  
                                 Spencer Harris                      Gerry Kittle                      Steve  
Revell                      Phil Dechert  
                                 John Forcier

**Others present:** Allison Lowry                      Scott Stewart  
                                 Frank O'Brien                      Bruce Douglas                      Anne  
Whiteley

**Scheduled meetings:**

March 20, 2007              1-4 PM              Appalachian Gap Room

**Review of agenda**

Added a topic for update on rule revisions.

**Review of minutes**

The minutes of the January 16, 2007 were reviewed and accepted. Steve suggested removing items on the discussion list that have are no longer under consideration and to consider whether others could be deleted.

**Anne reviewed the following legislative bills:**

**h.303** This bill includes a change in the definition of failed system and supply, a change that is supported by the Agency. Rodney asked about the deletion of the reference to inadequate quantity of water and Anne will explore adding something on this topic, maybe a determination made by the Agency and posting on the website. Craig and Spencer suggested that regulations should be less comprehensive on the inadequate water supply for individual single family homes where only the owner is affected. There was TAC consensus that some language about water quantity should be added to the proposed statutory language. Steve asked about the definition of structure and Anne mentioned the definition currently in the Rules. Steve asked if a surcharged septic tank, which is an indication of a problem, was a failure and Anne stated that it would not be under the proposed language. Gail mentioned that it would be good to indicate water tests with levels that are equal to or exceeding the specified standard are considered to be failed.

The exemptions are revised with most replaced by “clean slate.” The bedroom exemptions are removed. Primitive camps remain as an exemption. Enforcement language is revised to allow enforcement

## Appendix A

for a bad design, even if not constructed.

**h.296** Definitions of failed supply is the same as h.303. Failed system includes language that a system is not failed unless it is inspected using specific process that includes a dye test in all cases. Anne said this was drafted as “place holder” language and would be revised. Sec 3, requiring the Secretary to do inspections and determine compliance is unacceptable to the Agency. Sec 5 tries to push back the date for jurisdiction, but as drafted would not cover all of the issues. This is not supported by the Agency at this time.

Spencer commented that it is not fair to landowners to not have rules in place prior to July 1, 2007, so that people can plan. There should be a period after adoption for people to plan for the changes.

Sec 6 proposes allowing new subdivisions that have sewage capacity for only one bedroom while the proposed rules require capacity for two bedrooms. The bill requires an update of the design flows. The bill is thought to propose that when a composting toilet is proposed the leachfield may be designed without room for expansion if a person wanted to convert to conventional toilets and calls for re-examination of the need for replacement areas. The proposed rules will reduce, but not eliminate, the replacement area requirement. The bill assigns the funding program to the Agency with a \$1,000,000 appropriation.

Craig reviewed his presentation to the House Fish, Wildlife, and Water Resources Committee about the TAC work. He noted that the committee was starting to understand that there is no “magic box” and that major changes in statute that would be needed in order to allow surfacing systems.

**Designer licensing** Anne reviewed the proposal for a Class C license for well drillers that would allow them to deal with replacement wells for existing single family residences on their own individual lot.

**Water Supply Rules** - Scott Stewart reviewed his work on updating the rules. He recently met with some well drillers to update the construction standards. He is proposing to organize the new rules around 3 categories: wells in bedrock, wells in unconsolidated materials, and springs and infiltration galleries. Each section will be self-contained with all of the information needed for that category in one place making it easy to update the rules one section at a time. The new rules will increase the attention to overflowing wells, but do not prohibit them.

## Appendix A

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

1. Revisions to mound sand specification
2. Lake water systems

Topics list - items not ready for drafting for inclusion in rule revisions

15. Drip disposal
16. Changing the 20% slope restriction to 30%
17. Replacing perc test with soil identification approach
18. Defining when effluent is no longer wastewater
19. Disinfection
20. Colorado Rule – reduction in isolation distance to wells based on construction methods
21. Certification and audit approach to permitting
22. Field change policy
23. Revise existing desktop hydro chart
24. Conversion of use policy, including grandfathered flows
25. Revise design flows
26. Increased loading rate
27. Wells shields across property lines
28. Whether less than 12” of sand should be allowed under mound systems

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson

Appendix A

Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

**Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller’s knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Surfacing systems – Craig Heindel, Steve Revell, Frank O’Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Approved Minutes of the Technical Advisory Committee Meeting  
March 20, 2007

<b>Members present:</b>	Roger Thompson	Rodney Pingree
	Gail Center	Jeff Williams
	Kim Greenwood	Craig Heindel
	Barb Willis	Steve Revell
	Spencer Harris	Phil Dechert
	John Forcier	Allison Lowry

<b>Others present:</b>	Scott Stewart	Frank O’Brien
	Anne Whiteley	

**Scheduled meetings:**

April 17, 2007	1-4 PM	Room 100 Stanley Hall
May 15, 2007	1-4 PM	Room 100 Stanley Hall
June 12, 2007	1-4 PM	Room 100 Stanley Hall

**Review of agenda**

Added a topic for update on change in well driller licensing.

**Review of minutes**

## Appendix A

The minutes of the February 13, 2007 were reviewed and accepted.

### **Well Driller's License**

Jeff gave an update on the well driller training that was given on March 12<sup>th</sup> and March 19<sup>th</sup>. Jeff thought the training had gone well, with comments following the expected lines. There are concerns about the potential delay of the new well driller's license rules beyond July 1<sup>st</sup> as that would create a period of time when people would have to hire an engineer or site tech. There are concerns about the certification language and the well drillers want to be sure they are responsible only for the water installation. And there are concerns about delays in issuing permits in emergency situations.

Roger outlined the proposed rule language and stated that the design and installation certifications could be limited to just water systems.

Anne noted that well drillers cannot rely solely on the homeowner's information for items such as the location of existing leachfields. Roger noted that he and Anne would be working on new language for this topic which would be sent to the well drillers.

Rodney asked about funding. Anne said that ACCD would provide at least one million dollars and be responsible for the process of getting money to people. Gail asked if this is a one time contribution or is expected in the future. Anne said this was a one time contribution and Gail suggested this would not be sufficient. Jeff asked about the requirement for determining the location of existing septic areas, with Anne and Roger indicating this is not a new requirement.

### **Replacement areas**

Phil asked about the requirements for replacement areas. The proposed rules would allow for a 150% sized primary in lieu of primary and replacement areas. Spencer observed that most of the replacement systems he does are in new areas. Phil asked about replacements for systems designed using current rules. Craig and others noted that very few systems constructed using the current design approaches have been replaced.

Rodney asked about rebuilding in place. Steve and Craig said that rebuilding in place can often be done if needed. Roger noted that one issue for some people is the disposal of the used septic stone and that there will be an attempt in the new rules to deal with this issue.

Spencer asked whether existing town replacement areas are approved for future construction after July 1, 2007. The answer is no, though the permit that will be issued may approve the same or similar construction. Anne noted that variances will apply if the existing town approval does not include a fully complying replacement area. Anne also noted that old state permits, in a limited number of cases, actually approve the future construction of a replacement area. Current permits make it clear that a permit amendment is required for a replacement system.

### **Rules update**



## Appendix A

Craig asked about the timing of the new rules relative to July 1, 2007. Anne said the best case is done on July 1, 2007, the worst case is one or two months later.

Spencer asked about the process for adoption. Anne outlined that after approval by ICAR there is a two week period to publish public notice in the newspapers, and then 7-9 meetings at 2 or 3 per week, and a 10 day comment period after the last meeting. Anne noted that the Administration is looking at whether a delay in the universal jurisdiction makes sense, with the big issues being funding and whether the bill gets stuck in the Senate. Spencer asked why the Agency ended up doing the rules at the last minute. Anne noted that she had health issues that prevented her from working and then last summer the Kiazen process was imposed on the regional office program which sent the Agency in a different direction with a great deal of energy being spent on changing how the regional offices will do their work.

Scott asked where the water supply rule changes fit in the process. Anne said that these would likely not be included in this set of rules, but that she was glad to see the new format for the water rules so that the appropriate sections could be easily moved into the wastewater rules in the future.

### **h.296**

Anne reviewed the bill as passed by the house. One significant item is that there is a specific finding related to having a funding program based at ACCD (Agency of Commerce and Community Development). This finding has caused the bill to be referred to the Appropriations Committee in the House.

The proposed statute changes the definitions of failed system and supply to make them more usable. The current definitions include a threat to human health component that is not easily quantified. Phil asked who would be permitted to do inspections at the time of sale. Anne noted that anyone is allowed to do these, though some banks, attorneys, etc will not be willing to accept the inspection from just anybody. Steve observed that it does not make sense to only do a water test at the time of sale; a water test should also be required as part of the initial construction. Anne responded that the administration does not support testing requirements at the time of construction at this time.

Jeff suggested that water supplies that can be treated to remove contaminants should not be considered to be failed.

John asked if it was the Administration or ANR that is not supporting the time of sale inspection requirement as a state mandate. Anne noted that this is Administration language.

Anne explained that all exemptions, except for deer camps are gone as part of the clean slate approach. The exemptions for bedroom additions are proposed to be removed as a statutory change. The statute would allow for enforcement against designers for bad designs, instead of only if bad systems are actually constructed. The statute proposes to reduce the 3 bedroom requirement for subdivisions to only 1 bedroom and to require the Agency to update the design flow chart. It supports the Agency proposal to allow a reduction in both the leachfield size and the wastewater disposal capacity of the site by 25% if a composting toilet is used.

Phil asked if with the proposed reduction in replacement areas, better quality soil testing should be

## Appendix A

required.

John handed out copies of his testimony he gave at House Fish, Wildlife, and Water Resources. Kim said that she had testified as well, with general support for the bill. Neither person was representing TAC.

### **Addison County septic study**

Craig gave a brief update on the progress stating that the difficult soils were mapped and asked towns for feedback on areas to study with little response. Anne noted that some legislators said they had found the information confusing. Craig said they were mostly looking for properties on municipal water so there would be some flow information. He has now identified potential sites and has written many letters asking if the owner is willing to participate in the study. Also included in the mailing are selectboards and legislators. There have been about 30 responses so far, though only 6 have plans for the installed system. Craig is also asking local consultants for more information. He will select systems in the next couple of weeks. There will be soil samples using a hollow stem auger to bore through the system and look at the interface between the stone and soil. Ground water monitoring systems using pressure transducers will be installed as well.

Spencer suggested looking for state permitted systems that included a variance approval. Steve and Spencer suggested talking to the approximately three contractors who do the bulk of installations in the area being studied.

### **Rules**

Craig suggested dropping the requirement for a replacement area for mound systems. He said that most systems can be reconstructed in place and that there are few actual site capacity failures. Steve and Spencer offered support for this concept. Rodney asked about situations where the primary system is destroyed during initial construction. Anne asked for a group opinion on dropping the requirement with Craig, Spencer, Steve, John, Allison, and Rodney in favor of dropping the requirement.

Mound sand was discussed and it was decided to replace the #10 sieve requirement with a 3/8" sieve requirement. It was also decided to reduce the maximum amount of material passing the #200 sieve from 10% to 5%.

### **Meetings**

It was decided to meet on April 17<sup>th</sup>, May 15<sup>th</sup>, and June 12<sup>th</sup>.

## Appendix A

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

1. Revisions to mound sand specification
2. Lake water systems

Topics list - items not ready for drafting for inclusion in rule revisions

29. Drip disposal
30. Changing the 20% slope restriction to 30%
31. Replacing perc test with soil identification approach
32. Defining when effluent is no longer wastewater
33. Disinfection
34. Colorado Rule – reduction in isolation distance to wells based on construction methods
35. Certification and audit approach to permitting
36. Field change policy
37. Revise existing desktop hydro chart
38. Conversion of use policy, including grandfathered flows
39. Revise design flows
40. Increased loading rate
41. Wells shields across property lines
42. Whether less than 12” of sand should be allowed under mound systems

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

## Appendix A

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller's knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O'Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Surfacing systems – Craig Heindel, Steve Revell, Frank O'Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Approved Minutes of the Technical Advisory Committee Meeting  
April 17, 2007

<b>Members present:</b>	Roger Thompson	Kim Greenwood
	Gerry Kittle	Barb Willis
	Phil Dechert	Steve Revell
	Spencer Harris	Craig Heindel
	Bernie Chenette	Jeff Williams
	Rodney Pingree	

**Others present:** Frank O'Brien

### Scheduled meetings:

May 15, 2007	1-4 PM	Room 100 Stanley Hall
June 12, 2007	1-4 PM	Room 100 Stanley Hall

### Review of agenda

Added a topic for update on change in well driller licensing.

### Review of minutes

The minutes of the March 20, 2007 were reviewed and accepted.

### Existing town permits

## Appendix A

Spencer said he was still concerned about the status of replacement areas for projects with town permits. Spencer also said he remains concerned that town permits will remain in effect for construction after July 1, 2007 under one of the existing permit exemptions. Roger noted that while a town permit that showed a replacement area would not allow for construction of the replacement area after July 1<sup>st</sup>, the lot would qualify for a best fix approach.

### **Time of sale**

The Agency is not supporting a mandated time of sale inspection, and the current draft of h.296 does not include this requirement. It is expected that a time of sale inspection will be done because the banks and title insurance companies will require it. The new definitions of failed system and supply will help people determine whether or not there is a failed system.

### **Addison County public meeting**

The Agency participated in a public meeting in Middlebury on April 9<sup>th</sup>. Roger, Anne Whiteley, and Commissioner Wennberg gave an overview, and then answered questions from a panel and then from the general audience. Craig attended and reported that the meeting was pretty well received, though some people still believe the Agency promised in 2002 that there would be simple systems for clay soils.

### **h.296 issues**

Kim reported on the VNRC presentation to the Senate Natural Resources Committee. VNRC has concerns about the proposed increase in slope from 20% to 30%, the reduction in minimum lot capacity from 3 bedrooms to 1 bedroom, and the reduction in lot capacity for those using a composting toilet. Craig asked if the TAC wanted to offer comments as a committee on any topics related to h.296. Phil noted that he would prefer that slope issues be controlled in zoning, rather in the septic rules. Phil did say that the one bedroom concept might be OK.

### **Well driller issues**

Jeff gave an overview of the proposed changes related to replacement wells for single family residences. The Agency had been on track to create a special class of designers that would allow licensed well drillers to design the replacement well system. This ended up being a major concern for many well drillers. The expense and delay caused by the process are two big issues. The Agency met with the well driller's group and proposed to create an exemption that would be based on a well driller and the property owner signing a form that would be filed on the town records. The well would have to meet the requirements for location that are in the Water Supply Rules and the property owner would accept any problems associated with a well location that did not account for future replacement wastewater system areas. Bernie asked if anyone other than a well driller could be the designer. Roger reviewed the proposed statute and rules which specify that the form must be signed by a well driller.

Rodney said that we need to write up the variance process that a well driller will use to decide where to locate

the well and any off-setting measures, such as grouting.

### **Reappointment of the TAC**

A request was made to have the Secretary ask that the TAC Committee members be formally reappointed, as their term expired in January.

### **Treatment for potable water supplies**

A subcommittee was formed to look at treatment systems. The committee will consider a protocol that would help select the appropriate system. There may be some “plug and play” options that could be used by non-engineers, but this might require revisions to the rules. Gail, John Beauchamp, Jeff, Rodney, Craig, and Roger will participate.

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

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1. Revisions to mound sand specification
2. Lake water systems

### Topics list - items not ready for drafting for inclusion in rule revisions

43. Drip disposal
44. Changing the 20% slope restriction to 30%
45. Replacing perc test with soil identification approach
46. Defining when effluent is no longer wastewater
47. Disinfection
48. Colorado Rule – reduction in isolation distance to wells based on construction methods
49. Certification and audit approach to permitting
50. Field change policy
51. Revise existing desktop hydro chart
52. Conversion of use policy, including grandfathered flows
53. Revise design flows
54. Increased loading rate
55. Wells shields across property lines
56. Whether less than 12” of sand should be allowed under mound systems

### **Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### **Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller’s knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

## Appendix A

Surfacing systems – Craig Heindel, Steve Revell, Frank O'Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Approved Minutes of the Technical Advisory Committee Meeting  
May 15, 2007

**Members present:** Roger Thompson                      Steve Revell  
Kim Greenwood                                      Gail Center  
Craig Heindel    Lance Phelps  
Dave Cotton     Gerry Kittle  
John Forcier     Phil Dechert

**Others present:** Frank O'Brien                      Scott Stewart  
Anne Whiteley

### Scheduled meetings:

June 12, 2007                      1-4 PM                      Room 100 Stanley Hall

### Review of agenda

Accepted as drafted

### Review of minutes

The minutes of the April 17, 2007 meeting were reviewed. Lance noted that there had been a previous water treatment system sub-committee that looked at lake water treatment systems. Lance asked to be added to the water treatment sub-committee.

### Treatment for potable water supplies

Roger noted his concern that as currently written the rules require all water treatment systems to be designed by professional engineers. Gail said that she works with a few people who are not professional engineers that specialize in water treatment systems, particularly for single family residences (SFR). As of July 1, 2007 these SFRs will be subject to universal jurisdiction.

John noted that the statute includes some limits on what must be done by professional engineers and any changes need to fit within these limitations.

Anne stated that if there are to be any changes in the Wastewater System and Potable Water Supply Rules (Rules), which are currently under revision, the proposed changes would need to be determined in the next few weeks.

Committee members expressed concern that people would try to sell their house and find out at the last minute that there was a violation because a water treatment system had been added without a permit or that despite adding a water treatment system, especially one for pathogens, that the treatment system was not



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acceptable under the Rules.

The sub-committee will meet to discuss the options which might include deregulating some treatment systems, such as those only used for hardness issues, or creating a special designer license for water treatment systems. Dave and Lance will join the subcommittee and Craig asked to be excused.

### **H.296**

Anne reviewed the bill as passed the legislature and sent to the Governor for signature, which is expected.

Clean slate is included and will be effective as soon as the bill is signed as will the change in definition of failed system and failed supply. Language was added to allow submission of record drawings for projects not constructed exactly in accord with the approved plans without automatically requiring a revision to the permit. The enforcement language related to designers was also revised so that it could be used when the design work was faulty without waiting for the faulty design to actually be constructed.

The bill includes a finding that a funding program should be created and other legislative actions will provide the money. There will be \$500k from the ANR revolving loan fund used for wastewater treatment facilities which can be loaned to people with incomes up to about \$88k. The Agency of Commerce and Community Development (ACCD) will contribute money from various sources that have various limits on income and eligibility. The plan is to administer the loans through 5 existing regional revolving loan operations. The funding can be used for replacement of both water and wastewater systems.

The bill includes an exemption for replacement wells serving only one single family home on its own individual lot.

Craig asked if someone who qualified for an in-ground system and didn't want to show a replacement area could build a mound system instead. It was agreed that they would be allowed to do so.

Scott Stewart asked about an exemption for shallow well replacement. It was not clear whether this would fall into the well drillers' domain, or if a Designer would be required.

Under Section 4 Exemptions, 2. Primitive Camps, Gerry Kittle felt that a definition was needed for "seasonal camps."

### **ICAR Draft of Rules**

Anne stated that the Department was starting to see more towns wanting to take over jurisdiction, particularly pertaining to conversion of seasonal camps. There was also a discussion of construction in a floodplain and the problem posed by not having the floodway delineated on FIRM maps. Steve Revell reiterated his concern for granting a reduction in disposal area sizing for the use of composting toilets. Experience has shown that there is often a desire to remove the composting toilet after a short time dealing with the maintenance issues.

Anne discussed Kim's testimony to the House and other VNRC staff giving contradictory testimony to the Senate.....

## Appendix A

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

1. Revisions to mound sand specification
2. Lake water systems

Topics list - items not ready for drafting for inclusion in rule revisions

57. Drip disposal
58. Changing the 20% slope restriction to 30%
59. Replacing perc test with soil identification approach
60. Defining when effluent is no longer wastewater
61. Disinfection
62. Colorado Rule – reduction in isolation distance to wells based on construction methods
63. Certification and audit approach to permitting
64. Field change policy
65. Revise existing desktop hydro chart
66. Conversion of use policy, including grandfathered flows
67. Revise design flows
68. Increased loading rate
69. Wells shields across property lines
70. Whether less than 12” of sand should be allowed under mound systems

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

## Appendix A

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller's knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O'Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Surfacing systems – Craig Heindel, Steve Revell, Frank O'Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Water treatment systems – Gail Center, John Beauchamp, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting June 12, 2007

<b>Members present:</b>	Allison Lowry	Bernie Chenette
	Kim Greenwood	Gail Center
	Rodney Pingree	Lance Phelps
	Jeff Williams	John Forcier

<b>Others present:</b>	Frank O'Brien	Scott Stewart
	Anne Whiteley	

### Scheduled meetings:

August 14, 2007	1-4 PM	Room 100 Stanley Hall <b><u>Cancelled</u></b>
September 18, 2007	1-4 PM	Room 100 Stanley Hall
October 9, 2007	1-4 PM	Room 100 Stanley Hall
November 13, 2007	1-4 PM	Room 107 Stanley Hall
December 11, 2007	1-4 PM	Room 100 Stanley Hall

### Review of agenda

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Rodney asked that there be a discussion of separation distances & variances.

Kim gave a brief report on the Non-Point Source Conference, sponsored by NEIWPCC, which she had attended. The conference included a visit to the URI Training Center.

### Review of minutes

The minutes of the May 15, 2007 meeting were reviewed and accepted as presented.

### H.296 is effective as of May 18, 2007

Anne led a brief discussion of the key points of H.296 including the date chosen for Clean Slate was January 1, 2007. Anything that existed as of that date is considered legal for the purposes of the Rules. Funding was included, however, the slope change did not get included.

### Review of comments (and responses) on the Rules

Anne reviewed some of the highlights of the comments and the Agency response.

No change in ground slope.

Clean Slate – Public Building design flow – as existed on or after 01/01/06

Deferred Permits – no need to reissue

Municipal Permit exemptions

Seasonal conversions – existing potable water and wastewater

Replacement water supply exemption – only SFR

Class A waters (1-801) ID permits, WW < 1000 gpd, circumvention concerns -

<1000 gpd/system, <6500 gpd/lot, Proposed – no new soil based

systems > 1000 gpd or additions to > 1000gpd, no more than

& no more than 1 lot/application. “Really need

WW  
1 WW system/lot  
to change the Statute.”

Mounds do not have to be 150% to do away with replacement area, anything

other than mound needs 150% capacity of leach field.

Change in the GPS requirements on applications – 4 decimal places vs. 5.

There was a lengthy discussion of a report that was prepared (signed late) on the affect on land use issues because of the use of performance based systems.

TAC Members (Executive Committee) to attend the LCAR Hearing

### Separation Distances and Variances

Rodney led a discussion on the need for standards for Variances for separation from water source to contamination sources. Anne suggested that there are baseline variance standards which were included in the 2002 bill and are therefore in statute (10VSA64). Anne stated that any additional standards could be included in the Rules as a guidance document.

### Water Treatment Systems

## Appendix A

The subcommittee prepared no conclusions. Lance stated that Roger was to produce a draft and that just before he had left the subcommittee meeting he had lobbed a grenade suggesting an exemption for single family residences from the requirement of having an engineer design the water treatment system. Anne suggested leaving the Rules as they are, but flagging the issue for the next Rule change permutation. Lance feels that it is not likely that the average engineer has experience with treating contaminants in small water treatment systems. It may be best to allow SFR's to be handled as they are now (Culligan Man). The issue will go back to the Water Treatment Subcommittee. Several members of the TAC agreed that there should be a requirement for testing of new wells for SFR's.

### Next Meeting

The next TAC meeting was tentatively scheduled for August 14, 2007.

### Feedback

John stated that there were a lot of "site techs" at the recent ACEC soils seminars, but that they had signed up late and had necessitated the addition of an additional session. He felt that there should be a greater effort to try to coordinate with DEC to get the word out. Allison agreed but stated that she had not received word of the seminars until shortly before the scheduled dates.

Items prioritized for discussion with high, low, and medium ranking

- 1.. Encourage I/A **low**
2. Soil identification vs. perc test **medium**
3. Colorado rule **low**
4. Permit by certification **low**
5. Curtain drain with presumption of effectiveness **high**
6. Field change policy **high**
7. Revisions to desktop hydro chart **medium**
8. Minimum amount of sand under a mound **high**
9. Grandfathered design flow and conversion of use policy **high**
10. Updating of design flow chart **high**

Recommendations made:

1. Revisions to mound sand specification
2. Lake water systems

## Appendix A

### Topics list - items not ready for drafting for inclusion in rule revisions

71. Drip disposal
72. Changing the 20% slope restriction to 30%
73. Replacing perc test with soil identification approach
74. Defining when effluent is no longer wastewater
75. Disinfection
76. Colorado Rule – reduction in isolation distance to wells based on construction methods
77. Certification and audit approach to permitting
78. Field change policy
79. Revise existing desktop hydro chart
80. Conversion of use policy, including grandfathered flows
81. Revise design flows
82. Increased loading rate
83. Wells shields across property lines
84. Whether less than 12” of sand should be allowed under mound systems

### **Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### **Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Well driller’s knowledge checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Bernie Chenette, Gail Center and Steve Revell.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Surfacing systems – Craig Heindel, Steve Revell, Frank O’Brien, Roger Thompson, Bruce Douglas, Gail Center, and Brian Kooiker.

Water treatment systems – Gail Center, John Beauchamp, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Appendix A  
Approved Minutes of the Technical Advisory Committee Meeting  
October 9, 2007

**Members present:** Roger Thompson                      Spencer Harris  
Steve Revell    Lance Phelps  
Gail Center    Kim Greenwood  
Bernie Chenette                                      Rodney Pingree  
Phil Dechert

**Others present:**        Scott Stewart

**Scheduled meetings:**

November 13, 2007                      1-4 PM                      Room 107 Stanley Hall

December 11, 2007                      1-4 PM                      Room 100 Stanley Hall

**Review of minutes**

The minutes of the September 18, 2007 have not been written but will be.

**Next meeting**

Scott Stewart will attend and discuss isolation distances.

**Well isolation zones**

TAC needs to do a technical review that will include looking at what other states do and the technical basis for the existing Vermont rules. There are concerns about the impact of permitting a project with a well shield on a neighboring property. Any of the choices are difficult as reducing isolation distances will be viewed as a reduction in health protection, and requiring ownership or control of the well shield area will result in large lots or payments to the neighbor. This could have a major impact on municipal water supplies as their protective zone is very large. Ultimately this will be a policy call. The committee reviewed Scott's handout of isolation distances. Scott asked if the well shield concept should still be included in the Rules. Phil asked if 500' deep wells are less of an issue than 100' deep wells. How does grouting of wells affect the need for isolation distances? Scott responded that grouting helps with the flow down the bore hole around the casing but does not prevent water from moving through fractured rock down to the bottom of the casing. Rodney asked if sharing wells would help reduce the impacts on neighboring lots. Steve noted that this would require a demonstration that the well, in conjunction with its distribution system, can meet peak demand. This demonstration will add cost to the process and in addition many people prefer their own well without any burden of sharing operating and maintenance responsibilities.

**Water softener discharges**

Gail asked about whether discharges from water softeners should be discharged to the existing

## Appendix A

leachfields. Over the years there has been a lot of information about the impact to systems but without any clear answers. We will discuss this issue further at the next meeting.

### Replacement of failed systems

The committee reviewed the draft guidance for replacement of failed systems. Roger will update this and Anne will do another review as well.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Interested in the delegation rules - Spencer Harris, Gerry Kittle, Phil Dechert, and Alan Huizenga

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, John Beauchamp, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved Minutes of the Technical Advisory Committee Meeting  
November 13, 2007

**Members present:** Roger Thompson                      Rodney Pingree  
                                 Steve Revell                                      Lance Phelps



## Appendix A

Bernie Chenette  
Gerry Kittle  
John Forcier

Craig Heindel  
Allison Lowry

**Others present:** Scott Stewart Anne Whiteley

### **Scheduled meetings:**

December 11, 2007 1-4 PM Room 100 Stanley Hall

### **Review of minutes**

The minutes of the September 18, 2007 have not been written but will be. The draft minutes of the October 9, 2007 meeting were accepted.

### **Water treatment system questions**

Anne recommended using a subcommittee to discuss the issues. There are questions about treatment for non-primary standards, surface water sources, disposal of filters and/or backwash, and whether people other than professional engineers should be allowed to design treatment systems. Rodney noted that in some cases, such as treating for hardness, we need to decide if we should regulate at all.

A policy call is needed on whether or not to regulate water supplies relative to the secondary standards and whether the requirement for a permit does not apply for treatment systems only dealing with secondary standards.

The subcommittee should consider plumbing issues and UIC (Underground Injection Control) issues. Craig said that he had read about states where a private company collects and disposes of filters that remove radionuclides, which may be the most problematic contaminate when it comes to disposal.

### **Water Supply Rules rewrite**

Scott said that the WSD needed some guidance on the application of Appendix 11 now that WSD was dealing with the TNC water supplies.

### **Lake water systems**

A question was posed as to whether a pipe used for a lake water system could be replaced or reconstructed to be suitable for year-round use. There are surface encroachment issues related to burying a pipe and the Wastewater Rules would require a best fix for a failed potable water supply. Anne reviewed the definition of potable water systems, which includes use of water for bathing, and it appears that most lake water systems meet the definition of being a potable water supply. Untreated ones are likely to fail the water

## Appendix A

test, at least for coliform. The question of whether a best fix water treatment system for lake water is possible or desirable needs to be reconsidered.

### Next meeting

Anne asked that isolation distances and other potable water supply issues be the main topic for the next meeting. We should contact David Cotton and Bruce Douglas about the history of the 1992 Rules.

### Procedures

John asked if the guidance documents will be reviewed by TAC. Anne indicated that they would except for a small number that are non-technical analysis of the language of the Rules. The guidance that has been issued has been posted on the Agency website.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga



## Appendix A

The literature at the time also showed significant movement of micro-organisms in both the vertical and horizontal axes. Evidence from Colorado showed a break in statistical risk at about 200' from drilled wells.

The substitution of a prescriptive 500' distance from shallow well as opposed to a two-year time of travel was mostly established by an examination of field conditions and professional estimates of acceptable risk when the 500' separation was maintained.

In 1990, the State of New York adopted a 200' isolation distance to drilled wells. The 200' isolation distance was adopted for use in Vermont in the 1992 Water Supply Rules. Bill Bress (Vermont Health Department) reviewed the 1992 Rules and thought the analysis used to develop the isolation distances was sound.

Scott noted that the two-year time of travel approach has been used for a long period of time, and continues to be used, by the Water Supply Division for public community water supplies.

In 2002, the State of Wisconsin sampled 50 wells and found that 8% had virus contamination. In 1999, 6500 samples were analyzed in England and 21-27% had bacterial contamination. New Zealand tested aquifers and found that 48 meters of flow in good soil occurred and was sufficient to protect water supplies. The soil temperatures in New Zealand are higher than in Vermont which is important because there is a much higher die-off rate with higher temperatures. Anne asked if the New Zealand information was from systems contaminated by the owner's leachfield. Colorado and New Jersey did data analysis of the relationship between isolation distance and rate of contaminated supplies and found that the rate of contamination increased significantly when the isolation distance was less than 200'. Scott noted that Maine has completed a study of the effect of leachfields on well and found that new systems with current design factors are less likely to have contaminated a well than a system using older design factors.

Bruce noted that Wisconsin determined that nitrate and bacterial contamination does not have strong correlation with viral contamination.

Jeff asked if soil types, such as confining layers, or slowly permeable layers, affected well contamination. There was general agreement that slowly permeable soils can provide protection to deeper aquifers. Jeff suggested that there should be a simple approach to reduce horizontal isolation distances in Addison County clays and similar soils. Steve asked if the issue is reducing 200' to 100' or is it reducing 100' to 50'. Jeff said it is mostly the latter when dealing with failed supplies. Roger asked if there are concerns about corroding well casings that might allow shallow layer contamination to enter the well. Jeff said that he had seen very few at this point, though it might be a problem eventually. Steve said he did not feel that leaking well casings is a major problem.

Steve noted that controlling well construction is very important. The Rules, when fully implemented, give good protection, but that, particularly with grouting, careful installation with proper oversight is needed to ensure high quality installations. It is the well driller's responsibility to see the permit and to follow any requirements related to the drilling of the well. Steve said he did not think he needs to be present to see all grouting operations.

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Anne noted that there seems to be a scientific foundation to support the existing well isolation standards. Anne asked for a show of hands and all present supported keeping the existing standards. Spencer noted he was supportive with the understanding that an impeding layer could be the basis of a reduction in isolation distance.

Anne said that the hydro subcommittee should meet and review the well grouting issues. Guidance on when and how the isolation distance could be reduced would be helpful. Allison has concerns about isolation distances being reduced prescriptively. Steve said he would not support an across-the-board prescriptive approach. This needs to be a case by case thing based on hydrogeologic analysis. Jeff asked to participate on this subcommittee.

### **Overshadowing – well protection zones on neighboring property**

Anne stated that this is an important, and hot, topic for the coming year and that any revisions to the Water Supply Rule must take a position on this topic. Rodney asked about an approach that would require designers to locate wells so that neighboring properties are not affected whenever possible. Roger noted that there would be questions on application of this concept, such as if 2 lots can be approved without an impact on the neighbor and 3 lots can be approved with an impact, does that limit the project to 2 lots.

Rodney asked if encumbrance for a well shield is a taking issue. Anne said no based on current law, but that there are challenges to this and maybe there will be a court decision that will give us guidance.

Rodney summarized that the use of the current well shield approach and the existing well isolation distances are considered to be appropriate.

### Options for well protection zones

1. All isolation distance must be on the lot
2. As much as possible of the isolation distance must be on the lot
3. There must be an easement for any off lot isolation distance.
4. First in time as per present Rules

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**

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4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

**Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

**Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Licensed designers - Spencer Harris, Alan Huizenga, and Gerry Kittle.

Drip Disposal – Frank O’Brien, Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved Minutes of the Technical Advisory Committee Meeting  
January 8, 2008

**Members present:** Roger Thompson                      Rodney Pingree  
Steve Revell    Allison Lowry  
Kim Greenwood                                        Gerry Kittle  
Craig Heindel

**Others present:** Gary Schultz                                      Scott Stewart  
Bruce Douglas

**Scheduled meetings:**

February 19, 2008	1-4 PM	Mad Tom Room
March 18, 2008	1-4 PM	Appalachian Gap Room

**Review of minutes**

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The minutes of the December 11, 2007 meeting were reviewed and accepted with the addition that the first in time approach currently used in the Rules is one option related to the well protection zone overshadowing issue.

### Well shield

Steve asked if the Agency is going to take a position about keeping the well shield on land owned or controlled by the applicant. Roger said that there has not been a decision at this time.

Gerry noted that Colchester had confirmed that the Rules allow for a reduction in the well isolation distance when there is a hydrogeologic basis for doing so.

Bruce stated that part of his reasoning for the reduction in vertical separation between leachfield and SHWT and bedrock when advanced treatment is used is that Vermont has large horizontal isolation distances. Therefore, any change in horizontal isolation distances might also result in a need to change the vertical isolation distance or other design factors.

Scott noted that even with the existing isolation distances there can be some contamination break through to existing wells.

### Water Supply Rules

Scott led a review of his draft of Table A. Scott and Rodney had reviewed isolation distances from other states while preparing this revision to the Water Supply Rules and proposed adding an isolation distance for a few new items such as underground storage tanks.

Gary noted that Dick Valentinetti, who serves on the Climate Change Committee, thinks there will be a significant increase in the number wells drilled for heat pumps.

Scott will send the draft of the section related to bedrock well construction.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson

## Appendix A

Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting February 19, 2008

<b>Members present:</b>	Roger Thompson	Allison Lowry
	Gail Center	Steve Revell
	Craig Heindel	Gerry Kittle
	John Forcier	Phil Dechert
	Spencer Harris	

<b>Others present:</b>	Anne Whiteley	Claude Chevalier
	John Beauchamp	George Mills
	Scott Stewart	Chris Thompson

### Scheduled meetings:

March 18, 2008	1-4 PM	Appalachian Gap Room
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### Review of minutes

The minutes of the January 8, 2008 meeting were reviewed and accepted with the note that the licensed designer subcommittee should be dropped from the list.

### Water Treatment Issues

Roger gave an overview of the history of permitting requirements for the installation of water treatment systems. Prior to July 1, 2007, there were only a small number of regulated buildings that required water treatment systems and these were issued permits based on designs by professional engineers. The vast majority of water treatment systems were unregulated. After July 1, 2007, when a contaminated water system



## Appendix A

servicing a single family residence (SFR) was found, it delayed any property transfer or refinancing until the failed system was fixed. This requires a permit and the Rules explicitly require the design to be by a professional engineer. This adds considerable expense and delay to the process of selling or refinancing an SFR. The Agency wants to look at the existing requirements and revise them if possible to reduce or eliminate permitting requirements. The issues include what should be regulated, who can design when the system is regulated, whether there should be standards for the treatment equipment, and disposal of the byproducts with filter backwash disposal being a particular concern. There are also concerns about having enough designers and enough water testing capacity to meet the need.

George Mills noted that the Health Department Laboratory had not seen a recent large surge in testing. This raised the question of whether as many tests are being done as had been forecast by realtors, attorneys, and others in the property transfer business. Gail asked what people contacting her should be told about which contaminants to test for and whether they should be referred to the regional offices for permits. Steve said he tells people to get a full test. George also raised a question as to whether the break between classes of water systems, such as private and public, should also include a break at 1350 GPD because this number is currently in the Rules. This number is related to the design flow of projects that designers who are not professional engineers are allowed to handle and may not be a good break point for relative risk of different classes of water systems.

Claude Chevalier and John Beauchamp asked about how water treatment systems had become subject to the Rules. Anne reviewed the history of statutory and rule changes related to failed water systems in response to concerns that failed water systems are permit violations that cloud property titles. The need to determine if a water system is failed leads to testing of the water quality, failure of the testing requirements leads to a need to modify the system, and the definition of a water system includes water treatment equipment. Modification of the water system requires a permit and the Rules are explicit that only professional engineers can design treatment systems.

Gail suggested that records should be kept and published of test results so that knowledge of “hot spots” could be developed and used as guidance for specific testing requirements based on geographic location in a map form developed by DEC. Roger asked if all new wells should be tested. Craig said that water quality from a well often changes after a period of use of at least a few months. This sometimes reduces the level of contaminants and sometimes increases the level of contaminants. John Beauchamp agreed, noting that several months of use may be required until the water quality stabilizes.

### **Decisions**

Anne noted that in addition to the current individual permit approach, it would be possible to do a general permit or a permit by rule. A conditional exemption, which functions much the same as a permit by rule, could also be created. Claude suggested that any permitting requirement would be a nightmare of regulation that is really not needed. John Forcier commented that some situations need to be regulated and that some systems also need to have maintenance contracts in place to ensure the systems continue to operate as designed.

Anne suggested looking at treatment systems dealing with secondary standards, pathogens, and primary standards one at a time and seeing if there is consensus on one or more groups. Anne posed the question of whether treatment systems used for secondary standards should be regulated, and whether it mattered if the

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system served only a single family residence or other uses up to, but not including a system classed as a public water supply. John Forcier said deregulation might be OK for SFRs. Allison said the SFRs should be deregulated. Gail supported deregulation because the Health Department provides advice and permitting requirements may lead people to not deal with failed systems. Gail noted that she hopes to eventually have maps that will help people make decisions about water testing choices.

Anne then asked if there is support to deregulate water treatment systems for secondary standards. Gerry asked about the impact of water treatment filter backwash on leachfields. Claude said that current thinking he has seen suggests less impact on the leachfield than once thought. There may be an impact on the septic tank and bypassing is commonly done to avoid this impact. John Beauchamp suggested that filter backwash might increase discharges to the leachfield by about 20% at the high end of the range.

### Secondary standards

Anne polled TAC and there was consensus to deregulate water treatment systems for secondary standards serving SFR. There was also consensus among TAC members to deregulate all water treatment systems for secondary standards serving non-public water supplies. This would include duplexes, office buildings with less than 25 employees, day care businesses with up to 25 staff and children. John Forcier noted that there might be a need to revise the P.E. statute to implement this.

### Pathogens

Anne asked if systems treating pathogens should be regulated. Phil asked if a person would need help in selecting an appropriate system. Claude said that a person could rely on the work of the Water Quality Association (WQA) in selecting an approved system. John Beauchamp noted that he has a Level 6 Certification from WQA and that WQA Certification does provide assurance that a person is knowledgeable.

Anne polled TAC on deregulating water treatment systems for pathogens. There was consensus among those present that systems serving SFR should be deregulated. There was a majority opinion that pathogenic treatment should be deregulated for all non-public water systems, with Roger and John Forcier indicating that they did not agree with this approach.

### Primary standards

There was some brief discussion with agreement that radionuclides are a special case because of the disposal issues and should be considered separately. It was agreed to pick this up at the next meeting on March 18<sup>th</sup> or to schedule an extra meeting in the meantime.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**

6. Updating of design flow chart **high**

**Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

**Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved Minutes of the Technical Advisory Committee Meeting  
March 18, 2008

<b>Members present:</b>	Roger Thompson	Alan Huizenga
	Gail Center	Rodney Pingree
Craig Heindel	Allison Lowry	
	Kim Greenwood	John Forcier

<b>Others present:</b>	Claude Chevalier	George Mills
	Scott Stewart	

**Scheduled meetings:**

April 15, 2008	1-4 PM	Lincoln Room, Osgood Building
May 20, 2008	1-4 PM	Chapel Conference Room
June 17, 2008	1-4 PM	Room 100 Stanley Hall

**Review of minutes**

The minutes of the February 19, 2008 meeting were reviewed. Gail asked that minutes reflect her

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hope that DEC would develop the mapping for areas with water problems. Craig suggested that “endorsed” should be dropped from page one of the minutes. George suggested that the discussion about the use of 1350 GPD as a break point should be included.

### **Legislative update**

Roger noted there was proposed language that would require a report on the use of the general permit approach in the regional office program. This really is related to the targeted review concept that was developed after the Kaizen process. It would have limited the number of pre-application site and post application site visits and the number of plan reviews. Kim agreed that this was what the legislative committee was concerned about. So far, there has been little implementation of the plans except for administrative issuance of municipal connections. The regional offices are continuing pretty much as in the past and are making as many site visits and reviewing as many plans as they can while making sure the permit processing times are meeting the standards. The regional offices, particularly Essex and Rutland, have improved their processing times.

Kim noted that the public trust concept for groundwater remains in play at the legislature with the Senate NR Resources Committee approving a bill that contains public trust language. Scott noted that legislation under consideration conflicts with the definition of public water supplies as used in the current Water Supply Rule.

### **Meeting Schedule**

Future meetings were scheduled for April 15, May 20, and June 17. Scott asked about having extra meetings so there would be time to work on revisions to the Water Supply Rule. The group did not want to schedule extra meetings at this time but might at a later time.

### **Water Treatment Issues**

Rodney asked if there is a current policy related to the treatment of radionuclides for new wells. Roger said that the current policy, which dates back to around 2000, is that new wells will not be approved for use if treatment for radionuclides is required. This is because of the disposal problem of the filter backwash for the most common method of treatment for radionuclides.

The disposal of radionuclides is a UIC (Underground Injection Control) issue. Federal regulation applies and EPA does not have a clear position on how to apply this. Other states have unclear policies as well. Canute Dalmasse signed guidance around 2000 that allowed for treatment of existing wells with disposal through the existing leachfields.

Alan asked if the backwash could be returned to the source well. It would probably require a separate well drilled into the same aquifer because the concentrated backwash would not disperse easily in the bedrock aquifer. Roger said he would be OK with the concept as the existing radionuclides are only being returned to their source but EPA has not indicated this would meet the UIC Rules.

For perspective, Gail reviewed the results of water tests of private water systems for radionuclides done by the Vermont Department of Health Laboratory. Out of over 2000 samples, 40+ had levels above the

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standards with some up to 200 picocuries. It was noted that Public Water Supplies continue to provide water while the system is brought into compliance.

Gail also noted that about 25% of water samples from private water systems are positive for coliform with about 3% positive for e-coli. Out of 2157 samples 3.4% are above the arsenic standard with a range of 11-151 ppb. 6.4% of samples tested above the limit for radium with a range of 6.9 to 69 picocuries.

John asked if anyone had second thoughts about their positions at the last meeting after reading the e-mails from Bruce Douglas. Bruce stated that he would be concerned about deregulating installation of water treatment systems for pathogens and primary standards for both systems serving only one SFR and for other systems up to the Public Water System level. George noted that simply having a positive reading for coliform did not mean that pathogens are present. Rodney noted that treatment for cryptosporidium and giardia with chlorine is ineffective and that UV lights are only effective with there is a low level of turbidity in the water being treated. Claude said he still did not see a problem that justified a requirement that only PE design water treatment systems.

Alan noted that he supported Bruce's statement that the water system should be evaluated prior to just installing a water treatment system. This would ensure that other problems were resolved and that the treatment system was appropriate for that particular water system. Gail noted that that when describing treatment for pathogens the word should be inactivate not remove.

John asked Alan if he would support deregulation of water treatment systems for pathogens. Alan indicated he would accept deregulation at the one SFR level but not for other systems. Rodney recommended against deregulation for any systems treating pathogens. John stated that while he did not object to deregulation of treatment systems for pathogens at the previous meeting, after reading Bruce's recommendations he does not support deregulation of any treatment systems for pathogens. Kim stated that she would support deregulation of treatment systems for secondary standards she would not support deregulation of any treatment systems for pathogens.

Alan noted that he supports doing a full water test at the time of sale. The test that New Jersey currently requires costs \$316.

The group then turned to the water treatment for primary standards. The common contaminants found in Vermont include lead and copper, arsenic, hydrocarbons, and fluoride. There is a large list of primary contaminants but most are rarely or never found in Vermont as they are not naturally occurring. Claude said that it might be appropriate for a person designing water treatment for primary standards to have a WQA (Water Quality Association) certification. Kim asked Claude if his well drilling company was typical of all well drilling companies when it comes to designing water treatment systems. Claude noted that the level of skill and interest varied with the larger firms more apt to be involved in additional tasks such as installation the service to the house, the pressure tanks and pump controls, and water treatment systems.

On the question of whether water treatment systems for primary contaminants that serve only one SFR should be deregulated, TAC voted 6 no and 3 yes.

On the question of whether water treatment systems for primary contaminants that serve only other water systems up to the Public Water System level should be deregulated, TAC voted 6 no and 3 yes.

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### Permit by Rule

Roger asked if TAC members would support a permit by rule approach. A permit by Rule approach, which might be implemented in the Rules as a conditional exemption, could include a process that regulated the design and/or installation of water treatment systems while not requiring issuance of a permit. This would reduce the cost and the time required to get a system installed. The permit by rule could specify who could do the designs and whether the equipment needs to be certified by NSF (National Sanitation Foundation) or some other organization. The permit by Rule could have different requirements for SFR only or for pathogen treatment system versus systems for primary standards. When polled the members agreed that a permit by rule approach should be evaluated. John noted that he would support permit by rule for some treatment systems but would need further evaluation to decide if there is a risk level sufficient to trigger the need for a professional engineer's input. John noted that a maintenance contract should be required.

Claude will be included in discussions about the permit by rule approach as a well driller representative. John noted that Mike Quaid is the current contact for the PE Board.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved Minutes of the Technical Advisory Committee Meeting  
April 15, 2008

## Appendix A

**Members present:** Steve Revell Gail Center  
Craig Heindel Bernie Chenette  
Roger Thompson Rodney Pingree  
Jeffrey Williams

**Others present:** Chris Thompson Scott Stewart  
Claude Chevalier George Mills  
Anne Whiteley Bruce Douglas  
John Beauchamp

### Scheduled meetings:

April 15, 2008	1-4 PM	Lincoln Room, Osgood Building
May 20, 2008	1-4 PM	Chapel Conference Room
June 17, 2008	1-4 PM	Room 100 Stanley Hall

### Review of minutes

Gail asked that the minutes indicate the results of water tests she had mentioned are for private water supplies, and that the misspellings of picocuries on the second page be corrected.

### Water Treatment Systems

Anne reviewed the results of a meeting that she, Chris Thompson, and Roger Thompson had with Commissioner Laura Pelosi. The sense of the meeting was that Commissioner Pelosi was inclined to deregulate treatment systems used for treating secondary contaminants for systems that serve only one single family residence on its own individual lot and for all other non-public systems. The Commissioner is also open to deregulating systems installed to treat pathogens when used for systems serving only one single family residence on its own individual lot but is waiting until everyone has a chance to offer comments. Pathogen treatment for systems serving more than one single family residence should be subject to regulation in some form which might be an individual permit or a permit by rule.

Anne asked the committee if their previous opinion supporting deregulation of systems used to treatment secondary contaminants remained firm and found that it did.

Anne then reviewed a draft permit by rule document and the committee provided comments. There was discussion about whether there should be a physical evaluation of the existing water system to determine whether repairs or alterations to the system would either be a better choice than installation of a treatment system or should be used in conjunction with a treatment system. It was determined that a site inspection checklist should be prepared which Roger agreed to do. It was pointed out that the installer of a water treatment system might not be a licensed designer. John said that an interior inspection of the water storage and distribution system is essential because a water system with dead end pipes or cross connections would

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not be fixed with a water treatment system installed at the point where the water line enters the building. Chlorination might give a good test result at first, but with the point of contamination being after the treatment system recontamination can occur. The short term test results can give a false sense of security. John said that it takes 30 to 90 minutes to evaluate the interior distribution system. John also recommended monthly or quarterly testing for a year after a one time chlorination of a water system.

Anne asked a clarifying question of why a system evaluation is needed prior to installing treatment equipment. John noted that it is important to have people who can select the correct equipment. The Committee was polled and answered that an evaluation of the source and the distribution system should be required for systems that are regulated.

Maintenance of the systems was discussed with the option of a contract or putting a schedule in the approval. The Committee was polled and 7 to 5 preferred the maintenance contract to a maintenance schedule.

Anne then raised the issue of who could design the water treatment system; in particular could it be someone who is not a professional engineer (PE). There was support for allowing a PE, a designer who is not a PE with an appropriate WQA certification or a licensed well driller with an appropriate WQA certification. John suggested that someone with level 1, level 2 (disinfection), and level 3 (filtration) would have a good knowledge of common water treatment requirements.

### Water Supply Rules

It was decided to form a subcommittee to work with Scott on the Water Supply Rule revisions with Claude, Bernie, Jeff, Scott, Roger, and Steve agreeing to participate. Scott will arrange the meeting.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.



## Appendix A

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting May 20, 2008

**Members present:** Roger Thompson                      Steve Revell  
Rodney Pingree    Gail Center  
Jeffrey Williams

**Others present:** John Beauchamp                      Anne Whiteley  
Scott Stewart    Gary Schultz  
Claude Chevalier    Chris Thompson

#### **Scheduled meetings:**

June 27, 2008                      12:30 – 3:30 PM                      Chapel Conference Room

#### **Review of minutes**

The draft minutes for the April 15, 2008 meeting were accepted as drafted.

#### **Water Treatment Systems**

Anne suggested working from the draft checklist that Roger had prepared. The group confirmed that there is continued consensus for deregulation of water treatment systems that are designed for, and which in practice, only treat for hardness and/or for secondary contaminants. Anne then asked that the section related to treatment systems for pathogens for water systems serving other than one single family residence on its own lot be considered. Questions 10 and 11, related to whether or not the aquifer is contaminated and whether it can be remediated were discussed. The checklist is included below as an attachment. It was decided to revise the questions to focus more on the source of the contamination.

It was agreed that a finished checklist needs an introductory statement that explains the purpose and use of the checklist. Anne will do a first draft of this statement.

The use of WQA (Water Quality Association) Certifications was discussed. The level 1 certification covers

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a basic understanding of water treatment issues for some types of simple treatment systems. It is possible to obtain additional levels of certification up to level 6. It appears that a combination of level 1 and certification for disinfection would be sufficient for a person designing systems for pathogen treatment.

### **Water treatment system designers**

There was a discussion of what qualifications should be required to design pathogen treatment systems for water supplies serving other than one single family residence on its own lot. There was consensus that registered professional engineers should be acceptable under the Wastewater System and Potable Water Supply Rules. The P.E. Board also has jurisdiction and could limit these designs to only engineers with a particular specialty license. There was consensus that Class B Designers who also hold WQA level 1 certification and certification for disinfection systems could design treatment systems for treatment of pathogens. The licensed well drillers suggested that their well driller license alone should be sufficient though they would support adding an hour or two of continuing education to their training courses. In addition, any person holding a WQA level 1 certification and certification for disinfection systems could design treatment systems for treatment of pathogens.

### **Equipment certifications**

The question of whether the treatment equipment should be certified was discussed. John noted that NSF (National Sanitation Foundation) certifications are very specific and very expensive. Each company has several models of systems and each would have to be separately certified. NSF, and other agencies, also certify individual fittings, valves, pumps, and other items that make up a complete system. It was decided to not recommend a requirement that equipment be NSF certified.

### **Pathogen treatment for systems serving more than one SFR**

The issue of regulation of treatment systems for pathogen treatment of water systems serving only one SFR (single family residence) on its own lot was also discussed. Rodney asked why the requirements for an SFR should be different than for other water systems. Gary suggested that the individual owner should be able to decide what treatment system to use as only the owner's family is exposed to the risk. Jeff agreed with Rodney concerns. Gail and Claude supported the concept that the homeowner should be able to decide. Jeff noted that the issue of whether the installed treatment system was appropriate could also be part of the discussion at the time of sale and the new owner could upgrade if there were any concerns. The attendees voted with 8 in favor of deregulation, 1 in favor of regulation, and 2 abstaining.

### **Treatment for primary standards**

Treatment for primary standards was also discussed. The list proposed for people allowed to design these systems was the same as noted above for pathogens with the addition that those using WQA certification would need the specific certification related to the technology proposed for use. An example is that there is a specific certification for use of reverse osmosis treatment systems. The attendees voted with 7 in favor of deregulating these systems for SFRs while all opposed deregulating systems that served anything other than only one single family residence on its own lot.

### **Information and outreach**

## Appendix A

The group recommended that a list of types of treatment systems and related information be created. There is a lot of potential for a good public information document/outreach program that would inform people installing treatment systems that are not regulated.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### **Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### **Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Attachment

Appendix A

Checklist for Water System Evaluation 4-18-2008 **DRAFT Revised 5-20-2008**

This checklist is the basis for determining that the project described below qualifies for exemption from the Wastewater System and Potable Water Supply Rules as stated in 1-304(a)(????) related to treatment for protection against pathogenic organisms. Any water treatment system must be of the point of entry type so that all portions of the interior water distribution system receive treated water.

**This form must be completed, signed and dated, and filed in the municipal land records where the property is located. Installation of a water treatment system without first completing all 3 steps means the project is in violation of the Rules.**

Landowner's name \_\_\_\_\_

Property location (not mailing address) \_\_\_\_\_

Permit # for any existing state permit for subdivision, water supply, or wastewater disposal system \_\_\_\_\_

Note: Use of this form does not supersede any requirements in an existing permit.

Site Evaluation:

1. Source type: \_\_\_\_\_

2. Comments based on visual inspection of well construction: \_\_\_\_\_

3. Well Tag ID# if the well is tagged. \_\_\_\_\_

4. Are there obvious risk factors? \_\_\_\_\_

5. Are there any known sewer lines or septic tanks within 50' of the well casing? Are there any known leachfields with 100' of the casing. If yes, are these a likely source of the contamination?  
\_\_\_\_\_

Distribution System:

6. Atmospheric storage tanks: Are there any atmospheric storage tanks? Interior or exterior? Is the tank properly covered and sealed against contamination? Is there an air gap between the tank and the supply pipe?  
\_\_\_\_\_  
\_\_\_\_\_

7. Pressure tanks: Is the tank operating properly? \_\_\_\_\_

8. Distribution piping: Are there dead ends? Cross connections? \_\_\_\_\_

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Water quality evaluation:

9. Constituents tested for and the concentrations: \_\_\_\_\_  
\_\_\_\_\_

System evaluation

10. Is it your opinion that the aquifer itself is contaminated? \_\_\_\_\_
11. If yes, are there actions that can be taken to remediate the aquifer? \_\_\_\_\_
12. Is a different water source an option? \_\_\_\_\_
13. Are there problems with the water distribution system and/or storage system either inside or outside of the building that should be corrected? \_\_\_\_\_
14. Is water treatment an option? \_\_\_\_\_
15. What are the controlling contaminants and what equipment is recommended as part of the water treatment system? \_\_\_\_\_
16. What is the estimated amount and frequency of backwash discharge? \_\_\_\_\_  
\_\_\_\_\_
17. If the discharge will be directed to the existing soil-based wastewater disposal system, will the treatment system have any adverse effects on the system, i.e. backwash discharge volume and/or constituents? \_\_\_\_\_
18. If the discharge will not be directed to the existing wastewater disposal system it will require a permit under the Underground Injection Control Program. State the UIC permit # \_\_\_\_\_
19. What is the estimated cost to install and operate a water treatment system based on a 20 year life cycle in comparison to a replacement or upgraded source?

Treatment \_\_\_\_\_

Replace or upgrade source \_\_\_\_\_

Appendix A

Certification of the person preparing the design for the water treatment system.

I hereby certify that in the exercise of my reasonable professional judgment the design-related information stated above or included with this form is true and correct, and that the design included with this form for an exemption complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Professional Engineer license # \_\_\_\_\_, or Class B Designer # \_\_\_\_\_  
or WQA certification # \_\_\_\_\_

Instructions for completion of the form

1. Source type: drilled well into bedrock, drilled well in unconsolidated material, dug well, spring, concrete well tiles in brook, pipe into lake, etc. Specify depth and yield if known.
2. Visual inspection of well: Is the well properly covered? Does surface water pond around the well casing? Does the well casing (metal, concrete, stone) allow surface water to enter the casing?
3. Risk factors: Animals tethered or fenced near the well casing. Piles of manure or other materials nearby that might contaminate the well. For primary standards are there nearby users of a particular contaminant that might be the source?
4. Isolation distances to sewer lines, septic tanks, leachfields. Measure from the location based on the best available information. Excavation of sewer lines, septic tanks, and leachfields is not routinely required.

Approved Minutes of the Technical Advisory Committee Meeting  
June 27, 2008

**Members present:** Roger Thompson                      Laura Pelosi  
                                 Steve Revell                                      Gail Center  
                                 Craig Heindel    Jeffrey Williams  
Rodney Pingree

## Appendix A

**Others present:**

Anne Whiteley	Gary Schultz
David Loveday	Alan Bookspan
John Kiernan	Tim Ryan
Peter Boemig	Gary Adams
John Beauchamp	Claude Chevalier
Bruce Douglas	Christine Thompson

### Scheduled meetings:

July 22, 2008	1-4 PM	Room 107 Stanley Hall
August 19, 2008	1-4 PM	Room 100 Stanley Hall
September 16, 2008	1-4 PM	Room 107 Stanley Hall

### Review of minutes

The draft minutes for the May 20, 2008 meeting were accepted as drafted.

### Water Treatment Systems

Commissioner Pelosi gave a brief overview of the input she is looking for as she decides what changes in the existing requirements related to the installation of water treatment system should be made. There is a general inclination to minimize the requirements for single family homes on their own individual lots that are served by an individual water supply. This might include a combination of outright exemption, conditional exemption, and/or issuance of an individual permit. The goal is the minimum of regulation possible while ensuring that public health protection is maintained.

Anne did a short history of the Rule revisions that occurred in 2005 when the boundaries between what designers who are also professional engineers can do in comparison to designers who are not professional engineers so that those who are not regular attendees of the TAC meetings would have the background. The final decisions related to the 2005 Rule revisions were made at the Legislative Committee on Administrative Rules (LCAR) hearings and therefore did not have the extensive public review that most of the Rule changes did have. Because the vast majority of water treatment systems are installed on systems serving only single family residences that were, prior to July 1, 2007, unregulated, the affect on landowners and those installing water treatment systems was not immediately apparent.

Anne noted that the statutory definition of potable water supply explicitly includes water treatment systems, therefore a Rule change is required in order to create either an outright exemption or a conditional exemption.

Anne also reviewed the decisions made at previous meeting and reconfirmed that those attending the meeting agreed that treatment systems that are designed solely to, and actually do, treat only hardness and other

## Appendix A

secondary standards should be granted an outright exemption from the Rules. These systems would still be subject to the Vermont Plumbing Rules and those people hired to install these systems must hold the appropriate Plumbing License. There was not full consensus on treatment systems for pathogens or primary standards. There was majority agreement for an exemption for pathogen treatment for water systems that serve only one single family residence on its own individual lot. There was tentative agreement that a conditional exemption might be useful for other treatment systems, that there should be a checklist that might be filed on the municipal land records in lieu of a permit, and that a maintenance contract might be important to ensure continued operation of the treatment systems.

Alan noted that some people want to add treatment systems to municipal water systems even though the water system is providing water that meets all of the drinking water standards. This is often related to removal of chlorine and other disinfectants but may also be used to treat other taste and odor issues.

TAC then moved to discuss the issue of who should be allowed to design treatment systems that remain subject to the Rules and require either a permit or a conditional exemption.

David Loveday, representing the Water Quality Association (WQA), reviewed the role that WQA has in other states. WQA can do certification of products under NSF standards as well as issuing its own approvals for equipment. WQA certification of designers/installers is accepted in Texas. Other states are considering this but only Texas has agreed at this time. There are about 1800 designers currently certified by WQA. There are continuing education requirements that must be met every three years. There is a lot of chemistry knowledge required in order to become WQA certified. There are about 8 people currently certified in Vermont.

Tim asked how much it cost to become certified. The cost of the test and course materials is about \$300-\$400. The testing could be done in Vermont if desired.

The issue of getting continuing education was a concern of several attendees. Steve asked if some the training by the Vermont Rural Water Association might be accepted. John said that expanding the access to the continuing education courses was important as travel to distant out of state locations made keeping up on training difficult and expensive.

### **Treatment for pathogens for sources supplying other than only one single family residence**

1. Should an evaluation of the water supply be required prior to installation of a treatment system? Yes 15 No 0
2. Should this be done subject to a permit or with a conditional exemption? No vote taken.
3. Who should be allowed to do the evaluation?

Peter said that a professional engineer should certify the design. Gary Adams said that in his experience engineers did not come out to the site and give an answer as to what should be done. Peter agreed, but said that an engineer should not give an instant answer in all cases. Some cases require research in the best options.

Gary Adams said that WQA certification might be sufficient but that Vermont should have its own



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training and certification process.

Alan noted that engineers design the system but they do not know the flow rates of the various models of treatment system. Gary Adams only specifies NFS certified equipment.

Jeff said that he did not object to engineers being involved in the design process he thinks it is important to know where the problem starts because treatment is only used after the source is examined. Once that is done there are plug and play systems, but the big issue is evaluating the source.

Alan said that understanding the geology is not very important. The hotspots are already known.

Claude asked who is best qualified to evaluate the source and noted that the best tool to evaluate a well is a down-hole camera which some of the well drilling companies have.

Gary Adams outlined his normal approach for determining the problem. If coliform test positively, he checks piping for dead ends and cross connections and other problems. The well was chlorinated and a surface evaluation of the well site was done. A retest found even higher coliform level and further evaluation determined there was a problem with the well construction. At this point the situation was referred to an engineer.

Peter said that all of the people in the room have expertise in various areas related to determining the problem and the proper solution. The professional engineer has a broad perspective but turns to the appropriate people for help with a specific part of the determination and the solution.

Steve urged the group to move forward to reach a solution. TAC has been working on this topic for several meetings and now is the time to make the decisions needed to move forward.

Alan said he was concerned with the split between systems serving only one single family residence and those serving all other users. There are small public buildings that would be affected if the cost of obtaining a permit is too high.

Gary Adams gave a quick overview of treatment systems for coliform covering the need for a good initial water analysis because you may need to deal with turbidity and other contaminants in order to have effective treatment. UV especially needs clean water to work well.

Tim said that there are turf battles among the various interest groups. However, either the State should run the certification program or certification should not be required. An expensive certification program will not work.

John agreed with Tim's comments. There should be a state run certification for water system designers. Other professionals such as designers and well drillers who have the certification for water systems should also be allowed to design water treatment systems.

Bruce asked how big a problem is it if only professional engineers design systems for buildings other than one single family residence. Alan estimated that there would be 500 projects per year and with

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the difficulty of finding engineers willing to take this on, it would be a significant issue.

Tim said it can't be limited to professional engineers. People will do the right thing because of the liability if they certify improperly.

Anne asked if there is a way to include people like Gary who do not have a certification but who can do good work.

### **Regulation of pathogen treatment systems for single family homes on their own individual lots only**

Tim said this should be unregulated; it is up to the homeowner.

Gail said that the Health Department opinion is that it should be deregulated and that the homeowner should be provided with information about how to test and how to choose treatment systems if needed. If they want to find the source of the problem they are referred to well drillers and hydrogeologists. If they want to install treatment they are referred to a list of plumbers/water treatment specialist. Gail talks to 20-30 people per day. Gail noted that when they think the source of contamination may be a neighboring septic system, they consult with an engineer.

Jeff asked what the chances are for a cross-connection with dense development. What if the owner says treat mine and don't worry about the neighbors. Craig noted this can happen with older homes in villages.

Peter said that a professional engineer is not required for just a single family home. The homeowner will watch out for themselves. Lake water systems may be a special category as more expertise is required. With drilled well, leave it up to the homeowner, though there is some concern when the homeowner just goes to Home Depot and gets a system without understanding what is needed to treat his specific problem.

Claude said that he thinks the installation of water treatment systems for single family homes is a proven industry and that regulation would just add costs. Leave it up to the homeowner.

Gary Adams said that there are many people in the industry and most are good. The ones with less skill are the ones who do not participate in training. He has concerns about maintaining credibility in the industry. For instance, he has a customer who has been trying for 7 months to get a permit to add treatment for pathogens. The customer is having a hard time believing a permit is even needed based on information from other companies. He tries to tell the customer that if the competitors will cheat on the need to get a permit, they may cheat on other issues as well. He asked David Swift, Regional Engineer in the Rutland Office, how many permits had been issued and learned that only one permit has been issued. He thinks companies feel pressured to cheat in order to stay in business.

Rodney said that treatment should not be installed unless the source cannot be fixed because, if the well is actually contaminated with pathogens, the treatment system must operate perfectly 100% of the time. Rodney supports regulation of this category.

Laura asked Gail if there is a record of problems with people not running the treatment systems. Gary Adams noted that UV systems can fail, but so can the well casing itself.

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John said that individuals can look out for themselves but the multifamily dwellings might be in a different situation.

Steve noted that this issue had been discussed several times before with consensus that SRF pathogen treatment should be deregulated and that he was encouraged that the professional engineers present were in agreement with this position.

Gail noted that she too is concerned about lake water treatment systems. They should have both filtration and disinfection but she is still supportive of letting the homeowner make the decisions while providing the best information for them to use.

Craig, Tim, Alan, and Gary support deregulation. David Loveday agreed that education is very important if homeowners are on their own.

Bruce asked Jeff why he raised the cross-connection issue. Jeff replied that he is concerned about situations where several wells are drawing from the same source. If one well is a pathway for contamination into the aquifer, and instead of fixing the problem treatment is added for only one house, people in the other houses may have a problem without even being aware of it.

### **Treatment systems for other than one single family residence**

Should the addition of treatment that is not required to meet water quality standards be treated differently than in a situation where treatment is required? The groups answer is no.

Anne asked if a maintenance contract should be required. On an 11 to 1 vote the group says a contract should be required. Bruce noted that without a permit the state would have no way to track this for compliance.

Anne said that some process to approve those already doing the work is needed. Some sort of grandfathering process is needed.

Gary said that he had found that some apartment building owners are not very good about keeping up on the maintenance if they are doing it themselves.

Peter said the stormwater approach might work. This requires an annual certification by the homeowner and a periodic inspection by an engineer.

### **Next meetings**

July 22  
August 19  
September 16

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Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting July 22, 2008

<b>Members present:</b>	Roger Thompson	Steve Revell
	Allison Lowry	Gail Center
	Jeffrey Williams	Kim Greenwood
	Craig Heindel	Bernie Chenette
	Spencer Harris	Rodney Pingree
	Lance Phelps	Phil Deckert

<b>Others present:</b>	John Beauchamp	Gary Adams
	Scott Stewart	Christine Thompson
	Alan Bookspan	Claude Chevalier

## Appendix A

### Scheduled meetings:

August 19, 2008	1-4 PM	Room 100 Stanley Hall
September 16, 2008	1-4 PM	Room 107 Stanley Hall

### Review of minutes

The draft minutes for the June 27, 2008 meeting were accepted as drafted.

### Water Treatment Systems

Continuing education - John Beauchamp said that he has longstanding concerns about the continuing education requirements for Water Quality Association (WQA) membership. He has been able to get credit from some locally offered courses such as the licensed water system operator training. The Green Mountain Water Environment Association has also done some training. John thinks Vermont should offer its own training and solve its own problems. WQA does have a list of training opportunities on its web site. The Vermont Rural Water Association might be a source of training courses. The WQA books are a good source of material for training courses.

Steve Revell said that local resources should be used and wondered if current training is diversified enough. There are lots of topics such as the use of downhole cameras and replacing failed bladder tanks. John noted that he goes to training on chemistry and geology in order to extend his knowledge. John said that manufacturers can provide courses for credit but they are product placement training and design factors need more emphasis.

Craig Heindel asked John if he supports requiring WQA certification in order to design water treatment systems and if there are any other organizations that should be considered. John responded that he is not aware of any equivalent group, however some of the well drilling organizations may provide some training.

Gail Center asked if WQA accepts continuing education credits from other organizations. John said they have been reasonable about giving him credits.

Steve observed that everyone is groping for a basic course and observed that WQA level 1 sounds pretty good. Steve asked if the National Ground Water Association (NGWA) covered water treatment. Jeff Williams replied that NGWA did not and is not inclined at this time to add the topic to their training. Jeff said that NGWA does recognize WQA as providing good information on the topic.

Craig suggested that Vermont might use the WQA training as a topic list and do a RFP for local groups to create and provide training. John said that it might be possible to negotiate with WQA on acceptable training courses and noted that it would be good to have the Water Supply Division personnel trained as well.

Bernie Chenette asked how involved getting the WQA disinfection certification add-on. John said the process is fairly significant as there are many factors that can affect the choice of the treatment process.

Jeff asked if John is a member of WQA. John said that he was and supported the organization. Gary Adams

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said that he was not a member and while the organization has good information was not sure that membership is necessary in order to design water treatment systems. Jeff suggested that the Vermont well drillers association and the licensed plumbers might be able to add a section on water treatment to their existing training programs.

Gary Bookspan said that he did not get any water treatment system training or testing as part of being a licensed plumber. He does get training in water treatment as a licensed water system operator. Gary would join WQA if required but thinks there is enough talent in Vermont to handle the issue locally. John noted that in order to be certified at level 1 by WQA a person reads the books and takes the test. WQA also offers 4 hour long training courses to help people prepare to take the test.

Claude Chevalier noted that well drillers are now getting plumbing specially licensed that allow them to install pumps and pressure tanks and they will be getting specialty licenses to plumb up water treatment systems. He also needs an electrical certification to hook up the pump. He had to take an 8-hour electrical course even though only 2 hours dealt with pump installations. It seems like a lot of overlap to have to get all of these separate certifications.

Lance Phelps suggested using an educational approach. Roger Thompson asked if Lance was suggesting that water treatment installation be deregulated. Gail asked if there could be many different ways to become certified. Gary said that there should be some record of the work filed with the state so that people are on notice.

Checklist – Roger asked if the revised checklist that had been e-mailed for review was in improvement over the first draft. Steve said it is better. Lance suggested that nitrate should be listed on the first page and Roger said that a decision is required as to whether the checklist is only for pathogen treatment questions. Alan said that annual water testing should be required. Steve said that the checklist should be made consistent to cover all contaminants of concern.

Other issues - Steve asked if minor repairs include removing the top of a mound and replacing it. Roger said it does not and Steve asked that the regional office staff be informed so they would give a consistent answer.

Scott said the next subcommittee meeting would cover well closure and maintenance of unused wells for future use.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

**Executive Committee**

## Appendix A

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting August 19, 2008

<b>Members present:</b>	Craig Heindel	Spencer Harris
	Gail Center	Bernie Chenette
	Rodney Pingree	Roger Thompson

<b>Others present:</b>	John Beauchamp	Claude Chevalier
	Gary Adams	Scott Stewart
	Anne Whiteley	

### Scheduled meetings:

September 16, 2008	1-4 PM	Room 107 Stanley Hall
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### Review of minutes

The draft minutes for the July 22, 2008 meeting were revised.

### Water Treatment Systems

Roger Thompson started with a review of the progress to date including a meeting on August 12, 2008 with Commissioner Pelosi. As of that meeting the Commissioner is inclined towards:

Water systems serving only	All other non-public
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one single family residence                      water systems

Water softeners	Deregulate	Deregulate
Secondary contaminants	Deregulate	Deregulate
Pathogens	Deregulate	Regulate
Primary contaminants other than coliform	Regulate	Regulate

Anne Whiteley asked if it matters if there is more than one single family residence on a lot as long as each building is served by its own individual system. There was consensus that it should not matter and that as long as the water supply serves only one single family residence installation of water treatment should not be regulated.

Anne then reviewed a possible change in interpretation of the Water Supply Rules. The current interpretation is that if there is more than one source on a property, and the total number users of the two or more sources meet the standards for classification as a public water system, the separate sources will be considered as components of a single water system and therefore be regulated under the Water Supply Rules. This is being reconsidered with a possible new interpretation that unless the sources are physically interconnected through their piping systems each source will be evaluated on its own relative to its status as a public water system. Craig Heindel said he opposes the change if it means that the hydrogeologic connections that exist between multiple sources will be ignored. When someone is operating two or more wells that draw from the same local aquifer, the concerns are the same when someone serves 25 people from one well or serves 25 people from 2 wells that are hydraulically interconnected.

Bernie Chenette noted that the Indirect Discharge Program has circumvention language and maybe something similar could be used in the Water Supply Rules.

Gail Center asked about water treatment systems for primary standards used on water systems serving one single family residence. Anne said that we would come back to this topic.

Anne noted that in the August 12<sup>th</sup> internal meeting Commissioner Pelosi asked about the issue of who should be approved to design water treatment systems other than Professional Engineers. Anne was charged with looking into the concept of a rule that would require that the person designing water treatment systems be a “Qualified Designer.” There would not be a list of training or experience, just a list of areas the person should have expertise in.

The current Wastewater System and Potable Water Supply Rules use the term “Qualified Hydrogeologist”. The Rules go on to state that when hydrogeologic studies are required they shall be



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performed by a qualified hydrogeologist who is a designer or who is working under the supervision of a designer.

The wetlands program has a list of people who are acceptable. Anyone who wants to design is told to send in a few projects which are reviewed by the staff of the Wetlands program and if the work is good their name is added to the list.

The stormwater program did have a definition for designers in their rules, but they deleted it during the last revision. They are continuing to operate as if the definition were still in the rules.

Anne asked what the committee members thought about using this approach for designers of water treatment systems. Gary Adams noted there might be a certification related to a plumbing specialty license that included water treatment systems. John Beauchamp said that he objected at the time the Plumbing Rules added a specialty license for water treatment systems. The proposal was to call the people “water treatment specialists” but the test only covered plumbing issues. The test also had questions that were specific to a brand name technology which seemed inappropriate. Craig asked if John was recommending that there be an experience requirement with a specified number of years and John replied that having a number is better than not. Anne suggested that adding a number makes it equivalent to a licensing program and therefore requires a statutory change. Craig said that did not make sense to him if there is no requirement to apply for a license. Scott Stewart said this seemed to be a pyramid issue to him and that as you get to the smaller population of more difficult situations more regulation of designers is appropriate.

Anne then asked about the general concept of creating a term that created a group defined as “Qualified XXXX.” The group discussed the definition and suggested it should require experience in water chemistry, evaluation and treatment of biologic contamination, technologies used for such treatment, and operation and maintenance of such treatment technology. Gail said don’t use the term specialist. Craig said to use the term designer rather than professional.

### Water Supply Rules

Scott gave a short update on the progress of the subcommittee. The issue of deepening existing wells was discussed. This is a minor repair under the Wastewater System and Potable Water Supply Rules and does not require a permit. It is recommended that the water quality be retested after the well is drilled deeper as there may be new veins of water now entering the well. Craig, Rodney Pingree, and Scott suggested that there should be a conditional exemption from the Rules if the water quality is retested and is found to be acceptable. Scott noted that he is working on a well abandonment policy which can include allowing a well to exist for future emergency use provided the location and upkeep of the well is tracked.

## Appendix A

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

### Approved Minutes of the Technical Advisory Committee Meeting September 16, 2008

**Members present:** Roger Thompson                      Jeffrey Williams  
                                 Rodney Pingree                      Lance Phelps

**Others present:** Claude Chevalier                      John Beauchamp  
                                 Gary Adams                              Anne Whiteley

### Scheduled meetings:

None scheduled

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### Review of minutes

The draft minutes for the August 19, 2008 meeting were reviewed and accepted.

### Water Treatment Systems

The discussion from previous meetings on this topic was continued. Rodney asked why we would regulate treatment for primary standards in SFR systems if we will not regulate treatment for pathogens in those systems. Rodney does not support deregulating treatment for pathogens or for primary standards but wonders why we would regulate treatment for primary standards after deciding to not regulate treatment for pathogens.

Claude asked if we had reached agreement that a qualified designer would be OK. The group decided the answer was yes and the minutes from the August meeting will be revised. Roger pointed out that this was an undefined term which would make it difficult to administer. Lance asked if there were other lists of qualified people in the state.

John said that the Water Quality Association (WQA) covers most of the issues related to water treatment systems. John also noted that a Vermont Plumbing inspector said there is interest in the plumbing community for additional training in water treatment issues.

Anne said that Commissioner Pelosi is concerned about having only Professional Engineers eligible to prepare permit applications. Anne asked if existing water treatment specialists referred larger projects to professional engineers.

Gary asked if the current specialty plumbing license for installing water treatment systems would be appropriate to determine qualified designers. Claude said it appears that we are just recovering old ground with this discussion. Anne asked for Lance's opinion on what concerns the professional engineering community have about water treatment system designs. Lance responded that he did not think the group was very concerned about treatment systems for small scale (non-public) systems.

Lance suggested that if it is not practical to have a state list of qualified designers there should be a warning (informational) statement advising landowners to review the qualifications of any person they might hire to design a water treatment system.

John said that he had just finished some plumbing training. One point that came up was that the state plumbing license for water treatment is only required when the water is from a public water system and that even then enforcement with regard to SRFs is low. Anne said that it did not appear the specialty plumbing license by itself would be a good choice. Anne suggested not creating a definition of qualified designer and accepting anyone with either a professional engineer's license or the plumbing specialty license.

Lance asked Roger if all projects installing water treatment will need a state permit. Roger replied that the assumption is there would be a permit by rule. Anne noted this might also be called a conditional exemption which is how the current Rules cover the exemptions.

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Lance asked if someone with a specialty plumber license is able to determine if the problem is related to septic contamination. Anne said this issue would be covered by use of a diagnostic checklist.

Anne noted that we should notify the Department of Public safety if we end up proposing to rely on the specialty license.

### Primary Standards

Moving to a discussion focused on just treatment for primary standards, Roger asked if there is support for deregulating treatment for primary standards for non-public water systems.

Lance asked why all new wells do not require water quality testing. Roger said this was the existing practice and that when reviewed in the past there was not much support for adding the requirement, however with the time of sale and change in use definitions it may make sense in the future.

When the issue of disposal of radioactive contaminants was considered John said that radium is easily regenerated off resin filters but that uranium is not. Rodney asked if there are situations where radioactivity is so high that the appropriate answer is to close the existing source well rather than dispose of filter backwash with high levels of contamination into shallow placed disposal systems. John said there might be a few places where this would be appropriate, noting that in Plymouth he had projects with high radon, high radium, and high uranium. John said he had also worked on systems to treat lead, arsenic, nitrate, and manganese. John also looks for coliform when he finds high sodium chloride levels.

There are various types of water treatment systems. Reverse osmosis systems can be so expensive that a new source is a better choice. Lead treatment systems might use ion-exchange with discharge of the backwash into the ground. Arsenic would usually be resin filters, which strongly hold the arsenic, with disposal of the filters in a landfill. Reverse osmosis is possible for arsenic removal but is not used a lot. Anion water filters can also remove arsenic. Hydrocarbons are usually removed with carbon filtration and the hydrocarbons that are collected are removed from the site. Most of the ion exchange systems depend on substituting sodium for the contaminant and when these are backwashed the contaminants are discharged into the disposal system.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**

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- 5. Grandfathered design flow and conversion of use policy **high**
- 6. Updating of design flow chart **high**

**Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Bernie Chenette, Spencer Harris, Jeff Williams

**Subcommittees**

Hydrogeology - Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved Minutes of the Technical Advisory Committee Meeting  
November 24, 2009

<b>Attendees:</b>	Roger Thompson	Craig Heindel
	Spencer Harris	Steve Revell
	Gail Center	Kim Greenwood
	Rodney Pingree	Gerry Kittle
	Gary Adams	Claude Chevalier
	Amy Macrellis	Anne Whiteley
	Scott Stewart	John Beauchamp

**Scheduled meetings:**

December 8, 2009	1 – 4 PM	Room 107 Stanley Hall
January 12, 2010	1 – 4 PM	Room 100 Stanley Hall
February 9, 2010	1 – 4 PM	Room 107 Stanley Hall

**Review of minutes**

The draft minutes for the September 16, 2008 meeting were reviewed. Rodney asked to clarify that

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his question related to regulating treatment systems for primary standards was only based on the group's decision to not regulate pathogens, as he continues to disagree with the deregulation of treatment systems for pathogens.

### **TAC Annual Report**

Roger briefly reviewed the statutory change made in the past legislative session to re-establish the requirement for an annual report from the TAC. Craig agreed to write the portion summarizing the actions of the TAC for 2008 and 2009. Roger will update the various tables on permits, applications, innovative systems, etc.

### **Water Treatment Systems**

Anne started with a review of past actions by the TAC and by Commissioners Pelosi and Johnson. Anne stated that the TAC had reached uniform agreement that treatment systems for water softening and secondary should be deregulated. Anne recalled that there was a lot of discussion about regulating systems that treat pathogens with Gail Center giving the history of people contacting the Health Department for advice. Gary Adams and John Beauchamp explained what they, and other water treatment specialists, have done with systems designed to treat water to protect against pathogens. Anne recalls that there was near universal support from TAC for deregulation of systems treating for pathogens that serve individual single family residences with the group more divided on treatment systems serving other non-public water systems. Anne reviewed the discussions related to whether or not there are licenses or certifications other than the professional engineering license that could be relied upon to establish competency of those designing water treatment systems. The certifications from the Water Quality Association were reviewed in some detail, which resulted in concerns about the cost to obtain and maintain the license and the availability of local training and testing sessions. The Vermont Plumbing Specialty License for the installation of water treatment systems was reviewed and while the license assures the plumbing connections are made by knowledgeable people the training does not cover how to choose the proper treatment system or how to evaluate whether improvements to the water system outside of the building should be part of the solution. The TAC also spent time at a couple of meetings reviewing a checklist approach that would require a designer to evaluate the location and construction of the source along with interior plumbing construction. This was not pursued to conclusion as people realized it would require a lot of work to anticipate all of the situations which would occur and to design the checklist to cover each possibility.

Anne then summarized staff meetings with Commissioner Laura Pelosi during 2008. Commissioner Pelosi tentatively decided to support revising the Wastewater System and Potable Water Supply Rules (Rules) to deregulate water treatment systems designed to deal with hardness, secondary contaminants, and pathogens for all non-public water systems. Anne stated that when this was discussed with TAC there was a strong majority of TAC members supporting the deregulation of all non-public systems for pathogen treatment. The Commissioner's Office did not push this issue during the fall of 2008 and the spring of 2009 as the budget shortfalls and other issues consumed the legislative session. Recently, Commissioner Justin Johnson directed Anne to begin work on draft language revising the Rules relative to water treatment systems. Commissioner Johnson is currently taking the same position as Commissioner Pelosi to deregulate treatment systems for softening, secondary standards, and pathogens for all non-public standards. No Rule changes are proposed for treatment systems for primary standards. Anne noted that the TAC has only had limited discussions on treat for primary standards.

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Anne said that all of this history had led to the handout with draft language to revise the Rules relative to treatment systems. Anne also reviewed her recent attendance at the Ground Water Coordinating Committee (GWCC) which also agreed with deregulation of water treatments systems for softening and secondary standards. Also discussed at this meeting was the fact that some contaminants have both secondary and primary standard limits. This means that at lower levels of contamination there are aesthetic concerns while at higher contamination levels there are health concerns.

Spencer asked if the proposed changes mean that all wells will need to be tested for contaminants. Anne said no, that only if a well has been tested and determined to not meet the standards is it considered failed. Roger said that per the current rules, water supplies serving only one single family residences still only need to be tested if there is a reason to believe the water might be contaminated. Anne noted that banks and buyer's attorneys are starting to ask for testing in many cases. Anne said that realtors and bankers have told her they ask for the full suite of testing not just for coliform. It was noted that some purchase and sale agreements now allow the purchaser to back out of the deal if the water supply is contaminated. Gary said that some home inspectors are routinely testing for a wide range of contaminants. Craig asked if a system must be listed on the Agency website in order for it to be considered to be failed. Anne responded that if any of the five contaminants listed in statute and Rules in the definition of "failed supply" (arsenic, nitrate, nitrite, coliform, or uranium) exceeds standards the supply is considered failed. If other contaminants exceeding standards are found, or if the volume or flow of water is found to be inadequate for the permitted use, the system is only considered failed if the system is listed on the Agency website. No systems have been listed to date.

Note: The Wastewater System and Potable Water Supply Rules include three categories of failed water supplies. The first is any water system that is tested for arsenic, nitrate, nitrite, coliform, and uranium with any of these exceeding the drinking water standard. The second is any system that the Secretary affirmatively determines to not be potable and that information has been posted on the Agency website (none have been posted to date). The third is any system that the Secretary affirmatively determines is providing an insufficient quantity of water to support the usual and customary uses of a building or structure and that information has been posted on the Agency website (none have been posted to date).

Gail noted that Rhode Island requires testing of all water systems at the time of sale. Anne reviewed the time of sale discussions that occurred in 2006 with bankers, realtors, and others where there was initial interest in establishing requirements for time of sale inspections. After much discussion it appeared that a complete time of sale inspection could cost several hundred to a few thousand dollars so the proposal was not supported by the Agency. Roger noted that legislation was proposed a few years ago and supported by the Department of health to require routine water testing for rental properties which failed to get legislative support.

Kim said she had some concerns about extensive deregulation and asked if some sort of general permit process might be appropriate. Anne said that we do not have general permits in the Wastewater System and Potable Water Supply Rules and are not planning to use them because so many of the design issues are extremely site specific.

Anne then reviewed the draft rule revision language in the 11/24/2009 draft. As drafted a permit is not

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needed to install or operate a water treatment system for any non-public water system to treat for:

- A. hardness,
- B. secondary standards unless the constituent also has a primary standard, and/or
- C. pathogens, provided the system treats all of the water used for drinking, washing, bathing, the preparation of food, and laundering

Anne expressed concerns about enforcing section B as the constituents that have or are expected to soon have both a primary and secondary standard (copper, fluoride, manganese) all have the secondary standard set at a lower concentration than the primary standard.

The draft language also includes an exemption for the disposal of the filter backwash into an existing wastewater system.

Rodney asked if the intent of the language was to require a whole house treatment system when treating for pathogens as opposed to a point of use system that might only serve the kitchen sink. Anne replied that the language is intended to require all of the water that is defined as being potable in the Rules be treated because people brush their teeth in the bathroom, may consume water in the shower, etc. Roger supported the concept of treating the whole house system. Anne asked for a vote on whether the whole house system should be required. Kim said she was concerned that the Agency would not enforce a whole house requirement. Gary noted that some attorneys and clients are holding out for a new well when there are pathogens in the system. Craig said he supported the whole house approach because it is the best option but that a strong outreach program explaining our reasoning is also needed. Roger suggested adding a section that would exempt treatment systems for copper, fluoride, and manganese. TAC on a majority vote decided to revise the exemption to state that when treating for a constituent with a secondary standard a permit is not required even if the water source includes a contaminant that exceeds the primary standards.

Gail asked why the proposed language for exemption #24 included a statement that the discharge could not include uranium in excess of the standard developed by the Health Department. This was included because there are limitations for discharge of radioactive waste in the Underground Injection Control Rules that are based on federal standards. TAC supported dropping the limitation from the draft language. Kim said that she could not agree to this approach at this time.

Gary noted that uranium bonds strongly to resin so a non-discharging treatment approach could be used.

Gail asked if the use of aerated treatment systems such as for treating radon gas, hydrogen sulfide gas, and/or manganese would be regulated. Roger said it would depend. These contaminants would only be regulated under the current proposal if intended to treat for parameters which exceed their primary standards. Gail noted that neither radon gas nor hydrogen sulfide gas have primary standards.

Steve asked if this means that all systems for primary standards will require permits. Anne replied that they would need permits. Steve then asked if remediation systems, such as the Sites Management Section routinely approved, need permits. Anne said that under the current rules they do need permits. Anne



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said she would discuss this with the Sites Management Section. Roger suggested this might be the one place where a general permit would work with the main requirement being that the system is managed by the Sites Management Section.

John asked about the status of a system that was installed years ago for water softening but in recent testing it is determined that the water also exceeds the primary standards for radionuclides. This system would be regulated.

Anne suggested she might write a site remediation exemption. This concept is supported by the TAC.

Claude asked if there is a schedule for the Rule revisions. Anne said her sense is that the Commissioner wants to move fast and limit the changes to those related to water treatment systems. The process takes about 4 ½ months from the time it starts.

Steve said that he is concerned that this is a special effort related to water treatment issues and once resolved the TAC will stop meeting again. Anne said that this would not happen, because, in addition to other issues, the Water Supply Rules are being revised and TAC review is important for their completion.

### Water Supply Rules

Scott did a quick status update on the revisions to the Water Supply Rules. Anne suggested that the subcommittee meet to deal with Scott's draft of changes for springs and shallow water sources. Scott also reviewed the draft changes to the design flows. These mostly reflect the inclusion of a 10% reduction in design flow based on an assumption that at this point most interior plumbing systems include standard low flow devices. Steve suggested that a new category should be added for deli operations.

Steve also noted that Spencer would like to have more input in setting the meeting agenda as there are topics on the list that have been waiting for a long time.

### Meeting Dates

Future meetings were scheduled for December 8<sup>th</sup>, January 12<sup>th</sup>, and February 9<sup>th</sup> all being from 1 – 4 PM. Roger will arrange for meeting rooms.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

## Appendix A

### Executive Committee

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Spencer Harris, Jeff Williams

### Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

Training subcommittee - John Forcier, Roger Thompson, , Dave Cotton, and Barbara Willis.

Drip Disposal – Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga

Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

Approved  
Minutes of the Technical Advisory Committee Meeting  
December 8, 2009

<b>Attendees:</b>	Roger Thompson	Craig Heindel
	Steve Revell	Gail Center
	Scott Stewart	Gary Adams
	Claude Chevalier	Rodney Pingree
	Anne Whiteley	Kim Greenwood

### Scheduled meetings:

January 12, 2010	1 – 4 PM	Room 100 Stanley Hall
February 9, 2010	1 – 4 PM	Room 107 Stanley Hall

### Review of minutes

The draft minutes for the November 24, 2009 meeting were reviewed. It was suggested that Allison Lowry and Bernie Chenette should be dropped from the list of regular members. It was then suggested that after expiration of the 5 year appointments under the statute that there is no longer a difference between members and others present so that all those present should just be listed as attending the meeting. There was also discussion that minutes were not clear about when a system is considered failed. Roger will add clarifying language to the minutes. Gail asked if the Agency website would coordinate information with the Sites Management Section. Anne said it would. Gail said that the minutes on page 4 should replace radionuclides with uranium as that is the only standard the Health Department has created. Gail asked that the permitting requirements for aeration treatment systems be clarified. Anne and Roger will work this out. Anne said that a permit would be required unless there is an exemption. Gail noted that there is no drinking water standard for radon. Craig suggested that the question should be whether or not TAC thinks the

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treatment systems should be regulated. Anne suggested adding radon and arsenic to the discussion of systems that would not be regulated.

### **TAC Annual Report**

Roger reviewed his work on updating the tables covering the number of permits issued, innovative systems approved, etc. He is proposing to cover the most recent 5 years in the tables with a note that information from earlier periods is covered in previous TAC reports. The committee agreed with this approach. Claude asked about including the processing times for the permits that have been issued. Craig asked if this report is the place to elaborate on this information. Roger and Anne thought it would be useful information and Roger said that this is fairly easy to produce.

### **Water Treatment Systems**

Anne reviewed the meeting she and Roger had with the Commissioner just before the meeting. The Commissioner is looking for TAC to reach agreement on language quickly so that the rule making process can start. The Commissioner is open to including systems that treat for arsenic in the exempt category if TAC supports that approach.

Anne then reviewed the comments she had received on the draft language she had prepared dated 12/3/2009. Craig and Rodney submitted comments as did the Sites Management Section. Kim's e-mail that was circulated today included comments based on review of an earlier draft. There are two drafts with same date that added to the confusion.

Anne said the current draft is the one where the exemption language includes the installation and operation of systems. Sections B and C of exemption #23 were revised based on comments from the previous TAC meeting. The language in exemptions #23 and #24 was updated based on comments from the Sites Management Section. The Sites Management Section noted that about 80% of their projects are related to leaks from underground storage tanks. Treatment systems are installed as soon as there is a defined threat to a water supply and all systems are under the authority of the ANR Secretary. The proposed exemption #25 related to disposal of filter backwash from systems treating for radionuclides was deleted.

Anne said that Gary had contacted the Commissioner and asked about having an exemption for systems treating for arsenic. Anne recalled that John Forcier had objected at an earlier meeting to exempting arsenic treatment systems. Anne asked if the TAC members supported creating an exemption for arsenic treatment systems. Gary said that about 8 years ago, prior to when EPA lowered the arsenic MCL for drinking water, he reviewed the existing systems on display at a trade show. Some of those systems were not too good. However, with the new standard in place, the system designs have been upgraded and seem to be very reliable and based on design factors that include flow rates and other important design factors. The problem with arsenic treatment systems is that people can go onto websites a purchase a system that may or may not work because the proper design factors were not considered in the selection process. Gary said that the two main manufacturers are now using resin based treatment systems that work well. Gary noted that even the best systems require maintenance and if not properly maintained they will not provide good

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treatment and requiring an engineer to design the system will not overcome failure to maintain the system. Gary said that he refers people to the Vermont Department of Health website because they have great information related to the need for maintenance. Gary said that he did not see a need to have an engineer design arsenic treatment systems for non-public water systems.

Anne agreed that regardless of the permitting requirements there is no assurance that the system will be maintained. Anne summarized Gary's comments as a statement that the extra cost associated with a full permitting process would not be a good value. Gail observed that requiring a professional engineer and a permit might be a disincentive to installing a treatment system which is the ultimate goal. Kim asked if it is more important to have a good design or good maintenance. Craig said he would support an exemption for systems serving a single family residence. Kim asked if the reasons for John Forcier's objections are known.

Anne asked for vote on exempting arsenic treatment systems for SFRs. 7 voted yes and 2 abstained with zero voting against. Kim asked how many people did not feel they had enough information to decide. Gail asked about having a list of people approved to design arsenic treatment systems. Rodney said that considering all of the effort to license septic designers there should be an equivalent for water treatment designers.

Anne asked for a vote on exempting other non-public systems. Craig asked Gary if the SFR type systems scale up to larger non-public systems. Gary said that he would involve a professional engineer for liability reasons. Claude said that his company is responsible for systems that serve a total of 15,000 users and sees no significant differences between systems serving one SFR and those serving other non-public systems. Gail noted that the Department for Children and Families licensing regulations do not require testing for arsenic at day care operations. Gail said that the design and operation requirements are pretty much the same for SFR and other non-public systems.

Steve asked about a well serving 5 apartments with 2 bedrooms in each unit. This would be assumed to have capacity for 20 occupants and therefore would not be a public system. Steve asked Claude how often such a system would need maintenance. Claude said he tracks the systems and calls the customers to remind them of when the maintenance is due.

Roger asked what level of treatment is achieved with resin filters. Gary and Gail said that arsenic is routinely removed to less than 1 PPM against a standard of 10 PPM.

Anne asked for a vote on an exemption for arsenic treatment on all non-potable water systems and there were 8 votes yes, no objections, and with 1 abstaining. Anne asked if the system needed to treat the whole house and it was decided for arsenic it can be a point of use system.

Anne asked if the group wanted to next consider treatment for radon. Rodney asked if we had already covered all of the acute contaminants. It was decided to consider radon next and the group voted 8 in favor and with 1 abstention to deregulate radon treatment systems for all non-public systems.

Nitrate contamination was the next topic. Craig asked if there are existing well engineered package type systems for nitrate removal. Gary said there are not pre-engineered systems for nitrate to the extent that systems exist for treating arsenic. Gary noted that the systems can be tricky and in some cases can

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malfunction so that the water ends up with a higher nitrate concentration at a particular point in time. Gail said that most nitrate treatment systems use a reverse osmosis design. Gary said that reverse osmosis systems can work and can include a flow meter that shuts down the system when maintenance is needed. Gary also noted that in most cases the water being treated is only slightly higher than the drinking water standard with sources very high in nitrate being pretty rare. When the issue of whether nitrate systems should require designs prepared by professional engineers, Craig said that John Beauchamp thinks that a Water Quality Association Level 6 license should be acceptable as well. Gary said that resin treatment systems for nitrate are also available but they require a comprehensive water quality test to ensure they will function well. Anne suggested leaving nitrate to be considered at a later time.

Gail asked if lead treatment systems should be deregulated. The consensus was to deregulate. Rodney suggested that all treatment systems for contaminants with chronic concerns be deregulated. Kim asked where the Agency's authority to regulate treatment systems came from in the first place. Anne replied that it comes from statutory language which defines water systems as including the source, the distribution, and treatment systems. This was established in 2002. The limitation that all designs must be prepared by professional engineers was made explicit in 2005 when the Wastewater System and Potable Water Supply Rules were updated giving the non-engineer designers more authority while prohibiting them from designing water treatment systems. Once people realized how many treatment systems exist and are subject to regulation, and that there is a long history of treatment systems being installed without a history of problems associated with these systems, it was decided to see how much of the process could be deregulated.

Rodney proposed that we deregulate any treatment system not used to treat for acute contaminants based on the earlier decision to deregulate treatment for pathogens. Rodney restated his proposal to suggest deregulation of all water treatment systems for non-public water supplies in light of the earlier decision to deregulate treatment systems for pathogens. The group voted on this with 8 votes in support and with 1 abstention.

Anne said she would need to contact the engineering groups to see if they would be in support or opposition. After extended discussion it was decided this might be too big a change to bring to the legislature at one time and it was decided to only add lead, arsenic, and radon to the list of deregulated treatment systems.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

## Appendix A

### **Executive Committee**

John Forcier, Steve Revell, Lance Phelps, Phil Dechert, and Roger Thompson  
Alternates – Chris Thompson, Spencer Harris, Jeff Williams

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Water treatment systems – Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

## Appendix B

### SUMMARY TABLES OF ALTERNATIVE AND INNOVATIVE SYSTEMS AND PRODUCTS

Approval letters and contact information for each technology are available at the Agency web site:

<http://www.anr.state.vt.us/dec/ww/innovative.htm>

<b>SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS STATUS AS OF DECEMBER 31, 2009</b>		
Product	Description	Status
<b>Advanced Treatment Systems</b>		
Intermittent sand filter	attached growth aerobic process	Allowed in the Rules
Recirculating sand filter	attached growth aerobic process	Allowed in the Rules
Advantex	textile treatment system	Approved for General Use
Ecoflo Biofilter	peat treatment system	Approved for General Use
SeptiTech	recirculating fixed film treatment system	Approved for General Use
Bioclere	fixed film trickling treatment system	Approved for General Use
Puraflo	peat fiber biofilter treatment system	Approved for General Use
Bio-Microbics FAST	fixed film aerated treatment system	Approved for General Use
Singular	suspended growth extended aeration	Approved for General Use
Advanced Wetland Treatment System	aerated subsurface-flow wetland	Approved for Pilot Use
Enviro-Guard	combined process wastewater treatment	Approved for General Use
Aqua-Aire	aerobic treatment system	Approved for General Use
Aqua-Safe	aerobic treatment system	Approved for General Use
Chromaglass	sequencing batch reactor	Approved for General Use
The Clean Solution	aerobic treatment system	Approved for General Use
<b>Other Devices</b>		
Flout	floating outlet distribution box	Approved as substitute
Orenco Hydro-splitter	mechanical distribution	Approved as substitute
Juggler	septic tank pumping truck	Determined not subject to Rules
Miller septic tank liner	septic tank liner	Determined not subject to Rules
Enviro-Septic (Presby)	request for increase in application rate	Approved for General Use
Roth MultiTank polyethylene tanks	polyethylene septic tanks	Approved for General Use
Polylok Effluent Filter PL-122, PL-68, PL-525	effluent filters	Approved for General Use
Orenco Outlet Filters	effluent filters	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use
Tuf-Tite Effluent Filters	effluent filters	Approved for General Use
Zoeller Filters	effluent filters	Approved for General Use
Bio-Microbics SaniTEE	effluent wastewater screen	Approved for General Use
EZflow	replacement for crushed stone	Approved for General Use
Zoeller TRU-FLOW Splitter	flow splitter	Approved for General Use
Xactics polyethylene tanks	polyethylene septic tanks	Approved for General Use

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<b>SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS</b>		
<b>Prior to 2002</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Intermittent sand filter	attached growth aerobic process	Allowed in the Rules
Recirculating sand filter	attached growth aerobic process	Allowed in the Rules
Advantex	textile treatment system	Approved for General Use
<b>Other Devices</b>		
EnviroSeptic (Presby)	gravelless distribution pipe	Approved as substitute
Flout	floating outlet distribution box	Approved as substitute
Orenco Hydro-splitter	mechanical distribution	Approved as substitute
Juggler	septic tank pumping truck	Determined not subject to Rules
Miller septic tank liner	septic tank liner	Determined not subject to Rules

<b>New in 2002</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Ecoflo Biofilter	peat treatment system	Approved for General Use
SeptiTech	recirculating fixed film treatment system	Approved for General Use

<b>New in 2003</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Bioclere	fixed film trickling treatment system	Approved for General Use
Puraflo	peat fiber biofilter treatment system	Approved for General Use
SpecAIRR	reactor treatment system	Approved for General Use
<b>Other Devices</b>		
FRALO SEPTECH polyethylene tanks	polyethylene septic tanks	Approved for General Use
Polylok Effluent Filter PL-122	effluent filter	Approved for General Use



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<b>SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS</b>		
<b>New in 2004</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Bio-Microbics FAST	fixed film aerated treatment system	Approved for General Use
<b>Other Devices</b>		
Enviro-Septic (Presby)	request for increase in application rate	Approved for General Use
Polylok Effluent Filter PL-68	effluent filter	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use

<b>New in 2005</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Singular	suspended growth extended aeration	Approved for General Use
Advanced Wetland Treatment System	aerated subsurface-flow wetland	Approved for Pilot Use
Enviro-Guard	combined process wastewater treatment	Approved for General Use
<b>Other Devices</b>		
Enviro-Septic (Presby)	request for increase in application rate	Approved for General Use
Polylok Effluent Filter PL-525	effluent filter	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use

<b>New in 2006</b>		
<b>Advanced Treatment Systems</b>		
Product	Description	Status
Aqua Aire	aerobic treatment system	Approved for General Use
Aqua Safe	aerobic treatment system	Approved for General Use
Bio-Microbics RetroFAST	fixed film aerated treatment system	Approved With Renewal
Ecoflo Biofilter	mixed media biofilter	Approved With Renewal
<b>Other Devices</b>		
Infiltrator	request for increase in application rate	Approved for General Use

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<b>SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS</b>		
<b>New in 2007</b>		
Chromaglass	sequencing batch reactor	Approved for General Use

<b>New in 2008</b>		
The Clean Solution	Aerobic Treatment System	Approved for General Use

<b>New in 2009</b>		
No Systems were approved in 2009		

Appendix C

DEC OFFICE	Applications Received					Permits Issued				
	2005	2006	2007	2008	2009*	2005	2006	2007	2008	2009*
Barre	864	961	893	784	649	850	967	885	839	636
Essex	692	684	693	737	634	694	717	708	767	637
Rutland	534	560	664	627	493	564	546	681	633	497
Springfield	590	680	920	730	521	570	653	938	774	536
St. J.	344	399	514	413	396	340	403	534	422	385
<b>Totals</b>	<b>3024</b>	<b>3284</b>	<b>3684</b>	<b>3291</b>	<b>2693</b>	<b>3018</b>	<b>3286</b>	<b>3746</b>	<b>3435</b>	<b>2691</b>

\* thru 12-21-2009

DEC Office	Permits Denied														
	Denials Issued					Reasons for Denial									
						Insufficient Information					Non-compliance with Standards				
2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	
Barre	18	4	10	7	1	17	3	8	7	1	1	1	2	0	0
Essex	1	5	8	21	4	1	5	5	15	3	0	0	3	6	1
Rutland	0	4	2	0	2	0	4	2	0	1	0	0	0	0	0
Springfield	4	4	11	11	6	3	3	11	11	5	1	1	0	0	0
St. Johnsbury	0	0	3	3	3	0	0	3	3	3	0	0	0	0	0
<b>Totals</b>	23	17	34	42	16	21	15	29	36	13	2	2	5	6	3

Appendix C

DEC Office	Enforcement Cases				
	2005	2006	2007	2008	2009
Barre	1	6	2	3	1
Essex	0	0	1	0	0
Rutland	0	3	2	3	3
Springfield	1	1	3	1	3
St. Johnsbury	0	0	0	0	0
<b>Totals</b>	2	10	8	7	7

Performance Standards for Permits Issued During 2005 - 2009

	# of Permits Issued	Average DEC Days	Average Total Days	# Permits That Exceeded Stds.
2005	3018	19.1	48.6	76
2006	3286	18.5	59.9	124
2007	3746	16.8	48.2	55
2008	3435	12.3	62.1	17
2009*	2691	11.8	41.6	19

\* thru 12-21-2009

## Appendix D

### **Technical Advisory Committee: Members as of December 2009, Executive Committee, Sub-Committees and Statutory Charge**

Technical Advisory Committee to the Secretary of the Agency of Natural Resources regarding Environmental Protection Rules (Wastewater System and Potable Water Supply Rules)

Members and statutory charge (Updated to December 21, 2009)

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## Appendix D

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Rodney Pingree, Water Supply 802-241-3418 [rodney.pingree@state.vt.us](mailto:rodney.pingree@state.vt.us)

**Health Department technical staff**

Gail Center  
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**Executive Committee:**

Steve Revell, Lance Phelps, Phil Dechert, Roger Thompson.  
Alternates – Chris Thompson, Spencer Harris, Jeff Williams.

Hydrogeology - Craig Heindel, Dave Cotton, Steve Revell.

Training - Roger Thompson, Dave Cotton, Barbara Willis.

Licensed Designers - Spencer Harris, Alan Huizenga, Gerry Kittle.

Well driller's Knowledge Checklist - Jeff Williams, Rodney Pingree, Roger Thompson, Gail Center, Steve Revell.

Drip Disposal –Roger Thompson, Dave Cotton, Steve Revell, Alan Huizenga.

Water Supply – Steve Revell, Craig Heindel, Claude Chevalier, Jeff Williams, Rodney Pingree, Roger Thompson

Water Treatment Systems - Gail Center, Jeff Williams, Rodney Pingree, Dave Cotton, Lance Phelps, and Roger Thompson.

## Appendix D

### **Statutory composition of the Technical Advisory Committee and the charge to the committee:**

Section 1978 of 10 V.S.A., as established by Act 133 of the 2001 Adjourned Session, established a Technical Advisory Committee (TAC) to advise the Vermont Agency of Natural Resources regarding the technical standards and implementation of Act 133. The TAC's charge is:

The secretary shall periodically review and, if necessary revise the rules adopted under this chapter to ensure that the technical standards remain current with the known and proven technologies regarding potable water supplies and wastewater systems.

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 agency of natural resources.

The technical advisory committee shall provide annual reports, starting January 15, 2003, to the chairs of the house and senate committees on natural resources and energy. The reports shall include information on the following topics: the implementation of this chapter and the rules adopted under this chapter; the number and type of alternative or innovative systems approved for general use, approved for use as a pilot project, and approved for experimental use; the functional status of alternative or innovative systems approved for use as a pilot project or approved for experimental use; the number of permit applications received during the preceding calendar year; the number of permits issued during the previous calendar year; and the number of permit applications denied during the preceding calendar year, together with a summary of the basis for denial.

The annual reporting shall end as of January 15, 2007.

Note: The reporting requirement was extended in the 2009 Legislative Session.