

FIRST 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 14, 2003

/s/

Submitted by : _____
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Wastewater Management Division

For:

Members:

Bernard Chenette, P.E.

Gary Fern, P.E.

Gerald Kittle, site technician

Spencer Harris, site technician

Craig Heindel, hydrogeologist

Stephen Revell, hydrogeologist

Philip Dechert, town planner

Gail Center, Health Department

Rodney Pingree, Water Supply

Lance Phelps, P.E. (alt. Alan Huizenga)

John Forcier, P.E. (alt. Brad Aldrich, P.E.)

Barbara Willis, site technician (alt. Justin Willis)

Jeff Williams, well driller

David Cotton, P.E., hydrogeologist

Kimberley Crosby, town planner

Kimberly Kendall, water quality specialist

Roger Thompson, Environmental Conservation

Allison Lowry, Environmental Conservation

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REPORT OF THE TECHNICAL ADVISORY COMMITTEE
ON THE WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES

Purpose: This report on implementation of the Wastewater and Potable Water Supply Rules is the first of five annual reports required by the on-site septic bill (Act 133 of the 2001 Adjourned session). The statute was the result of a ten-year public process focused on reforming the permit program for wastewater systems and potable water supplies for public buildings and single family homes. The technical standards for the wastewater systems and water supplies had not been updated since 1982.

Section 1978 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. To that end, the statute established a Technical Advisory Committee to advise the Agency regarding the technical standards and implementation of the Act. The Committee is required to report annually until January 15, 2007 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 the statute and the rules adopted under the statute; 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 Technical Advisory Committee hereby submits this report in fulfillment of its charge for January 15, 2003. Additional questions or inquiry should be directed to Roger Thompson, Regional Office Manager, 103 So. Main Street, Waterbury, VT, 05671-0405 (phone: 802-241-3027) or to specific members of the Committee.

Background:

Act 133 was the result of a ten-year effort partly directed toward revising the technical standards in the on-site rules. As part of that process, the Agency of Natural Resources had established an ad-hoc Technical Advisory Committee that assisted them in reviewing the scientific basis for changes to minimum site conditions and supported the draft revised rules submitted to the legislature in January 2002. When the Act was passed on June 13, 2002, the Agency acted promptly to incorporate the statutory requirements into the rules, which were effective August 16, 2002.

In response to the statutory directive, a new TAC was established and met for the first time on October 22, 2002. There were two requirements in the statute that needed detailed rules, expanded site technician authorities as licensed designers and delegation of the permit and enforcement program to municipalities. The TAC has been meeting on these and other issues and expects to produce draft rules for these two items by late January of 2003. Minutes of the meetings through January 7, 2003 are appended to this report. After those rules are in the formal rulemaking process, the Committee will take up other items related to the technical standards such as:

- Whether multiple barriers are necessary for public health protection...the Department and the Health department have operated on that premise for many years.
- Design flows for all categories...only residential and campground flows were looked at for these rules
- The adequacy or appropriateness of the requirements for the permit to subdivide existing improved lots
- Water Supply is considering a general permit for some water supply treatment units such as a water softener, iron removal facilities etc. Will there need to be a permit under these rules? It may depend on the discharge from the unit and the relationship with the UIC program. The Health Department mentioned that one study of these units in another state indicated that 20% did not treat the water to standards.
- Replace the percolation test with soils evaluations

Implementation activities:

The Governor established an Education and Implementation Committee to advise the Agency on implementing Act 133 and the new rules. That Committee has created a thorough report of the education effort and other issues related to implementation from passage of Act 133 to now. A copy of that report has been sent to you. The Committee refers you to that report for the implementation information in order not to duplicate effort. Future annual reports by this Technical Advisory Committee will address implementation issues as well as technical issues.

Report on Innovative Technologies:

The following innovative systems and products have been approved for general use as of November 19, 2002. The specific approval letters are included at the end of this report.

Included in existing rules:

- Intermittent Sand Filter
- Recirculating Sand Filter
- At-Grade System

Specific product approvals for general use

- Advantex®, textile treatment system
- Ecoflo Biofilter®, peat treatment system
- Septitech®, a recirculating fixed film treatment system

Products that substitute for traditional methods

- EnviroSeptic®, gravelless distribution pipe
- Flout®, floating outlet distribution box*
- Orenco Hydro-splitter®, mechanical distribution alternate to a distribution box*

*These have not requested product approvals, however, the Department has approved their use.

Letters indicating that a technology is not subject to the rules

- The Juggler®, a septic tank pumping truck that removes solids and returns water to septic tank.
- Miller septic tank liner

The statute appears to refer to the innovative technologies applications for approval when it requires a report on “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.” There are two applications under review for systems requesting general use approvals. No applications for general use products or systems have been denied. There have been no applications for pilot or experimental use products.

Preliminary numbers indicate that about 6 advanced treatment systems, Advantex and EcoFlo, were permitted in 2002. Several additional projects using advanced treatment are under design or in the review process. Based on reports from the distributors it appears that about 50 advanced treatment systems were installed in 2002 on lots that did not require a state permit.

About 10 systems have been approved or are under design using the reduced minimum depth to bedrock or seasonal high water table (SHWT). Some of these systems will also use an advanced treatment system even though advanced treatment is not required to use the reduction in minimum site conditions.

Some sites have been evaluated where it was determined that a permit could not be issued because of the presence of the seasonal high water table. Some of these sites may be approvable if a subsurface drain (curtain drain) is installed and proves effective at lowering the water table. There have been some projects that met the reduced site conditions that could not be approved

because the town did not have a confirmed town plan and zoning. At least one site that could have been developed with the standard site conditions used the performance based approach to allow for installation of a system closer to the building, thereby reducing cost.

The ability to use the reduced site conditions only began on August 16, 2002. The use of the reduced site conditions so far has been limited, as initially the licensed designers were unsure how the process would be applied to a particular project. As the Agency provided training sessions, some designers began to use the enhanced prescriptive and performance based approaches. The Agency will be providing additional training in early 2003, particularly with respect to use of the “desktop” hydrogeological analysis that can be the basis of a performance based design. The Agency expects to see significantly more use of the performance based design approach in 2003.

Other permit applications (for conventional systems)

The Agency issues a formal report to the legislature annually, called the *Annual Report of Permit Activity*, which provides statistics on all the permits issued by the Agency. The Technical Advisory Committee will not attempt to include here all the information regarding other permits issued under the Wastewater System and Potable Water Supply Rules and other Agency programs that will be included in the Agency report.

Report on permits received, issued and denied

Office	Applications Received	Permits issued	Denials issued	Insufficient Information	Non-compliance	Enforcement case
Barre	813	827	8	4		2
Essex	712	706	3	2	1	
Rutland	522	485	2	1	1	
Springfield	568	584	24	24		
St. Johnsbury	242	243	1			
Total	2857	2845	38	31	2	2

Information on three denials was unavailable at the time of issuance of this report. A search of old records would be necessary to determine the reasons for denial of those projects. Many of the cases of insufficient information were resolved through denial after additional requests for submittal did not result in adequate supporting data. As time allows, the regional offices attempt to clear inactive projects from the pending project list by sending reminder requests. The applicant is notified that failure to submit the required data or to submit a schedule for pursuing the application will result in denial. As is apparent from the chart, the Springfield Office has a high number of denials during this period, caused by the closing out of old pending projects. In other periods, other offices will show a similar increase in denials. In such cases, denial does not prejudice resubmittal of the application.

WASTEWATER MANAGEMENT DIVISION
MEMORANDUM

Date: December 1, 2002 (e-mail address revised)

Re: **Technical Advisory Committee** for on-site program
Members and statutory charge

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

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.

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APPROVED MINUTES OF TECHNICAL ADVISORY COMMITTEE MEETING
OCTOBER 22, 2002 (FIRST MEETING)

Members present: Steve Revell, John Forcier, Gary fern, Spencer Harris, Lance Phelps, Philip Dechert, Kimberley Crosby, Bernie Chenette, Barbara Willis, Gail Center, Roger Thompson, Gerry Kittle, Craig Heindel, Dave Cotton, Kimberly Kendall, Rodney Pingree

Members absent: Jeff Williams, Allison Lowry

Others attending: Anne Whiteley, Marilyn Davis, Christopher Recchia

Future meeting schedule:

November 5, 2002 1:00 p.m.-4:00 p. m. discussion of the licenser designer categories and the hydrogeological chart.

November 19, 2002 12:00 p.m.-2:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury, VT

December 2, 2002 1:00 p.m.-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury, VT

December 17, 2002 1:00 p.m.-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury, VT

Minutes:

After the welcome and introductions, Roger Thompson gave a status update on the innovative system review process. Frank O'Brien has been hired as the Innovative Systems review engineer and will be splitting his time between the Innovative review position and the Indirect Discharge Section work until the ID section can refill his old position.

Commissioner Recchia arrived and spoke about the results he would like to see from Committee's work. The department is committed to complete the revisions necessary to expand the licensed designer classes as the statute provides as soon as reasonably possible. Chris would like to submit the draft rule to the Legislative Committee on Administrative Rules by late January. He then asked : What can the Department do to make this successful?

Dave Cotton asked what the Department's plans for continued updating of the rules. The Commissioner indicated that the Department is also committed to update the rules periodically as necessary to incorporate current science. The Committee is appointed for 4 years and can assist by letting us know where the uncertainties and inconsistencies are and help us delineate the appropriate balance between risk

management, public health and environmental protection and development needs. He reiterated that we want to complete the licensed designer revisions early next year, by end of January if possible.

John Forcier noted that as a member of the Education and Implementation Committee he sees an overlap between the committees' work on implementation, education and training and wanted to know if the former TAC work on the chart to be used in determining hydrogeological analyses had been made available to the Regional Office staff. Other members stated that they were using it as guidance in submitting information and that the RO staff should be familiar with it and use it also.

Chris mentioned that a good part of the information from the report was put into the revised rules. Members of the former TAC Committee noted that the report was a good compilation of what various members of the Committee were thinking but that there was no "agreement" on all the final issues. Roger noted that there was not time to finalize the Table and incorporate it in the rule, however the TAC can work on that now and perhaps get it usable as guidance, eventually to be in rule.

It was noted that the old report was a "political position statement" and that not all the positions could be incorporated into the rule. The members wrote up the presentation on the items they were most passionate about, and a revised document may not make the same conclusions as were presented in the old report. The Committee asked for copies of the old reports to be provided to all the members.

Chris noted that the report to the legislature must include quite a bit of "beancounting" that the Department does as a matter of course. He would like this Committee to focus on giving assistance on clarity and scientific criteria rather than creating the data.

John Forcier reiterated that there is a lot of confusion and many engineers are backing off and not working on projects because of the confusion. He indicated that the first agenda item (Is there a need to reevaluate the minimum site criteria) is incorrectly stated. The issue is not that the engineers want to change the minimum site criteria, but that engineers want the Regional Offices to more readily accept the engineer's evaluation of the significance of soil mottling and whether it is indicative of the seasonal high water table. A hydrogeologist noted that he is using the Table from the former report to make his evaluations and the Regional Office is not familiar with it.

A discussion of the Addison County site visit in August ensued with the final result that it was felt that both perceptions noted above had been presented at the site visit, and since, but now we must move on to find the appropriate resolution of the issues. The Commissioner indicated that Regional Office staff is being given guidance on how to review a project giving increased reliance on the engineer's proposal. If the factual evidence supports the engineer's claim and reasonable assumptions are used, then a permit will be issued on that basis. We also agreed that there may be steps to take to define scientific criteria to support a change in the minimum site conditions but that it is a

very complex issue. The mathematics may not support what actually happens in the field due to the effects of extremely good construction practices or other variables such as low operating flows improving system performance.

The Committee agreed that it would be useful to monitor some existing sites in poor soils next spring even though the results may not provide definitive answers. The program at a minimum should require metering of flows and weekly checks on whether the systems are surfacing. There should be enough sites to represent various soil types and slopes in the Addison County area.

John Forcier noted that the Agency's field test for soil identification will be 11/13 and that another is planned in the spring. He is working with a NH engineer to present a day's refresher course in soil identification and hydrology. The Regional Engineers will be invited to attend.

The Committee talked again about the difficulty in designing a monitoring program that will give useful data due to complexities in extrapolating from low flows to design flows, peak uses on occasions versus high daily uses close to design flows etc. An old study done by Stan Corneille was mentioned that collected data on hundreds of systems yet was not able to draw good conclusions.

It was repeated that much soils analysis is a gray area rather than black and white and that Regional staff needs to adjust to relying on the engineer's professional judgment in those situations. Anne reminded the Committee that the engineer is not certifying that the system will never surface. The certification is that the system is **designed to keep the effluent six inches below the ground surface** taking the seasonal high water table into account. The six inches design factor is the margin that the former TAC thought was appropriate so that effluent would rarely surface because of unusual outside influences. Anne noted that if a system fails, the reasons for failure will be investigated and may be determined to be construction or operations related rather than design related.

Dave Cotton mentioned that the soils hydrogeology Table in the former report will only work for the easier sites that can be evaluated without monitoring.

The Committee set meeting dates and established two subcommittees, one to work on finalizing the Table and one to set up training opportunities, specifically one during the next month or so. The "Hydrogeology Table" subcommittee is Allison Lowry, Craig Heindel, Dave Cotton and Steve Revell. The training subcommittee is John Forcier, Roger Thompson, Allison Lowry, Dave Cotton, Barbara Willis and Marilyn Davis.

Additional discussion debated whether there should be changes in the basic performance criteria such as using a two year time of travel and then allowing the effluent to surface, or using disinfection and allowing surfacing or discharge. This is a complex issue and should be reviewed by the Committee in the future rather than during the next four months when we have so much else to accomplish.

It was noted that we will have to move very quickly to draft new licensed designer rules by January. A third subcommittee to consider the change in the licensed designer rules and come up with topics for discussion at the next meeting consists of Spencer Harris, Gary Fern, Alan Huizenga for Lance Phelps, and Gerry Kittle.

It was also noted that we need to think about innovative solutions to the poor soils in Addison County that are doable under the existing minimum site conditions, such as drip irrigation or holding lagoons that only release into soils when the water table is low. The Committee agreed to consider this and bring new ideas to the next meeting. The Committee did agree that it was not possible to find a design criteria that would allow every previously exempt property to be built upon.

The Committee asked that Richard Czaplinski be invited to be on the committee because he was such a valuable addition to the former TAC. The next meetings were set as noted at the beginning of these minutes. Marilyn Davis agreed to call him and request his assistance.

The meeting schedule was set as given at the beginning of these minutes.

APPROVED MINUTES OF TECHNICAL ADVISORY COMMITTEE MEETING
NOVEMBER 5, 2002

Members present: Unfortunately, I have misplaced the attendance list for this meeting.

Next meetings:

November 19, 2002, 1:00-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury VT

December 2, 2002, 1:00-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury VT

December 17, 2002, 1:00-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center, Waterbury VT

Minutes:

The draft minutes of the previous meeting were not sent out to the committee. They will review them at the next meeting.

The subcommittee working on the hydraulic chart was asked if there were any comments on progress at this time. The report is not due until next meeting.

It was noted that the chart on page 10 of the original TAC committee final report is the most important chart, however, a person identifying a soil in order to use the chart should not simply rely on the cursory identification shown there i.e. "fine sandy loam" . . .the structure (how strong or weak the soil is) and similar data must be considered. The chart calculations based on slope are also simplistic ones. It was also stated that though many clay soils will not pass the desk-top study calculations, designers can design systems that will not surface. The design, however, could not be certified to calculate that the effluent will rise no closer to the ground surface than 6 inches.

The committee was asked if there are other solutions for Addison County. Reference was again made to the hydraulic chart. It was stated that the baseline performance standard is not surfacing at all versus surfacing a few days a year. It is believed that for a reasonable clay site with mottles at 10-12 inches, good soil structure, and a lot of available length for a system the Table, as constructed now, will say that such a site can be built on without a specific site analysis, but that if hydraulic conductivity parameters are lowered much more it will seal out those sites. This is no different for Addison County than it is for the rest of the state. The committee agreed that any guidance must be applicable to the whole program and not just one geographical area. The desktop hydrogeological study is provided so sites that can easily be determined to meet requirements based on conservative assumptions may be approved without the need for site specific work. The

committee agreed that the chart needed to be completed and then used for some projects to see how it actually functions in the real world. There was a discussion of the difficulty of doing site specific tests, such as slug tests, and particularly trench tests because the work of digging the trench in tight soils at certain times of the year smears the walls of the trench and reduces the hydraulic properties you are trying to measure. The tests are also costly.

The ideas being discussed were summarized as:

- A. The normal easy sites will work well with the chart.
- B. Addison County soils are somewhat unique, the chart may not apply.
- C. The performance standard of not surfacing can be met by systems for which the design calculations do not meet the requirement to stay 6 inches below the surface of the ground. The designers know this from experience with such systems but do not know how to “demonstrate” that the design will work. In certifying that a system meets the rules it is not only the 6 inch standard that is the problem, it is other standards such as isolation distances that are also a problem for these systems.

John Forcier noted that the training that is being set up will discuss some of the judgments required to analyze soils, and show that it is not black and white. The training will help eliminate the gaps between the black and white line and the judgements so that more people seeing a certain situation will have similar judgments.

There were several opinions on why consultants were unwilling to certify sites. The original statement was that it is not about whether the system would surface or not, it was about whether the regional office would approve the consultant’s proposal. Then the concern was redefined to be that it was about not being able to certify that a system would not surface. It was noted that the not-surfacing standard has been in place in New York for 17 years, at least, because dye tests are performed to make sure that the system does not surface when title is transferred. Several consultants said that the regional Offices usually agree on where the mottles are but it is a matter of the difficulty of justifying that the system will meet the requirements of the rules when it is a questionable site. Some said the “6 inches” is the issue others said: No, it is the liability that is the problem. Consultants are concerned that the state will enforce against them if the system fails if it is a judgment call design. In some cases the town standards have been less stringent than the state standards or there have been exemptions for systems on 10 acres...many systems would be designed with “cheater pipes” to the surface. The changes create a steep learning curve for clients who may not be able to build or have a lot of new expense and they are angry. Consultants do not want to do work on systems when the way the new rules will be administered is still in flux. If the state had no enforcement capability, that is, go back to the status before the rules, it would be a lot better. Consultants would not have to worry about being second-guessed. Consultants would like to be sure that the Regional Engineers will be receptive to new concepts.

There are some new innovative systems that could have criteria developed such as drip irrigation and systems that hold the effluent for a while and discharge it when the

groundwater table is lower. No one knows how many of the sites where the consultant designed “what would work” because there was no state permit required have surfacing systems or for how long they surface. They generally do not go back and check them out. Those that were reported are likely to be the worst cases. Other design concepts that can be developed are the two-year time of travel on your own property and the idea that standards will be different for areas where everyone is on a public water supply. These should be done, but there is no time until after the first of the year to look at the issue. First in time and isolation distances also need to be discussed as relates to the two-year time of travel.

The consultants acknowledged that before the new rules designing systems was a risky business and it is still a risky business. Things will adjust eventually and stabilize. Because the new rules include more marginal soils there will be more failures than there were before with the more conservative standards. However usually there will be lower actual flows than design flows so there is some safety factor there for most sites.

Licensed designer discussion:

The subcommittee presented the following draft for discussion

I Hydraulic Limits

- A. Mound systems up to and including 1000 gpd
- B. In-ground systems up to and including 2000 gpd
- C. At-grade systems up to and including 2000 gpd

Basis: hydrogeological studies required for systems with wastewater flows greater than those stated.

Comments...the statute limits site technicians to systems < 1350 gpd. This was because water supplies at 1440 gpd required hydro studies and the sewage rules flows for the number of SFRs below 1440 (three-3 bedroom houses) were 1350, so we settled on the lower number for a given project. Numbers should match for water supplies and sewage systems. Consensus that 1350 was the number of choice.

II. Wastewater Characteristics

- A. projects limited to domestic (sanitary) wastewater only.

Basis: treatment of process wastewater requires greater educational training than that required in the Environmental Protection Rules.

Comments...This can include wastes that the Division deems compatible with domestic waste. It does not include industrial discharges. Those require a UIC permit and site technicians should not do those. Q. What about treatment systems

on the water such as softeners, radionuclides, iron manganese, arsenic. Some are okay, some not...a document needs to be developed about this. Recycled water to toilets etc is domestic waste.

III. Types of projects

- A. residential, including apartments and duplexes
- B. Commercial, when the on-site wastewater system is receiving combined residential/commercial wastewater. The residential flow component must be greater than the non-residential flow component.

Basis: Small-scale commercial projects, such as offices and stores, are sometimes combined with apartments. In most cases, the commercial component is less than the residential component.

- C. Subdivisions will be limited up to 9 lots.

Basis: Act 250 permits are not required for projects up to 9 lots. Amplified reason during discussion...Act 250 permits involve a lot of work that site technicians are not qualified to do, such as roads, stormwater, parking lots. (Actually Act 250 permits are required for more than 6 lots now).

Comments...site technicians can only do the work necessary to design systems covered by the rules, those other items are not part of their license authority from DEC. Wastewater from a school or office is no different than sewage from a home, the system design is the same. Places of assembly require special concern because of so many people. Places of assembly are simply one category of public water system. Public water systems require a professional engineer to design, so site technicians cannot do those systems. That will be a limit on the water supply side. The number of lots doesn't matter. There was agreement that site technicians should not design public water systems, and that the number of lots doesn't matter.

IV. Other items for consideration

- A. Pretreatment systems will not be designed by site technicians.

Basis: Treatment of wastewater requires greater educational training than that required in the Environmental Protection Rules.

Comments...generally the pretreatment systems that site technicians will be using (for sanitary wastes only) will be "black boxes" approved for general use by the Department. Using those systems, as sand filters can now be used as a system by a site technician, is not considered "designing" a pretreatment system. Site technicians will not be allowed to design the "black box" itself. That requires more education and training than the licensing program will provide. It was noted

that there was no consensus to allow site technicians to use innovative systems approved for general use in their designs.

Further Discussion:

Perhaps there should be continuing education requirements. Should there be a gradual elimination of all grandfathered site technicians so that everyone must have taken the test. Does there need to be pre-qualifications to take the exam? There are none now.

The Plumbers licensing program had continuing education requirements and has worked very well.

Should site technicians be able to design water supplies for schools that are not public water supplies? What should be the restrictions if any?

Should there be a licensed designer category for well drillers. How about hydrogeologists? (Anne believes that we cannot provide a category for hydrogeologists).

Should the rules be changed to provide for disposal of leach bed waste? (Future discussion.)

Subcommittees

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

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

Licensed designers - Spencer Harris, Gary Fern, Alan Huizenga for Lance Phelps, and Gerry Kittle.

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Approved Minutes of the Technical Advisory Committee
November 19, 2002 Meeting

Members Present:

Roger Thompson
Frank O'Brien
Dave Cotton
Alan Huizenga
Bernie Chenette

Craig Heindel
Barb Willis
Phil Dechert
Kim Crosby

Steve Revell
Allison Lowry
John Forcier
Spencer Harris

Scheduled Meetings:

Monday, December 2, 2002, from 1-4 PM @ Appalachian Gap Room

Tuesday, December 17, 2000, from 1-4 PM @ Appalachian Gap Room

Tuesday, January 7, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, January 21, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, February 4, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, February 18, 2003, from 1-4 PM @ 100 Stanley Hall

Committee Discussion

Future Meetings:

It was decided to meet every other week on Tuesdays from 1-4 PM starting January 7, 2003. DEC will look ahead at the calendar for conflicts and then book a room.

Review of Minutes:

The draft minutes for the November 5, 2002 meeting were discussed. It was noted that the comments portion of section IV entitled "Other items for consideration" should include a statement that some members did not agree that use of a treatment system, even one with a general use approval from the Department, should automatically be designed by a site technician. It was also requested that the minutes indicate which members were present. There was a request that when meeting dates are given that the meeting time be included for ease of use.

There was also a comment on the draft minutes for the October 22, 2002 meeting that in one place there is a note of the formation of two subcommittees and a following note that

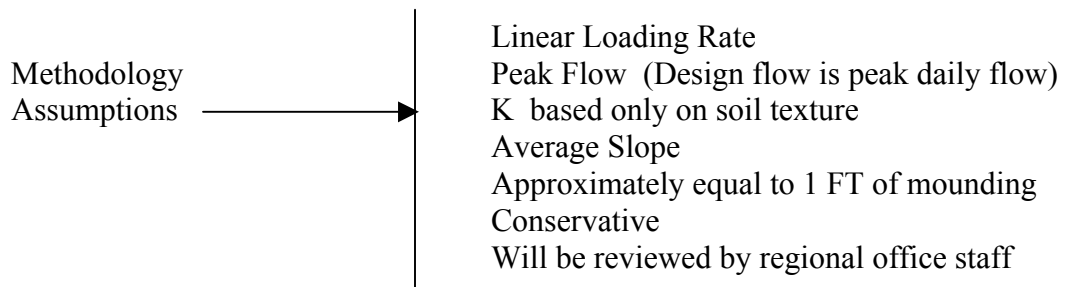
an additional subcommittee was formed. The minutes should be reworded to make it clear that three subcommittees were formed. It was requested that the subcommittee tasks and members be included with the minutes each time.

The minutes were accepted with the above noted additions and corrections.

Presentation of the Hydrogeologic Subcommittee:

Dave gave a presentation of the results of the subcommittee's work using the outline below:

Do we accept the:



Recommendations:

This is a prescriptive approach for use by most designers and does not require specialized hydrogeologic skills.

There is a need to incorporate training for everyone in how to use the approach.

There is a need to increase soil morphology training for everyone in order to maximize the use of soil information

Dave reviewed this outline and said that the subcommittee did agree that the methodology is valid and that the assumptions are agreed on. The subcommittee developed a chart that converts soil textures into conservative K values and then into acceptable linear loading rates based on 1' of groundwater mounding. The site conditions relative to the amount of soil above the SHWT have to be factored in to use the chart for designing a system. For instance, if the design basis is that SHWT is 12" below the surface of the naturally occurring soil, the mounding must be reduced to 6" by using a lower linear loading rate in order to meet the 6" design requirement.

The chart mentioned above is different than the chart that was partially developed by the previous TAC during the early part of this year. The subcommittee proposes that there also be a **second chart** that would, in addition to the soil texture, include factors related to soil structure. Because this form of soil analysis is not part of the existing program for prescriptive system design, the use of the technique requires an advanced understanding of soil morphology. A soil scientist or hydrogeologist usually does this analysis. The use of site specific conductivity testing is also allowed.

John said that he wanted to support as many options as possible. Craig agreed and noted that there would be two desktop approaches and one based on site specific testing.

Discussion of the 6” rule

Roger asked for discussion of the requirement that a performance-based system be based on a design that would keep the effluent at least 6” below the surface of the naturally occurring soil. Dave reviewed a portion of the 1997 summary report that noted both that 6” was the consensus number developed by the members of that technical committee and that at that time it was observed that even with a 6” layer of soil above the free water table, the soil would be saturated to the surface and feel soft underfoot in the springtime. Roger asked if after 5 years of thinking about the subject was there any way to reduce the 6” standard and still make a claim that the system would not surface. Craig and Dave said no and this appeared to be the consensus from the group. Roger said that this seemed to lead to a position that solving the “Addison County problem” would require a change in the policy against surfacing sewage. Committee members agreed that the topic must be considered and said that discussion should include the question of when the discharge is no longer considered wastewater.

Several members talked about approaches that would include advanced treatment prior to discharge to the leachfield followed by some polishing in fill material or in naturally occurring soil or a combination of both in systems that where there would be at least periodic surfacing of effluent at the toe of the system. Several members, Dave in particular, suggested that disinfection could be part of the treatment process. John suggested that a two year time of travel zone, owned or controlled with an easement might be part of the solution. Dave said that the two year time of travel was based on 5 to 7 logs of viral removal, heading towards the thought that disinfection could serve the same purpose. This led to a discussion about the passive nature of treatment in the soil versus the active treatment of a disinfection system.

It was agreed that this is a policy decision that the Department will have to consider and that this topic will be reviewed at future meetings.

Site Technician Rules

Alan Huizenga reviewed the subcommittee results.

- A. There is no need for additional classes of designers, at least in the wastewater area.
- B. There is no need for minimum qualifications. Continue to rely on the testing program.
- C. There should be a continuing education requirement for all designers and for review personnel including state review personnel.
- D. Grandfathered site techs should not be required to complete the site tech examination. Time and the continuing education requirements will weed out those who really are not able to do the work.
- E. Consensus was not reached on allowing site techs to design wastewater systems for places of public assembly. Gary is concerned about the use of public funds and the standard of care that users would expect. John said that there was also concern that the wastewater might be of higher strength because there is less dilution when the building is not used for residential purposes (no showers or clothes washers).
- F. Site techs would not design any water system classed as a public system or that required a water treatment system to meet drinking water standards. Other water systems with a total design flow of up to 1350 could be designed by site techs, including those with a combination of commercial and residential use.
- G. There was not total consensus on the use of advanced treatment systems with a general use approval by site techs. Gary is concerned that if the manufacturer is not available at some point in the future, some engineering judgement will be required to keep the system functioning.

There was general agreement by the committee with each of the positions on which the subcommittee developed consensus. The committee asked that the subcommittee write up the areas of disagreement on the other topics with the supporting arguments for each side. The committee will discuss and make a recommendation to the Department on each topic.

Other topics

Dave asked that the “framework” document agreed to last year be circulated to committee members.

There was a request to put minutes of the meetings on the web and it was noted that the process was already under way and that the minutes should be available soon.

John reviewed the status of training sessions with Sid Pilgrim. Mr. Pilgrim will be in Vermont in the spring of 2003. The sessions will be sponsored by ACEC. ACEC, VTC, and Stone Environmental are applying for a grant to support this work.

Subcommittees

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

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

Licensed designers - Spencer Harris, Gary Fern, Alan Huizenga for Lance Phelps, and Gerry Kittle.

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APPROVED MINUTES OF TECHNICAL ADVISORY COMMITTEE MEETING
DECEMBER 2, 2002

Members present: Bernie Chenette, Brad Aldrich, Alan Huizenga, Gary Fern, Phil Dechert, Kimberley Crosby, Barbara Willis, Kimberley Kendall, Gail Center, Spencer Harris, Gerry Kittle, Roger Thompson, Rodney Pingree

Next meetings:

Tuesday, December 17, 2002, 1:00-4:00 p.m. Appalachian Gap Room, Cyprian Learning Center

Tuesday, January 7, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, January 21, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, February 4, 2003, from 1-4 PM @ 100 Stanley Hall

Tuesday, February 18, 2003, from 1-4 PM @ 100 Stanley Hall

Wednesday, March 5, 2002, from 1-4 PM TBA

Tuesday, March 18, 2003 from 1-4 PM TBA

Tuesday, April 1, 2003 from 1-4 PM TBA

Minutes:

The minutes of the November 19 meeting were approved.

The subcommittee working on the hydraulic chart were unable to meet during the previous week so only minor additional changes were made. The report will be presented at the next meeting.

The remaining items about site technician authorities were discussed:

Design of public buildings and places of public assembly. Mention was made of the fact that most public buildings are funded with taxpayers' money and that perhaps there was an expectation that the facilities for these buildings should be designed by engineers. These buildings are no different than private buildings that are frequented by the public and the standards for the design are just the same. If the issue is the liability of the designer and the fact that the owner could have to foot the bill for replacement if a designer is out of business or bankrupt, municipalities, whose original projects are paid for by the taxpayers, should be careful to choose licensed designers, or installers, who are bonded or insured so not to place the expense of correcting the problem on the taxpayers if the system fails. Enforcement is the same for all licensed designers. It was the consensus of the committee that site technicians should be able to design systems of the same type and size for both private and public buildings. Educational materials for consumers, including municipalities, about liability and insurance should be made available.

Designs using advanced waste treatment units approved for general use. It was the committee's opinion that designers should know how the systems they are designing

work. The systems currently approved function much like a sand filter and site technicians should be able to use them in designs. There could be units that are complex enough that a site technician should not be able to use them in a design. The decision was that the approval for use could be into categories that would differentiate if it were not suitable for a site technician to use in a design. A site technician or an engineer may recommend a system that they are particularly familiar with which is more expensive than some other system that would be acceptable for a given situation. That would be unfortunate for the consumer but in that case it would be a matter of a consumer taking interest to become educated about what services he or she is purchasing, as it is with other purchases. For systems below 1350 gallons a day that will probably not be an issue.

The committee asked that the Agency send the draft approvals of innovative systems to them for review and comment before they are final.

The committee established another subcommittee to work on deciding what a well driller needs to know to site a well after July 1, 2007. The expectation is that they will learn enough about the needs for a replacement area for a wastewater system that they will not pick out the best wastewater system replacement area and put the well there; and that they will assess the location of septic systems and wells on adjacent lots. The subcommittee members are Jeff Williams, Rodney Pingree, Roger Thompson and Bernie Chenette. They hope to develop a checklist of basic criteria.

The Agency is working with VLCT on the rules for delegation of the permitting and enforcement program to municipalities. Spencer Harris, Gerry Kittle, Kim Crosby, Phil Dechert, Gary Fern and Allan Huizenga noted that they wished to be involved in the discussions.

There is a question about the qualifications needed for an administrative person, working for a municipality taking delegation, who may do administration rather than technical review of the systems. We will be considering that as we continue to talk with VLCT.

The Committee discussed the work to be done on other solutions for difficult sites. The desire to monitor some of the existing sites that may be keeping sewage below the ground surface yet not meet the rules is difficult to do because people are not willing to have their sites evaluated. It was mentioned that the 4 demonstration sites could be evaluated again if that would be useful.

A short list of other issues to be looked at are:

- Whether multiple barriers are necessary for public health protection...the Department and the Health department have operated on that premise for many years.
- Design flows for all categories...only residential and campground flows were looked at for these rules
- The requirements for the permit subdivision of existing improved lots

- Water Supply is considering a general permit for some water supply treatment units such as a water softener, iron removal facilities etc. Will there need to be a permit under these rules? It may depend on the discharge from the unit and the relationship with the UIC program. The Health Department mentioned that one study of these units in another state indicated that 20% did not treat the water to standards.
- Replace the percolation test with soils evaluations

Subcommittees

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

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

Licensed designers - Spencer Harris, Gary Fern, Alan Huizenga for Lance Phelps, and Gerry Kittle.

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

Interested in the delegation rules-- Spencer Harris, Gerry Kittle, Kimberley Crosby, Phil Dechert, Gary Fern and Allan Huizenga

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APPROVED MINUTES OF TECHNICAL ADVISORY COMMITTEE MEETING
DECEMBER 17, 2002

Members present: Bernie Chenette, Alan Huizenga, Gary Fern, Phil Dechert, Barbara Willis, Dave Cotton, Gail Center, Spencer Harris, Gerry Kittle, Jeff Williams, Stephen Revell, Roger Thompson, Rodney Pingree

Members absent: Kimberley Crosby, Kimberly Kendall, Craig Heindel

Others attending: Frank O'Brien, Allison Lowry, Marilyn Davis

Next meetings:

Tuesday, January 7, 2003, from 1-4 PM @ Room 100 Stanley Hall

Tuesday, January 21, 2003, from 1-4 PM @ Room 100 Stanley Hall

Tuesday, February 4, 2003, from 1-4 PM @ Room 100 Stanley Hall

Tuesday, February 18, 2003, from 1-4 PM @ Room 100 Stanley Hall

Wednesday, March 5, 2003, from 1-4 PM TBA

Tuesday, March 18, 2003 from 1-4 PM TBA

Tuesday, April 1, 2003 from 1-4 PM TBA

Minutes:

The December 2, 2002 minutes were corrected: on page 1 about the wording of "It is possible for" to clarify the meaning of the phrase; on page 4 regarding the administrative staff qualifications (it refers to municipal staff); and on page 1 about the concern that taxpayer funded projects that fail because of licensed designer or installer error should not have to have the corrective actions paid for by the taxpayers.

The subcommittee working on the hydrocharts will have them complete for the next meeting.

The New England Interstate Water Pollution Control Commission subcommittee on on-site systems had several items of interest that Roger Thompson reported.

The Infiltrator system, open leaching chambers that do not require gravel, has been doing considerable testing to see whether there is a masking of the infiltrative surface by gravel that does not occur with their units. It appears that there is a 60% masking with gravel and that the long-term acceptance rate may be 2 to 2 and ½ times greater with the open chambers. They believe also that there is a better saturation of the infiltrative surface that may give better treatment. They are not however, asking for a reduction in the depth to groundwater based on increased treatment. There may be additional research conducted to quantify the increased treatment.

The Elgin in-drain treatment system has been claimed to produce effluent that meets 30 mg/l BOD and TSS and therefore qualifies as a filtrate disposal system and can use a smaller disposal area. The Department will be reviewing this system.

In Connecticut a system called Ecomatrix has been using a method of injecting oxygen into the failed leach field that seems to be effective when the gas is pushed through the system. They have taken the research from in the lab to a mobile unit in the field. There has to be significant pressures to make sure that the oxygen treats the entire system. When air is put into the effluent stream, the improvement is to about 10 mg/l concentration rather than with this method which improves the oxygen levels in the soil around the leachfield to 20% concentration. In order for this to be effective, doses to the leachfield of sewage must be fewer doses with larger volumes.

Mention was made of a state that has used a program approving these more complex treatment systems and is thinking of dropping the program. It is difficult to keep the contracts in place for maintenance of systems, and there is a funding problem.

The Barnstable County testing site is still in operation although there are rumors that it might close because of lack of funds. There have been some problems correlating test center data with field data on the tested systems. Costs of testing have gone up considerably since the start of the testing.

The well drillers would like to get together with us and work on written information for well drillers about the new rules. The Water Supply Rules about well construction are being changed and they would like to coordinate with the on-site program so that the programs interlock appropriately. Roger and Jeff Williams feel that some or all overflowing wells should be capped. There is concern over wasting water from aquifers, especially with the droughts that are occurring more frequently. The effects of water softeners in densely populated areas (backwash salts into the groundwater) is becoming a real concern for new supplies in those areas. In areas where the hardness is about 350ppm, a residence uses about 700-800 # of salt per year. There is also concern in shallow bedrock areas that the contamination may travel long distances.

The Agency has not been able to run statistics on the numbers of permits being processed in the Regional Offices and will not be able to until after the New Year. The tracking system has been transferred to new software and the reporting programs are being constructed now.

There is a demand for training for installers. We would like to fit that in, but it will not be soon.

Steve Revell asked to be added to the subcommittee on well driller's education/checklist.

The next meeting of that subcommittee will be on January 21, 2003 at 11:00 am before the regular meeting of the TAC. It will be in the Water Supply Conference room. Rodney Pingree will schedule the room.

A short list of other issues to be looked at are:

- Whether multiple barriers are necessary for public health protection...the Department and the Health department have operated on that premise for many years.
- Design flows for all categories...only residential and campground flows were looked at for these rules
- The requirements for the permit subdivision of existing improved lots
- Water Supply is considering a general permit for some water supply treatment units such as a water softener, iron removal facilities etc. Will there need to be a permit under these rules? It may depend on the discharge from the unit and the relationship with the UIC program. The Health Department mentioned that one study of these units in another state indicated that 20% did not treat the water to standards.
- Replace the percolation test with soils evaluations

Subcommittees

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

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

Licensed designers - Spencer Harris, Gary Fern, Alan Huizenga for Lance Phelps, and Gerry Kittle.

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

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

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Innovative/Alternative System Approval

#2001-01
Revision #1

Vendor Information

Orenco Systems, Inc.
814 Airway Avenue
Sutherlin, OR 97479

Technology Name

Advantex™ Treatment System

Contact

Orenco Systems, Inc.
814 Airway Avenue
Sutherlin, OR 97479
(541) 459-4449
Fax (541) 459-2884
Web Site: www.orenco.com
Contact: Bill Cagle ext 326

Technology Type

Textile Based Recirculating Packed
Bed Filter

Expiration Date

September 15, 2003

Local Contact

David Cotton
Wastewater Technologies, Inc.
P.O. Box 80
Saxtons River, VT 05154

Tel: 877-212-3219
802-869-3219
Fax: 802-869-3436
wti@wastewatertechnologies.com
www.wastewatertechnologies.com

Approval

The Advantex™ Treatment System operating in Modes AX-1, AX-3, RX-1, and RX-3 may be used as part of a subsurface wastewater disposal system approved under the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996 under the following conditions:

1. The treatment units must be installed and operated as described in the Innovative/Alternative System application package filed with the Agency of Natural Resources (Agency) on March 1, 2001.
2. Unit sizing must be in accord with the technical information submitted with the Innovative/Alternative System application package on March 1, 2001.

3. This approval is based on treatment only of domestic wastewater of average strength.
4. The system may be used for both new and replacement systems. Please review the revised Interim Guidance for Innovative Systems, dated February 13, 2002, that is attached.
5. All effluent from the AdvantexTM Treatment System shall be discharged to a filtrate disposal system that conforms to the requirements of §1-715 of the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996. If the Small Scale Wastewater Treatment and Disposal Rules are revised during the term of this approval, the conditions related to filtrate disposal systems of the revised rules shall apply to final disposal systems permitted under the revised rules.
6. Each application for use shall demonstrate the ability to construct a fully complying replacement system. This replacement system will usually be a sand filter treatment and filtrate disposal system as described in §1-715 of the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996.
7. All treatment modules shall be equipped with anti-floatation flanges unless there is a demonstration that floatation is not a problem on a particular site or that an alternative system has been approved by the Agency.
8. Detailed operating instruction shall be provided to the owner/operator.
9. The vendor shall have an inventory of replacement parts available locally.
10. The vendor shall provide a copy of this approval letter to any land owner who is a prospective purchaser of the system prior to the sale of the system and prior to the filing of any application for a site specific approval by the Agency for the purchasers property. The application filed with the Agency shall include the landowners' written acknowledgement of this approval letter. Prior to any sale or sales agreement, a copy of the site specific permit shall be provided to the prospective purchaser.
11. The owner of a property where an AdvantexTM system has been installed shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency. Maintenance shall be performed or supervised by a Vermont licensed engineer or a Certified Class B Site Technician, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance

- with this approval. The inspection shall be performed in accord with the manufacturer's Operation and Maintenance Manual submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.
12. The first inspection shall be completed no later than 6 months after placing the system in service. The second inspection shall be completed no later than 12 months after placing the system in service. Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. All reports shall be filed with the appropriate Regional Environmental Office of the Agency and the land owner no later than 30 days after the date of inspection.
 13. All systems shall be equipped with an hour meter, an audible alarm, and a visual alarm. These indicators shall be located outside of any buildings and visible to the building users in the normal course of routine occupancy of the building.
 14. The vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the previous 12 month period ending December 31 of the previous year:
 - A. The number of permitted systems installed in Vermont, including those permitted by the Agency and those permitted by Towns under authority of 24 V.S.A. Chapter 102.
 - B. The address of each installation.
 - C. The name of the owner at the time of installation and any known change in ownership.
 - D. All known problems or failures, with a brief summary of the cause and remedial measures taken.
 15. This approval is based on information submitted by the Vendor indicating that the specified models and treatment modes will routinely provide effluent with no more than 30 mg/l of BOD₅ or more than 30 mg/l of TSS.
 16. Site specific permission for the use of this product is required in the form of a Subdivision, Water Supply – Wastewater Disposal System, or Mobile Home Park Permit.
 17. A site specific permit for the use of this system may be revoked if the system fails to function properly or if the property owner fails to have a valid contract for the required maintenance and inspection of the system. Revocation of the permit will

require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.

18. A town that regulates wastewater disposal systems under 24 V.S.A., Chapter 102 and whose ordinance permits, may approve use of the AdvantexTM Treatment System subject to all conditions in this approval. The town shall ensure that the maintenance contract is in effect and that the required maintenance is performed.

effective _____

by _____

Roger Thompson, Jr.
Regional Office Programs Manager

Innovative/Alternative System Approval

#2002-02

Vendor Information

Premier Tech
7051 Meadow Lark Drive
Birmingham, Alabama 35242

Technology Name

Ecoflo® Biofilter

Contact

Luke Robitaille
Premier Tech
7051 Meadow Lark Drive
Birmingham, Alabama 35242
(205) 408-9691
Fax (205) 408-8783

Technology Type

Single Pass Peat Filter

Expiration Date

April 30, 2004

Local Contact

Tim Lake
New England Biofilter Corporation
P.O. Box 912
Stowe, Vermont 05672
Tel: (802) 253-2203

Approval

The Ecoflo® Biofilter Model STB-650 may be used as part of a subsurface wastewater disposal system approved under the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996 under the following conditions:

1. The treatment units must be installed and operated as described in the Innovative/Alternative System application package filed with the Agency of Natural Resources (Agency) on April 9, 2002.
2. Unit sizing must be in accord with the technical information submitted with the Innovative/Alternative System application package on April 9, 2002.
3. This approval is based on treatment only of domestic wastewater of average strength.
4. The system may be used for both new and replacement systems. Please review the revised Interim Guidance for Innovative Systems, dated February 13, 2002, that is attached.

5. All effluent from the Ecoflo® Biofilter shall be discharged to a filtrate disposal system that conforms to the requirements of §1-715 of the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996. If the Small Scale Wastewater Treatment and Disposal Rules are revised during the term of this approval, the revised rules shall apply.
6. Each application for use shall demonstrate the ability to construct a fully complying replacement system. This replacement system will usually be a sand filter treatment and filtrate disposal system as described in §1-715 of the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996.
7. Detailed operating instruction shall be provided in writing to the owner/operator.
8. The vendor shall have an inventory of replacement parts available locally.
9. The vendor shall provide a copy of this approval letter to any land owner who is a prospective purchaser of the system prior to the sale of the system and prior to the filing of any application for a site specific approval by the Agency for the purchasers property. The application filed with the Agency shall include the landowners' written acknowledgement of this approval letter. Prior to any sale or sales agreement, a copy of the site specific permit shall be provided to the prospective purchaser.
10. The owner of a property where an Ecoflo® Biofilter has been installed shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency. Maintenance shall be performed or supervised by a Vermont Professional Engineer or a Certified Class B Site Technician, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance with this approval. The inspection shall be performed in accord with the manufacturers Operation and Maintenance Manual submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.
11. The first inspection shall be completed no later than 6 months after placing the system in service. The second inspection shall be completed no later than 12 months after placing the system in service. Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. All reports shall be filed with the appropriate Regional

Environmental Office of the Agency and the land owner no later than 30 days after the date of inspection.

12. The vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the 12 month period ending December 31 of the previous year:
 - A. The number of permitted systems installed in Vermont, including those permitted by the Agency and those permitted by Towns under authority of 24 V.S.A. Chapter 102.
 - B. The address of each installation.
 - C. The name of the owner at the time of installation and any known change in ownership.
 - D. All known problems or failures, with a brief summary of the cause and remedial measures taken.
13. This approval is based on information submitted by the Vendor indicating that the specified models and treatment modes will routinely provide effluent with no more than 30 mg/l of BOD₅ or more than 30 mg/l of TSS.
14. Site specific permission for the use of this product is required in the form of a Subdivision, Water Supply – Wastewater Disposal System, or Mobile Home Park Permit.
15. A site specific permit for the use of this system may be revoked if the system fails to function properly or if the property owner fails to have a valid contract for the required maintenance and inspection of the system. Revocation of the permit will require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.
16. A town that regulates wastewater disposal systems under 24 V.S.A., Chapter 102 and whose ordinance permits, may approve use of the Ecoflo® Biofilter subject to all conditions in this approval. The town shall ensure that the maintenance contract is in effect and that the required maintenance is performed.
17. This approval is not a representation or guarantee of the effectiveness, efficiency or operation of this system.

Design and Review Conditions

The following conditions will be used by the Department in reviewing permit applications which include the Ecoflo® Biofilter.

Equipment

- Only the Model STB-650, with factory assembled watertight collector bottom is approved.

Design and Application

- The treatment unit will be completely buried except for the access hatch. If this is not possible the designer shall place it in a berm and submit heat loss calculations to justify that it will properly function in all seasons.
- The designer must assess the structural needs of the unit for the specific application site and place the requirements on the design plans.
- The designer must determine the type of backfill required and any necessary placement specification.
- The designer must assess the ventilation path for the particular application and make any necessary provisions to assure proper flow and control of odor emissions.
- The designer shall include in the design a septic tank effluent filter with easy access for inspection and cleaning.
- The designer must assure routine access to the unit hatch and the septic tank effluent filter.

Installation Inspection

- The treatment unit shall be set up under the instruction and guidance of an installer/inspector trained by the manufacturer.
- The treatment unit shall be inspected by a Professional Engineer registered as a civil, civil/sanitary, sanitary or environmental engineer or a Certified Site Technician B, after placement in the excavation and before backfilling, and after backfilling and grading is complete. The inspection shall include checking for an adequate structural foundation to support the unit, checking for levelness of the tank, and inspecting for damage and proper assembly.
- Before backfilling the tankage will be tested for watertightness by filling the unit with water to a height within the hatch riser and holding it at a constant level for 24 hours; there shall be no measurable leakage. During the test the entire tank shall be inspected for visible leaks. (Section 1-715 A. 2) d)) Should the tank fail the test it may be repaired and retested. The testing and repairs shall be conducted under the direction and in the presence of the inspecting engineer or site technician.
- The engineer or site technician shall inspect all piping for proper installation and watertightness before backfilling.

Start-up

- Start-up of the system and initial operational checks shall be conducted by an installer/inspector trained by the manufacturer, who shall submit a report to

the owner, and inspecting engineer or site technician indicating any problems encountered, their resolution, and affirmation that the system is operating as intended.

Operational Maintenance and Inspection

- The owner shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency. Maintenance shall be performed or supervised by a Vermont licensed engineer or a Certified Class B Site Technician, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance with this approval. The inspection shall be performed in accord with the manufacturers Operation and Maintenance Manual submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.
- The first inspection shall be completed no later than 6 months after placing the system in service.
- The second inspection shall be completed no later than 12 months after placing the system in service.
- Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service.
- All inspection reports shall be filed with the appropriate Regional Environmental Office of the Agency and the land owner no later than 30 days after the date of inspection.

Permitting

- The permit shall run with the land.
- A copy of the permit shall be provided to any prospective buyers prior to the sale.
- Each new owner of the property shall inform the appropriate Regional Environmental Office of the Agency of the transfer of the property and include the name and mailing address of the new owner.

effective _____

by _____

Roger Thompson, Jr.
Regional Office Programs Manager

Innovative/Alternative System Approval
General Use per §1-309 of the
Wastewater System and Potable Water Supply Rules, effective August 16, 2002

#2002-03

Vendor Information

SeptiTech, Inc.
220 Lewiston Road
Gray, Maine 04039

Technology Name

SeptiTech Residential Series
SeptiTech Commercial Series

Contact

Don R. Rousseau
Vice President
SeptiTech, Inc
220 Lewiston Road
Gray, Maine 04039
Phone (207) 657-5252
Fax (207) 657-5246

Technology Type

Recirculating Trickling Filter

Expiration Date

November 1, 2004

Local Contact

Paul Beauregard
The Culvert Company
PO Box 109
Fairfax, Vermont 05454

Approval

The SeptiTech Models M400, M550, M750, M1200, M1500 and M3000 may be used as part of a subsurface wastewater disposal system approved under the Wastewater System and Potable Water Supply Rules, effective August 16, 2002 under the following conditions:

1. The treatment units must be installed and operated as described in the Innovative/Alternative System application package filed with the Agency of Natural Resources (Agency) on April 19, 2002.
2. Unit sizing must be in accord with the technical information submitted with the Innovative/Alternative System application package on April 19, 2002. The sizing

Innovative/Alternative System Approval
#2002-03

shall be based on the calculated design flow per §1-504 of the Wastewater System and Potable Water Supply Rules, effective August 16, 2002.

3. This approval is based on treatment only of domestic wastewater of low and moderate strength as specified in §1-519(a)(1)(C) +(D) of the Wastewater System and Potable Water Supply Rules, effective August 16, 2002.
4. The system may be used for both new and replacement systems.
5. All effluent from a SeptiTech System shall be discharged to a filtrate disposal system that conforms to the requirements of §1-520 of the Wastewater System and Potable Water Supply Rules, effective August 16, 2002. If the rules are revised during the term of this approval, this approval shall be revised as needed to conform to the revisions.
6. Each application for use shall demonstrate the ability to construct a fully complying replacement system.
7. Detailed operating instructions shall be provided in writing to the owner/operator.
8. The vendor shall have an inventory of replacement parts available locally.
9. The vendor shall provide a copy of this approval letter to any land owner who is a prospective purchaser of the system prior to the sale of the system and prior to the filing of any application for a site specific approval by the Agency for the purchasers property. The application filed with the Agency shall include the landowner's written acknowledgement of this approval letter. Prior to any sale of the property or completion of a sales agreement to sell the property, a copy of the site specific permit shall be provided to the prospective purchaser.
10. The owner of a property where a SeptiTech System has been installed shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency. Maintenance shall be performed by, or shall be supervised by, a Vermont Registered Professional Engineer or a Certified Class B Site Technician, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance

Innovative/Alternative System Approval
#2002-03

with this approval. The inspection shall be performed in accord with the manufacturers Operation and Maintenance requirements submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS. The results of any testing shall be submitted with the annual inspection report.

11. The first inspection shall be completed no later than 6 months after placing the system in service. The second inspection shall be completed no later than 12 months after placing the system in service. Subsequent inspections shall be completed at least once per year based on the date when the system was first placed in service. All reports shall be filed with the appropriate Regional Environmental Office of the Agency and the landowner no later than 30 days after the date of inspection.
12. The vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the 12 month period ending December 31 of the previous year:
 - A. The number of permitted systems installed in Vermont, including those permitted by the Agency and those permitted by Towns under authority of 24 V.S.A. Chapter 102.
 - B. The address of each installation.
 - C. The name of the owner at the time of installation and any known change in ownership.
 - D. All known problems or failures, with a brief summary of the cause and remedial measures taken.
13. This approval is based on information submitted by the Vendor indicating that the specified models and treatment modes will routinely provide effluent with no more than 30 mg/l of BOD₅ or more than 30 mg/l of TSS.
14. When the project is subject to the Wastewater System and Potable Water Supply Rules, effective August 16, 2002 site specific permission for the use of this product is required in the form of a Water Supply – Wastewater Disposal System Permit.

Innovative/Alternative System Approval
#2002-03

15. A site-specific permit for the use of this system may be revoked if the system fails to function properly or if the property owner fails to have a valid contract for the required maintenance and inspection of the system. Revocation of the permit will require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.
16. A town that regulates wastewater disposal systems under 24 V.S.A., Chapter 102 and whose ordinance permits, may approve use of a SeptiTech System subject to all conditions in this approval. The town shall ensure that the maintenance contract is in effect and that the required maintenance is performed.
17. This approval is not a representation or guarantee of the effectiveness, efficiency or operation of this system.

Design and Review Conditions

The following conditions will be used by the Department in reviewing permit applications that include a SeptiTech System.

Equipment

- Models M400, M550, M750, M1200, M1500, or M3000

Design and Application

- The treatment unit will be completely buried except for the access hatch. If this is not possible the designer shall place it in a berm and submit heat loss calculations to justify that it will properly function in all seasons.
- The designer must assess the structural needs of the unit for the specific application site and place the requirements on the design plans.
- The designer must determine the type of backfill required and any necessary placement specification.
- The designer must assess the ventilation path for the particular application and make any necessary provisions to assure proper flow and control of odor emissions.
- The designer shall include in the design a septic tank effluent filter with easy access for inspection and cleaning.
- The designer must assure routine access to the unit hatch and the septic tank effluent filter.
- The designer must address flotation issues if the SHWT will be above the bottom of the tank.

Innovative/Alternative System Approval
#2002-03

Installation Inspection

- The treatment unit shall be set up under the instruction and guidance of an installer/inspector trained by the manufacturer.
- The treatment unit shall be inspected by a Professional Engineer registered in Vermont as a civil, civil/sanitary, sanitary or environmental engineer or a Certified Site Technician B, after placement in the excavation and before backfilling, and after backfilling and grading is complete. The inspection shall include checking for an adequate structural foundation to support the unit, checking for levelness of the tank, and inspecting for damage and proper assembly.
- Before backfilling the tankage will be tested for watertightness by filling the unit with water to a height within the hatch riser and holding it at a constant level for 24 hours; there shall be no measurable leakage. During the test the entire tank shall be inspected for visible leaks. Should the tank fail the test it may be repaired and retested. The testing and repairs shall be conducted under the direction and in the presence of the inspecting engineer or site technician.
- The engineer or site technician shall inspect all piping for proper installation and watertightness before backfilling.

Start-up

- Start-up of the system and initial operational checks shall be conducted by an installer/inspector trained by the manufacturer, who shall submit a report to the owner, and to the inspecting engineer or site technician indicating any problems encountered, their resolution, and affirmation that the system is operating as intended.

Operational Maintenance and Inspection

- The owner shall have a valid maintenance contract in force at all times. The minimum length of any contract shall be for a period of two years. A copy of the initial and each succeeding contract shall be submitted to the appropriate Regional Environmental Office of the Agency. Maintenance shall be performed by, or shall be supervised by, a Vermont Registered Professional Engineer or a Certified Class B Site Technician, approved by the Vendor, who shall provide written inspection reports detailing the maintenance performed on the specific system, any problems that have occurred since the previous inspection, any modifications made to the system, the date of the inspection, and any work required to ensure the system operates in compliance with this approval.

Innovative/Alternative System Approval
#2002-03

The inspection shall be performed in accord with the manufacturers Operation and Maintenance Manual submitted as part of the Innovative/Alternative System application package. If at any inspection the effluent is cloudy or pungent smelling a sample shall be collected and tested for BOD and TSS.

The results of any testing shall be submitted with the annual inspection report.

- The first inspection shall be completed no later than 6 months after placing the system in service.
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effective _____

by _____

Roger Thompson, Jr.
Regional Office Programs Manager

Wastewater Management Division
103 South Main St, The Sewing Building
Waterbury VT 05671-0405

Phone: 802-241-3822
Fax: 802-241-2596

April 13, 1998

David W. Presby
Presby Environmental, Inc.
P.O. Box 617
Sugar Hill, NH 03585

Re: **Enviro-Septic™**

This letter will confirm our discussion of how a system using the Enviro-Septic™ pipe could be submitted for review and approval. The approval would be granted for an innovative system under section 1-203 of the Small Scale Wastewater Treatment and Disposal Rules, effective August 8, 1996. The approval would be for a site specific design which would, other than the pipe and sand bed, meet all of the requirements for isolation and construction. The sizing calculation would be based on a design which includes sand extending 12" on each side of the pipe and each linear foot of pipe and sand bed would count as 3 sqft of leachfield. The bottom of the sand would be equivalent to the bottom of the stone in a conventional system. This approach will satisfy the requirement that an innovative system have a fully complying replacement area because the bottom area of the sand will have the same dimensions as a standard pipe and stone system. The system design should include inspection access for the pipe and for the sand-soil interface so that the system can be monitored as needed.

Please contact me if you have any questions. You may reach me at 241-3027 or at the address/phone number above.

Sincerely,

Roger Thompson, Jr.
Engineering Manager

copy: Regional Engineers
Innovative System File

Wastewater Management Division
103 South Main St., The Sewing Building
Waterbury, Vermont 05671-0405

Phone: (802) 241-3822
Fax: (802) 241-2596

November 8, 2002

Robert Pozer
Production Manager
SNS Group, Inc.
785 Guy-Poulin Avenue, Suite 202
Saint-Joseph-de-Beauce (Quebec)

Re: Juggler™ septic tank pumping technology

In looking through my files I found that I had not written a letter confirming our phone conversation.

The Juggler™ technology is based on a truck-mounted septic tank pumping system that allows the solids to be filtered from the liquid. The solids are transported to an approved disposal facility and the liquid is returned to the septic tank.

The use of the Juggler™ system is not regulated by the Wastewater System and Potable Water Supply Rules. There would be no objection to using this technology for cleaning of tanks that are part of a soil-based wastewater disposal system.

Systems that are surfacing and/or have ponded leachfields probably would benefit from having the entire contents of tank removed, which I understand your technology can also do. The longer period before the tank refills and the effluent starts flowing to the system again could help the system recover in some situations.

Please contact me at 241-3027 or at the address/phone number above if you have any questions.

Sincerely;

Roger Thompson, Jr.
Regional Office Programs Manager

Wastewater Management Division
103 South Main St., The Sewing Building
Waterbury, Vermont 05671-0405

Phone: (802) 241-3822
Fax: (802) 241-2596

March 15, 2001

Jeff Miller
Miller Environmental Products, Inc.
P.O. Box 334
East Bridgewater, Massachusetts 02333

Re: Your letter of February 17, 2001 related to water tight septic tanks

Vermont's current design standards call for a water tight tank with the responsibility being for the designer to choose the proper tank. While leaking tanks have not emerged as a major problem in Vermont, I do think this is a topic for future discussion, along with changes in tank sizing and outlet filters. Vermont is just beginning a major revision of our rules and septic tanks are on the list of issues to be addressed. I expect the process to extend into early 2002 before we are ready to actually adopt new rules.

I will keep your information in my file and see that it is included as part of the review.

In the meantime, I do not see any portion of our rules that would prohibit the use of a liner if someone wanted to do so.

Please contact me at 241-3027 or at the address/phone number above if you have any questions.

Sincerely;

Roger Thompson, Jr.
Regional Office Programs Manager

copy: Marilyn Davis, Director WWMD