

The
ALTERNATIVE/EXPERIMENTAL WASTEWATER TREATMENT TECHNOLOGIES
TECHNICAL REVIEW COMMITTEE (TRC)

**The meeting was held at the Quonset Development Corporation Annex
95 Cripe Street, North Kingstown, RI**

September 27, 2011

Approved Minutes

Present: Russ Chateaufneuf, Susan Licardi, George Loomis, Tim Stasiunas

Absent: Ken Anderson, Noel Berg, and Dennis Vinhateiro

Others Present: Don Bach of Norweco, Hollister Siegmund of Siegmund Environmental Services, Inc., Brian Moore and Deb Knauss (DEM)

Call to Order: 9:00 AM

Russ called for a moment of silence for our departed friend and colleague Dave Burnham.

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 7/13/11 meeting
- TRC Vacancy letters of interest
- Email from Don Bach to Deb Knauss and its attachments:
- Written statement of Norweco's Request for Modification of the RIDEM Singlair Approval
- NSF statement of approval of plastic tank
- HDPE Buried Tank Structural Analyses
- Norweco Singlair Green Tank Delivery and Setting
- September 20, 2011 letter from Wes Combs (Clarus Environmental) regarding Fusion application and leachfield reduction associated with state approvals
- September 13, 2011 letter to Wes Combs from NSF: approval of proportional scale up of ZF600 and ZF800
- Exec. Summary of NSF report on testing of ZF450
- September 16, 2011 Email from Jason Churchill to Deb Knauss proposal for extending MD testing of RT

Review of Draft Minutes of July 13, 2011

Motion: George made a motion to approve the minutes as submitted.

Second: Tim and Susan seconded the motion.

Discussion: There was no discussion.

Vote: All in favor who were in attendance at the meeting July 13th voted in favor of the motion.

CEUs for Webinars

Russ has attended some but is not certain about how to fit these into the CEU evaluation process. Russ is working with a person from Brown to develop a smart room. The utility of this space will be for interfacing remotely. The EPA representative who works with DEM is based in Boston and this resource will allow better participation with DEM and not require travel from Boston.

The current CEU formula is ½ CEU for 1 hour of contact time for courses offered by the NEOWTP; this is applied to other educational institutions' events as a function of content. Training workshops offered by technology vendors are assigned credit at ½ this formula: ¼ CEU for 1 hour of contact time, unless there is substantive scientific content presented by a well-credentialed, or renowned expert. In these cases, a greater credit value may be assigned.

George explained that nationally, there is a new trend in the Cooperative Extension programs (e-Extension) to deliver material to user groups efficiently and webinars are a good application for certain types of topics. The weakness is accountability and applicability. If it is a national presentation, an important consideration is: is the message consistent with what we are trying to produce in RI? Professionals who have been working in RI for a while, and are familiar with RI Rules and practices, will probably understand how to distinguish what applies to RI and what does not. A new professional, may learn and try to implement something that is not consistent with RI methods. Webinars may have interactive content programmed in, but most do not and the presenter(s) can't see the knitted brow on a face, indicating that the topic is not being understood and allowing the speaker an opportunity to re-state information and try to work with individuals to deliver a message that is understood.

Susan said the Drinking Water Operators Board has online training. DOH sends notices of these events to Operators and the operators get credit for participation, but the training is at DOH, attendees sign in and there is a test at the end.

George was involved in presentation of similar training where an event was presented in St. Croix and viewed in St. Thomas. But as is done by DOH, all the attendees were in the same place. The attendees were visible to presenters via webcam and could ask questions.

Russ liked the idea of webinars under controlled conditions, as described by Susan and George; perhaps when the Smart Room is completed at DEM, this would be a suitable location for such events. He stated that until such a set up is available, if an individual calls and asks if they can host one of their own, it will not be authorized.

Deb stated that it seemed like a suitable time to introduce the topic of online courses such as RedVector. She has received a few requests for DEM approval of credit for RedVector courses. Both Deb and Russ reviewed some of the courses and thought that they were well-developed and credit was assigned to the selection at ½ the RedVector credit value. Deb and Russ thought that there should be some maximum number of CEUs that can be obtained by online options, but a written policy was never developed. She asked for the TRC's opinion on online training and the element of a maximum number of CEUs that may be obtained online.

There was interest in consideration of the topic so Deb will bring the list of RedVector courses, their descriptions and their RedVector & DEM credit assessments to the next meeting.

There was discussion about how to evaluate a webinar. The hosting agent could email speakers' notes and slides for evaluation and assignment of credit.

Don Bach of Noweco, who was in attendance to support Norweco's application for approval of the plastic tank-version of Singulair, stated that he had done training in Oregon where a subcommittee reviews the content of training events. The credit evaluation process included consideration of whether the event had been evaluated by the National Environmental Health Association (NEHA). If so, a course syllabus for the event is submitted to the subcommittee. If an event has not been evaluated by NEHA, then a more substantive review is required and more course material than the syllabus must be submitted. NEHA requires a test to be given at events they evaluate and NEHA retains the results of the tests for five years.

Russ thought that DOH may have some NEHA members. Although NEHA has a certified installer program based on training materials developed by the Consortium of Institutes for Decentralized Wastewater Treatment in collaboration with NOWRA and SORA (NEOWTP and members of the TRC contributed to and participated in development and presentation of this program), RI was licensing installers for many years before the development of the NEHA program and never joined NEHA to have them implement installer certification here.

Norweco's Singulair Green® 960-500 and Singulair Green® TNT-500/equivalency with currently approved Singulair technologies.

Norweco representative Don Bach and Hollister Siegmund, of Siegmund Environmental Services, Inc. (SESI) attended

Russ explained to Don Bach, that the TRC has some questions based on the material previously submitted. If Norweco gets approval for the Green Singulair how does it affect certification conditions, since SESI currently has the approval. The Green Singulair is available in 500 and 600 gpd units, what are the differences between these, since it seems there is one tank size? How are the two different design flow applications specified in a design plan?

Don stated that Norweco is requesting equivalency with the Norweco Singulair systems that are approved in RI and also requesting that the listing in the list of RIDEM approved alternative technologies be changed to cite Norweco as the certification holder and SESI as the exclusive distributor. He stated that this would be consistent with the other listings where the certification holder is the manufacturer.

Russ asked Don what the relationship is between Norweco and SESI, and if Norweco will continue to provide product to and support SESI? Don responded that Norweco has been in business for 100 years and will remain so. If there is a problem, approach SESI first and Norweco at the same time. If someone hears "rectify this, or I'll call NSF", things get done. The only difference between the currently approved system and the Green (plastic) system is the tank; they have identical capacity and similar dimensions. NSF has looked at the Green system and evaluated it. Their engineering study has determined that the Green will perform as the currently approved concrete Singulair. The only difference between the currently approved Singulair and Green, is the tank's material.

The 500 and 600 gpd system issue was explained: NSF gave the Green Singulair a 500 gpd approval in Waco in 2005, and Buzzards Bay in 1996. NSF testing costs \$200,000 for about seven months of evaluation. Standard 40 allows for approval and certification of NSF certified systems that are proportionally scaled-up, so the Green Singulair is also good for 600 gpd capacity and many states have approved this. Other vendors approved for use in RI have done this.

Russ noted that the concrete system is approved for 500, 600, 750, 1,000, 1,250 and 1,500 gpd. Minnesota asked the same question and Sharon Steiner (of NSF) and Tom Bruursema verify that the two systems are the same, except that Green Singulair with one tank size can treat up to 500 or 600 gpd. Russ asked: the Green system, with one tank size and no change in the settings or other specifications, is rated for both 500 gpd and 600 gpd. Deb asked about capacity of the system to treat a range of design flows, for example might this system be specified to treat a 230 gpd design flow for a 2 bedroom home? Don explained that 500 gpd is the flow at which NSF tests systems. With water saving devices, the actual flow at homes can be as low as 200 – 300 gpd. The system is applicable to systems with design flows from 100 gpd to 600 gpd. And although there is no testing available to substantiate this, there is a lot of manufacturer expertise.

For NSF testing the aerator was run 30 minutes on and 30 minutes off. But the time clocks are available to increase runtime to continuous operation in 5-minute increments.

For example a Norweco Green system is serving a home with water saving devices and occupied by 2 to 3 people with the aerator running 30-minutes on and 30-minutes off. This system is receiving low water volume and concentrated waste. Hollister goes to the home and discovers the TSS is at 30 mg/L. He will increase the runtime to 45-minutes on and 15-minutes off. Don stated that near the end of the book he provided this morning there is direction for this.

Russ sought verification that Norweco is seeking approval for one tank size only. Norweco verified that they want this one tank size added to the existing certification with Norweco as the entity to which it is issued.

Singulair Green is just under 100-pounds and it can be installed with only one or two men and a backhoe. Norweco water tests every tank before it leaves the facility.

They currently have 42 approvals from US states and provinces in Canada with names and phone numbers for the appropriate contacts in each of these.

The tanks are pinned together and are delivered to the site connected. The test protocol that was developed for this system by North American Testing, LLC is in the booklet that Don provided this morning. As part of their responsibility to maintain the North American Testing, LLC certification that was developed for the Green Singulair, their manufacturing facilities are inspected weekly.

George asked if the tanks may be vacuum tested. Don reported that the tanks will hold 3.5 or 5 bars and that FL, OR, WA and the B66 standard for Canada require vacuum testing.

Norweco has NSF 245 certification for TNT with a fixed 1 hour on and 1 hour off aeration setting (there is no option for adjustment of the aeration setting in the nitrogen removal application). OH, WA, OR, AZ and NM have approved this unit.

The RI leachfield area reduction for Singulair is 35%.

George asked if they sample BOD and TSS and fine-tune each system at each service visit. Don replied that about 9 of 10 are installed with aeration set at 30 minutes on and 30 minutes off and require no adjusting. But at the 6-month service performed by Hollister, if there is more sludge accumulated than expected, he will adjust the aeration setting.

Deb asked about the 30 minute on 30 minute off aeration setting, because she thought that the TSS and BOD reduction Singulair was running with continuous aeration. Russ stated that he recalled that continuous aeration was required initially because the testing on which the approval was based, was performed with continuous aeration. But later data that was provided for 30-minute on and 30 minute off aeration supported allowing this cycled aeration setting. He asked Deb to check the files on this.

George asked about the total nitrogen removal citation on Page 2 in the booklet Don provided this morning and stated that he thought RI is currently only considering use of Green Singular for TSS and BOD reduction, not for nitrogen removal. Deb reminded Don that she had communicated with him about this and she had explained that the system's process of moving wastewater through the system was different than the Singulair that is approved in RI for nitrogen removal. For this reason they are considered to be different treatment systems and approval of the Green Singulair for nitrogen removal would have to be sought independent of the existing approval for Singulair for nitrogen removal and that he had stated that he understood this.

Tim asked what Hollister thought about using the Green tank and recirculating from a recirculation tank exterior to the processing tank, as the concrete Singulair is approved for nitrogen removal in RI. Hollister stated that since the tanks are equivalent, this would work and would be good for them because the cost of the system would decrease: a concrete tank costs \$6,500 and the plastic tank costs \$5,500. In response to Russ's question about whether Norweco would

approve of this use of the Green Singulair tank, Don stated that he, as Norweco's representative has no problem using the Green tank in the configuration for which Siegmund's Singulair is approved in RI for nitrogen removal.

It is understood that Norweco is requesting that the RIDEM certification for TSS and BOD be revised when it is renewed, including Singulair Green and naming Norweco as the vendor and Siegmund Environmental as the exclusive distributor. Deb explained that this would require collaboration between Norweco and Siegmund Environmental, because the application for renewal would have to be submitted by Norweco, and include a statement from Siegmund Environmental acknowledging their agreement with this. Also, all the terms and conditions in the certification will have to be satisfied before a revised renewal could be issued, and this has been the responsibility of Siegmund Environmental to compile and submit data and annual reports, as may be specified in their certification.

It was asked, how would the difference between the two tanks be specified in a design plan, since installers and designers need to know what is going in the ground. Russ noted that the setting and installation instructions for the plastic tank are very specific about hoisting the unit from the top, but that he did not see design specifications.

Russ asked if Norweco applies for and receives approval of Green TNT for nitrogen removal, would SESI withdraw their nitrogen removal system? Hollister stated that they would.

Russ asked if anyone had additional questions, there were none. He asked Deb to check the Singulair file for aeration setting information, since the certification doesn't cite time on and off. But Russ stated that 30 minutes on and 30 minutes off is OK with him because the NSF testing results that show that treatment satisfies RIDEM requirements.

Russ asked if anyone would like to make a motion on the Singulair Green for TSS and BOD removal and changing the vendor to Norweco with Siegmund Environmental as exclusive distributor; with Siegmund Environmental's agreement to this condition, we would be able to issue the revised renewal to Norweco.

Tim asked if we could integrate into the motion, use of the Green tank for nitrogen removal, if configured as the concrete Singulair is required to be under the current RI nitrogen removal certification. Russ stated that Hollister would need to be asked for an official request for this tank substitution with his submission of the amendment to the manual accommodating use of the Green Singulair. Deb will ask Hollister to submit an official request to use the Green tank in the Siegmund Singulair nitrogen removal configuration approved in RI.

Motion: George made a motion to approve the Singulair Green for BOD & TSS removal only, (no accommodation for the TNT nitrogen removal version that cycles one-hour air on to one-hour air-off), by incorporating it into the Singulair TSS & BOD removal certification when this certification is renewed and to name Norweco as the vendor and Siegmund Environmental as the exclusive distributor. The renewal application will have to include acknowledgment from Siegmund Environmental that the revised renewal will be issued to Norweco, and that Siegmund Environmental will be named their exclusive distributor.

Second: Susan seconded the motion.

Discussion: There was no discussion

Vote: All present, voted in favor of the motion

O&M: owner follow-up on required service is not happening

Tim explained that if a service provider identifies additional attention required of a system, the service report provided to the homeowner will have highlighting on additional service needed. The homeowner will send a check in for the basic service invoice, but not call or otherwise authorize the additional work (repair or replacement of a part) that was specified in the report as necessary. There was no discussion of this, but the issue is noted for possible future consideration.

TRC Vacancy

Russ explained that we would hold this part of the meeting in open session. The topic doesn't qualify for executive session because the candidates were not notified that discussion of their candidacy would be held in executive session. Each member of the TRC present and Brian Moore and Deb Knauss had before them a set of the nine letters of interest submitted in response to the OWTS Listserv July 11, 2011 announcement of TRC vacancy. Russ explained that he did not want any discussion of individuals' character, abilities, or accounts of any interactions with them. He distributed small post-it notes to each of the group and asked for each person to nominate three individuals, based on their suitability to fill the vacancy created by Joe's passing and to list them in order of preference. Russ collected the post it notes from everyone who participated in the nomination process. In addition to Russ, two of the group did not participate because they did not have knowledge of the individuals or their work. On all of the post-it notes, Nikki Schultz was nominated as the first choice. Because of the unanimous nomination, Russ would make the recommendation to DEM Director Janet Coit that Nikki Schultz be appointed to fill this TRC vacancy.

Clarus Fusion

Wes Combs provided Deb the additional information on specific percent leachfield reductions approved by other states and if these approvals required a septic tank or other special provision.

The cost is cited to be \$18,000 including a drainfield. The application is seeking a 50% reduction of required leachfield area, George asked if this is a leachfield with 50% reduced area? Deb did not have the answer.

Leachfield area reductions allowed for treatment technologies that RIDEM has approved, were established many years back by application of Laak's formula only. Now the TRC has been considering method of treatment, surge storage capacity and the method of dosing effluent to the leachfield as-well. Time-dosed units provide better consistency of flow and inherent treatment potential, better protecting the leachfield from heavy system use and should be allowed a greater reduction of required leachfield area than systems that do not incorporate all or any of these characteristics.

It was suggested that in the future we could develop a rating system incorporating these system attributes.

The coastal zone has the greatest potential for peak flow problems and Fusion is not a nitrogen removal system, so it will not be installed in these areas. It was thought however, that a 50% reduction should not be provided for a system that doesn't have the capacity to store peak flow and time dose to the leachfield, with telemetry to alert the service provider if there is a problem, with high flow at the system.

Discussed of options for considering reduction of required leachfield area included the following:

- 1) 50% reduction of area would not be considered without the protection of surge storage capacity, time dosing and telemetry to aid risk reduction.
- 2) 45% leachfield area reduction, without telemetry,
- 3) 40 or 45% with TSS and BOD concentrations of 10 mg/l each in treated effluent,
- 4) 35 to 40% reduction without time dosing.

It was suggested that we assign the leachfield area reduction as we have in the past and then change them all at the same time, applying consideration of system attributes in addition to effluent quality documented in the technology application. An alternative perspective was to apply our enhanced understanding of risk and risk-reduction to this decision, as new systems are approved, and when certifications are renewed.

Leachfield area reductions need to account for the extent to which the system can deal with peak flows and time dose the field, data provided documenting ability to consistently reduce BOD and TSS and ideally, we need actual influent concentrations. Of great value to risk-reduction is the ability to monitor the system using telemetry, so that alarm events alert the service provider. This allows problems like stuck toilet valves to be detected and resolved before too much water has surged undertreated to the field.

A future objective is to develop a policy, objective, predictable and neat for establishing percent reduction of leachfield area for treatment technologies. At the next meeting we will discuss this and work to develop a simple, elegant process of assigning leachfield area reductions based on 5 factors (effluent quality and availability of influent data, surge storage capacity, time dosing, telemetry and treatment process).

Fusion has an alarm panel to alert the homeowner if the linear compressor stops functioning (blower stops producing air pressure or if there is a high water level within the unit. Telemetry is not included and system discharge is invert-controlled, gravity discharge, not time dosed.

The information provided by Wes, reports that all the states approving leachfield reductions for Fusion approved its use without a septic tank. There was discussion about depriving the system of the carbon it may need to function so well, if it is preceded by a septic tank. Without a septic tank, 40% reduction would make sense, based on the effluent quality and the system's gravity discharge. There was discussion about pumping frequency and process. From page 3 of 4 in minutes of 6/15/11: *"The owner's manual in the back of the application states that periodic solids removal is necessary for optimal performance and states that an authorized Fusion maintenance provider will oversee this process. Figure 9 in the O&M guidance depicts the pump out procedure for the sedimentation-separation tank and for the anaerobic filter tank."*

Because of its small size, Fusion may require more frequent pump outs and this should be noted in the certification, stating that the need for pumping should be checked at every service visit.

We could approve a leachfield reduction of a stated amount with testing and data submitted annually and we may revise the percent reduction as a function of the effluent quality. Either 40 or 45% is OK with George. George: with no septic tank 45% reduction, without telemetry, 2X/year testing for two years for three systems.

In the section on O&M, that requires two service providers unaffiliated with the distributor, include that the service providers must actually provide the service and not subcontract service to others. Add this to this certification and to the others as they are renewed and issued in the future.

Motion: George made a motion to approve Fusion for BOD & TSS reduction, without a septic tank and a 45% reduction of required leachfield area. The certification is to include:

- 1) In addition to a requirement for two service providers unaffiliated with the vendor or distributor, that service providers must provide service themselves and this may not be subcontracted,
- 2) Because of its small size, Fusion may require more frequent pump outs than systems and tanks currently used in RI; the need for pumping should be checked at every service visit.

Second: Tim seconded the motion.

Discussion: None

Vote: All present voted in favor of George's motion to approve Fusion.

Deb was asked to call Allison Blodig and get follow-up on the FAST service provider certification training. We've heard that they have not scheduled the 3 service visits and that test results from the training have not been received by those who attended.

Orenco Systems, Inc's AX20-RT Request for Equivalency

Deb explained that Jason Churchill emailed her a request for a TRC decision on whether they would consider the Maryland data for the RT in support of a Class 2 technology application to RIDEM for the AX20-RT. Maryland requires one year of testing and OSI is proposing to extend this testing for an additional year, if RIDEM will consider it in support of a Class 2 application. He explains, however, that these RT systems are not in the configuration for which RI approval will be sought: they do not have the recirculation pump in the second compartment and they do not have the two spin nozzles for distribution of effluent to the media. Deb had provided the group with the drawings Jason provided her, of the RT configuration for which they will be seeking RI approval and reminded them that OSI has received NSF equivalency for this system with the AX20 Filter.

The TRC was in unanimous agreement that the data for the AX20-RTs in MD would not be accepted in support of a RI application for the RT with a different configuration. It was asked if they can retrofit these Maryland systems with the configuration for which RI approval will be sought. If so, perhaps if the performance data for the two configurations are indistinguishable, that would be acceptable. Deb was asked to find out if OSI maybe able to retrofit the Maryland systems before additional TRC consideration of the issue.

Other:

O&M Issues

Someone stated that the AX20's in RI are not receiving 2 service visits each year, that Bob Johnson is doing 1 and is not taking dissolved oxygen readings. How do we really know that these systems are performing as they should? Bio-Microbics is documenting two service visits a year, sends DEM inspection reports and informs us when system owners don't renew or cancel service contracts.

Follow up on the Bio-Microbics FAST operator certification training: Following the training and test, three field service visits had to be scheduled. For Tim, these were three sites that Tim has under service contract. Mike Morrow (sp?) a service provider with J&R Engineering attended the site visits to document performance and record that the requirement had been satisfied.

Next Meeting

The group decided that they wanted Deb to use a Doodle poll to decide between October 27 and October 28, 2011.

Adjournment

All business concluded, no other issues were introduced and Russ declared the meeting adjourned.

The meeting adjourned at 12:42 PM.