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

April 30, 2010

Approved Minutes

Present: Ken Anderson, Noel Berg, Russ Chateauneuf, Joe Frisella, Susan Licardi, George Loomis, Brian Moore, Tim Stasiunas and Dennis Vinhateiro

Absent: Dave Burnham

Others Present: Scott Samuelson, Lee Verbridge and Josh Cobb of SeptiTech, Dan Cotta local SeptiTech representative and Deb Knauss (DEM)

Call to Order: 8:45 AM

Materials Distributed:
- Draft Agenda for this meeting
- Draft Minutes of 1/22/10 meeting
- Data summary for SeptiTech

Minutes of January 22, 2010
On Page 1, at the first citation beginning "On Page 3": change "ISDS" gravel to "OWTS" gravel.

As a clarification: on Page 2, beneath **Geoflow** in the paragraph beginning: "In the Operation and Maintenance section at number 7…", add "third-party" before "service providers".

Motion: Ken made a motion to accept the minutes with the necessary edits.
Second: Joe seconded the motion.
Discussion: There was no discussion.
Vote: All present who were present at the January 22nd meeting voted to approve the minutes with the noted edits.

SeptiTech
There are currently two SeptiTech waste-strength reduction systems installed in RI, both installed under the Block Island Green Hill Pond Demonstration Project and two new permits have recently been issued.

Deb reported that the application satisfies the requirements of the Rules for a Class II technology approval and brought attention to the data summary:
Table 1 reports 7 of 10 systems' average TN < 19 mg/L; 2 exceedences at 19.1 mg/L and 1 at 19.75 mg/L.;
Table 2 reports all 5 systems' average TN < 19 mg/L, all having been in service for over 4 years;
Table 3 reports on 10 systems (7 of which are seasonal): 9 systems' average TN < 10 mg/L; 1 system's average TN = 19 mg/L. She acknowledged that although the intervals for which these data are provided is short, it is interesting that with test intervals ranging from one month to one year, the average TN concentrations are all ≤ 19 mg/L and there is only one excedence of the 19 mg/L TN concentration reported for all these systems at 39.0 mg/L.

She noted that although approval is sought for unlimited use there are no commercial or large systems' data provided: the maximum design flow for which data are provided, as she could discern is 690 gpd.

It was stated that the MA Test Center reports influent nitrogen of about 38 - 42 mg/L; individual homes' influent would generally have nitrogen concentrations in the 50 - 60's mg/L range and even higher if carriage water volume is low. Nitrogen removal technologies' biological systems are temperature-dependent; we need to accept that there will be performance fluctuations, with occasional TN concentrations greater than 19 mg/L in the treated effluent.

Some of the approvals provided in the application limit use:
- WA approval is limited to the three smallest treatment units (up to 880 gpd) and requires treated effluent TN concentration <20 mg/L;
- NM: approved for <20 mg/L TN;
- WI: approved for 15 mg/L TN and up to 4,500 gpd;
- MA: up to 50 systems; 10 mg/L TN for single-family homes and 25 mg/L TN for commercial and over 2,000 gpd.

There was confusion regarding the number and function of the pumps that are in the system. The two schematics at tab 8 show different configurations, but both are labeled M400.

At about 9:35 Scott Samuelson, Lee Verbridge and Josh Cobb of SeptiTech and Dan Cotta, SeptiTech's local distributor, joined the meeting.

Josh explained the differences between the waste strength reduction and the nitrogen removal models and clarified the purpose of the pumps in the system.

The media in the processor has an indefinite life expectancy and requires no maintenance.

Anything exterior to the processor is the contractor's responsibility to provide.

Telemetry is an option.

SeptiTech requires watertight tanks and water or vacuum tests each tank prior to placing the insulation around the tanks. Tim wanted to know if they require use of Jolley septic tanks and what is the preferred pass-through between the first and second septic tank compartments. Josh replied that **any septic tank approved by RI is acceptable**.

Although there is no requirement for an **effluent filter,** Josh explained that a designer may specify one if desired; it will not interfere with the system's function and SeptiTech will not prohibit it (since it is a RI requirement). SeptiTech requires an effluent filter with the waste strength reduction model.

Regarding lack of clarity in the septic tank schematics, Josh stressed that the **septic tank must conform to state standards**. Russ stated that the design and installation manual would have to show the proper configuration. George stated that the images in the application also need to be correct and clearly depict how the system works since it is part of the official record for the technology. The diagrams need to be edited to include risers, inlet detail, effluent filter and all media. He also stated it would be helpful if the clear explanation of process that Josh provided earlier is included as narrative on the same page as the schematics and asked if this could be accommodated. Josh agreed to make these changes to the system figures.

Either SeptiTech or Dan Cotta, as the local representative will **train designers, installers and service providers**; Dan expressed interest in initiating training as soon as possible when the technology is approved. Dan said that the recently permitted system in Exeter will be used for data collection and demonstration. This system is not configured for denitrification, but to do so would require only minor modifications. Josh explained how these recently installed systems are slightly different from the models that were installed in 2003.

There was discussion of the importance of **surge storage capacity** to ensure that the leachfield is properly dosed even during periods of high use. Josh stated that they can change the float levels based on design flow to meet peak design flow requirements. Russ stated that this would need to be carefully covered in the design and installation manual, but Josh explained that the processors are shipped with the floats set.

Joe asked about **cost**, including installation, septic tank and biopack media. Dan cited $17,000 (installed) including a BSF, noting however that this system was not configured for denite. Other costs: **O&M $250/yr**; **electrical about $35 per month**, **telemetry to purchase is about $500**, plus the phone line; a dedicated phone line is requested, if it is not provided, a splitter will be used. Telemetry is not web-based. Pages 14 and 15 of the application provide cost estimates for each of the models, and for O&M and energy.

Dan explained that **they include with the purchase, a 6 and a 12-month inspection** and then a service contract would be taken out for the subsequent annual inspections. Russ stated that **every AE technology in RI is required to have two maintenance visits per year** and asked what is required in MA. Josh thought that MA requires one site-visit per year. Russ stated that if we make a change to the required frequency of maintenance visits, we will apply it to all approvals, but at this time, we are requiring two and this would be part of an approval for SeptiTech. He asked that the material submitted for clarification include a statement acknowledging that RI requires two maintenance visits per year. He also stated that if they wish to make a case for SeptiTech requiring only one visit per year, they may include this as-well. The O&M manual will need to include the steps and process for service work on the system.

Russ stated that although the application is seeking approval for all uses and flows, the performance data submitted in the application are limited to single family residential and asked if they have **data for the denitrification system for large flows**. Josh replied that they do have data for large commercial systems and the performance is as good as and even better in some cases, than the residential systems. It was requested that they provide performance data for systems 4,500 gpd and greater. In MA there is an 8,000 gpd subdivision and an 8,000 gpd nursing home (denite) and 2 restaurants served by denite systems, one is 3,800 gpd, the other 6,000 gpd. SeptiTech considers commercial to be

1,000 gpd and larger. Noel wanted to know if they have influent data; they do, for some residential systems but not for the commercial systems; they noted that recycling the wastewater complicates obtaining influent samples. SeptiTech will provide these large systems' data.

Russ asked how **commercial systems differ from single-family home systems**. Josh: the theory is the same, but commercial systems may need two recirculation pumps (the pumps that deliver the wastewater to the treatment media in the processor) and all systems over 1,000 gpd (regardless of use) and all commercial and high strength systems require remote monitoring. Russ wanted to know if they use equalization tanks; Josh replied that they sometimes do, but that this is system-specific and decided in collaboration with the design engineer. He stated that they are working on one at a military base that will receive heavy weekend use.

The processor is flexible; it can be adjusted and re-programmed if the performance data are not meeting the treatment requirement.

Scott stated that the **NSF 245 evaluation was completed last year** (after the application was submitted to RIDEM) and it **documented TN below 19 mg/L**. Scott agreed to send the executive summary for the NSF 245 report to DEM.

They generally do not sample for alkalinity, but if a water softener is discharging to the system, that is a red flag to monitor alkalinity if the system is performing poorly.

Russ asked how it is determined during an O&M visit that a system is denitrifying. Josh: DO in the processor can be checked and the service provider can use alkalinity strips, but **there is no way to check nitrate levels without lab analytical data**. Visual, mechanical and data downloaded from the PLC (average daily flow and peak daily flow) are used to assess condition of the systems: visual assessment of whether the air intake is plugged, are the pumps operating in their specified amperage range, are any media bags broken, presence of grease in the processor. The PLC holds 90-days' data, but retains peak flow until a new maximum is recorded.

Joe asked if pH and dissolved oxygen (DO) can be adjusted by modifying a process in the system. Josh replied that pH cannot, but low DO may be due to a plugged Venturi or a low point in the air-intake line. DO is assessed during maintenance visits and if it is low, these would be checked, as-well-as recirculation pump bearings. He added that high DO has never been a problem for them. If DO is too high in the septic tank, they would decrease the recycle ratio to decrease the amount of water recycled back to the septic tank from the processor. A more detailed service checklist than the one in the application is available and it will be provided to DEM. George asked if the PLC can make this adjustment. Josh replied that it cannot; this adjustment needs to be made manually; the PLC records number of discharges to the leachfield. Josh also explained that during intervals of low flow the PLC does not decrease the recycle setting; it only performs this function when there is no flow.

When there is **no flow for 24 hours** the system will decrease to 50% recirculation (delivery of wastewater to the media pillows); then at 5 days it will enter hibernation mode, during which it will run several minutes every couple of hours. In the hibernation mode and also with no power to the system, the system receives no new carbon; the bacteria will not survive indefinitely, however the system is reported to be fully operational 2 – 3 weeks after re-start.

Recycle only needs to run enough to maintain proper condition of the denitrifiers; this pump would run all winter unless it is turned off. SeptiTech recommends switching power off for seasonally used systems when the home will not be occupied. **During a winter shutdown**, the material in the processor will become crusty but will not require any attention other than turning the system back on.

Drawing cold air into the system will not be a problem. The insulation around the septic tank and processor is intended to retain heat within the tank, rather than to prevent cold transfer into it from the surrounding environment. An R-value requirement is not specified for the insulation.

Scott will send the following information to DEM: detail the float level change required to provide for surge storage as required by RIDEM, design, installation and O&M manuals, show effluent filter in the system details, process description narrative on same page with system detail, change the service visit frequency to two per year, denitrification data for large systems with system details, NSF 245 executive summary, and the detailed inspection checklist.

Scott wanted to know what the remainder of the review process includes and what they can expect. Russ explained that we will look at the data with the TRC and if satisfied, it will be about two months for a final decision regarding the application.

SeptiTech asked what process RI applies to assigning leachfield area reduction. Answer: we consider treated effluent quality and factor in time-dosing and peak flow storage.

Geoflow (dripline)

Russ summarized the telephone conference he and Deb had with Karen Fergueson (Geoflow) and Lauren Usilton (J&R Sales & Service) the local Geoflow distributor. As a result of this call, some changes were made to the approval letter and Deb sent the revised approval letter to the TRC inviting comment. No comments were received. Russ explained that in the original approval, all systems in RI were required to use pressure-compensating emitters; this requirement was included because of recommendation received in response to the query sent to people with experience using drip dispersal. However, Karen explained that non-pressure compensating emitters (Wasteflow Classic) would be her preference for her own home (barring conditions for which they recommend pressure-compensating emitters) and that most of the residential installations in MA are non-pressure-compensating. Deb also explained that another change made on the basis of the telephone call and consideration of the stiffness of a sample provided was to delete the requirement for using flexible PVC for loops in the manifolds. The samples of each type of emitter (within a short length of dripline) and a coil of the material without emitters was brought to the meeting. No one objected to the changes in the approval.

GeoMat

Russ explained Dave Potts' objection regarding DEM not allowing direct substitution of GeoMat 1200 for PSNDs specified in approved plans, but rather requiring submission of a redesign plan for this substitution. Russ reminded the group that there were two different width mats presented at the TRC meeting at which the GeoMat application was presented. Discussion of sizing included agreement that the wider mat would be harder to deal with (regarding development of design specifications) but the 1200 (the 12-inch width) was similar to the PSND. It was offered to Dave that only the 1200 be considered and that it be specified in design plans using the same general design parameters used for the PSND; he agreed.

Russ does not recall committing to Dave about revised design plan or direct substitution allowance. At DEM it is thought that the applicant should know what product is going to be installed for their system. Dave Potts resisted firmly, considering abandonment of the product's introduction in RI. Russ agreed to bring the issue to the TRC seeking their recall of the discussion. Since Dave Burnham could not attend the meeting, he sent an e-mail expressing support for direct substitution, with the COC reflecting which leachfield option was installed.

Russ asked if anyone recalls making a commitment to Dave Potts on the issue of substitution GeoMat 1200 for a PSND specified on an approved plan. Dennis has no issue with substitution without a redesign.

Russ clarified that the difference between this and the OSI AX/RX substitution (which was allowed with filing of an affidavit signed by the applicant, the designer and the installer prior to the start of construction), is that both technologies had RIDEM denite approval and the RX was being discontinued. DEM required OSI to provide the RX to any applicant holding an approved permit, if it was requested. Russ also noted that he has heard that this process did not go well. He asked what the group thought about an applicant not knowing the type of leachfield is installed as part of their system.

George sees this as an in-kind replacement, as ADS pipe was deemed to be when used as dome material in a PSND, in place of bisected PIP pipe.

A suggested option for dealing with the issue of who decides to substitute a component specified by a designer in an approved plan: Installer should contact designer and ask which the designer prefers. Dave could have a typical cross section of GeoMat 1200 available for the installer who installs it as a PSND substitute, the system elevations would not change.

Deb explained the lack of communication between installers and designers and cited that it seems improper for an installer to change an element of an approved design plan; she asked if anyone accepts these two conditions as issues relevant to this substitution issue.

George asked why DEM is penalizing this vendor. Brian Moore doesn't see this as penalizing this vendor.

It was suggested that as with transfer of owner, do the paper work to account for the change at DEM rather than requiring redesign, saving a $700 bill from a designer.

George reported that Infiltrator can provide a PSND dome for lower cost than PIP pipe. GeoMat is a faster installation than a PSND, saving money. He stated that he understands the issue with the GeoMat substitution not being communicated to DEM and agrees that this is an issue for maintaining accurate permitting records. The designers need to be held accountable; they are charging homeowners for installation oversight, so they need to be present for the installation of systems they design.

Russ requested the feeling of the TRC on Dave Potts' belief that a decision was made at the meeting he attended, allowing an easy and direct substitution of GeoMat 1200 for approved PSNDs. Noel stated that the designer needs to know what is installed; the installer should not make an unauthorized change of a system component. George added that it should be a decision made by the designer and homeowner.

Brian reported that there are less than 10, perhaps 5 approved PSNDs that are not installed.

Russ stated that following GeoMat training DEM will allow direct substitution with designer and homeowner input for PSNDs approved as of the date of the approval certification, which is January 13, 2010 through the date of the first training. After this, if GeoMat is to be substituted for an approved PSND, a re-design will be required.

Next Meeting
The next meeting was scheduled for June 10th at 8:30 am, pending availability of the QDC Annex.

Adjournment
Motion: Joe made a motion to adjourn.
Second: Ken seconded the motion.
Discussion: There was no discussion.
Vote: All present voted in favor of the motion.

The meeting adjourned at 12:15 PM.