

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

The meeting was held at
95 Cripe Street, North Kingstown, RI

May 14, 2014

Approved Minutes

Present: Brian Moore, Noel Berg, Susan Licardi, George Loomis and Tim Stasiunas

Absent: Nikki Andrews, Jim Boyd, David Dow and Dennis Vinhateiro

Others Present: Jim Bell, Bio-Microbics; Lauren Usilton and Mike Moreau, J&R Engineering; Meg Thompson and Brian Parker, Eljen Corporation and Deb Knauss (DEM)

Call to Order: 8:46 AM

Materials Distributed:

- Draft Agenda for this meeting
- Draft Minutes of 3/18/14 meeting
- Deb's accounting of Jim Bell's (Bio-Microbics) answers to her questions regarding the application for BioBarrier
- Jim Bell's letter in reply to Deb's questions regarding Bio-Microbics application for BioBarrier and attachment: NSF letter dated 9/13/12) approving use of the bubble mixer in the anoxic chamber. This NSF letter was provided because this is the mixer proposed for use in BioBarrier in RI, but the application wasn't clear on this point.
- Summary of Bio-Microbics application for BioBarrier
- Micro-summary of Bio-Microbics application for BioBarrier
- Addendum to the Bio-Microbics application for BioBarrier: Draft Guidance Document, received at DEM 5/6/14
- Draft Class I Approval Certification for Eljen Corporation's Geotextile Sand Filter (GSF)

Review of Draft Minutes of March 18, 2013

On page 2: in the section **Norweco, Inc.'s Application for Hydro-Kinetic Model 600 FEU: Review of Draft Approval**, in the last sentence of the second paragraph before the quotation, add "minimum" as follows: "...designs would need to incorporate a minimum 450 gallon pump (dosing) tank."

Motion: Tim made a motion to approve the minutes with the above noted correction.

Second: George seconded the motion

Discussion: There was no discussion.

Abstention: Noel abstained from the vote because he was not in attendance at the meeting.

Vote: All present, except Noel who abstained because he wasn't at the March meeting, voted in favor of the motion.

Bio-Microbics BioBarrier Membrane System for N-removal

BioBarrier is NSF certified to Standard 245; the application was submitted with documentation toward fulfillment of Rule 37.4.2 (B)(i). Jim Bell made a presentation and explained the membrane system, its function and maintenance. He spoke briefly about the membrane cartridge in the commercial HSMBR. Since this model doesn't have NSF/ANSI Standard 245 certification, and Rule 37.4.2(B)(i) authorizes approval of systems that are Certified to Standard 245, and the application doesn't include data for HSMBR that fulfill the requirements of the other Rules, we can only consider the models that are certified to Standard 245. BioMicrobics can apply for HSMBR in the future with another state's approval and two years of data meeting the requirements of Rule 37.4.2 (A).

Jim recommended that if the pretreatment tank is specified as a distinct unit, that it is smaller than 1000 gallons for a three bedroom home.

Knauss note: In this part of his presentation, I noted that Jim recommends 5 BOD to 1 TKN, this is a ratio of 5. Maybe I got it backwards because other sources (one is quoted below) recommend a ratio of 2.5 or less (for nitrification). 5 BOD to 1 TKN is a ratio of 5. (there's nothing in the application or any manuals regarding this ratio and treatment performance)

From: <http://www.wrights-trainingsite.com/Nitri3onb.html>

BOD:TKN Ratio ratio is calculated from TKN and BOD measurements on the nitrification step influent. The higher the BOD portion the lower the nitrifier fraction. A BOD:TKN ratio of 2.5 or less should show good nitrification in the treatment system.

Jim will send another NSF letter that clarifies the configuration of the baffle wall.

Knauss note: Request copy of the NSF letter clarifying configuration of the baffle wall.

There is a non-corrosive support system used to prevent flotation of the membrane cartridge. This may be purchased from BioMicrobics, or built by the installer.

Knauss note: Approval certification was drafted requiring that Bio-Microbics non-corrosive support to prevent flotation of the membrane cartridge is used, rather than built by the installer.

Jim was asked about life expectancy of the membrane cartridge and explained that BioMicrobics beta tested the system at distributors' homes and offices. The oldest one, installed at an office, is eight years old, the membrane cartridge hasn't been replaced and it is performing well.

Pump operation: the pump runs 30-minutes on and 5-minutes off and the blower is on 30 minutes and off for 90 minutes.

Start up is critical, so there will be a list of FAST service providers and a separate list of BioBarrier service providers. At start up, seeding the system is critical. Mike Moreau explained that he'll use seed sludge from another BioBarrier system after some of these are installed and get going. Until then this will be obtained from an MBR, or aerated sludge treatment plant.

When the system is pumped, maintaining activated sludge in the system is critical, so a depth of 1 to two inches of water must be left in the system. The membranes can't be allowed to dry.

10,000 mg/L MSSL indicates need for pumping, but there is no good field test. There is a formula in the O&M manual that can be used to estimate frequency of pumping based on occupancy of the home. If a system is not pumped when it is needed, the filtration rate will decrease and result in high water alarms. Intense cleaning should be required every five years unless the system is abused.

George asked about the statement in paragraph two of the letter Jim sent to Deb responding to her questions, stating that flow between the two zones has not been quantified, but that NSF verifications have shown that transfer is four times the daily flow. Jim clarified that it is believed that transfer between the two zones is four times the average daily flow because of the treatment results.

George asked about paragraph three: low flow systems and high strength nitrogen and if there is any flexibility in the operation protocol. Jim replied that with 150 mg/L TKN, you get denitrification as long as there is sufficient alkalinity; the ratio of BOD to TKN needs to be known. Vacation homes have high TKN and low BOD, so the system requires enrichment and maybe recycle pumps to meet performance objectives.

George said that because of these kinds of use-related effects on system performance and possible design elements that could be considered to mitigate them, at the design stage it would be nice to know about how a home will be occupied and the type of use a system will see. He asked about discharge of water softener backwash into the system. Jim stated that he had concerns about the salts harming the nitrifiers.

The presentation concluded and with no more questions, the Bio-Microbics representation left. Brian Moore asked if anyone wanted to make a motion to approved the system, since it is certified to NSF/ANSI Standard 245.

It was agreed that if approval is recommended, that it should be for the "N" models for 0.5, 1.0 and 1.5 for nitrogen removal, since these are the ones with the NSF Standard 245 listing. If approval of other models is desired by Bio-Microbics, an application with all the required supporting material will be required to be submitted for TRC review.

Motion: Susan made a motion to recommend approval of BioBarrier 0.5-N, 1.0-N and 1.5-N models for nitrogen removal subject to the requirements of the N-removal monitoring protocol for nitrogen systems approved under Rule 37.4.2 (B)(i).

Second: Tim seconded the motion.

Discussion: There was no discussion.

Vote: All present voted in favor of the motion.

Eljen Corporation Proposed Revisions to the Eljen Manual

Brian Parker (Eljen Corporation) explained that except for the 30-inch cover requirement for venting, all DEM's comments on the February 2014 version of the revised manual had been addressed in the April 2014 version. He remains confused about the 30-inch depth of cover DEM requested as the threshold for requiring venting. He explained that if this measurement is taken from the bottom of the sand beneath the GSF module, it was acceptable, because Eljen's threshold for requiring venting is 18-inches measured from the bottom of the top of the mat (distribution pipe invert); so if the 6-inch mat and 6-inch depth of sand are added to 18-inches, that total depth is 30-inches. He doesn't care from where the threshold for requiring venting is measured, as long as the (soil) cover material over the surface of the mat is 18-inches; the Eljen minimum cover is 12-inches (over the surface of the mat), with venting required with cover depths greater than 18-inches over the surface of the mat.

It was explained to Brian Parker that the TRC reservations about venting is additional expense, the nuisance of the presence of the vents to homeowners and homeowners removing them. George noted that there are thousands of Eljen leachfields installed in RI, none of which are vented and there have been few known failures.

There was some discussion of various cover depth issues and options, but Brian Moore stated that to be consistent and reduce confusion and design errors, we will keep the cover requirements for Eljen the same as the other leachfield trenches. But it is good to know that the manufacturer will approve of less cover so that on repairs they Eljens can be approved using their (Eljen Corporation's) minimum cover.

Brian Parker wanted to know if in Section III (O&M) of the draft approval, O&M would be required only for Eljens installed with LPP distribution. It was explained that this is indeed the case, as is stated in narrative in this section, and that the section title will be revised by including "LPP". Eljen requested that the requirement for offering a service contract be placed on the designer or the installer, rather than Eljen Corporation (Vendor) as the draft approval is written. This is a unique situation because there was agreement that the pressurized LPP system is worthy of maintenance, but Eljen Corporation isn't a vendor of a treatment system like the advanced treatment system vendors, with distributors that have service departments. Deb explained that she had thought through design of an Eljen field with LPP distribution and at what point, and by whom would a service contract be offered? She asked George if the individuals registered by NEOWTP after they pass INSP 200 would be suitable for listing as service providers for this purpose? He agreed that this group would be suitable as service providers for LPP STE distribution. This list would be provided by the designer to applicants for whom they design LPP systems and the service contract would be required to be recorded in land evidence records as service contracts are required to be.

The term "sampling" will be deleted from the title of Section IV. Brian Parker explained that they want to be responsible for reporting less than is required in Section IV; he explained that they sell to distributors and it will be hard to get the information from them. Brian Moore agreed to delete all these for them.

Brian Moore asked the group what we should require for O&M on LPP systems (the Pressurized Drainfield Guidance Document that incorporates LPP was just adopted in November of last year) for septic tank effluent (STE). George noted that in the April 2014 Eljen draft manual, Figure 16 depicts a hard 90-degree fitting between the distribution line to the vent. This 90-degree turn should be made using a "sweep-90" (long turn), or 2, 45-degree fittings, to facilitate O&M activities. George said that O&M activities for LPP distribution of STE should at a minimum include yearly flushing and snaking of the lines. Brian Parker stated that Eljen can state in the manual that this is recommended annually, or as-needed, to accommodate more frequent attention where needed.

Motion: George made a motion to recommend approval of the April 2014 Eljen draft manual and the draft approval with the changes agreed to during today's discussion.

In the manual:

- Venting will be required according to Eljen's requirement of 18-inches of cover over the invert.
- Eljen GSF will be designed and installed according to the same design parameters for minimum and maximum cover as other leachfields, except for repair situations when Eljen's minimum of 12-inches over the invert may be used (RIDEM minimum cover is one and one-half (1½) feet).

In the approval:

- In Section III, the section title will be revised by including "LPP", to make it abundantly clear that the O&M provisions apply only to Eljen GSF installed with LPP distribution.
- In Section III, the requirement for offering a service contract will be revised so that this is not a responsibility of Eljen Corporation. A possible approach is for the designer of an LPP system to be required to provide to the applicants for whom they design these systems, the list of individuals who have passed INSP 200 and are registered by NEOWTP as service providers for AE systems. Recording the service contract in land evidence records will be one of the permit requirements.
- The term "sampling" will be deleted from the title of Section IV.
- In Section IV, Eljen Corporation's annual reporting responsibility will be limited to the following actions that they did not request to be deleted: number of inspections/maintenance calls conducted; and all known problems or failures reported and/or observed with a brief summary of the cause and remedial actions taken.

Second: Susan seconded the motion.

Discussion: There was no discussion.

Vote: All present voted in favor of the motion.

AE Program Update

Deb provided an update of recent actions in the technology program:

Hydro-Kinetic Manuals (Norweco) revised version was received yesterday. Hydro-Kinetic has been approved, so when the manuals are approved this "Standard 245" system will be added to the list of approved technologies and Norweco may schedule training.

Bio-Microbics Application for BioBarrier mbr –N-removal NSF 245- New application discussed today.

Eljen GSF Revised draft manuals & draft Class I approval- Discussed today.

FAST 3 systems' data (Bio-Microbics) The final 8th quarter's data and also the MASS DEP data that the certification requires have been submitted and all look good. A renewal will be issued when possible.

Singlair 960 (TSS & BOD Annual Reporting) Norweco, has been submitted. Deb is working to find out what the protocol is when a service provider discovers that the aerator has been removed.

Singlair DN (Denite 3 Systems' Data and Annual reporting) Siegmund Environmental Services Deb met with Carmel McGill, who has taken over temporarily since Hollister left the company, to explain the reporting requirements. Nothing has been submitted to-date.

New application received 5/8/14 – AquaSafe for BOD & TSS removal The application compiled by Cal Locker for Ecological Tanks (mfgr) distributed today, to those attending. Fed EX to others.

Nitrex the two start-up installations continue to be monitored.

Next Meeting and Adjournment

The group selected three possible dates for a meeting in mid-June. Deb will send Doodle poll out to the group to indicate availability for these dates.

All business was concluded and no additional business was introduced; the meeting adjourned at 12:10.