

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – January 12, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance:

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

Public – Ernest Stickler, Environmental Engineering Service

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Installer/ Service Provider – Mark Fehring, Fehring Services

Manufacturer Representative - Scott Hetrick, Norweco Inc.

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner –Raymond Saporito, Ashtabula County Health Department

Manufacturer Representative — Dick Bachelder, PSA, Inc.

ODNR Soil Scientist – vacant

Guests:

Jon Naseman with Norweco, Inc., Joe Keiser with StreamKey, Bob Paulus with RMSYS, Inc., Bill Wehrman with Winelco, Inc., Bob Reckers with Winelco, Inc., Steve Radcliff with Winelco, Inc., Wayne Peyton with Clearstream, Matt Deaton with ODNR and Tim Gerber with ODNR

Other ODH participant: Amy Mills

Welcome and Agenda review:

Rebecca Fugitt reviewed the meeting agenda. A modification was made; Bob Fletcher had requested to remove Norweco from the agenda. Introductions were made by all in attendance. Matt Deaton announced that he has been chosen as the ODNR Soil Scientist representative on TAC but the appointment is not yet official.

Meeting Minutes:

TAC members reviewed the Dec. 8, 2009 meeting minutes. A motion was made by Charles Patterson and seconded by Dick Bachelder for approval of the November 10, 2009 meeting minutes as submitted. All TAC members present voted in favor of the motion.

Winelco – Bob Reckers, Bill Wehrman & Steve Radcliff

At their last TAC meeting Winelco was granted permission to install up to 25 units in order to collect more data. Improvements were made on product water-tightness due to experience with other units; oxidation and corrosion found on ballast. They modified the systems in the field by installing an aluminum reactor tube which reflects UV to improve fecal counts. Flow was kept within ½ inch of the UV tube. Ray Saporito asked how many number of sites/homes were tested. Winelco reported that six additional homes were tested on the second round in addition to the 2 units used to test 4 homes previously. The Winelco UV units were installed following Advantex pretreatment units. A discussion on sampling and data followed. Mark Tumeo recalculated data and could not replicate the means from the data provided by the lab. He found Winelco over 5,000 fecal counts 60% of the time. Winelco asked for guidance. Dr. Tumeo volunteered to work with Winelco, helping to analyze data but would have to remove himself from the next meeting vote. In conclusion, the TAC determined that Winelco mixed experimentation with validation by artificially stimulating flows which affected data.

No action was taken by the TAC; Winelco will re-work data and come back to the February TAC meeting. A five minute break followed.

Clearstream Wastewater Systems, Inc. request for approval of Clearstream Wastewater Treatment System Models 500N, 500NC, 500NC2, 500NC3, 500NCS, 500NU, 600N, 600NC, 600NC2, 600NC3, 600NU, 750N, 750NC, 750NC2, 800N, 800NC, 800NC2, 1000N, 1000N-B, 1000NC, 1000NC-B, 1500N, 1500N-B, 1500NC, and 1500NC-B when used with a pretreatment tank and the Salcor 3G Ultraviolet Disinfection Unit for achieving Fecal Coliform Standards <10,000, <1000, <200, and <20, and Models 500N, 500NC, 500NC2, 500NC3, 500NCS, 500NU, 600N, 600NC, 600NC2, 600NC3, 600NU, 750N, 750NC, 750NC2, 800N, 800NC, 800NC2, 1000N, 1000N-B, 1000NC, 1000NC-B, 1500N, 1500N-B, 1500NC, and 1500NC-B when used with Salcor 3G Ultraviolet Disinfection Unit, reaeration, and telemetry or pump lockout failsafe for meeting the water quality limits defined in the Sewage Treatment System NPDES General Permit for discharge to the waters of the state other than Lake Erie and discharge to the waters of the state including Lake Erie.

Presentation by Wayne Peyton, Clearstream Wastewater Systems, Inc.

Mr. Peyton presented information and data to support approval of the specified models for the standards listed above. Following the presentation the TAC reviewed the provided data. Rebecca Fugitt explained that the model utilizing a spin filter for a re-aeration option fell below the NPDES general permit dissolved oxygen standard of 6ppm. It was also noted that no information was provided regarding water tightness of the concrete models. The TAC discussed clarification of water-tightness on different models. It was concluded that engineering specifications/review for water-tightness and structural integrity must be provided for the 800 NC2 model.

Mark Tumeo recommended approval of all specified models requested for all fecal reductions, Ernie Stickler seconded the motion. Ralph Benson commented on the installation checklist, asking for specificity. He asked that items be broken down in a more step-by-step manner so installers know exactly what to do for inspections. Ralph will provide guidance. Mark Tumeo made motion to approve all fecal requests with modifications to the installation instructions/checklist and provision of technical information on the 800 NC2. All TAC members present voted in favor. This was item 5.a. on the agenda.

Dick Bachelder made motion to recommend approval for all specified models requested for NPDES discharge to the waters of the state, including Lake Erie with modification to sampling port from 4 inches to 6 inches and modifications to the installation instructions/checklist. Charles Patterson seconded the motion. All TAC members present voted in favor. This was item 5.b. on the agenda.

The TAC members discussed the last request of approval for specified models utilizing a spin filter for re-aeration for NPDES discharge to waters of the state including Lake Erie. Data revealed that the dissolved oxygen average was 6.4ppm with a range of 4.1-9.8ppm. Since some of the dissolved oxygen points fell below 6.0ppm the conditions of the NPDES general permit for HSTS were not met. Mark Tumeo motioned to recommend disapproval of the request; Mark Stump seconded the motion. All TAC members present voted in favor. This was item 5.c. on the agenda.

Discussion of Low Pressure Pipe (LPP) Special Device Approval (SDA)

Rebecca Fugitt asked if anyone would like to chair a committee for the LPP SDA. It was decided that there would not be a chairperson and that discussion would take place via conference calls. The committee is open to interested parties. Rebecca Fugitt agreed to set up the initial conference call.

Pending Applications for TAC Review/Next TAC Meeting Agenda

Norweco will return with the Singulair Green. The TAC requested further information including water tight testing and manuals.

Glendon Biofilter has not yet submitted requested information.

Discussion planned for requirement of/modification to six inch sampling port on NPDES approved pretreatment components.

ODH Sewage Program Updates

Rebecca Fugitt presented program updates to the TAC

Senators Neihaus and Grendell have continued discussions over the past month, working on items of disagreement. They will be meeting in early February. No bills have moved out of committee.

Through the ARRA funds, approximately 3.5 of 5 million dollars were allocated for the repair and replacement of household sewage systems. There is a possibility of ARRA funds coming to Ohio that were not spent by other states. ODH has made request known to the OEPA for more funds.

Rebecca described a situation brought to our attention by a local health department (LHD) involving qualifications and activity of service providers and installers of ODH approved pretreatment components. A distributor for Ecological tanks contracted with a precast concrete producer to supply the concrete tanks of their ODH approved systems. The producer was also an installer and service provider independent of the distributor. It was discovered that the producer had sold and installed tanks without the components to homeowners, independent of, and unbeknownst to the distributor. Rebecca explained that LHDs register installers and may register service providers but there are no specific means to verify that those individuals have been trained on particular pretreatment systems they may be installing and or servicing. This provoked discussion on whether manufacturers should be required to provide documentation of certification of installers, distributors and service providers to LHDs and whether to make a retro-active motion to require it. After further discussion Scott Hetrick made motion to recommend that the manufacturers of existing approved sewage treatment systems provide documentation as proof of certification for those individuals qualified to oversee installation, install or service their products. Dick Bachelder seconded the motion. All TAC members present voted in favor.

Next the TAC discussed changing the 4 inch sampling port requirement for NPDES systems to 6 inches. The TAC recommended that all approved NPDES discharging systems shall change to a six inch minimum sampling port for systems installed thirty days after the date of approval of this modification by the director of Health. Mark Tumeo made motion for approval; Ralph Benson seconded the motion. All TAC members present voted in favor.

The meeting was adjourned.

Approved on 3-9-2010 as signified by:



Rebecca Fugitt, TAC Chairperson



Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – March 9, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (5 of 10 were present):

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

Academic - Dr. Mark Tumeo PhD, Cleveland State University

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Installer/ Service Provider – Mark Fehring, Fehring Services

Absent (excused):

Public – Ernest Stickler, Environmental Engineering Service

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner – Raymond Saporito, Ashtabula County Health Department

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Manufacturer Representative – Dick Bachelder, PSA, Inc.

ODNR Soil Scientist – Vacant

Guests:

Bob Fletcher with Norweco, Inc., Matt Deaton with ODNR, Joe Keiser with StreamKey, Tim Gerber with ODNR, Steve Davis with Hydro-Action, Calvin Locker with Ecological Tanks, Inc., James and Rene Dye with Wastewater Solutions, Berry Meadows with Superior Septic, LLC, Zak Sherman with Infiltrator Systems, Chris Mandich, Jet, Inc., Dick Noland with Anderson and Noland Construction

Other ODH participant: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda.

No changes were suggested.

Meeting Minutes:

TAC members reviewed the January 12, 2010 meeting minutes. A motion was made by Mark Tumeo and seconded by Mark Fehring for approval of the January 12, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion.

Calvin Locker's presentation was not loaded on the computer. Mark Tumeo suggested that the committee move to the next agenda item (4. Norweco), and then return to the Ecological Tanks request. There were no objections.

Norweco, Inc.'s request to modify the approved Singulair 500 and 600 gpd sewage treatment systems (NPDES and soil depth credit) to substitute the concrete tank for a HPDE tank (Singulair Green)

Bob Fletcher of Norweco, Inc.

Norweco, Inc. had previously electronically submitted a request to modify the company's previous approvals. Bob Fletcher circulated a hard copy of the submittal and a watertight testing report to committee members. Mr. Fletcher pointed out that the drawings did not show up in the copies of the company's tank delivery and setting instructions. Mr. Fletcher informed the committee that the pictures were omitted due to an electronic error and that the instructions would be corrected.

Mr. Fletcher stated that a corrected version of the instructions would be made available to ODH for web posting.

Mr. Fletcher provided a brief description of the Singulair Green product and the manufacturer's request. Norweco, Inc. is requesting modification to all previous approvals of the Norweco Singulair 960 and TNT to include the option to use a HPDE tank (Singulair Green) in place of the concrete tank included in all previous approvals.

Discussion ensued concerning the other components of the pretreatment system. Mr. Fletcher explained that all other components of the unit, including the aerator motor, controls, alarm, and filter are identical and the only difference in the new model is the use of a HPDE tank.

Mark Tumeo made a motion to recommend approval of the modification to all previous approvals of the Norweco Singulair 960 and TNT to include the option to use a HPDE tank (Singulair Green) in place of the concrete tank as requested by Norweco, Inc. The motion was seconded by Ralph Benson. Committee members voted in favor of the motion.

Ecological Tanks, Inc.'s request for approval of the Aqua-Safe AS500, AS600, AS750, AS1500, AS500-C, AS600-C, AS750-C and AS1000-C with a tertiary filter, Disinfectant UV, reaeration, and failsafe system for meeting the requirements of the Ohio EPA NPDES General Permit for discharge to the waters of the state other than Lake Erie

Calvin Locker, Ecological Tanks, Inc.

Calvin Locker provided a brief PowerPoint presentation including a description of the treatment train and the manufacturer's request. Mr. Locker explained that Ecological Tanks, Inc. is requesting recommendation for approval of a new treatment train for meeting the requirements of the Ohio EPA NPDES General Permit. Mr. Locker further explained that the manufacturer did not wish to modify the previous approval for the same product. Instead, the manufacturer is requesting recommendation for approval of a second treatment train. Mr. Locker explained that the new treatment train would include a tertiary filter between the aeration treatment unit and the reaeration basin. An explanation and specifications of the tertiary filter were provided. Mr. Locker explained that the tertiary filter is available from a third party manufacturer and will be provided by some Ecological Tanks, Inc. distributors.

Mr. Locker modified the manufacturer's request to include recommendation for approval for meeting the requirements of the Ohio EPA NPDES General Permit for discharge to the waters of the state including Lake Erie

Discussion ensued concerning the reason for the request, operation and maintenance requirements, and the filters availability. Further discussion ensued concerning the lack of E. coli data for the treatment train.

Mark Tumeo made a motion to recommend approval of Ecological Tanks, Inc.'s request for approval of the Aqua-Safe AS500, AS600, AS750, AS1500, AS500-C, AS600-C, AS750-C and AS1000-C with the tertiary filter, Disinfectant UV, reaeration, and failsafe system for meeting the requirements of the Ohio EPA NPDES General Permit for discharge to the waters of the state other than Lake Erie as submitted by the manufacturer. The motion was seconded by Ralph Benson. Committee members voted in favor of the motion.

Discussion ensued concerning additional action needed to address Ecological Tanks request for meeting the requirements of the Ohio EPA NPDES General Permit for discharge to the waters of the state including Lake Erie. Calvin Locker withdrew the request.

Requested Presentation – Report on Maximizing Efficiency of Soil Treatment Area

Richard Noland, P.E.

Richard Noland, Anderson and Noland Construction

Richard Noland provided the committee with an overview of his background and interest in soil absorption components and the installation of engineered drainage around the components. Mr. Noland explained that he is planning to collect samples at several depths below the infiltrative surface of leach trenches at a site in Northeast Ohio. Mark Tumeo stated that he would review Mr. Noland's plans to answer questions and provide guidance.

Discussion of NPDES General Permit renewal and related issues

Mark Stump, OEPA, DSW

Mark Stump informed committee members that the current NPDES General Permit expires December 31, 2011. OEPA will begin drafting the new general permit in the summer or fall of 2010. Mr. Stump stated that he expected several changes in the new permit. The new permit will not include fecal coliform standards. All pathogen standards will be E. coli standards. Manufacturers will have to submit E. coli data that meets the E. coli standards to have approval for discharge under the new general permit.

Mr. Stump announced that the OEPA is drafting a letter to request all sampling documentation from local health departments. Discussion ensued concerning what information should be submitted and the usefulness of the performance information.

Low Pressure Pipe Special Device Approval

Rebecca Fugitt explained that the subcommittee created to discuss the Low Pressure Pipe Special Device Approval had not met. Program staff will attempt to set up a conference call for the subcommittee before the next TAC meeting. The special device approval will be included on the April TAC Agenda.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with Presby Environmental, Glendon Biofilter, Winelco, and Xerolet concerning applications to TAC.

Sewage Program Updates:

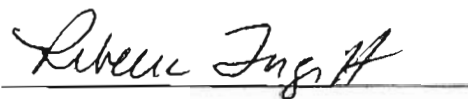
Rebecca Fugitt informed the committee that the department has learned that the legislature is discussing adding amendments to SB 110.

Rebecca Fugitt informed the committee that the ODH Bureau of Environmental Health's annual Midwest Conference is March 8 through March 11. Mrs. Fugitt reviewed the agenda for the Residential Sewage Program's section on March 11.

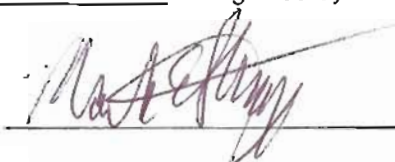
The next TAC meeting is April 13, 2010 and will be held at ODNR, Building I.

The meeting was adjourned.

Approved on 4-13-2010 as signified by:



Rebecca Fugitt, TAC Chairperson



Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – April 13, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (9 of 10 were present):

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Installer/ Service Provider – Mark Fehring, Fehring Services

Public – Ernest Stickler, Environmental Engineering Service

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner – Raymond Saporito, Ashtabula County Health Department

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Manufacturer Representative – Dick Bachelder, PSA, Inc.

By conference call:

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Absent

ODNR Soil Scientist -- Vacant

Guests:

Matt Deaton with ODNR, Joe Keiser with StreamKey, Tim Gerber with ODNR, Steve West, Steve Radcliff, and Bill Wehrmann with Winelco Inc., Michael Market, David Presby and William Evans with Presby Environmental, Dan Lark with the Lake County Health Department, Chris Mandich with Jet Inc., Dick Noland with Anderson and Noland Construction

Other ODH participants: Nathan Johnson and Amy Mills

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda and noted that an amended agenda had been forwarded to committee members. The amended agenda included a request by Winelco, Inc. Mrs. Fugitt asked if any additional changes to the agenda were requested. No changes were requested.

Meeting Minutes:

TAC members reviewed the March 9, 2010 meeting minutes. A motion was made by Ralph Benson and seconded by Ernie Stickler for approval of the March 9, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion.

Presby Environmental, Inc.'s request for approval of the Advanced Enviro-Septic Treatment System to meet the BOD₅ and TSS standard of 30 mg/l and fecal coliform standard of 10,000 colonies/100 mL

David Presby, Presby, Inc.

David Presby circulated two documents to be added to the company's submittal. Mr. Presby passed out an index of the submittal and a summary of changes to the company's request compared to the company's 2007 application. Mr. Presby informed committee members that 65 systems using the EnviroSeptic Pipe had been installed in Ohio under experimental concurrence and 1600 systems had been installed in Indiana. Further Mr. Presby explained to committee

members that the Indiana systems were inspected and only 6 of the 1600 systems installed experienced problems and that the problems were due to surface water infiltration into the systems. Mr. Presby continued by explaining changes in the company's current submittal compared to the 2007 submittal following the summary supplied earlier in the meeting. Committee members asked questions concerning the problems identified in the Indiana systems and discussion was had by all.

It was pointed out that in 2007 TAC had requested that the company submit information supporting the companies request for reduced soil loading rates that were included in the 2007 submittal. Mr. Presby explained that the company had contracted with individuals to produce such a report, but were unable to produce an explanation supporting the 2007 sizing request.

Mr. Presby and William Evans went on to explain that the sizing using the Tyler Table, as included in the current submittal for the Advanced EnviroSeptic System, was not necessary because the table is based on "dirty water" and the Advanced EnviroSeptic System treats effluent to 2 mg/L BOD₅ and TSS. Mr. Presby and Mr. Evans further explained that their experience showed that shorter systems were more effective than long systems because it is easier to divert surface water around shorter systems.

Discussion ensued concerning the performance data submitted by the manufacturer. Dr. Turney pointed out that the tested EnviroSeptic system utilized 12 – 24 inches of sand beneath the pipe and the company was requesting approval for only 6 inches of sand beneath the pipe. Dr. Turney went on to explain that the committee historically had not recommend approval of treatment trains that differ from the tested treatment trains. Mr. Presby stated that no additional treatment was provided by the additional depth of sand in the tested system. Mr. Presby supplied a few copies of a document dated March 1, 2004 and titled *Functional Comparison of Enviro-Septic and Conventional Pipe and Stone Leaching Systems* which he felt supported the manufacturers request for approval of the Advanced EnviroSeptic System with only 6 inches of sand beneath the pipe. Mr. Presby went on to explain that he did not want to come to the meeting and had only come at the request of his staff. Mr. Presby indicated that he planned to withdrawal his request for approval. Ralph Benson addressed the committee and stated that he felt it would be a mistake to let Mr. Presby leave the meeting.

Mr. Presby returned and requested to amend the manufacturer's submittal to include a treatment train that includes 12 inches of sand and 6 inches of unsaturated in-situ soil beneath the sand. Mr. Presby claimed that the six inches of soil beneath the system would be capable of moving the treated effluent away from the soil absorption area.

Committee members discussed lineal loading requirements used for similar soil absorption technologies. It was pointed out that the soils ability or inability to move treated effluent away from the soil absorption area is dependant on the soils depth, structure, and texture and completely independent of the treatment system installed to provide pretreatment of the wastewater. Further it was suggested that if TAC desired to allow reductions in lineal loading requirements, the committee should adopt standards and criteria for the reduction for all systems not just the Advanced EnviroSeptic System. ODH program staff expressed concern in approving a reduction in lineal loading (the required length along contour) for only a single technology.

Discussion ensued concerning the use of subsurface drainage around the Advanced EnviroSeptic Systems to create a gradient around the soil absorption system reducing the need for adequate length along contour. Testing results of the contents of curtain drains around systems installed in Van Wert County were discussed. The sampling results detected high fecal coliform levels in the systems' curtain drain inspection ports. The curtain drains were installed 4.5 feet from the Advanced EnviroSeptic System. Rebecca Fugitt expressed concern over the use of curtain drains to substitute for adequate length along contour and the sampling results supplied by Van Wert County. Mr. Presby again indicated that he would withdraw the manufacturer's request. Committee members again stopped Mr. Presby and discussed the approval of a limited

number of systems with reduced length along contour and curtain drains. Mr. Presby explained that the high fecal levels observed in the curtain drain inspection ports were due to the installation of curtain drains too close to the soil absorption area in Van Wert County. Mr. Presby explained that the company requires curtain drains to be installed 10 feet from the soil absorption system and had not authorized the installation of drains at 4.5 feet from the soil absorption area. Discussion was had by all.

Charlie Patterson made a motion to recommend approval of the Advanced EnviroSeptic System for meeting the effluent standards of 30 mg/L BOD₅ and TSS and fecal coliform standard of 10,000 cfu/ 100mL as per the application with the following changes::

- Add the option to use perimeter drains at 10 feet from the soil absorption system.
- Require a minimum of 12 inches of sand beneath the pipe.
- Require a minimum of 6 inches unsaturated native soil beneath the sand.

The motion was seconded by Mark Stump. Committee members voted in favor of the motion 7-0 with Dick Bachelder abstaining from the vote.

Ernie Stickler made a motion to recommend approval of 500 Advanced EnviroSeptic Systems for meeting the effluent standards of 30 mg/L BOD₅ and TSS and fecal coliform standard of 10,000 cfu/ 100mL as per the application with the following changes:

- Add the option to use perimeter drains at 10 feet from the soil absorption system.
- Require a minimum of 12 inches of sand beneath the pipe.
- Require a minimum of 6 inches unsaturated native soil beneath the sand.
- Design using the soil infiltrative loading rate from the Tyler Table.
- Design using a modified linear loading as done in Indiana that would be provided to ODH.
- Install 2 inspection ports at the infiltrative surface. Inspection ports are to be installed during system installation.
- Site visits must be conducted twice a year in the spring and fall to conduct observations for ponding and the information reported to ODH.
- Data from the installations must be maintained.
- System installations would be reported to ODH.

The motion was seconded by Mark Fehring. Committee members voted in favor of the motion 7-0 with Dick Bachelder abstaining.

Winelco, Inc.'s request approval of the Uvirex 36 Ultraviolet Disinfector as a replacement for the Salcor 3G Disinfection Unit in approved treatment trains

Steve West, Steve Radcliff, and Bill Wehrmann, Winelco, Inc.

Steve West, Steve Radcliff, and Bill Wehrmann distributed literature and provided a short presentation. During the presentation they provided data and data analysis of sampling data the company has collected from systems in Ohio. Rebecca Fugitt reminded TAC members that in previous discussions committee members had stated that requests to modify approved treatment trains must be provided by the manufacturer of the pretreatment component.

A motion was made by Ray Saporito to recommend approval of the Winelco Uvirex 36 Ultraviolet Disinfector as a replacement of the Salcor 3G Disinfection Unit or the Disinfector Ultraviolet Disinfection Unit in new or existing approved systems that meet the flow requirements of less than 5 gpm with a concurring request by the system manufacturer; and further, that ODH administratively review and approve the manufacturers' requests to allow the substitution. The motion was seconded by Scott Hetrick. Committee members voted in favor of the motion 8-0.

Low Pressure Pipe Special Device Approval

Rebecca Fugitt explained that the subcommittee created to discuss the Low Pressure Distributed Leach Trench Special Device Approval had met via conference call on April 9, 2010. Ralph Benson, Mike Felton with Streamkey, Ben Berteau and Curtis Clucky with Infiltrator, Matt Beckman with the Seneca County General Health District, Robert Mayer with American Manufacturing Company, Inc., and Nathan Johnson and Amy Mills with ODH participated in the conference call. Program staff will draft and circulate a revised special device approval based on comments. The special device approval will be included on the May TAC Agenda.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with Glendon Biofilter, BioMicrobics, Orenco, AquaKlear, and Xerolet concerning applications to TAC.

Sewage Program Updates:

Rebecca Fugitt informed the committee that the department has learned that the legislature is still discussing amendments to SB 110. The Ohio Association of Health Commissioners has been involved in the drafting of an alternative definition for a public health nuisance.

Mark Stump informed the committee that the Ohio EPA is currently discussing the possibility of creating guidance for local health departments when reviewing sampling data from NPDES discharging systems. The draft guidance may include "action levels" for systems that do not meet the effluent limits defined in the permits.

Rebecca Fugitt informed the committee that program staff has been approached by the Clark County General Health District concerning the statewide approval of tire chips as an alternative aggregate in soil absorption systems. Anne Kaup-Fett with the district will be on the May agenda.

The next TAC meeting is May 11, 2010 and will be held at ODNR, Building I.

The meeting was adjourned.

Approved on _____ 6-15-10 _____ as signified by:



Rebecca Fugitt, TAC Chairperson



Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – May 11, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (9 of 10 were present):

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Public – Ernest Stickler, Environmental Engineering Service

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Manufacturer Representative — Dick Bachelder, PSA, Inc.

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Absent:

ODNR Soil Scientist -- Vacant

Installer/ Service Provider – Mark Fehring, Fehring Services, excused

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner –Raymond Saporito, Ashtabula County Health Department

Guests:

Matt Deaton and Tim Gerber with ODNR, Joe Keiser and Mike Felton with Streamkey, Stan Shepherd and Sam Carter with Orenco Systems, Steve Davis with HydroAction, James Bell with Bio-Microbics, Tom Ashton with American Manufacturing, Anne Kaup-Fett with the Clark County Combined Health District, and Chris Mandich with Jet

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda and asked if any changes to the agenda were requested. No changes were requested.

Meeting Minutes:

TAC members reviewed the April 13, 2010 meeting minutes.

Discussion ensued concerning the second recommendation for approval of the Advanced EnviroSeptic System. Dick Bachelder stated that he did not realize that the recommendation for tracking the 500 systems did not state who was to complete the tracking. Rebecca Fugitt explained that the tracking of the 500 systems was one of the concerns ODH program staff has with the recommendation. Mrs. Fugitt noted that ODH has authorized the installation of 125 Enviro-Septic installations in six counties through experimental concurrence. Each county's experimental concurrence included monitoring and sampling requirements for at least the first two years after installation. To date, 68 of the 125 systems have been installed; none have been monitored as outlined in the experimental concurrence, and only the contents of the systems perimeter drain has only been collected in 10 of the 68 installations. Mrs. Fugitt noted that many local health departments do not have the resources to collect and track the performance information included in the committee's recommendation. It was suggested that the committee change the recommendation to require the company to track and sample the installations and report back to TAC similar to the Winelco, Inc. approval in 2009. Scott Hetrick and Mrs. Fugitt pointed out that the company refused to take responsibility for tracking the 500 installations. Committee members agreed to discuss the situation at the end of the meeting.

Committee members requested a change in the meeting minutes to clarify the committee's two recommendations for approval of the Advanced EnviroSeptic System. A motion was made by Mark Tumeo and seconded by Ernie Stickler for approval of the April 13, 2010 meeting minutes as amended. TAC members present voted in favor of the motion (6-0).

Orenco Systems, Inc. request for modification to previous approvals of the AdvanTex AX20 pretreatment component to include a new model, AdvanTex AX20RT.

Sam Carter, Orenco Systems, Inc.

Sam Carter explained that Orenco Systems, Inc. is seeking approval of a new model of the previously approved AdvanTex AX20 pretreatment component. Mr. Carter provided documentation from NSF stating that the new model is functionally equivalent to the previous approved models.

Ralph Benson suggested several changes to the AdvanTex Installation Manual and Installation Checklist. Mr. Benson and Dick Bachelder agreed to work with the manufacturer to revise the company's installation manual.

Dick Bachelder made a motion to recommend approval of the modification to include the new model, AdvanTex AX20RT, in previous approvals of the AdvanTex AX20 with the provision that a TAC subcommittee work with the manufacturer to update the installation checklist. Ralph Benson seconded the motion. Committee members voted in favor of the motion 6-0.

BioMicrobics, Inc. request for approval of the MicroFast Models 0.5, 0.75, 0.9, and 1.5 with the Salcor 3G Ultraviolet Disinfection Unit, reaeration, and telemetry or pump lockout for meeting effluent quality standards outlined in the Ohio EPA NPDES General Permits for discharge to the waters of the state not including Lake Erie (fecal coliform) and discharge to the waters of the state including Lake Erie (E. coli)

James Bell, BioMicrobics, Inc.

James Bell provided a short presentation outlining the company's request and the performance information included in the company's submittal.

Discussion ensued concerning the performance information included to support the company's treatment claims. Committee members discussed the ammonia data. Much of the data was collected during winter months as defined by the OEPA, but since the sampled system was installed in Texas the temperatures did not reflect environmental conditions in Ohio. Mark Tumeo suggested that the company reevaluate the ammonia data utilizing a cutoff of 20 degrees Celsius and eliminate the startup data. The committee also discussed the lack of E. coli data in the submittal. Committee members suggested that the company collect and analyze samples for E. coli to support their claims.

Ralph Benson, Scott Hetrick, and Dick Bachelder agreed to review and modify, if needed, the company's Installation Manual and Installation Checklist.

No action was taken by the committee.

Use of tire chips as an alternative aggregate material

Anne Kaup-Fett, Clark County Combined Health District

Anne Kaup-Fett reviewed a study completed in Clark County in 2000 with tire chips and suggested standards for the use of tire chips as an alternative aggregate. Committee members discussed the use of tire chips in distribution trenches in Ohio and other states and available research on their use.

Anne Kaup-Fett agreed to prepare a list of references for committee members. Dick Bachelder suggested that committee members check with other states to find out their experiences on the technology.

No action was taken by the committee.

Discussion on setting standardized requirements for NPDES system sampling ports

Rebecca Fugitt reviewed the recent recommendation for approval by TAC and approval by the Director of Health concerning a six inch minimum diameter requirement for sample ports installed in treatment trains approved for NPDES discharge. Mrs. Fugitt pointed out that ODH program staff have been in contact with many local health departments and based on the opinions and in field experiences of local health department field sanitarians, ODH program staff is requesting that the committee consider the adoption of more detailed specifications for inspection ports. A drawing and sample language was forwarded to committee members as provided by the Hamilton County General Health District.

Among the concerns voiced to ODH program staff by local health department field sanitarians was the inability to collect samples in small inspection ports without contaminating the sample, the inability to fit sample bottles in many sample ports approved in the state of Ohio, and lack of guidance on how to collect samples in many configurations approved in the state of Ohio, specifically sampling crosses.

Many committee members and guests explained that detailed specifications would not increase the likelihood or occurrence of correctly collected samples and that if detailed specifications for sample ports does affect sampling results, manufacturers will begin to create specifications for sample ports in their treatment trains and require their use. Mrs. Fugitt agreed that manufacturers may ultimately require the use of sampling ports similar to what local health department staff is requesting that the state require now, but expressed immediate and serious concern for local health departments and homeowners in Ohio who must address systems where sampling results indicate that the system is not performing as intended.

Committee members suggested that sample bottles and example sample ports be brought into the next committee meeting. NPDES sample ports will be on the TAC meeting agenda for June.

Low Pressure Pipe Special Device Approval

Rebecca Fugitt explained that the subcommittee created to discuss the Low Pressure Distributed Leach Trench Special Device Approval will schedule a second conference call to discuss the latest revision of the special device approval as soon as reference material is submitted by Ben Berteau with Infiltrator Inc. The special device approval will be included on the June TAC Agenda.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with Bord na Mona and AquaKlear concerning applications to TAC.

Several committee members expressed concerns over their second recommendation provided to the Director of Health concerning the Advanced EnviroSeptic System in May. Mark Tumeo stated that he felt personally insulted by the statements made by David Presby during the meeting. Scott Hetrick also stated concern over Mr. Presby's actions. Dick Bachelder stated that he had distaste for how Mr. Presby handled the meeting but stated that he was fine with the second recommendation. Mr. Bachelder quoted ORC 3718.04 F (4). Dr. Tumeo stated that Mr. Presby was given the option to collect data for his system in Ohio through the installation of systems under experimental concurrence and did not produce the performance information. Dr. Tumeo went on to state that although ORC 3718.04 (4) states that the committee shall pursue and recruit

the research, development, introduction, and timely approval of innovative and cost-effective household sewage treatment systems and components of a system for use in this state, the committee must be careful not to risk the health and welfare of Ohioans by recommending approval of systems that have no data to support their treatment claims.

Discussion ensued concerning changes to the recommendation. Committee members chose not to alter the recommendation to include guidance concerning the tracking of the 500 systems, and took no further action on the recommendation.

Sewage Program Updates:

Rebecca Fugitt informed the committee that the department continues to work with legislature concerning SB 110 and possible amendments to the bill.

Rebecca Fugitt announced that she would be unable to attend the June 8, 2010 meeting due to a schedule conflict. Many committee members and guests noted the same conflict. Committee members agreed to move the June meeting date to June 15, 2010

The next TAC meeting is June 15, 2010 and will be held at ODNR, Building I.

The meeting was adjourned.

Approved on 6-15-10 as signified by:



Rebecca Fugitt, TAC Chairperson Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – June 15, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (9 of 10 were present):

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Public – Ernest Stickler, Environmental Engineering Service

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Installer/ Service Provider – Mark Fehring, Fehring Services, excused

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

Absent:

ODNR Soil Scientist -- Vacant

AOHC Health Commissioner –Raymond Saporito, Ashtabula County Health Department

Manufacturer Representative — Dick Bachelder, PSA, Inc.

Guests:

James Conley with HydroAction, Shelly Wyhensinger with Norweco, James Bell with Bio-Microbics, Tom Ashton with American Manufacturing, Charles Ray and Colin Bishop with Bord Na Mona, and Trent Lydic with Jet

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda and informed the committee that HydroAction had requested a modification to the agenda. James Conley with HydroAction requested to amend the agenda to include a request to modify the company's approval for NPDES discharge to include the option to utilize telemetry in place of pump lockout. There were no objections to the modification.

Meeting Minutes:

TAC members reviewed the May 11, 2010 meeting minutes.

A motion was made by Mark Tumeo and seconded by Ernie Stickler for approval of the May 11, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion (7-0).

HydroAction, Inc. request for modification to the company's existing approval for NPDES discharging systems to include the option to utilize telemetry in place of pump lockout

James Conley, HydroAction, Inc.

James Conley explained that HydroAction, Inc. is seeking approval for use of telemetry in place of pump lockout in the treatment train previously approved for discharge in compliance with the OEPA NPDES General Permits. Mr. Conley provided a short presentation over how the company's control panel is used for telemetry. Discussion ensued concerning necessary changes to the company's drawing including the location of the sample port. The committee had further discussion over additional documentation that would be also be needed.

Charles Patterson made a motion to recommend approval of the modification to include the option to utilize telemetry in place of pump lockout within the HydroAction treatment train previously approved for discharge in compliance with the OEPA NPDES General Permits with the provision that the manufacturer supply additional documentation for posting on the ODH Residential Sewage Program's website. Ralph Benson seconded the motion. Committee members voted in favor of the motion 7-0.

BioMicrobics, Inc. request for approval of the MicroFast Models 0.5, 0.75, 0.9, and 1.5 with the Salcor 3G Ultraviolet Disinfection Unit, reaeration, and telemetry or pump lockout for meeting effluent quality standards outlined in the Ohio EPA NPDES General Permits for discharge to the waters of the state not including Lake Erie (fecal coliform)

James Bell, BioMicrobics, Inc.

James Bell provided additional performance information as requested by the committee. The revised submittal outlined an evaluation of the ammonia data utilizing a cutoff of 20 degrees Celsius for winter and summer data. Mr. Bell also explained that several weeks of ammonia data collected during the startup of the system was omitted. Mr. Bell further explained that the manufacturer had withdrawn its request for approval for meeting the effluent quality standards outlined in the Ohio EPA NPDES General Permits for discharge to the waters of the state including Lake Erie (E coli).

Discussion ensued concerning the reevaluation of the ammonia data.

The committee discussed the sampling port for monitoring of the discharging system. Mr. Bell explained that the drawings of the treatment train will be modified to include a T and valve within the pump discharge line for the collection of effluent. Committee members agreed that the addition was sufficient to meet the monitoring requirements within the OEPA NPDES General Permit.

The committee noted that a group of committee members, Ralph Benson, Scott Hetrick, and Dick Bachelder, had agreed to review and modify, if needed, the company's Installation Manual and Installation Checklist. Mr. Benson and Mr. Hetrick agreed to continue to work with the manufacturer concerning the revisions.

Scott Hetrick made a motion to recommend approval of BioMicrobics, MicroFast Models 0.5, 0.75, 0.9, and 1.5 with the Salcor 3G Ultraviolet Disinfection Unit, reaeration, and telemetry or pump lockout for meeting effluent quality standards outlined in the Ohio EPA NPDES General Permits for discharge to the waters of the state not including Lake Erie (fecal coliform) with the provision that the manufacturer continue to work with the committee subgroup and supply additional documentation for posting on the ODH Residential Sewage Program's website. Mark Tumeo seconded the motion. Committee members voted in favor of the motion 7-0.

Bord na Mona, Inc. request to modify the previous approvals of the Puraflo Peat Biofilter to include the option to utilize bottomless Type A pad dispersal.

Colin Bishop, Bord na Mona

Colin Bishop provided a brief presentation outlining the Type A modules and the manufacturer's manuals. Mr. Bishop explained that the company is requesting approval to use pad dispersal in three configurations: subsurface, at grade, and mounds. Mr. Bishop informed committee members that most Puraflo systems in the United States utilize pad dispersal.

Discussion ensued concerning the sizing of systems and how the proposed systems compare to the previously approved configuration and pressure distributed sand mounds used in Ohio.

Several items were requested by the committee, which included:

- More specific installation guidance including specifications for scarification, and fill material.
- More specific information concerning the spacing of modules.
- Detailed guidance for each configuration (subsurface, at grade, mounds, and trenches).
- A diagram of an additional "trench" configuration discussed during the meeting.
- VSD and in situ soil requirements
- Details concerning the manufacturers certification of designers and installers
- Specifications for the sampling port included in the company's green module
- Requirements concerning siting the system on slopes.
- An in depth explanation of how effluent is dispersed from the system, justifying the system design.

Mr. Bishop stated that he would return to the July 13 meeting to address the committee's questions and concerns.

No action was taken.

Discussion on setting standardized requirements for NPDES system sampling ports

Rebecca Fugitt reviewed the recent conversations concerning sample port requirements. Committee members and guests presented sample bottles and sample ports to committee members for review. Committee members agreed that use of a sampling valve within post aeration chambers for pump discharges was an acceptable location for sampling systems for the purpose of meeting the monitoring requirements of the OEPA NPDES HSTS General Permits. Committee members suggested that program staff draft specifications for sample ports for review at the July 13 meeting. Members suggested that the requirements include:

- Watertight with watertight joints
- A minimum depth below the inlet of eight inches
- At least two inches of fall between the inlet and outlet
- A diameter of at least eight inches at the point of sample collection

Discussion continued and committee members agreed that collection of samples within the post aeration tank and at the point of discharge was acceptable if recommended by the manufacturer.

Use of tire chips as an alternative aggregate material

References supplied by Anne Kaup-Fett with the Clark County Combined Health District were distributed to committee members and guests.

Committee members suggested that ODH program staff draft specifications for the use of tire chips based on Ms. Kaup-Fett's recommendations for the July TAC meeting.

Low Pressure Pipe Special Device Approval

Rebecca Fugitt explained that the workgroup created to discuss the Low Pressure Distributed Leach Trench Special Device Approval has met twice and revisions are being made to the special device approval based on the group's latest discussions. The workgroup has discussed the use of soil depth credits with the technology and several workgroup members have committed to do more research on the subject and circulate any research supporting its use.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with HydroAction concerning modifications to previous approvals.

Sewage Program Updates:

Rebecca Fugitt informed the committee that Amended Substitute SB 110 had been passed by conference committee and was awaiting action by the governor. Mrs. Fugitt explained how the bill would affect the committee, department of health, and local health departments.

Rebecca Fugitt informed committee members that the department had received a response from the Ohio Board of Registered Engineers and Surveyors concerning recent discussions between the board and Department of Health. Mrs. Fugitt explained that the department had not met internally to review the letter. Copies of the letter were circulated.

The next TAC meeting is June 13, 2010 and will be held at ODNR.

The meeting was adjourned.

Approved on Rebecca Fugitt as signified by: 7-13-10

Mark Stump
Rebecca Fugitt, TAC Chairperson Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – July 13, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (8 of 10 were present):

ODH Director of Health Representative & TAC Chair – Rebecca Fugitt

OEPA DSW Engineer – Mark Stump

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Public – Ernest Stickler, Environmental Engineering Service

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Academic - Dr. Mark Tumeo PhD, Cleveland State University

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner –Raymond Saporito, Ashtabula County Health Department

Absent:

ODNR Soil Scientist -- Vacant

Manufacturer Representative — Dick Bachelder, PSA, Inc.

Installer/ Service Provider – Mark Fehring, Fehring Services, excused

Guests:

Jim Charville with Norwalk Concrete, Dan Lark with the Lake County General Health District, Stan Shepherd with Orenco Systems, Joe Keiser with Streamkey, Matt Deaton with ODNR, and Charles Ray and Colin Bishop with Bord na Mona

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda and informed the committee that Bord na Mona requested a modification to the agenda to move discussion of the manufacturers request to the end of the agenda. Charles Ray with Bord na Mona had contacted ODH and stated that Colin Bishops plane would not be arriving in Columbus until later in the morning. There were no objections to the modification.

Meeting Minutes:

TAC members reviewed the June 15, 2010 meeting minutes.

A motion was made by Charles Patterson and seconded by Ernie Stickler for approval of the June 15, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion 6-0 (Mark Stump was not present for the vote).

Discussion on setting standardized requirements for NPDES system sampling ports

Rebecca Fugitt reviewed document specifications for sampling ports and sampling locations for NPDES discharging household treatment systems outlining TAC suggestions during recent conversations on the subject. Discussion ensued and the committee suggested several changes to the document.

Mark Tumeo made a motion to recommend approval of the specifications for sample ports and sampling locations for NPDES discharging systems with the modifications to the document. Mark Stump seconded the motion. Committee members voted in favor of the motion 7-0.

Use of tire chips as an alternative aggregate material

A revised Alternative Leaching Trenches Special Device Approval was circulated to committee members and guests. The revision included specifications for the use of tire chips as an alternative aggregate and provided clarification on several issues within the document. Rebecca Fugitt reviewed the revision with all in attendance. Discussion ensued and the committee suggested several changes to the document.

Committee members suggested that ODH program staff follow up the OEPA and local tire chip distributors to review the feasibility of manufacturing a product meeting the suggested specifications and report to the committee in September. Program staff will also provide the committee with a revision to the special device approval to address concerns discussed during the meeting.

Low Pressure Pipe Special Device Approval

Rebecca Fugitt explained that workgroup members continue to collect research supporting the use of soil depth credits with the technology. Members are to submit research to ODH program staff for redistribution.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with BioNest and EnviroFlo concerning modifications to previous approvals.

Sewage Program Updates:

Rebecca Fugitt reviewed changes to the TAC process and membership that will take effect on September 17, 2010 when Amended SB 110 becomes effective. Three members will be added to the committee. Matt Deaton stated that he has still not been appointed to the committee. Mrs. Fugitt explained that the terms for two members, Ray Saporito and Dick Bachelder, will end July 21, 2010. Committee members requested that Mrs. Fugitt forward a member table including who appointed them and the date that their term ends.

Rebecca Fugitt informed committee members that the department is planning to create an advisory workgroup to assist the department in the rule writing process. Program staff has provided the director with suggestions concerning the membership of the committee. Committee members requested that Mrs. Fugitt forward staffs recommendation.

Mark Stump informed the committee that the OEPA has been receiving sampling data for NPDES discharging systems from local health departments. The data is being compiled and will be available in the near future.

Bord na Mona, Inc. request to modify the previous approvals of the Puraflo Peat Biofilter to include the option to utilize bottomless Type A pad dispersal.

Colin Bishop, Bord na Mona

Colin Bishop provided a brief presentation addressing the items requested at the committee's June 15 meeting including system design using Type A modules in three configurations: subsurface, at-grade, and mounds and an in depth explanation of how effluent is dispersed from the system.

Committee members expressed concern with the distribution of effluent in the company's at-grade design. Mr. Bishop stated that the at-grade design was uncommon and would not be applicable in many situations. He stated that he was comfortable withdrawing his request for approval of the at-grade configuration.

Discussion concerning the subsurface configuration ensued. Mr. Bishop explained that the distribution area and length was calculated using the Tyler Table.

Committee members then discussed the mound design. Mark Tumeo stated that the model used to demonstrate distribution in the design was only applicable on flat sites and that additional information would be needed to support approval of the design on sloping lots. Rebecca Fugitt pointed out that calculations to demonstrate effluent distribution at the infiltrative surface were omitted. Discussion continued outlining the committee's concern over improper dispersal of effluent in the mound design and the possibility that improper designs could lead to the surfacing of effluent and system failure. Mr. Bishop stated that he would provide the committee with additional information to support the manufacturer's request.

Mark Tumeo made a motion to recommend approval of Bord na Mona's PuraFlo Type A Pad system in subsurface applications with all specifications outlined in the company's application. Scott Hetrick seconded the motion. Committee members voted in favor of the motion 6-0 (Charles Patterson was not present to vote).

Mark Tumeo thanked the manufacturer for addressing the committee's concerns and for doing so in a professional manner. Committee members agreed. Dr. Tumeo pointed out that the manufacturer should consider requesting an extension and return in September to address the concerns with the mound design. Mr. Bishop stated that he would request an extension for review of the mound design and return to the September 14 meeting to address the committee's questions and concerns.

The next TAC meeting is September 14, 2010 and will be held at ODNR.

The meeting was adjourned.

Approved on 9-14-10 as signified by:



Rebecca Fugitt, TAC Chairperson



Mark Stump, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday–September 14, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (11 of 11 were present):

AOHC Health Commissioner–Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner–Raymond Saporito, Ashtabula County Health Department

Academic - Dr. Mark Turneo PhD, Cleveland State University

OEPA DSW Engineer–Mark Stump

OEHA Registered Sanitarian–Ralph Benson, Clermont County General Health District

Public–Ernest Slickler, Environmental Engineering Service

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Manufacturer Representative– Dick Bachelder, PSA, Inc.

ODNR Soil Scientist -- Matt Deaton

Installer/ Service Provider–Mark Fehring, Fehring Services

ODH Director of Health Representative & TAC Chair–Rebecca Fugitt

Guests:

Jim Charville with Norwalk Concrete, Stan Shepherd with Orenco Systems, Charles Ray and Colin Bishop with Bord na Mona, James Conley and Steve Davis with HydroAction, Ron Swinko, Chris Mandich, and Trent Lydic with Jet, James and Rene Dye with Wastewater Solutions, and Nate McConoughey with the Cuyahoga County Board of Health

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Rebecca Fugitt reviewed the meeting agenda and informed the committee the agenda would need modified to include election of the committee chairman. Committee members suggested adding election of the chairman as agenda item twelve. There were no objections to the modification.

Meeting Minutes:

TAC members reviewed the July 13, 2010 meeting minutes.

A motion was made by Dick Bachelder and seconded by Mike Turneo for approval of the July 13, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion 10-0.

Hydroaction Inc. request for modification to previous approvals of the HydroAction aeration treatment unit

James Conley, HydroAction, Inc.

James Conley explained that HydroAction, Inc. is seeking approval for three modifications to previous approvals of the HydroAction pretreatment component. The first modification request was to move the Salcor 3G UV unit and an alternative reaeration device (constructed of 4 inch piping) to within the pretreatment component. The second request was for use of the UV Disinfectant as an optional replacement to the Salcor 3G unit inside the AP Series ATU with re-air. The third request was for use of the CLP 500 Series and CLP 600 Series concrete models.

Mr. Conley provided a short presentation over the company's request. Discussion ensued concerning the need for documentation from NSF stating that the performance data is representative of each of the products models. Committee members had much discussion concerning the existence of an unused pump tank following disinfection and reaeration of the effluent and the use of a ½ horse compressor in place of the ¾ horse compressor included in previous approvals.

Committee members asked Mr. Conley where the performance data was obtained. Mr. Conley stated that the performance information was collected from a single home in Indiana. Committee members stated that the performance data was limited in quantity and quality. Committee members suggested that the company collect additional performance information from the treatment trains for which they are seeking approval in the range of conditions they could be expected to experience in the state of Ohio.

After much discussion with the committee, Mr. Conley stated that HydroAction, Inc. would withdraw their requests. HydroAction will return in October with a new request for approval of the manufacturer's concrete models.

Jet, Inc. request for modification to the manufacturers previous approvals to include the • an attached pump tank with integrated re-aeration

Trent Lydic, Jet, Inc.

Trent Lydic provided a short presentation covering the companies request to utilize a model referred to as J-500-P500-OH which is a Jet BAT 500 aeration treatment unit with an attached 500 gallon pump tank. Disinfection utilizing the Salcor 3G Disinfection Unit and reaeration takes place within the attached pump tank.

Dick Bachelder made a motion to recommend approval of the modification to include model J-500-P500 in previous approvals for discharge in compliance with the OEPA NPDES General Permits. Mark Tumeo seconded the motion. Committee members voted in favor of the motion 10-0.

Bord na Mona, Inc. request to modify the previous approvals of the Puraflo Peat Biofilter to include the option to utilize bottomless Type A pad dispersal in mounds.

Colin Bishop, Bord na Mona

Colin Bishop provided an explanation of the company's request for modification to previous approvals of the Puraflo Peat Biofilter. Mr. Bishop explained that the committee had previously heard requests for approval of bottomless Type A pad dispersal in mounds. The company modified the request to include Type B Puraflo modules. Discharge from the modules is collected in a pipe. The pipe is perforated at the 9:00 position. The company claimed even distribution through the pipe. The company provided a document prepared by Richard Otis with Otis Environmental Consultants, LLC to support these claims.

Discussion ensued concerning the request and its modification. Committee members stated that additional material was needed to support the request and the manufacturer's claims concerning distribution before a recommendation could be made.

Rebecca Fugitt will generate a list of items that Bord na Mona needs to provide to the TAC prior to the next TAC meeting. Bord na Mona will request an extension and the request will be included on the October TAC meeting agenda provided the manufacturer is able to provide documentation to address the committees concerns in time for the meeting.

Use of tire chips as an alternative aggregate material

ODH program staff reported on information supplied by the OEPA and local tire chip distributors concerning the feasibility and cost of manufacturing a product meeting the each of the suggested

specifications in the revised Alternative Leaching Trenches Special Device Approval. Committee members suggested leaving the less stringent standards in the special device approval instead of substituting more stringent standards as was previously discussed.

Mark Tumeo made a motion to recommend approval of the revised Alternative Leaching Trenches Special Device Approval. Charley Patterson seconded the motion. Committee members voted in favor of the motion 10-0.

Update on NPDES sampling data analysis

Mark Stump, Ohio EPA

Mark Stump provided a summary of performance information from discharging systems submitted by local health departments. OEPA estimates that they had approximately 15% compliance from homeowners concerning the collection of performance information. Mr. Stump explained that there were several entries that were believed to be data entry mistakes. He explained that those data points would be removed and an analysis of the data would be available in October.

Review of Revised TAC forms to meet Sub. SB 110 timeframes and revised timeframes for submittal of data

Rebecca Fugitt explained that program staff had revised TAC forms to be consistent with changes to ORC 3718.02 effective September 17. The committee reviewed the changes.

Mark Tumeo made a motion to recommend approval of the revised *Standards and Guidelines, and Protocols for Ohio Revised Code Section 3718.04 Review of Sewage Treatment System Products or Components*. Ray Saporito seconded the motion. Committee members voted in favor of the motion 10-0.

Charles Patterson made a motion to recommend approval of the revised *TAC Bylaws* as amended. Ralph Benson seconded the motion. Committee members voted in favor of the motion 10-0.

2009 TAC Annual Report

Committee members discussed the Draft 2009 TAC Annual Report.

Ray Saporito made a motion to recommend approval of the revised 2009 TAC Annual Report. Mark Fehring seconded the motion. Committee members voted in favor of the motion 10-0.

Pending Applications:

Rebecca Fugitt informed TAC that the department has been in contact with BioNest concerning a request for ORC 3718 Review.

Sewage Program Updates:

Rebecca Fugitt updated the committee concerning progress made toward the creation of an advisory workgroup to assist the department in the rule writing process. Mrs. Fugitt stated that several groups have not provided contact information for their representation on the work group. ODH expects to schedule a meeting in September once the membership is finalized.

Rebecca Fugitt announced that Ray Saporito had been reappointed and Matt Deaton had received official paperwork concerning his appointment to the committee. Mrs. Fugitt reminded committee members Dick Bachelder's term expired in July and many other members appointments expire in January of 2011.

Election of Chairman and Vice Chairman

Discussion ensued concerning nominations for TAC Chairman. Mark Tumeo made a motion to nominate Mark Stump for the position of committee chairman. Dick Bachelder seconded the motion. Committee members voted in favor of the motion 10-0.

Charles Patterson made a motion to nominate Mark Turneo for the position of vice-chairman of the committee. The motion was seconded by Ernie Stickler. Committee members voted in favor of the motion 10-0.

Schedule for Review of Requests

Committee members discussed the timeframe for review of manufacturer requests. Changes to ORC 3718.04 include an expanded timeframe for review and approval of these requests and there has been some interest in extending the timeframe for review of manufacturers requests and submittals prior to TAC meetings. After much discussion among committee members and manufacturers present at the meeting, the committee decided to requests submittals be forwarded to allow sufficient time for review based on the type of request.

- New requests will be forwarded to committee members five weeks prior to the committee meeting at which the request will be heard.
- Requests to modify previous approvals will be forwarded to committee members two weeks prior to the committee meeting at which the request will be heard
- Ongoing application requests will be forwarded to committee members by email one week prior to the committee meeting at which the request will be heard. Ongoing application requests were defined as returned visits before TAC when additional information has been requested by committee members before action could be taken.

Discussion ensued concerning information that should be included in requests to modify previous approvals. Committee members suggested that program staff create guidance for requests to modify previous approvals and perform an Administrative Review for completeness of submittals prior to forwarding the request to the committee and inclusion on the TAC meeting agenda.

The next TAC meeting is October 12, 2010 and will be held at ODNR.

The meeting was adjourned.

Approved on 10-12-10 as signified by:



Mark Stump, TAC Chairperson



Rebecca Fugitt, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – October 12, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (7 of 11 were present):

OEPA DSW Engineer & TAC Chair – Mark Stump

ODH Director of Health Representative & TAC Secretary – Rebecca Fugitt

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner – Raymond Saporito, Ashtabula County Health Department

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Installer/ Service Provider – Mark Fehring, Fehring Services

Absent:

Manufacturer Representative – Dick Bachelder, PSA, Inc.

ODNR Soil Scientist -- Matt Deaton

Public – Ernest Stickler, Environmental Engineering Service

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Guests:

Jim Charville with Norwalk Concrete, Stan Shepherd with Orenco Systems, Charles Ray. Mike Sunderg, and Colin Bishop with Bord na Mona, Chris Mandich with Jet, Inc., Jim Hennessy, Roger Loecy, and Serge Baillargeon with BIONEST Technologies, Inc., and Tom Ashton with American Manufacturing

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Mark Stump reviewed the meeting agenda and informed the committee the agenda would need modified to include BIONEST Technologies, Inc.'s request for approval for meeting the Nitrogen reduction standards. There were no objections to the modification.

Meeting Minutes:

TAC members reviewed the September 14, 2010 meeting minutes.

A motion was made by Scott Hetrick and seconded by Mark Fehring for approval of the September 14, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion.

Bord na Mona, Inc. request to modify the previous approvals of the Puraflo Peat Biofilter to include the option to utilize bottomless Type A pad dispersal in mounds.

Colin Bishop, Bord na Mona

Colin Bishop provided an explanation of the company's request for modification to previous approvals of the Puraflo Peat Biofilter. Mr. Bishop explained that the committee had previously heard requests for approval of the Type B Puraflo modules in a mound. Discharge from the modules is collected in a pipe. The pipe is perforated at the 9:00 position for effluent distribution into the mound.

Mr. Bishop reviewed materials that were previously supplied to committee members and a design example provided by Jim Charville with Norwalk Concrete. TAC members recommended that the detailed drawing of the piping of the system from the design example be included in the manufacturer's manuals. Discussion ensued concerning suggested changes to the manuals.

Rebecca Fugitt will generate a list of concerns for review by committee members. The list will be provided to Bord na Mona. Bord na Mona will request an extension and the request will be included on the October TAC meeting agenda provided the manufacturer is able to provide documentation to address the committee's concerns in time for the meeting.

Charles Patterson made a motion to recommend approval of the modification to include the Type B Pad mound design in the company's previous approvals with the discussed edits to the manufacturer's manuals. Scott Hetrick seconded the motion. Committee members voted in favor of the motion 6-0 in a roll call vote.

Rebecca Fugitt noted that she had been in recent discussions with the manufacturer concerning the approval of the Type A module in a trench design. Mrs. Fugitt stated that the approval was for designs utilizing linear loading rates to determine system length, but the manufacturer's manual did not include this requirement. Mr. Bishop stated that he felt he had modified the request for approval to include designs that did not utilize linear loading rates. Discussion ensued. Mr. Bishop agreed to add a description of utilizing linear loading rates to determine system length to the manufacturer's manuals.

BIONEST Technologies, Inc. request for approval of the BIONEST System for meeting the standards of 30 mg/l BOD and TSS and 10,000 colonies/100 mL fecal coliform and Nitrogen Reduction. Request for approval of the BIONEST System with ultraviolet disinfection for meeting the standards of 1,000, 200, and 20 colonies/100 mL fecal coliform reduction. Request for approval of the BIONEST System with ultraviolet disinfection, reaeration, and pump lockout for meeting the standards outlined in the OEPA General NPDES Permit for discharge to waters of the state including and not including Lake Erie

Serge Baillargeon, BIONEST Technologies, Inc.

Serge Baillargeon provided a short presentation for all in attendance.

Mr. Baillargeon explained that the company does not manufacture tanks. The company requires distributors to utilize septic tanks approved in the jurisdiction that is selling the product. Rebecca Fugitt explained that the state of Ohio does not currently have the authority to review and approve septic tanks and that the company would have to determine a procedure to assure tanks will be watertight and structurally sound.

Committee members expressed concern with the request to utilize ultraviolet disinfection units that are different than the unit that was tested. Mr. Baillargeon stated that the company could provide documentation supporting the use of the alternative disinfection units. Mrs. Fugitt pointed out that product manuals would have to be provided for the ultraviolet disinfection units.

Committee members expressed concern with the company only providing one year of service with the system. Scott Hetrick noted that NSF Standard 40 systems include two years of service (four site visits). Mr. Baillargeon stated that the company would be willing to provide service consistent with their Std. 40 approval for systems installed within the state.

Additional concerns with the sampling locations and interior service panel were discussed.

Mark Stump pointed out that the company did not provide data supporting their claims for meeting dissolved oxygen and E. coli standards. Mr. Stump stated that he was not concerned about the E. coli data since fecal coliform were measured below the E. coli standards. Committee

members informed Mr. Baillargeon that the company would have to provide dissolved oxygen data from an installed system to be considered for approval for NPDES discharge.

After much discussion with the committee, Mr. Baillargeon stated that BIONEST Technologies, Inc. would forward the requested information to ODH by November 2 with the intention of returning to TAC for the November meeting.

Update on NPDES sampling data analysis

Mark Stump, Ohio EPA

Mark Stump discussed the summary of performance information from discharging systems submitted by local health departments that was provided to the committee at the September meeting. OEPA continues to review the submitted data and has found approximately seven dozen data points that were not included in the previously provided summary. The addition of these data points has changed some of the numbers.

Pending Applications:

Rebecca Fugitt informed TAC that the department has not been in contact with any additional manufacturers concerning a request for ORC 3718 Review in the last month.

Sewage Program Updates:

Rebecca Fugitt updated TAC concerning the September 30, 2010 STS Rules Advisory Committee meeting and the creation of a SharePoint website for the committee. Mrs. Fugitt explained that the program hopes to create an additional page for TAC members.

Mrs. Fugitt stated that program staff has taken several complaints concerning control over and tracking of approved system distribution and installations within the state. The committee discussed proper tracking of system installations. Ray Saporito and Charles Patterson stated that the information could be included in local health department transmittals.

Mrs. Fugitt stated that program staff has taken several complaints concerning the availability of service providers. Often only one service provider certified to service a product may be available. The limited availability of service providers has led to complaints of price gouging from the public. Several manufacturers complained of homeowners using uncertified service providers to maintain their systems. Much discussion concerning service provider certification and availability followed.

Mrs. Fugitt stated that Dick Bachelder's term expired in July and that he will not seek reappointment. Many other members' appointments expire in January of 2011.

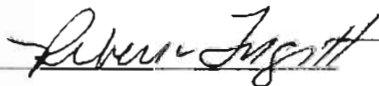
The next TAC meeting is November 9, 2010 and will be held at ODNR.

The meeting was adjourned.

Approved on 11-9-10 as signified by:



Mark Stump, TAC Chairperson



Rebecca Fugitt, Secretary

Sewage Treatment Systems Technical Advisory Committee

MEETING MINUTES

Date: Tuesday – November 9, 2010

Time: 10:00 AM to 2:00PM

Location: Ohio Department of Natural Resources, 2045 Morse Road, Columbus

TAC Members in Attendance (10 of 10 were present):

OEPA DSW Engineer & TAC Chair – Mark Stump

ODH Director of Health Representative & TAC Secretary – Rebecca Fugitt

AOHC Health Commissioner – Charles Patterson, Clark County Combined Health District

AOHC Health Commissioner – Raymond Saporito, Ashtabula County Health Department

OEHA Registered Sanitarian – Ralph Benson, Clermont County General Health District

ODNR Soil Scientist – Matt Deaton

Manufacturer Representative - Scott Hetrick, Norweco Inc.

Installer/ Service Provider – Mark Fehring, Fehring Services

Public – Ernest Stickler, Environmental Engineering Service

Academic - Dr. Mark Tumeo PhD, Cleveland State University

Absent:

Manufacturer Representative — vacant.

Guests:

Stan Shepherd with Orenco Systems, Chris Mandich with Jet, Inc., Mike Hennessy, Jim Hennessy, Roger Loecy, and Serge Baillargeon with BIONEST Technologies, Inc., Mike Benton with Norweco, Inc., James Conley with Hydro-Action Inc., Rene and James Dye with Wastewater Solutions Inc., and Dan Lark with the Lake County General Health District

Other ODH participants: Nathan Johnson

Welcome and Agenda review:

Introductions were made by all in attendance. Mark Stump reviewed the meeting agenda and asked for requests to modify the agenda. There were no requests to modify the agenda. Mark Stump announced that Mark Tumeo was in route to the meeting, but would be a few minutes late.

Meeting Minutes:

TAC members reviewed the October 12, 2010 meeting minutes.

A motion was made by Ernie Stickler and seconded by Mark Fehring for approval of the September 14, 2010 meeting minutes as submitted. TAC members present voted in favor of the motion.

BIONEST Technologies, Inc. request for approval of the BIONEST System for meeting the standards of 30 mg/l BOD and TSS and 10,000 colonies/100 mL fecal coliform and Nitrogen Reduction. Request for approval of the BIONEST System with ultraviolet disinfection for meeting the standards of 1,000, 200, and 20 colonies/100 mL fecal coliform reduction. Request for approval of the BIONEST System with ultraviolet disinfection, reaeration, and pump lockout for meeting the standards outlined in the OEPA General NPDES Permit for discharge to waters of the state including and not including Lake Erie
Serge Baillargeon, BIONEST Technologies, Inc.

Serge Baillargeon provided a short presentation covering items identified during the committee's review of the request during the October 12, 2010 meeting. These items included:

- Use of the OPCA Voluntary Septic Tank program to demonstrate water tightness and structural soundness of tanks.
- Letter of equivalency for the requested UV disinfection unit to the tested unit.
- Performance and installation information for the reaeration unit.
- Two years of maintenance included with all systems.

The committee discussed the revised submittal in detail and asked the manufacturer to make two modifications on the manuals to provide clarification on the systems design and sampling procedure. Discussion was had by all.

Scott Hetrick made a motion to recommend approval of the request with the suggested modifications to the manufacturers manuals for approval of

- The BIONEST System for meeting the standards of 30 mg/l BOD and TSS and 10,000 colonies/100 mL fecal coliform and Nitrogen Reduction.
- The BIONEST System with ultraviolet disinfection for meeting the standards of 1,000, 200, and 20 colonies/100 mL fecal coliform reduction.
- The BIONEST System with ultraviolet disinfection, reaeration, and pump lockout for meeting the standards outlined in the OEPA General NPDES Permit for discharge to waters of the state including and not including Lake Erie

Charles Patterson seconded the motion. Committee members voted in favor of the motion (Mark Tumeo was not present for the entire presentation and abstained).

Hydroaction Inc. request for modification to previous approvals of the HydroAction aeration treatment unit to include concrete models

James Conley, HydroAction, Inc.

James Conley reviewed the manufacturers request for modification of previous approvals of the HydroAction pretreatment component to include the option to utilize the CLP 500 Series and CLP 600 Series concrete models.

Discussion ensued concerning the use of trash traps in front of the pretreatment component. Committee members discussed the importance of reviewing performance information collected from the treatment train that is reviewed. Much discussion concerning effects of adding trash traps in front of pretreatment components followed.

Mark Tumeo made a motion to recommend approval of the modification of the concrete models identified within the submittal for meeting the BOD/TSS standard and the concrete models identified within the submittal for meeting the fecal coliform standards of 10,000 and 1,000 cfu/100mL. Ray Saporito seconded the motion. Committee members voted in favor of the motion.

Mark Tumeo made a motion to recommend approval of the concrete models identified within the submittal for meeting the standards outlined within the OEPA NPDES General Permits for discharge to waters of the state including and not including Lake Erie without the identified change to the trash trap volume. Scott Hetrick seconded the motion. Committee members voted in favor of the motion.

Norweco, Inc. request for modification to the manufacturer's previous approvals for the Singlair Green to utilize a new tank design

Mike Benton, Norweco, Inc.

Mike Benton provided a short presentation to review the manufacturers request to utilize an alternative tank design for the Singlair Green in place of the previously approved design.

Charles Patterson made a motion to recommend approval of the modification to utilize an alternative tank design for the Singulair Green in place of the previously approved design. Ray Saporito seconded the motion. Committee members voted in favor of the motion.

Update on NPDES sampling data analysis

Mark Stump, Ohio EPA

Mark Stump discussed the performance information from discharging systems submitted by local health departments that was provided to the committee at the September meeting. Mr. Stump stated that the OEPA has prepared a four page report that will be provided to the public with all performance data. Scott Hetrick stated that Norweco, Inc. had performed a field survey on 17 systems that had tested poorly according to the performance data. Mr. Hetrick stated that the manufacturer's field study showed better performance data than what was submitted by local health departments for the report. Discussion was had by all concerning effluent sampling and testing. Discussion concerning the number of results from these systems followed. Rebecca Fugitt reviewed an email from Portage County that included suggestions for increasing compliance with the monitoring requirements of the OEPA NPDES General Permits. All in attendance made suggestions concerning the monitoring of discharging systems. Mr. Stump and Mrs. Fugitt stated that the committee's input would be helpful during the rule writing process and drafting of a new general permit.

The committee suggested that time be set aside for a discussion of the matter during the December TAC meeting. Input from local health districts, manufacturers, contractors, and the public will be discussed during the meeting.

Pending Applications:

Rebecca Fugitt informed TAC that the department has not been in contact with any additional manufacturers concerning a request for ORC 3718 Review in the last month.

Sewage Program Updates:

Rebecca Fugitt updated TAC concerning the October 28, 2010 STS Rules Advisory Committee meeting.

Many committee members' appointments will expire in January of 2011.

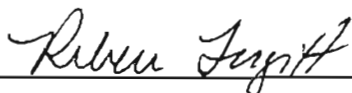
The next TAC meeting is December 14, 2010 and will be held at ODNR.

The meeting was adjourned.

Approved on February 8, 2011 as signified by:



Mark Stump, TAC Chairperson



Rebecca Fugitt, Secretary