

RESEARCH REVIEW AND ADVISORY COMMITTEE

ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS

ADVISORY TO THE DEPARTMENT OF HEALTH

AUTHORITY: SECTION 381.0065(4)(o), FLORIDA STATUTES

Approved Minutes of the Meeting held at the Southwood Office Complex, 4025 Bald Cypress Way, Room 220P, Tallahassee, Florida
October 20, 2017

In attendance:

Research Review and Advisory Committee (RRAC) Members and Alternates:

In person:

- Car Ludecke (Chair, member, Home Building Industry)
- Eberhard Roeder (member, Department of Health)

Via teleconference:

- Mark Tumeo (member, Professional Engineer)
- Roxanne Groover (member, Septic Tank Industry)
- Bob Himschoot (alternate, Home Building Industry)
- Daniel Meeroff (alternate, State University System)
- Christopher Pettit (member, Local Government)
- Eric Rollings (member, Real Estate Profession)
- Clay Tappan (alternate, Professional Engineer)
- Robert Washam (alternate, Consumer)

Absent members and alternates:

- Craig Diamond (member, Environmental Interest Group)
- Mark Repasky (alternate, Restaurant Industry)
- Thomas Baker (alternate, Real Estate Profession)
- John Schert (member, State University System)
- Bill Milton (Vice-Chair, member, Consumer)
- Geoff Luebkemann (member, Restaurant Industry)
- Matt Surrency (alternate, Local Government)

Department of Health (DOH), Onsite Sewage Program Section:

In person:

- Ed Barranco, Xueqing Gao, Dale Holcomb, Debby Tipton, Alan Willet, Onsite Sewage Program
- Elke Ursin, Environmental Administrator, Public Health Toxicology Program

Other attendees:

Via teleconference:

- Damann Anderson (Hazen and Sawyer)
- Josefin Hirst (Hazen and Sawyer)
- Thomas Lyon (Presby)
- Fred Vengrouskie (Presby)

In person:

- Anita Nash (DEP)
- Kevin Coyne (DEP)
- Mary Paulic (DEP)
- Richard Hicks (DEP)
- Laura Grant (Florida Springs Institute)

- 1. Introductions** – Eight out of ten groups were present, representing a quorum. The meeting started at 1:00 pm. The agenda was presented, introductions were made, and some housekeeping issues were discussed. **Xueqing Gao** updated the Research Review and Advisory Committee (RRAC) about staff change in the Research and Engineering group. The former environmental manager of the group – Elke Ursin, was promoted to the section administrator of the Public Health Toxicology Program and left the Onsite Sewage Program. Dr. Eb Roeder was promoted to the environmental manager of the Research and Engineering group. Debby Tipton and Alan Willett from the Public Health Toxicology Program joined the Onsite Sewage Program as environmental consultants. They

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both have strong hydrogeology backgrounds and, therefore, fit the Onsite Sewage Program very well. Xueqing Gao will serve as the RRAC liaison while he continues his work on TMDLs and BMAPs.

2. **Review of previous meeting minutes** – Chair Carl Ludecke called to review the RRAC meeting minutes of the October 21, 2016 meeting.

Motion by Mark Tumeo and seconded by Ed Roeder for the RRAC to approve the minutes of the October 21, 2016 meeting with no changes. All were in favor, none opposed, and the motion passed unanimously.

3. **Old Business and Research Program News** – Xueqing Gao went over the action items from the last meeting.

Regarding Action Item 1 - Comments on the draft final report for the Florida Water Management Inventory Project, Xueqing Gao invited Elke Ursin to give an update.

Elke Ursin: The first cycle of the project was completed and the final report was available as the grant deliverable for the FDEP. The report is available on FDOH Onsite Sewage Program's website. If anybody wants to go to the website, the address is <http://www.floridahealth.gov/environmental-health/onsite-sewage/research/flwmi/index.html>. FLWMI is short for Florida Water Management Inventory.

Regarding Action Item 2 - RRAC member to attend National Onsite Wastewater Recycling Association (NOWRA) Board of Governors meeting regarding funding from the federal Environmental Protection Agency to the onsite systems, Xueqing Gao invited Roxanne Groover to provide a summary of what she learned from the NOWRA conference to the RRAC.

Roxanne Groover: The NOWRA lobbying group is working very hard. A decentralized caucus has been formed (in congress), and part of the responsibilities of the NOWRA group and lobbying group is to discuss that, when talking about wastewater infrastructure funding to each state as related to federal government dollars, the portion of the state that is encompassed by onsite wastewater treatment receives adequate funding. It would be nice in a state such as Florida where onsite sewage treatment and disposal systems (OSTDS) are 33% (of the total households), OSTDS will get 33% of the total funding coming to Florida. However, this is probably not going to happen. What the lobbying group from NOWRA and the FOWA (Florida Onsite Wastewater Association) group are asking is that, when the federal agency have those funds and make those funds available, that each individual state gets the allotted amount directly from the OSTDS department rather than that the federal agency brings the money to the state and allows the state, typically, DEP to determine how much goes to the OSTDS division. What the lobbying group is asking for is that the money be separated and given to the OSTDS department rather than coming to the DEP and then, OSTDS has to ask for the allotment.

There is going to be discussions at this year's NOWRA conference and then the lobbying group will take a field trip down to Washington DC on Wednesday to speak to different legislators both that

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are members of this caucus and those that aren't because the lobby group would like them to be members of this caucus, to talk about the importance of making sure that the OSTDS have adequate federal funding as a whole for the wastewater challenges that we are seeing, but certainly, predominantly the lobbying group is interested in and wants to make sure that the OSTDS division is adequately funded so that folks who need to upgrade their OSTDSs and repair their OSTDSs have adequate funding as easily as those having central sewer connection.

Carl Ludecke: How often does the NOWRA lobbying group meet? Roxanne stated that now the lobbying group has an active lobbying firm. Whenever the session is in, the lobbying firm will work with the legislators on the national level. Eric Casey is the executive director of NOWRA. He is the go-to person with the lobbyists. They are actively participated in any session opportunities they have. They (NOWRA) are currently reaching out through a master program to the individual states to get the NOWRA members to actively engage their state's legislators at that national level. It is an ongoing process. Any time when the lobbying group has the opportunity, they typically have a flying-in where they bring in folks from all different states to meet their federal representatives. This year, those people who will attend the NOWRA conference will have the opportunity to meet their state legislators on Wednesday.

Bob Himschoot: Bob expanded Roxanne's discussion by indicating that the Board of Governors is a separate committee from the NOWRA Board. It is operated under the NOWRA Board. The group is made up of particular members making significant financial contributions to the Board of Governors for NOWRA. The Board of Governors meets through teleconference at least once quarterly with lobbyists and the board is currently chaired by Tom Fritts who is the past chairman and founding chairman of the committee. The board is not getting a lot of attention from the House of Representatives, but the Senate is a little bit favorable to the board through the Interior Environment Committee. The committee had a change of directors for the subcommittee on water in the Transportation Infrastructure Committee. Bob Gibbs from Ohio had stepped down and Garret Graves from Louisiana has stepped up. The board will have a meeting with Garret Graves on Wednesday. The board is now getting attention from the Senate but not from the House. It will be a constant battle, a marathon, not a sprint. The board is now having a piece of legislation about four pages long. It will be rolled out for the Wednesday meeting to the people who will attend with their congressmen, and will ask for some specific recognitions. Later, when the RRAC talks about goals of the committee, Bob would like to propose to talk about the DOH and DEP collaborative efforts to obtain funds from the DEP allocation or the state allocation. DEP has a funding arm but DOH traditionally has not had a good mechanism to acquire those funds and distribute and collect under the State Revolving Fund Program.

Eric Rollings: Eric said that Congressman Darren Soto appointed him as the chair of the advisory committee for the Natural Resource Committee. Congressman Soto is a member of the Natural Resources Committee. The congressman is a leader on water quality issues. Eric would like to facilitate any conversations that RRAC needs to have with the congressman. Eric shared his contact information with the RRAC. His telephone number is (407) 256-2470. His email is eric@mainframere.com.

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Regarding Action Item 3 - Rules and regulations related to the Clean Water Act State Revolving Funds, Xueqing Gao updated the RRAC about recent investigations done by the Onsite Sewage Program regarding sources of funding for OSTDSs.

Xueqing Gao: Xueqing reported that the United States Environmental Protection Agency (USEPA) recently provided several webinars showing cases of the Clean Water Act State Revolving Fund (CWASRF) being used in several states to finance the construction, repair, and modification of OSTDSs. Using the Washington State as an example, the state's Department of Ecology received the CWASRF from USEPA and formed partnerships with the state's health department, local health districts, and a local loaner – Craft 3 to funnel the CWASRF money to support individual home owners for their OSTDS needs. The state health department and local health districts provided technical review on the OSTDS related applications and evaluated the technical aspects of these application. Craft 3 manages the loan and provide loan services to individual home owners. Similar CWASRF management systems were also reported by West Virginia and Minnesota. Webpages providing some detailed descriptions of these cases are provided on a presentation slide to RRAC.

The Onsite Sewage Program also conducted researches on the availabilities of other funding sources that can be used to support OSTDS repair and upgrade. The funding sources being discussed including:

1. EPA Nonpoint Source Section 319 Grants (<https://www.epa.gov/nps/319-grant-program-states-andterritories>)
2. EPA Water Infrastructure Finance and Innovation Act (<https://www.epa.gov/wifia/learn-about-wifia-program>)
3. EPA Environmental Finance Center Network (<https://www.epa.gov/waterfinancecenter/efcn>)
4. U.S. Department of Agriculture, Rural Development (<https://www.rd.usda.gov/newsroom/notices-solicitationapplications-nosas>)
5. U.S. Department of Housing and Urban Development (https://www.hud.gov/program_offices/comm_planning/communitydevelopment/programs)
6. U.S. Economic Development Administration (<https://www.eda.gov/funding-opportunities/>)

Xueqing also introduced a federal funding database – the Catalog of Federal Funding Sources for Watershed Protection, that can be used to search for the funding sources available to support onsite wastewater systems. The address of the database is (<https://ofmpub.epa.gov/apex/watershedfunding/f?p=fedfund:1>).

Xueqing also stated that the Onsite Sewage Program contacted the DEP CWASRF Program and talked to the program administrator Tim Banks. Tim confirmed that the SWASRF can be used to support OSTDS related activities. Theoretically, the program can work with individual home owners to provide the financial aid. However, since the program does not have staff resource to directly pass funding to each individual home owners, the program prefers to work with local governments to provide the funding opportunity. Mr. Tim Banks very much likes to provide a presentation to the RRAC to help RRAC members gain better understanding of this funding mechanism.

Carl Ludecke commented that he had a \$10,000 fix in the Ocala National Forest. The customer only has an \$800 social security check. There is no way that he can put in something without a

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fund. The fund is going to be the key to this whole thing. While this may not be in every case, it will be in majority of the cases.

Carl Ludecke asked how many septic systems that the State of Florida has. **Ed Barranco** responded that we estimated 2.5 to 2.6 million systems located in about 2.1 million parcels. **Elke Ursin** explained that the estimated number varies based on the number of parcels with unknown wastewater treatment methods in the Florida Water Management Inventory (FLWMI). But the estimated number falls within the range of 2.1 to 2.7 million systems. The number will be refined as more utility data are collected.

Ed Barranco: Ed agreed with Carl that the funding is the key issue. When onsite system is converted to sewer, the funding is going to the wastewater facilities to upgrade and to lay the line. So, there is assistance to the home owner, while the gentleman in the trailer out in the Ocala National Forest does not get that benefit. There is an issue between these two situations.

Bob Himschoot: Bob thanked the Department staff to conduct the funding resources investigation and move this action item ahead more than what he expected.

Regarding Action Item 4 - Past research project ideas, **Xueqing Gao** mentioned that it will be discussed in later part of the RRAC meeting regarding how to prioritize a set of research projects. Discussions will cover how we want to prioritize the research ideas that RRAC discussed in the past and mix them with new research ideas in the priority ranking process.

Regarding Action Item 5 - Student project on correlations between water quality, onsite sewage treatment and disposal system (OSTDS), and health effects, Xueqing Gao invited Elke Ursin to give an update on the project.

Elke Ursin: Elke explained that this was one of the prioritized projects that is on the Onsite Sewage Program website. A volunteer intern – Nicole Pritchard who was with the Onsite Sewage Program back in 2013, wrote up a paper about this project, but we just never quite got to where we feel hundred percent comfortable with all of the numbers and required some extra analyses. It would be a question for RRAC whether we still want to pursue that evaluation or whether we can move on from that or start all over.

Bob Himschoot: Bob asked where we are with that project and whether we have some numbers. Elke responded saying that we did have some numbers, but we have to feel more comfortable with the methodology used to obtain those numbers to put the Department behind that. It was a great effort from Nicole, but it will take extra time for the Department staff to complete the project. Whether it is still a priority is a question for the committee. Bob asked whether people like Damann have some idea on the fate and transport of some of the constituents included in the study, and whether we have a draft report that RRAC members can take a look at even though there is not an official stamp on it. Elke explained that the problem is that the health effects are confidential data held by the Department of Health because it holds data on the actual patients and symptoms. Those data are not something that we can make publicly available at all, which makes it difficult for somebody outside the organization to verify the numbers.

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Daniel Meeroff: Dr. Meeroff asked (through the chat board of Adobe Connect) whether the Florida Atlantic University can take over the project. Elke responded that the information about the project can be found from the RRAC webpage on www.flhealth.gov. Again, the problem is how to deal with the confidential data. Elke mentioned that we don't normally deal with confidential data and, therefore, she is not an expert on how the data can be shared. She suggested that Dan may have some better idea on how this can be dealt with. Elke believes that this is a larger discussion that we need to cover and it may not be feasible to reach the conclusion at this point.

Regarding Action Item 6 - OSTDS Research Program budget information,

Xueqing Gao: Xueqing reported to RRAC that, at this point, we don't have all the details of available funding for research projects. What we knew was that, at the beginning of the 2016-2017 fiscal year, we had a cash balance of \$156,994. The total revenue for the fiscal year was \$87,416, and the fiscal year's expenditure was \$109,334. The end-of-year balance was \$135,076 for the 2016-2017 fiscal year. This is the amount that can potentially be used to support our research projects. For those who are not familiar with the source of this funding, it came from a \$5.00 surcharge from every new construction permit for an onsite sewage system. The fund resides in a pot of money that is internally referred to as B9 and spending the money needs to be authorized by the Bureau of Environmental Health. The reason why we want to report to the RRAC the 2016-2017 fiscal year end balance was because the Onsite Sewage Program wanted to remind RRAC that \$135,076 is the maximum upper limit that can be used to support our research projects. But this is not necessarily all what we can spend because we still need to get an authorization to do that. Therefore, when RRAC helps the Department prioritize the research projects, available funding should be carefully considered.

Of course, the B9 money is not the only source of funding that is available to support the research projects. Other sources of funding have also been explored and obtained. For example, the FLWMI project is partially supported by the federal 319 grant and funding from the Center for Disease Control (CDC). In addition, the Department is in the process of applying for a 319 grant to support continued monitoring of the long-term performance of several full-scale passive nitrogen-reducing OSTDSs that were identified and tested during the Florida Onsite Sewage Nitrogen Reducing Strategies Study (FOSNRSS) in the period from 2009 through 2015. It is expected that the funding may become available later this year.

Damann Anderson: Damann commented that the \$5.- surcharge has been \$5.- for as long as he could remember. Damann asked whether there had been any thoughts that the surcharge can be increased to raise extra research funds. If there is an intention of increasing the surcharge, now it is the time to request because onsite sewage systems are in the news every day. Damann suggested that increasing the surcharge from \$5.- to \$10.- per permit would not hurt anyone. At this point of time, the request to raise the funding may fly.

Ed Barranco: Ed echoed Damann on this issue. He mentioned that the \$5.- surcharge goes back to early 90s. But the issue is that, in order to change the surcharge rate, it will require a statutory change. While the septic is in the news every day, the environment for a fee increase is still somewhat timid. He was not sure what kind of support anyone will get. It will require a statutory change and the Department is willing to look into it.

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Bob Himschoot: Bob commented that, speaking from the home builders' standpoint, home builders get hit with a lot of different taxes. Whatever this committee decides, it is a wise idea to consult Florida Home Builders before this committee even tries to float it very high because, while Bob did not disagree with a fee increase to support the research, he believes that this group should also get funding help from somewhere else. Long story short, it is wise to contact the Florida Home Builder Association about the thought because they will be someone to oppose it if anybody.

- 4. Update on OSTDS Remediation Plan Development** – Xueqing Gao provided to the RRAC an update on the latest status of OSTDS remediation plan development. The presentation covered the following information:
- (1) A review of statutory requirements from the Florida Springs and Aquifer Protection Act (Florida Statute, Sections 373.801 through 373.813), including:
 - a. Identify all Outstanding Florida Springs (OFSs) impaired for nutrients by July 1 of 2018
 - b. Adopt basin management action plan (BMAP) within two years of adoption of the total maximum daily load (TMDL) (the latest July 1, 2018)
 - c. Target achieving TMDL goals in 20 years
 - d. Establish milestone targets for 5, 10, and 15 years
 - e. Develop OSTDS remediation plans for basin where OSTDSs contribute more than 20% of nonpoint source loads or if FDEP considers an OSTDS plan is needed
 - f. Re-adopt BMAPs previously adopted without an OSTDS remediation plan by July 1, 2018
 - g. Delineate priority focus areas (PFAs) for impaired springs (Section 373.803)
 - (2) Nutrient status assessments for all OFSs have been completed by DEP. Out of 30 OFSs, 23 were verified for nutrient impairment.
 - (3) OSTDS remediation plans are required for nine OFS BMAP basins, including Wakulla Spring, Wekiwa Spring and Rock Spring Run, Silver Spring, Rainbow Spring, Volusia Blue Spring, Kings Bay/Crystal River, Homosassa Spring, Chassahowitzka Spring, and Weeki Wachee Springs. OSTDSs contribute more than 20 percent of the nitrogen loading from all nonpoint sources in either the BMAP areas or PFAs of these basins.
 - (4) Recently, DEP proposed to include OSTDS remediation plans into BMAPs of the Suwannee River Springs and Santa Fe Springs basins. Based on DEP's nitrogen source inventory loading tool (NSILT) analyses, OSTDSs contribute about 3 to 4 percent of the nitrogen loads in these two basins, which is less than the 20% threshold for developing a comprehensive OSTDS remediation plan. But because OSTDS is one of the nitrogen contributors in these basins, DEP believes that an OSTDS remediation plan is needed to level the play-field when implementing the impaired-spring restoration plan.
 - (5) So far, DEP has published draft BMAP reports that include OSTDS remediation plans for the Volusia Blue Spring basin and the Kings Bay/Crystal River basin. DEP plans to adopt these BMAP as Secretarial Orders before the end of 2017. Another BMAP expected to be adopted before the end of 2017 is the Suwannee Springs basin BMAP. Because OSTDSs

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only contribute about 4% of the nitrogen loads in this basin, DEP plans to develop a simplified OSTDS remediation plan for this BMAP.

- (6) Based on DEP's NSILT calculation, OSTDSs contribute about 42% of the total nitrogen loads in the Kings Bay/Crystal River BMAP basin. To achieve the TMDL restoration target, the nitrogen loads required to be reduced is 274,000 lbs-N/year. The nitrogen load reduction expected to be achieved through ongoing and proposed restoration projects in the basin is about 135,942 lbs-N/year. More projects and restoration activities are required to address the remaining 138,058 lbs-N/year.
- (7) OSTDSs contribute about 54% of the total nitrogen loads in the Volusia Blue Spring BMAP area. To achieve the TMDL restoration target, the nitrogen loads required to be reduced is 48,743 lbs-N/year. The nitrogen load reduction expected to be achieved through ongoing and proposed restoration projects in the basin is about 47,745 lbs-N/year. More projects and restoration activities are required to address the remaining 997 lbs-N/year.
- (8) In order to address the remaining nitrogen loads to be reduced, DEP proposed policies to regulate OSTDSs in these spring basins. For the Volusia Blue Spring basin, DEP requires existing OSTDSs not meeting the minimum treatment criterion (about 65% nitrogen removal rate including the drainfield attenuation) to either connect to the sewer network if available or upgraded to the nitrogen-reducing systems for:
 - a. New constructions, repair, and modifications on lots one acre or less in the priority focus area (PFA) unless sewer will be available within five years.
 - b. All existing OSTDSs on lots one acre or less with an OSTDS in PFA, within 20 years after BMAP adoption.
- (9) Because the higher amount of remaining nitrogen loads to be addressed, DEP's OSTDS regulation policy for the Kings Bay/Crystal River BMAP area is more stringent than the Volusia Blue Spring BMAP area. For the Kings Bay/Crystal River BMAP area, DEP requires existing OSTDSs not meeting the minimum treatment criterion to either connect to the sewer network if available or upgraded to the nitrogen-reducing systems for:
 - a. New constructions, repair, and modifications on lots of all sizes in PFA unless sewer will be available within five years.
 - b. All existing OSTDSs on lots of all sizes with an OSTDS in PFA, within 20 years after BMAP adoption.

Bob Himschoot: Bob commented that he had been sitting on the Rainbow and Silver Spring remediation plan advisory committee. The primary method to remediate onsite systems in those basins seemed to be replacing onsite systems with central sewer. Bob stated that there were documents showing significant surface discharges from the wastewater treatment facilities to the Indian River Lagoon and from the Kissimmee River basin to Lake Okeechobee, especially during the last wet season of hurricanes. They had direct discharges of untreated or partially treated wastewater into these waterbodies. Now everybody wants to talk about putting the onsite systems onto the central sewer. Bob believed that all what this is going to do is to exacerbate the problem already existed. In order to remediate (this problem), we need to identify funding from the State Revolving Fund or other (funding) mechanisms to remediate what is there to truly remediate without replacement. Bob felt that the remediation plan that he saw so far coming in the two spring basins that he had been working on all talked about replacement. Nobody talked about taking an area that

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is on septic and remediate the septic systems and upgrade them to nitrogen systems to meet the requirement. Bob wanted to point this out for further discussion and he believed that everybody needs to be aware of this issue.

Kevin Coyne (program administrator for the Water Quality Restoration Program of DEP): Kevin indicated that, based on the public comments received, most likely, the Volusia Blue Spring project credits and remaining nitrogen loads to reduce would be changed.

Bob Himschoot: Bob asked when the proposed revisions (on 64E-6, F. A. C) will become effective. Whether the revised 64E-6, F.A.C. will contain a separate chapter for each different BMAP area? **Ed Barranco** responded that, if Bob was thinking about 64E-6, F.A.C. will contain separate chapters for different basins, the answer would be no. Ed indicated that BMAPs and remediation plans will lay out some minimum requirements that onsite systems in PFA areas will have to meet. The rest of the Chapter 64E-6 will apply as it currently does.

Bob Himschoot: Bob asked whether we will have a dedicated chapter (in 64E-6, F.A.C) for BMAPs. **Ed Barranco** answered that there will be no dedicated BMAP chapter in 64E-6. There will be OSTDS remediation plans adopted as part of the BMAP that will be signed by the DEP Secretary as a Secretarial Order and adopted for specific areas. For example, minimum requirements will be set in the BMAP remediation plans for the Crystal River basin that covers Citrus County. Home owners from the county will come to the health department for permits like they usually do. The health department will not only look at the requirements from the 64E-6, but will also look at whether they need to be compliant with the requirements established in those particular OSTDS remediation plans.

5. Update on the 64E-6 Rule Revision –

Ed Barranco: Ed provided an update to the RRAC about the 64E-6 rule revision.

- (1) Ed first briefly summarized the general goal of the rule revision:
 - a. The Onsite Sewage Program have been working on developing technologies that can reduce nitrogen in a passive manner. The program takes the less complex, simplest (form) of the technology studies and attempts to make it into prescriptive rules. This leads to the part of the revised rule on the in-ground biofilter technology. The revised rule about this technology has been approved by the TRAP committee and is now in the rule making process.
 - b. The second (part) of the rule revision will allow the Department to include the aerobic treatment units (ATU) that are certified for nitrogen reduction. These are specifically NSF standard 40 units that are also certified on the NSF standard 245.
- (2) The revised rule about the in-ground nitrogen-reducing biofilter includes the following provisions:
 - a. Allows the introduction of a nitrogen-reducing media layer beneath the drainfield.
 - b. Draws from the concept developed in the FOSNRS study.
 - c. Provides for a standard system and three variants:
 - i. Standard Liner

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- ii. Variant One (No Liner)
 - iii. Variant Two (Liner with Underdrain)
 - iv. Variant Three (Dual Liner)
 - d. Allows a pilot of five to 10 of each type to be installed and monitored for one year
 - e. Allows an unlimited number of standard liner systems to be installed provided the first five are monitored and the results are encouraging
 - f. Provides a target performance level (65% Nitrogen reduction) based on results of the Florida Onsite Sewage Nitrogen Reduction Strategy (FOSNRS) studies
 - g. Allows the types that perform as well as the standard liner to be installed in unlimited number after the year of testing.
 - h. Allows test systems that do not perform to the target to continue operating until they require repair at which time they will need to meet current standard for nitrogen reduction
 - i. Requires low-pressure distribution or other method demonstrated to achieve adequate nitrification
 - j. Allows five to 10 of the standard liner and each variant to be installed with gravity flow
 - k. Requires filing a public record notice for these particular systems
- (3) Ed then discussed the general structure of the in-ground nitrogen-reducing biofilter, the standard liner, and the three variants. He explained that the revised rule language can be found at the flhealth.gov under Environmental Health/Onsite Sewage Program and go to the TRAP tab.
- (4) The second rule revision is to recognize the aerobic treatment units that are nitrogen-reducing units certified under the NSF 245 standard and allowing those in the rule revision process. The detailed revised rule language can be found by going to the TRAP section of the website. The major goal to include these NSF 245 certified systems in the revised rule is to ensure that their nitrogen-reducing capability can be recognized.

Ed showed a list of NSF 245 certified ATU systems based on the data from DOH's database. These are ATU systems that are certified under the NSF 40 standard as well as the NSF 245 standard. Ed pointed out that these technologies have been approved to be used in the State of Florida. There are about 600 units of these types that have been installed in the state and have the needed nitrogen reducing capability. These technologies, when coupled with 24 inches of water table separation in good drainfields, will help achieve the nitrogen-reducing goal.

Tom Lyon (representing Presby): Tom commented that he did not see the magical Presby name appear on any of the slides that Ed presented in terms of technologies. Tom wants to know where Presby is with the Department (regarding the patent of the liner system). Ed responded that that is an issue not related to the RRAC meeting. The Onsite Sewage Program has been working with Presby on the innovative system permit. Tom wanted to confirm whether the permit is a general approval or innovative permit. Ed explained that the program has been working with Presby on the company's request for reclassification of the technology as an alternative drainfield product. Once

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the product is reclassified as an alternative drainfield product, the product will have a general approval. Tom stated that he did not see the Presby name be included in the slides presented by Ed. He stated that some of the technologies presented by Ed are good technologies, but there are also technologies in the presentation that he believed will not achieve the 50-65% target rate that the Onsite Sewage Program was trying to reach. Tom asked Ed whether he knows who happen to own the patent of the liner technology. Ed pointed out that that was a separate issue irrelevant to the meeting discussion. The issue has now moved to the office of the General Counsel. If Tom wants to talk about it, he is more than welcome to call General Counsel's office and find out what they might have to say about it.

Clay Tappan: Clay asked that, as the revised rule allows the five tested systems, if these do not show encouraging nitrogen-reducing results, (would they) generally be grandfathered and (had) to be brought up to the standard only when they need a repair permit or other sorts of construction permits, whether the same luxury will be applied to the other unlimited systems. Ed responded that the requirement will be applicable to the other unlimited systems. He did not see that the Department will chase after the unlimited systems at the end of the one-year testing period. Ed also pointed out that the Department is in the mode of updating the rule and changing what we are doing and, hopefully, gets the nitrogen-reducing system to the level of nitrogen reduction that we need. As those systems fail, they will have to be repaired and repaired to whatever the standard might be at that point in time.

Clay Tappan: Clay also asked what the future failure criterion would be. Whether it is going to be the traditional failure criterion with water at the ground surface or will it be the nutrient failure. Ed answered that the failure criterion will be what we typically look as failure now where the drainfield is no longer accepting the wastewater and is backing into the structure or to the surface of the ground and needs to be repaired. At that point, the system will need a repair permit and will face the same BMAP requirements that it was facing earlier. Ed mentioned that he hopes that, after one year of testing, we would be able to phase out system variants that are not working and upgrade our rule to include those variants that work.

Clay Tappan: Clay expressed his feeling of uneasiness about the "unlimited" number of systems to be installed. He understood the need of the pilot study and testing installation to determine the effectiveness of the evolving technology. But allowing unlimited number of systems to be installed during the testing period is equal to saying why we are doing the testing. This does not seem to follow the same philosophy of doing the testing. Ed explained that the FOSNRS study tested these technologies for 18 months to two years. TRAP wanted to ensure that these systems indeed work and, therefore, requested one more year of testing. But, in the meantime, we need these systems to be available because of the sheer load of number of systems that are needed to be upgraded. In the BMAP areas shown in previous slides, there are about 350,000 to 380,000 onsite systems that need to be upgraded in some 16 different counties. Even if 80% of those systems can be converted to sewer, there will still be 70,000 to 80,000 systems needed to be upgraded. What TRAP requested was to ensure that these systems will work. But we are certainly not going in blindfolded.

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6. Update on Septage Ban –

Ed Barranco: Ed provided an update to RRAC about the septage ban. Ed showed a map showing the spatial distribution of the septage land application sites inside and outside the spring protection areas before the prohibition. There are many sites located right in the spring protection areas. Ed then reviewed the history of the ban:

- a. Laws of Florida 2010-205 – Amended 381.0065, FS Prohibited Land Application
 - i. Effective January 1, 2016
 - ii. Delayed to June 30, 2016
- b. May 27, 2016, DOH/DEP – Guidance to Request a Temporary One Year Variance From DOH
 - i. 69 Variances Granted
- c. May 18, 2017, DOH/DEP – Guidance for A 180-day Maximum Variance Extensions. At the end of December 31, 2017, these variance extensions will expire.
 - i. 44 Variance Extensions Granted
 - ii. About 29 or so sites are currently seeking DEP permits or in some other ways in DEP regulatory processes.
 - iii. There are about 10 to 11 sites for which something is about to happen after December 31, 2017.

Ed also presented a slide showing where the 44 sites that received variance extensions are located. He indicated that the green bar on the slides shows where these variance extensions were granted.

7. Update on Florida Water Management Inventory –

Elke Ursin: Elke provided an update to the RRAC regarding the Florida Water Management Inventory (FLWMI).

- (1) Elke presented several slides to show what people can do to access the FLWMI main page, the county page, the FTP site, and online application:
 - a. The main FLWMI web site will be updated soon with some new information. A user can click on a county on the GIS map and it will take you to a snapshot page that will allow you to feed them additional information. It has different maps for the drinking water sites and wastewater sites that users can get an idea of what the actual GIS data shows. The inventory is a geographic map of the state of Florida that is in GIS that you can see for every built property in the state where drinking water is from and where wastewater goes. While the project group tried best to stitch together data from multiple sources to come up with a comprehensive database, the database is by no means perfect. This is because people are not required to send the project group their data, there are areas with unknowns or conflicting data.
 - b. When a user gets to the county map page, there are a couple of places at the top of the page where the user can download the project maps and data. This will take the user over to the FTP site. On the FTP site, a user can see multiple different files, including PDF files and Excel files. The zip file at the bottom is the geodatabase. If the user doesn't have the

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- GIS software, he/she can access the spreadsheet on Excel and manipulate the data for the county. The actual GIS files are there with all the PDF maps and other information. There is also an interactive web map where a user can go and be able to click and view the data.
- c. The web application allows a user to either click on the map to choose the location of the parcel or type in an address. It will zoom the map down and show whether the selected property is on septic or sewer, and what confidence level we have on the data. It also allows the user to click on the drinking water and see the drinking water information. The application also allows the user to create maps, export these maps, and search for needed data by attributes. There are also things that the project group is constantly changing to improve the data or improve the functionality of the application.
- (2) The project team also builds in the environmental health database the ability for the county health departments that receive abandonment data from utilities to enter that information into the environmental health database to help with accuracy of converting those that are on septic over to sewer. The environmental health database is one of the data sources the project team updates periodically. At this point, the project team is looking at updating the inventory with new environmental health database data quarterly.
 - (3) The project team finished the first cycle, which was really the creation of the database and the ability to view the data:
 - a. The 1st Cycle of FLWMI was completed in September 2016.
 - b. All Project deliverables available at:
<http://ww10.doh.state.fl.us/pub/bos/Inventory/Deliverables/>.
 - c. The 1st Cycle mapped 91% and 81% of the population served by permitted wastewater facilities and drinking water facilities statewide, respectively.
 - d. Resulted in a more accurately defined number of OSTDS in Florida (2,096,941 properties with known/likely/somewhat likely septic).
 - e. Still many unknown parcels.
 - (4) The goal of the second cycle is to fill in some of the major data gaps. Then the project team will start to get into more of a maintenance mode on whether that will be updated periodically.
 - (5) All the public project deliverables are available on the FLWMI website. Anyone who wants to know details about what the project team did and what exactly “somewhat likely sewer” means can find their answers from these deliverables. The answer to what “somewhat likely sewer” means is that it's a little bit better than a guess. The term “known” means that the data is supported by the permitting data source, either as the utility source or the permitting agency source. There are several things that influence a “likely” confidence level. For example, if one is going to look at permitting data it would be where someone applied for and received a septic permit but a final inspection was never done. So, it is not quite known whether there is a system there, but there is a tendency that there might be one there. “Somewhat likely” is, for example, someone applied for a permit and no permit was ever issued. So, it is a little bit better than nothing.
 - (6) There are still many unknown parcels. This is where the 2.1 million properties with septic comes from. There are about five hundred thousand built parcels in the state that don't have any information. They are unknown and they could go either septic or sewer as the data about them becomes available. That's why the project team reported a range of numbers on how many septic systems are in Florida.
 - (7) Elke developed a poster that she presented at the Florida Public Health Association Conference in 2017. The poster demonstrates a bivariate map that shows both the wastewater and the

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drinking water information on one map. The map also includes the confidence level of the data using different colors. The map shows the parcels on sewer. Each house shown on the map legend symbolizes 250,000 parcels. The vast majority of the state is on sewer and on public water. The map also shows that the next highest (combination) is septic with public water. The map also shows all those septic with private well. And there are a few outliers that are on sewer and private well. These might be a good indication that it is bad data. The map also shows some unknown or conflicting data. The gray areas of the map are unbuilt properties.

- (8) The goal of the second cycle of the project, which will end in October or September of 2018 is to fill the data gap and start to increase the accuracy of onsite wastewater systems statewide. The project is partly funded through a 319 grant and also receives some CDC Florida Environmental Public Health Tracking Funds. Right now, the project team still has Liz Sabeff who is our GIS data analyst. She's still doing all the GIS analyses. Alx Walter is our OPS staff that is working on data management. Today, the project team got Levi Owens back as OPS. He has been out for a while because the project ran out of funding. The project team will have him for another two or three months. The project team is always on the hunt for more funding.
- (9) Elke described the use of the FLWMI data during Hurricane Irma. She also mentioned that CDC was really impressed that DOH had this data source. When the CDC worked on Hurricane Harvey they had tried to figure out the impact of flooding of private wells in Texas. The CDC now wanted to provide help for Florida with the analyses because the center worked through this process in Texas. However, the department had already used the FLWMI pre-landfall to estimate how many private wells could be impacted by flood waters and what that impact could be to workloads and costs. CDC was impressed with this. So, there's a large scale of attention on the project, from the national to the individual homeowners. For people who are looking at buying a property and want to have an idea of what's in the neighborhood and if sewer is available, he/she can zoom in and if he/she can see a lots of sewer parcels around them it will help him/her find a property that can connect to sewer. So, they're a little bit more informed when they purchase a property.
- (10) Regarding the prioritization for counties to be updated in the Cycle 2 project, Elke explained that the focus is currently on BMAP counties for updating and filling the data gaps. The project team has already updated several counties. The project group plans on updating the data set and the web application, but does not plan on updating the individual county Excel spread sheets and PDF maps and individual downloadable geodatabases just because that is very time-consuming process. The desire is to have access to the latest and greatest data as quickly as we can get it. So, if we can update the inventory with statewide environmental health database data regularly, that would be a much smarter thing to do than going county by county.

Bob Himschoot: Bob praised Elke's efforts in developing and maintaining the FLWMI tool.

8. Innovative System Permits including Nitrogen Reduction –

Eb Roeder: Eb provided a summary on the status of innovative system permits that include nitrogen reduction capability. Eb explained that, in addition to the NSF 245 certified ATU technologies, the State of Florida also has an innovative system permit system that allows manufacturers to come in, get a permit, and test a few systems to evaluate how they are doing.

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There are several manufacturers have taken advantage of this approach. He presented a table that shows these manufacturers and the technologies being tested:

- (1) Anua (formerly Bord-na-Mona), technology tested is Puraflo.
- (2) Clearstream, technology tested is Clearstream D.
- (3) Ecological Tanks, technology tested is AquaSafe.
- (4) Environmental Conservation Solution, technology tested is POTS (passive onsite treatment system)
- (5) Fuji-Clean, technology tested is CEN, CE.
- (6) Lombardo, technology tested is Nitrex (second stage).
- (7) Norweco, technology tested is Hydro-Kinetic.
- (8) Orenco, technology tested is Advantex.
- (9) Quanics, technology tested is Aerocell.

9. Florida Onsite Sewage Nitrogen Reduction Strategies (FOSNRS) Study and Continued Monitoring –

Xueqing Gao: Xueqing presented to RRAC some preliminary results from the first round of continued monitoring on the several full-scale passive nitrogen-reducing onsite systems identified and tested during the FOSNRS study.

Xueqing first provided a review on the concept of the passive nitrogen-reducing system, which generally is composed of no more than one pump and includes two stages of media filters. The stage one media filter is generally sandy media to facilitate aeration and nitrification. The stage two media filters include lignocellulosic materials and/or elemental sulfur that serve as electron donors and provide the anaerobic condition to facilitate the denitrification process to remove nitrogen. Xueqing also mentioned that the passive nitrogen-reducing media filter systems come with two different general designs. One design is the in-ground nitrogen reducing system that stacks the stage one filter on top of the stage two filter underneath the drainfield. In order to create the anaerobic condition, the in-ground system includes an impervious liner underneath the lignocellulosic layer to hold the water. The other design is the in-tank system that put two stages of media into separate tanks that are connected in series.

Xueqing explained that, during the FOSNRS study, seven full-scale passive nitrogen-reducing systems were installed and tested by Hazen and Sawyer. Each system had about 18 months of monitoring data. Two systems were deactivated after the FOSNRS study based on home owner's requests. Five of these systems are still functioning. One of them is in Hillsborough County, three in Seminole County, and one in Marion County.

The goals and objectives of the continued monitoring project are:

- Goals
 - Establish long-term performance of the two-stage passive nitrogen removal technology
 - Provide guidance for possible system refinement and future implementation.

Objectives

- Continue monitoring the performance of these systems
- Document the maintenance needs and operation costs
- Monitor nitrogen species concentrations at influent, effluent, and intermediate locations of these systems and evaluate nitrogen removal efficiency

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- Monitor the treatment efficiencies other pollutants including 5-day carbonaceous biochemical oxygen demand (cBOD5), total suspended solid (TSS), total phosphorus (TP), and bacteria.
Xueqing then presented monitoring results from each of the five systems and compared the monitoring results from the first round of continued monitoring to the mean values of the monitoring results from the FOSNRS study. Results from the continued monitoring showed that several passive systems are still functioning as well as they did during the FOSNRS study. But system failure due to the change of home owner, uneven distribution of the lignocellulosic materials due to the flushing from the distribution pipe, and some unexpected results from the sulfur tank were observed and warranted more data collection and analyses to examine the long-term pattern.

Damann Anderson: Damann asked whether the sulfate concentration was measured from the sulfur tank at the B-HS4 system (one of the tree passive systems located in Seminole County), where the total nitrogen concentration from the sulfur tank was higher than the total nitrogen concentration at the lignocellulosic tank. He also asked whether the water quality samples collected from the sulfur tank was from about half feet below the water surface in the tank or at the bottom of the sulfur tank. Xueqing will check the data records to find out answers to these questions.

Ed Barranco: Ed commented that results from these monitoring indicates the need of a consistent and periodical monitoring on these systems because, regardless how sophisticated a design is, it will not control how these systems will be used.

Chairman Carl Ludecke called a five-minute break at 3:15 pm.

10. Update from the Florida Department of Environmental Protection –

Rick Hicks: Rick from DEP provided a presentation to RRAC regarding results from several OSTDS studies done by DEP. These studies include: Wekiva area homeowner's septic tank study, Ichetucknee experimental drainfield, and Apopka experimental drainfield

- (1) Wekiva area homeowner's septic tank study
 - a. Homeowner meeting (March 2015), 18 home owners volunteered for the study.
 - b. Screening and selection of 11 study sites (June 2015). Most of these sites are conventional drainfields.
 - c. Site instrumentation (July-August 2015)
 - d. Monitoring period, bi-monthly sampling (September 2015-October 2016)
 - e. A draft report has been created and now is being reviewed by the DEP management. It is expected that it will become available to the general public in the next month or so.
 - f. Rick showed a list of all the study sites.
 - i. All sites are in the Wekiva Study Area. Most of them in Apopka and generally located in two neighborhoods.
 - ii. They are typical residences with two to three residents per household.
 - iii. Most of these systems have old pipe and gravel drainfield. Some of them had their old drainfield replaced with Infiltrator (Chambers).
 - iv. Most of them are subsurface system. Only one of them is a mound system.

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- v. Most homeowners had their septic tank pumped some time, but some of them never pumped.
 - vi. Most of the home owners maintain their yard themselves and fertilize their lawns when necessary. All these homes have irrigation systems.
 - vii. All the systems have sandy soil typical for the central Florida area.
 - g. Rick presented a map showing spatial locations of the sites being studied. Quite a few of them are in Seminole County.
 - h. Rick presented a slide showing the type of drainfields included in the study, including the pipe and gravel system and infiltrators. Most of the sites included in the study have small lots with the houses occupying most of the lot. The drainfield and septic tank are bunched up in their front yards.
 - i. The monitoring devices used by the study include suction lysimeters. The goal of the study is to focus on shallow monitoring underneath drainfields. Most lysimeters were installed about 24 inches below the infiltration surface. However, several lysimeters were installed at larger depths.
 - j. Risers were installed on septic tanks. This study also collected samples from septic tanks.
 - k. The sampling frequency is bi-monthly with total of seven sampling events.
 - l. The study tried to collect water use data. But because the water meters at these sties only provide aggregated water use including irrigation and swimming pools, it was impossible to segregate the volume of wastewater going through the onsite systems.
 - m. About 60 lysimeters were installed in this study. They include lysimeters under the drainfields and at background locations. Some lysimeters were also installed in locations away from the drainfield to evaluate other influences on nutrients in the soil pore water.
 - n. Rick presented a slide showing what DEP did at each sampling site (to instrument it). Flags were used to mark out the location of drainfields and septic tank so that lysimeters could be installed at an angle (with the lysimeter below) the drainfield. Problems of installing lysimeters were encountered at several pipe and gravel drainfield. At these sites, lysimeters were installed as close to the drainfields as possible.
 - o. Rick presented a slide showing results of average total nitrogen (TN), average chloride, TN/chloride ratio, and average total phosphorus (TP) in septic tank effluent from eight sites. The average TN concentration from the septic tank effluent was 85 mg/L. Typical septic tank effluent TN concentration from work done by Damann and others is about 60-65 mg/L. So, these studied homes have higher septic tank effluent TN concentrations than typical values. Effluent TN concentration for one site is very high with 140 mg/L TN. That home had only one resident with low water use. The high TN, chloride, and TP concentration was largely due to the lack of dilution. Most of these homes have modern flushing system and do not use much of water. That could be the reason why these homes have higher TN, chloride, and TP concentrations.
 - p. The study used both TN concentration and chloride concentration to better interpret the observed nitrogen concentrations and evaluate the impact from dilution effects.
 - q. Rick showed results of all sampling events for several sites. He talked about using the TN/chloride ration to evaluate the TN concentration decrease due to dilution. He indicated

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that these results represented the combined effects from nitrification, denitrification, and dilution. At some sites, the interference from the fertilization was very significant, resulted in drainfield nitrogen concentration much higher than the TN concentration from the septic tank effluent. He also showed results from some lysimeters installed at larger depths, such as 5 feet and 10 feet, showing TN concentrations at the 10-foot depth was significantly lower than the 5-foot concentrations. He indicated that, based on the chloride results, the majority part of the difference can be explained by dilution.

- r. Rick showed a summary slide on the range and average TN, chloride, and TP concentrations below the drainfield. The average TN concentration below the drainfield from the 11 sites included in the study ranged from 4.0 mg/L to 49 mg/L. After removing the dilution effect, he estimated that the average TN reduction due to nitrification/denitrification was about 39-44%, which is slightly higher than the 10-50% range measured by Damann and others.
 - s. Using the collected data described above, Rick's group did some model testing runs using the STUMOD model, trying to evaluate the impact of soil types in the Wekiva Spring springshed on the final nitrogen concentration reaching the groundwater. Coupling STUMOD modeling results with the GIS soil information may provide a useful tool to help identify the nitrogen source hot spots for the restoration program. But Rick also mentioned that, because of the limited number of data DEP collected through the Wekiva OSTDS study, the results from the model runs are considered preliminary.
 - t. Rick also presented some data results used to evaluate the impact of septic pumping on the TN concentration in the effluent of the septic tank. Rick mentioned that four out of the eight septic tanks included in this OSTDS study were pumped at midway through the monitoring. Average TN concentrations before and after the pumping were collected from these four septic tanks and compared. The results showed that the TN concentrations after pumping these septic tanks could go either up or down. There were no statistically significant differences between before and after the pumping, suggesting that pumping alone will not reduce nitrogen load sufficiently to improve the nitrogen treatment effect of conventional onsite systems.
- (2) Ichetucknee Drainfield Study:
- a. This is a wood mulch system under the drainfield installed at about the same time when Damann installed the passive nitrogen system in Marion County.
 - b. DEP Intentionally made this system a low-tech, low cost design (added approximately \$300 to the cost of a new drainfield).
 - c. It is located at the Ichetucknee Springs State Park manager's house. Two residents live at the house.
 - d. The system was constructed with DOH construction and operating permits, and under a Memorandum of Understanding between DOH and DEP.
 - e. A new drainfield underlain by wood chips (but without a liner) was installed.
 - f. A comprehensive set of monitoring devices was installed.
 - g. Monitoring of the system started in March of 2014 and was conducted on the monthly basis for about a year and then quarterly after that.

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- h. Rick presented some pictures showing the installation of the system.
 - iv. The hole is about 5 feet deep
 - v. Only includes the wood mulch layer without the soil mixture defined in the revised 64E-6.009.
 - vi. The depth of the wood mulch is about 1 foot, but might have compacted a little.
 - vii. Installed lysimeters above and below the mulch layer.
 - viii. Groundwater, (percolate), and septic tank effluent nitrogen concentrations were measured.
 - ix. A piezometer was used to determine the water level (in the wood mulch) for estimating mounding.
- i. Rick showed the plan view and cross section view of the drainfield and the location and depth of various monitoring equipment. A concentration hot spot was identified at the upper end of the drainfield (likely caused by uneven distribution of the wastewater in the distribution network because the system is a gravity system). In addition, one of the Infiltrator (chambers) seemed to get most of the water for a long time and only started to spread out over the study period.
- j. Rick showed the total nitrogen results at different sampling points around the system. There was a general temporal trend of decrease in total nitrogen concentration in the septic tank effluent. Rick explained that it could result from the fact that the old park manager found another job and left the house. The new park manager tended to use more water than the old park manager, which could have diluted the TN concentrations in the septic tank effluent. Because the old manager only used small amount of water, the wastewater TN concentration was high, and it only went through a small portion of the mulch layer with very short residence time. The mulch layer was mostly dry and caused problem for the treatment efficiency. The shallow lysimeter measurements did not show significant TN concentration reduction.
- k. The deep lysimeter results showed some nitrogen removal. The treatment efficiency of total nitrogen improved as the study goes. But Rick still pointed out that the pure mulch layer does not contain enough fine materials to hold the water and generate enough water residence time to provide high treatment efficiency.
- l. The groundwater monitoring results showed that:
 - x. Water table at about 20-24 ft below land surface
 - xi. Two wells installed between Infiltrator (chamber) rows
 - xii. Beneath active drainfield, nitrate(-nitrogen) ranged from 18 to 26 mg/L over the past year, increasing from original background concentration of 3.3 mg/L
 - xiii. Rick said the system still provides some treatments. The groundwater samples were collected just a little bit deeper than the water table. There was small amount of dilution. A difference between the effluent concentration of about 80 mg/L to 18 to 26 mg/L slightly below the water table showed that the system is working, but the result can be better.
- m. The study also collected wood mulch samples as the study (progressed), and tried to evaluate whether a significant amount of wood mulch is consumed during the study. With

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some pictures, Rick showed that the mulch sample collected in January of 2015 was not much different from the original mulch when installed in March of 2014. However, the color of the mulch samples collected in July of 2017 was black, which indicated that the mulch was eventually soaked with water and started to produce an anaerobic condition that favors denitrification. In addition, the structure of the mulch layer did not change much, indicating that the mulch layer was not consumed significantly.

Carl Ludecke: Carl asked whether termites can be a concern for the mulch layer. **Damann Anderson** responded by saying that the low oxygen environment in the mulch does not favor the growth of termites.

(3) The Apopka Lined Drainfield:

- a. Passive drainfield with mulch on liner
- b. Recycled wood mulch with sand mixture
- c. No pump
- d. Installed August 2016 at a house with two residents
- e. Monthly monitoring for 1 year followed by quarterly monitoring
- f. The home has a well, so a water meter was installed.
- g. Started with one foot of mulch, compacted down to about 8 inches.
- h. The entire mulch area was lined with a liner. The rim of the liner was raised up by about 6 inches.
- i. Installed 20-some lysimeters on the system both above and below the mulch layer. Lysimeters were also installed in the native soil close to the rim of the liner to measure the TN concentration when treated wastewater flows out of the liner. Piezometers were installed to monitor the mounding (in the liner).
- j. The septic tank effluent TN concentration at this home was about 50 – 55 mg/L, more typical for a residence (than the Ichetucknee system).
- k. Home owners were not using fertilizer during the study.
- l. The depth to groundwater table was about 30 feet below land surface.
- m. The chloride concentration at different depth showed that dilution is insignificant at the site.
- n. The shallow lysimeter showed very good nitrification. But the mulch layer showed higher TKN concentration. Rick interpreted this as the organic nitrogen coming from the mulch layer.
- o. Based on TN results from the deep lysimeters located at the rim of the liner, the system provides about 65-70% of the nitrogen reducing rate, similar to the nitrogen-reducing rate observed with Damann's Marion County system.
- p. The nitrate concentration in the groundwater beneath the drainfield increased from the 3.5 mg/L pre-installation to 6.0 mg/L one year later.

Bob Himschoot: Bob asked whether the Wekiva Study should be considered inconclusive. Rick responded saying that, although the data is muddled by the fertilization, the study can still

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derive a general nitrogen removal rate about 42% with the conventional drainfield, which is fairly similar to the results obtained by other studies in the same area.

Bob also tried to confirm with Rick that, based on the data from the Wekiva study, even if OSTDSs are taken out, fertilizer still had an effect. Rick agreed with Bob's observation and indicated that the result from the Wekiva study is a very good demonstration that fertilizer has an impact on the groundwater nitrate concentration. Rick also mentioned that, when he presented these data to the home owners participated in the study, they were impressed by the effect of fertilizer. But they also mentioned that their hands are tied because of the green lawn requirement from the home owner association made them must fertilize their lawns. Rick pointed out that some education will be needed to change the home owner association's requirement. He knew that Orange County change their fertilizer ordinance to control the urban fertilization more tightly. But Rick felt that other parts of the state still need more work to change the behavior of home owners.

Carl Ludecke: Carl mentioned that agriculture fertilization could be an important source of nitrogen too depending on the area in the state. Rick echoed that in the Suwannee River basin, agricultural fertilization could account for about 97% of the nitrogen loads. Carl also asked whether the reuse of treated wastewater from wastewater treatment plants for lawn irrigation will put a lot of nitrogen through the soil. Rick responded saying that nitrogen concentration in reuse water is generally very low. Bob asked how low. Rick answered that, in most cases, lower than 7 mg/L.

11. New Business –

Xueqing Gao: Xueqing talked about new business for the RRAC, which includes:

- (1) Update on RRAC positions up for renewal in January 2018. Xueqing stated that the RRAC membership for several organizations will expire by the end of January of 2018. The Onsite Sewage Program like to get recommendations from these entities to renew their RRAC memberships. Xueqing had sent out emails to these entities for membership recommendations. He hoped that RRAC members from these organizations can be aware of this situation. The entities whose RRAC membership needed to be renewed are:
 - a. Septic Tank Industry
 - b. Environmental Interest Group
 - c. Restaurant and Hotel Industry
 - d. Florida Department of Health

Car Ludecke: Carl asked whether the Restaurant and Hotel Industry group ever participated in the RRAC meeting. Elke Ursin responded by saying yes. The organization's alternate member, Mr. Mark Repasky, had been actively participated in RRAC meetings.

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- (2) Project priority ranking – Xueqing Gao stated that the Department likes to continue the discussion on the project prioritization started by Elke Ursin in the previous RRAC session. Xueqing mentioned that the RRAC prioritized the long list of 17 research projects in 2011 and condense it to a priority list of five research projects that include:
- i. Continuation of Inventory of OSTDS in Florida
 - ii. Effectiveness of Outlet Filters
 - iii. Life Expectancy of Onsite Systems
 - iv. Drip Disposal with Septic Tank Quality Effluent
 - v. Correlations Between Water Quality, OSTDS, and Health Effects

Xueqing stated that, among these five prioritized projects, the “Continuation of Inventory of OSTDS in Florida” has been carried out successfully by Elke Ursin and is now in its second cycle to fill data gaps and refining database function and the online application. The “Corrections between Water Quality, OSTDS, and Health Effects” obtained some preliminary results, but needs more efforts to make it a successful project and needs a decision from RRAC what we should do with the project. Xueqing invited Elke and Eb to provide some updates on the other projects.

Elke Ursin: Elke stated that the number iv project was looked at in the nitrogen study. Regarding the “Life Expectancy of Onsite Systems” project, Elke mentioned that the Department conducted life cycle cost analyses in the nitrogen study, which touched on the life expectancy of the systems. Elke also stated that NSF was conducting some research related to the “Effectiveness of Outlet Filters” and we don’t want to recreate the wheel. Eb may know more about this topic.

Eb Roeder: Eb stated that he remembered that NSF was working toward a standard that would measure effectiveness and field experience with that. He remembered that it eventually didn’t result in a standard because it was too complicated to be reproducible. Eb felt that, for items ii and iii, there were not too much movement. The question is how to make that doable with limited funds and whatever data we have a chance of gathering.

Carl Ludecke: Carl tried to confirm with Eb regarding the concept of “effectiveness”. He said “every time when I pull out the filter, if it is effective, it holds solids. That is what you are talking about, right?” Eb acknowledged that. Carl continued by saying that the problem is how a little lady is going to get at it. He described the difficulties for an average home owner to remove the heavy lid of the septic tank and get the filter out. He also described an improvised 6-inch pipe that could be screwed to the top of the septic tank and replace the concrete septic tank lid so that an average home owner can reach the filter and clean it. He also described that the septic tank contractor could not pump the tank through the 6-inch pipe and, therefore, they had to remove the pipe, pump the tank, and then put the pipe back to the right place. The process is awkward.

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Bob Himschoot: Bob pointed out that the practice described by Carl modifies the septic tank approved by DOH. This is in violation of the regulation. Users can put a riser on top of the tank, but the rise needs to be water tight. Bob indicated that there are effective ways to solve the problem. The filter is an effluent screen that does the job to help preserve the drainfield. There is a cost associated with maintaining the component. But if you modify the system, you step out of the boundary of a good protocol.

Damann Anderson: Damann commented that proper functioning of the septic system has to be maintained and the maintenance requires access to the system. We should have lids to grade on all systems and it should be required.

Elke Ursin: Elke reminded everybody the objectives of the filter effectiveness study. The objective/purpose of outlet filters is to retain solids in the tank where further digestion can take place thus “in theory” extending the life of the drainfield because of a cleaner higher quality effluent. The objectives of the filter effectiveness study were to:

- i. determine whether outlet filters are performing as expected/described and not causing unnecessary expense to the homeowner as in unnecessary cleanings and or pump outs.
- ii. Determine average maintenance frequency such as filter cleaning or pump outs.
- iii. Determine whether Department’s Approval Standards for Outlet Filters are adequate.

Elke also mentioned that the reason why several projects on the priority list were not moved forward was because that the legislature-required nitrogen study changed the priority and most efforts were put into the nitrogen study.

Xueqing Gao thanked everybody for the discussion. He stated that the reason why the old list of projects was brought up was because some of the projects on the list have not been accomplished or progressed to a significant extent. At the same time, some new projects, such as the continued monitoring on the passive nitrogen-reducing system that the Department has been carrying out and will continue to with the project. The Department is now seeking 319 grant support from DEP for this project. The Department wants to propose this project to RRAC. So, at this point, we got a different list of projects and may have different priority. We want to see how we can come up with a new project prioritization.

Elke Ursin commented that the 319 grant support requires a match from the state, which will need to spend B9 money for the project and need the approval from RRAC. That is an important reason why the project should be proposed to the RRAC for prioritization. Xueqing thanked Elke for bringing up the point. He indicated that for a project to be qualified for the 319 grant, DEP will require the entity proposing the project to provide a match that accounts for 40% of the total project cost. Therefore, funding support from the B9 account is required.

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Xueqing Gao suggested that the Department can resend the old project list to RRAC members and mix some newly proposed research ideas with the old projects on the list. RRAC members are also encouraged to provide new research ideas. RRAC members can submit their proposed research projects to the Department. The Department staff will examine the easiness, the potential cost, the timeframe, and other factors of the proposed projects, and compile all proposed research projects into a new list and redistribute the list to all RRAC members.

Xueqing presented a template project description sheet, which include the project title, the person proposed the project, project background information, project objectives and outcomes, research approach, potential collaboration, project duration, estimated budget, ease of implementation, and other comments. Xueqing encouraged RRAC member to fill this sheet as much as they can when proposing a project. The Department staff will also help to fill the needed information.

In terms of the method for ranking the priority of proposed project, Xueqing suggested using a method proposed by Elke in the last meeting. Basically, the ranking process will include two steps. In the first step, RRAC member will provide their ranking and the Department staff will combine the rankings from all RRAC member to come up with a list of projects that rank the top 10 positions. The top ten projects will then be given to RRAC members for second round of ranking and the top five projects will be established as selected projects for funding.

Bob Himschoot: Bob stated that he would like to put the research on available funds to support onsite systems onto the project list.

Xueqing Gao: Xueqing thanked Bob for bringing up the issue and asked RRAC whether everybody wants to invite Tim Banks the program administrator of the DEP Clean Water Act State Revolving Fund to come and give a presentation to the RRAC regarding use of the State Revolving Fund in support of onsite system enhancement.

Motion by Eb Roeder and seconded by Bob Himschoot for the RRAC to invite Tim Banks to provide to RRAC a presentation on using the Clean Water Act State Revolving Fund to support onsite systems. All were in favor, none opposed, and the motion passed unanimously.

Rick Hicks: Rick asked whether there is a deadline to submit research projects and a deadline to prioritize the proposed project. Xueqing stated that he wanted to keep the current momentum and proposed to have another RRAC meeting in the second week of December. Xueqing mentioned that he had already sent to all RRAC members the link to a doodle poll to vote on the date and time for the next RRAC meeting. The potential dates for the next RRAC meeting are from December 11 through December 15, 2017.

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Eb Roeder: Eb suggested that the deadline for submitting the proposed projects be set at one week before Thanksgiving (November 17, 2017). This will give the Department staff some time to work on the project list. Then one week before the next RRAC meeting, the newly created project list will be shared with RRAC members for their consideration. Ed Barranco suggested that the project list can be sent to RRAC members together with the meeting notice. The final project priority can be discussed at next RRAC meeting.

Elke Ursin: Elke suggested that, (after receiving the proposed projects), RRAC members can think about their preferred ranking before coming to next meeting. This way, RRAC members will be ready to conduct the step one ranking at the beginning of the meeting. Eb agreed that this is an effective way of handling the ranking at the meeting.

Elke also suggested that the Department requires RRAC members to fill out the project description spreadsheet as much as they can. Eb also suggested that the Department staff should also do some editing on the submitted projects, for example, to compile projects that share similar ideas into one projects.

Elke suggested that we should not automatically go with the low hanging fruit in terms of selecting projects. We should think about bigger projects and good projects that need to get done. So, we can always think beyond the fiscal year and length of time. As for funding sources, that is something that everyone can keep their eye on and apply for it. The big hurdles of that are the budget authority and the cash. If we have an idea to think about an extensive project and we don't have the budget authority for it, it is better to think about it now than when you need it and do some planning to secure that authority.

12. Public Comment

Bob Himschoot: The Secretary of the Department has put together his budget. What portion of the budget do we have to commit to the onsite industry? Are you losing money for the upcoming fiscal year or are you able to increase the funding?

Elke Ursin: That is a good question. The \$5 surcharge is the pot of money that we have and it is dependent fully on new permits coming in. If we want to something that is beyond what is in the pot,

Eb Roeder inserted: The money would have to come from someplace that we have little control over other than applying for grants. You (Bob Himschoot) probably have a little broader question if the whole Onsite Sewage Program is getting more or less money, which is even more difficult to answer because we are largely fee based and fees are not quite up to covering all of us.

Carl Ludecke: Do we need funding right now? Do we have specific, ongoing septic tank observation and monitoring?

Eb Roeder: That is part of the reason to do the prioritization.

Elke Ursin: We always need funding. For example, if we want to keep the Inventory project up to date rather than just stay as a snapshot, we must find funding for that. I at this point take what I can

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find from multiple sources. But if there is source for that, that could be more secured. The project benefits more than just the onsite program because drinking water program can use it. DEP permitting program and BMAP program all benefit from it.

Carl Ludecke: Basically, you are working on the \$5 surcharge for it, right?

Elke Ursin: Not anymore because that is running so low. I am currently working with some CDC funds and some DEP/EPA funds.

Carl Ludecke: So, politically, everybody thinks that it is not a good time to request for additional fund in the form of raising the \$5 to \$10. It is never a good time to ask for that to the legislature.

Eb Roeder: I got the impression that, so far, we stayed within the statute. So, what the statute set, that is what it is.

There is a question from the audience on whose role it might be to make the suggestion (for the fee increase).

Elke Ursin: We have certain legislative budget request through legislative issues that we can propose and this (raising the surcharge fee) is not one of them for the near future. We obviously cannot lobby.

Bob Himschoot: Florida Home Builder Association needs to know this discussion because it is going to be your biggest opposition right of the back.

Carl Ludecke: I am not at this point even contemplating to do that.

Bob Himschoot: We need to know what is Department's budget for the onsite wastewater. If some of us need to boost a support, then we need to know about it before the session. They (the legislators) are in committee meetings right now. We have individual assistance from Darren Soto's committee. We need to know about Department's budget needs.

Ed Roeder: After this meeting, we can get some clarification on what the Department is thinking so that, next time, somebody can make a motion to make more specific recommendations.

13. Closing Comments, Next Meeting, and Adjournment

The next meeting will be scheduled in the second week of December. The Department has requested RRAC members to vote in a doodle poll for a specific date and time.

Motion by Carl Ludecke and seconded by Eb Roeder, for the RRAC to adjourn at 4:51 p.m. All were in favor, none opposed, and the motion passed unanimously.

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Summary of action items from meeting:

- Proposed research projects will be submitted to the Department by November 17, 2017.
- The Department will get clarification on the budget needs of the Onsite Sewage Program.
- A compiled project list and descriptions of proposed projects will be sent to RRAC members by December 4, 2017.
- The Department will finalize the date and time for the next RRAC meeting
- The Department will post all meeting materials used for the RRAC meeting on October 20, 2017 onto Department's RRAC web page.