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

Draft Minutes of the Web Conference Held on September 4, 2020

In attendance:

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

Attended members and alternates:

- Roxanne Groover (chair, member, Septic Tank Industry)
- Eberhard Roeder (member, Department of Health)
- Elke Ursin (alternate, Department of Health)
- Bob Himschoot (member, Home Building Industry)
- Craig Diamond (member, Environmental Interest Group)
- Bill Melton (vice chair, member, Consumer)
- William Brookman (alternate Consumer)
- Daniel Meeroff (alternate, State University System)
- Mark Tumeo (member, Professional Engineer)
- Clay Tappan (alternate, Professional Engineer)
- Thomas Baker (alternate, Real Estate Profession)
- Kevin Cannon (member, Local government)

Absent members and alternates:

- John Schert (member, State University System)
- Eric Rollings (member, Real Estate Profession)
- Geoff Luebkemann (member, Restaurant Industry)

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

- Ed Barranco
- Alan Willett
- Audra Burchfield
- Debby Tipton
- Kim Duffek
- Marcelo J. Blanco

Other attendees:

- Jim Tully (Affiliated entity not stated)
- Madelyn Christensen (Affiliated entity not stated)
- Melanie Smith (Environmental Management)

1. **Introductions** – Nine out of ten groups were present, representing a quorum. The meeting started at 1:30 pm. The agenda was presented, introductions were made, and some housekeeping issues were discussed.

2. **Updates on the Preparation of Onsite Sewage Program (OSP) Transfer Required by Senate Bill 712 and Future of the Research Review and Advisory Committee – Mr. Ed Barranco** provided an update on the OSP program transfer from DOH to Florida Department of Environmental Protection (DEP), which is required by Senate Bill 712 signed by the Governor on June 30, 2020. Mr. Barranco discussed:
   - **a.** Two reports required by the bill, including
     - **i.** A report due to the Governor and Florida Legislature on July 1, 2020 that provides key information regarding the OSP program, including the program costs and expenditures (about $22 million annually for both county health departments (CHD)

and the central office to cover payroll, operating capital outlay, vehicle acquisitions, contractual services, risk management, and other costs) and number of permits issued each year by the program (about 43,247 construction permits and 12,293 operating permits).

ii. A program transfer recommendation report due to the Governor and Legislature on December 31, 2020, which must include recommendations on all aspects of the transfer and address the continued role of CHD in regulating and managing the onsite sewage treatment and disposal systems (OSTDS).
Mr. Barranco indicated that Bureau of Environmental Health has contracted with the Florida Conflict Resolution Consortium at the Florida State University to facilitate the report writing and formed work groups for the central office and CHD. A policy committee is established to lead the process. A series of joint meetings between central office, CHD, and DEP have been scheduled between now and December to prepare the report. These are not public meetings. They are interagency meetings for the report writing.

b. Several other requirements specified by Senate Bill 712 that will become effective either on July 1, 2020 or after OSP is transferred to DEP, including:

i. Adding into Section 381.0065(7), Florida Statute (F.S.) the requirement to approve enhanced nutrient reducing OSTDS using a fast-track approval process of no longer than 6 months. The OSP decided to use the American National Standards Institute (ANSI) 245 systems approved by the National Sanitation Foundation (NSF) in the fast-track process. The fast track process was implemented on June 30, 2020. The NSF 245 system reviews take precedent. Requirements on aerobic treatment unit (ATU)'s alarm are streamlined and requirements to resolve conflicts between the operations and maintenance manual and the rule are simplified.

ii. Amending Section 381.0101, FS to remove the requirement that the OSTDS practitioners be certified under the Certified Environmental Health Professional (CEHP) program. This will impact the private soil evaluators operating under the CEHP in OSTDS. This requirement will also incur revisions to Chapter 64E-18, Florida Administrative Code (FAC) for certification and Chapter 64E-6 for CEHPs in the onsite sewage program. Mr. Barranco expected that this issue will be discussed during the recommendation report writing and how it will be executed remains to be seen when the final report is prepared.

iii. Repealing both the Technical Review and Advisory Panel (TRAP) and Research Review and Advisory Committee (RRAC). Mr. Barranco indicated that these requirements are changes to the law. If the recommendation report team decides that TRAP and RRAC are indispensable for the OSTDS program, the recommendation report may propose changes to the statute.

iv. By August 1, 2021, a temporary technical advisory committee will be activated. This committee will include 10 members. They will be responsible for proposing approaches to increase availability of enhanced nutrient reducing OSTDS and providing recommendations on OSTDS setback to surface water, groundwater, and wells. The committee is required to submit their recommendation report to the Governor and Legislature by January 1, 2022 and be disbanded on August 15, 2022.

v. OSTDS permitting will be done by DEP through an interagency agreement with CHD for at least five years. The interagency agreement will be developed between January 1, 2020 and June 30, 2020. Mr. Barranco expects that several options may be included in the recommendation report to help the execution of this requirement. But there are some aspects of this should be clarified first. For example, whether the Type II transfer allows all OSP program staff be transferred to DEP and then DEP transfers some of them back to DOH, or some sort of hybrid approaches.

vi. Transferring continued education for Sections 381.0101 and 489.554, F.S., related to OSTDS to DEP. Mr. Barranco indicated that this requirement will be discussed during the recommendation report writing because the requirement of the CEHP certification for OSTDS practitioners has been removed, the required continued education for CEHP certification no longer exists. A recommendation can be included in the recommendation report for legislators to correct the requirement.
vii. Transferring contractor enforcement to DEP.

Chair Roxanne Groover asked who will make the decision on who will enter the CHD workgroup for the recommendation report preparation. Are people participating in the workgroup those who conduct the OSTDS field work or people from the management and administration who do not have the programmatic knowledge of OSTDS regulation and management.

Mr. Barranco indicated that the CHD workgroup is composed of representatives recommended by the County Health Systems, which is the division where the CHD management occurs, and representatives from small, medium, and large counties who are managing the OSTDS program and have direct programmatic experience. There are six people from CHD who are directly involved in the OSTDS program. The representatives of the central office workgroup are assigned by the DOH Bureau of Environmental Health and by DEP for their representation.

Chair Groover asked whether the general public can know who are in these workgroups.

Mr. Barranco answered yes. Whatever products generated by these workgroups will be made available to the general public once they become final products. These include the initial assessment and summary reports that include the list of people involved.

Mr. Bob Himschoot asked whether the employee cost number presented by Mr. Barranco includes contribution from local counties to the health department.

Mr. Barranco indicated that the figure presented is a cost. It is not a revenue. Out of the about $21 million total cost, about $20 million are from CHD. About 61% of the $20 million is supported by state fees. When county fees are added, the revenue goes up to about 84-85% of the total cost. However, the county fee is not a standard across all counties. The remaining 15% comes from the general revenue and other sources. The state fees have not paid for the program. This will become an operation issue for DEP who will receive the OSP. The state fees will not change on July 1, 2021 because there are no rules for those state fees to change. About 50% of those fees are maxed out based on statutes. So, the statutes must be modified to give the authority to raise the fees. What will happen to the internal agreements between CHDs and local counties regarding contributions from local counties will also be part of the discussions to be included in the recommendation report.

Mr. Himschoot asked which program in DEP will assume the role to manage the OSTDS program.

Mr. Barranco indicated that no specifics have been decided. Mr. Barranco believes that this will be one of the key issues being discussed first during the joint meetings because many other issues are evolved around the organization structure of the transferred program.

Mr. Himschoot asked, since Senate Bill 712 eliminates the CEHP certification for the OSTDS program, whether master septic contractors and septic contractors' ability to design and inspect systems and conduct soil analyses will be impacted.

Mr. Barranco indicated that none of the capabilities of master septic contractors and septic contractors allowed by the current rule will be impacted. The master contractors will continue to do

some of the designs that are not prohibited by law and conduct site evaluation and system inspection. The pluming exception is not impacted. The registered septic contractors will be able to do site evaluation for repair systems only. The only difference is that the CEHP certification for onsite program will be repealed and after July 1, 2021, there will be no such certification. So, the parts of the onsite system rule that specify the work that can only be done by CEHP certified people will need to be revised because CEHP will no longer be a category. It is not clear whether this is done by design or by a mistake that can be fixed. The impact of this requirement will depend on how the transfer will be structured in the interagency agreement. If all OSTDS program staff (including CHD staff) go to DEP, DEP will do all the work. However, if the transfer involves CHD staff being returned to DOH, DOH will have to make the call on how to train OSTDS staff to do the work even if there is no CEHP certification.

Mr. Himschoot asked how removal of the CEHP certification will impact the continued education from the organizations like the Florida Onsite Wastewater Association (FOWA).

Mr. Barranco said the continued education for contractors will go to DEP. DEP will administer the continued education for the OSTDS program, being responsible for approving the contractors and approving the courses. The registered contractors will continue to need the hours. But the continued education will not generate hours required for the CEHP certificate because the certification will not exist for onsite program. The CEHP program for the OSTDS program will be a discussion topic for the next three months to come.

Mr. Clay Tappan asked whether the surcharge of the application fee for the research will continue to be collected when RRAC is repealed. He also asked how the ten-member recommendation group will be created. Will the stakeholder groups currently represented on TRAP and RRAC remain in power to recommend the members of the temporary Technical Advisory Committee or those members will be legislative appointees?

Mr. Barranco said the application surcharge for the research fee will continue to be charged unless there will be rule change, which is not very likely to happen between now and July 1, 2021. DEP will own the jurisdiction of the onsite program after that. Chapter 64E-6, FAC will continue to be the permitting regulation under DEP's direction. The rule may be one day become Chapter 62 series under the DEP format and, in doing that, the whole chapter may be opened for changes. In the interim, the $5 surcharge will continue to be collected for the research and it may go into an account that DEP manages. Mr. Barranco expects that, since the Type II transfer will transfer everything related to the program, the revenue account and expenses account of the program will also be transferred to DEP. DEP will have to do something with the surcharge which, by law, should be used for research. He concluded that, while the RRAC will be repealed, the $5 surcharge will remain.

Dr. Eb Roeder answered the question regarding the composition of the temporary Technical Advisory Committee. Senate Bill 712 specifies that, by August 1, 2021, the committee will be appointed by DEP in consultation with DOH. The committee will be composed of no more than 10 members, including a professional engineer, a septic contractor, two representatives from the home building industry, a representative from the real estate industry, a representative from the OSTDS industry, a representative from local government, two representatives from environmental community, a representative from of the scientific and technical community who has substantial expertise in the areas of the fate and transport of water pollutants, toxicology, epidemiology, geology, biology, or environmental science.

2. **Updates on Research Projects Prioritized by RRAC in Late 2017** – **Xueqing Gao** provided a brief summary. These projects include:

a. Continuation of the Florida Water Management Inventory (FLWMI).
b. Continued monitoring on passive nitrogen-reducing biofilter systems.
c. Investigating the funding resources for OSTDS in Florida and use of the Clean Water State Revolving Fund (CWSRF) to assist OSTDS activities.
d. OSTDS environmental and health effects
e. Estimation of frequency of non-conformance OSTDS in Florida.

3. **Update on the FLWMI Project** – **Ms. Elke Ursin** provided a brief update on current status of the FLWMI project:
    a. There hasn't been a major funding contributor to the FLWMI project for a while. So, the FLWMI has been leveraging many other funds. In addition, this project is not tied to any rules or statutes, so it will not be part of the program transfer. This project will continue in DOH unless DOH is told otherwise.
    b. FLWMI is a state-wide electronic geographic database map of Florida that shows, for every property in the state, whether the source of drinking water is from a public drinking water source or a private drinking water well and where the wastewater goes, including the central sewer systems regulated by DEP and septic system on site. Because more data become available through time and onsite systems are converted to sewer systems, the inventory data only represent a snapshot in time.
    c. One of the accomplishments that the project team is working on is to update the database schema for FLWMI. This is the skeleton of the information captured in the inventory. The project team has been refining the land use codes obtained from the Florida Department Revenue (DOR) as part of the property appraisal data that sent to DOR every year. The land use code refinement will help make the wastewater and drinking water methods assignment to each property more accurate.
    d. Calculations regarding whether a property is built or not built is also refined. Efforts have also been made to tie each parcel to specific domestic wastewater and public water systems. These systems have their unique identifier and permit numbers from DEP. The FLWMI team is working with the Environmental Health Tracking Team. Tying properties to specific public water systems will help identify, in case of a drinking water pollution event, which properties will be impacted.
    e. Some new attributes are added into the FLWMI database to make it easier to connect FLWMI with the information in the Environmental Health Database (EHD) through the OSTDS permit number. EHD is now being improved and the new system hopefully will become available at the end of 2020. Including the OSTDS permit number as a new feature in the FLWMI will help incorporate FLWMI with EHD to facilitate the permit information retrieval from EHD.
    f. All EHD data records have been re-geocoded. The geocoding method is also refined. This will help make the FLWMI property location more accurately represented in FLWMI.
    g. Data from other sources, such as well surveillance program and private well programs from the water management districts and counties are also being incorporated into the updated FLWMI dataset.
    h. The challenges for the FLWMI project are:
        i. Insufficient funding. The project currently only has a half-time temporary employee who has the GIS expertise. The staff has a lot of historical knowledge of the project, but it is still not enough to run the whole program. The project team used to have three full-time employees. The project team has applied for funding from the Centers for Disease Control for the Environmental Health Capacity Building Grant and were awarded the grant to continue the FLWMI project. The project will receive about $100,000 for the next five years to fund the GIS expert as well as a staff to process the collected data.

ii. Another challenge is that, since the utilities' participation in the FLWMI project is not a requirement, there are some utilities that have not provided any data to the project team. The communication and follow-up with these utilities and processing the data being collected are time consuming. The new staff to be hired for data processing will help with these processes.
iii. The accuracy of the address data being provided is challenging and is a critical aspect of the accuracy of the geocoding process.
iv. COVID-19 presented a lot of challenges to the work schedule of the program partners and impacted the project team's efforts for system update.

Ms. Ursin summarized that, although the project has not achieved as much as what the team achieved when the project had three full-time employees, the FLWMI project is continuing.

Chair Groover congratulated Ms. Ursin for the CDC funding. She said that she used the FLWMI database very often and always encourages other people to use the database. She mentioned that, when she met with the county commissioner of the Polk County, they obtained key information from the data for updating the 20-year old county ordinance. The database is often used by people other than the OSTDS professionals to gain information.

Ms. Ursin added to Chair Groover's comment on how people outside the OSTDS field use this database. She mentioned a meeting with the United States Geological Survey who was working on identifying landscape contaminate sources to determine biological endpoint. They were very interested in knowing where the private drinking water wells and septic systems are located. They were amazed that the FLWMI database provides information at the parcel level while USGS is only working on the census track data. No other states in the United States has as detailed information as Florida in inventorying the property drinking water and wastewater information.

4. **Update on the Status of the Other Research Project Prioritized by the RRAC Committee** – **Xueqing Gao.** Xueqing Gao provided updates on the status of the other three high priority research project ranked by RRAC in late 2017.
    a. Continued monitoring on passive nitrogen reducing biofilter systems
        i. Seven passive nitrogen-reducing media systems were installed during the Florida Onsite Sewage Nitrogen Reducing Strategy (FOSNRS) study period (2012 through 2014). Monitoring results from the study showed 65% to 98% nitrogen-reducing efficiency from these systems. One recommendation from the FOSNRS study is to continue monitoring these systems to evaluate their long-term performance.
        ii. OSP resumed monitoring on these systems in April 2017. Only four of the seven systems still remain in operation, including one in-ground system (in Marion County), two in-tank system (in Seminole County) and one hybrid system (in Seminole County). By December 2019, OSP completed all eight scheduled sampling events.
        iii. Results from the continued monitoring showed that, more than six years after these passive nitrogen-reducing media systems were constructed, they are still providing more than 85% removal of nitrogen from the septic tank effluent. The system specific nitrogen-removal efficiency is largely comparable when they were first constructed for in-tank and hybrid systems and higher for the in-ground system.
        iv. Elevated total nitrogen concentrations were observed occasionally with the samples collected from the final system effluent (sulfur denitrification media chamber) compared to the samples from the bottom of the lignocellulose media. Data and system inspection suggested that this might have been caused by overflow of the wastewater untreated by the lignocellulose media from the top of the baffle wall that separates the lignocellulos media from the sulfur media into the sulfur media

chamber, suggesting that the structure of the denitrification media tank design can be improved.

v. The lignocellulose media in one in-tank system showed significant decay. About one-third of the media is decomposed. The project team is in the process of recruiting a local septic contractor to help replace the lignocellulose media from the system.

vi. Drainfield subsidence was observed with the in-ground system. Based on the elevation survey data collected at the existing grade and at the bottom of several clean-out pipes (close to the bottom of the drainfield), the grade subsidence is significantly larger than the subsidence of the bottom of the drainfield, suggesting that the observed subsidence might have been caused more by the stormwater erosion of the drainfield cover layer than by the decay of the lignocellulose media.

vii. All four systems remained low in maintenance needs during the period of continued monitoring project. The major maintenance activities were routine cleaning of the septic tank outlet filter, which is needed for conventional onsite systems too and not an extra maintenance need specific to the nitrogen-reducing system. When system includes a pump for either lift dosing, drip irrigation, or low-pressure dosing, the monthly electricity costs remained less than $3.

viii. The continued monitoring project has been funded by the 319(h) Grant. The project is scheduled to be completed in September 2021. The project team has generated a project report describing the samples being collected, sampling results, and interpretation of the sampling result. In early 2020, OSP was awarded the federal multipurpose grant to continue monitoring the two in-tank systems for four more times. One of the goals to extend monitoring on in-tank systems is to evaluate the system performance and change of hydraulic conductivity in the denitrification media tank after the lignocellulos media is replaced.

b. Funding Sources for OSTDS activities

i. The goal of the investigation is to identify available funding sources for OSTDS remediation and upgrade in Florida.

ii. Six funding sources that can be used to fund OSTDS related projects include:

a) Springs Restoration Fund: The funding is appropriated by Florida Legislature, $50 million every year for 20 years since 2016, available to point source and nonpoint source nitrogen loading control projects, including nitrogen loading control projects from the onsite systems. Xueqing mentioned that, previously, Leon County and Wakulla County each received $750,000 spring protection grant to upgrade existing conventional onsite systems to nitrogen-reducing systems. The total $1.5 million eventually all went to Leon County for a nitrogen-reducing onsite system upgrade pilot project. The county will use the money to convert some conventional onsite systems to in-ground nitrogen-reducing biofilter systems (INRB).

The Spring Restoration Fund, however, is only available for projects in basins of nitrogen-impaired Outstanding Florida Springs (OFS) (Leon County is in the spring basin of the nitrogen-impaired Wakulla Spring), not across the State. In order for the OSTDS repair or upgrade to be funded, OSTDS systems need to be included in projects. Individual onsite system repair and upgrade is not eligible for the funding.

b) Septic Upgrade Incentive Program: This is an onsite system specific fund generated by DEP in response to the requirement of Section 373.807, FS, which requires funding to be provided to remediate the existing onsite systems located in the priority focus area (PFA) of the nitrogen-impaired OFS. For fiscal years 2018-2019 and 2019-2020, DEP provided about $4

million and $10 million, respectively, to assist upgrading existing conventional systems to nitrogen reducing systems. The grant provides $10,000 to offset the construction cost of each nitrogen-reducing systems being installed.

Recently, DEP started discussions with the nine counties located in the spring basins of nutrient-impaired OFS, hoping that these counties will take over the management of the fund. The fund can be used for these counties to conduct the wastewater management feasibility studies and, based on the project prioritization from the feasibility study, to fund either the sewer connection projects or onsite system upgrade projects. DEP is also discussing with these counties on the possibility of earmarking certain portion of the funding specifically for onsite system upgrade.

This funding is only available for systems located in PFA of impaired OFS, not available to onsite systems that need repair but located outside the nine spring counties.

c) 319 (h) Grant: This is a water resource protection fund that specifically targeting nonpoint pollutant source control. This is a federal fund administered by DEP. The total available funding is about $5 million to $6 million each year. In order for OSTDS activities to be funded, they have to be included in projects. Repair for individual onsite system is not eligible for the grant. The project team consulted DEP previously to explore the possibility of allowing counties to estimate the possible funding need of repairing onsite systems based on the number of onsite systems repairs happened in previous years so that the counties can apply for the 319(h) Grant to support the OSTDS repair. DEP did not consider a project putting together this way as an eligible project for 319(h) grants.

d) Clean Water State Revolving Fund (CWSRF): This is a low-interest loan fund capitalized by the United States Environmental Protection Agency (EPA) for each state with certain formula, combining with the match fund from each state and the loan repayment and earned interest to fund the water resource protection and conservation projects. In Florida, the available loan funding is about $250 million to $260 million on the annual basis. This is so far the largest water resource protection fund in the state. Most of this fund has been used by the centralized wastewater projects in Florida. Theoretically, repair and upgrade of individual onsite wastewater systems are eligible for the CWSRF. But a funding disbursal mechanism has not been established in the state.

e) Single Family Housing Repair-Loan and Grant: This funding source is managed by the United States Department of Agriculture. The agency has branch office in each state and does not rely on each state to manage this fund. The fund primarily targets the low-income families living in the rural area for their house repair. Onsite system repair is only one of house repair projects eligible for the funding. On the annual basis, this fund has about $700,000 for grant and $800,000 for loan.

f) Florida Small Cities Community Development Block Grant Program: This is a fund from the United States Department of Housing and Urban Development. The Florida Department of Economic Opportunity administers the fund in the State of Florida. This fund is provided to low-income families living in small cities and rural communities (by definition, small cities and rural communities

are cities with fewer than 50,000 people and counties with fewer than 200,000 people). Homeowners must meet certain income criteria to be eligible for this fund. This fund covers many aspects of the housing and onsite system repair is only a small percentage of the funding coverage. On the annual basis, this funding only offers $18 million to $26 million.

iii. Most of these funding sources have limited funding amount and very restrictive funding eligibility. Most of these founds are not available for individual OSTDS repair and upgrade. OSTDS upgrade must be included in a project in order to be funded, which is not practical because onsite system failures can happen randomly in space and time.

iv. Clean Water State Revolving Fund (CWSRF) is the largest water environment protection related founding source in Florida. It is a low-interest loan fund. Theoretically, the loan fund can be made available to individual OSTDS owner. But, no mechanism has been established in Florida to distribute the fund.

v. The project team conducted a comprehensive internet research and found:
    a) Based on a paper published at the 2017 National Onsite Wastewater Recycling Association (NOWRA), 27 states in US used the CWSRF to assist OSTDS related activities by 2017 (Lowenstein, 2017). The OSP project team investigated the CWSRF websites of all 50 states and identified 18 states that established designated onsite system funding program using CWSRF.
    b) Three major approaches are used to distribute the low-interest loan to individual homeowners, including direct funding (used in Delaware and Utah, effective when the population needs OSTDS funding is relative small), linked deposit (used in Ohio, Iowa, Maryland, and Nebraska, attractive if the overall market interest rate is high) and pass-through funding (most states having the designed OSTDS funding program based on CWSRF use this approach, require forming effective partnership between the funding management entity and either local communities, nonprofit organizations, or commercial lenders to dispense the fund and collect loan repayment). In many cases, the state funding administrative entity will require local governments who desire to participate in the funding program partnership to generate a septic system inspection or management plan so that clear responsibilities of all parties, eligibilities of the funding, and repayment collection mechanisms can be established.
    c) Establishment of partnership among different state agencies and between the state funding administration agencies and local government, nonprofit organizations, and commercial lenders is critical in loan dispense, management, and repayment collection.
    d) Several approaches are used to provide further assistance to low income homeowners including zero percent interest loan, principal forgiveness, and supplementing the loan program with grant support.
    e) To address the demand and supply issue of the fund, many states use the CWSRF as a security to issue bond to supplement CWSRF.
    f) Florida CWSRF received to date $1.47 billion and made over $4.6 billion in loans that covers mostly sewer and wastewater treatment plant projects. CWSRF has not being used in support of onsite wastewater system related project. More efforts are needed to establish effective partnership between the DEP CWSRF program and local governments. Communication with other state program such as State Housing Incentive Partnership (SHIP) program and the Community Development Block Grant program may incorporate funding sources and management expertise to make funding individual OSTDS repair and upgrade efficient and widely available.

c. OSTDS environmental and health effects – a preliminary case study data review
    i. Numerous studies evaluated OSTDS environmental effects by analyzing groundwater impacts from individual OSTDS system. Studies on OSTDS regional impact are less common.
    ii. This case analysis examined the before-and-after a septic elimination project to evaluate the OSTDS impact on the regional water quality condition. A similar case study was conducted previously by evaluating the change of water quality condition before and after a sewer connection project in Town of Suwannee. The period of record used for the Town of Suwannee study was relatively short.
    iii. The septic to sewer conversion case examined in this study took place in the Cape Coral Utility Southwest 6 and 7 area. Project was constructed between October 2013 and April 2015.
    iv. Long-term water quality stations located
        a) inside the project area
        b) outside the project area that are not impacted by the project
        c) outside the project area but hydraulically impacted by the project
        d) in Caloosahatchee River and estuary

        were selected and total nitrogen (TN) data for these stations were retrieved from the DEP Impaired Waters Rule database.
    v. Temporal trends of the TN concentrations from these stations were examined.
    vi. The TN concentrations for the period of January 2007 through April 2015 (the pre-project period) and the period from May 2015 through May 2019 (the after-project period) were aggregated separately. The Kruskal-Wallis test was used to evaluate whether the aggregated median concentrations from these two periods were significantly different for all stations.
    vii. Results from the Kruskal-Wallis tests showed that:
        a) Median TN concentrations in the after-project period (May 2015 through May 2019) were significantly lower than the median TN concentrations in the before-project period (2007 through April 2015) for all stations located inside the project area.
        b) Median TN concentrations in the after-project period (May 2015 through May 2019) were significantly lower than the median TN concentrations in the before-project period (2007 through April 2015) for most stations located outside the project area but hydraulically impacted by the project. The two stations showed no significant difference are located at the mouth of the canals discharging into the Caloosahatchee River, which may be impacted by the tidal dilution from the river.
        c) Median TN concentrations in the after-project period (May 2015 through May 2019) and before-project period (2007 through April 2015) showed no significant difference for stations located outside the project area that are not hydraulically impacted by the project, suggesting that the significant reduction observed in a) and b) were not caused by the change of local weather condition.
        d) Median TN concentrations in the after-project period (May 2015 through May 2019) and before-project period (2007 through April 2015) showed no significant difference for most stations located in the Caloosahatchee River and estuary. Some water quality stations in the Caloosahatchee River even showed higher TN concentration after the project period, suggesting that the observed TN reduction in a) and b) were not caused by the dilution of the river water.
    viii. Results from this preliminary data analyses suggest positive impact of the sewer connection project on TN concentrations in canals impacted by the project. However,

the project did not see any significant positive impact on the TN concentrations in the River. This observation is consistent with the general TN source loading distribution in the Caloosahatchee River that the vast majority of the TN loadings are from Lake Okeechobee and watershed areas upstream of the City of Cape Coral.

ix. It should be noted that this result is preliminary. Impact from confounding factors such as the TN load reduction from stormwater TN loading control is unknown and worth further investigation.

x. OSP plans to hire a provider to help conduct a more comprehensive analysis on the regional water quality impact of OSTDS. A draft request for quote document has been prepared and is now pending for review.

d. **Xueqing Gao** summarized the next steps for the OSP research projects:

i. Apply for funding to update FLWMI

ii. Replace the lignocellulose media in one in-tank passive nitrogen-reducing media system and conduct four more monitoring events on the two in-tank systems

iii. Identify sites and monitor in-ground nitrogen-reducing biofilter (INRB) to evaluate performance and reliability

iv. Solicit provider to implement additional case studies on OSTDS environmental and health effects

v. Apply for funding to monitor nitrogen-reducing aerobic treatment systems that meet the national sanitation foundation (NSF) standard 245

vi. Update research program website

Mr. Tappan asked what caused some of the homeowners participated in the FOSNRS system test stopped using the FOSNRS systems. Whether was it because they didn't like to pay the electricity bill or because they did not like the monitoring results?

Xueqing Gao said that Dr. Eb Roeder has more historical knowledge on why some of the system owners quit. Xueqing mentioned that one system located in Hillsborough County switched the owner shortly after the continued monitoring project started. The new owner was not interested in participating in the monitoring project.

Dr. Roeder mentioned that the two systems located in the Wakulla County were at the same location. One system was built and then was replaced by another system with similar components. But the system had some operation issues such as wastewater backup. In addition, the electricity bill and the reluctance of the homeowner to allow project staff to visit the system on the routine basis might have all contributed to the decision to stop the system.

Commissioner Kevin Cannon asked whether the project team conducted a tree species analysis on the lignocellulose media used for the in-tank system.

Xueqing Gao said that the project team hasn't done any analyses on the impact of different type of tree species on the life expectance of the treatment system. Xueqing mentioned that the project team did a literature research last year on this subject and found that, as long as the media were from tree materials, the life expectances are not much different. If sedge or straw are used, the dentification rate will be high, but the system life expectance would be low.

Commissioner Cannon suggested that cypress folding typically has much longer useful life than other type of wood. **Commissioner Cannon** suggested that the project team contact the Institute of Food and Agricultural Sciences for the more appropriate wood type to be used as the denitrification media.

Commissioner Cannon also asked the suitability of the in-ground nitrogen-reducing system in different parts of the state. Commissioner Cannon indicated that in many parts of the State, such as in south

Florida and areas along the St. Johns River, the seasonal high-water table can be high. How does the high water table influence the function of the inground nitrogen-reducing system? Whether were piezometers used with the inground nitrogen-reducing system to study the effect of water table.

Xueqing Gao stated that, for the in-ground nitrogen-reducing system located in the Marion County, no piezometer measurements were taken. However, based on observation of drainfield ponding from the observation ports installed at the bottom of the lignocellulose media, high water table is not an issue for the system. Xueqing agreed with Commissioner Cannon's concern on the influence of high water table. Xueqing indicated that the OSP has been making efforts to inform the general public that the in-ground nitrogen-reducing system is not a silver bullet solution for onsite wastewater treatment everywhere in the state. The system is designed for areas with relatively low ground water table so that effective nitrification in the unsaturated sandy media can be allowed to happen. The rule requires at least six inches separation between the bottom of the lignocellulose media and the seasonal high water table.

Mr. Himschoot asked whether he can get a copy of the Cape Coral study for evaluating the regional water quality impact from onsite wastewater system.

Xueqing Gao responded that the Cape Coral study is still at its beginning stage. The project team has not prepared a formal written document.

Mr. Himschoot asked whom the project team is working with in the Lee County on the project.

Xueqing Gao said the project team contacted Holly Goyette from the City of Cape Coral to obtain information regarding the utility extension project for the Southwest 6 & 7 area. The project team also had a discussion with Sara Davis, who is an environmental administrator with the Basin Management Action Plan (BMAP) Program. She handles the Caloosahatchee BMAP and promised to send to the project team more information and data about the sewer connection project. If Mr. Himschoot has other local contact, the project team would love to have that.

Mr. Himschoot suggest that the project team contact Roland Ottolini from the Lee County Natural Resources.

Mr. Tappan indicated that a significant former mine was dewatered into the Cape Coral stormwater ditch system coming in from the north of Cape Coral. There is a change of hydrology during the period that the project conducted the data analysis and a good chance that all the overland swale travel picked up other nitrogen sources such as animal waste and plant matter. Mr. Tappan suggested to contact the Consumptive Use Permitting group of the South Florida Water Management District for more details about this project.

Mr. Barranco indicated that he will retire at the end of the year. He wanted to thank all the committee members for their participation and what they have been doing for the program. Both Mr. Barranco and Chair Groover believed that RRAC should not go away without more discussions. Mr. Barranco would offer his recommendation on RRAC in the Recommendation Report.

Motion by Mr. Himschoot and seconded by Chair Groover, for the RRAC to adjourn at 3:30 p.m. None opposed, and the motion passed.

The meeting adjourned at 3:30 pm.