FLORIDA DEPARTMENT OF HEALTH

Rick Scott
Governor

March 2, 2011

Mr. Damann Anderson
Hazen and Sawyer
10002 Princess Palm Avenue
Registry One Building, Suite 200
Tampa, Florida 33619

Dear Mr. Anderson:

This letter authorizes you to proceed with the following tasks in accordance with the current executed contract CORCL for Florida Onsite Sewage Nitrogen Reduction Strategies Study:

Shift funds from Task B.16 Change-order Allowance in the amount of $3,718.05 to provide one deliverable of Task E.4 RRAC or TRAP Meeting Attendance for the March 24, 2011 RRAC meeting.

If you have questions, please contact me at (850) 245-4070 x2708 or by email at Elke_Ursin@doh.state.fl.us.

Sincerely,

Elke Ursin
Environmental Health Program Consultant

EU/ contract file

Bureau of Onsite Sewage Programs
4052 Bald Cypress Way, Bin A08 • Tallahassee, Florida 32399-1701
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Florida Department of Health
Research Review and Advisory Committee for the Bureau of Onsite Sewage Programs

Final Minutes of the Meeting held at the Betty Easley Conference Center, Tallahassee, FL
March 24, 2011

In attendance:

- **Committee Members and Alternates**:
  In person:
  - Bob Himschoot (member, Septic Tank Industry)
  - Carl Ludecke (vice-chairman, member, Home Building Industry)
  - Bill Melton (member, Consumer)
  - Eanix Poole (alternate, Consumer)
  - Patti Sanzone (member, Environmental Interest Group)

  Via teleconference:
  - Quentin (Bob) Beitel (alternate, Real Estate Profession)
  - Kim Dove (member, Division of Environmental Health)
  - Tom Miller (member, Local Government)
  - John Schert (member, State University System)
  - Clay Tappan (chairman, member, Professional Engineer)
  - David Richardson (alternate, Local Government)

  Absent members and alternates:
  - Sam Averett (alternate, Septic Tank Industry)
  - John Dryden (alternate, State University System)
  - Tom Higginbotham (alternate, Division of Environmental Health)
  - Kriss Kaye (alternate, Home Building Industry)
  - Mike McInarnay (alternate, Septic Tank Industry)
  - Jim Peters (alternate, Professional Engineer)
  - Restaurant Industry (no appointed member/alternate)
- **Visitors**:
  In person:
  - Robert Arredondo (DCA)
  - Keith Hetrick (Broad & Cassel for FHBA)
  - Richard Hicks (DEP)
  - Sean McGuigan (Presby Env,)
  - Steve Meints (Clearstream)
  - Dave Presby (Presby Env.)
  - Lee Rashkin (Presby Env.)
  - Shanin Speas-Frost (DEP)

  Via teleconference:
  - Damann Anderson (Hazen and Sawyer)
  - Kim Dinkins (Marion County)
  - Gina Herron
  - Katherine Lowe (CSM)
  - John McCray (CSM)
  - Maria Pecoraro (Rep. Nelson)
  - Andrea Samson
  - Daniel Smith (AET)
  - Richard Spaulding (DOH)
  - Pam Tucker
- **Department of Health (DOH), Bureau of Onsite Sewage Programs**:
  In person:
  - Eberhard Roeder, Professional Engineer
  - Elke Ursin, Environmental Health Program Consultant

  Via teleconference:
  - Kim Duffek, Environmental Health Program Consultant
  - Paul Booher, Professional Engineer

1. **Introductions** – Nine out of ten groups were present, representing a quorum. Missing the Restaurant Industry. Chairman Tappan called the meeting to order at 9:35 a.m. Introductions were made and some housekeeping issues were discussed.

2. **Changes to RRAC Composition** – Every year around December and January terms expire. The expirations are staggered so that each year 3-4 groups need to be renewed. New appointees include Tom Miller and David Richardson representing local government. Reappointments are Bill Melton and Eanix Poole representing consumers, and John Schert and John Dryden representing the state university system. Leaving the committee is Pam Tucker, Jim Oskowis, and Vince Seibold. The Florida Restaurant Association failed to name replacements for the committee and the two positions remain vacant. Clay Tappan pointed out that there is no replacement right now for the Real Estate Industry member position. Elke Ursin stated that that is correct, and that the alternate, Quentin Beitel, would be the voting member until a new member is appointed. Pam Tucker stated that she is still interested in keeping up with what is happening, but that she could not make another commitment to serve on the panel. Quentin Beitel acknowledged the great work that Pam has done and that she has inspired a lot of people in their industry throughout the state, and there was general consensus from DOH staff and the RRAC that she will be missed.

3. **Review of Previous Meeting Minutes** – The minutes of December 10, 2010 were reviewed.

   Motion by Patti Sanzone and seconded by Bob Himschoot to approve the minutes as presented. All were in favor with none opposed and the motion passed unanimously.

4. **Nitrogen Study**

   a) **Comments on deliverables and next steps** – Elke Ursin presented the overall purpose of the study and presented several updates to each of the tasks.

   Damann Anderson presented on a concern that Representative Nelson had regarding the definition of passive. Representative Nelson expressed concerns regarding the use of pumps for all passive nitrogen reduction systems. Damann stated that pumps would not be required for all these systems, that the definition states there shall be no more than one pump, so if topography allows for it the pump could be eliminated from the design. Damann proposed looking at a gravity system at a home site with available topography in Task B to satisfy these concerns. Bill Melton stated that after reading the Wakulla study report, he would rather not see any pumps at all because of issues that occur if they don't work. Carl Ludecke stated that in some situations you have to have a pump. He said that the systems that are being turned off in the Wakulla study report are the ones with aerators and with gravity flow through the system so when the aerator is turned off the sewage still moves through the system. Damann stated that allowing for the one pump is a similar concept to what is currently required for mound systems throughout the state. Clay Tappan stated that when the original definition of passive was written, including the option for no more than one pump to move effluent was to include systems that would need a pump based on site conditions. Having a pump was not a requirement, but was allowed, if necessary, based on site conditions. There is a difference between pumps required for operational improvement (part of an advanced system, recirculation, etc.) and functional necessity (lift dosing to meet site restrictions). Maria Pecoraro asked if these type of systems would require a generator if there is no power due to a natural disaster and Damann stated that this would be no different than any of the other systems out there currently with a pump. Carl Ludecke stated that the pump does not run

constantly, it only runs as the demand is needed. If the power goes out, the tanks and drainfields are built with extra capacity to handle some of the flow. For systems out in rural areas where there is a well for drinking water, when the power goes out the well does not work so there is no flow generated. Damann stated that they are working on developing a system and whether or not a pump is required is a different issue. Maria stated that Representative Nelson's concerns are regarding existing septic systems that have no electricity that might now require electricity if a pump is required. Damann stated that the only places where a pump would be required would be places where a pump would be required anyway for a septic system due to topography or water table setback issues. There were some questions regarding how many systems have a pump and Elke Ursin will provide this information to the RRAC email distribution list shortly after the meeting. Bill Melton asked Damann how much drop in elevation is needed for the system they are working on and Damann stated approximately 6-8 feet.

Quentin Beitel made a motion, seconded by Bill Melton, to require one of the field tests to be a gravity system. All were in favor, none opposed, and the motion passed.

Quentin Beitel asked if there is anything that can be done to clean up the definition of passive. Carl Ludecke said that passive is non-mechanical and there is an exception to allow one pump to move effluent. Eberhard Roeder stated that back when the definition was originally made, mechanical aeration pumps were to be excluded and a pump to allow for distribution and head was allowed. Damann stated that the idea was to have a system that is no more complicated than the systems around today. Maria stated that this definition was crafted 5 years ago during a RRAC meeting. Maria stated there is an issue with nitrogen, but that there needs to be an understanding of what homeowners are going to be able to do in a practical sense. Maria stated some of Representative Nelson's other concerns were that there seemed to be a lack of coordination with other studies going on and that there was not enough research done on different drainfield materials or other media. Clay stated that regarding the issue with lack of coordination, RRAC has had two or three presentations from the University of Central Florida regarding their system and wanted to avoid doing extensive testing on existing products to avoid giving someone a free ride in the application process. Damann stated that this study has researched all sorts of media alternatives, in any number of configurations, and several are being tested at the testing center. Pam Tucker stated that homeowners think that a passive system has no mechanics. Homeowners are fearful of rules that require mechanics. Because the definition is not clear, there is a gap in understanding. Maria agreed with Pam's comments and stated that homeowners are coming to them with these concerns. Keith Hetrick stated that there will be no rulemaking until the study is done. These systems are not complex mechanical systems; these are cost-effective systems for homeowners that do not have a high level of maintenance. Elke Ursin stated that Gerald Briggs had told her that the current draft of the house and senate budget includes a line item for the Nitrogen Reduction Strategies study in the amount of $2,725,000. Rick Hicks stated that there might be a possibility that the definition of passive as it is right now might restrict the funding for this project. Maria stated that Representative Nelson has a concern over the inclusion of pumps on a passive system. He understands the topography and water table restrictions but that a pump cannot be the first option. If the site can utilize gravity flow then that should be the default. Eberhard Roeder stated that this definition has been used all throughout this project and if this definition is changed it may not be consistent with the contract and the competitive instrument used to hire the contractor. Maria stated that the study needs to include non-mechanical systems. Carl Ludecke stated that the study does include this. Damann stated that a passive system is a non-mechanical treatment system

however one pump is allowed, but not required, to get the effluent to the treatment system. Maria's concerns were that rulemaking could require that all systems need a pump. Damann stated that the pump would be allowed, but not required. There seemed to be a general consensus that a passive system does not require a pump. Patti Sanzone stated that what this study is looking at is not a conventional system. A conventional system does not do much for nitrogen removal. Damann is trying to get a system to reduce nitrogen that is cost-effective. Damann stated that a mound system with a pump achieves better treatment than a gravity-fed mound system. Patti stated that the study will give us the answers, at this point we do not know what they are. Patti asked Maria if the Legislators have any problem with the current rules when it comes to pumping to a drainfield. Maria stated that they are reviewing those rules, but that a pump should not be mandatory for people that do not need a pump. Patti stated that development in Florida is currently focusing on developing marginal lands, and that these areas often have pumps in order to meet state requirements. Eberhard Roeder stated that the legislative language for this year said that the contract shall remain in full force. Changing the definition of passive may not be allowed. Keith Hetrick suggested changing the definition of passive from "includes no more than one effluent dosing pump" to "allows no more than one effluent dosing pump if necessary". Shanin Speas-Frost asked why this is coming up now when this definition has been around since 2007. Patti Sanzone asked that information from homeowners be passed to DOH so that these issues can be responded to. Andrea Samson is a homeowner in the Wekiva area. She said that homeowners are responding to accusations that their systems are polluting the groundwater. The focus of this study was to substantiate the need for nitrogen removal, and the fate and transport component of this project is critical. Legislators need to be convinced that the study is providing homeowners with nitrogen removal materials that can be used with conventional existing systems. They want solutions that are affordable in response to a demonstrated need. Bill Melton said that the ultimate goal of this project is to find the cheapest, most effective, and most efficient way to achieve nitrogen reduction, but that we do not know what the answer is yet. Maria stated that the legislators all value the work that this committee does. Eberhard Roeder stated that he has a concern regarding recirculating systems in Task A and if the definition is changed this would exclude them from being tested. Keith Hetrick said the main focus and priority for Phase II from the legislative language was developing, testing, and recommending cost-effective passive technology design criteria for nitrogen reduction. He stated that originally what they were referring to in the law was that the focus be on passive technologies that can be retrofitted to conventional systems. If the conventional system has a pump then it would still have a pump. He stated that the original intent was not the whole system, but just the passive technology portion. If we are now trying to alter the original system so that it does not have a pump then that is a much different mission than what was originally discussed. The 2008 language from the law mentions looking at multiple types of nitrogen reducing technologies, and the focus is on the technology to reduce nitrogen. We do not want to do anything to disrupt the contract mid-stream. This is a $5 million project that has been vetted and is on time and on budget and he does not want something to disrupt this. Maria stated that the system needs to be non-mechanical. Patti stated that Keith made an excellent presentation. RRAC is following the law and does not want RRAC or DOH to react to something that may not need to be reacted to without full RRAC involvement. Maria stated that the legislators are reacting to homeowners concerns. Damann said that the project is going to look at a completely passive system as part of this project. Maria will send a draft letter that will ultimately come from the RRAC, to DOH staff clarifying the issue, and will then be sent to the RRAC for their review by Elke.

Elke Ursin prepared a spreadsheet with a funding update on what has been spent to date on the project by task.

b) **Task D modeling amendment discussion** – John McCray, professor with the Colorado School of Mines and department head of the environmental science and engineering division, presented on the proposed Task D amendment. Task D goal is to account for the true treatment that happens in soils. The type of treatment depends on many things such as hydrology and soil type. To simply assume that all of the nitrogen leaving a system makes it to the groundwater is too conservative of an approach. In the end they want to develop a tool that is relatively simple to use to find out treatment performance and impacts to groundwater. The general scope and budget do not change with what they are proposing; instead they propose to move some funds from Phase 3 into Phase 2. He described the difference between a simple model and simple to use tool. The simple to use tool will be more robust. He gave an example of a simple model being like a bicycle: it is relatively easy to see how it works and is easy to use; and a simple to use tool being like a car: it is complicated underneath but is also relatively easy to use. Currently the contract has a simple model and they would like to change it so that it is a simple to use tool that will be built from a complex model. Katherine Lowe with the Colorado School of Mines stated that this type of model can be manipulated in many different ways resulting in numerous changes in the output graphs. This will allow you to determine if the soil system will achieve the treatment that is desired, and will allow the user to see the limitations to achieving that treatment level. John McCray presented the suggested amendment. Phase I will not change. Phase II will go from development of a simple soil model and a complex soil model to starting with the complex soil modeling and then tailoring that to a simple soil tool. Phase III will include a groundwater model and linking it with the complex soil model. By shifting funds into Phase II to cover this amendment, portions of Tasks B and C will go into Phase III. Based on the current schedule it appears that this would be done anyway. Damann stated that based on the work that FSU and DEP are doing, this model will provide the missing soil component in their model. Rick Hicks stated that this soil model tool can give ideas for areas of the state where no additional wastewater treatment is needed if the soil conditions are adequate. It is important to advance this tool sooner rather than later. Quentin Beitel asked who can use the deliverables that come out of this task. Elke Ursin stated that all of the work products as a result of this contract are all public information. Katherine Lowe stated that one of the deliverables includes modifications of a model called STUMOD which is available in the public domain. John McCray said that nothing is proprietary; it is all free information for future development. Eanix Poole asked whether this model could address densities and John McCray stated that the model itself cannot do that, but if used in aggregate (i.e. in as Geographic Information System) it could be done. Rick Hicks asked if this was part of the contract and Katherine Lowe stated that Phase III has a component that interfaces with a groundwater model.

> **Bill Melton made a motion, seconded by Patti Sanzone, to move forward with the Task D amendment to make the contract in line with the Quality Assurance Project Plan. All were in favor, none opposed, and the motion passed.**

c) **Discussion on status report for Legislature** –The status report for the Legislature, as outlined in the legislative language in this year's budget, is due on May 16, 2011 and will need to be routed internally at least a month prior to be completed on time. Elke Ursin presented a draft to the RRAC. She asked what RRAC expected this report to look like and how this can be approved by RRAC in the timeframe available. Quentin Beitel stated the this report should highlight accomplishments, go into detail about where we are in the current phase, support the

need for funding, mention that the project will be looking at installing a passive gravity-fed system at a home site, and update the Task D section based on what was approved at this meeting. RRAC discussed modifications to the draft status report and agreed that the final format will be almost identical to the legislative progress report from February with some updates regarding current status and current spending.

Bill Melton made a motion, seconded by Patti Sanzone, to do an email vote for approval of this report similar to the process done for the last legislative report. All were in favor, none opposed, and the motion passed.

5. **Presentation by Presby Environmental Inc. on passive denitrification processes** – David Presby presented on their De-Nyte wastewater denitrification system. He stated that some of the work that is being done on the nitrogen study has been done by him previously. They are located in New Hampshire and Maine and are looking to expand. Their product is a container with a special mix of media that goes underneath the drainfield to reduce nitrogen. A physical demonstration of the product was made. Carl Ludecke asked how this product can get approved in Florida, and Sean McGuigan stated that they met with Roxanne Groover with the Florida Onsite Wastewater Association and submitted information to FDOH for part of the system, but not the De-Nyte system. Once they get their initial product approved then they will apply for the rest of the approvals. They appreciated the opportunity to present to the RRAC.

6. **Research Priorities Workshop** – The basic process to get the ranking done as quickly and efficiently as possible was outlined. During the December 10, 2010 RRAC meeting, everyone brainstormed up to 5 ideas for potential research projects. Then each person recited his or her responses which were written down by staff. Then a group discussion occurred to clarify and discuss the potential research projects. These project suggestions were streamlined into 17 projects which had project descriptions roughly scoped out giving a background, objectives and outcomes, the research approach, any potential collaboration, the duration, the estimated cost, and the ease of implementation. RRAC members submitted their rankings to Elke Ursin, which were tabulated in an Excel spreadsheet during the meeting. The resulting priority list is as follows:

Ranking	Project
1	**Continuation of Inventory of OSTDS in Florida**
2	**Effectiveness of Outlet Filters**
3	**Life Expectancy of Onsite Systems**
4	**Drip Disposal With Septic Tank Quality Effluent**
5	**Correlations Between Water Quality, OSTDS, and Health Effects**

These projects will be presented at the next Technical Review and Advisory Panel for their approval per the statutory requirements. Staff will begin scoping out these projects and will present on them at a future RRAC meeting.

7. **Update on Study of Performance of Advanced System in Florida** – Elke Ursin presented some of the recent progress on this project. A grant amendment was executed to extend the end date to 9/30/2011, allow for the purchase of equipment, and allow the county health departments to assist with the sampling effort. She then provided an update of what has been accomplished by task for this project. The summary report outline and data analysis for the Monroe County project is being done. The basic design for the database is complete and is continuously being updated to streamline data entry. A query and report is being developed to automate the summary statistics. The survey results are being tabulated and analyzed with several cross-tab analysis categories having been sent to the contract provider for them to include in their analysis. For the sampling portion of this project, there have been several developments. The Quality Assurance Project Plan was routed to DEP on January 18, 2011 and DEP responded back on March 18, 2011. Staff sent responses back to DEP this morning prior to the meeting. The contract with the lab has been amended to add more units for sample analysis. Permit file reviews are ongoing with 442 files having been reviewed. The sample set was expanded by 204 systems for a total of 1,000 due to a large number of systems not being an active advanced system. They were either abandoned (many in the Keys fit in this category), a conventional system, connected to sewer, etc. The Monroe County Health Department has agreed to participate in the sampling effort. Charlotte CHD volunteered too. Brevard has declined and we are looking for at least one more county to assist. Debra Roberts, the contract staff working on this project, was on a conference call this morning with the Environmental Health Directors throughout the state to let them all know that we need volunteers. The quality assurance on the data entry is ongoing. Eberhard Roeder went on a quality assurance/training trip to the Keys and sampled several systems and standardized the protocol. DOH staff performed a sampling event on March 22nd in Wakulla. The final task for this project is evaluating management practices, and staff is working on developing a method to choose counties to focus on. One way might be looking at high/low user satisfaction from the user surveys. Another way could be looking at high/low scores on county program evaluations as they related to advanced system scoring categories.

8. **Update on Alternative Drainfield Products Study** – Elke Ursin presented an update of what has been accomplished for this project. For 2010 data, a clean-up was done to make sure the system installation date on the repair form is accurate. The county health departments were notified via email and most errors were data entry errors that involved the system install date being the same as, close to, or later than the application date. Data mining of existing permit data was done to link original installations with corresponding repairs based on geocoded addresses. These were then filtered by those that had product information. The plan is to retrace the steps to ensure data accuracy, and then other data fields will be pulled into the dataset to do a data analysis. Data mining and analysis will continue and will be reported back to RRAC.

9. **Other Business** – No other business was discussed.

10. **Public Comment** – The public were allowed to comment throughout the meeting. There was no additional public comment.

11. **Closing Comments, Next Meeting, and Adjournment** – Potential dates for the next RRAC meeting will be emailed to RRAC members and alternates to determine the next meeting date. It is anticipated that this meeting will occur sometime in April to allow for a discussion of the Nitrogen Study Status Report for the Legislature.

Carl Ludecke made a motion, seconded by Bill Melton, to adjourn at 2:54 p.m. All were in favor, none opposed, and the motion passed.

Department of Health
Bureau of Onsite Sewage Programs
Research Review and Advisory Committee

Thursday March 24, 2011

9:30 am – 3:00 pm

Agenda:

- Introductions and Housekeeping
- Changes to RRAC Composition
- Review Minutes of Meeting December 10, 2010
- Nitrogen Study
  - Task D modeling amendment discussion
  - Comments on deliverables and next steps
  - Status report for Legislature
- Presentation by Presby Environmental Inc. on passive denitrification processes
- Research Priorities Workshop
- Update on Study of Performance of Advanced Systems in Florida
- Update on Alternative Drainfield Products Study
- Other Business
- Public Comment
- Closing Comments, Next Meeting, and Adjournment

Introductions & Housekeeping

- Roll call
- Identification of audience
- How to view web conference
- DO NOT PUT YOUR PHONE ON HOLD!!!!
- Download reports:

http://www.myfloridaeh.com/ostds/research/Index.html

Changes to RRAC Composition

Link to current list:
http://www.doh.state.fl.us/environment/ostds/research/index.html

New members (term expires January 2014):

- Local Government: Tom Miller (member) and David Richardson (alternate)

Reappointments (term expires January 2014):

- Consumers: Bill Melton (member) and Eanix Poole (alternate)
- State University System: John Schert (member) and John Dryden (alternate)

Leaving the committee:

- Pam Tucker (realtor), Jim Oskowis (local government), and Vince Seibold (local government)
- Florida Restaurant Association has failed to name replacements for the committee and the two positions remain vacant

Review Minutes of Meeting December 10, 2010

- See draft minutes

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Purpose: Develop passive strategies for nitrogen reduction that complement use of conventional onsite sewage treatment and disposal systems, and further develop cost-effective nitrogen reduction strategies

HAZEN AND SAWYER
Environmental Engineers & Scientists

FLORIDA DEPARTMENT OF HEALTH

Florida Onsite Sewage Nitrogen Reduction Strategies (FOSNRS) Project

Project Status Report

FDOH Research Review & Advisory Committee Meeting

March 24, 2011

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

Otis Environmental Consultants

Task D – Current Approach

- General Scope
  - Simple soil model
  - Complex soil model linked to an aquifer model
  - Provide simple to use tool for the assessment of OSTDS treatment performance and impacts to groundwater
- Budget = $808K
  - Phase 1 = $74K; Phase 2 = $94K; Phase 3 = $640K

Task D – Proposed Approach

- General Scope
  - Simple soil model
  - Complex soil model linked to an aquifer model
  - Provide simple to use tool for the assessment of OSTDS treatment performance and impacts to groundwater
- Budget = $808K
  - Phase 1 = $74K; Phase 2 = $258K; Phase 3 = $476K
- ***No change to general scope or total budget***

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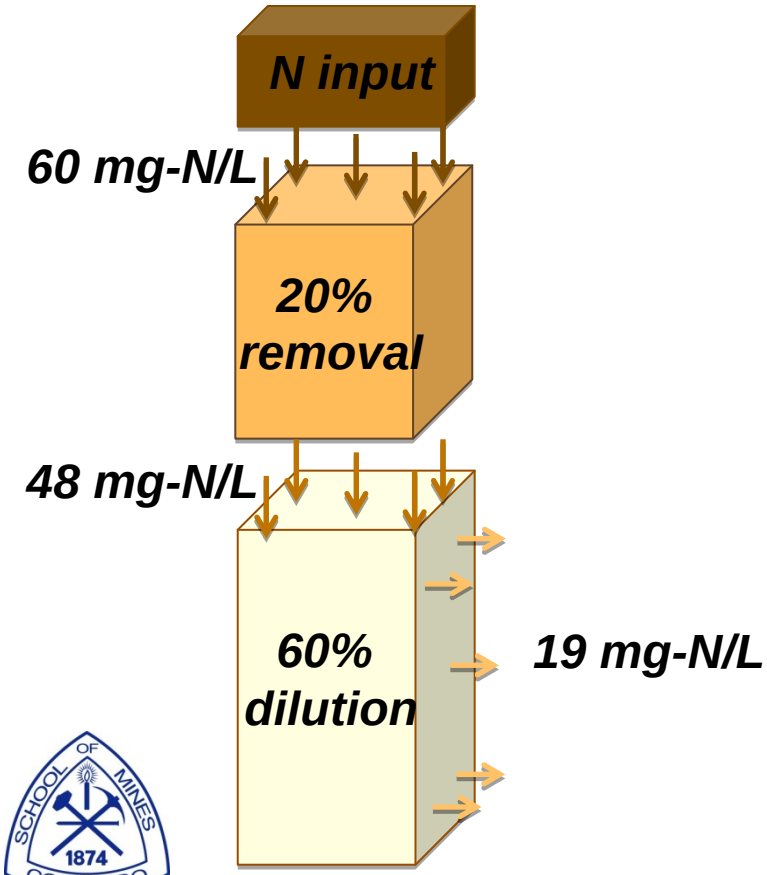
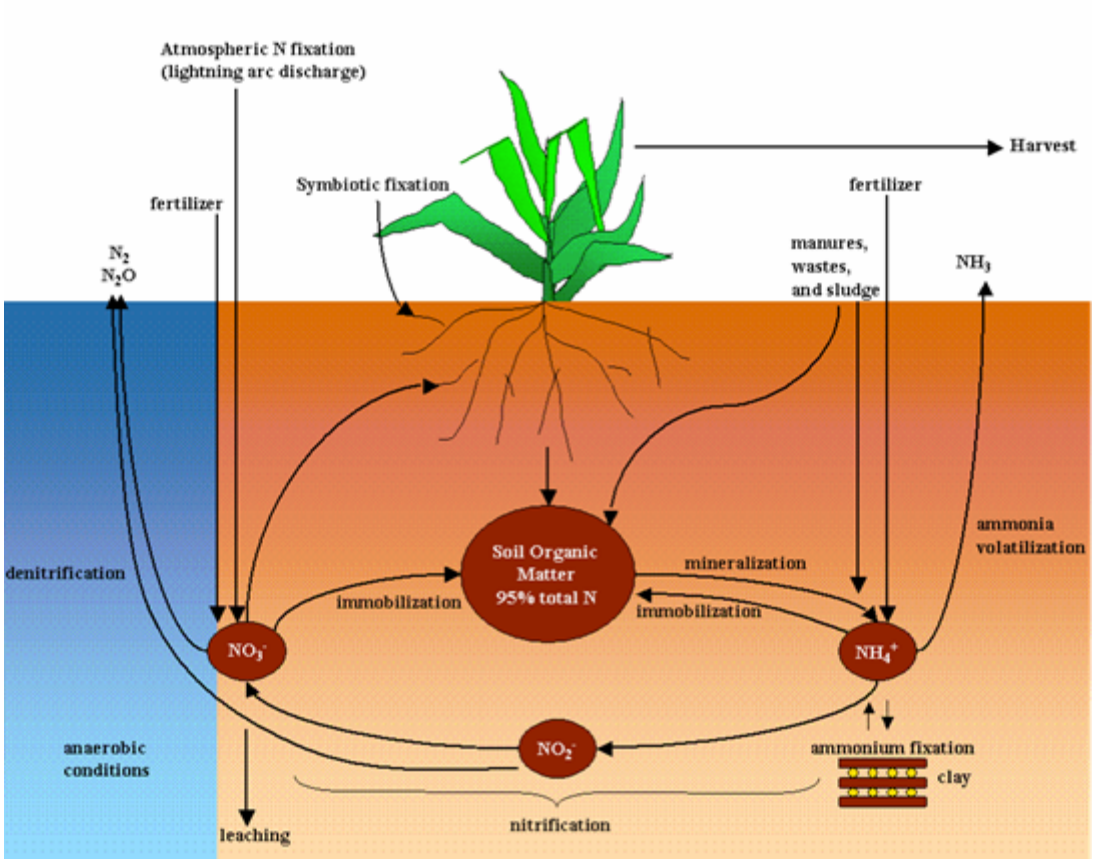
Environmental Engineers & Scientists

Task D – Soil Model

- Simple model vs. simple to use tool…





Neitsch et al., 2002

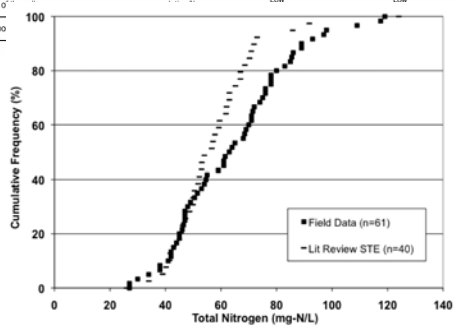
Task D – Soil Model

- Simple model vs. simple to use…

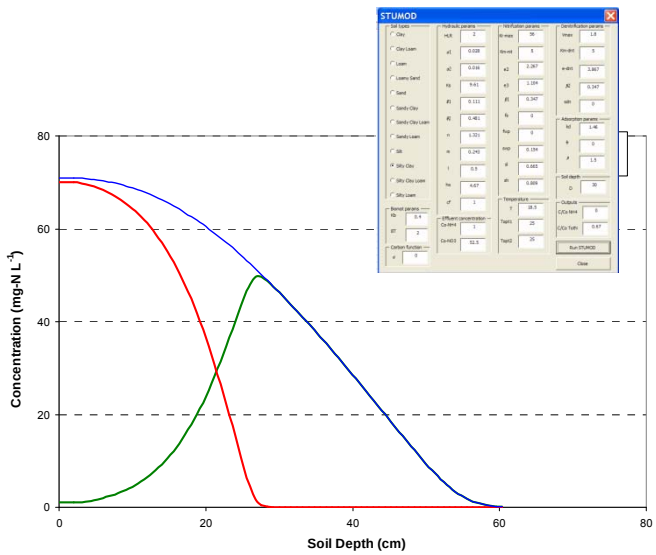
increasing complexity

Tables Graphs

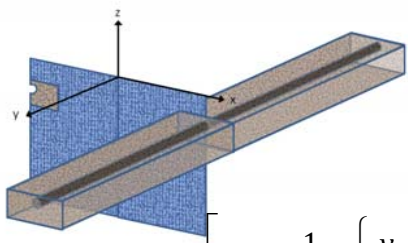
Factors	Units	Expected Field Condition	Resulting Ammonium Sorption
Ammonium-nitrogen concentration of the effluent	mg-N L^{-1}	Low	High
		High	Low
Chemical oxygen demand of the effluent	mg L^{-1}	Low	Low
		High	High
Cation exchange capacity of the soil	meq 100g^{-1}	Low	Low
		High	High
Calcium and magnesium mineral content of the soil	mg L^{-1}	Low	High
		High	Low
Clay content o		Low	Low
Water filled po			



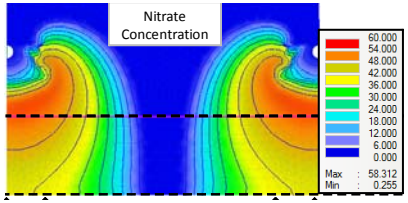
Spreadsheet Tools



Numerical Models



$$\psi = c_f\left[\psi_o - z + \frac{1}{\alpha_G}\ln\left\{\frac{v}{K_o}e^{-\alpha_G\psi_o}\left(e^{\alpha_G\psi_o}-1\right)+1\right\}\right]$$



Task D – "Simple" Approach

- Spreadsheet tool based on Wekiva loading estimates (Otis, 2007)
  - spatially averaged % removal in soil
    - water table, drainage, soil texture, and organic matter
  - highly conservative, limited value
- Look-up tables for key Florida conditions
  - numerical models used to estimate performance
  - limited number of runs, easy field reference

Soil Texture	Design HLR (gpd/ft^2)	Effluent Quality	Separation to Seasonal High Groundwater	Estimated Nitrogen Removal
Fine sand	0.8	60 mg-N/L as NH_4^+	12 inches	10%
Fine sand	0.8		24 inches	45%
Fine sand	0.8		36 inches	50%
Fine sand	0.8	30 mg-N/L as NO_3^-	12 inches	10%
Fine sand	0.8		24 inches	30%
Fine sand	0.8		36 inches	30%

Note: Table values are arbitrary and intended to illustrate the type of information and format of look-up values only rather than expected performance or actual modeled conditions.

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Task D – "Complex" Approach

- Spreadsheet model incorporating scientific principals
  - Taylors existing soil model (STUMOD) for Florida specific conditions
    - Simple to use model can be calibrated to site specific data
    - Based on Darcy's Law and a simplification of the advection dispersion equation
    - Incorporates nitrification and denitrification based on estimates of the water filled porosity
  - Incorporates the effects of evapotransporation and high groundwater tables

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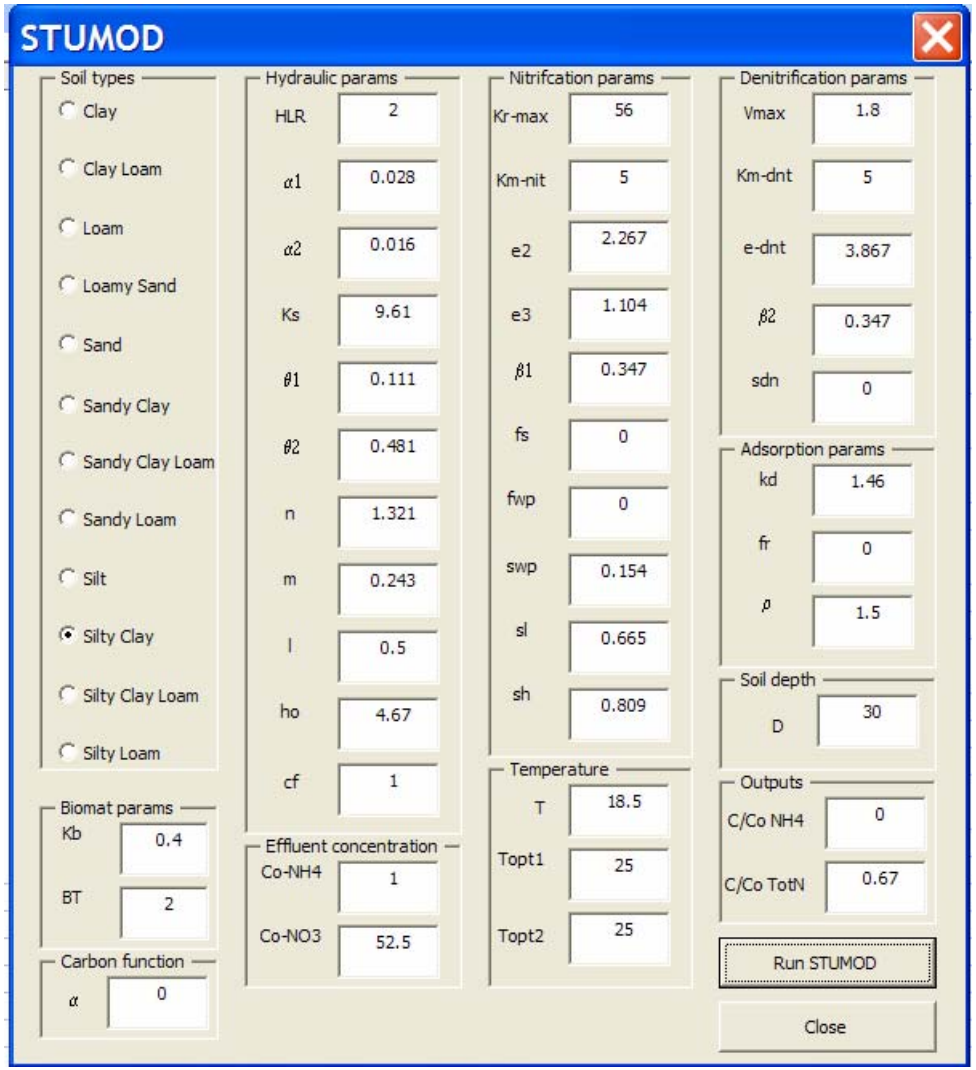
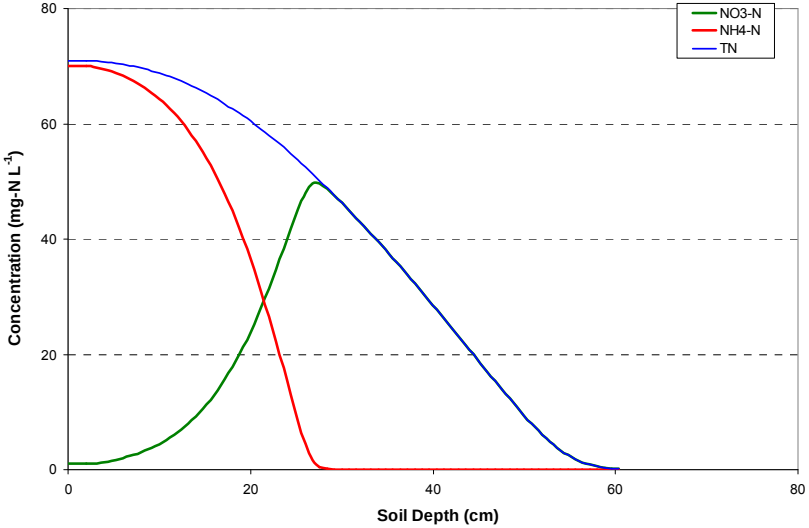
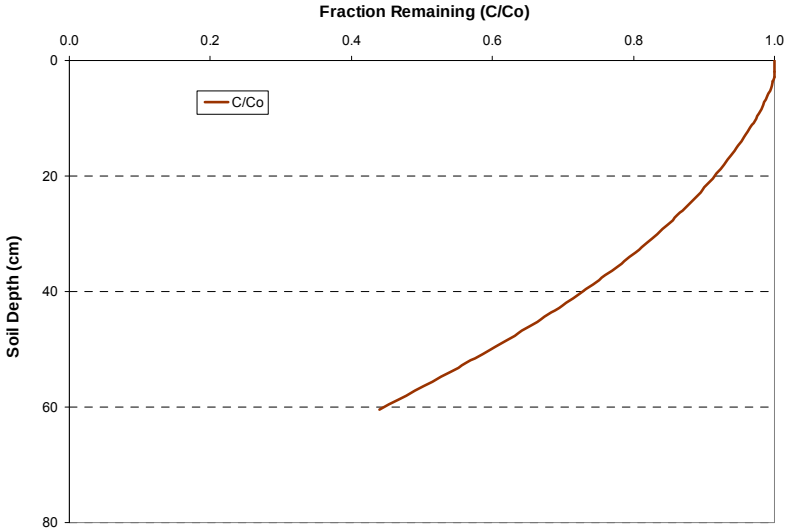
Task D – "Complex" Example

- STUMOD
  - Input parameters:
    - effluent concentration, hydraulic loading rate
    - hydraulic and nutrient transformation calibration parameters
  - Output:
    - expected performance (i.e., constituent concentration) at selected soil depth

Task D – "Complex" Example







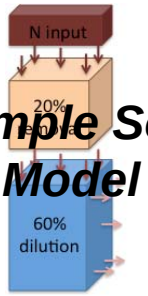
Suggested Task D Amendment

- Current Approach

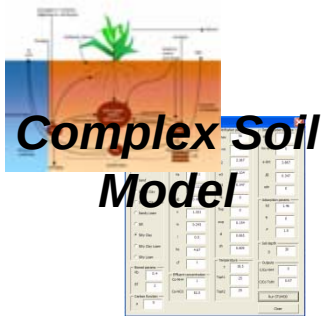
Phase 1

Literature Review
QAPP

Phase 2



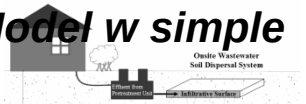
Simple Soil Model



Complex Soil Model

Phase 3

Groundwater Model w simple



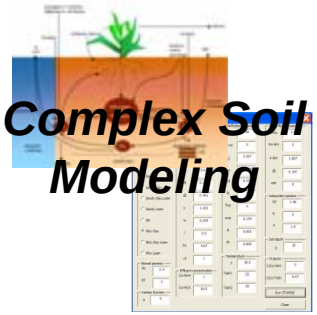
Groundwater Model w complex

- Proposed Approach

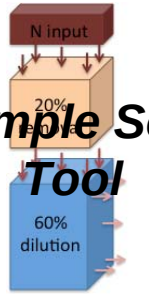
Phase 1

Literature Review
QAPP

Phase 2

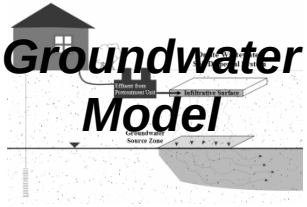


Complex Soil Modeling



Simple Soil Tool

Phase 3



Groundwater Model

Task D Summary

- Task D budget remains at $808K
  - Authorize $163K from Phase 3 as part of Phase 2
  - Delay portions of Tasks B and C from Phase 2 into Phase 3
- Task D deliverables at completion of Phase 2
  - Simple tools
    - tables of selected Florida conditions
  - Complex soil model
    - based on rigorous scientific principles, but simple to use
    - stand alone tool can be used as input to groundwater models

HAZEN AND SAWYER
Environmental Engineers & Scientists

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task D modeling amendment discussion

Main reasons for this amendment are:

1. Get the soil model moving ahead, as it is something that is really needed for OSTDS planning, also will be useful to the FDEP/FSU model we saw at the previous RRAC meeting
2. The way the schedule is moving, it appears that we won't get the number of Task B or C sites completed that we thought, so some of this money can be moved to Task D soil modeling to better fit the schedule

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task A

- PNRSII modifications as of the last meeting: increased recycle ratio for the polystyrene biofilter to 6:1 from 3:1
- Fourth sampling event report submitted
  - Systems functioning as intended
  - Flow rates within 15% of target
  - Septic tank effluent quality characteristic of household
  - 9 of 10 Stage 1 unsaturated filters had ammonia of 1.7 mg/L or less
  - 5 of 9 Stage 2 saturated filters had nitrate/nitrite of 0.35 mg/L or less
- Recommend to discontinue polystyrene, replace lignocellulosic material, replace piping with clear tubing to allow better visual inspection for clogs, and increase loading rates for some of the biofilters

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B

- Currently identifying home sites: two in Wakulla and one in Hillsborough
- Started work on vendor agreements
- Field work begun for permit to install passive technology at a home site in Wakulla

Task C

- Currently identifying home sites: one in Wakulla
- GCREC mound monitoring/sampling has begun, first sample event report submitted
  - 62 monitoring locations sampled
  - Groundwater levels ranged from 118 ft to 123 ft below sea level, which is equivalent to about 4 ft to 9 ft below ground surface
- Instrumentation and monitoring of Tack C home site in Wakulla ongoing

Task D

- Working on contract amendment to align with QAPP
- Started work on complex soil model development

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Passive Definition Concerns – Pumping

- Rep. Nelson expressed concerns regarding use of pumps for all passive nitrogen reduction systems
- Proposed looking at gravity systems at home site with available topography in Task B to satisfy these concerns

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B – PNRS II Systems Pumped Flow

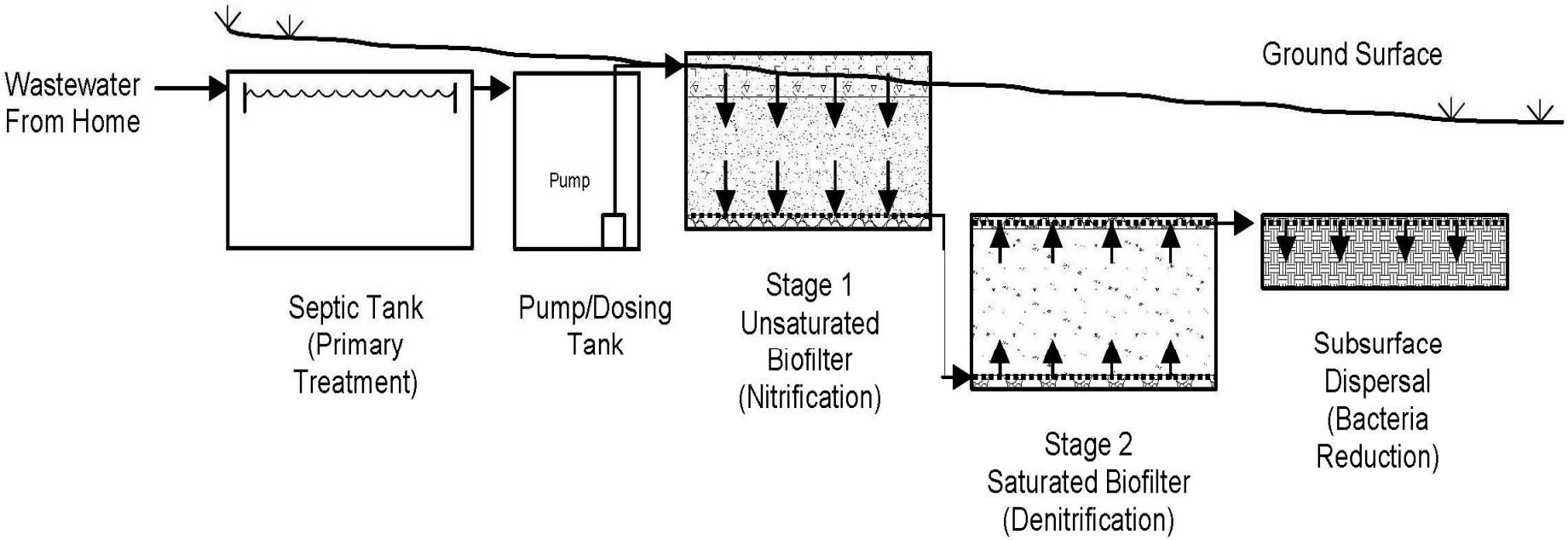


FIGURE 2. Schematic of two-stage, in-tank single pass biofilters for passive nitrogen reduction on relatively flat terrain with high groundwater, requiring a pump.

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task B – PNRS II Systems Gravity Flow

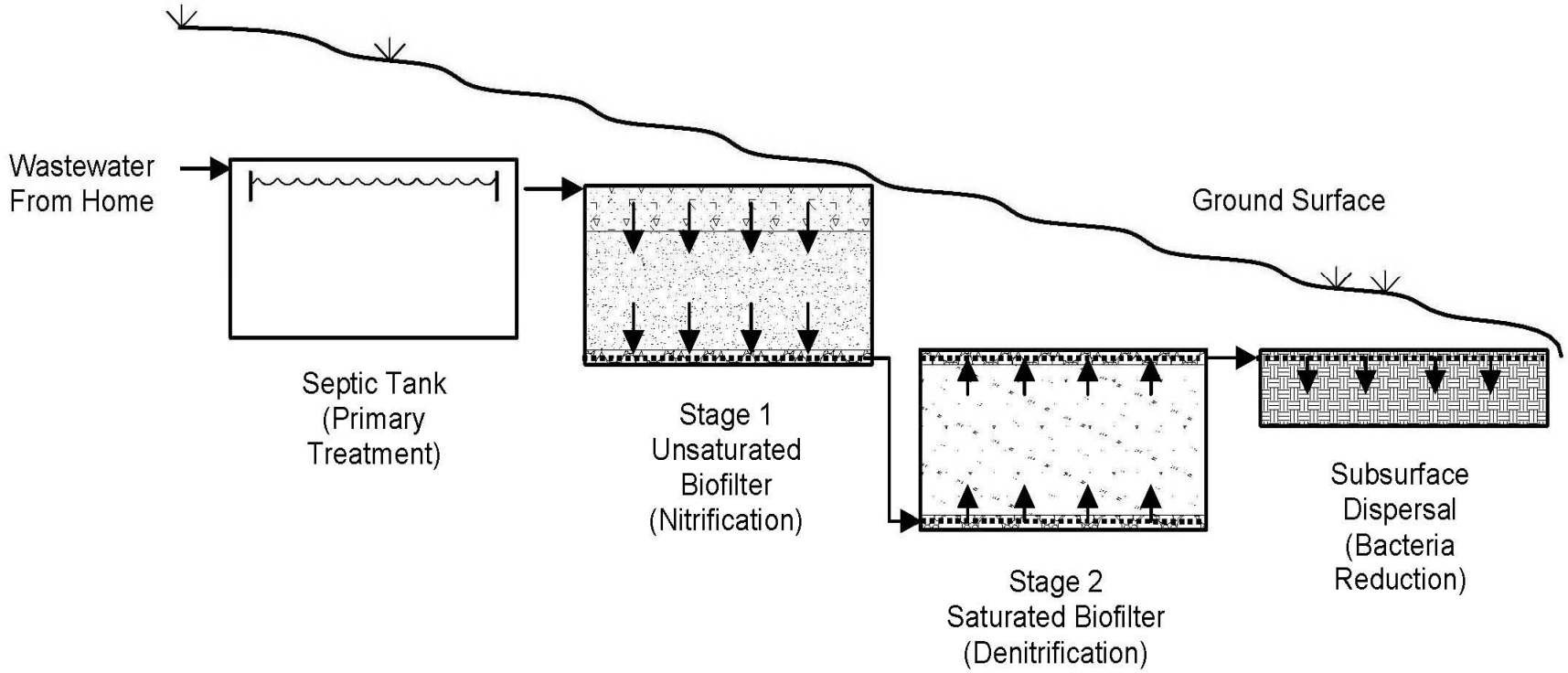


FIGURE 1. Schematic of two-stage, in-tank single pass biofilters for passive nitrogen reduction on sloping ground with gravity flow.

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Status report on nitrogen study due May 16, 2011 (need to route by mid-April)

- What format?
- Modify Interim Report from February 16th
  - Final language will depend on what the Legislature does regarding additional funding
  - Take out recommendations **(switch to draft status report)**
- How to obtain RRAC approval? (email vote?)

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Funding update

	Total Estimated Cost	Allocated Funds	Estimated to be Spent for Phase I	Estimated to be Spent for Phase II	Estimated to be Spent for Phase III	Total Spent as of March 17, 2011	Remaining Unspent Allocated Funds	Remaining Funding Needs
Task A	$786,760	$751,280	$352,144	$399,136	$35,480	$472,559	$278,721	$35,480
Task B	$1,080,352	$521,237	$50,202	$471,035	$559,115	$71,565	$449,672	$559,115
Task C	$1,906,952	$1,244,012	$216,164	$1,027,848	$662,940	$254,201	$989,811	$662,940
Task D	$808,022	$168,214	$74,357	$93,857	$639,808	$90,015	$78,199	$639,808
Task E	$417,874	$168,627	$90,695	$77,932	$249,247	$124,741	$43,886	$249,247
Other Costs Not in Nitrogen Contract (RRAC, etc.)	$100,040	$46,630	$29,258	$17,372	$53,410	$43,788	$2,842	$53,410
Total	$5,100,000	$2,900,000	$812,820	$2,087,180	$2,200,000	$1,056,869	$1,843,131	$2,200,000

Passive Denitrification Processes

Presentation by Presby Environmental Inc.

(limit 15 minutes)

Prioritization of Future Projects

Prioritization Process:

1. (completed at 12/10/10 meeting) Individuals brainstorm up to 5 ideas for potential research projects
2. (completed at 12/10/10 meeting) Round robin - each person recites his or her responses, which are written down
3. Clarification - the group discusses any questions about the proposed projects
4. Selection and ranking - each person selects and ranks top 5 projects in priority order from 5 (highest priority) to 1 (lowest priority)
5. Final selection and ranking - results are tallied and reported

Step 3: Clarification

- Discussion/clarification of proposed projects

Step 4: Selection and Ranking

- Select and rank your top 5 ideas

5 = highest ranking

1 = lowest ranking

Step 5: Final Selection and Ranking

- Tally results, highest total score wins
- Determine final prioritization list and process forward

319 Project on Performance and Management of Advanced Onsite Systems

Purpose: Assess water quality protection by advanced OSTDS throughout Florida

Progress:

- Executed amendment to grant
  - New end date 9/30/2011
  - Allowed for purchase of equipment
  - Allowed for CHD's to assist with sampling
- Monroe County Project
  - Summary report being outlined
  - Data analysis combining all phases to begin

319 Project on Performance and Management of Advanced Onsite Systems

Progress cont. :

- Database
  - Basic design complete, continuously updating forms to streamline data entry
  - 16,802 identified advanced systems in the state
  - Developing query and report to automate summary statistics
- Surveys of interest groups
  - Survey results being tabulated and analyzed
  - Cross-tab analysis categories for analysis developed (next slide)

319 Project on Performance and Management of Advanced Onsite Systems

Some of the questions we're analyzing in the survey:

1. **Owners:**
   - Age of system vs. whether they have had any problems over the last year
   - Age of system vs. overall satisfaction
   - Problems over the past year vs. overall satisfaction
   - Overall satisfaction vs. the type of system
   - Overall satisfaction vs. county
   - Cost of permits and maintenance contract vs. overall satisfaction
   - How many people use the system vs. problems over the past year

319 Project on Performance and Management of Advanced Onsite Systems

Some of the questions we're analyzing in the survey:

2. **Maintenance Entities:**
   - **What services are covered by the annual contract fee vs. the cost of the maintenance contract**
   - **Level of interaction with entities vs. the overall treatment performance**
3. **Regulators:**
   - **Employee years of experience vs. turnover rate**
   - **Employee years of experience vs. who evaluates permits for advanced systems**
   - **Size of county vs. the number of systems needing enforcement**
   - **Size of county vs. customer complaints**
   - **Size of county vs. overall treatment performance**

319 Project on Performance and Management of Advanced Onsite Systems

Progress cont. :

- Sampling
  - QAPP routed to DEP on January 18, 2011, DEP responded on March 18th, anticipate response back to DEP on March 23rd
  - Contract with lab has been amended to add more sample analysis
  - Permit file reviews are ongoing, 442 files have been reviewed
  - Expanded sample set by 204 systems (for a total of 1000 systems) due to a large number of systems (~60%) being not an active advanced system (abandoned, conventional system, connected to sewer, etc.)
  - Monroe County Health Department has agreed to participate in the sampling effort, anticipate Charlotte CHD to volunteer, Brevard has declined, looking for one more county to assist
  - Quality Assurance (QA) on data entry ongoing
  - QA trip to Keys: sampled several systems, standardized protocol
  - Sampling event on March 22nd in Wakulla

319 Project on Performance and Management of Advanced Onsite Systems

Progress cont. :

Management Practices

- Developing method to choose counties to focus on:
  - High/low user satisfaction from the user surveys
  - High/low scores on county program evaluations looking at the advanced systems scoring categories

Alternative Drainfield Products

Problem statement: Since approximately 2004 alternative drainfield products are installed at rates higher than aggregate. System field longevity and effectiveness of minimum drainfield size are untested. Availability of data is limited.

Study history: RRAC directed staff to proceed with performing an evaluation of existing data. Once data gaps are identified, the next phase of the project will be scoped out.

Alternative Drainfield Products

Progress:

- For 2010 data, a clean-up was done to make sure the system installation date on the repair form is accurate.
- CHD's were notified via email. Most errors where the system install date was the same as, close to, or later than the application date were due to data entry errors.

SYSTEM FAILURE AND REPAIR INFORMATION

[ ] SYSTEM INSTALLATION DATE TYPE OF WASTE [ ] DOMESTIC [ ] COMMERCIAL
[ ] GPD ESTIMATED SEWAGE FLOW BASED ON [ ] METERED WATER [ ] TABLE 1, 64E-6, FAC

SITE [ ] DRAINAGE STRUCTURES [ ] POOL [ ] PATIO / DECK [ ] PARKING

Alternative Drainfield Products

Progress (cont.):

- Data mining of existing permit data was done to link original installations with corresponding repairs based on geocoded addresses (~12,000 records)
- Then filtered by those that had product information (~2,500 records)
- Will retrace steps to ensure data accuracy then will pull in other fields to do data analysis
- Data mining / analysis to continue and will report back to RRAC at the next meeting

Other Business

Public Comment

Next Meeting

Upcoming meeting topics:

- Discussion on process forward for ranked priority project ideas
- Status report on nitrogen study due May 16, 2011 (need to route by mid-April)

Proposed dates for next meeting:

- Suggestions?

Closing Comments and Adjournment