



Florida Department of Environmental Protection

Silver Springs and Rainbow Springs Basin Management Plan Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan Meeting

**April 27, 2017
Mary Paulic**





Agenda

- Welcome and Opening Remarks.
- Remediation Plan Development Benchmarks
- Potential Pilot Evaluations
- Case Studies: OSTDS to Sewer Projects
 - City of Ocala
 - Florida Keys (brief overview)
- General Discussion Of Alternative Systems From March Meeting
- Public Comment and Next Steps
 - Next meeting date and location and agenda
 - Summary of action items



Remediation Plan

- Plan needs to:
 - Provide for BMAP revision by July 2018.
 - Include development of 5-year, 10-year, and 15-year goals.
 - *20 year plan started at adoption of BMAPs in 2015.*
 - Include detailed plan to meet TMDL in 20 years.
- OSTDS Advisory Committee members:
 - Represent the sectors that are affected by the OSTDS Remediation Plan.
 - Have expertise to lend to the process and to successful outcomes to reduce nitrogen loadings from OSTDS sources.
 - Advise/provide DEP with opinions or direction on Wastewater/OSTDS Remediation Plan.



Advisory Committee Sunshine Law

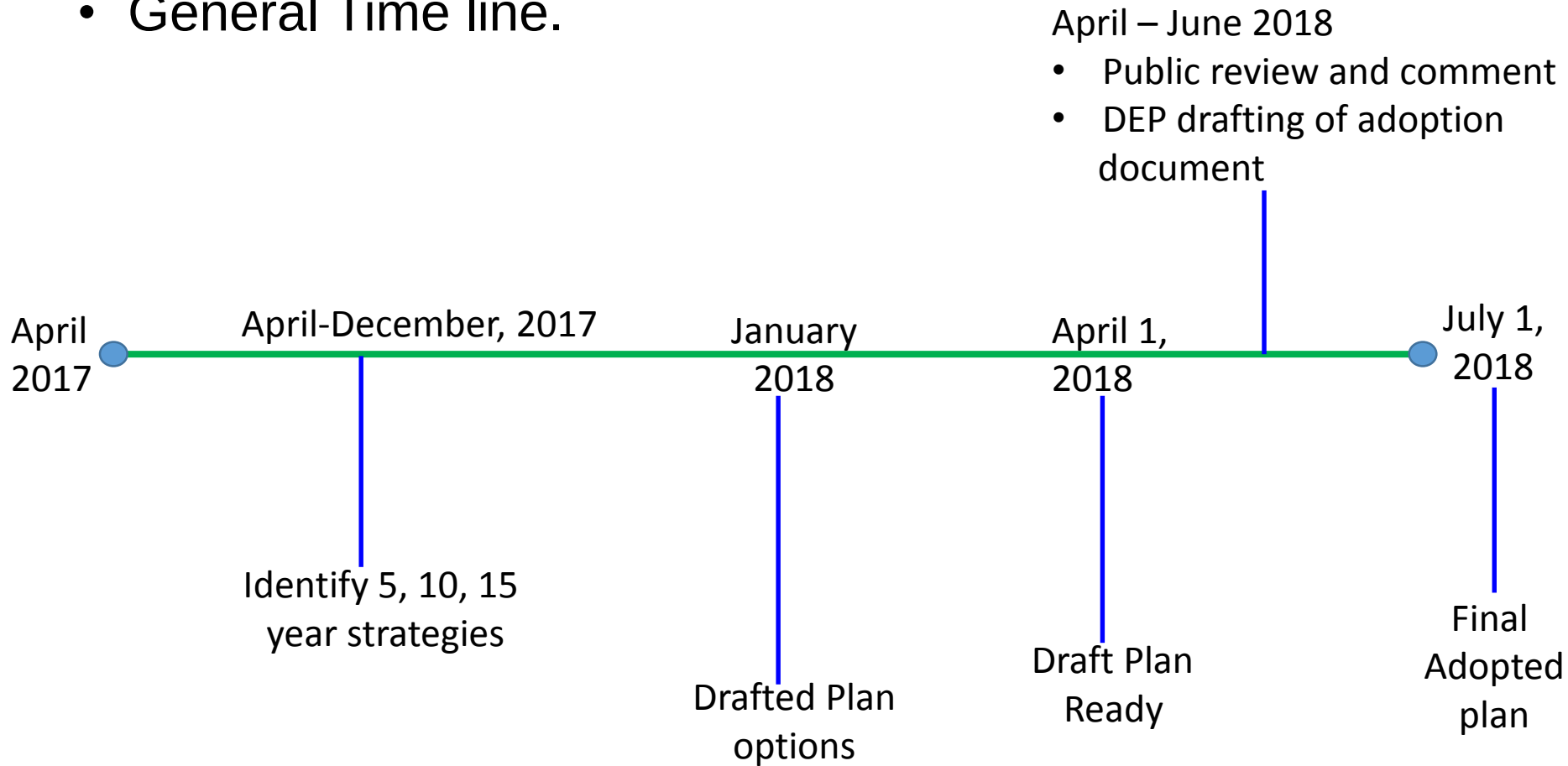
- OSTDS Advisory Committee operates under the Sunshine Laws (Article 1, Section 24, Florida Constitution and Section 286.011, F.S.).
- Discussion or any form of communication between committee members on matters reasonably expected to come before the committee is **prohibited** outside of a publicly noticed meeting.
 - Communication includes but not limited to phone calls, writing, texting, and emailing another committee member.
 - Discussion between a committee member and non-committee members, including staff, is permissible.
 - Discussion of committee topics between a committee member and their alternate representative is permissible.





Remediation Plan Development Benchmarks

- General Time line.





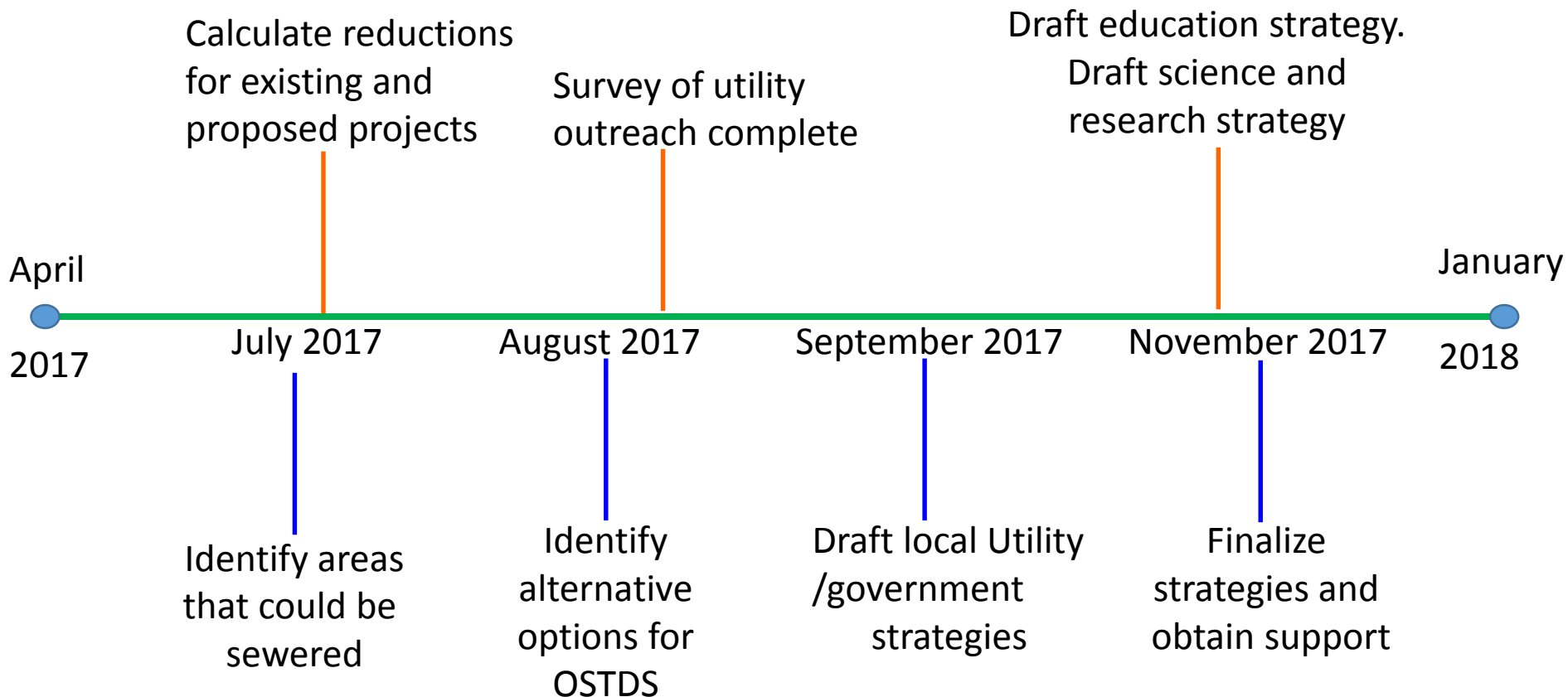
Needs

- What do we need to do?
- When do we need to do it?
- What else do we need to know?
- What specific data or other type of information do local governments and utilities need from DEP or DOH?



Time Line

- April through December 2017.





Estimated Loading Reductions

Spring System	Percent Reduction	Draft Loading from NSILT lbs-N	Draft Target Loading Reduction lbs-N	Draft Target OSTDS Loading lbs-N
Rainbow BMAP	82%	251,823	206,495	45,328
Silver BMAP	79%	628,459	496,483	131,976
Silver PFA	79%	267,974	211,699	56,275
Silver BMAP outside PFA	79%	360,485	284,784	75,701

- DEP goal to meet reductions in 15 years. Propose:
 - 30% of total reduction first 5 years.
 - 40% of total reduction second 5 years.
 - 30% of total reduction third 5 years.
 - Use last 5 years to finish up.



Estimated Reductions by Period

- Reduction goal is for each 5 year period and not a cumulative total.

Spring System	Draft Estimated Loading Reduction lbs-N	Draft 5 Year Reduction Goal lbs-N	Draft 10 Year Reduction Goal lbs-N	Draft 15 Year Reduction Goal lbs-N
Rainbow	206,495	61,949	82,598	61,948
Silver PFA	211,699	63,510	84,680	63,508
Silver BMAP outside PFA	284,784	85,435	113,914	85,435
Silver BMAP	496,483	148,945	198,594	148,943



Potential Evaluations or Studies

- Usefulness of DOH data to select areas for prioritization or additional study.
 - Depth to water table under drainfield. Can this data be used for prioritization of areas?
 - Comparison of nitrogen loading from older systems and newer systems.
- Pilot areas for testing education and outreach strategy.
 - Value of door-door surveys?
 - Test messages with local property owners?



Science Questions

- NSILT Refinements.
 - Refinements will be included as part of BMAP.
 - Are refinements to OSTDS attenuation factor and per person N values needed?
 - Update of number of systems located in BMAP areas.
 - Update of attenuation factor.
 - Are additional data collection efforts needed to better define concentration of N under drainfield?
 - Suggested Silver/Rainbow study elements?
- Test sites for alternative nutrient removing OSTDS.



Nitrogen Source Reduction

- What are we talking about?
 - Many products we use have nitrogen containing components. For example, cleaning products with ammonia.
 - Fertilizer (lawn and garden).
 - Food and food waste.
 - Animal waste.
 - Comparatively, human waste is the largest source inside of a home (FDOH, 2011).
 - 78% toilet.
 - 17% baths, sinks, and appliances.
 - 5% kitchen sink.
- How do we reduce? Where to focus attention?



Education Audience

- Decision Makers and Utilities.
 - Utilities contacted to supply education outreach material.
 - What do policy makers need to know or what message do they need to hear?
- Property Owners where sewer is available.
 - Address support of connection to sewer.
 - Convince property owner that this is the right decision.
- Property Owners in areas that will not be sewerred.
 - Address need for replacing OSTDS with nitrogen reducing system.
 - Convince property owner that their participation is important and a critical link in the protection of either Rainbow or Silver Springs.



Education Outreach Strategy

- How will the education plan support the OSTDS remediation plan?
 - What outreach is needed to implement the remediation plan?
- What do homeowners care about?
- Do homeowners need emotional connection to springs to participate?
- Think of conversion of septic system to sewer as an exchange. For the cost what is homeowner getting in return?
- If the exchange is not attractive, people won't make it. In this case they won't support connection to central sewer. How do we make the exchange attractive?



Next Meeting

- Set date for early June. Tentative topics:
 - Review benchmarks.
 - Rick Hicks research update.
 - Florida Keys Program. Bill Brookman, FDOH in Monroe County.
 - Cluster systems.
- July meeting tentative topics:
 - Calculation of loading reductions. Progress to date.
 - Education Plan development.
 - Results from evaluation studies.
 - Dunnellon conversion program.



Summary and Action Items

- Summary.
 - TMDL needs to be achieved no more than 20 years after adoption of BMAP.
- Need to update information (data, projects, studies, etc.) and gather necessary information.
 - Identify projects to meet the 5-year, 10-year and 15-year targets.
 - Identify what and where scientific information is needed.
 - Identify what public education efforts exist & what needs to be done.
- Action Items.
 - Confirm benchmarks.
 - Next Advisory Committee meeting, early June and mid-July.



Questions?



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Florida Keys

Florida Keys Reasonable Assurance Documentation Update

FKRAD Program

December 2011

Prepared for

**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**





Environmental Impact of Wastewater Disposal in the Florida Keys, Monroe County

Tom Higginbotham

University of Florida

Soil and Water Science

Slides 22-24 summarize findings or quote material from this report.



Findings

- Marine waters surrounding the Keys are tropical and normally oligotrophic.
- Support extensive patch and bank reefs, seagrass beds, and mangroves (Lapoint, 1990).
- The only significant coral reef system in the continental U.S. exists around the Keys (Paul, 1997).
- Scientific evidence supports significant impact of sewage pollution on water quality and health of seagrasses and corals (Lapoint, 2004). Nutrient levels in sewage pollution are considerable relative to the low nutrient environment of the marine waters surrounding the islands.
- Dissolved inorganic nitrogen (DIN) composed of ammonium, nitrate, and nitrite is causing an excessive growth of macroalgae that overgrow seagrasses and adult coral, obstruct development of juvenile coral, and develop areas of anoxia and hypoxia (Lapointe, 2004).



Findings (Continued)

- Discharge of sewage into cesspits, shallow holes, and directly into the adjacent coastal water were common methods of sewage disposal during early development.
- The significant difference between the Florida mainland and the Keys is the presence or absence of soils suitable for filtration of sewage effluent from septic tanks. Sandy soils exist in most regions of the Peninsula to several meters in depth, but only a few inches at best in the Keys.
- Until the late 20th century it was reasonable to view the geological structure of the keys as a method for disposing sewage since no usable freshwater aquifer exists there.



Keys Science

- Water quality in Florida Bay began showing signs of significant degradation in the late 1980s. Clear water began to turn green and turbid with seagrass die-offs and algae blooms occurring with greater frequency (Dillon et al., 2000).
- A direct connection between septic systems and marine water was shown in a 1995 study conducted in the Upper Keys that seeded septic tanks and injection wells with different bacteriophages and followed their fate as a function of time (Paul et al., 1995).



Magnitude of Problem



EXHIBIT ES-1

Thirty percent, or 7,200 of the 23,000 onsite wastewater systems in the Keys are not permitted, and may include up to 2,800 illegal cesspools.

- Courtesy of Monroe County Sanitary Wastewater Master Plan, CH2MHill, June 2000.



Master Plan Findings

- Cesspits are illegal, provide very little treatment, and are a health hazard.
- Sewage discharges from cesspits and septic tanks are a source of nutrients and human pathogens.
- Septic tank systems remove a very small amount of nutrients.
- Aerobic treatment units (ATUs) and package treatment plants do not remove dissolved nutrients.
- From Monroe County Sanitary Wastewater Master Plan, CH2MHill, June 2000.



Legislation

- Chapter 99-395, Laws of Florida.
- Revised Chapter 2010-205, Laws of Florida.
- State of Florida Department of Health
Chapter 64e-6, Florida Administrative Code
standards for onsite sewage treatment and
disposal systems, Part 2 Florida Keys.