

Decentralized Wastewater Webcast Series



Natural Disaster Preparedness and Recovery for Communities Served by Decentralized Wastewater Systems

WEDNESDAY, JUNE 19, 2019 • 1:00 – 3:00 P.M. EDT

This webinar is sponsored by EPA's Decentralized Wastewater MOU Partnership, which consists of 18 organizations that work collaboratively to encourage proper decentralized system management and education on system maintenance in order to protect the nation's public health and water resources.



Presenters

Ayana Jones, MPH, Project Coordinator at the National Environmental Health Association, works across a broad spectrum of program areas at NEHA, including decentralized wastewater. Ayana previously worked as an environmental health fellow at the American Public Health Association and as a county sanitarian in Ohio.



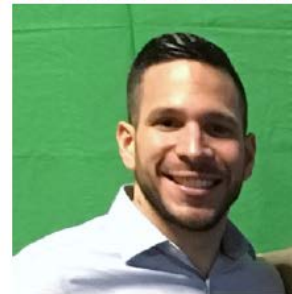
Sonia Marino, MPH, is Director of the Westbrook, Connecticut, Health Department and a registered sanitarian. She has spent the past eight years working for local municipalities along the CT shoreline, which are largely dependent on onsite wastewater systems. Sonia has been actively pursuing the goals of the town's Water Pollution Control Commission/Associations.



Joel Blanco-González, Sustainability Advisor for Puerto Rico, works on the Puerto Rico Recovery Plan for EPA and FEMA following Hurricanes Irma and Maria in 2017. He has previously served as an environmental engineer and tribal affairs expert for EPA Region 3, a strategic integration analyst for EPA Region 2, and in international affairs for EPA Region 4.



Paul Fericelli, Water Advisor with EPA Caribbean Environmental Protection Division in San Juan, Puerto Rico, coordinates efforts with FEMA, other federal agencies, Puerto Rico and stakeholders to expedite the recovery from Hurricanes Irma and Maria. Paul provides planning, technical, managerial and compliance support to water systems and infrastructure projects.





Emergency Preparedness Resources for Septic System Users

Ayana Jones, MPH

Project Coordinator

National Environmental Health Association





About NEHA

- ~ 89,000 Professionals
- > 6,200 Credential Holders
- Annual Conference
- JEH
- 38 State Affiliates
- Web-based learning platform
- Workforce Capacity Building

Members

- Local governmental PH
- State governmental PH
- Industry
- 7 uniformed Services
- Academic institutions

Presentation Agenda

- Background
 - Importance
 - Awareness
- NEHA's Role
 - Project goals
 - Committee process
- Disaster Impact and Key Septic Guidance
 - Disaster areas
 - Key messages

A satellite image of a hurricane over the Caribbean Sea. The hurricane is a large, circular storm system with a distinct eye and spiral cloud bands. The surrounding ocean is dark blue, and the landmasses of the Caribbean islands are visible in shades of green and brown. A teal rectangular box is overlaid in the bottom-left corner, containing the word "Background" in white text. In the top-right corner, there is a faint, semi-transparent watermark that reads "NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION".

Background



Importance

- Public health
- Long-term effects
- Emergency planning
- Population use
- Education and awareness



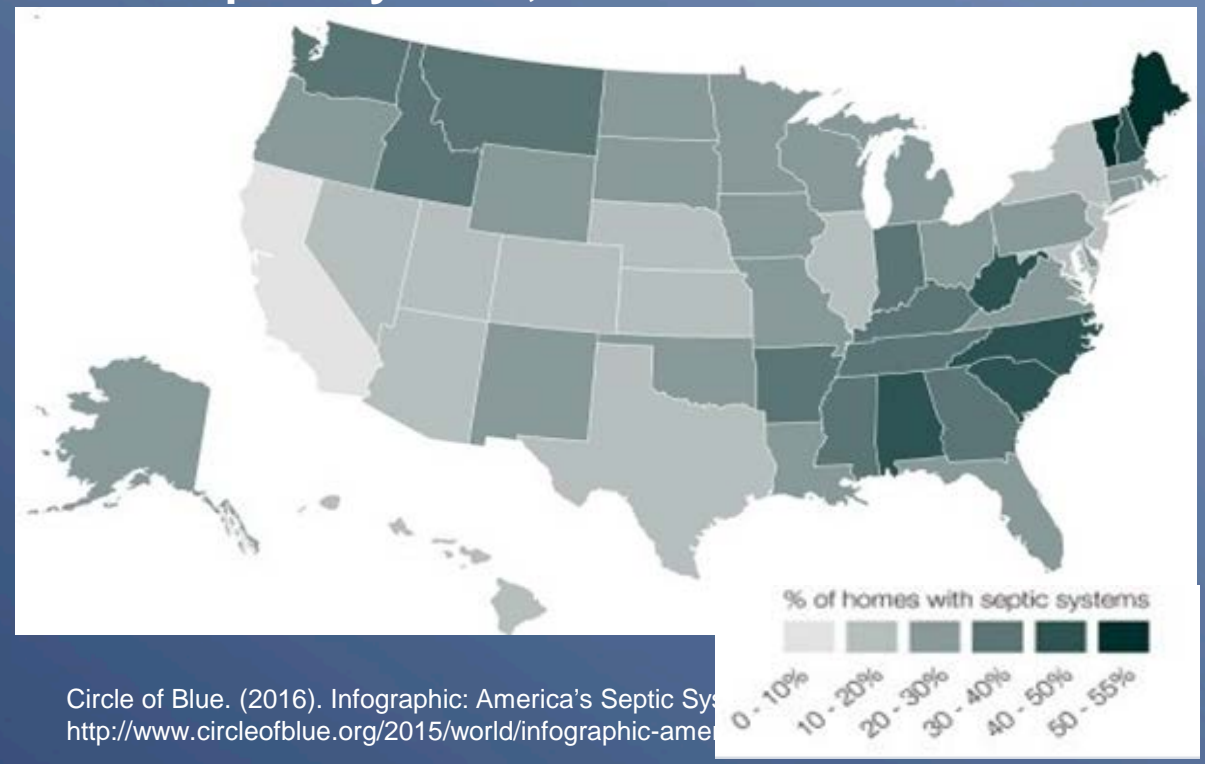


Septic Systems

- 20% (26.1 million) of U.S. homes
- 22% (1.6 million) of housing less than 4 years old
- 50% in rural areas

Environmental Protection Agency. (2008). Septic Systems Factsheet. Retrieved from <https://nepis.epa.gov/Exe/tiff2png.cgi/P1004624.PNG?-r+75+-g+7+D%3A%5CZYFILES%5CINDEX%20DATA%5C06THRU10%5CTIFF%5C00000431%5CP1004624.TIF>

Portions of Homes Relying on a Septic System or Cesspool by State, 1990



Circle of Blue. (2016). Infographic: America's Septic Systems. <http://www.circleofblue.org/2015/world/infographic-america>

A satellite image of a hurricane over the Caribbean Sea. The hurricane is a large, swirling white cloud system with a distinct eye, moving from the upper right towards the lower left. The surrounding ocean is dark blue, and the landmasses of the Caribbean islands are visible in shades of green and brown. A teal rectangular box is overlaid in the bottom left corner, containing the text 'NEHA's Role' in white. In the top right corner, there is a faint, semi-transparent watermark that reads 'NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION'.

NEHA's Role



Project Goals



Protect public health



Provide one-stop-shop
for safety resources



Collect ongoing
best practices



Maintain flexibility



Committee Process

- Committee formation
 - Partners from federal agencies, state agencies, industry, academia, and nonprofits
- Committee structure
- Examples of discussion points
 - Differing regulations for cesspools
 - Different septic system types
 - Gravity or conventional
 - Pressure distribution



A satellite image of a hurricane over the Caribbean Sea. The hurricane is a large, circular storm system with a distinct eye and a dense, swirling cloud structure. The surrounding ocean is dark blue, and the landmasses of the Caribbean islands are visible in shades of green and brown. The text "NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION" is faintly visible in the upper right corner of the image.

Disaster Impact and Key Septic Guidance



Hurricanes

- Potential Issues
 - Floating or dislodged septic tank
 - Exposed sewage
 - Potential contamination of drinking water sources (i.e. private well)
- Impact¹
 - 30% (2.6 million) in Florida



¹ Florida Department of Health. (2017). *Onsite Sewage*. Retrieved from <http://www.floridahealth.gov/environmental-health/onsite-sewage/index.html>



Hurricane Preparedness

Long term

- Make sure the land around the manhole covers is sloped downwards

Immediately before (time permitting)

- Turn off electricity to the system
- Waterproof all electrical connections (when power is off)
- Reduce water use in the house





During a Hurricane

- Follow emergency and evacuation advice
- Eliminate non-essential water use
- Do not use the system if the drain field becomes covered with water





Hurricane Response

- Rope off the septic system if it floods and avoid the area
- Contact a septic system service professional for an inspection
- Do not have the septic tank pumped under flooded conditions
- Avoid using the system and do not dig around the system





Wildfire

- Potential Issues
 - Damage from heavy equipment such as fire trucks driven or parked over drain fields
 - Fire damage to above ground components
 - Potential contamination of drinking water sources (i.e. private well)





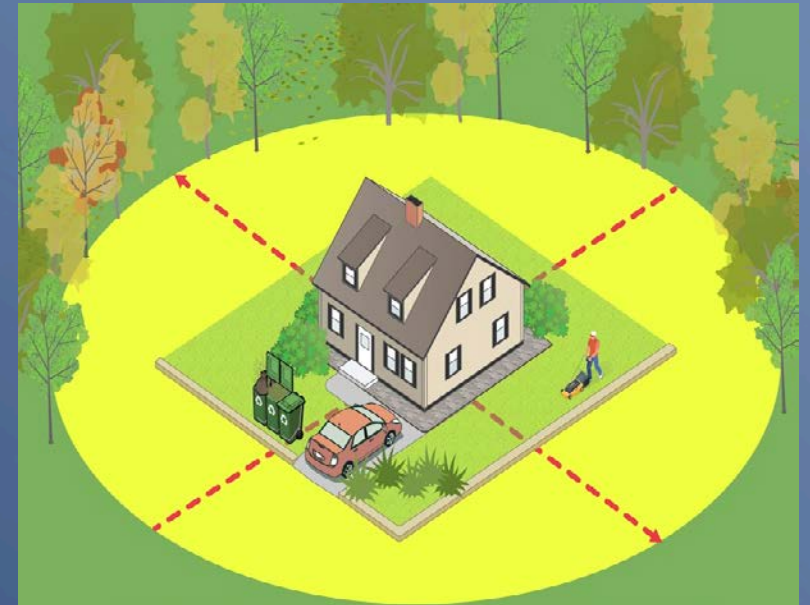
Wildfire Preparedness

Long term

- Follow defensible space guidelines
- Mark system components with a fire-resistant marker

Immediately before (time permitting)

- Turn off power to your system
- After the power is off, wrap control panels, plastic risers, and lids with a durable flame-resistant sheet plastic





During a Wildfire

- Follow emergency and evacuation advice
- Eliminate non-essential water use





Wildfire Response

- Contact a septic system service professional for an inspection
- Stay out of the area if sewage backs up due to a system malfunction or excess water from firefighting efforts
- Reduce water use until the system is inspected and repaired





Other Issues

- Earthquakes
- Freezing Temperatures and Snow





Other Guidance

Earthquakes

- Check for changes in how the septic system functions (how appliances drain, wet or unusually green spots in your yard, odors, activated alarms, etc.)

Freezing temperatures and snow

- Check for open, broken, or uncapped risers, inspection pipes, or manhole covers
- Avoid compacting the snow around the system
- Call a septic system professional if your system freezes



General Guidance


- Know your septic system and take pictures or keep documents of the following
 - Septic tank location
 - Septic system records or drawings
 - Electrical components
- Have contact information for a septic system service professional on hand
- Always make sure power to the system is off before inspecting the area

Next Steps

- Documents can be accessed at neha.org
 - Septic materials will be posted June 2019
 - Well materials will be posted Fall 2019
- Promotion
 - Social media channels
 - NEHA membership
 - Journal of Environmental Health
 - Email blasts
 - Partner organizations
- Ongoing feedback
 - Update every few years
 - Contact aschneider@neha.org



Questions?



Natural Disaster Preparedness & Recovery In A Shoreline Community Dependent On Decentralized Wastewater Management

Hurricane Irene 2011 & Super Storm Sandy 2012



WESTBROOK CONNECTICUT

<https://www.byy.com/marinas/pilots-point-marina-westbrook-ct/>



CONNECTICUT SHORELINE

Some Shoreline Towns Dependent on Onsite Wastewater Management



IRENE AUGUST 2011





LOCAL HEALTH DEPARTMENTS/DISTRICTS

Multitask & Prioritize

- ▶ Emergency Preparedness
- ▶ Shelters
- ▶ Power Outage
- ▶ Road Closures
- ▶ Food Service Establishment
- ▶ Drinking Water
- ▶ Environmental Assessment
- ▶ Clean-up
- ▶ Mold
- ▶ Stagnant Water
- ▶ Onsite Wastewater Management
- ▶ Plan & Review
- ▶ Permit & Rebuild
- ▶ Construct & Inspect
- ▶ Plan for the Future

AUGUST 2011



Photo by: Wallace, H 2011

AUGUST 2011 (1)



Photo by: Brown-Arnold, W 2011

AUGUST 2011 (2)



Photo by: Brown-Arnold, W 2011

AUGUST 2011



Photo by: Brown-Arnold, W 2011

AUGUST 2011 (3)



Photo by: Brown-Arnold, W 2011



AUGUST 2011 (4)



Photo by: Brown-Arnold, W 2011



AUGUST 2011 (5)



Photo by: Brown-Arnold, W 2011



AUGUST 2011 (6)



Photo by: Wallace, H 2011



SUPER STORM SANDY 2012



Photo by: Wallace, H 2012



OCTOBER 2012



Photo by: Wallace, H 2012



OCTOBER 2012 (1)



Photo by: Wallace, H 2012



OCTOBER 2012 (2)



OCTOBER 2012 (3)



Photo by: Wallace, H 2012



OCTOBER 2012 (4)



Photo by: Wallace, H 2012

2019 SEASIDE AVENUE REPAIR



Photo by: Marino, S 2019

2019 SEASIDE AVENUE REPAIR



Photo by: Marino, S 2019



2018 SEASIDE AVENUE AFTER A STORM AND HIGH TIDE



2019 OLD MAIL TRAIL HEAVY RAIN & NORMAL HIGH TIDE



Photo by: Maiden, D 2018

OLD MAIL TRAIL SEPTIC REPAIR 2018

Before



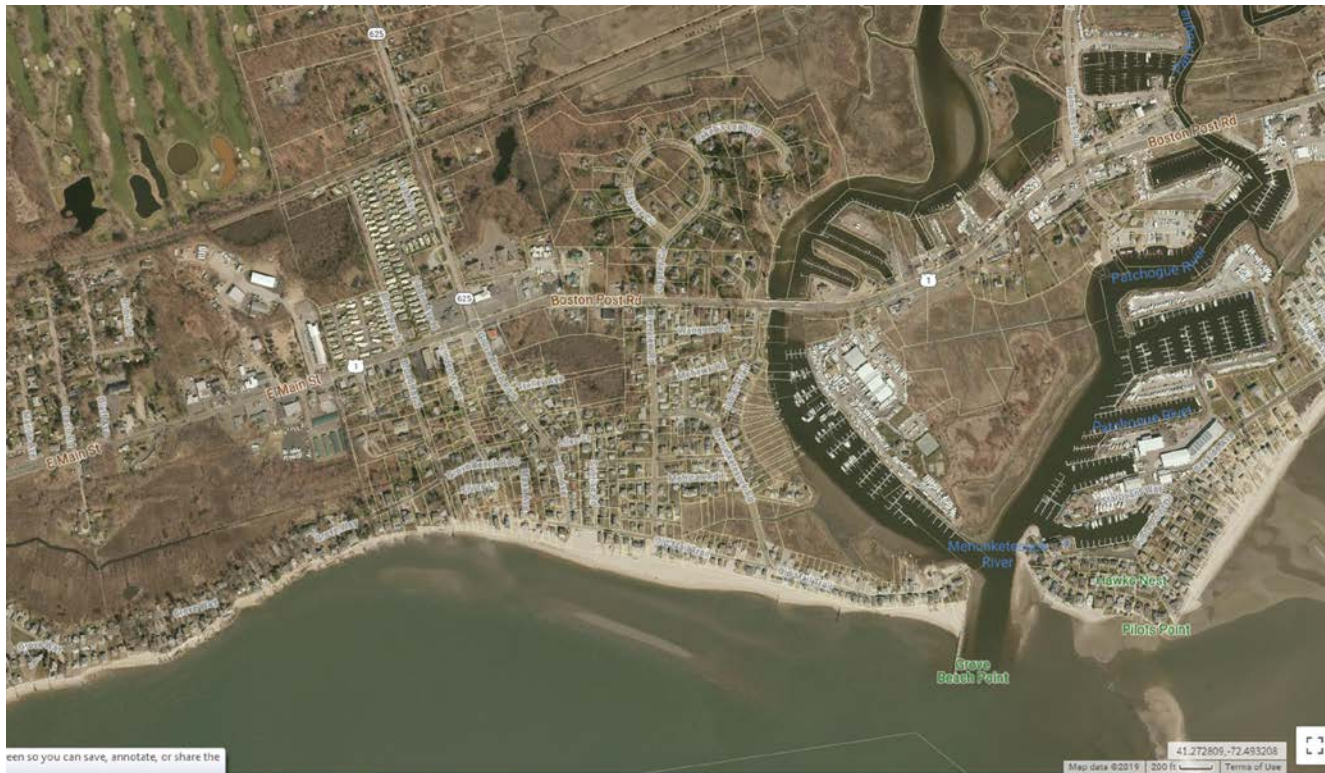
Install



After



QUESTIONS???





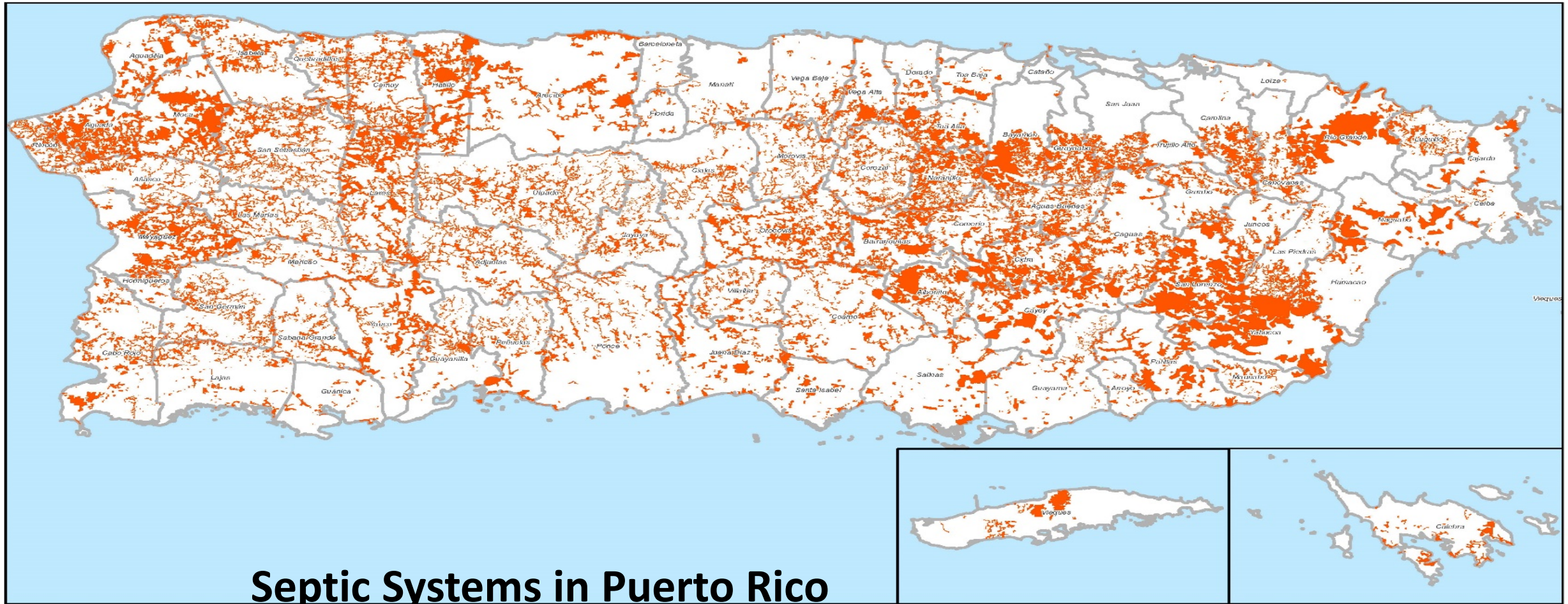
Caribbean Septic Systems Workgroup

An EPA initiative promoting stronger, more effective septic systems in the Caribbean

US EPA Region 2



Caribbean Environmental Protection Division

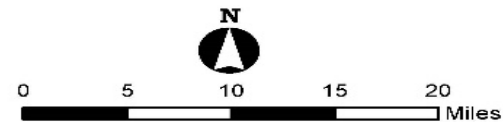
Guaynabo, Puerto Rico



Septic Systems in Puerto Rico

Legend

-  Communities with no Sewer Connections
-  Municipios



Data Layer / Map Description:

This map displays the Communities with no sewer connections

Data Sources: FEMA, ESRI, PRASA

Initial Map Creation: (27 November 2018, 1400 AST)













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Strategic Planning



- **VULNERABILITIES**
 - Tropical Flooding
 - Oversaturation of Soil
 - Erosion
- **STRESSORS**
 - Planning
 - Design
 - Construction
 - Operation
 - Maintenance
- **REPERCUSSIONS**
 - Surface Water
 - Ground Water
 - Drinking Water
- **INTEGRATED RESOURCES MANAGEMENT**
 - Efficiency/Efficacy
 - Identifying Deliverables
 - Describing Measures
 - Leveraging Resources
 - Setting Timeframes
 - Consistency/Consensus



Federal government, state, and local stakeholders and counterparts

Federal Government:

- EPA (Headquarters, Region 2, Region 9)
- U.S. Department of Agriculture
- U.S. Department of Housing and Urban Development
- U.S. Geological Survey

State and Local Government:

- U.S. Virgin Islands Department of Planning and Natural Resources
- Puerto Rico Department of Natural and Environmental Resources
- Puerto Rico Department of Health
- Puerto Rico Office of Permits Management
- Puerto Rico Planning Board
- Puerto Rico Housing Department
- Hawaii Department of Health Office of Environmental Quality Control



FEDERAL GOVERNMENT, STATE, AND LOCAL STAKEHOLDERS AND COUNTERPARTS

Academia:

- University of Puerto Rico at Mayagüez
- Polytechnic University of Puerto Rico
- Interamerican University of Puerto Rico at San German
- University of the Virgin Islands
- University of Puerto Rico at Rio Piedras
- Ana G. Mendez University System

Non-Governmental Organizations

- USVI Coral Bay Community Council, Inc.
- Protectores de Cuencas Inc.
- Centro de Microempresas y Tecnologías Agrícolas Sustentables Yauco Inc.
- Fideicomiso de Conservación e Historia de Vieques
- Programa del Estuario de la Bahía de San Juan
- RCAP Solutions
- Enterprise Community Partners, Inc.
- Colegio de Ingenieros y Agrimensores de Puerto Rico

ACTION PLAN DEVELOPMENT

Puerto Rico



LESSONS LEARNED

WATERSHED STEWARDSHIP PROGRAM

- 1 PERMITTING**

Need to address shortfalls in the permitting process to arrest growth of noncompliance with building codes and best management practices.
- 2 CONSENSUS**

Although much of the existing laws and regulations are sufficient, there is no consensus about roles and legal jurisdictions of the territory agencies.
- 3 AWARENESS MODEL**

The Homeowner Awareness Model is the most practical/reasonable management model due to unclear implementation of PR laws.
- 4 OUTREACH & DETERRENCE**

Changes on public behavior are needed through public education and deterrence.
- 5 SHORT-TERM STEPS**

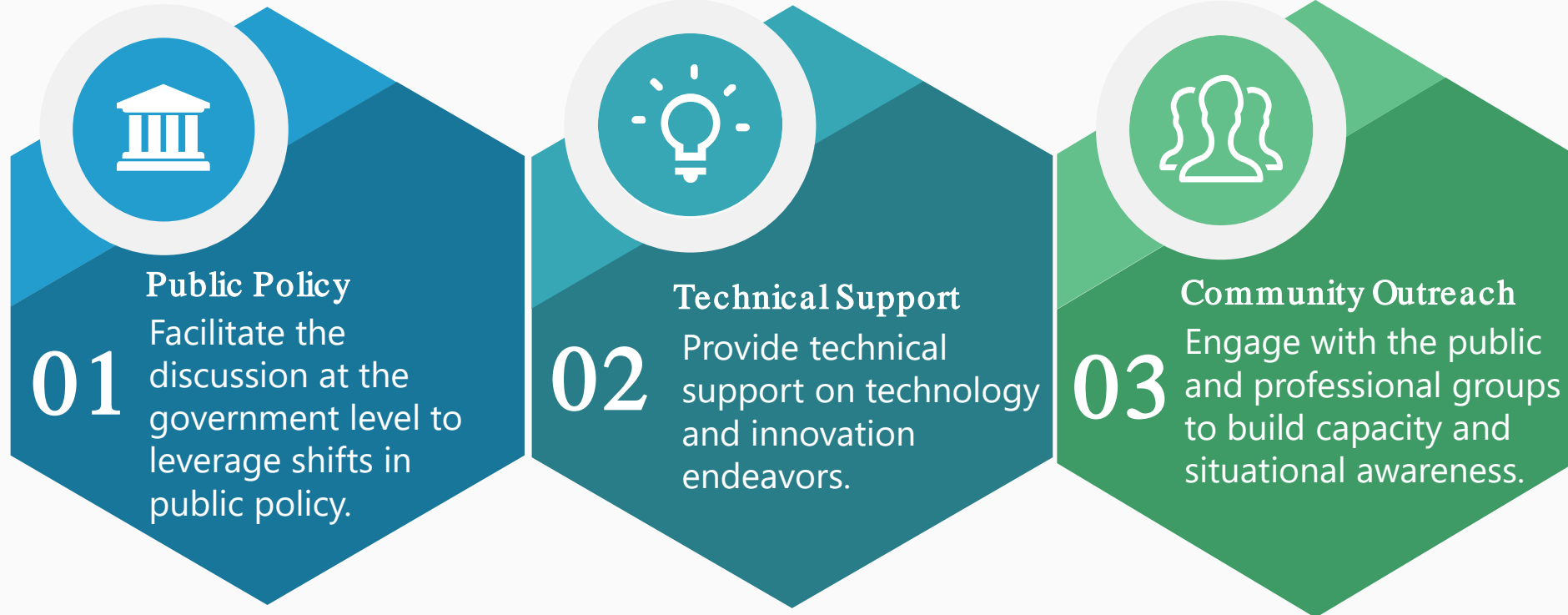
The need for short-term and relatively inexpensive steps can significantly reduce the problem.
- 6 FUNDING**

Funding is needed for continuation, coordination and success of the stewardship.



Caribbean Septic Systems

CARIBBEAN SEPTIC SYSTEMS FOCUS GROUPS





Caribbean Septic Systems (1)

CARIBBEAN SEPTIC SYSTEMS ROADMAP TO RECOVERY IN PUERTO RICO

- Establish strategies and partnerships to secure human and financial resources for continuity of focus groups. ●  ● Leverage the incorporation of protocols to address shortfalls in the territory permitting process using as a baseline the Watershed Stewardship protocols.
- Support development of a geospatial model to prioritize environmental risk factors from unsewered communities. ●  ● Provide support to coordinate proper installation, repair, and upgrades of septic systems using federal funds (e.g., EPA SRF).
- Support the San Juan Bay Estuary on case study project. ●  ● Develop the framework and methodology to conduct a pilot study in areas of interest.
- Conduct a training event with the Professional College of Engineers and Land Surveyors of Puerto Rico for the professional community. ●  ● Implement and manage the EPA SepticSMART Program in partnership with the Government of PR.
- Build capacity in federal and territory agencies. ●  ● Coordinate training events with EPA grantee for the general public.



The Clean Water Act and Safe Drinking Water Act are the fundamental building blocks for clean water and safe drinking water in the United States and its territories. We should use them to great advantage to improve water quality and protect drinking water and secure tangible environmental results.

KEEP BUILDING ON A RESULTS-FIRST APPROACH



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Questions for Joel and Paul?