

# Building Resilience in Partnership with Vulnerable Communities

Webcast sponsored by EPA's Watershed Academy



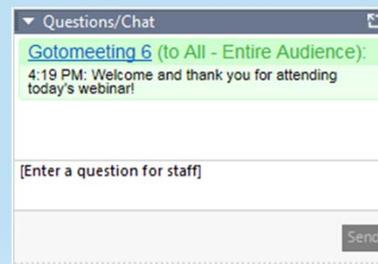
Thursday, November 8, 2018, 1:00pm – 2:30pm Eastern

## Speakers:

- **Jeanine Finley**, Program Analyst, U.S. EPA's Office of Environmental Justice
- **Brenda Torres**, Executive Director, San Juan Bay Estuary Program
- **Tom Herder**, Watershed Protection Coordinator, Mobile Bay National Estuary Program
- **Melissa Deas**, Climate Program Analyst, District Department of Energy Environment

## Webcast Logistics

- **To Ask a Question** – Type your question in the “Questions/Chat” tool box on the right side of your screen and click “Send.”
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## BUILDING RESILIENCE IN PARTNERSHIP WITH VULNERABLE COMMUNITIES

November 8, 2018

A collaboration between EPA's Office of Environmental Justice (<https://www.epa.gov/environmentaljustice>)  
the Watershed Academy (<https://www.epa.gov/watershedacademy>)  
the National Estuary Program (<https://www.epa.gov/nep>)  
And DC Department of Energy and Environment (<https://doee.dc.gov/>)

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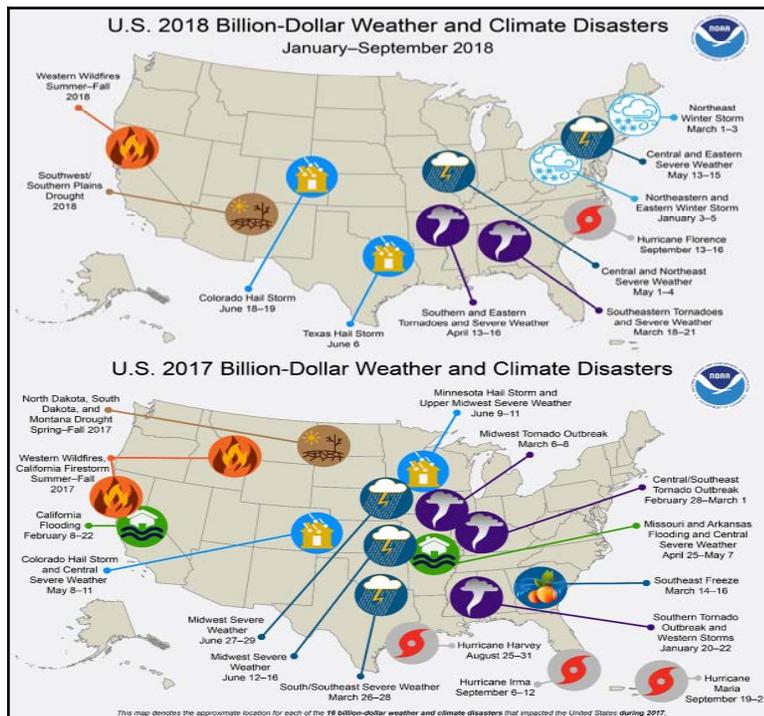
# What is Resilience?

## Resilience:

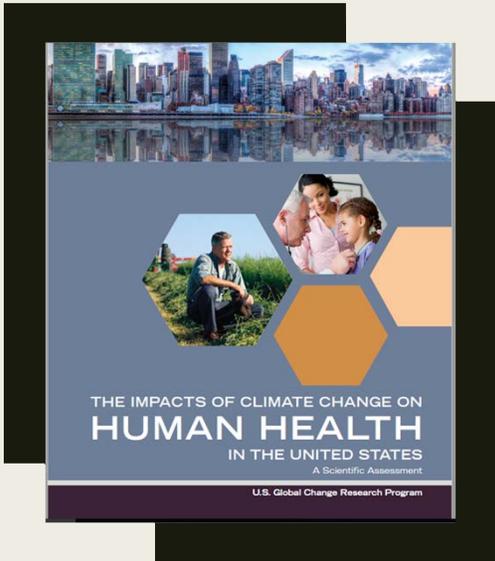
the ability of individuals, communities, states and their institutions to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term changes and uncertainty.

## Categories of Extreme Events:

- ❖ Flooding due to extreme precipitation, hurricanes & coastal storms
  - ❖ Droughts
  - ❖ Wildfires
  - ❖ Winter storms



**EXTREME WEATHER EVENTS IN THE UNITED STATES 2017 & 2018**

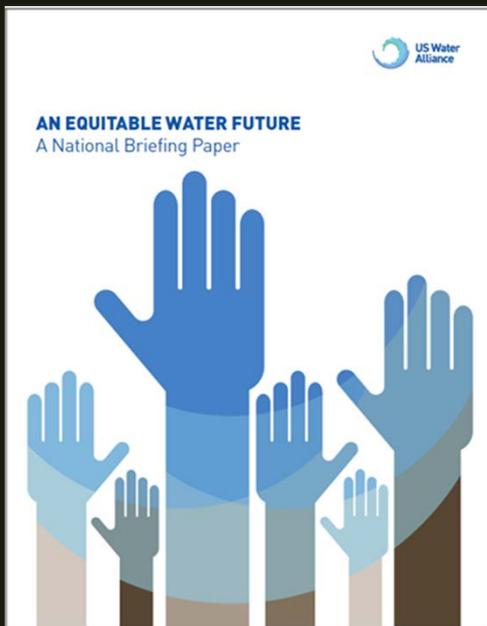


## THE US GLOBAL CHANGE RESEARCH PROGRAM

### *THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT*

[https://s3.amazonaws.com/climatehealth2016/low/ClimateHealth2016\\_FullReport\\_small.pdf](https://s3.amazonaws.com/climatehealth2016/low/ClimateHealth2016_FullReport_small.pdf)

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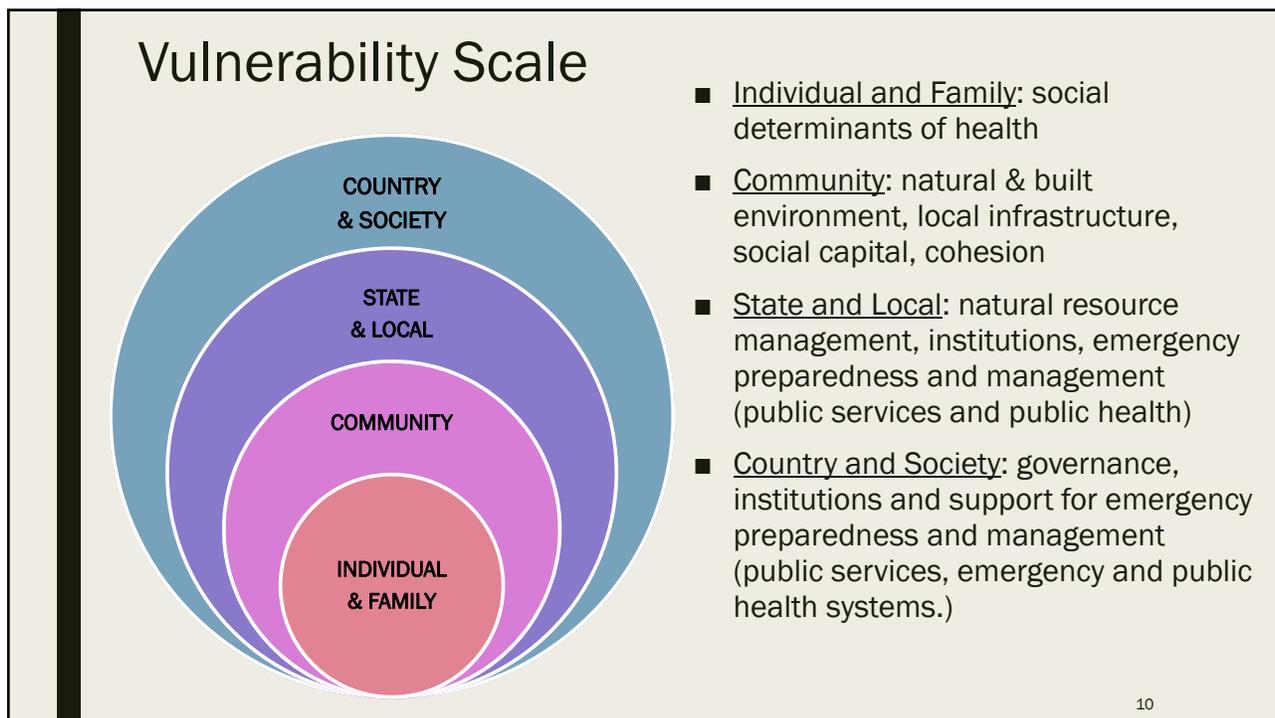
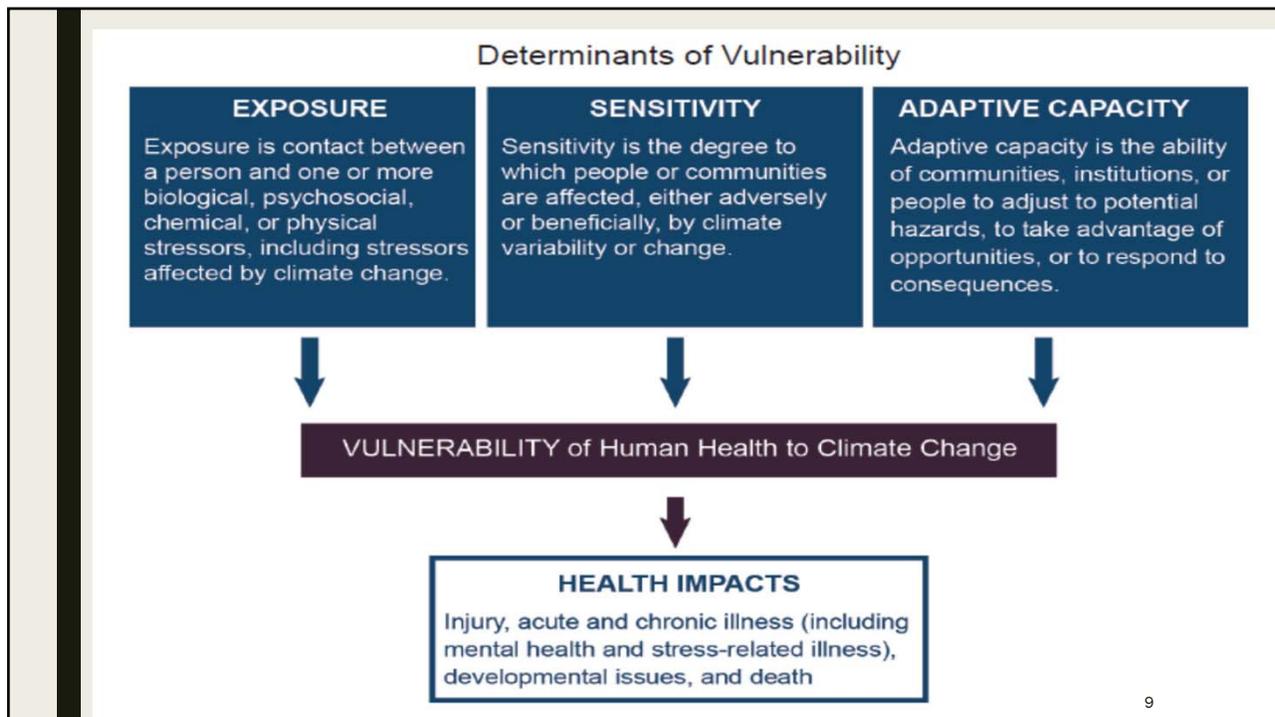


## US WATER ALLIANCE

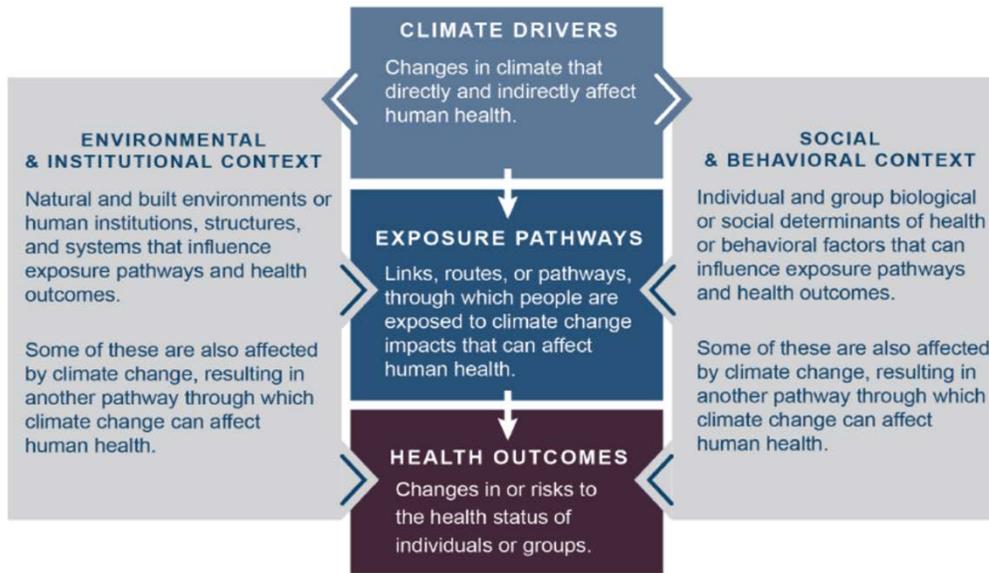
### *AN EQUITABLE WATER FUTURE: A NATIONAL BRIEFING PAPER*

[http://uswateralliance.org/sites/uswateralliance.org/files/publications/uswa\\_waterequity\\_FINAL.pdf](http://uswateralliance.org/sites/uswateralliance.org/files/publications/uswa_waterequity_FINAL.pdf)

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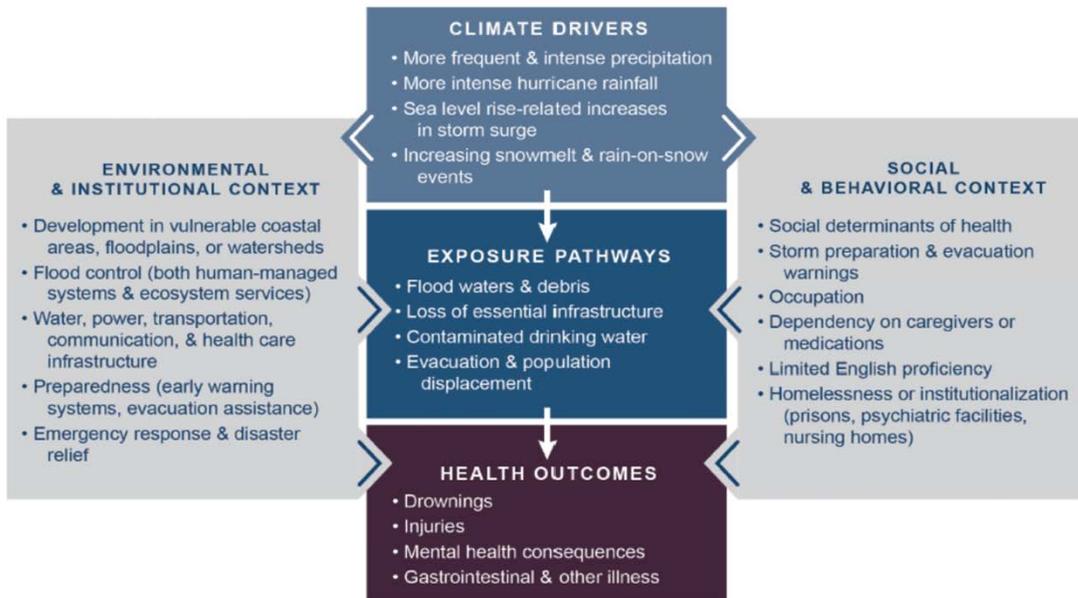
## Understanding the Exposure Pathway Diagrams



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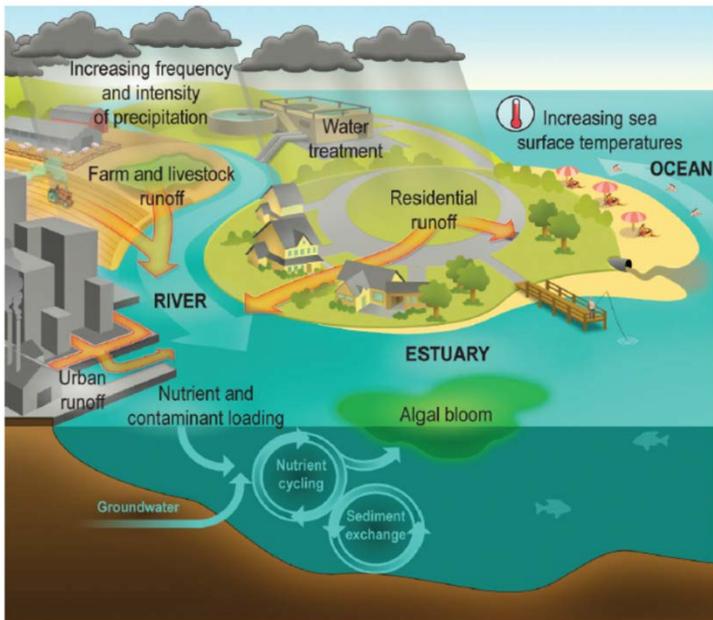
## Climate Change and Health—Flooding



## INFRASTRUCTURE

- When essential infrastructure is disrupted, vital public services are also disrupted after an extreme event
- Reduced functionality or complete loss of infrastructure pose serious risk to communication, transportation, electricity, food and water, healthcare, sanitation

Links between Climate Change, Water Quantity and Quality, and Human Exposure to Water-Related Illness



**WATER QUALITY AND HAZARDS:**

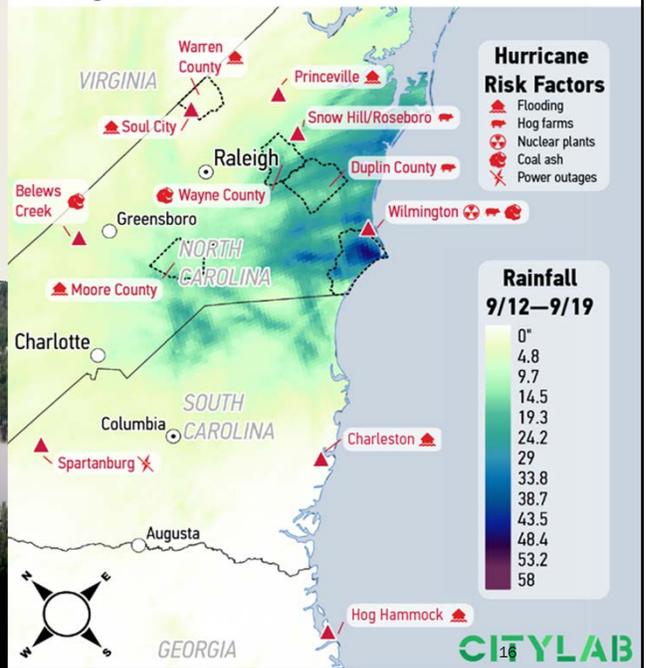
PRIMARY SOURCES OF CONTAMINATION ARE HUMAN, ANIMAL WASTE AND AGRICULTURAL ACTIVITIES.

Example from Hurricane Florence:

Historical siting of hazards near communities of color and low income communities creates increased vulnerability in the event of extreme storms like hurricanes.



**Endangered Historic Environmental Justice Sites**



# Challenges

- Urban flooding occurs when precipitation overwhelms existing systems, insufficient or degraded stormwater or wastewater infrastructure.
- Many low-income communities are in low-lying areas or near bodies of water. Frequent flooding and damage to homes that discourage economic development and create public health risks.
- Disinvested urban neighborhoods often have a concentration of impervious surfaces, abandoned buildings and lack of green spaces that could absorb flood water.
- Vulnerable communities do not always receive the aid and relief funding they need to recover from flood events.



Equality	Equity	Justice
		
<p>The assumption is that <b>everyone benefits from the same supports</b>. This is equal treatment.</p>	<p><b>Everyone gets the supports they need</b> (this is the concept of "affirmative action"), thus producing equity.</p>	<p>All 3 can see the game without supports or accommodations because <b>the cause(s) of the inequity was addressed</b>. The systemic barrier has been removed.</p>

Jeanine Finley  
Office of Environmental Justice  
[Finley.jeanine@epa.gov](mailto:Finley.jeanine@epa.gov)  
Phone: 202-564-2195

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## Tools and Resources

### Resource Databases and Portals:

- Climate Change Adaptation Resource Center (<https://www.epa.gov/arc-x>)
  - Green Infrastructure for Climate Resilience (<https://www.epa.gov/green-infrastructure/green-infrastructure-climate-resiliency>)
  - Water Infrastructure Finance and Resiliency Center (<https://www.epa.gov/waterfinancecenter>)
  - Water Finance Clearinghouse (<https://ofmpub.epa.gov/apex/wfc/f?p=165:1.....>)
  - Living Shorelines Academy (<https://www.livingshorelinesacademy.org/>)
- Georgetown Climate Adaptation Center (<https://www.georgetownclimate.org>)
  - Adaptation Clearinghouse (<https://www.adaptationclearinghouse.org/>)
  - Green Infrastructure (<https://www.epa.gov/green-infrastructure>) (<https://www.epa.gov/sustainability/giwiz>)

### Case Studies:

- EPA SmartGrowth Strategies for Disaster Resilience and Recovery (<https://www.epa.gov/smartgrowth/smart-growth-strategies-disaster-resilience-and-recovery>)
- Evaluating Urban Resilience to Climate Change: A Multi-Sector Approach (<https://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=322482>)

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# Tools and Resources cont..

## Assessment and Planning Tools:

- EJ SCREEN (<https://www.epa.gov/ejscreen> )
- Flood Resilience Checklist (<https://www.epa.gov/smartgrowth/flood-resilience-checklist> )
- National Stormwater Calculator (<http://www2.epa.gov/water-research/national-stormwater-calculator> )
- Healthy Watersheds Integrated Assessments (<https://www.epa.gov/hwp/integrated-assessment-healthy-watersheds> )
- Climate Resilience Screening Index (<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100SSN6.txt> )
- How's My Waterway? (<https://watersgeo.epa.gov/mywaterway/> )
- Climate Ready Estuaries (<http://www2.epa.gov/cre/risk-based-adaptation> )
- EnviroAtlas (<https://www.epa.gov/enviroatlas> )

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**Environmental Justice Small Grants Program**

In 2010, the Connecticut Coalition for Environmental Justice received a grant for the "Toilet Paper Project" to educate 900 residents on how to recycle, to protect land air quality by reducing the amount of trash burned at the city's incinerator.

**Malama Learning Center Small Grant Success Story**

In 2010, with a \$25,000 Environmental Justice Small Grant award, the Malama Learning Center formed a partnership with Leeward Community College, as well as local businesses, government and community groups to launch the Hawaii Green Collar Institute. The purpose of the institute was to engage high school and college students in learning about public health and climate change issues affecting their communities.

Students learned from professionals about environmental justice issues, conducted team-based research projects, and received training to become better prepared to enter Hawaii's green collar job industry. In March 2011, the institute honored its first graduating class of 36 students, 40% of which were of Native Hawaiian descent.

The institute supported its students' transitions into the workforce by offering them career counseling services that include bulletins to alert them of green job openings, resume writing workshops, practice job interview sessions, and career fairs opportunities.

To read about more projects like this, visit [www.epa.gov/ejsmallgrants/environmental-justice-small-grants-program](http://www.epa.gov/ejsmallgrants/environmental-justice-small-grants-program).

**About the EJ Small Grants Program**

EPA's Environmental Justice Small Grants program provides financial assistance to community-based organizations, local tribal organizations and tribal governments working on projects to address environmental and public health concerns. The Office of Environmental Justice (OEJ) supports the Plan EJ 2030 Action Agenda through the Environmental Justice Small Grants Program. The program uses grants to strengthen community-based programs that engage over-burdened communities and build partnerships to promote environmental well-being and improve public health.

Since its inception in 1994, the Environmental Justice Small Grants Program has awarded more than \$24 million in funding to over 1,400 projects across the country. The program helps affected communities by providing up to \$50,000 in assistance over a one-year period to create community-based projects. The goal of the Small Grants Program is to help affected communities create self-sustaining, community-based partnerships that will continue to improve environments.

**Is My Organization Eligible?**

An eligible applicant MUST BE one of the following entities:

1. Incorporated, non-profit, community-based organizations. This includes environmental justice networks, faith based organizations and those affiliated with religious institutions;
2. Federally recognized tribal governments; OR
3. Tribal organizations.

AND an eligible applicant must be:

1. Located within the same state, territory, commonwealth, or tribe where the proposed project will be located; and
2. Able to demonstrate that it has worked directly with the affected community.

**How To Apply**

To find the application or more information, visit [www.epa.gov/environmentaljustice/environmental-justice-small-grants-program](http://www.epa.gov/environmentaljustice/environmental-justice-small-grants-program)

*Did You Know?* EPA awarded environmental justice grants to local organizations helping communities affected by the BP oil spill. Funds are being used to help address and adapt to the spill's long-term effects.

## 2019 EJ Small Grants RFP

<https://www.epa.gov/environmentaljustice/environmental-justice-grants-funding-and-technical-assistance>

## How To Apply:

<https://www.epa.gov/grants/how-apply-grants>

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Questions?

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# Environmental Justice and Disaster Resilience in the San Juan Bay Estuary System

Presented by Brenda Torres Barreto, Executive Director  
EPA Watershed Academy  
November 8, 2018

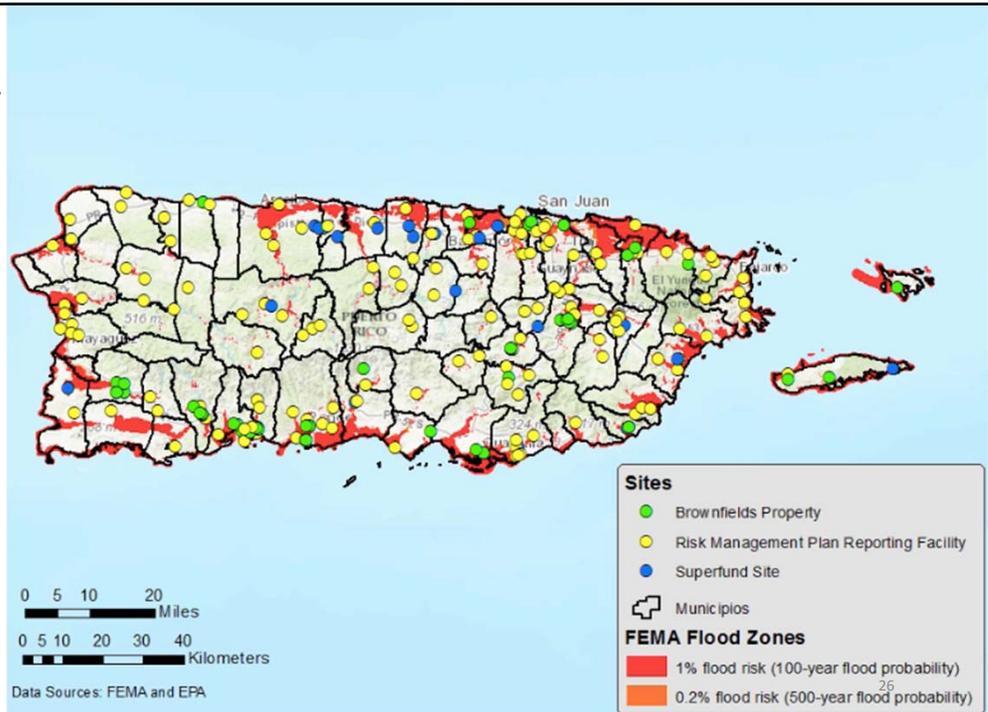
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# Puerto Rico



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## Vulnerability



# Environmental Justice in Puerto Rico

All 38 dams in Puerto Rico rated by USCOE as having a high hazard potential.

Disproportionate contact with toxic substances.

Low income communities located in vulnerable regions.

More than half of the population lives under the poverty line.

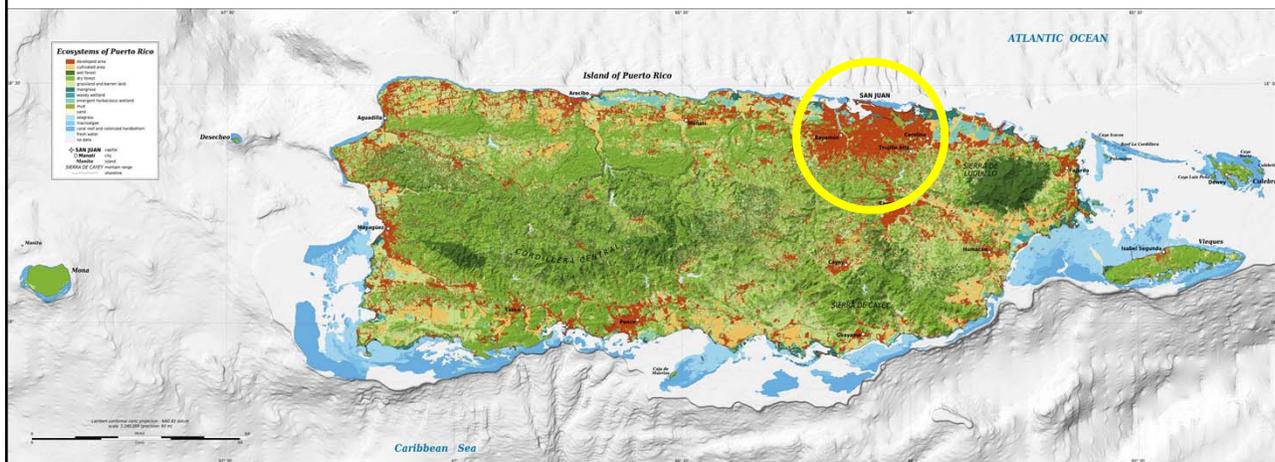
Unreliable and Expensive Electricity

Lack of Safe Water.

High Unemployment rate.



## Metropolitan Region – San Juan Bay Estuary

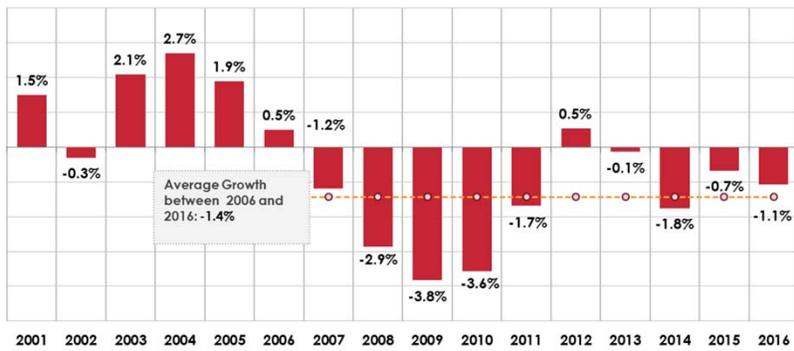




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## Before Maria: Economic Recession

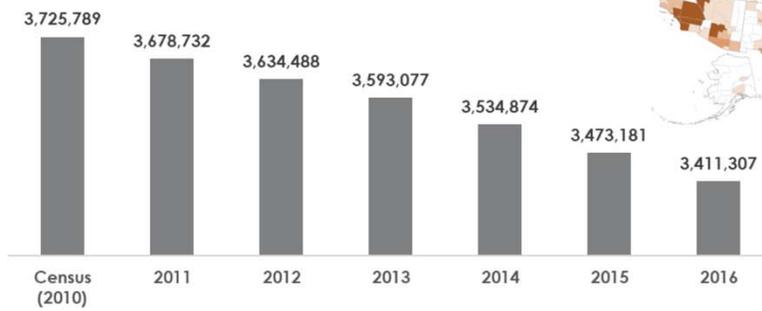
**Real GNP Growth in Puerto Rico**  
Fiscal Years -- 2001 - 2016



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# Before Maria: Population Loss

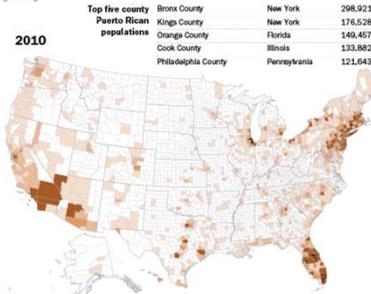
## Population in Puerto Rico 2010-2016



Source: US Census Bureau (2017). Annual Estimates of the Resident Population [Table PEPANNRES].

## U.S. Puerto Rican Population

By county

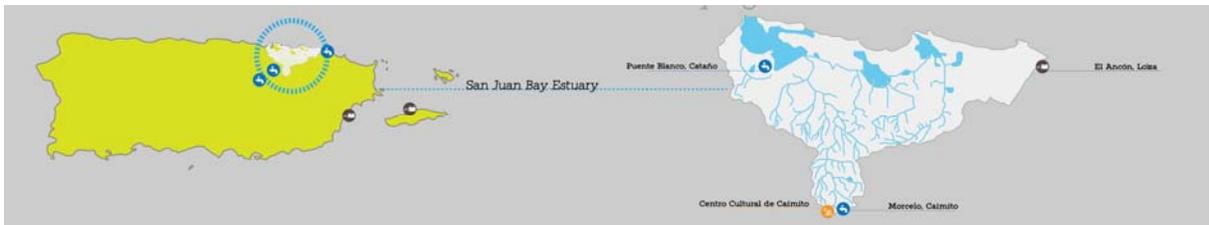


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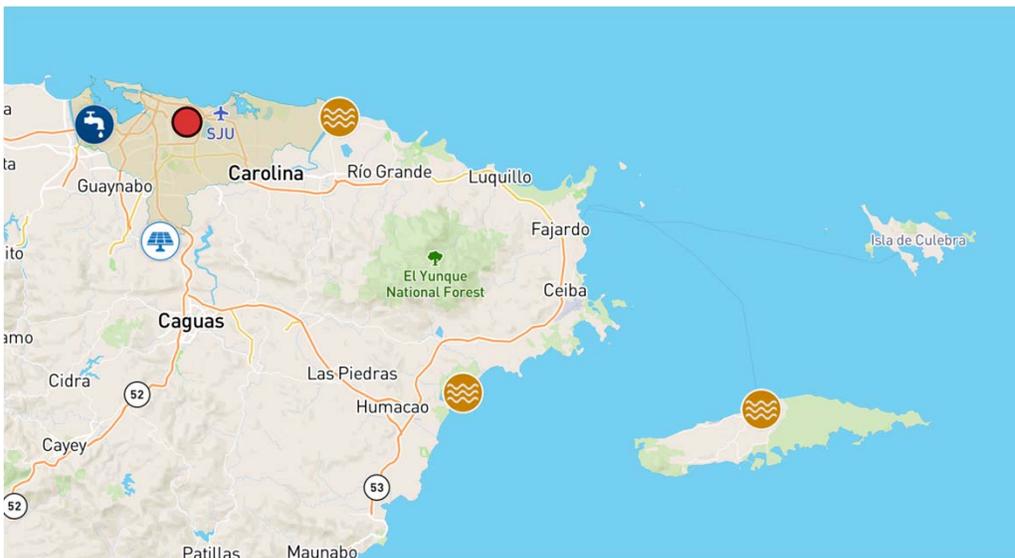
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# #EstuarioRevive Campaign: Relief Efforts



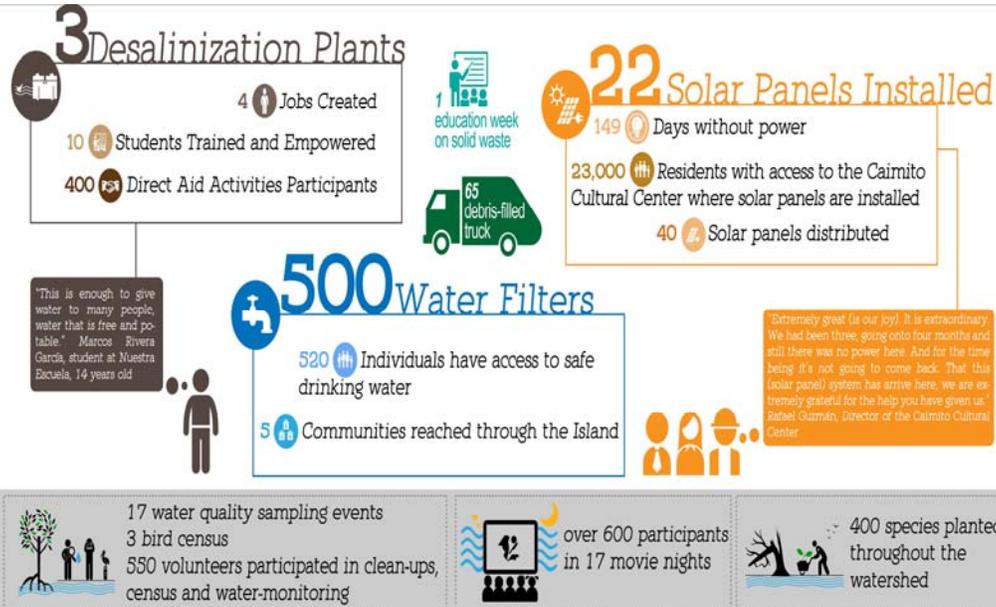
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# Estuario Climate Adaptation Efforts



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# #EstuarioRevive Campaign: Results



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## ACTION MODEL OF THE SAN JUAN BAY ESTUARY PROGRAM

- The Program divides its study area (97 square miles) into the Lower Watershed and Upper Watershed.
- The Upper Watershed is divided into 12 Critical Areas.
- The Program Strategizes its actions based on the following layers of Action:
  - Underserved Communities
  - Illegal Discharges into the system
  - Public Health Problems,
  - Ecological Value of the regions
- This comprehensive approach helps the Program quantify our impact and increase efficiency.



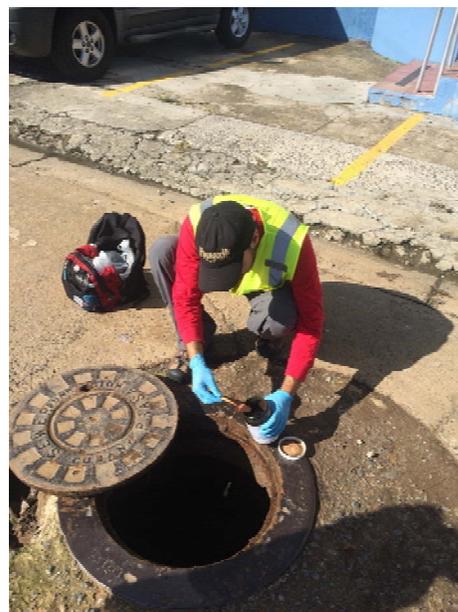
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## Detection of Human (HF183) and Leptospira interrogans (LIPL32) Gene Markers

SAMPLE ID	DATE	HF183	LIPL32-45F/LIPL32-286R
MAMEYES RIVER	10/19/2017	-	-
ESPIRITU SANTO RIVER	10/19/2017	+	-
PRASA TANK @ RÍO GRANDE	10/19/2017	-	-
ESPERANZA PENINSULA	10/25/2017	+	-
MALARIA CANAL	10/25/2017	+	-
CONDADO	10/25/2017	-	-
MARTÍN PEÑA	10/25/2017	+	-
CANTERA	10/25/2017	+/-	+
UNIVERSITY GARDENS	10/26/2017	+	-
BUENA VISTA	10/26/2017	+	-
JOSEFINA	10/26/2017	+	+
DOÑA ANA	10/26/2017	+	-
JUAN MÉNDEZ @ BELMONTE	10/26/2017	+	+
JUAN MÉNDEZ @ BARBOSA ST.	10/26/2017	+	-
SAN CLAUDIO AVENUE @ CUPEY	10/27/2017	+	-
WALGREENS @ CUPEY	10/27/2017	+	+
SHEET WORKSHOP @ TRUJ ALTO	10/27/2017	+	+
URUGUAY ST. @ BLASINA	10/27/2017	+	-
DRNA @ CATAÑO	10/30/2017	+	-
PUENTE BLANCO @ CATAÑO	10/30/2017	+	-

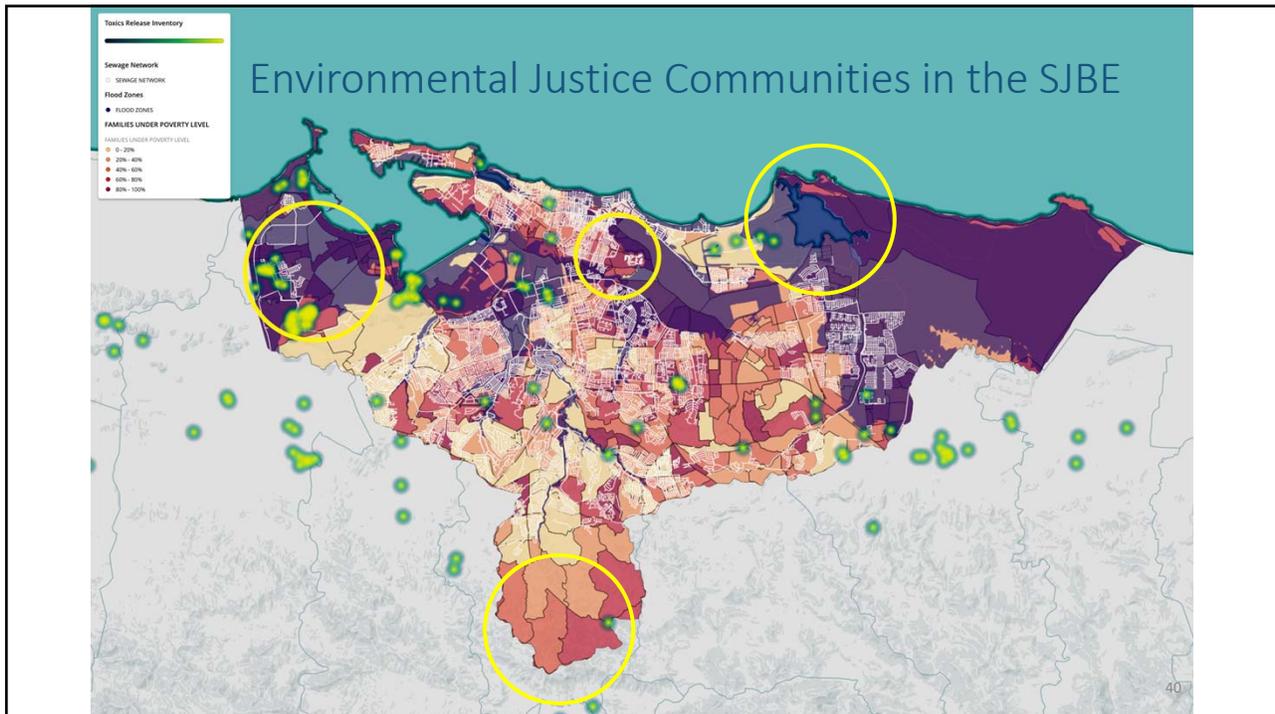
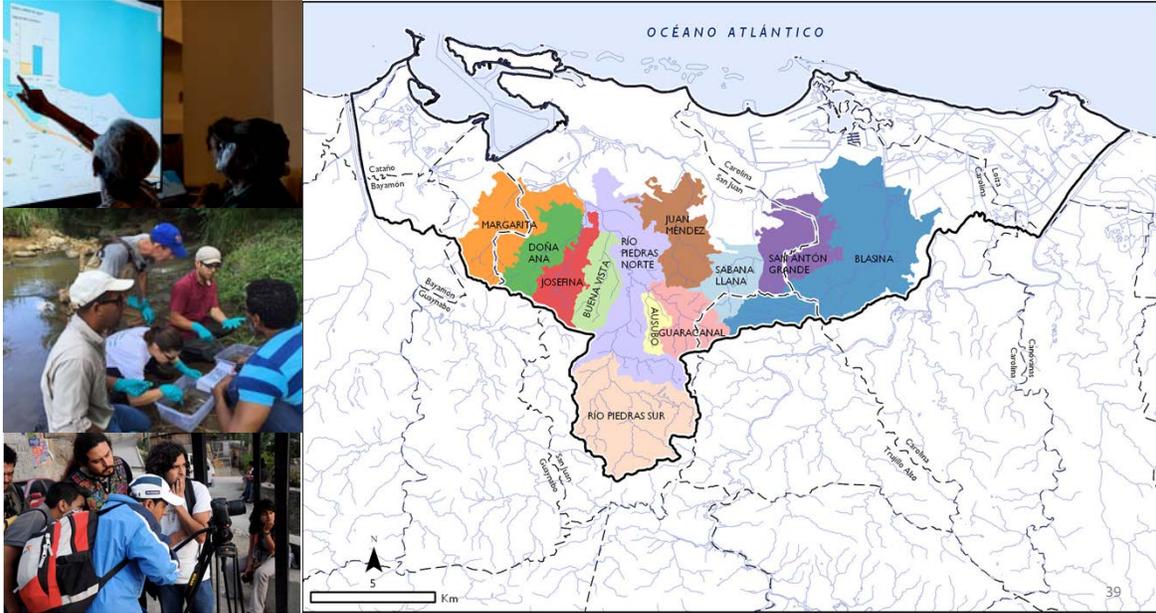
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## Illegal Discharges Detection & Elimination (IDDE) Multi-Sectorial Taskforce



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# Water Community Network



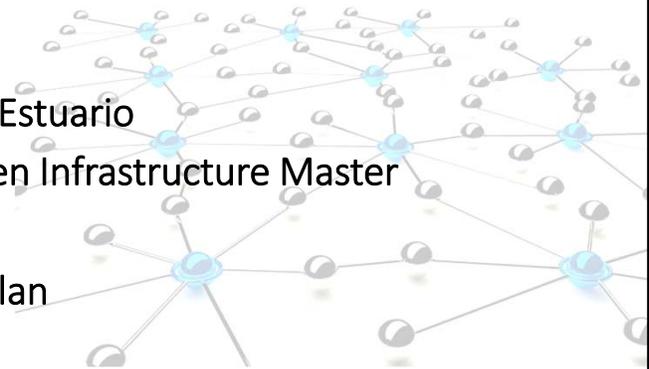
## Strategies to Engage at the Community Level

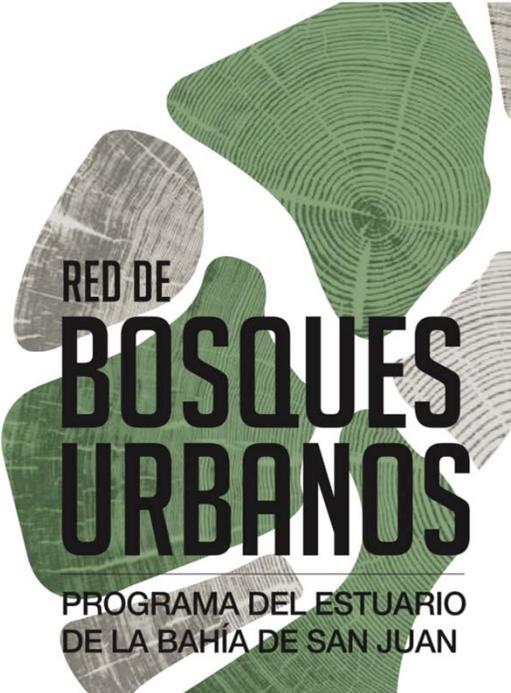
- San Juan Bay Estuary Program Educational, Volunteer Oriented Activities
- Improve community preparedness and resilience in the face of extreme events
- Improve access to clean water and water quality in the watershed
- Facilitate resources to address issues and needs
- Promote better handling of debris and solid waste
- Citizen Science Certification Program
- Identification of Illicit Discharges & Correction
- Rapid Needs Assessment
- Water Quality Network



## Strategies to Engage at the Watershed Level

1. Community Resilience Unit at Estuario
2. Urban Forests Network & Green Infrastructure Master Plan
3. Watershed Based Mitigation Plan
4. Water Community Network





**RED DE  
BOSQUES  
URBANOS**

PROGRAMA DEL ESTUARIO  
DE LA BAHÍA DE SAN JUAN

**PASAPORTE**

Nombre:

Pueblo:

Edad:



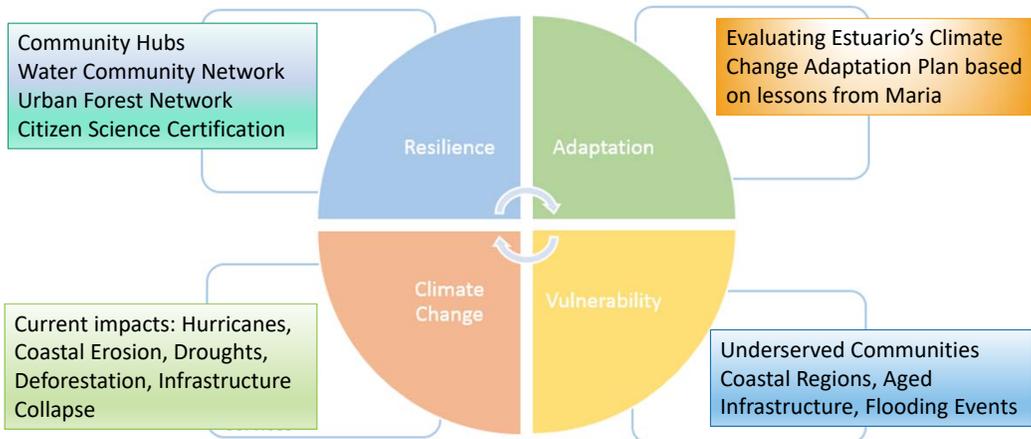
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Water Community Network



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# An Interconnection between Climate Change, Adaptability, Vulnerability and Resilience



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## Tools for Resiliency

- Estuario's APP for Citizens and Decision Makers
- Citizen Science Certification Program
- Mapping Tool: Estuario.info
- Community Development Corporation
- Community Resilience Unit



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## Funding Requested by the Government of Puerto Rico

Housing	\$31,068,532,671
Power Grid and Resiliency	\$17,789,375,000
Health and Healthcare	\$14,946,507,962
Agriculture	\$2,076,500,000
Social Services	\$288,262,193
Economic Development	\$3,194,677,600
Communications Infrastructure	\$1,500,000,000
Roads & Bridges	\$4,497,725,000
Ports and Airports	\$1,345,700,000
Public Building Revitalization	\$153,100,000
Water and Water Control Facilities	\$1,280,822,003
Sanitary Sewer and Storm Drainage	\$1,409,716,413
Education and Schools	\$8,413,208,822
Environment and Natural Resources	\$1,581,050,000
Public Safety & First Response Coordination	\$486,990,571
Long-Term Recovery Management and Coordination	\$9,000,000
Cost Share	\$4,358,445,905
<b>Grand Total:</b>	<b>\$94,399,614,140</b>



# Environmental Justice and Disaster Resilience in the San Juan Bay Estuary System

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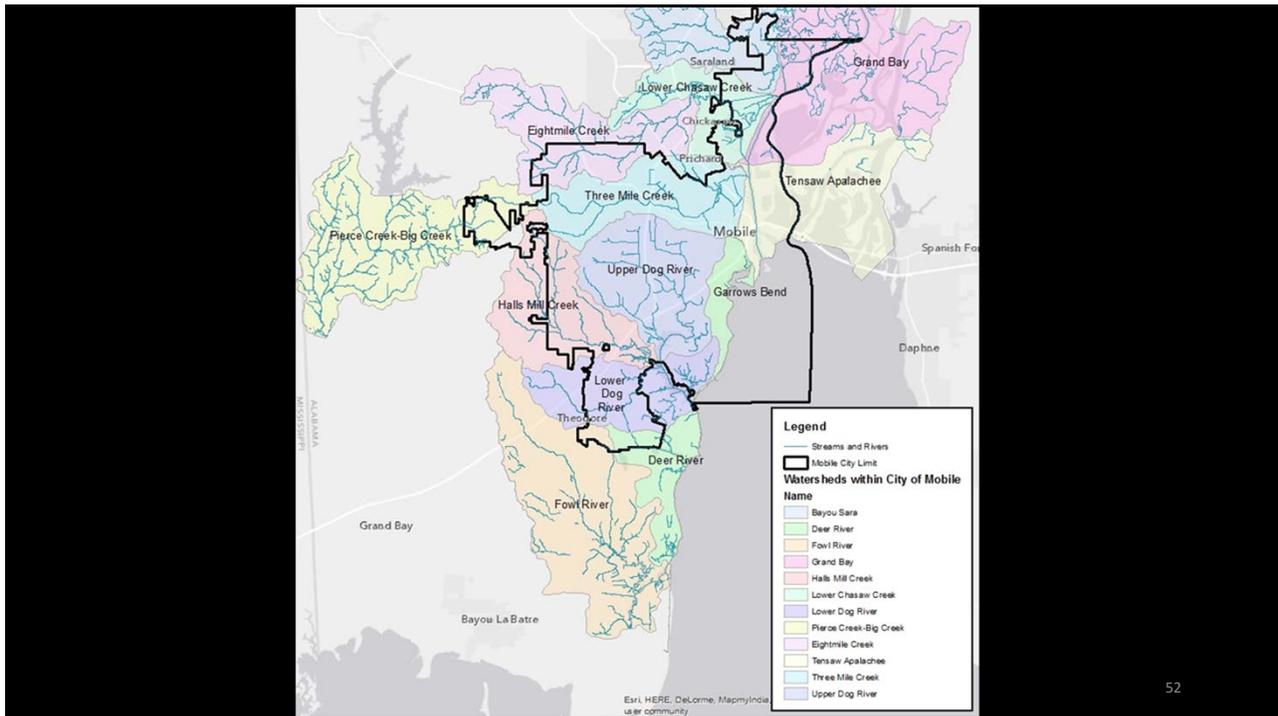
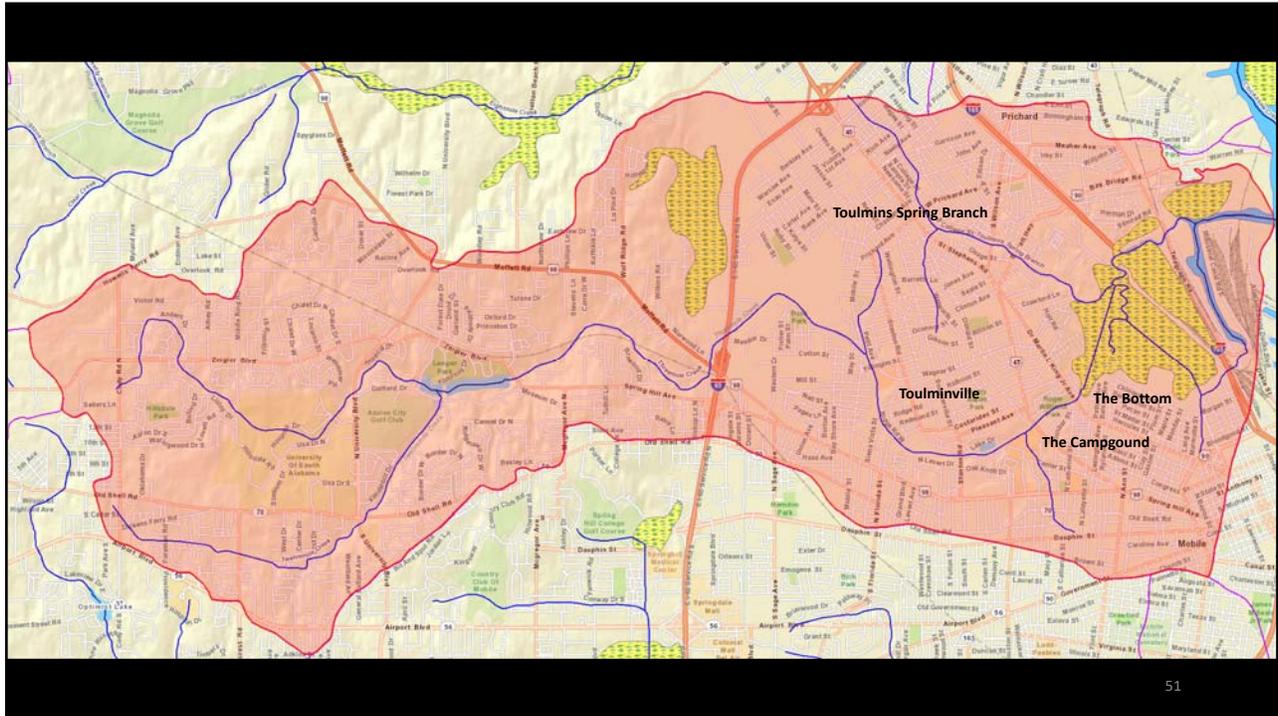
## Overview of the Mobile Bay NEP

*The National Estuary Program was created by the U.S. Congress in 1987 through amendments to the Clean Water Act, to "identify, restore, and protect nationally significant estuaries in the United States."*

- Funded by a partnership between U. S. EPA, the State of Alabama, and local governments and interests
- One of 28 "nationally significant estuaries" in the United States
- In existence for 22 years
- *Comprehensive Conservation Management Plan (CCMP)*
- Annual Work Plan Guides activities from one year to next

*Photo courtesy of Buzz Sierke*

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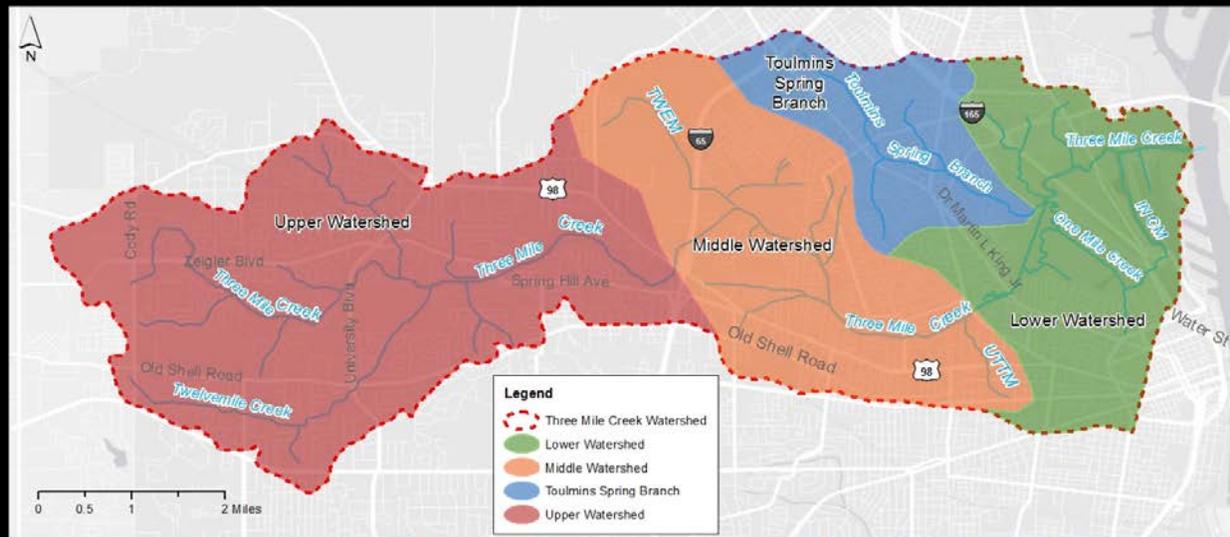
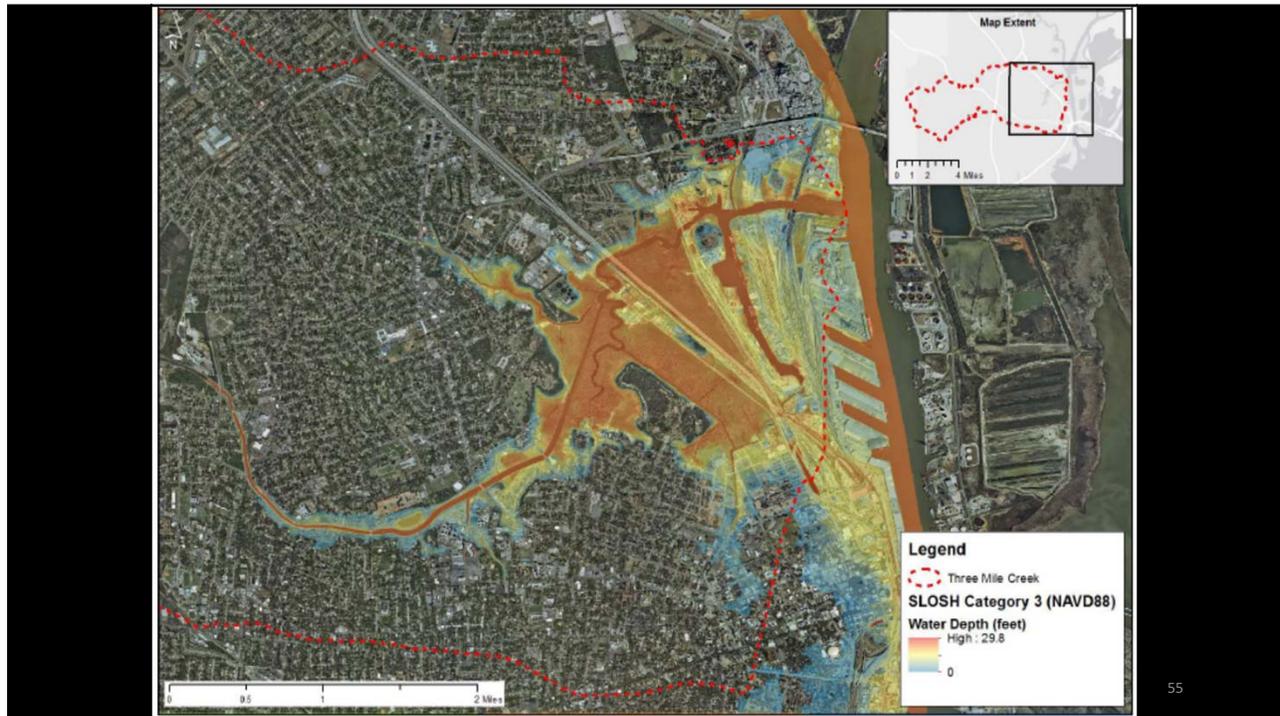


Table 2-6 Census Block Groups Intersecting Three Mile Creek Areas of Concern

	Census 2010 Population	Hispanic	White	African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Other	Two or More Races
Lower Watershed	15,247	195	3,742	11,042	47	79	1	15	126
		1.3%	25%	72%	0.3%	0.5%	0.01%	0.10%	0.8%
Middle Watershed	22,181	231	7,027	14,623	45	69	3	7	176
		1.0%	32%	66%	0.2%	0.3%	0.01%	0.03%	0.8%
Toulmins Spring Branch	14,401	94	128	14,060	29	2	0	2	86
		0.7%	0.9%	98%	0.2%	0.0%	0.00%	0.01%	0.6%
Upper Watershed	47,210	1,310	25,688	18,267	138	1,074	9	68	656
		3%	54%	39%	0.3%	2.3%	0.02%	0.14%	1.4%

Table 2-7 Census Block Groups Intersecting Three Mile Creek Areas of Concern (Median Household Income is average median household income in the past 12 months (in 2011 inflation-adjusted dollars))

	Number of Households	Median Household Income	Number of Households with Income Below Poverty Line	Number of Households with Income at or Above Poverty Line	Percent Households Below Poverty Line
Lower Watershed	5,672	\$26,512	1,840	3,832	32%
Middle Watershed	9,563	\$34,154	2,473	7,090	26%
Toulmins Spring Branch	5,788	\$19,741	2,683	3,105	46%
Upper Watershed	18,036	\$57,190	2,757	15,279	15%



**The Mobile Bay National Estuary Program undertook several initiatives to build community resilience in TSB and the Lower TMC Watershed in the face of climate change:**

- Auburn University/Community Solutions investigations and Prichard Drainage Study
- MLK Jr. Avenue Leadership Academy
- Toulmins Spring Branch Community Adaptation Engagement
- Coastal Alabama Conservation Corps

**An Auburn University team assessed hydrology in the Toulmins Spring Branch Subwatershed:**

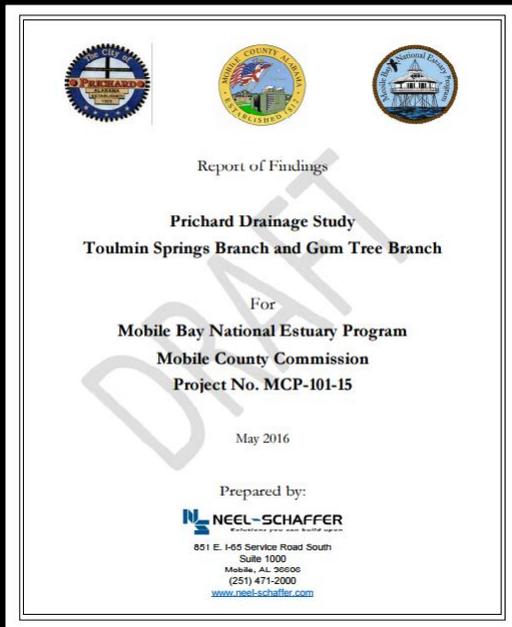
- Verified or corrected TSB Subwatershed boundaries
- Located and characterized stormwater outfalls.
- Installed five pressure transducers to record flow and depth in TSB.
- Installed a rain gauge was installed at Prichard Municipality Complex.
- Calibrated a Stormwater Management Model.
- Sampled water quality from TSB.

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**Community Solutions Fellow Maharam Dakua**

- Worked with Auburn Team on hydrologic study.
- Determined areas of lower elevation.
- Made visits and interviewed residents on problems related to stormwater and flooding.
- Identified vulnerable areas of flooding and neglect within Mobile and Prichard city limits.
- Identified problems, including:
  - Poor maintenance of earthen ditches
  - Narrow channels, clogged by vegetation and litter
  - Increased stormwater volume related to upstream imperviousness

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**Recommendations include:**

- Use Low Impact Development techniques.
- Install Gross Pollutant Removal Devices.
- Remove debris accumulations.
- Increase culvert size to increase flows.
- In concrete culverts, remove sediments, repair concrete damage, and remove accumulated sediments.
- Repair problem road-crossing culverts.



**The Martin Luther King Jr. Avenue Leadership Academy**





## Community Adaptation Planning in the Toulmins Spring Branch Subwatershed

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## Coastal Alabama Conservation Corps

- In response to MLK Leadership Academy suggestions.
- MBNEP secured \$250,000 from NFWF Creating a New Generation of Conservationists.
- Partnered with MLKARC and The Student Conservation Association.

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**Thank You!**

**Tom Herder**

**Mobile Bay National  
Estuary Program**

**[therder@mobilebaynep.com](mailto:therder@mobilebaynep.com)**

**251-380-7937**



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Questions?

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# Community Driven Planning: LESSONS & OPPORTUNITIES

Melissa Deas, Climate Program Analyst

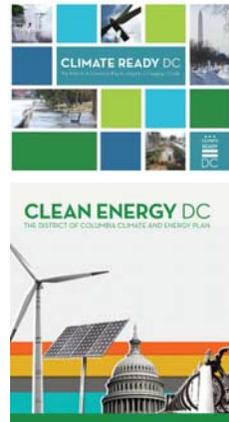


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## SUSTAINABLE DC GOALS FOR 2032

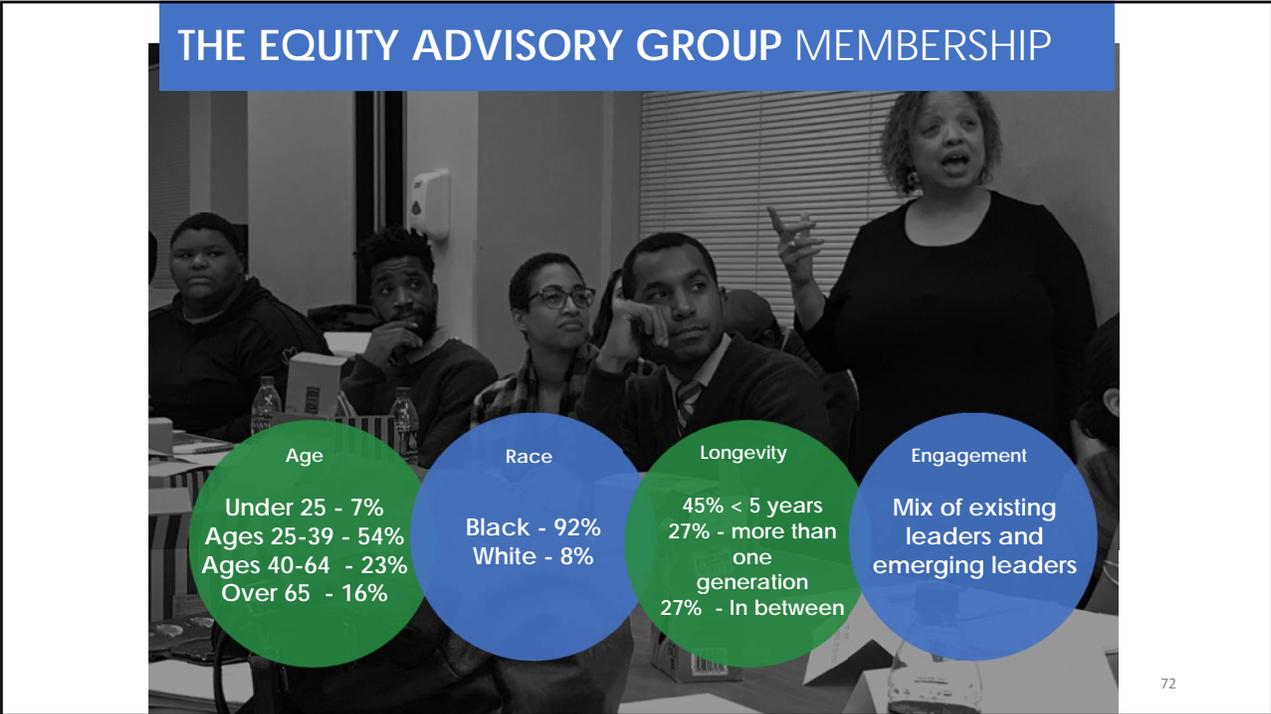
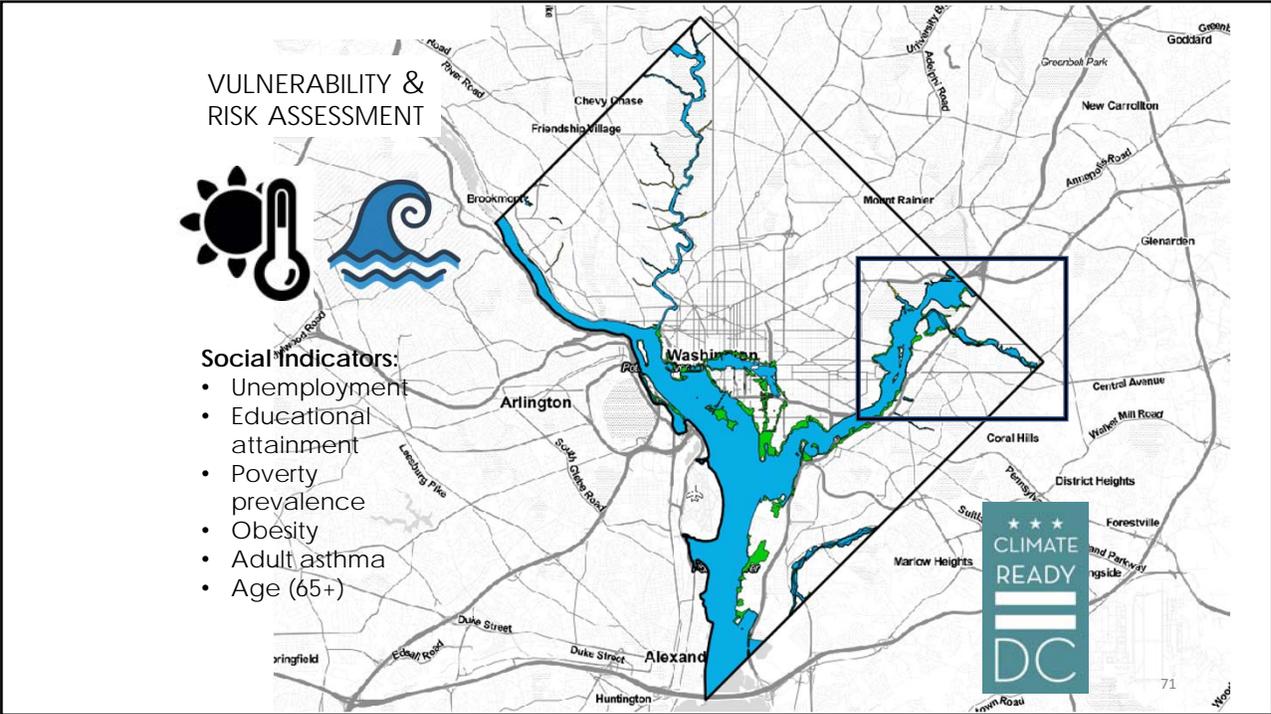


- Adapt to Climate Change
- Climate Ready Buildings
- Cut Energy Use 50%
- 50% Renewable Energy
- Net Zero New Buildings
- Net Zero Retrofits
- Cut GHG Emissions 50%



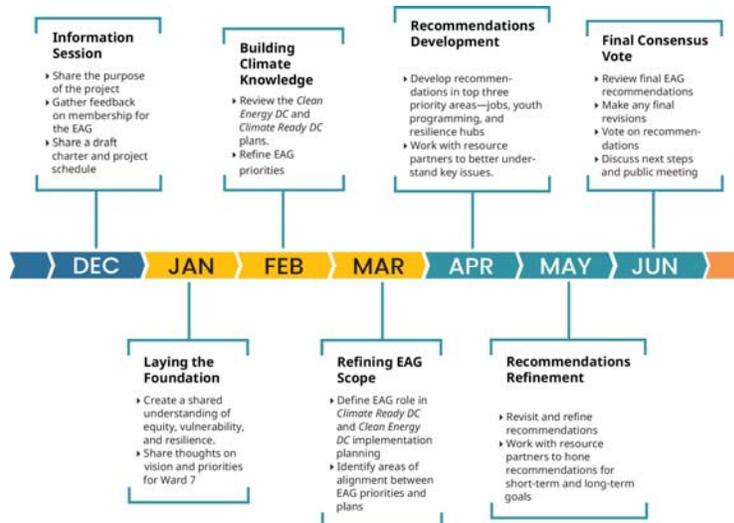
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## EAG MEETING SCHEDULE



## EAG RECOMMENDATIONS



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## COMMUNITY ENGAGEMENT STEPS (PART 1)



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**SCOPE THE PROJECT: THE VISION AND SCOPE OF THE PROJECT SHOULD BE CO-DEFINED**



77

**IDENTIFY FUNDING: DEDICATED FUNDING CAN OPEN DOORS FOR MORE EQUITABLE ENGAGEMENT**



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## BUILD THE PROJECT TEAM: PROJECT PARTNERS SHOULD BE CHOSEN WHO ARE ORIENTED TOWARDS UPLIFTING THE COMMUNITY



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## FORM THE COMMITTEE: THIS IS BOTH AN OPPORTUNITY TO HEAR DIVERSE PERSPECTIVES AND BUILD CONSENSUS



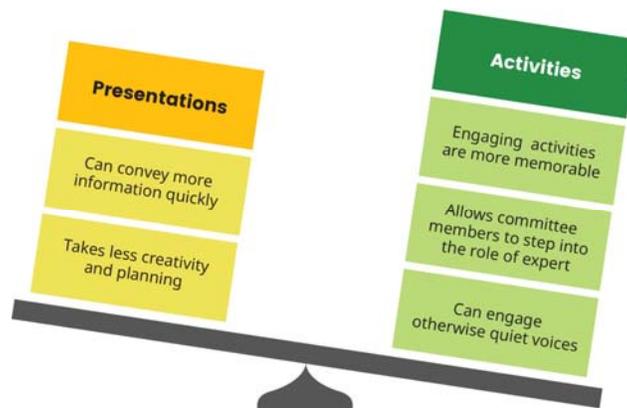
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## COMMUNITY ENGAGEMENT STEPS (PART 2)



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## CREATE A MEETING STRUCTURE: THE GOAL IS TO LISTEN AND LEARN, NOT CONVINCING AND PERSUADE



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**DEVELOP RECOMMENDATIONS:**  
CO-DESIGNED RECOMMENDATIONS ARE STRONGER  
RECOMMENDATIONS



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**SHARE RECOMMENDATIONS:**  
THE COMMITTEE DOES NOT SPEAK FOR THE  
ENTIRE COMMUNITY



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## REMAIN ACCOUNTABLE: RELATIONSHIP AND TRUST BUILDING SHOULD BE A HIGH PRIORITY



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## QUESTIONS?



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## Questions?

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## Speaker Contact Information

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## Watershed Academy Website

More webcasts coming soon!

[www.epa.gov/watershedacademy](http://www.epa.gov/watershedacademy)

The slides are already posted and a recording will be posted within the next 2-3 weeks.

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## Participation Certificate

- If you would like to obtain a participation certificate you can access the PDF in the **Handouts** section of your control panel.
- You can type each of the attendees names into the PDF and print the certificates.

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Thank You!

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