

Building Resilience in Partnership with Vulnerable Communities

Webcast sponsored by EPA's Watershed Academy



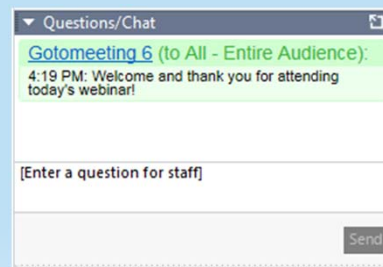
Thursday, November 8, 2018, 1:00pm – 2:30pm Eastern

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 Program 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.”
- **To Report any Technical Issues** (such as audio problems) – Type your issue in the “Question/Chat” tool box on the right side of your screen and click “Send” and we will respond by posting an answer in the “Questions” box.



Speakers

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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?

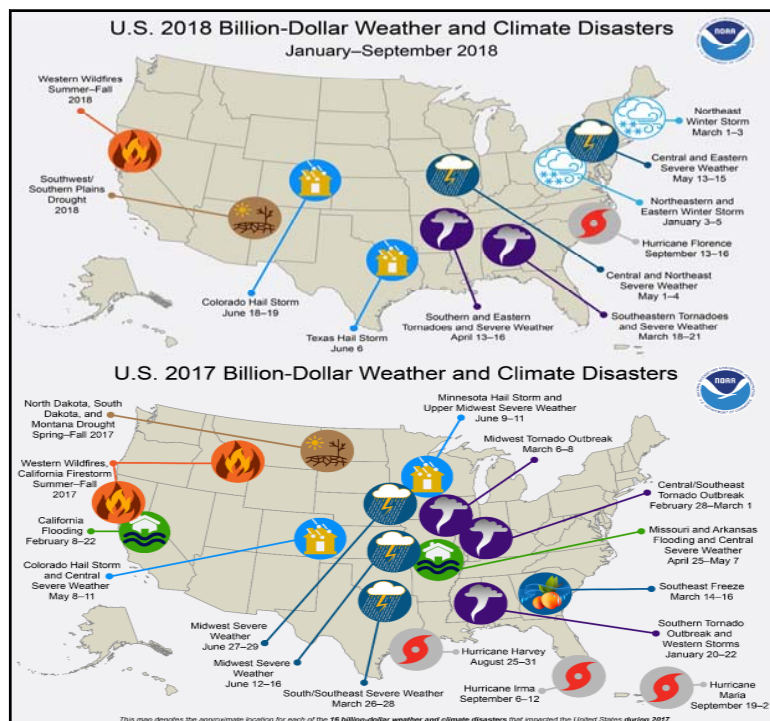
Resilience:

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:

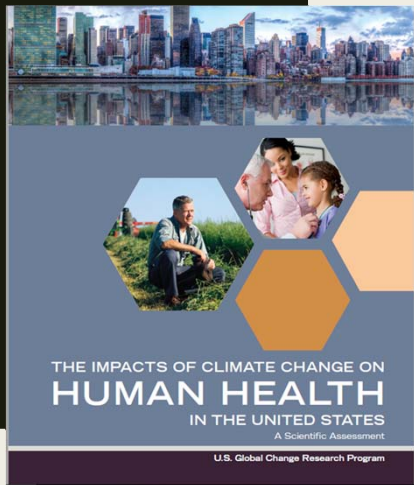
- ❖ Flooding due to extreme precipitation, hurricanes & coastal storms
- ❖ Droughts
- ❖ Wildfires
- ❖ Winter storms

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EXTREME
WEATHER
EVENTS IN
THE UNITED
STATES
2017 & 2018

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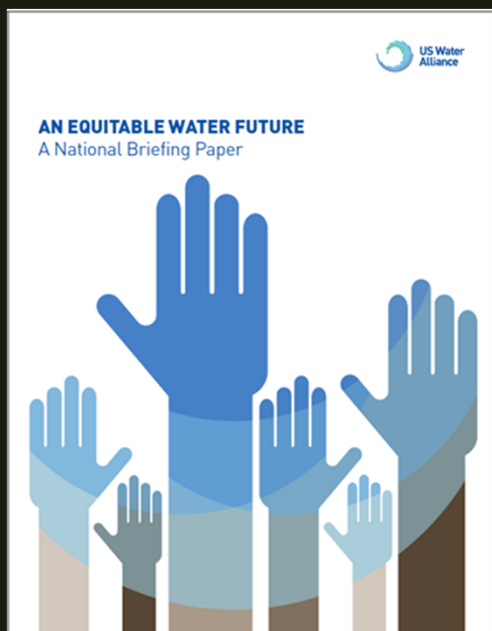


THE US GLOBAL CHANGE RESEARCH PROGRAM

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

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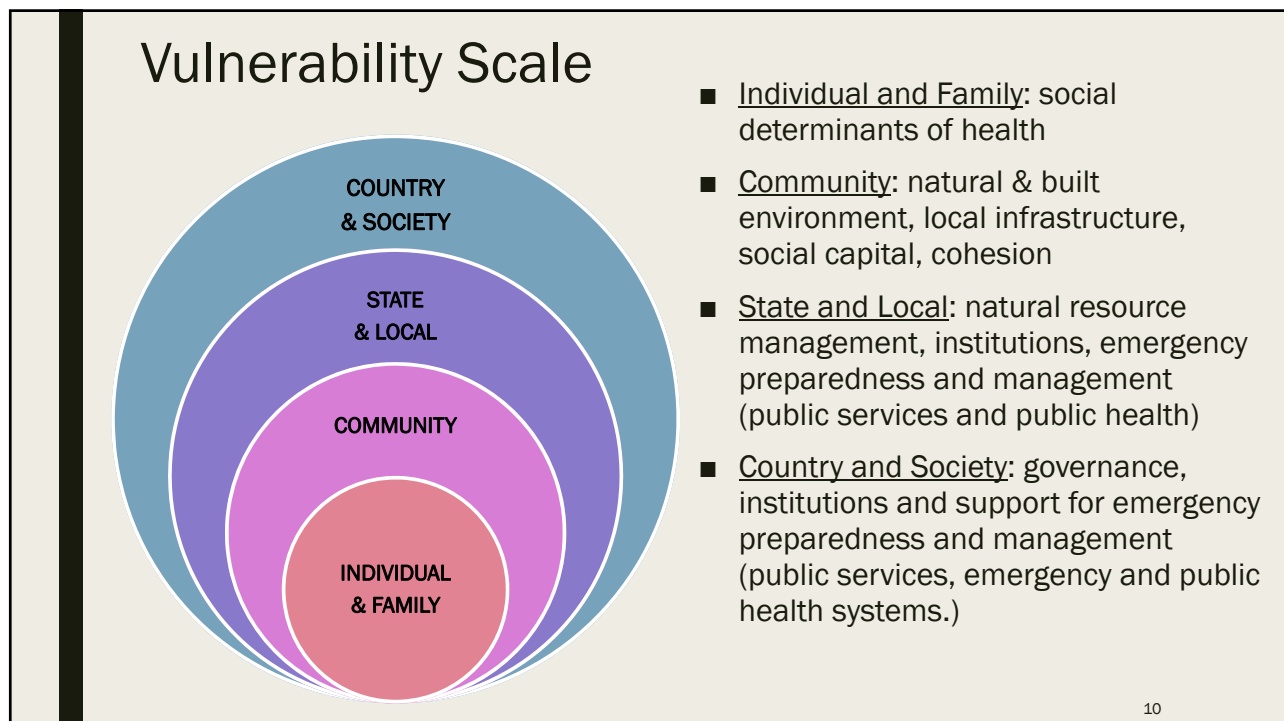
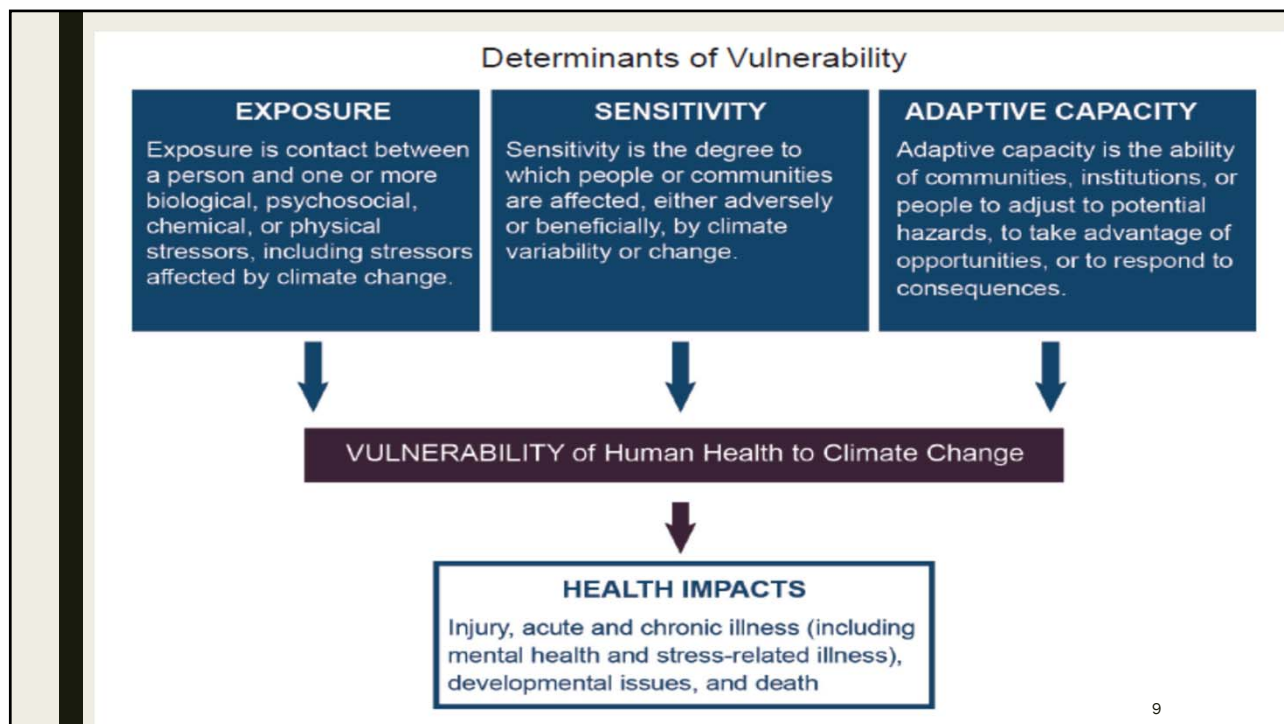


US WATER ALLIANCE

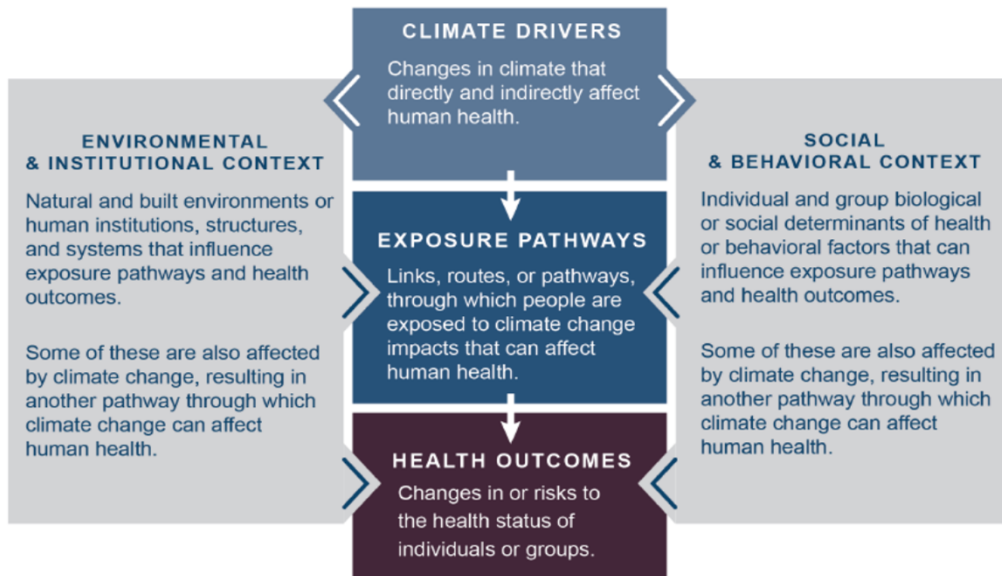
AN EQUITABLE WATER FUTURE: A NATIONAL BRIEFING PAPER

http://uswateralliance.org/sites/uswateralliance.org/files/publications/uswa_waterequity_FINAL.pdf

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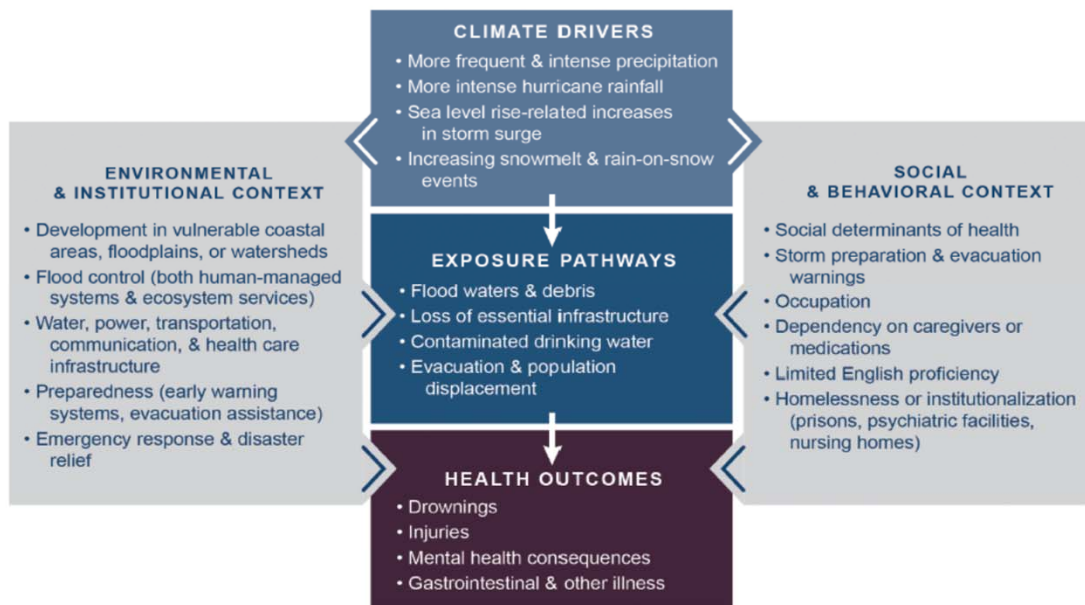
Understanding the Exposure Pathway Diagrams



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Climate Change and Health—Flooding

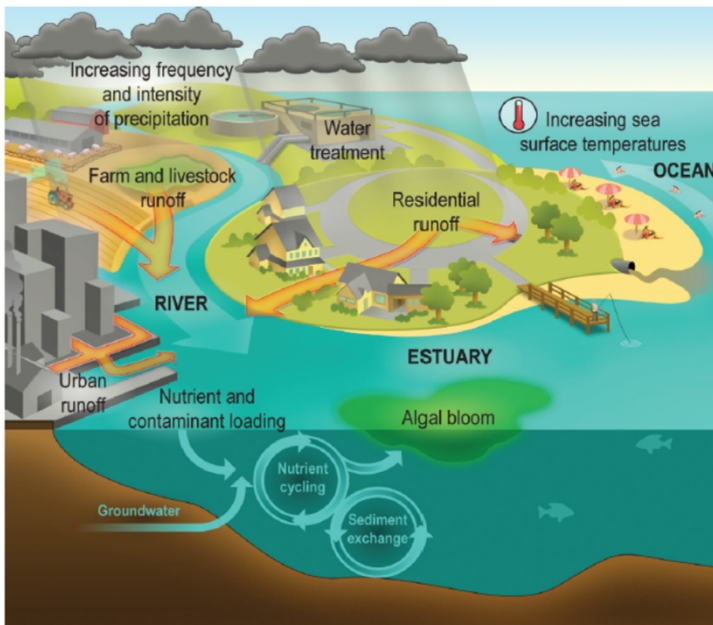


INFRASTRUCTURE



- 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.

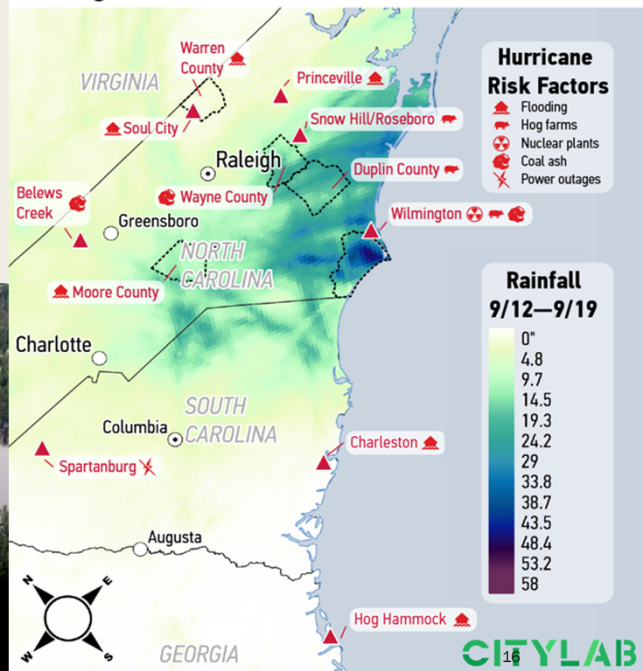
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Example from Hurricane Florence:

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.



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Equality



The assumption is that **everyone benefits from the same supports**. This is equal treatment.

Equity



Everyone gets the supports they need (this is the concept of "affirmative action"), thus producing equity.

Justice



All 3 can see the game without supports or accommodations because **the cause(s) of the inequity was addressed**. The systemic barrier has been removed.

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Jeanine Finley
Office of Environmental Justice
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/recorddisplay.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 President's Council on Environmental Justice received a grant for the "Sunland Beaches" project to educate 500 residents on how to properly dispose of household waste 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/environmentaljustice/environmental-justice-small-grants-program

About the EJ Small Grants Program

Each 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 overburdened 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

Don't 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

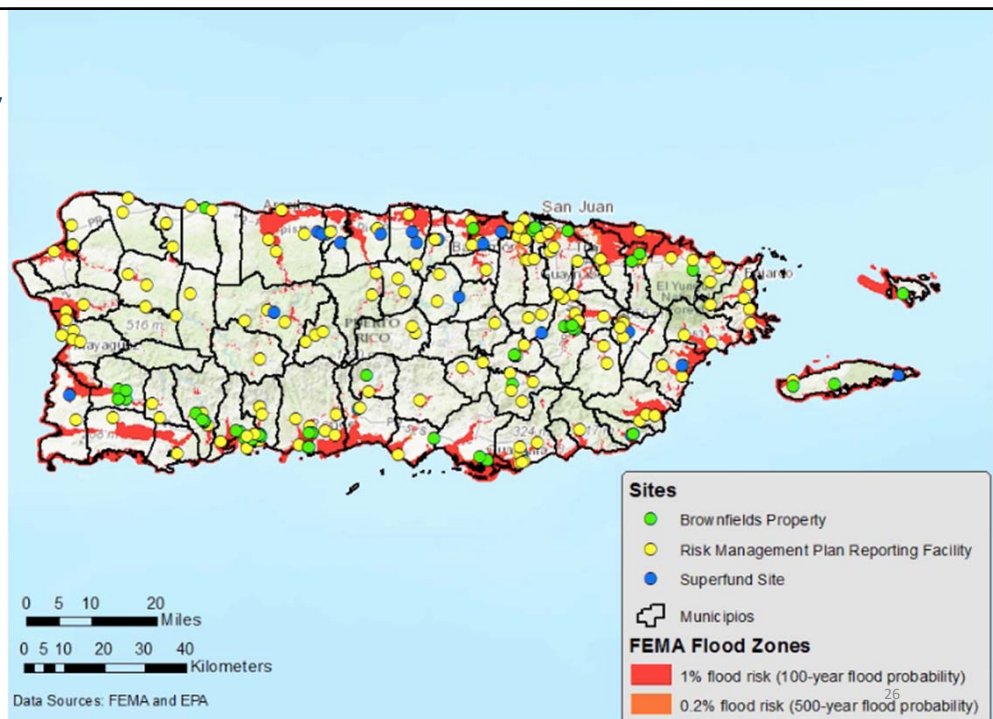
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Puerto Rico



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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.

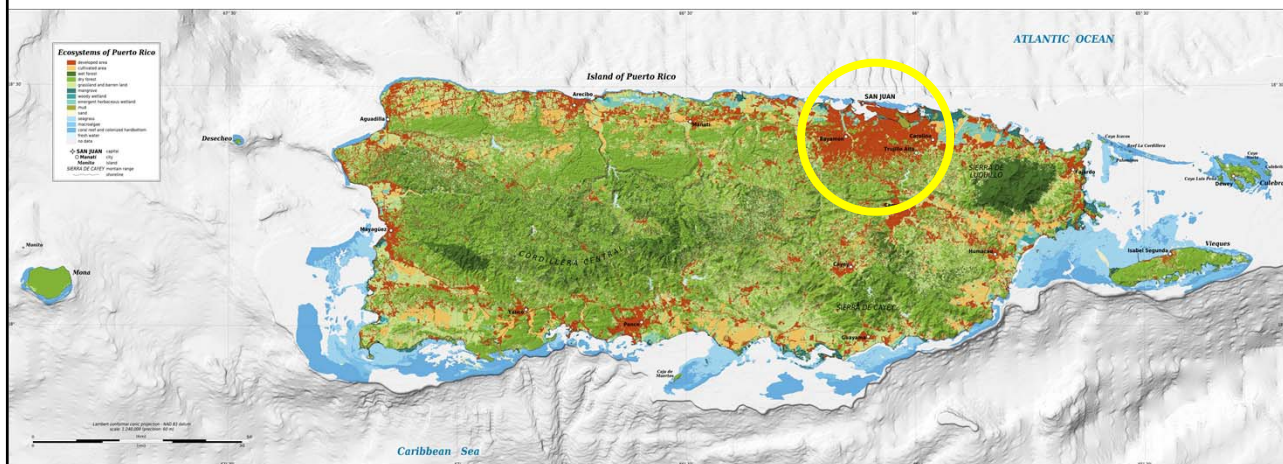
Unreliable and Expensive Electricity

Lack of Safe Water.

High Unemployment rate.



Metropolitan Region – San Juan Bay Estuary



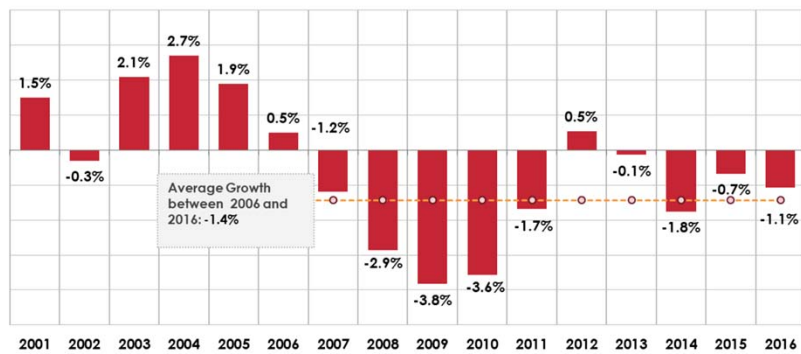
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Before Maria: Economic Recession

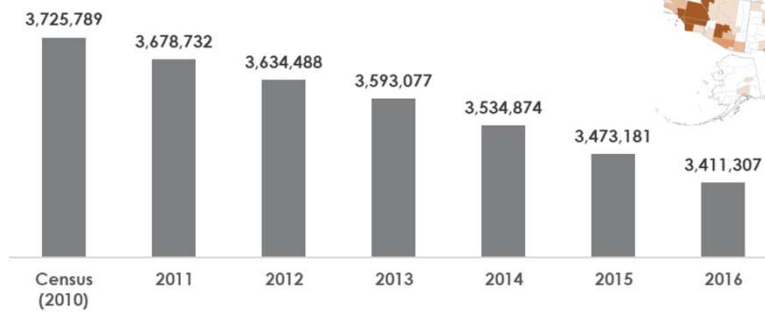
Real GNP Growth in Puerto Rico
Fiscal Years -- 2001 - 2016



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Before Maria: Population Loss

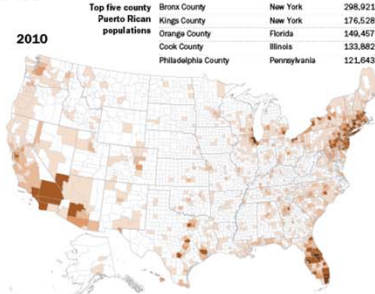
Population in Puerto Rico
2010-2016



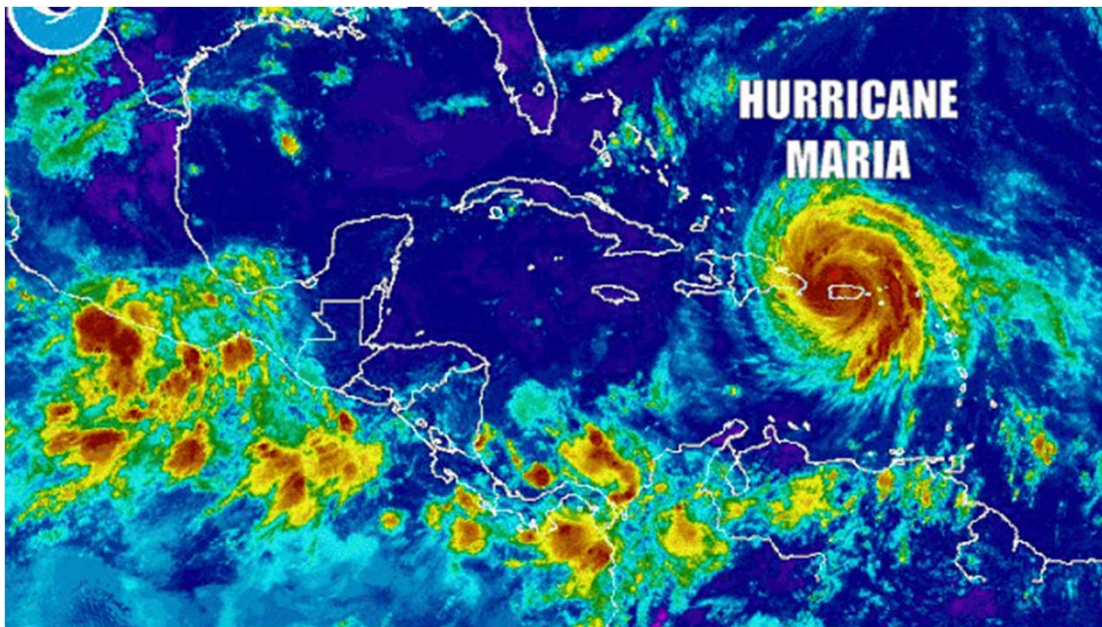
Source: US Census Bureau (2017). Annual Estimates of the Resident Population [Table PEPANNRES].

U.S. Puerto Rican Population

By county

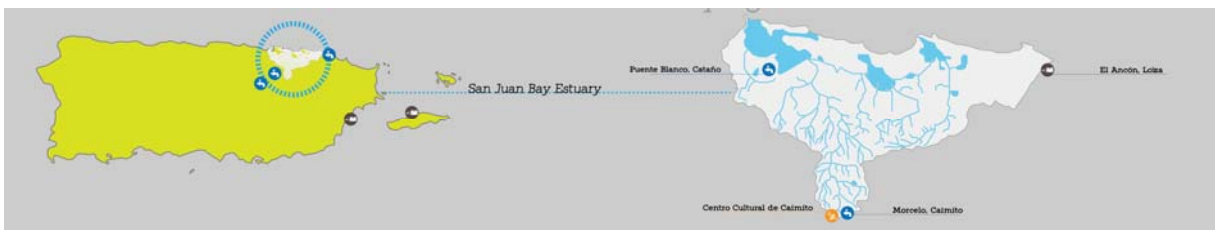


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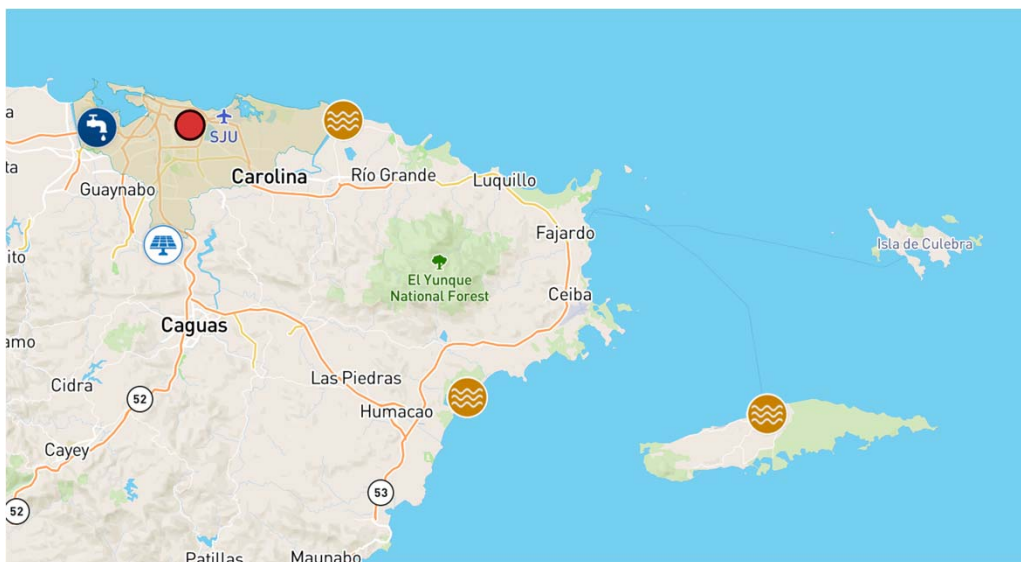
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#EstuarioRevive Campaign: Relief Efforts



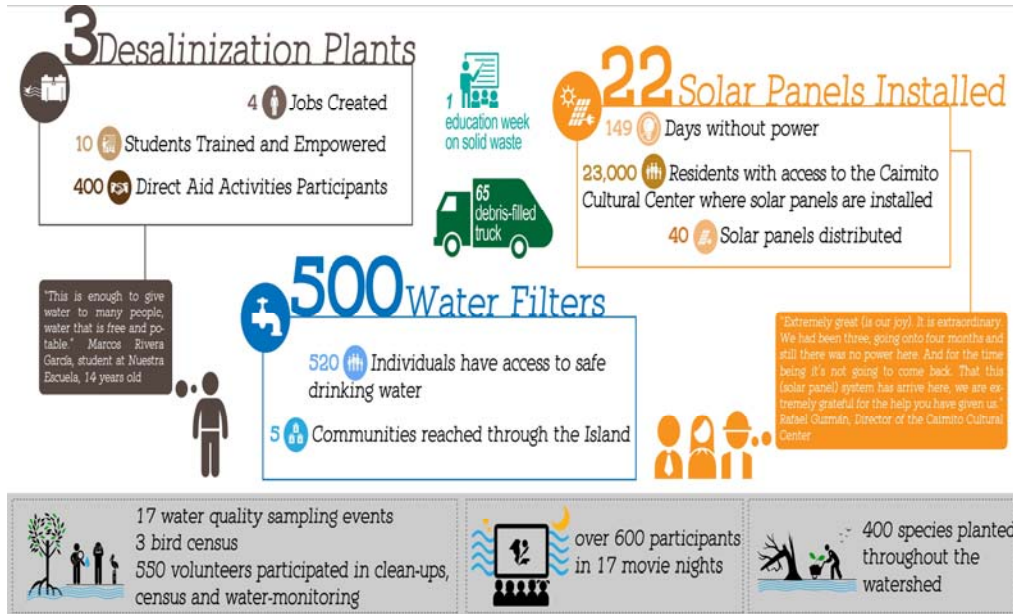
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Estuario Climate Adaptation Efforts



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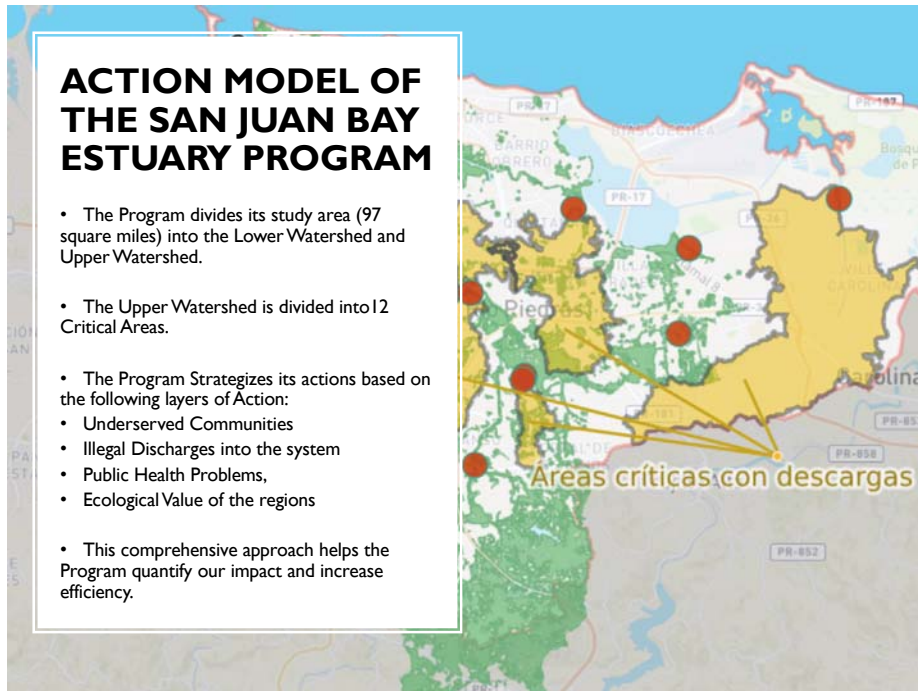
#EstuarioRevive Campaign: Results



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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 | - | - |
| ESPÍRITU 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 | + | - |

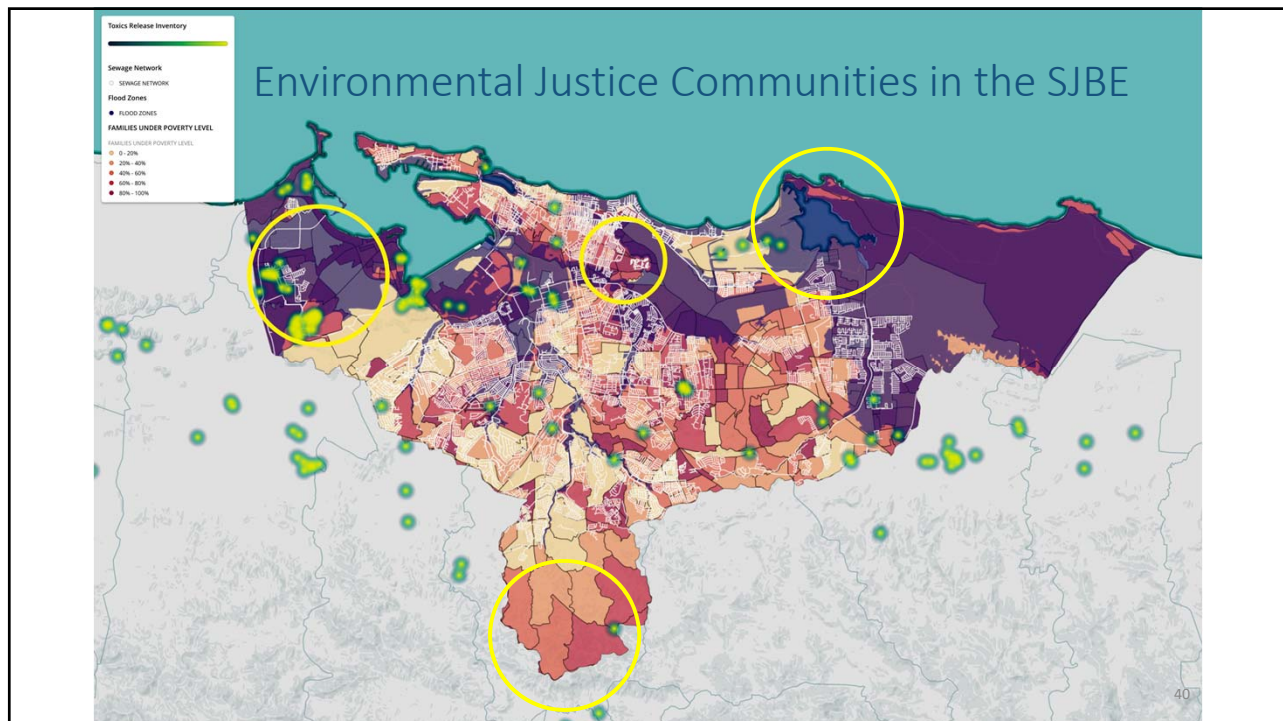
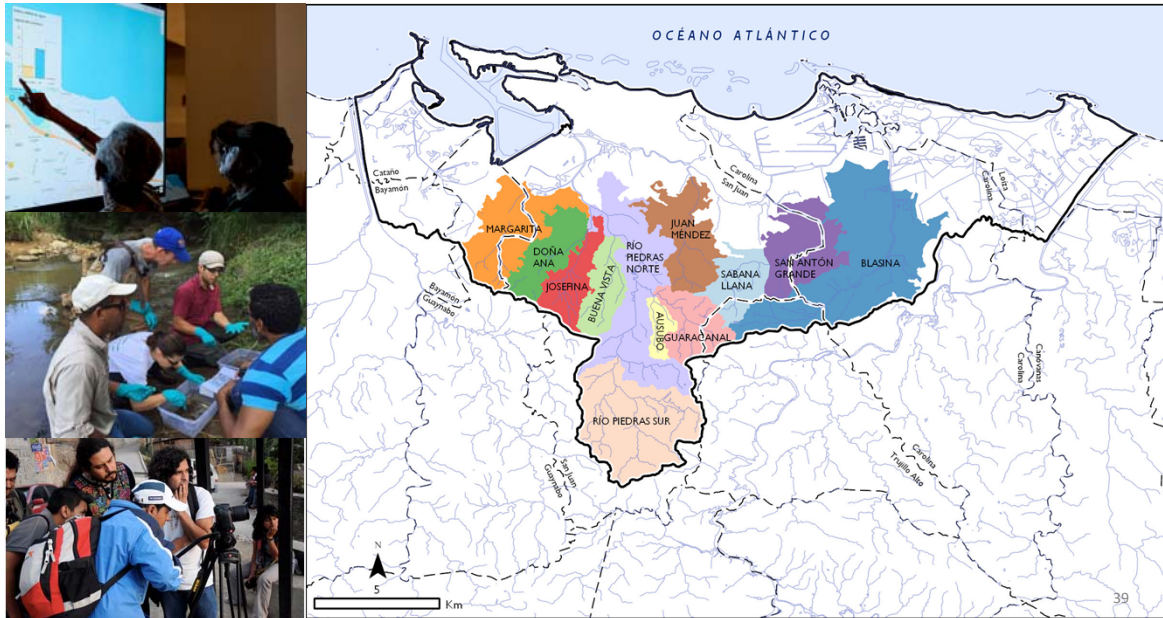
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Illegal Discharges Detection & Elimination (IDDE) Multi-Sectorial Taskforce



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Water Community Network



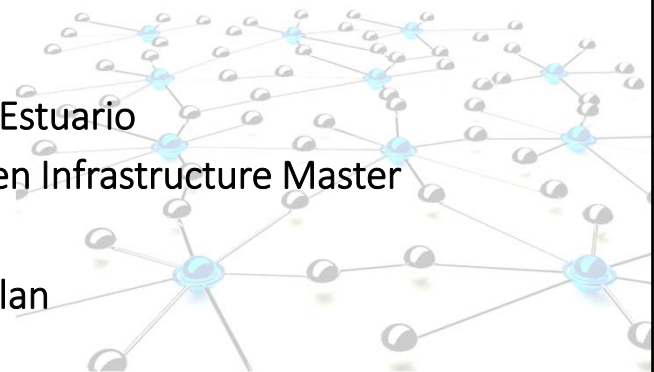
Strategies to Engage at the Community Level

- 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



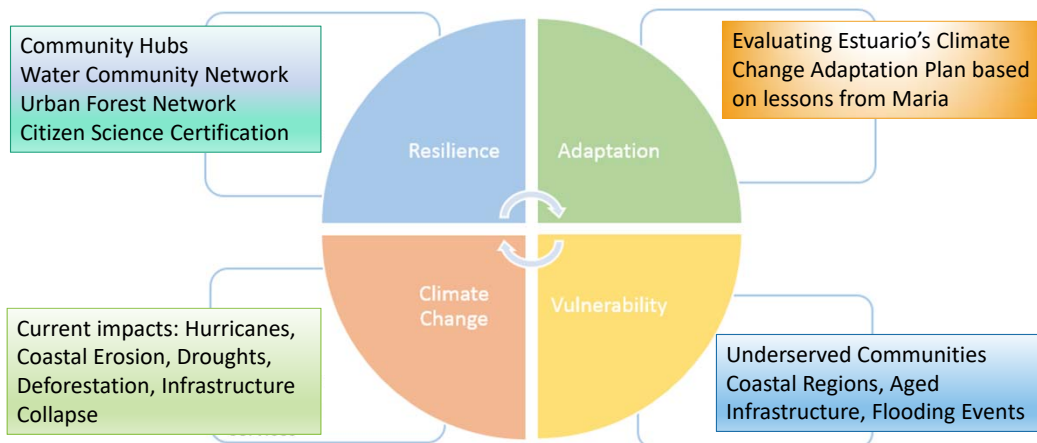
Strategies to Engage at the Watershed Level

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





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 |
| Grand Total: | \$94,399,614,140 |



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

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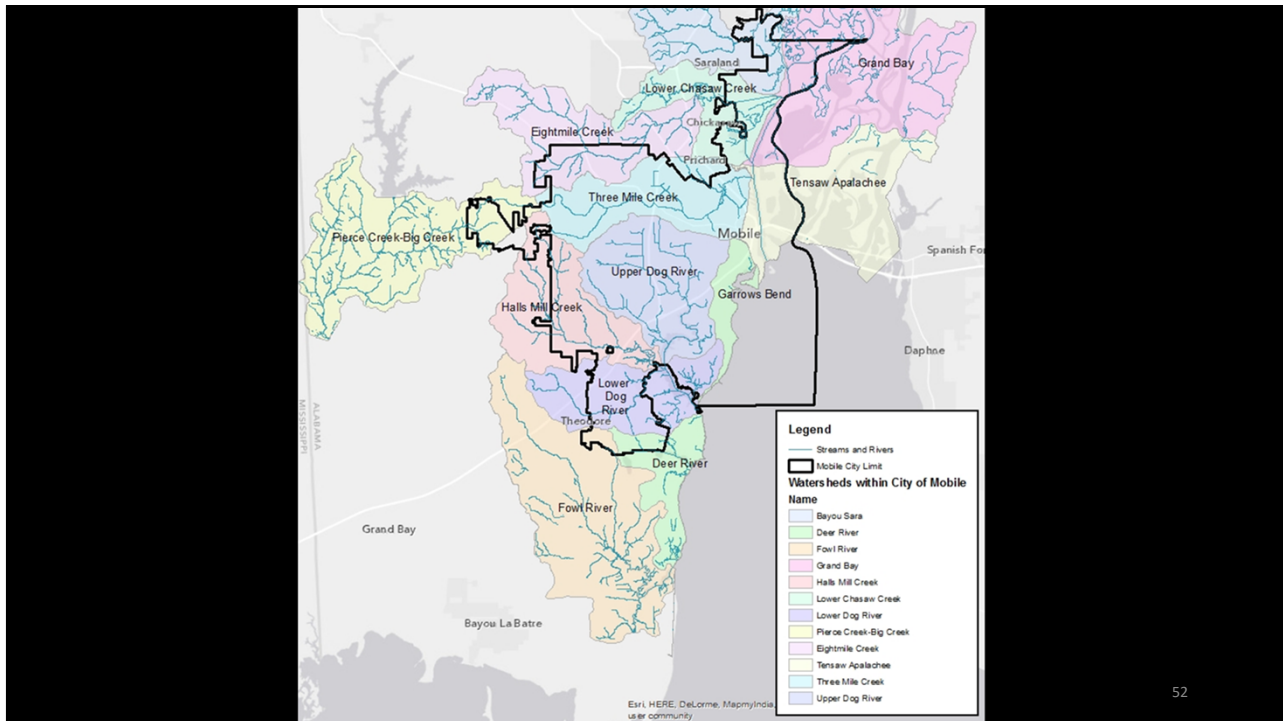
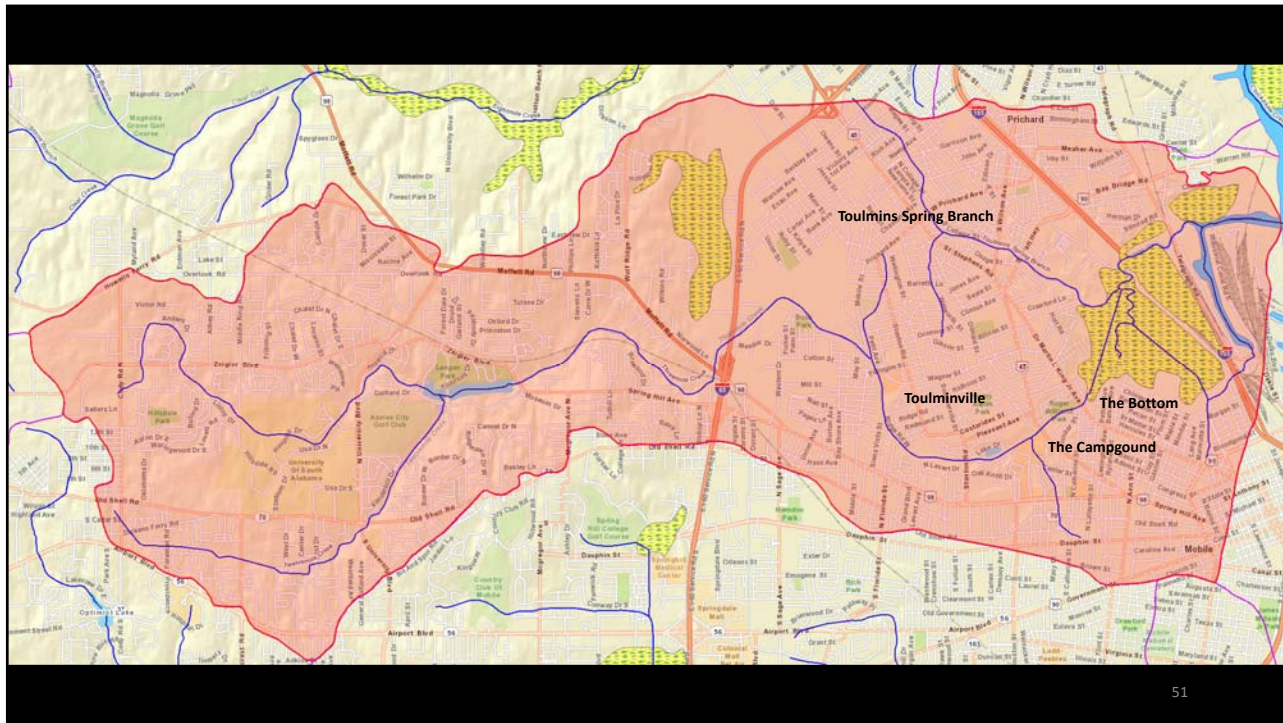
Overview of the Mobile Bay NEP

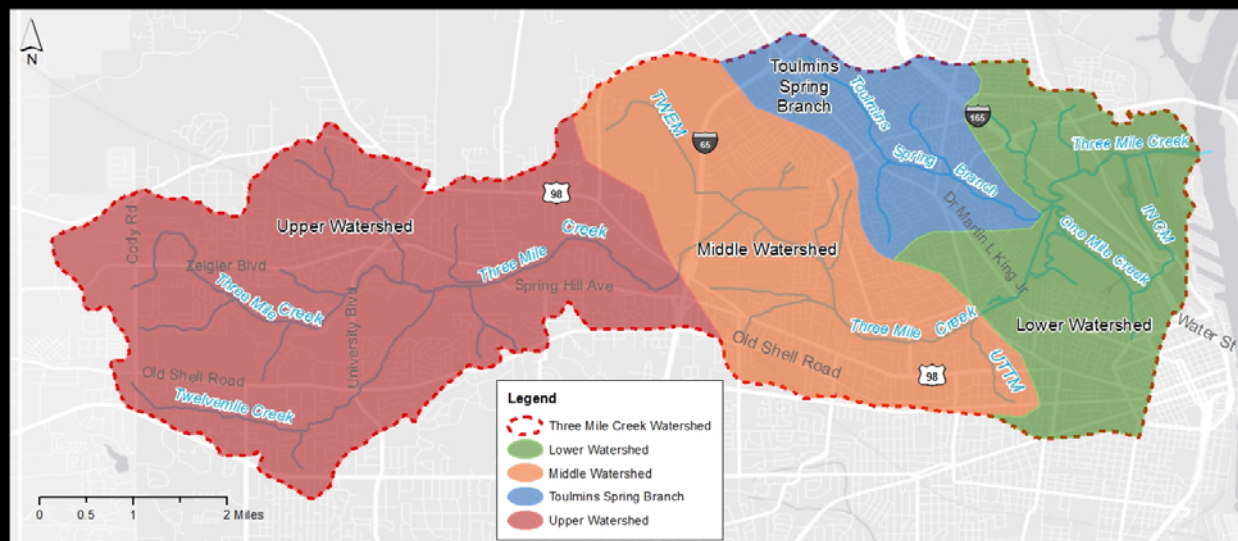
The National Estuary Program was created by the U.S. Congress in 1987 through amendments to the Clean Water Act, to "identify, restore, and protect nationally significant estuaries in the United States."

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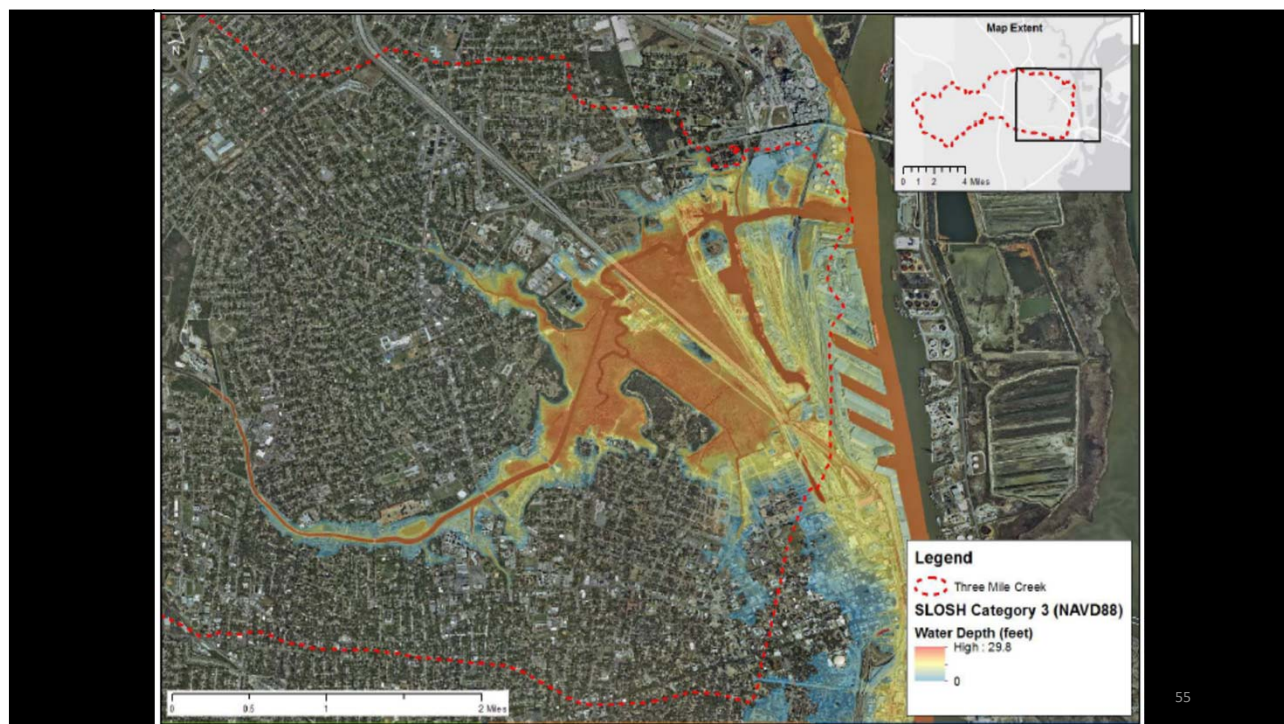
Table 2-6 Census Block Groups Intersecting Three Mile Creek Areas of Concern

| | 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))

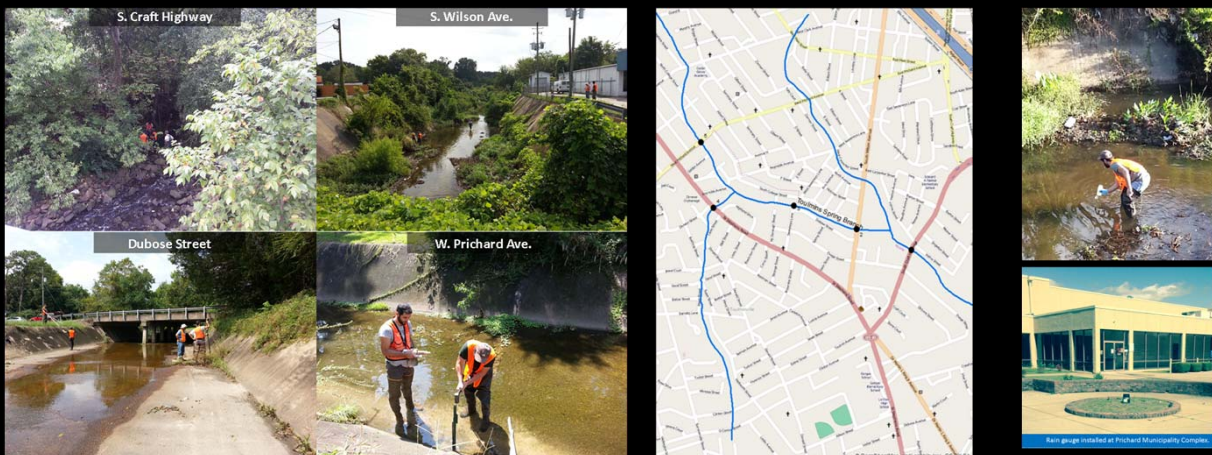
| | Number of Households | Median Household Income | Number of Households with Income Below Poverty Line | Number of Households with Income at or Above Poverty Line | Percent Households Below Poverty Line |
|------------------------|----------------------|-------------------------|-----------------------------------------------------|-----------------------------------------------------------|---------------------------------------|
| 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% |

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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:

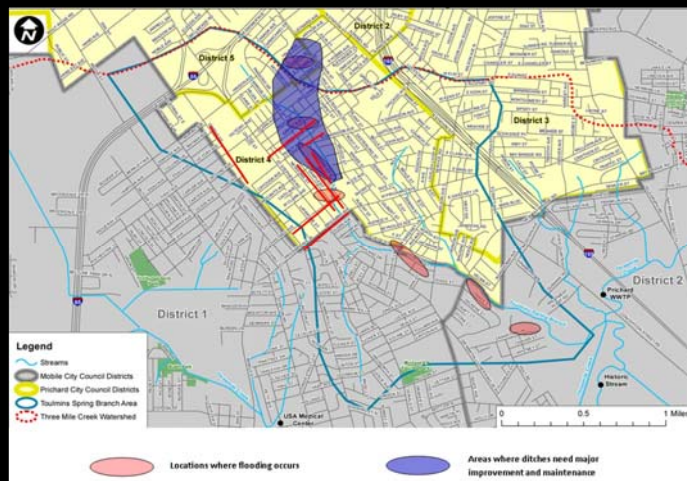
- Verified or corrected TSB Subwatershed boundaries
- Located and characterized stormwater outfalls.
- Installed five pressure transducers to record flow and depth in TSB.
- Installed a rain gauge at Prichard Municipality Complex.
- Calibrated a Stormwater Management Model.
- Sampled water quality from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

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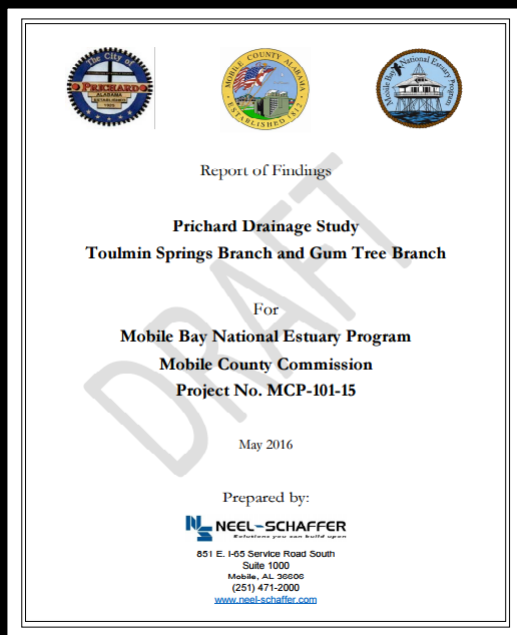


Community Solutions Fellow Maharam Dakua

- 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



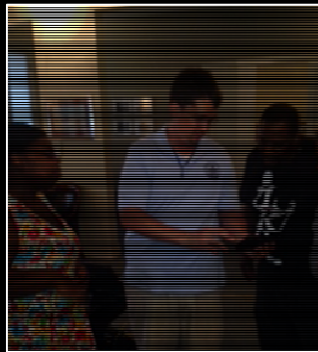
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Recommendations include:

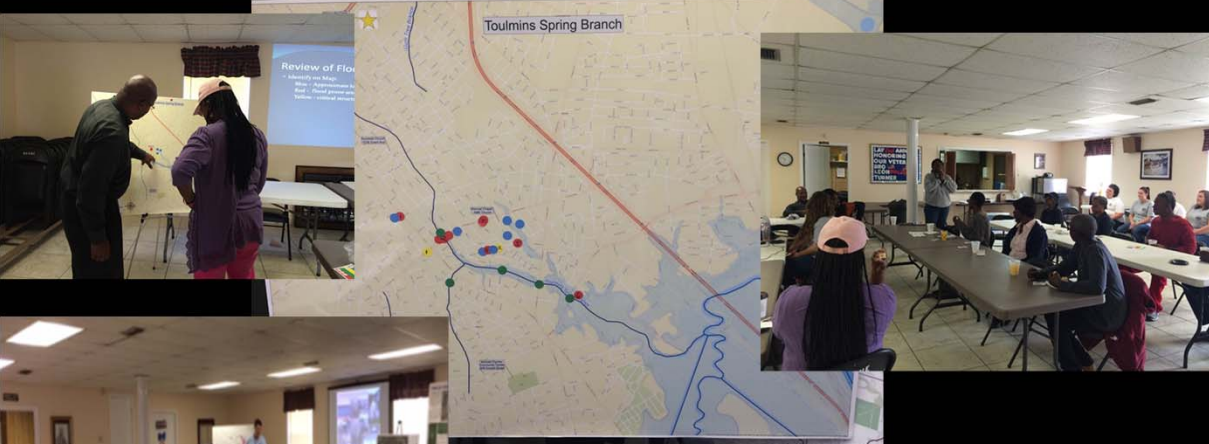
- Use Low Impact Development techniques.
- Install Gross Pollutant Removal Devices.
- Remove debris accumulations.
- Increase culvert size to increase flows.
- In concrete culverts, remove sediments, repair concrete damage, and remove accumulated sediments.
- Repair problem road-crossing culverts.

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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
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251-380-7937



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Questions?

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Community Driven Planning: LESSONS & OPPORTUNITIES

Melissa Deas, Climate Program Analyst

GOVERNMENT OF THE
DISTRICT OF COLUMBIA
MURIEL BOWSER, MAYOR

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SUSTAINABLE DC GOALS FOR 2032



Adapt to Climate Change

Climate Ready Buildings

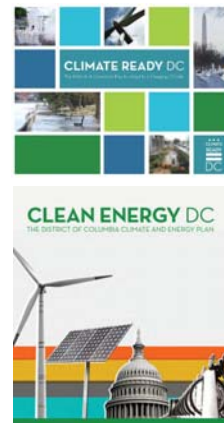
Cut Energy Use 50%

50% Renewable Energy

Net Zero New Buildings

Net Zero Retrofits

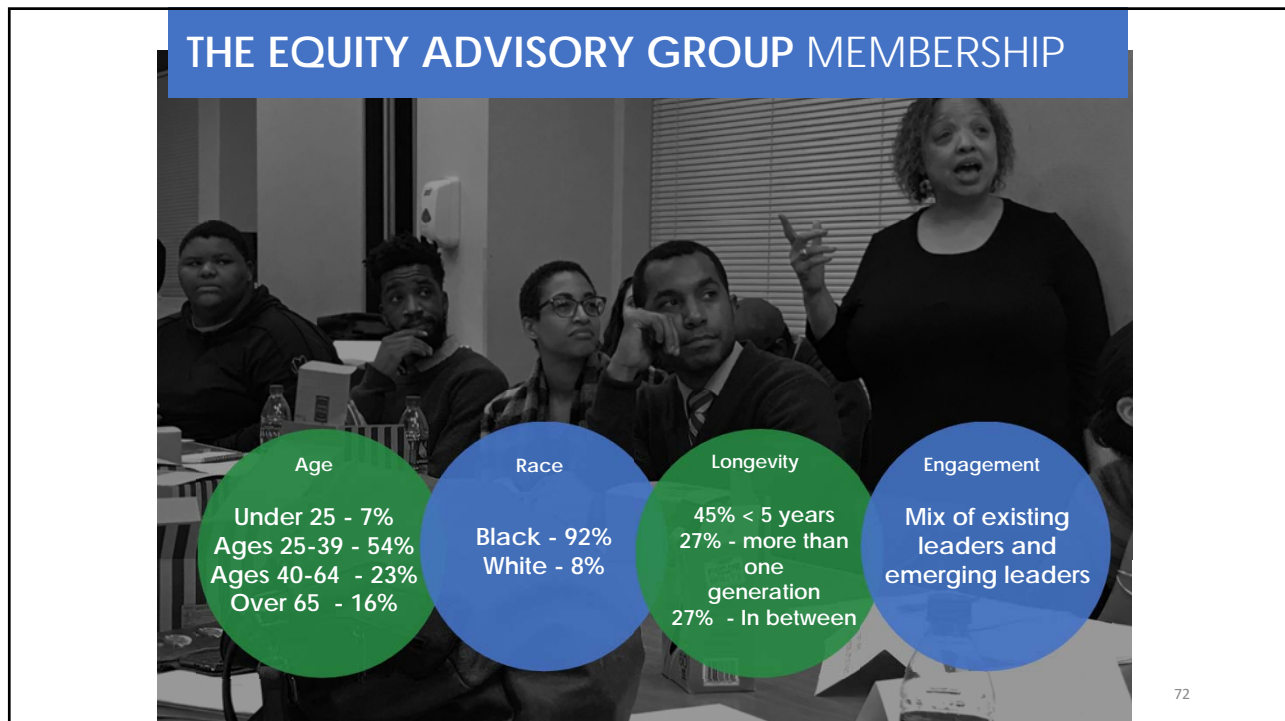
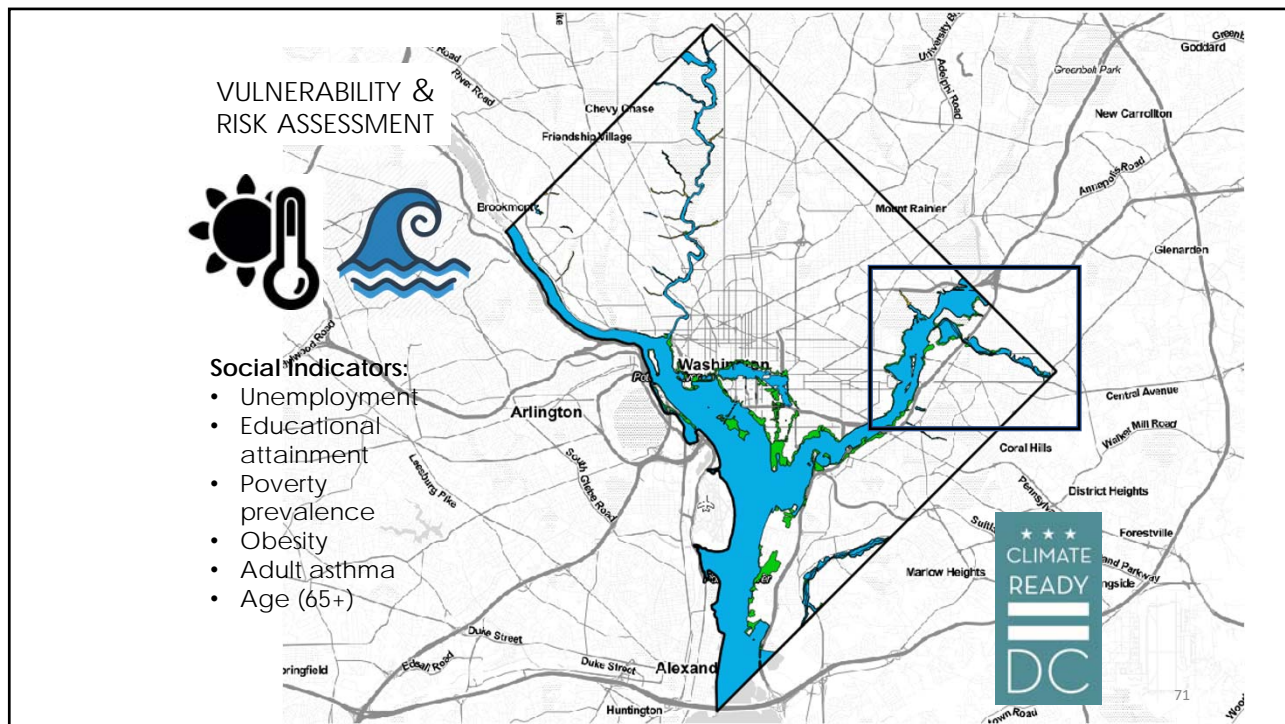
Cut GHG Emissions 50%

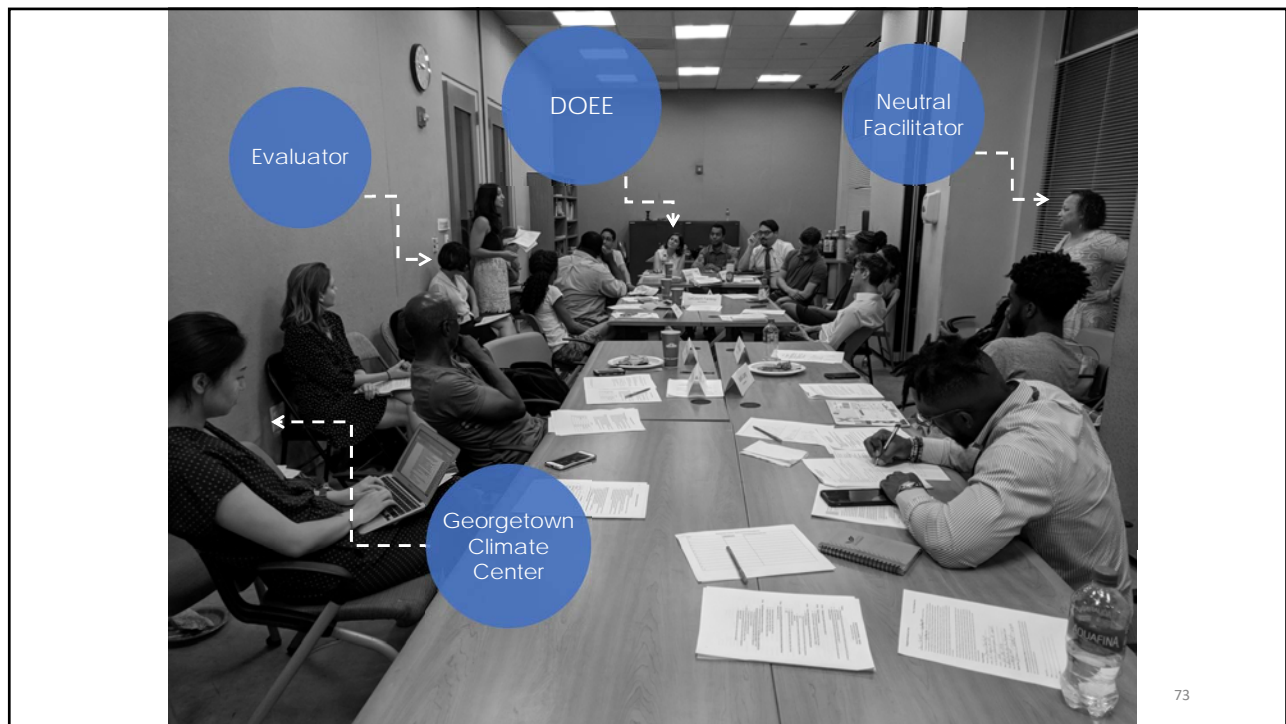


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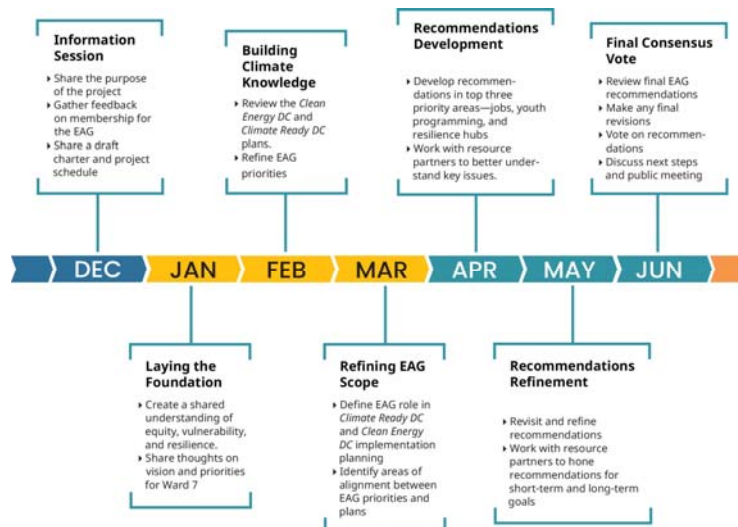
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EAG MEETING SCHEDULE



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EAG RECOMMENDATIONS



Create neighborhood scale resilience hubs

Create an integrated workforce development program

Expand workforce opportunities for youth

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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



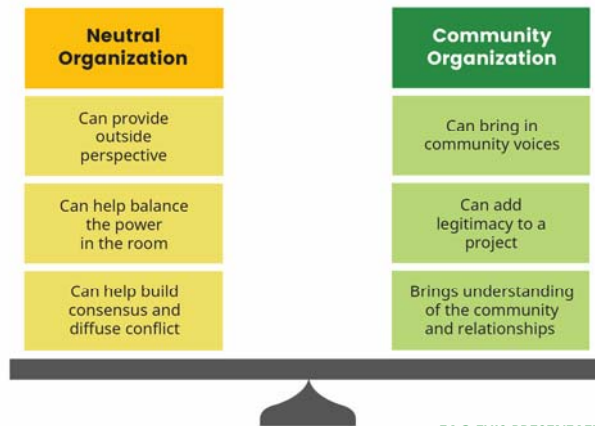
77

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



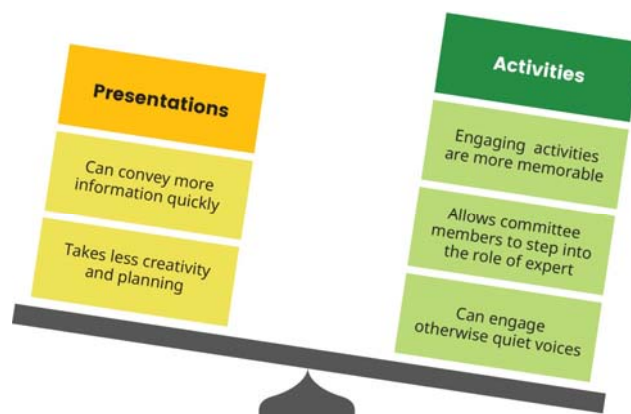
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COMMUNITY ENGAGEMENT STEPS (PART 2)



81

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



82

DEVELOP RECOMMENDATIONS:

CO-DESIGNED RECOMMENDATIONS ARE STRONGER
RECOMMENDATIONS



83

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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Watershed Academy Website

More webcasts coming soon!

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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