

Leveraging FEMA Funding for Nature-Based Solutions to Support Hazard Mitigation

Rowan Schmidt | Earth Economics

May 14th, 2019

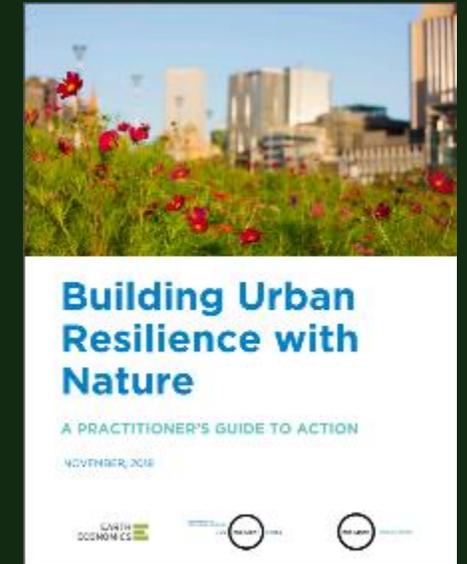
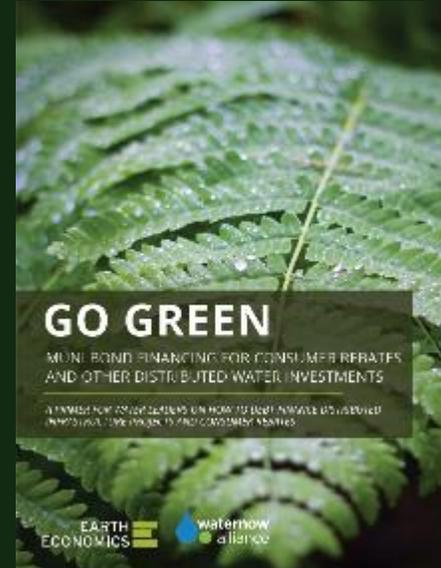
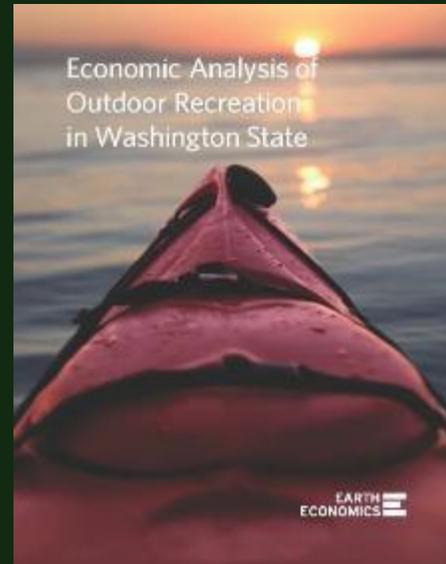
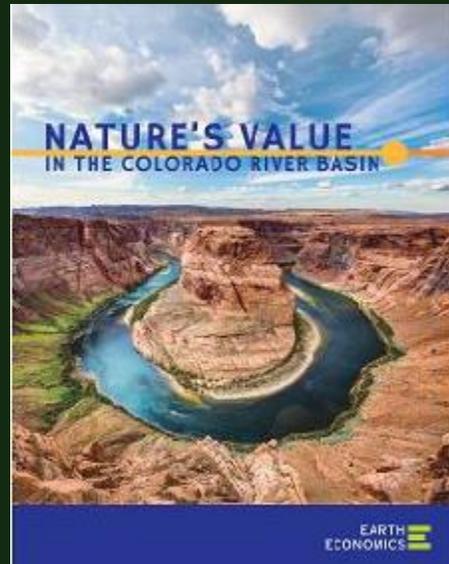


Agenda

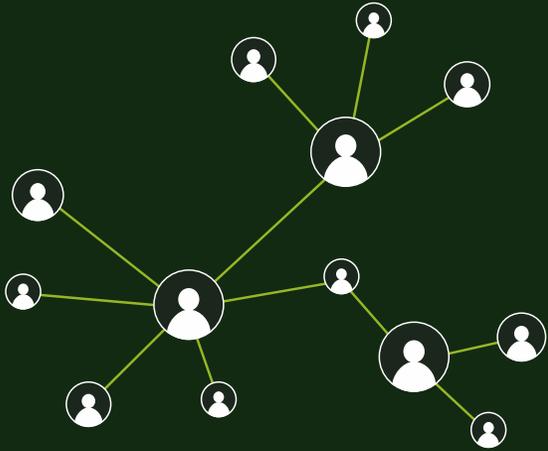
- About Earth Economics
- The big picture
- Nature-based solutions to support hazard mitigation
 - Recent FEMA policy advances
 - Case studies: Wildfire, Flood



Taking Nature into Account



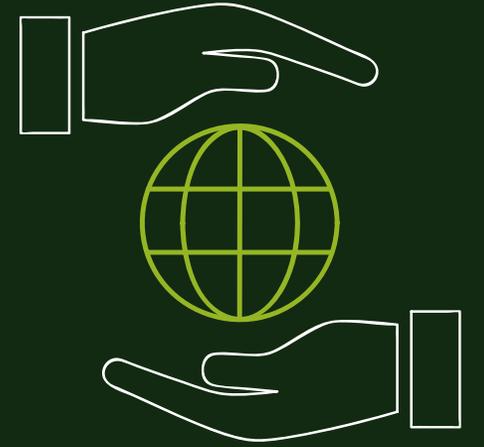
Our Approach



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...



Awareness
Building

Place-Based
Analysis

Policy and
Finance



WHAT HAS VALUE?

How do we measure it?

How do we fund it?





OLD THINKING

Nature as an accessory





NEW THINKING

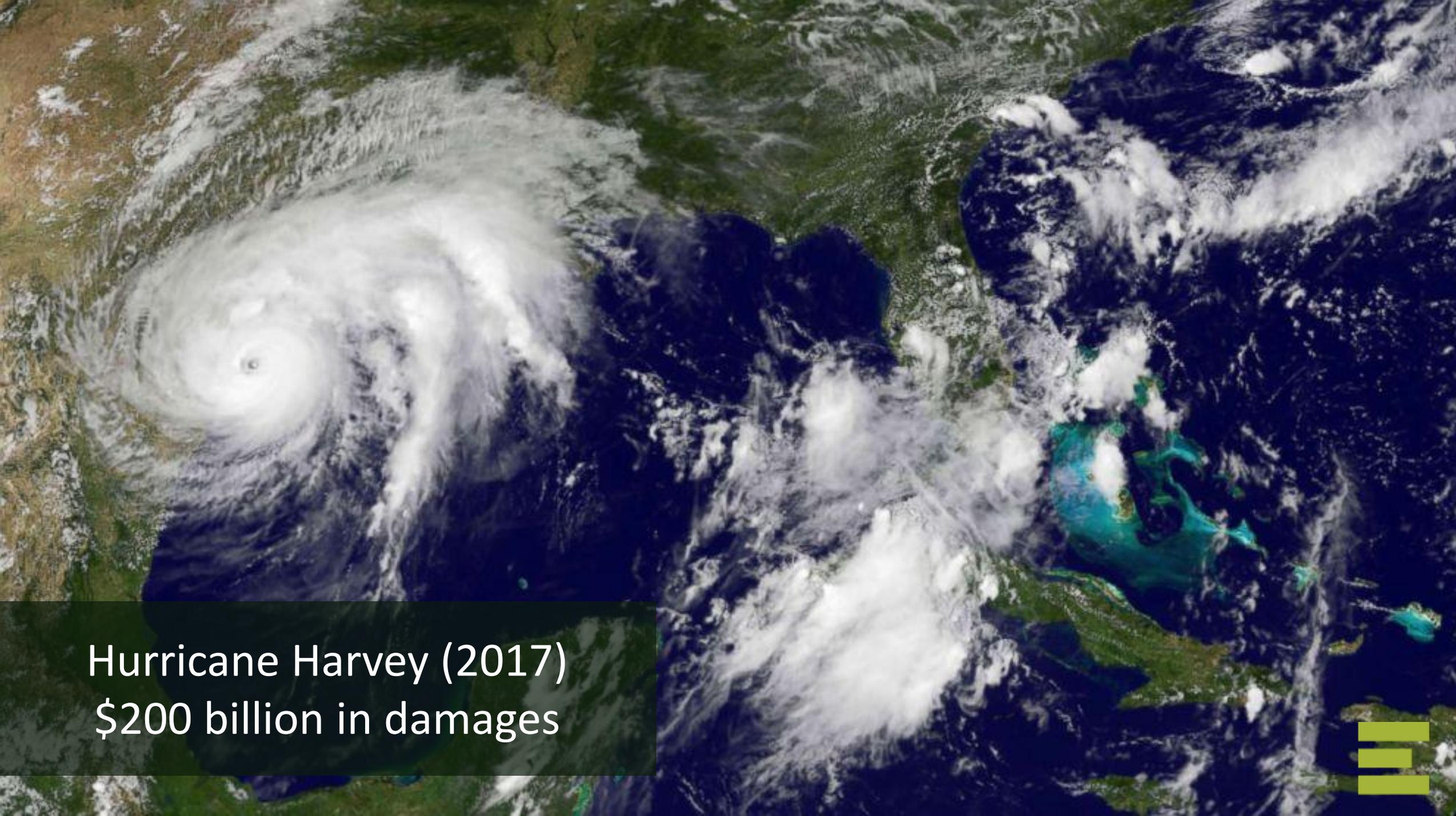
Nature as the big picture



Natural disasters cost the United States a record **\$306 billion** in 2017.

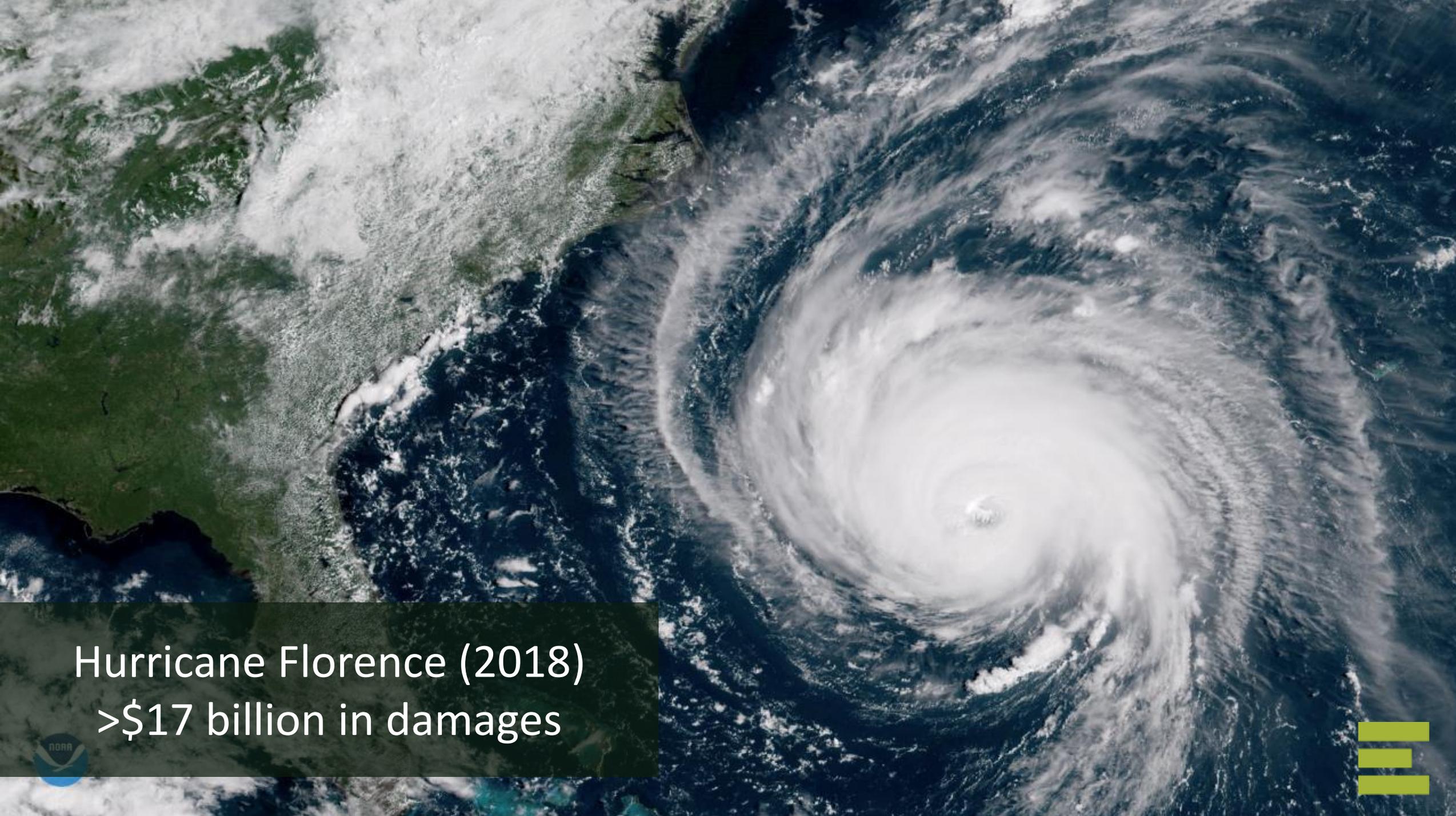
The previous record was \$215 billion in 2005.





Hurricane Harvey (2017)
\$200 billion in damages



A satellite image of Hurricane Florence (2018) showing a well-defined eye and a dense, swirling cloud structure over the Atlantic Ocean. The hurricane is positioned to the right of the North American continent, which is visible on the left side of the frame. The ocean surface shows some wave patterns and a slight color change near the storm's edge.

Hurricane Florence (2018)
>\$17 billion in damages



A satellite image of California and the surrounding region, showing a massive plume of white and grey smoke rising from the state and drifting westward over the Pacific Ocean. The smoke originates from several points along the California coast and extends across the entire width of the image. The land is shown in shades of green and brown, while the ocean is a deep blue.

California Wildfires (2017)
>\$18 billion in costs



Hazard Mitigation Grant Program (HMGP)

The key purpose of this grant program is to enact mitigation measures that **reduce the long-term risk of loss of life and property from future disasters.**





Flood Protection



FEMA Policy Advances

- 2013: Environmental Benefits Policy
 - Applies to acquisition projects
- 2016: Policy expansion, new eligible project types
 - Post-wildfire mitigation
 - Aquifer storage & recovery
 - Flood and drought mitigation
 - Green infrastructure





FEMA

MITIGATION POLICY – FP-108-024-01

I. TITLE:

Consideration of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Assistance (HMA) Programs

II. DATE OF ISSUANCE:

JUN 18 2013

III. POLICY STATEMENT:

FEMA will allow the inclusion of environmental benefits in benefit-cost analyses (BCA) to determine cost effectiveness of acquisition projects.

IV. PURPOSE:

The purpose of this policy is to identify and quantify the types of environmental benefits that FEMA will consider in the BCA for acquisition projects.



FEMA

May 12, 2016

MEMORANDUM FOR: Mitigation Division Directors
FEMA Regions I-X

FROM: Michael M. Grimm 
Assistant Administrator for Mitigation
Federal Insurance and Mitigation Administration

SUBJECT: Benefit Cost Analysis Tools for Drought, Ecosystem Services, and
Post-Wildfire Mitigation for Hazard Mitigation Assistance

In September 2015, FEMA released three new activities eligible for the Hazard Mitigation Assistance (HMA) programs: Aquifer Storage and Recovery, Floodplain and Stream Restoration, and Flood Diversion and Storage, known as the Climate Resilient Mitigation Activities (CRMA). These activities can be used for any hazard when appropriate and leverage traditional risk reduction benefits and applicable ecosystem services. Additionally, FEMA developed pre-calculated benefits for cost effectiveness evaluation of soil stabilization, flood diversion, and reforestation projects in wildfire impacted areas to support expedient implementation of post-wildfire mitigation actions. With this memorandum, FEMA is releasing the following additions



Flood Protection +



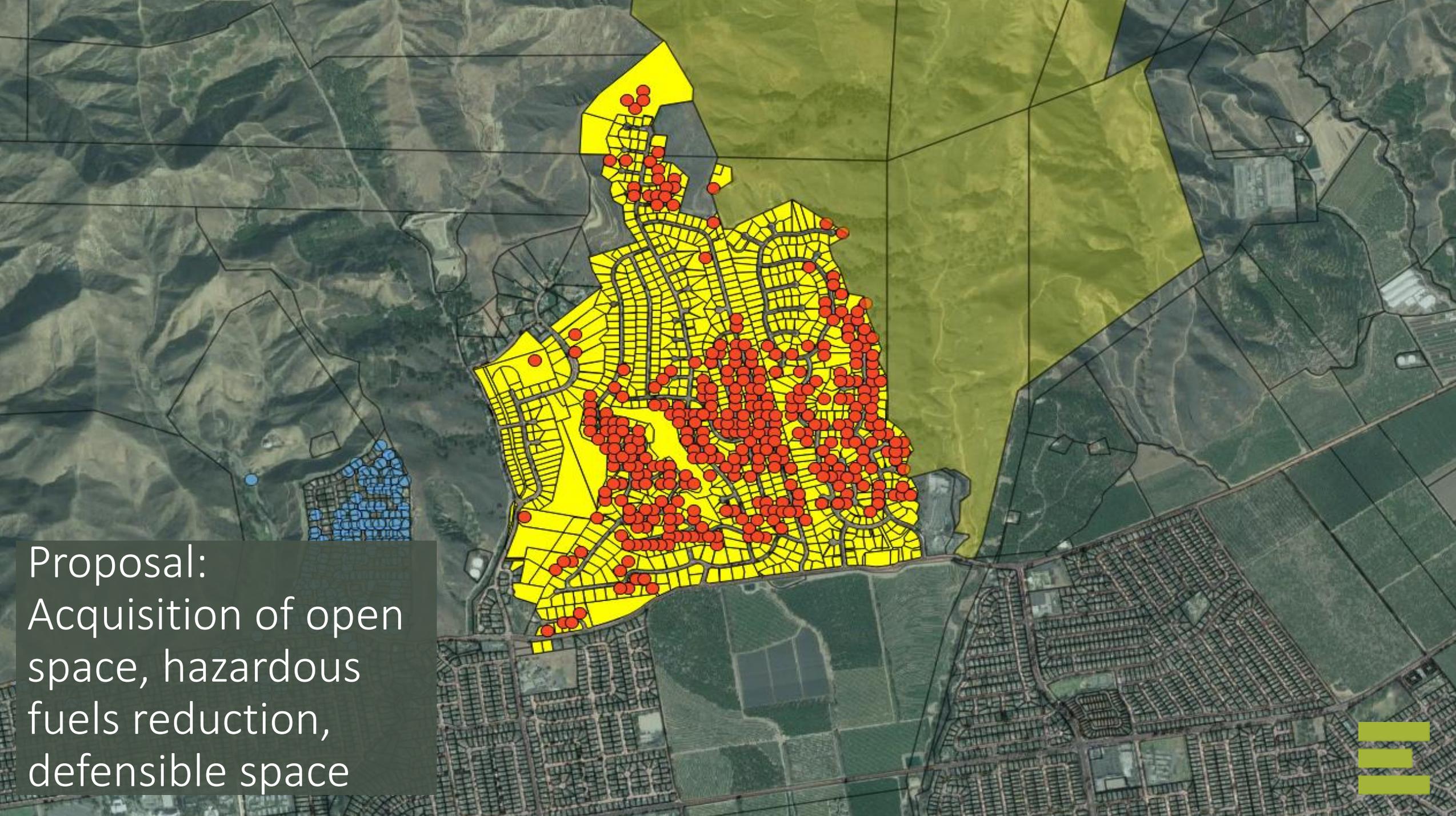
California Wildfires



Post-Wildfire Mitigation

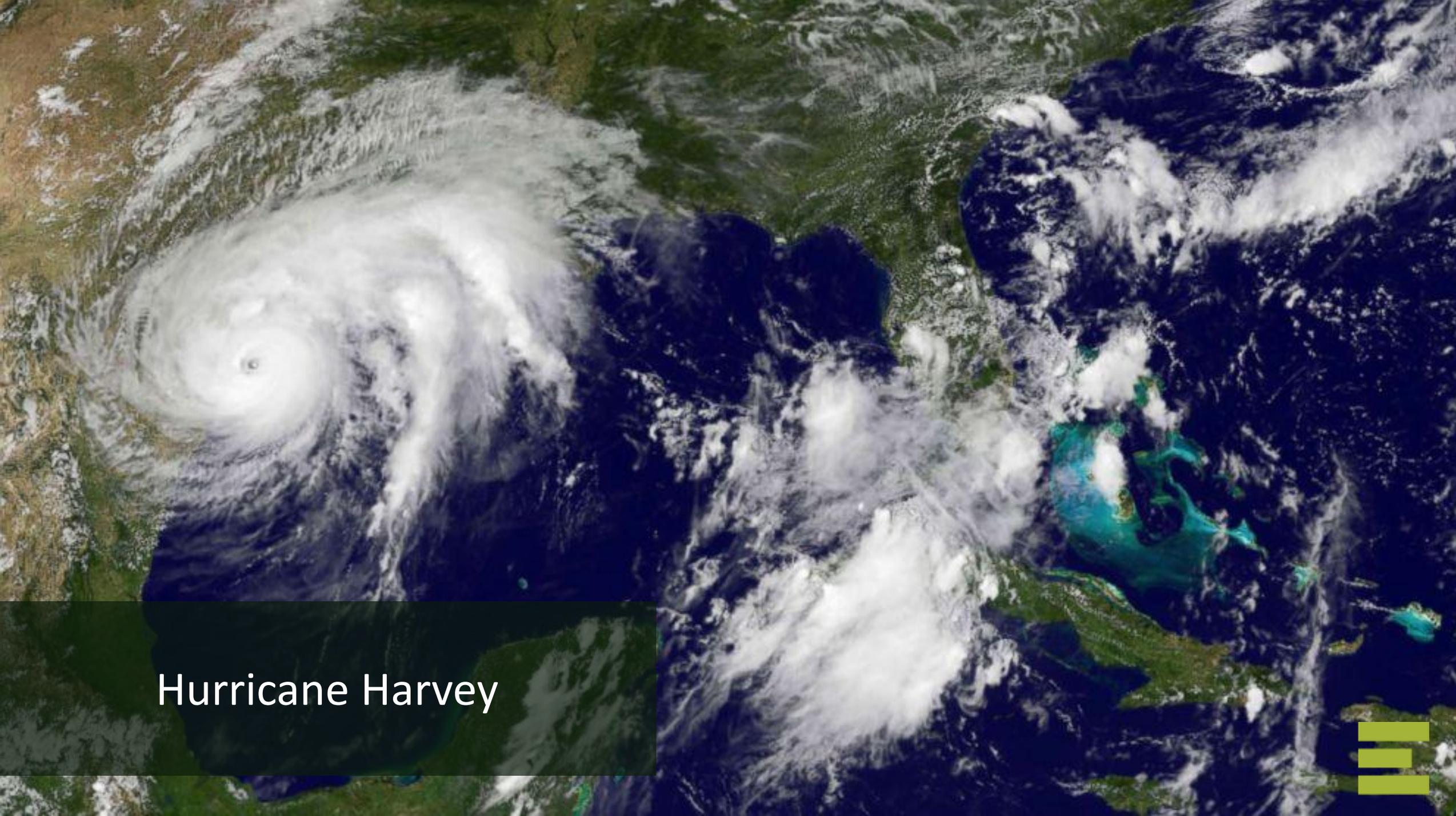
Using pre-calculated benefits





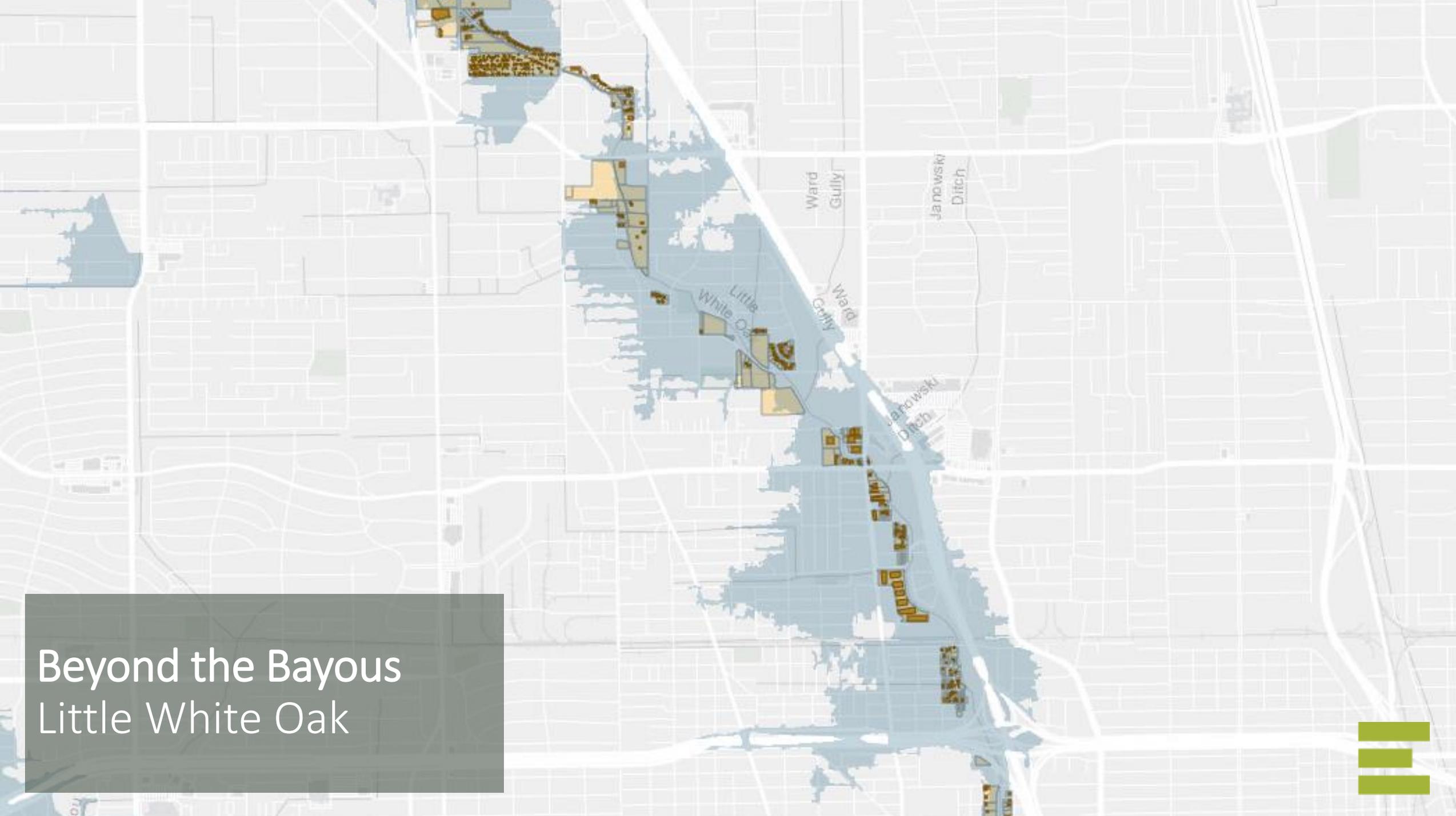
Proposal:
Acquisition of open
space, hazardous
fuels reduction,
defensible space





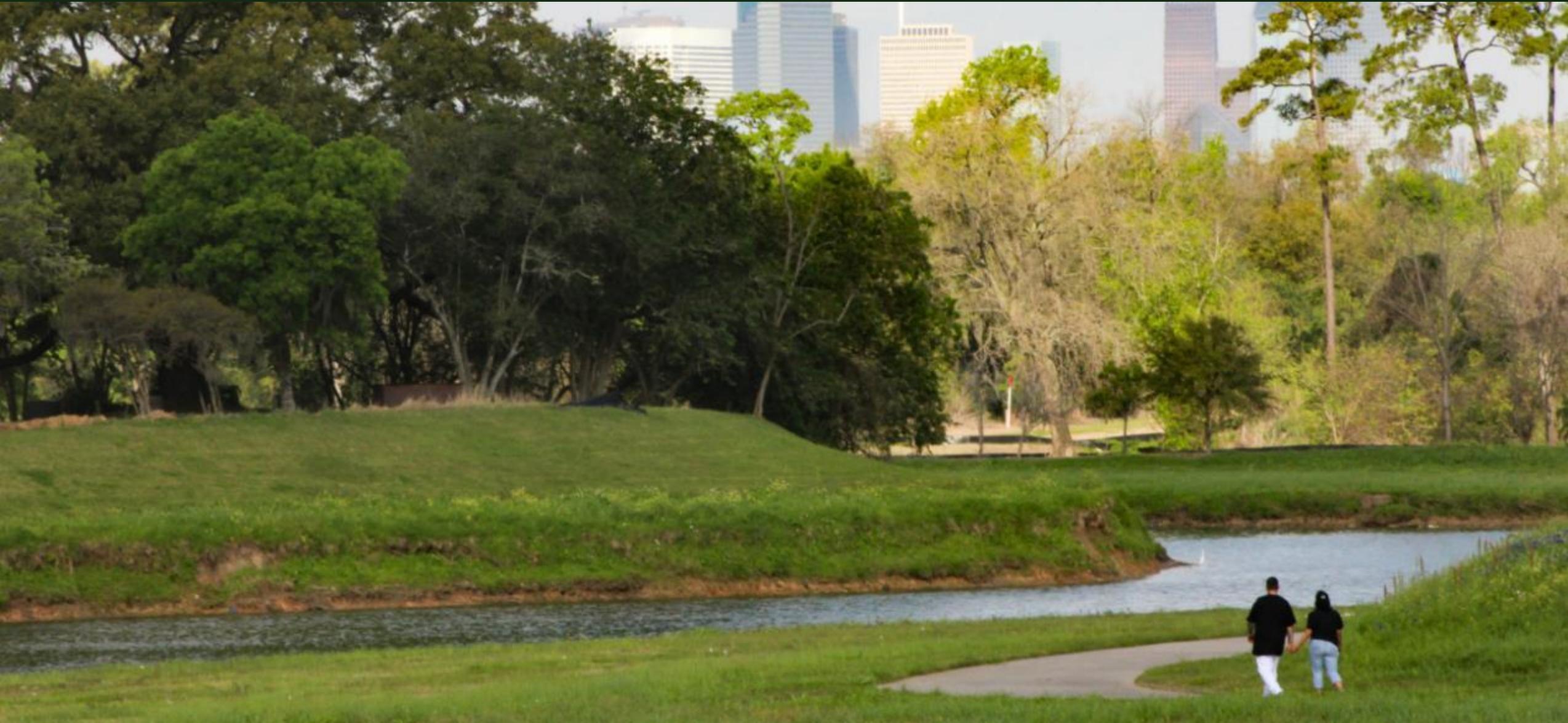
Hurricane Harvey





Beyond the Bayous Little White Oak





Green Infrastructure Flood Risk Reduction



 Flood Storage
Parcels

Structure Damage

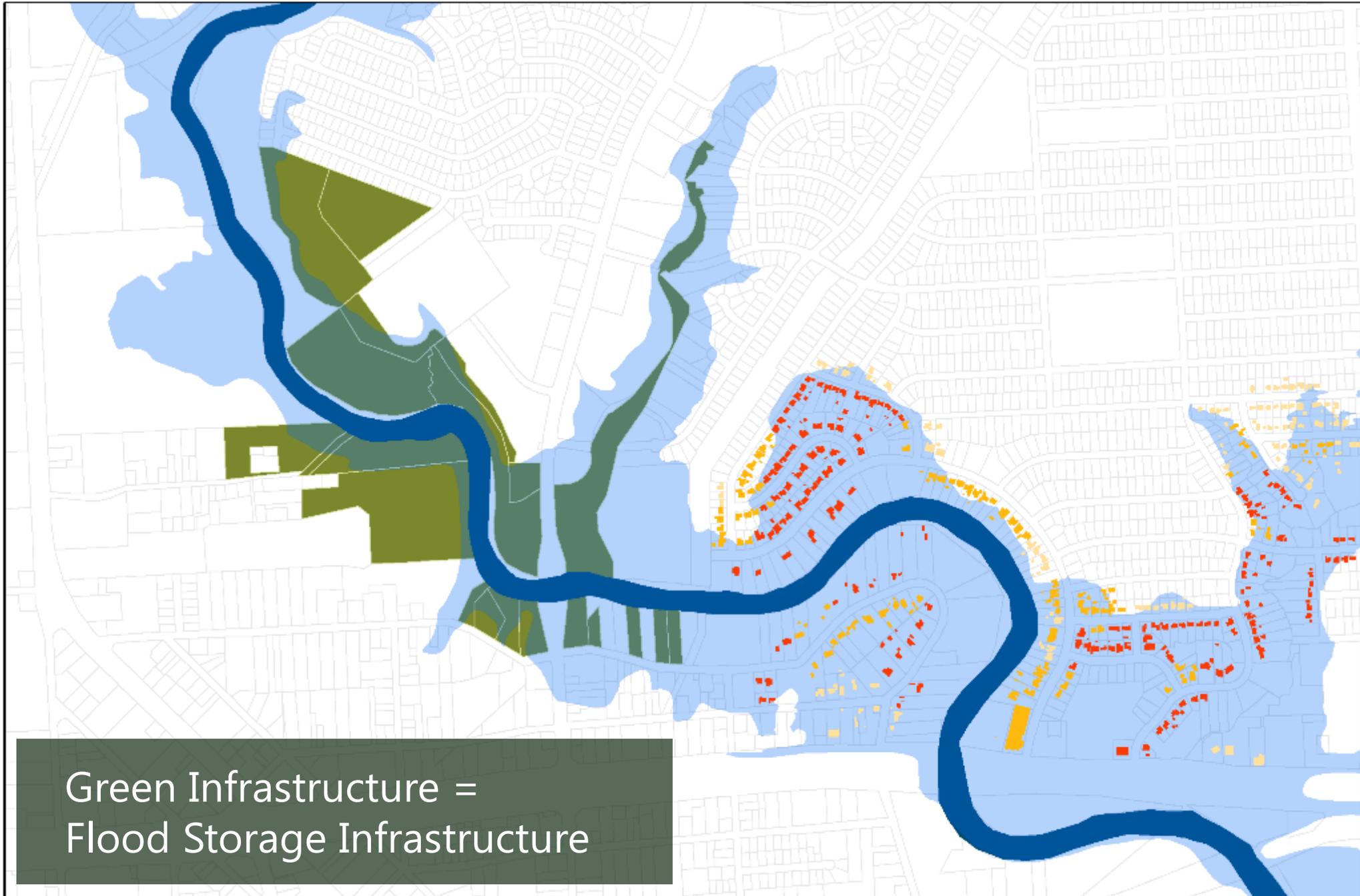
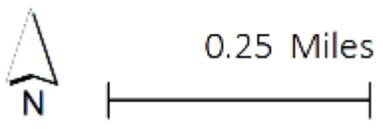
 Severe

 Moderate

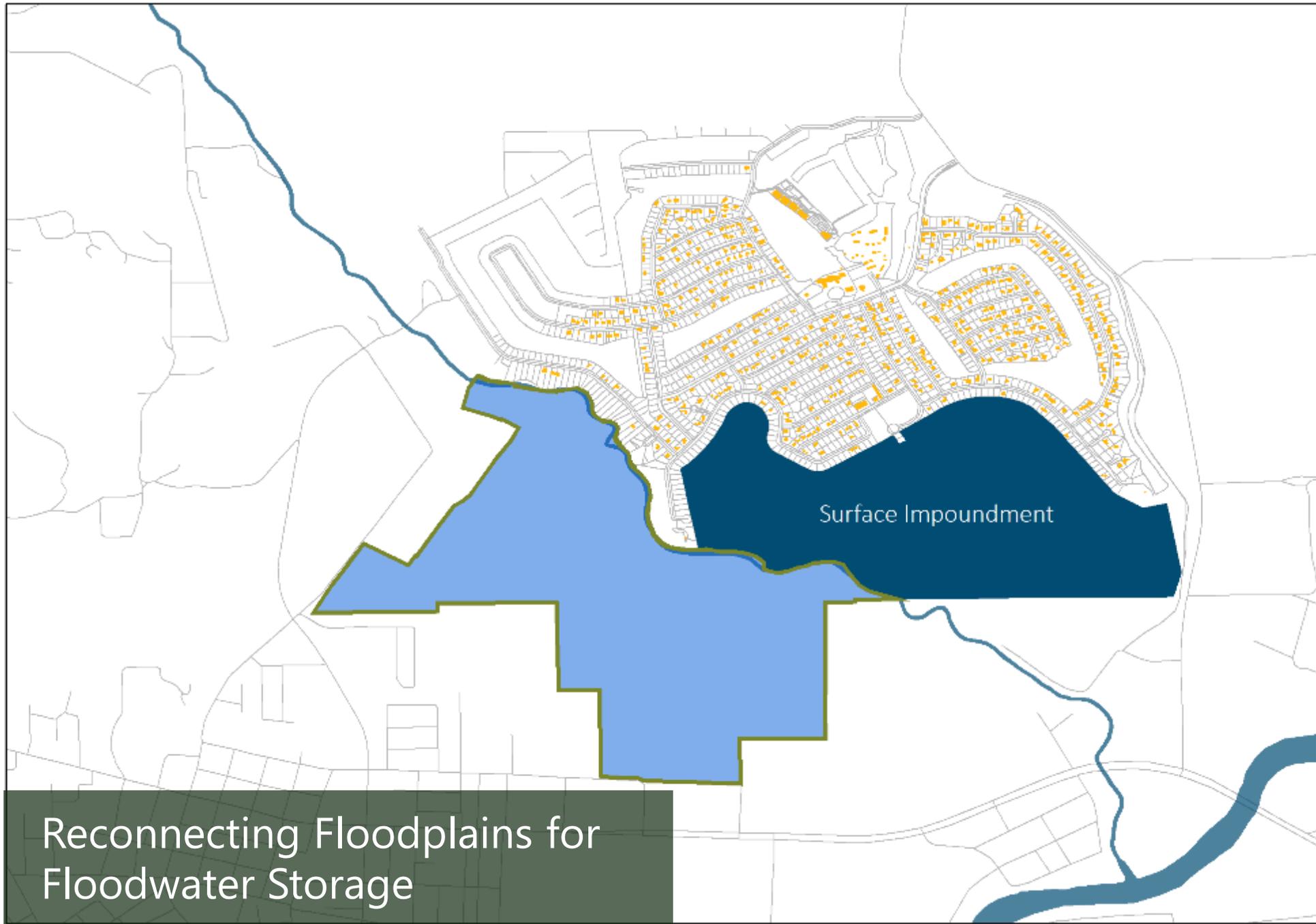
 Low

 100yr Floodplain

 River



Green Infrastructure =
Flood Storage Infrastructure



Reconnecting Floodplains for Floodwater Storage

- Flow Direction
- Surface Impoundment
- Floodplain Property
- Redirected Flooding
- Structures At Risk

0.5 Miles

FEMA: New Pre-Disaster Mitigation

- Potential expansion of funding for Pre-Disaster Mitigation (PDM)
- PDM funds similar approaches to HMGP, but is not tied to disaster declaration.
- PDM funding was ~\$250 million in FY 2018, could increase significantly in FY 2019.



Thank You

rschmidt@eartheconomics.org

EARTH
ECONOMICS 