

Welcome to Key Largo

SFWMD Governing Board Meeting 1-15-15

Florida Keys Water Projects



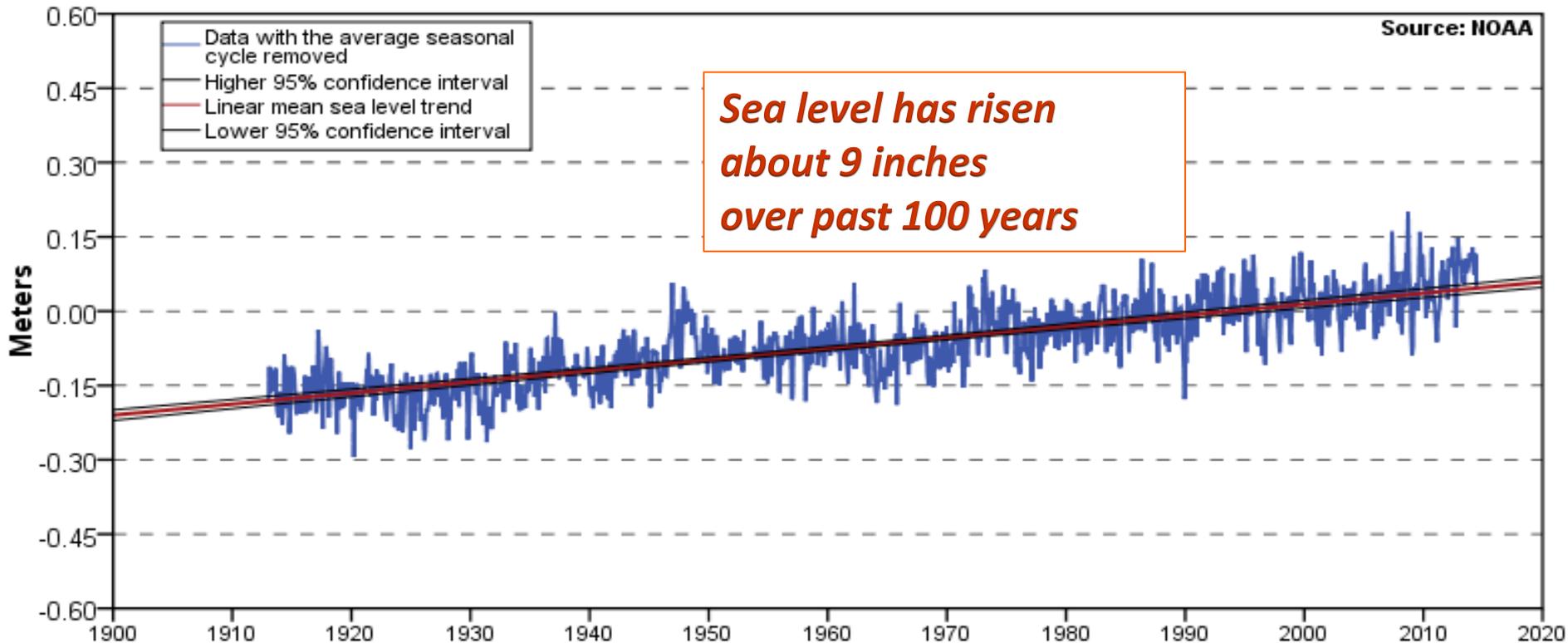
Commissioner Sylvia Murphy
County Administrator Roman Gastesi
Public Works Director Kevin Wilson
Sustainability Director Rhonda Haag



SEA LEVEL RISE IN MONROE COUNTY

Key West, FL

2.24 +/- 0.16 mm/yr



NOAA KEY WEST TIDE GAUGE

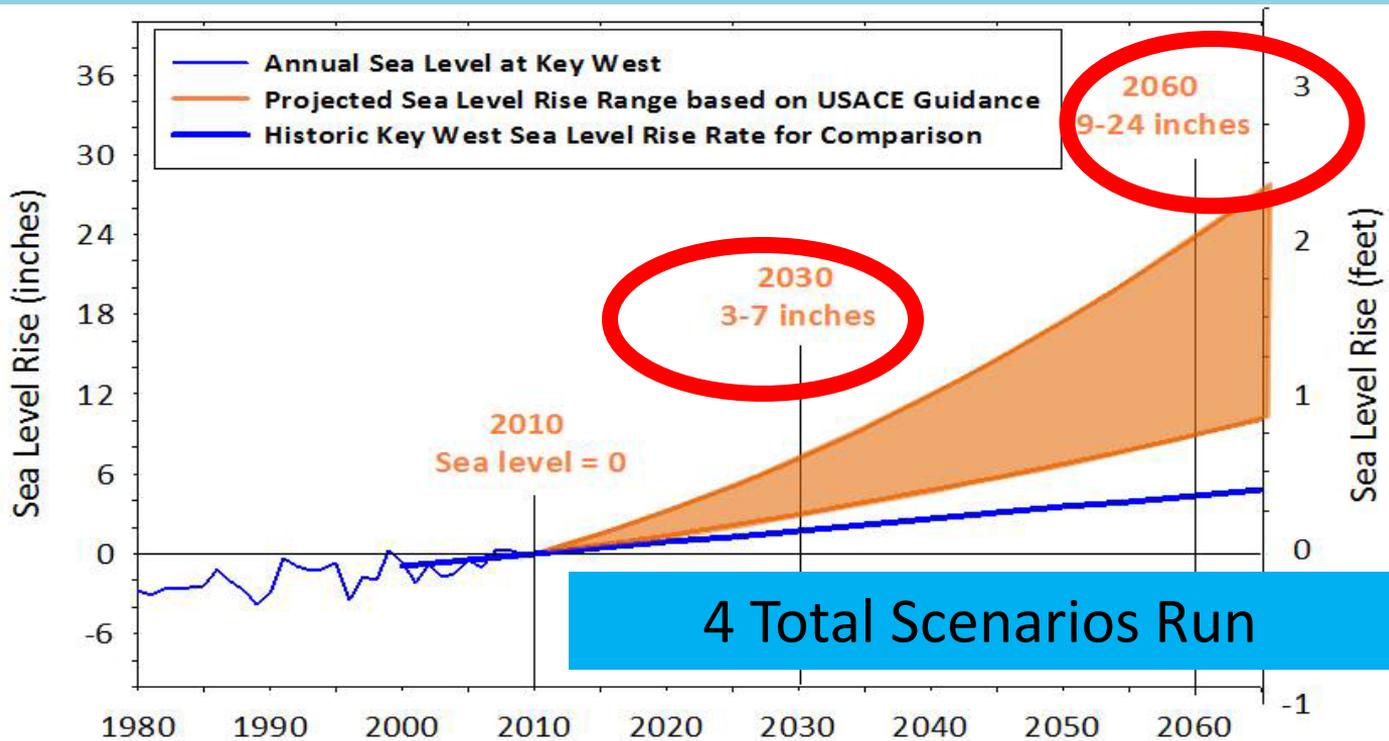


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SEA LEVEL RISE SCENARIOS

Adopted by Southeast Florida Regional Climate Compact



INUNDATION



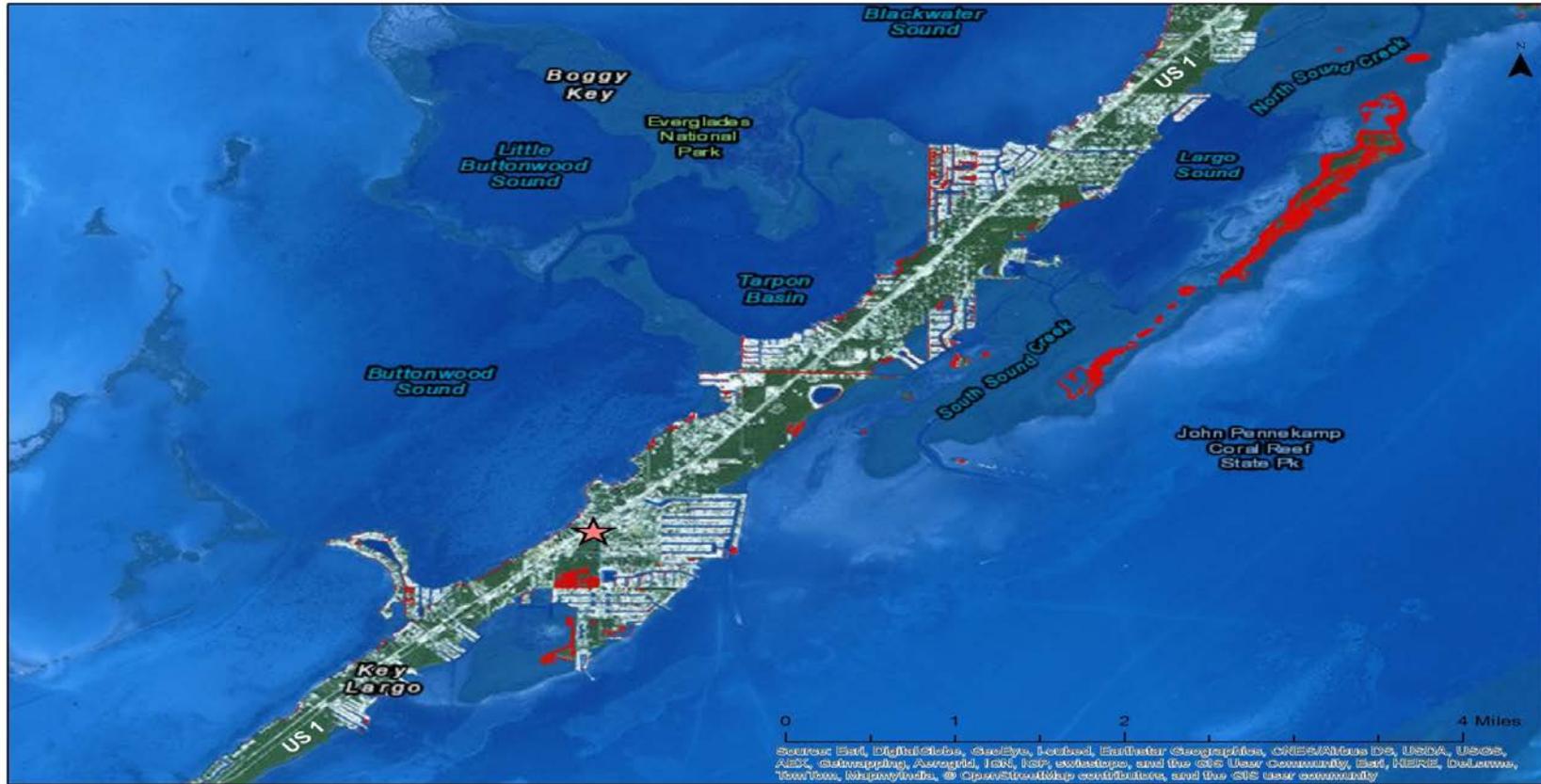
Key Largo, Present Day



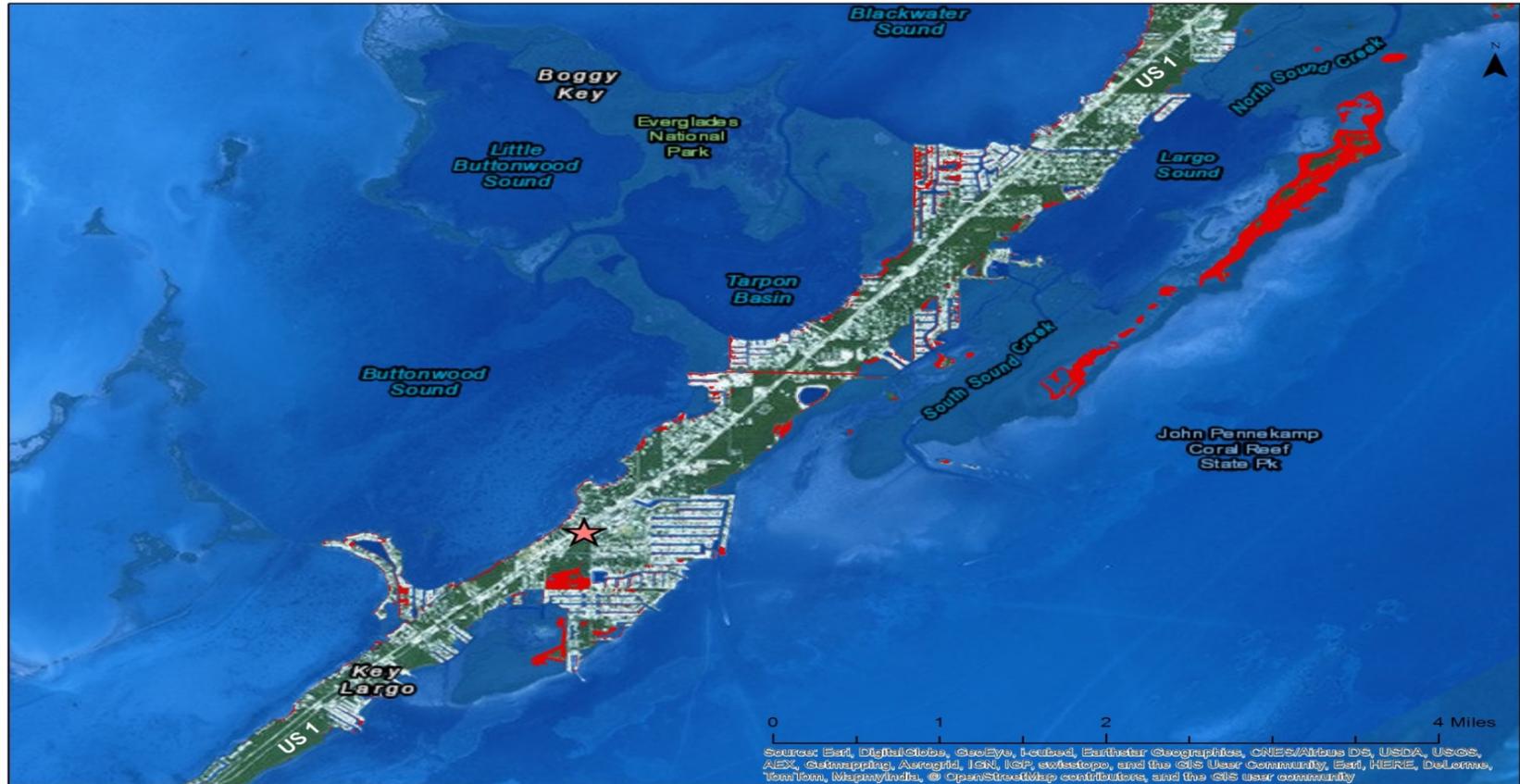
Key Largo, 3 inches Sea Level Rise (2030, Low Scenario)



Key Largo, 7 inches Sea Level Rise (2030, High Scenario)



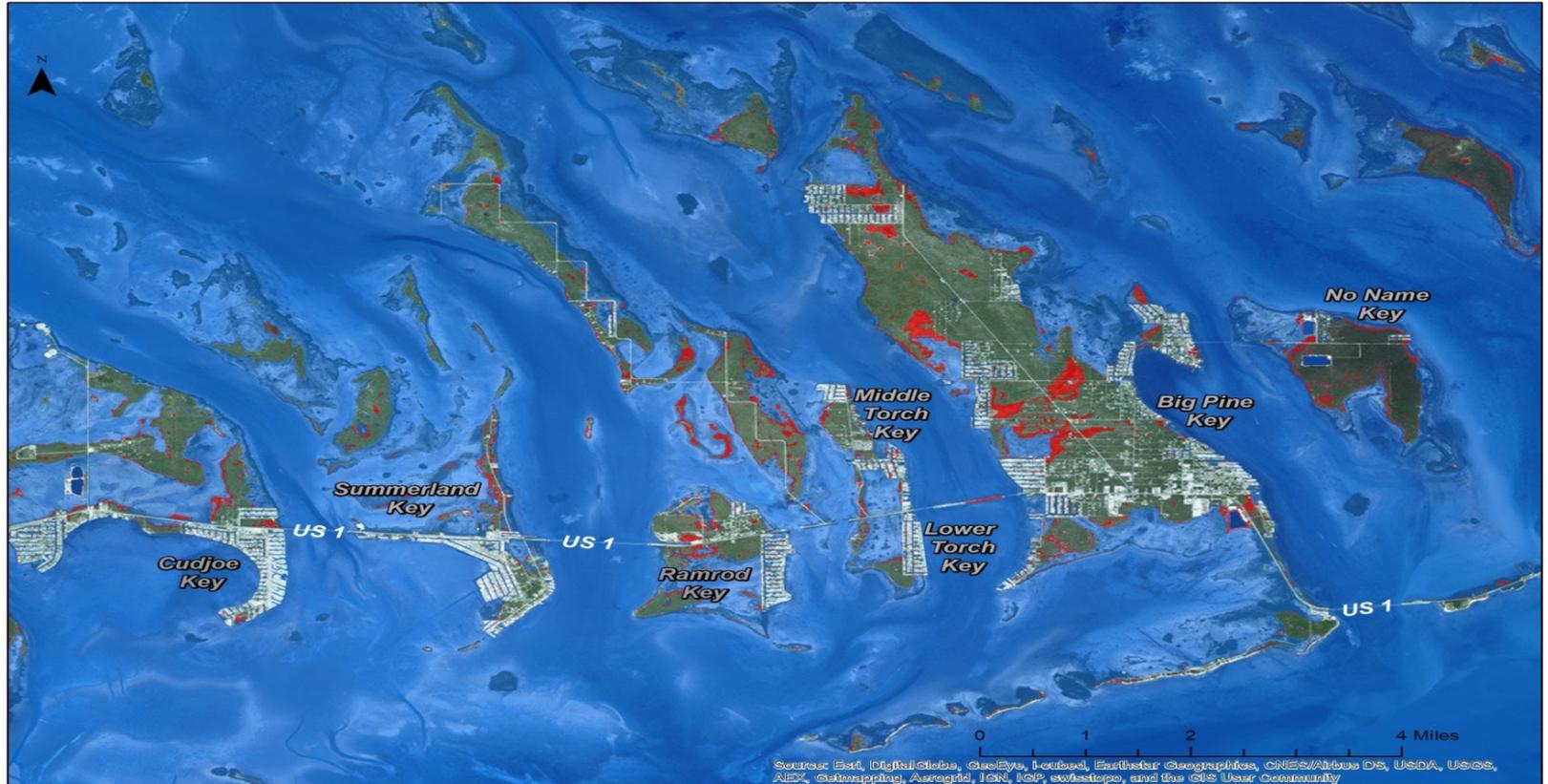
Key Largo, 9 inches Sea Level Rise (2060, Low Scenario)



BIG PINE KEY AND VICINITY, PRESENT DAY



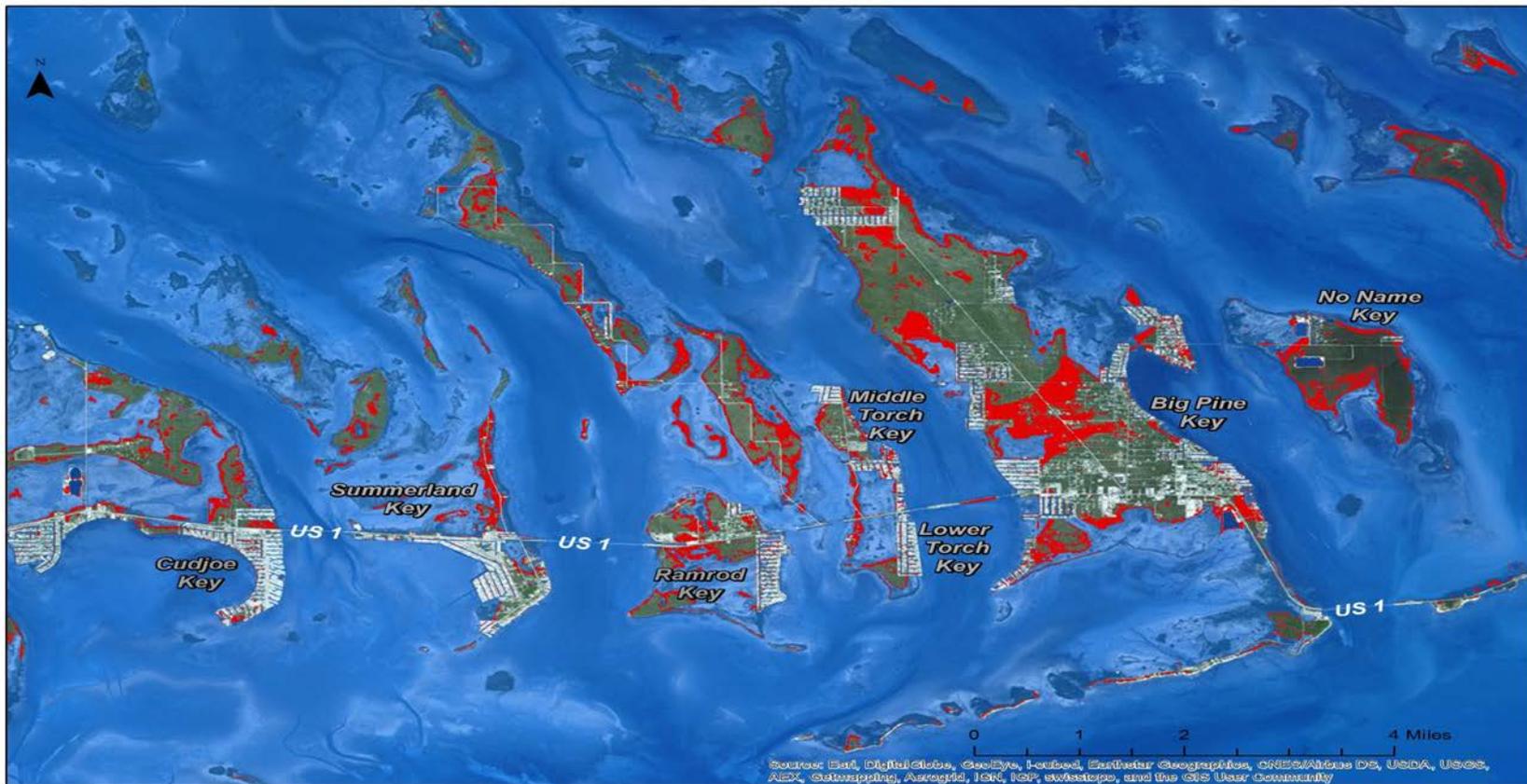
Big Pine Key and vicinity, **3 inches** Sea Level Rise (2030, Low Scenario)



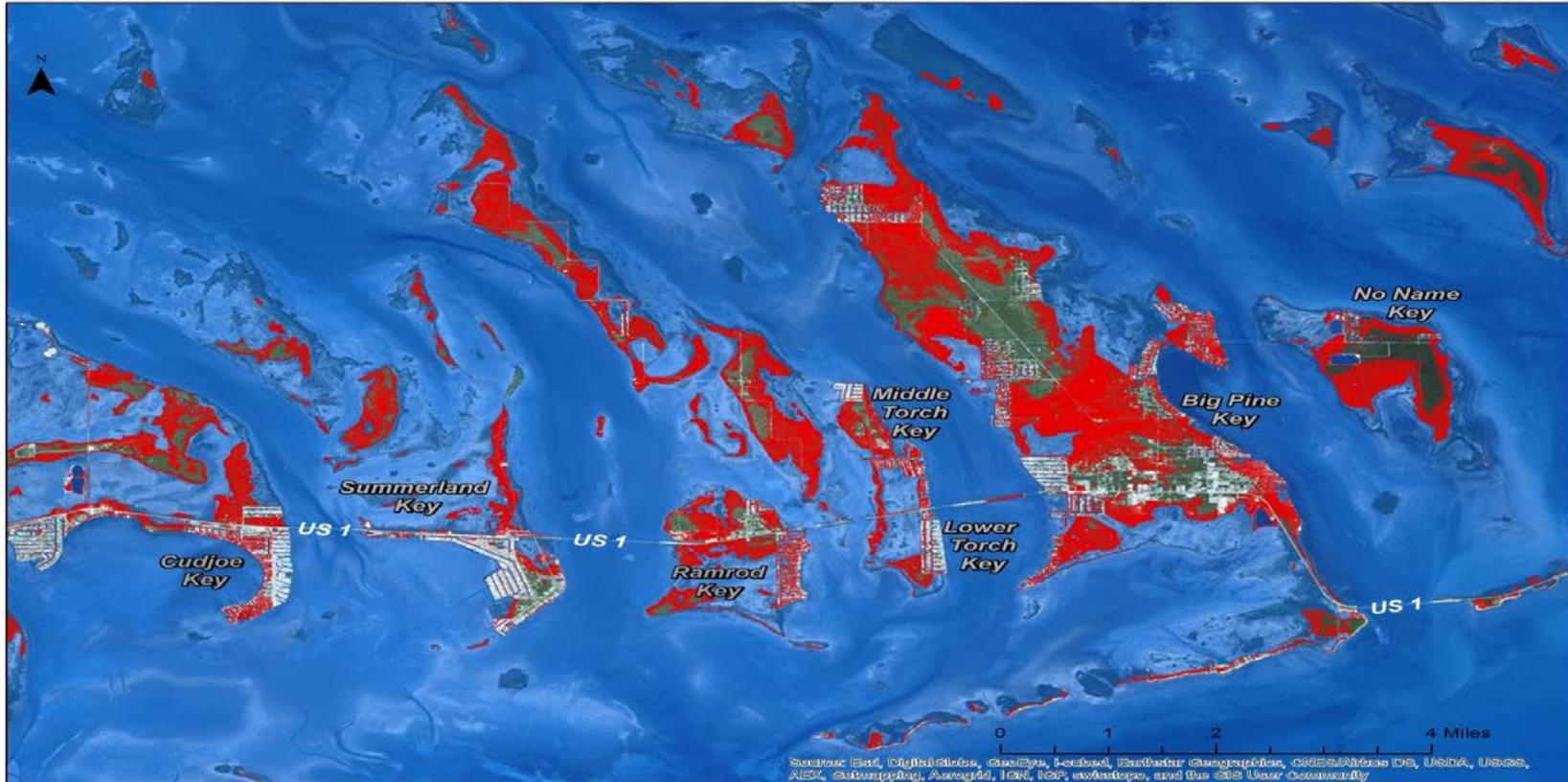
Big Pine Key and vicinity, 7 inches Sea Level Rise (2030, High Scenario)



Big Pine Key and Vicinity, 9 inches Sea Level Rise (2060, Low Scenario)



Big Pine Key and vicinity, 24 inches Sea Level Rise (2060, High Scenario)



HABITAT CHANGE

24 inches of sea level rise 2060, High Scenario) could bring **daily** saltwater tides into **42%** of Monroe County's remaining **Tropical Hardwood Hammock***



Trees killed by saltwater intrusion
(Big Pine)

<http://www.worldviewofglobalwarming.org/risingseas/FLKeysPinesKilledSaltSLRWeb.jpg>



MONROE COUNTY ROADS

- **875 Total Road Miles**
- **299 Miles County-Maintained**

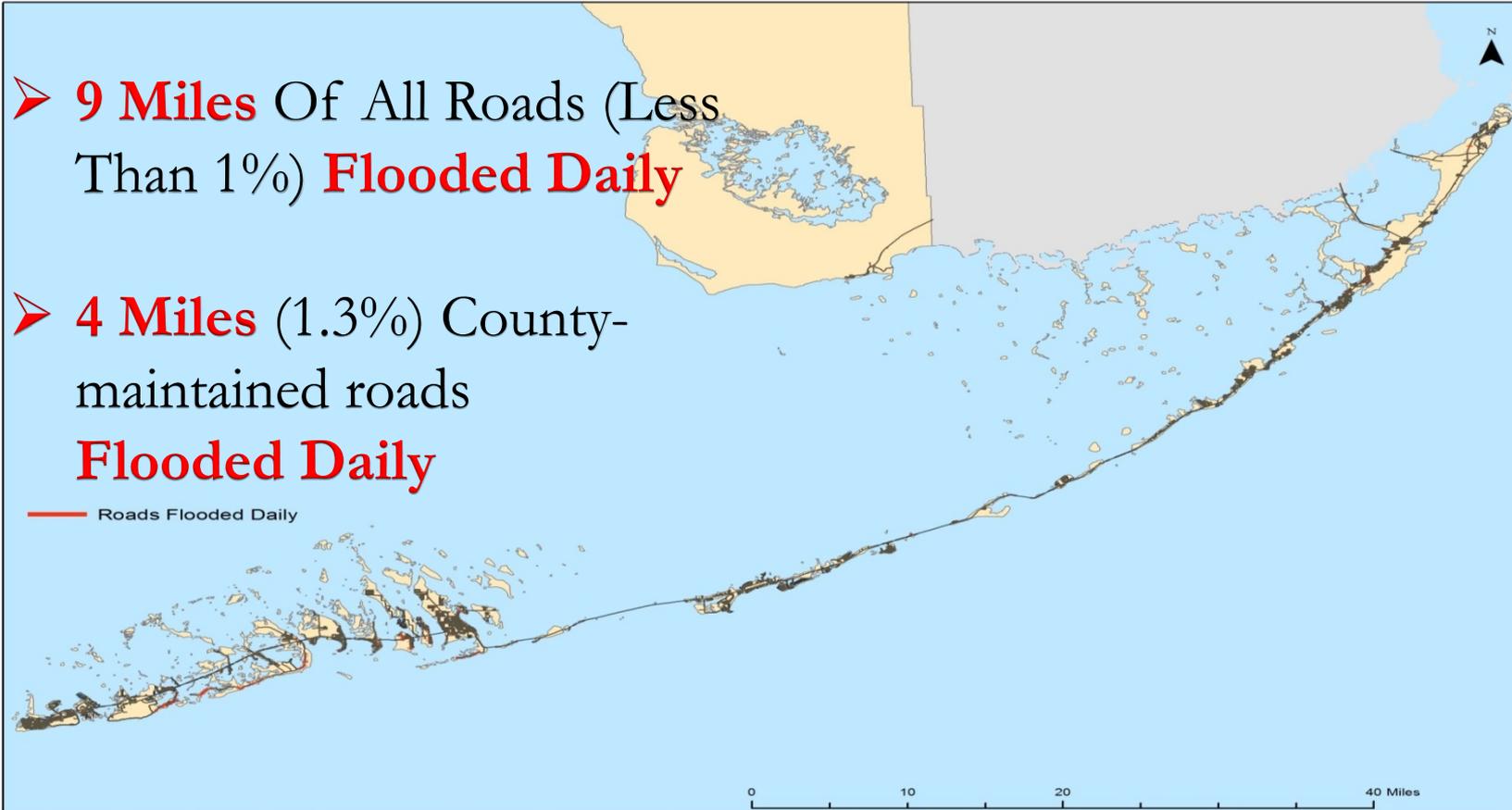


3 INCHES OF SEA LEVEL RISE (2030 “LOW” SCENARIO)

➤ **9 Miles** Of All Roads (Less Than 1%) **Flooded Daily**

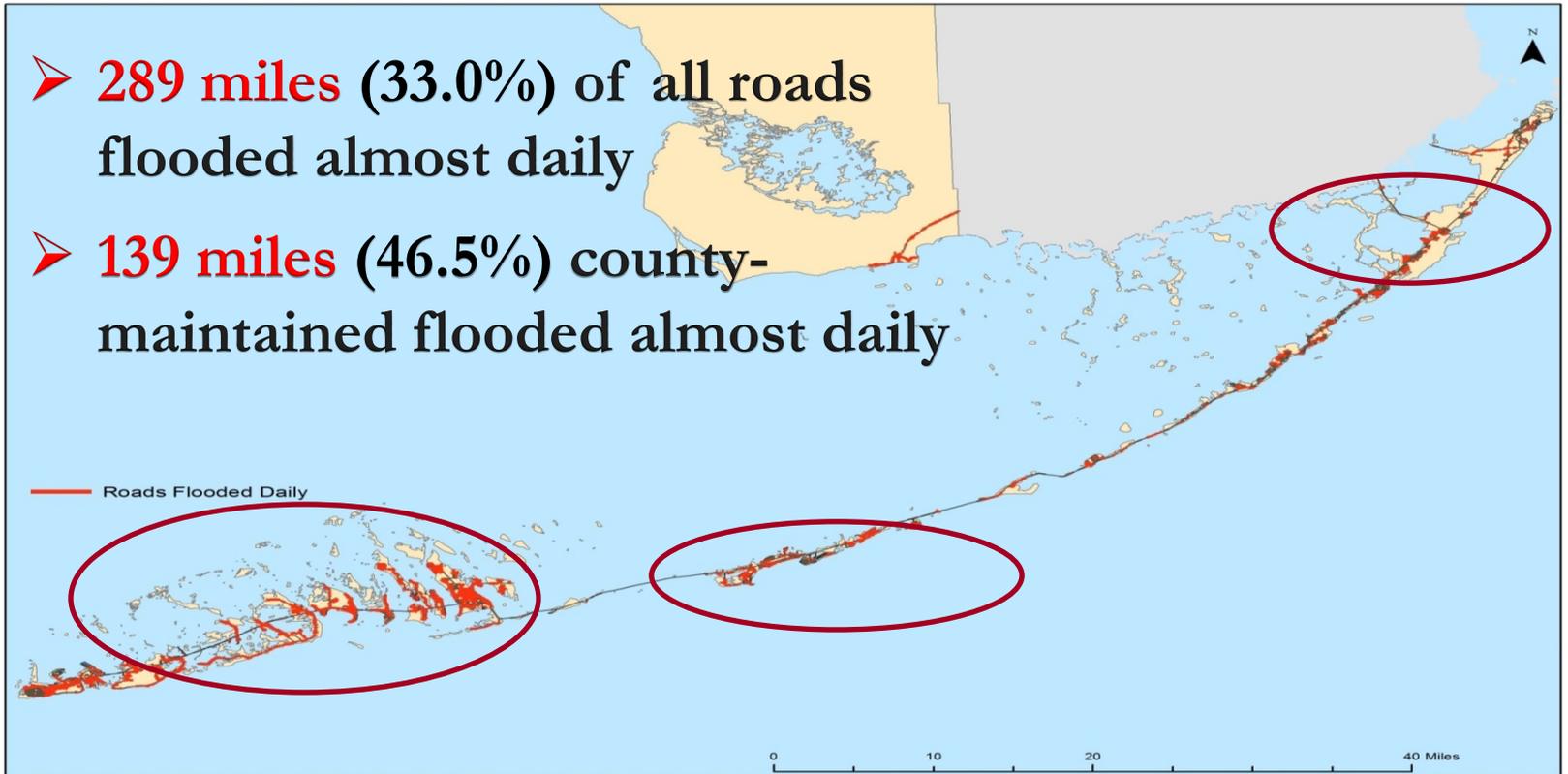
➤ **4 Miles** (1.3%) County-maintained roads **Flooded Daily**

— Roads Flooded Daily



24 INCHES OF SEA LEVEL RISE (2060 HIGH SCENARIO)

- **289 miles** (33.0%) of all roads flooded almost daily
- **139 miles** (46.5%) county-maintained flooded almost daily

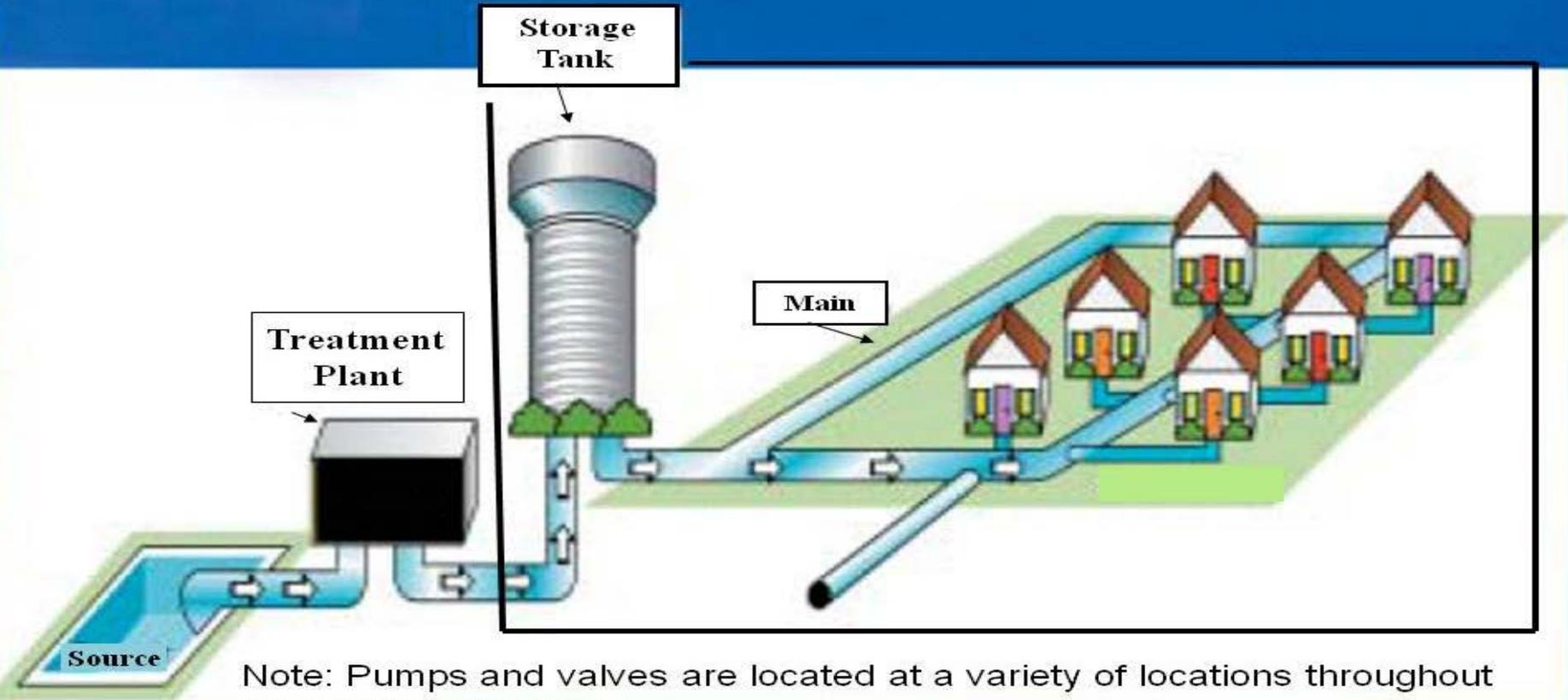


COUNTY FACILITIES AND BUILDINGS

1. Evaluated 74 parcels with County-owned buildings and facilities
2. **41%** (26 parcels) show **flooding encroachment** at **3 inches** of sea level rise
3. **53%** (36 parcels) show flooding encroachment at **24 inches** sea level rise
4. Overlays with aerial photos show buildings generally located on highest ground



WATER SUPPLY AND DISTRIBUTION (FKAA)



Note: Pumps and valves are located at a variety of locations throughout the distribution system.

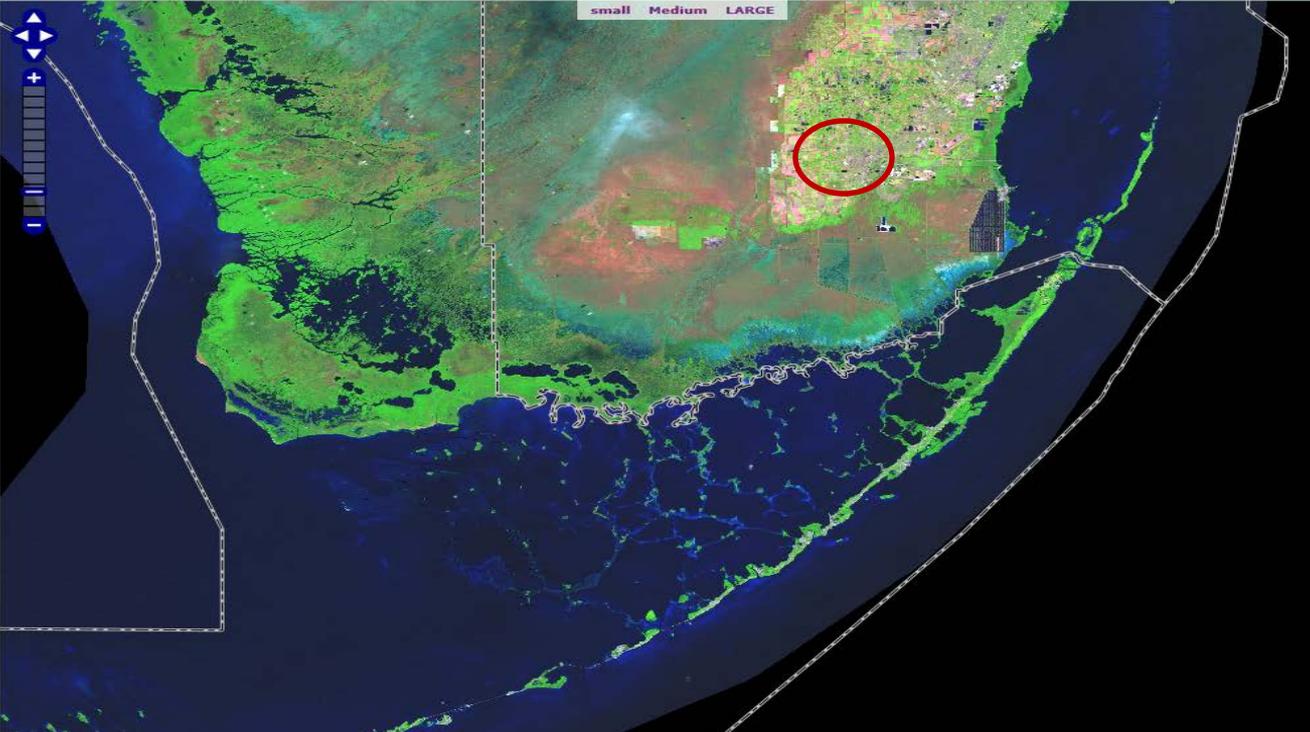
FKAA Groundwater Wells



USGS Home
Contact USGS
Search USGS

IMMAGE: Internet-based Modeling, Mapping, and Analysis for the Greater Everglades

small Medium LARGE



10 km
10 mi

<http://lcat.usgs.gov/>

Permalink

Map Layers **Point Info**

Graphs

Imagery:
Landsat 7 (543 bands)

BISECT Sea Level Rise and Habitat Distribution
BISECT: -- None --

SLOSH Storm Surge Model
Category: -- None --

HAZUS Damage Model
Cat: 1 Value: -- None --

General Data

- County Boundaries
- 2025 Urban Expansion Area
- 2015 Urban Development Boundary
- CERP Projects
- Groundwater Travel Time Contours (Miami-Dade)
- Surface Water Control Network
- Roads and Streets (Miami-Dade)
- Canals
- Basins
- Elevation (NED)
- USGS NLCD 2006 Land Cover

FKAA GROUNDWATER WELLS – Permitted by SFWMD

1. *Model results supplied by USGS **do not show saltwater contamination** to FKAA well field by any 2030 or 2060 sea level rise scenario*
2. *Potential for **development of new** wells in west Dade and **increased severity of drought episodes** not factored into these models*



TECHNICAL RECAP



1. The Florida Keys are clearly vulnerable to impacts from long-term sea level rise
2. Roads will be the “canary in the coal mine”
3. Lower and Middle Keys will feel earlier and more widespread effects as compared to the Upper Keys
4. Impacts to other infrastructure will gradually increase through 2030 scenarios
5. High sea level rise scenario brings a *Wilma-like event* to Key West *twice a year by 2060*
6. Effective adaptation planning requires continuous development and enhancement of information



KEY WEST AIRPORT - Need Assistance from SFWMD

- **End-of-Runway flooding from extreme high tide May 2012**
- **Area is designed to flood during rain events**
- **Now gets wet during extreme high tides**



Canal Restoration Program – New!



Why is Canal Restoration Needed?



Key Colony Beach

**“Good”
Water
Quality
Canals**



Duck Key

Key Haven



Conch Key



Sugar Loaf

This is Why Restoration is Needed



Upper Keys – accumulated seaweed

“Poor”
Water
Quality
Canals



Middle Keys – trapped seaweed



Summerland– trapped seaweed



Lack of flushing

Importance of Improving Canal Water Quality

1. Many canals do not meet the State's minimum water quality criteria and are a **potential source of nutrients and other contaminants** to near shore waters designated as Outstanding Florida Waters.
2. Implementation of waste water treatment and storm water management systems will reduce nutrient loadings but **will not eliminate water quality problems** caused by the **physical structure, depth, and orientation of canals**, which can contribute to low flushing and the build-up of organic floating debris.
3. The *Canal Management Master Plan* is needed to develop feasible strategies to improve the water quality in these canals and to prioritize the canal restoration projects in the Florida Keys.



THE WATER QUALITY PROTECTION PROGRAM (WQPP)

- In 1992 Congress directed USEPA and the State of Florida to develop a WQPP for the Florida Keys National Marine Sanctuary (FKNMS).
- The purpose of the WQPP is to **recommend corrective actions to protect water quality and compliance schedules** to address point and nonpoint sources of pollution to restore and maintain the chemical, physical and biological integrity of the Sanctuary.
- Canal water quality restoration is a priority of the WQPP Steering Committee which recently passed a motion to **develop a plan to prioritize canal restoration projects and to identify funding sources** for these projects.



Organic Removal in Canals #266 Drs. Arm & #290 Avenue J, Big Pine Key



1. Restoration consists of removal of decayed seaweed and muck from the canal bottoms

- a) Canal #266 8,300 cubic yards from -3.4 to -8.4 feet MLW
- b) Canal #290 4,700 cubic yards from -3.9 to -8.9 feet MLW

2. Construction Methodology

- a) Hydraulic dredge
- b) Dewatering via Geotubes

3. Update on permitting status

- a) SFWMD ERP
- b) USACE and FKNMS



Canal #29 Backfilling Project Sexton Cove, Key Largo

1. Restoration consists of placing ~11,000 cubic yards of fill to raise elevation to -8.7 feet NAVD (-7.7 feet MLW) from -30 to -40 feet
 - a) Barge emplacement for uniform distribution
2. Two Options for Transport of Fill to the Canal
 - a) Land Transport via trucks
 - b) Water transport via barges
 - c) Land transport cheaper (by ~ \$500,00), faster to permit, and preferred by FKNMS
3. Update on permitting status
 - a) **SFWMD ERP obtained 10-29-14**
 - b) FKNMS permit obtained 11-11-14
 - c) USACE - permit obtained





Monroe County Wastewater Projects Status



TWELVE SYSTEMS – NINE WWTP – SEVEN SEPARATE PROVIDERS



10 systems completed
Representing 76% of EDUs
At a total cost \$440 million

2 systems under construction
represent 24% of EDUs
Cost = \$290 million





**CURRENT COUNTYWIDE CONNECTIONS
ARE 75% COMPLETE)**

**ISLAMORADA & CUDJOE REPRESENT
21% OF THE COUNTYWIDE
CONNECTIONS**



CUDJOE



WWTP STARTS WATER TESTING SOON

**STARTS ACCEPTING WASTEWATER FLOW
IN MARCH**

ISLAMORADA

**IS NOW SENDING SOME FLOW TO KEY
LARGO**





STORMWATER



Thanks for the Cooperative Grant Program!



County has 2 Applications Pending:

-Jo Jean Way (\$100k)

baffle box on bayside direct discharge

-Countywide Stormwater Treatment (\$3.3 million over 3 years)

piggybacking on our Road Program



**How can the SFWMD
and Monroe County
work together for
2015 and beyond?**



THANK YOU
QUESTIONS?

