

Monroe County Canal Restoration Project Updates

WQPP Canal Restoration Advisory Subcommittee Meeting

October 28, 2016

protecting the Florida Keys

Since 1971, the Conservancy has helped protect more than 7,700 acres of land in the Florida Keys. We also helped create the 2,800-square-nautical-mile Florida Keys National Marine Sanctuary. This map shows the boundary of the Sanctuary and the approximate locations of the places that have been preserved through the Conservancy's efforts. The list below indicates the number of acres the Conservancy protected within each site.

1. Biscayne National Park - 517 acres
2. Cross Key - 125 acres
3. Key Largo - 4,406 acres
4. Shell Key - 256 acres
5. Lignumvitae Key - 280 acres
6. Lower Matecumbe Key - 89 acres
7. Long Key, Keys Marine Lab - 5 acres
8. Little Crawl Key - 35 acres
9. Fat Deer Key - 365 acres
10. Big Pine Key - 574 acres
11. Little Torch Key - 249 acres
12. Ramrod Key - 87 acres
13. Sugarloaf Key - 35 acres
14. Snipe Key - 463 acres
15. Sadglabunch Key - 222 acres
16. Key West - 49 acres



Florida Keys National Marine Sanctuary

Monroe County Demonstration Projects

Air Curtain	Organic Removal	Culvert Installation	Backfilling	Pumping
#266 Big Pine Doctor's Arm between Witters & Bailey Lanes Same Canal – 2 Categories #1		#472 Geiger Key Geiger Mobile Homes FDEP Grant Project #2	#29 Key Largo Sexton Cove between Bunting and Pigeon Drives #3	#278 Big Pine Eden Pines Colony Pine Ave #7
#290 Big Pine between Ave I and J Same Canal – 2 Categories #5		#277 Big Pine Tropical Bay between Watson Blvd and Sunrise Dr #6		
#287 Big Pine Atlantic Estates between Hollerich Dr and Atlantis Dr #4		#459 Geiger Key Boca Chica Ocean Shores between Boca Chica Rd and Jay Ln #8		

Project #1: Backfilling Project - Canal #29 Sexton Cove, Key Largo

- A. The project was completed in July 2015 and the cost for construction was \$1,360,000
- B. Lessons learned
 1. Detailed pre- and post-construction videos of adjacent property to the canal
 2. Vacant lot and private property approval for equipment staging
 3. Impacts to residents due to closure of canal
 4. Traffic impacts to residents due to trucks (17 per day)



Projects #2 and #3: Organic Removal Projects – Canals #266 Drs. Arm and #290 The Avenues, Big Pine Key

- A. The project was completed in March 2016 and the cost for construction was \$1,901,804
- B. Lessons learned
 1. Polymer residual and toxicity concerns with OFW
 2. Vacant lot and private property approval for equipment staging
 3. Impacts to residents due to closure of canal
 4. Sloughing of muck back in the canal due to shallow elevations outside mouth of canal (permitting concerns with muck removal in OFW)
 5. Concerns with O&M being provided by residents to maintain air curtain systems
 6. Construction administration cost due to bidding requirements for GC license and bonding



Project #4: Culvert Installation Project - Canal #277 Tropical Bay Estates, Big Pine Key

- A. 60” concrete culvert to connect two sections of canal system
- B. Project was completed May 2016 and the cost for construction was \$373,957
- C. **DEP provided \$50K for the construction cost**
- D. Lessons learned
 1. Homeowner perception of seaweed movement
 2. Private property approval for culvert installation and equipment staging



Project #5: Air Curtain Installation Projects - Canals #266 Drs. Arm and #287 Atlantic Estates, Big Pine Key

- A. Project completed in June 2016 and the cost for construction was \$202,384
- B. The County is funding the O&M for \$99K for 2 years – including power
 1. Savings to homeowners per year for Canal #266 is \$688/property and Canal #287 is \$952/property
- C. Lessons learned
 1. Noise levels of compressors and distribution manifold
 2. Elevation of equipment
 3. Private property access and approval to place equipment
 4. PRD entrapment concerns, alternative design was evaluated but still caused concerns with wildlife entrapment
 5. Navigation issues with shallow canal mouth depths
 6. Site obstructions (wind vane, control panel, compressor boxes)



Before



After



Before



After

Project #6: Air Curtain Installation Project - Canal #290 The Avenues, Big Pine Key

- A. County completed a \$700K organic muck removal project in March 2016
- B. Homeowner weed gate was reinstalled but is unable to prevent seaweed from entering the canal
- C. The homeowners have requested assistance from the County installing a new air curtain
- D. The County will provide match funds to design, permit, and construction
- E. Alternative design with a combination physical and air curtain barriers addresses PRD concerns
- F. Evaluate elevating the compressors on 2-story home to plan for sea level rise and storm surges
- G. **DEP provided \$50K for the construction cost**
- H. Construction has to be completed by June 2017



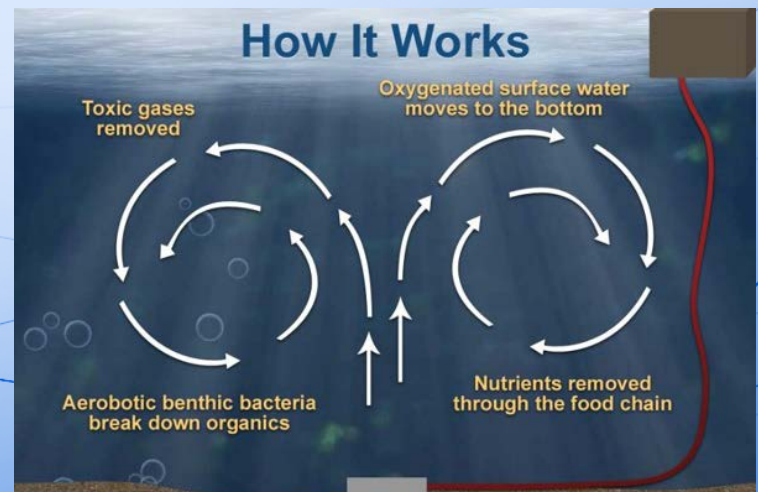
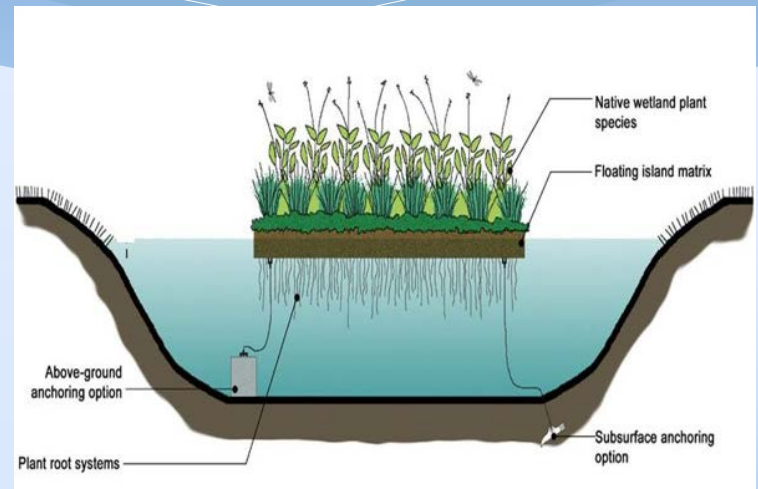
Project #7: Organic Removal, Backfilling, and Air Curtain Project - Canal #83 Rock Harbor, Key Largo

- A. Permits have been received from the federal, and state agencies. County permit is pending approval.
- B. Adventure Environmental, Inc. was selected by committee based on the criteria in the RFP.
- C. 1,524,040 Contract pending BOCC approval until access agreement for air curtain is finalized.
- D. County Policy 202.8.4 states that “*maintenance dredging in artificial waterways shall not exceed depths greater than minus (-6) feet mean low water*”
- E. Policy 202.8.6 was passed in 2015 that allowed the implementation of the 2 demonstration organic removal projects to exceed depth threshold without backfilling
 - 1. Water quality report after 2 years of monitoring to determine effectiveness



Project #8: Augmented Aeration Projects - Canals #48, #59, #79, #80, Key Largo

- A. Working on access agreements for staging equipment and RFP.
- B. Project may include augmented aeration such as bio bugs, macro algae, or applicable means of improving water quality
- C. Potential permitting issues
- D. A selection committee will evaluate the proposals based on criteria in the RFP
- E. Funding for project is an issue at the moment



Project #9: Backfilling Project - Canal #92 Tavernier, Key Largo

- A. Unable to obtain access agreement for temporary staging of material and equipment.
- B. Canals #75(existing air curtain) and #76 identified as alternatives based on database and the following criteria:
 - * Unincorporated Monroe County
 - * Backfill Only (no organic removal or air curtain based on database)
 - * Poor Rated
 - * WQ Ranking
 - * Estimated Cost < 1.3 million
 - * Staging Area



EPA 2016 South Florida Initiative Grant Project

- A. EPA provided \$110,582.30 to the County to fund a portion of the CMMP Part III A to address data gaps
- B. Monroe County will provide \$17,029.75 in match funding
- C. The scope includes:
 1. Collection of expanded Dissolved Oxygen (DO) data for 180 Fair and 131 Poor raked canals
 2. Collection of sediment cores from 15 canals that have documented organic detritus bottom sediment loading greater than 0.75 feet in thickness to evaluate the potential for reusing canal sediments in their planning and cost evaluation of organic removal and backfilling