

April 29, 2020

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Re: Florida Keys National Marine Sanctuary WQPP

Ms. Ellington and Mr. Iglehart,

We direct this letter to you as the delegated representatives from the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (DEP), respectively, to the Florida Keys National Marine Sanctuary Water Quality Protection Program (WQPP).

Our environmental and civic organizations represent thousands of residents in the Florida Keys. We care about Sanctuary water quality. Over many years, most of us have been actively addressing water quality issues in the Keys. Surrounded as we are by the Sanctuary, we have attempted to be helpful and watchful. We have volunteered to monitor water quality; participated on the Sanctuary Advisory Council and contributed to the efforts of various WQPP committees and subcommittees; kept our supporters advised of Sanctuary issues; worked to obtain sewerage and deep wells for disposal of sewage effluent; and litigated where it was not possible to reach agreement on issues of concern which impact the Sanctuary.

The new Sanctuary Superintendent, Sarah Fangman, and Karen Bohnsack, the Sanctuary's new Associate Director, Water Quality and Ecosystem Restoration, have been very proactive in convening meetings to address water quality issues. We appreciate their accessibility to local residents and their real concern for the Sanctuary, and we commend their actions to your attention.

Our groups are concerned about the use of shallow sewage effluent wells in the porous limestone strata of the Keys. Marathon uses multiple shallow sewage wells rather than the deep well called for in the Monroe County Sanitary Wastewater Master Plan 2000, in which your agencies played a significant role. Key Largo, Islamorada, Monroe County at Cudjoe Regional Wastewater Treatment Plant, and Key West all use deep wells, as Marathon, too, had been intended to do prior to its incorporation.

In spite of the conversion from septic and cess pit to centralized sewers, water quality in the Halo Zones and nearshore waters around the Keys remains impaired for nutrients under the Clean Water Act, despite regulatory management efforts by EPA and DEP for nutrient impairment for over a decade. In the most recent report - the 2018 Update to the Florida Keys Reasonable Assurance Document - **DEP acknowledged that the Halo Zone waters surrounding the Keys remain impaired for nutrients.**

Data collected by FIU's Southeast Regional Environmental Research Center from the SHORE monitoring stations in the Keys Halo Zones since their 2011 inception, reported annually to your

agencies and maintained in a publicly available data base, **demonstrate persistent non-compliance with EPA Strategic Targets for nutrients and in some areas, particularly Marathon, a deteriorating trend, in spite of the elimination of most septic tanks and cess pits:** ⁱ

“On average over the time period, **DIN samples complied only 22.3% of the time, while TP samples complied 58.1% of the time.** These percentages of compliance were graphed by year to assess if water quality was improving or deteriorating over time. The graph of the percentage of DIN samples that complied with the Strategic Targets between 2011 and 2017 suggest there is little change in compliance over time, and the graph of the percentage of **TP samples suggests a decreasing number of samples were complying with the Strategic Target over time.**”

“Table 1. SHORE Stations, Compliance Percentages with Strategic Targets”

Percent of surface water samples from FKNMS SHORE stations that complied with Strategic Targets

(TP ≤ 0.0077 ppm & DIN ≤ 0.01 ppm) by year.

	DIN Surface			TP Surface		
	# of samples	# that complied with Target	% complied with target	# of samples	# that complied with Target	% complied with target
2011	10	3	30.0%	10	9	90.0%
2012	40	5	12.5%	40	28	70.0%
2013	40	12	30.0%	40	20	50.0%
2014	40	4	10.0%	40	18	45.0%
2015	40	11	27.5%	40	25	62.5%
2016	40	7	17.5%	40	24	60.0%
2017	37	13	35.1%	38	20	52.6%
2011-2017	247	55	22.3%	248	144	58.1%

When trends over time since 2011 were graphed for Marathon, Key West and Islamorada, **the water quality around Marathon at all sampling stations showed a deteriorating trend.**

“Summary table of DIN and TP trends at the six SHORE stations are evaluated.”

Key	Water Quality Parameter	Station	Figure#	General Direction of Trendline	End of Trendline Complies with Strategic Target
Marathon	DIN	504 Ocean 100 th St	4	Deteriorating	No
	DIN	505 Hidden Harbor Beach	5	Deteriorating	No
	TP	504 Ocean 100 th St	6	Deteriorating	No
	TP	505 Hidden Harbor Beach	7	Deteriorating	No
Islamorada					
	DIN	502 Indian Key	9	Improving	Yes
	DIN	503 Blackwood Drive	10	Deteriorating	No
	TP	502 Indian Key	11	Static	Yes
	TP	503 Blackwood Drive	12	Static	No
Key West					
	DIN	509 Intl. Airport	14	Static	No
	DIN	508 Marriott Beach	15	Improving	No
	TP	509 Intl. Airport	16	Static	Yes
	TP	508 Marriott Beach	17	Improving	Yes

The persistent water quality problems – reported by the Florida Keys Reasonable Assurance Program and demonstrated in the analysis of the Sanctuary’s SHORE station monitoring data collected by FIU under EPA contract, supra, – are not solely or even primarily the result of local canals, which are the subject of some ongoing work rule programs through the Department of Economic Opportunity:

Concern that sewage effluent disposed to shallow wells in the porous limestone of the Florida Keys migrates to nearshore and Halo Zone waters has been expressed by many experts:

- **Annual reports from the Sanctuary since at least 2005 indicate a concern about shallow sewage effluent wells.** The most recent report – 2018 – repeated, “[R]ecent studies have shown that **nutrients from shallow sewage injection wells may be leaking into nearshore surface waters** (Corbett et al. 1999; Shinn 1999a, 1999b; Paul et al. 1995, 1997; Reich et al. 2001; Briceño et al. 2015).”ⁱⁱ
- **DEP has long recognized that shallow wells in the Florida Keys often do not work.** As stated in the minutes of a 2008 meeting between DEP and Florida Keys Aqueduct Authority (FKAA) personnel about Monroe County’s Cudjoe Regional shallow sewage effluent wells:

“FDEP responded and stated that most shallow wells in the Florida Keys are operational only when the tide is receding. FDEP cited several plants with shallow wells that do not work.”ⁱⁱⁱ

- **Data collected from 2015 dye-tracer tests at Cudjoe Regional demonstrate that sewage effluent – more buoyant than seawater – gravity injected into shallow wells would reach the nearby surface waters almost immediately.**^{iv} The test confirmed the highly porous condition of the geology and the rapid and “...undeniable connection between the connection depth and surface waters,” as described by Dr. Henry Briceño, lead scientist on the Cudjoe dye-tracer test.
- FDEP requested an additional test, conducted by Water Science Associates (WSA).^v According to Don Maynard, a Florida licensed geologist and hydrogeologist, as well as a well driller and engineer, with over thirty years of professional experience, the WSA test results --specifically Figure 8 --^{vi} demonstrate that “...**water level data collected during the injection test provide an additional line of evidence that there is direct hydraulic connection between the shallow injection wells and surface water.**”
- Based on those two test results, and citizen litigation, the plans to use shallow wells for sewage effluent disposal were dropped, a deep well was drilled, and Cudjoe Regional now uses its four shallow wells for back-up only.
- **Recent sucralose test results suggest that sewage effluent from Marathon’s Area 4 Wastewater Treatment Plant’s shallow sewage effluent wells is rising to the surface in the nearby mangroves,** according to Mr. Maynard. The sucralose water samples were

taken by Don DeMaria, former Vice Chair of the Sanctuary Advisory Council, who followed protocols as stated by Dr. Brian Lapointe. The samples were analyzed by a respected third-party lab.^{vii}

- The sucralose test results are scientifically reliable data sufficient to meet the mandatory requirements of Section 403.086(10) (h), Florida Statutes, so that a deep well should be required for Marathon:

“If it is demonstrated that a discharge, **even if the discharge is otherwise in compliance with this subsection**, will cause or contribute to a violation of state water quality standards, **the department shall:**

1. Require more stringent effluent limitations;
2. **Order the point or method of discharge changed;**
3. Limit the duration or volume of the discharge; or
4. Prohibit the discharge.”

If the EPA or DEP feels that further testing of the Halo Zone and nearshore waters in the Marathon area is required, we urge you to ensure that such additional testing takes place expeditiously. On behalf of our thousands of members and supporters who care about water quality in the Sanctuary and who are concerned about the continued use of shallow wells for primary sewage effluent disposal in the Marathon system, we ask that you ensure that this critical issue is properly and immediately addressed.

Florida Keys Chapter of the Izaak Walton League of America, Florida Keys Citizens Coalition, Florida Keys Environmental Fund, Inc., Friends of the Lower Keys (FOLKs), Key Deer Protection Alliance, Inc., Last Stand, Lower Density for Lower Sugarloaf, LLC (LD4LS), Save Summerland Native Areas, Cudjoe Gardens Property Owners Association, South Point Homeowners, LLC, Sugarloaf Shores Property Owners Association (SSPOA)

For more information go to www.friendsofthelowerkeys.org

ⁱ Evaluation of SHORE Monitoring Stations in the Context of Nutrient Compliance Targets in Florida Keys National Marine Sanctuary, McKee, Kathleen A., M.S., May 1, 2019.

ⁱⁱ 2018 Florida Keys National Marine Sanctuary Report.

ⁱⁱⁱ Meeting Memorandum 12-22-2008, DEP and Florida Keys Aqueduct Authority and its contractors concerning the planned Cudjoe Regional Wastewater Treatment Plant.

^{iv} Design and implementation of dye-tracer injection test, Cudjoe Key, Florida Keys, FINAL REPORT, Henry O. Briceño, Reinaldo Garcia, Piero Gardinali, Kevin Boswell, Alexandra Serna, Florida International University and Eugene Shinn University of South Florida, May 25, 2015.

^v Aquifer Test Report, Cudjoe Key Wastewater Treatment Plant, Water Sciences Associates, September, 2015.

^{vi} Ultra-Trace Analysis of Sucralose in Multi-Matrix Aqueous Samples by Online SPE HPLC-High Resolution Mass Spectrometry, Environmental Analysis Research Laboratory (EARL) Southeast Environmental Research Center and Department of Chemistry & Biochemistry, Florida International University, North Miami, Florida 33181, August 21, 2019.