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Wastewater in the Florida Keys: A Call for Stricter Regulation of Nonpoint Source Pollution

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WASTEWATER IN THE FLORIDA KEYS: A CALL FOR STRICTER REGULATION OF NONPOINT SOURCE POLLUTION

HEATHER DARDEN*

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INTRODUCTION

As you stand out on the dock at the Islamorada Marina near Key Largo in Monroe County, Florida, you see the sun rising over the Atlantic Ocean, boats slowly meandering down the mangrove canals, crystal blue waters teeming with plant and animal life, and beautiful coral reefs beneath the clear water. What you cannot see are the human feces, viruses, bacteria, and high mineral concentrations that are killing this unique environment.¹ Recent scientific studies have identified raw sewage, leaking from cesspools and septic tanks, as the main source of this pollution.² These troubles are compounded by the already problematic underground shallow injection wells.³

One environmental resource increasingly affected by the wastewater problem is the Florida Keys National Marine Sanctuary, which Congress created in 1990.⁴ The Sanctuary encompasses the nearshore waters of the entire chain of islands in the Florida Keys, and is home to the nation's only barrier coral reef.⁵ The Sanctuary is also home to mangrove islands and seagrass meadows, and provides habitat for several endangered species.⁶ In addition to its environmental value, the Sanctuary hosts much of the booming tourist industry that sustains these island economies.⁷ Monroe County has taken one large step forward combatting this problem in signing a contract for the construction of a new centralized wastewater facility to serve over 12,000 residents in the Key Largo area. The facility will provide advanced treatment of wastes, and will require the abandonment of a large portion of some 30,000 septic tanks currently in use in the Florida Keys.⁸

This Article reviews the sources of water pollution, the different resources for federal and local regulation of such pollution and recommends strengthening these regulatory schemes. The first part

1. See Dale W. Griffin et al., *Detection of Viral Pathogens by Reverse Transcriptase PCR and of Microbial Indicators by Standard Methods in the Canals of the Florida Keys*, 65 APPLIED AND ENVTL. MICROBIOLOGY 4118 (1999).

2. John H. Paul et al., *Viral Tracer Studies Indicate Contamination of Marine Waters by Sewage Disposal Practices in Key Largo, Florida*, 61 APPLIED AND ENVTL. MICROBIOLOGY 2230 (1995).

3. *Id.*

4. Florida Keys National Marine Sanctuary and Protection Act, Pub. L. No. 101-605, 104 Stat. 3089 (1990) [hereinafter Sanctuary Act].

5. BARBARA H. LIDZ, U.S. DEP'T OF THE INTERIOR, PUB. NO. OFR-97-453, ENVIRONMENTAL QUALITY AND PRESERVATION — FRAGILE CORAL REEFS OF THE FLORIDA KEYS: PRESERVING THE LARGEST REEF ECOSYSTEM IN THE CONTINENTAL U.S. (1997).

6. *Id.*

7. *Id.*

8. For a more detailed discussion of the wastewater facility planned for Key Largo, see *infra* text accompanying notes 139-49.

discusses the two basic types of water pollution: point and nonpoint sources. Point sources, those typically caused by industrial facilities, are more easily identified and traced than nonpoint sources, which are typically caused by water picking up pollutants as it moves over and through the ground. Part II of the Article discusses the particular impacts of nonpoint source pollution in the Florida Keys, which have few of the municipal wastewater treatment systems so commonly found in other urban areas. The movement of wastewater through the extremely porous islands presents a wealth of potential danger for the sensitive coral reefs located in the Atlantic Ocean. Parts III and IV then discuss current sources of federal and local regulation of water pollution. The bulk of federal water pollution regulation is aimed at the more readily identifiable point sources. In contrast, much of the legislative language dealing with nonpoint sources of pollution comes in the form of recommendations for states and other local government entities to identify their own particular problems and develop individual plans of action. Part IV also includes a summary of state legislative activity in the 2000 session, and then evaluates the likelihood of using these provisions in protecting the Florida Keys.

A new wastewater treatment plant has been proposed for Key Largo to combat recent findings of water pollution in the area. Part V describes the plans for the new facility, as well as reactions to the plan by local residents and businesses. Finally, Part VI discusses recommendations for strengthening regulation of nonpoint source water pollution so as to aid efforts to protect national waters, particularly the Florida Keys area. Specific provisions need to be made for financing efforts to combat nonpoint sources of water pollution. In particular, funding must be earmarked expressly for these purposes, so that local governments will be able to identify and remedy their own nonpoint source problems.

I. SOURCES OF WATER POLLUTION

Water pollution is typically divided into two basic categories: point source and nonpoint source pollution. Point source pollution, as the name suggests, includes pollution that is released from a stationary or fixed facility, such as industrial or municipal waste discharged through pipes, ditches, lagoons, or wells.⁹ Nonpoint source (NPS) pollution on the other hand, has many diffuse origins.

9. OFFICE OF WATER, U.S. ENVTL. PROT. AGENCY, PUB. NO. 841-F-94-005, POLLUTED (1994), available at <http://www.epa.gov/epahome/pubsearch.html> (last visited May 22, 2001).

NPS pollution is often caused by runoff moving over the ground that picks up pollutants and deposits them in water bodies, but it can also be caused by underground sources. NPS pollutants include: fertilizers and other agricultural products; oil and chemicals from urban runoff and energy production; sediment from construction sites, crops and forest land; salt from irrigation; acid from abandoned mines; and bacteria and nutrients from livestock, pet wastes and faulty septic systems.¹⁰ The pollution from point sources, such as municipal wastewater treatment facilities, and from nonpoint sources, such as septic tanks and cesspits, is of particular importance in the Florida Keys because of the many environmental resources held within this area.

The domestic wastewater systems currently in use in the Keys include two municipal wastewater treatment plants, over 250 small package plants, approximately 24,000 regulated on-site wastewater treatment systems, also called septic tanks, and an estimated 8,000 unregulated cesspits.¹¹ The EPA estimates that the septic tanks and cesspits alone introduce over 1,200 pounds of nitrogen and 326 pounds of phosphorus each day into the surrounding marine environment, accounting for over half of the total nutrient loading in these waters.¹²

Originally, onsite wastewater treatment in the Florida Keys was accomplished through the use of cesspits followed by conventional septic systems, but recently the islands have begun to use aerobic treatment units.¹³ Centralized municipal treatment facilities are common in most urban areas, but because of the difficulty and expense of digging holes and trenches in solid rock and then stringing a sewage system through 120 miles of islands, it has not been a popular option in the Florida Keys and residents have instead been using septic tanks since the 1950s.¹⁴ "Before 1989, raw, untreated waste from Key West was pumped directly into the Atlantic."¹⁵ Only within the last ten years have centralized treatment

10. *Id.*

11. AYRES ASSOCIATES, MONROE COUNTY SANITARY WASTEWATER MASTER PLAN, SUMMARY REPORT: TECHNOLOGY ASSESSMENT OF ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS), at 2 (1998), available at <http://www.keyswastewater.org/summary1.htm> [hereinafter SUMMARY REPORT] (citing U.S. ENVTL. PROT. AGENCY, WATER QUALITY PROTECTION PROGRAM DOCUMENT FOR THE FLORIDA KEYS NATIONAL MARINE SANCTUARY (1996)).

12. *Id.*

13. *Id.* at 8.

14. June Wiaz, *From the Ground Up*, FLA. ST. U. RES. IN REV., Spring/Summer 1999, available at <http://www.research.fsu.edu/whatsnew/researchr/springsummer99/features/fromthefoundup.html> (last visited May 22, 2001).

15. *Id.*

facilities come into use in the Keys.¹⁶ Individually, each of these sources poses little threat to the environment. However, on small islands, with rapidly increasing populations, the collective impact of the various wastewater treatment options is beginning to take its toll.

A. Point Sources

Point sources of pollution are those originating from stationary, identifiable sources, typically from ground pipes or wells. Scattered throughout the Keys are various injection wells and treatment systems that fall under the point source classification.

There are five categories of underground injection wells: (a) Class I wells are used to inject hazardous waste, non-hazardous waste, or municipal waste; (b) Class II wells are used to inject fluids associated with the production of oil and natural gas or fluids used to enhance hydrocarbon recovery; (c) Class III wells are used to inject fluids for extraction of minerals; (d) Class IV wells are used to dispose of hazardous or radioactive wastes, but are banned in Florida; and (e) Class V wells are other wells used generally to inject non-hazardous fluid.¹⁷

Today there are roughly 750 sewage disposal wells, ranging in depth from 30 to 90 feet operating in the Florida Keys.¹⁸ Florida's Department of Environmental Protection regulates underground injection wells according to the federal Safe Drinking Water Act, and addresses construction, operation, and maintenance of these wells.¹⁹ Some studies have shown that injected wastewater is actually "polished" as it works its way through the limestone substrate beneath the islands.²⁰ The polishing process occurs when phosphate and nitrate molecules (both of which are extremely harmful to the coral reefs) stick to the limestone, and are naturally filtered out before the wastewater reaches local surface water bodies.²¹ There are, however, questions as to the extent of this "polishing" process, and whether the injection system as a whole is sufficient, or whether

16. *Id.*

17. BUREAU OF WATER FACILITIES REGULATION, FLA. DEP'T OF ENVTL. PROT., UNDERGROUND INJECTION CONTROL PROGRAM, at <http://www8.myflorida.com/environment/learn/waterprograms/uic/index.html> (last visited May 22, 2001).

18. Wiaz, *supra* note 14.

19. Florida Internet Center for Understanding Sustainability, *Underground Injection Wells in Florida*, at http://www.ficus.usf.edu/docs/injection_well/underground.htm (last visited May 22, 2001).

20. Wiaz, *supra* note 14.

21. *Id.*

the entire Keys region should be forced to convert to centralized sewage treatment.²²

Private operators of package plants, scattered throughout the Keys, consolidate residential and municipal sewage, treat it, and pump it below ground.²³ Roughly 350 package plants operate, mostly in the Upper Keys region, to treat wastewater to conform to secondary treatment standards before it is pumped into the ground.²⁴ "These plants turn slurries of thick brown gunk, basically immense bacterial cultures, into clear, heavily chlorinated effluent."²⁵ The settled out solids, or sludge, is then sent to Miami for further treatment. One owner states that his effluents, on average, test at 17 to 20 milligrams per liter for nitrate composition and 5 milligrams per liter for phosphates.²⁶ These figures "are up to six times the state standard for an advanced wastewater treatment plant, which limits nitrates to three milligrams per liter and phosphates to only one."²⁷

These standards are applied primarily to inland waterway discharges; conflict remains over what the target standard should be in the Florida Keys.²⁸

B. Nonpoint Sources

Most of the concern over nonpoint sources of water pollution has traditionally been centered around agricultural and urban development sources. In the Florida Keys, however, septic systems also pose an enormous threat to local waters.²⁹ The unique geology of the environment, and the extreme cost of establishing centralized sewage associated with this environment, have forced developers to utilize septic systems and cesspits as the primary means of household wastewater disposal in this area. The same unique geology, however, exaggerates the effects of these nonpoint sources of pollution, creating a hazard for the surrounding marine environment.

22. *Id.*

23. *A Conch Dilemma*, FLA. ST. U. RES. IN REV., Spring/Summer 1999, available at http://www.research.fsu.edu/whatsnew/researcher/springsummer99/features/sb_conch.html [hereinafter *Conch*] (last visited May 22, 2001).

24. *Wiaz*, *supra* note 14.

25. *Conch*, *supra* note 23.

26. *Id.* (quoting Chris Schrader, owner of Ecosystematics, Inc., which operates more than 100 package plants).

27. *Id.*

28. *See id.*

29. Paul, et al. *supra* note 2.

1. Cesspits

Cesspits were the major method of wastewater treatment and disposal in the Florida Keys until the 1970s.³⁰ Cesspits are basically large holes made in the limestone substrate, into which raw wastewater is discharged and thus they constitute more of a disposal technique than a treatment method.³¹ The idea of the cesspits was that wastewater would seep out of the pit into the natural rock or groundwater, and natural pollutant removal would occur as it moved through the substrate, much like the "polishing" effect in the wells.³² The porous nature of the Keys' substrate and the tidally influenced groundwater movement, however, reduce the polishing effects and results in significant pollutant loading into surrounding waters.³³ For these reasons, eliminating cesspits has been a major priority in upgrading wastewater treatment in the Keys.³⁴

2. On-site Wastewater Treatment Systems

Beginning in the 1970s, more conventional on-site wastewater treatment systems (OWTS) began to appear in the Keys.³⁵ OWTS consist of two primary parts: 1) a septic tank; and 2) a subsurface wastewater infiltration system (drainfields or leachfields).³⁶ Wastewater flows through the septic tank and into the drainfield where it is absorbed into the soil and then makes its way through the substrate.³⁷ "When at least two feet of unsaturated soil exists below the drainfield, the treatment provided by this process generally exceeds secondary treatment standards typically utilized in wastewater treatment plants."³⁸ However, in the Florida Keys, the substrate is almost completely limestone and very little soil exists for treatment by the drainfields.³⁹ As with the cesspits, the wastewater travels quickly through the substrate and out into surrounding waters. Travel times from septic systems to canals in the Keys has

30. SUMMARY REPORT, *supra* note 11.

31. *Id.*

32. *Id.*

33. *Id.* For a discussion of the tidal movement of groundwater in the Keys, see *infra* text accompanying notes 54-65.

34. MONROE COUNTY, FLA., CODE, ch. 15.5, art. II (1999) (banning the use of cesspits and providing a replacement program as a requirement for obtaining additional disposal permits).

35. SUMMARY REPORT, *supra* note 11.

36. *Id.*

37. *Id.*

38. *Id.* at 9.

39. *Id.*

been shown to be a matter of hours,⁴⁰ an extremely accelerated process compared to travel time elsewhere in Florida, usually several hundred days.⁴¹

Because of this unique geology, septic tanks are not an ideal method of disposal in the Keys. In fact, scientists speculate that these tanks are one of the major causes of pollution in the near shore waters of the islands.⁴² With the exception of Key West, which has already moved to sewer disposal, there are approximately 30,000 septic tanks across the region.⁴³ Both federal and local governments need to examine the current regulatory scheme of the septic systems commonly used in the Keys, and evaluate the costs and benefits of eliminating these disposal methods completely.

II. IMPACTS OF NONPOINT SOURCE WATER POLLUTION IN THE FLORIDA KEYS

Because the Florida Keys are home to a plethora of environmental treasures, an examination of the particular effects of nonpoint source water pollution is necessary. The contaminants carried by nonpoint source pollution can be detrimental to the natural flora and fauna, as well as to the health of humans. One recent study found that fecal indicator bacteria were present in the surface waters of over half of all sites surveyed in the Florida Keys.⁴⁴ Coral reef colonies are extremely sensitive to changes in ambient water quality and are therefore a good indicator of potential threats caused by water contamination. Coral reefs in the Florida Keys are already exhibiting symptoms of coral diseases that often result from increased nutrient and bacteria levels.⁴⁵

A. The Coral Reefs

The Florida Keys are home to the only living barrier coral reef ecosystem in the continental United States.⁴⁶ The reef is located

40. See Paul, et al. *supra* note 2, at 2230. See also SUMMARY REPORT, *supra* note 11 at 9.

41. SUMMARY REPORT, *supra* note 11 (citing J. I. McNeillie et al., *Investigation of the Surface Water Contamination Potential from On-site Wastewater Treatment Systems (OWTS) in the Indian River Lagoon Basin*, in 7TH INTERNATIONAL SYMPOSIUM ON INDIVIDUAL AND SMALL COMMUNITY SEWAGE SYSTEMS 154 (Dec. 11, 1994)).

42. Paul, et al. *supra* note 2, at 2231-32 (septic tank seed study).

43. Brian E. Lapointe et al., *Nutrient Couplings Between On-site Sewage Disposal Systems, Groundwaters, and Nearshore Surface Waters of the Florida Keys*, 10 BIOGEOCHEMISTRY 289, 290 (1990).

44. See Paul, et al. *supra* note 2, at 2230, 2232.

45. REEF RELIEF, THE KEYS ARE IN OUR HANDS (1994) [hereinafter REEF RELIEF], available at <http://www.ficus.usf.edu/docs/keys/hands.htm> (last visited May 22, 2001).

46. LIDZ, *supra* note 5.

between four and seven miles offshore of the islands in the Atlantic Ocean, and its physical framework serves as an essential "structural barrier to catastrophic waves and storm surges."⁴⁷ The reefs are contained within the boundaries of several state and national parks including Biscayne National Park, John Pennnekamp Coral Reef State Park, Key Largo National Marine Sanctuary, Looe Key National Marine Sanctuary, and part of the Florida Keys National Marine Sanctuary.⁴⁸

Coral reefs are some of the oldest, and most biologically diverse ecosystems on earth, but are also some of the most fragile ecosystems.⁴⁹ Coral reefs are colonies of coral polyps, small animals similar to jellyfish and anemones, with a hard outer coral structure that is formed from the calcium carbonate skeletons secreted by these polyps.⁵⁰ Corals typically grow in nutrient-poor, tropical waters, which contain very little plankton.⁵¹ Corals rely on a symbiotic relationship with the algae cells contained in each polyp, which in turn depend on the clear (nutrient-free) water for absorbing sunlight.⁵² Because of this need for sunlight, coral reefs are usually located in shallow waters, relatively close to land, and consequently are sensitive to a variety of environmental stresses such as shore development, water pollution from runoff and groundwater seepage, boat discharges and collisions, and physical harm from divers.⁵³

B. Geology and Hydrology

The Florida Keys and Florida Bay sit on a thick layer of limestone through which groundwater can flow with relative ease.⁵⁴ The rise and fall of tides in the Atlantic Ocean, compared with the near constant water level in Florida Bay, creates a phenomenon called "tidal pumping" that continually moves groundwater back and forth between the two bodies of water, through the limestone bedrock.⁵⁵

47. *Id.*

48. *Id.*

49. Robin Kundis Craig, *The Coral Reef Task Force: Protecting the Environment Through Executive Order*, 30 ENVTL. L. REP. 10343, at 10343-44 (May 2000).

50. *Id.* at 10344.

51. *Id.*

52. *Id.*

53. *Id.*

54. *Wiaz*, *supra* note 14.

55. EUGENE A. SHINN ET AL., U.S. DEP'T OF THE INTERIOR, GEOLOGY AND HYDROLOGY OF THE FLORIDA KEYS: GROUND WATER FLOW AND SEEPAGE (1999), available at http://sofia.usgs.gov/projects/grndwtr_flow/grflowab1.html (last visited May 22, 2001).

When the Atlantic Ocean, on the east side of the islands, is at high tide, water is pushed through the limestone into Florida Bay on the west side of the islands, where water level is lower.⁵⁶ At mean tide and low tide Florida Bay is higher, and water moves back towards the Atlantic in the same manner.⁵⁷ Most of the time, water levels in the Florida Bay are slightly higher than those in the Atlantic Ocean, resulting in a general eastward "downhill" flow of water toward the Atlantic Ocean.⁵⁸ This direction indicates that if any pollutant enters the groundwater system on land, there is a great possibility that it will be transported eastward toward the reef tract in the Atlantic Ocean.

"Because the upper 1 to 2 m[eters] of limestone are relatively impermeable compared to the underlying limestone, tidal springs occur wherever there are small sinkholes, fractures, or man-made breaks in the upper surface"⁵⁹ Consequently, the years of dredge and fill operations in the Keys have taken their toll on the environment.⁶⁰ Much of the dredging occurred in the 1950s to create available land to support the increasing population; in the process, dozens of canals broke through the coral barriers, creating a virtual highway for underground water, and consequently the wastes, to reach Florida Bay and the Atlantic, home of the coral reefs.⁶¹ "Collectively, these man-made conduits cut into natural subsurface water routes, allowing oxygen-poor and hydrogen sulfide-rich waters" from the surface to invade the groundwater system.⁶² These manmade conduits, the extremely permeable upper layer of limestone, and the constant sloshing of water back and forth through the islands, increase the amount of nutrients and pollutants in the groundwater. As a result, the wastes move faster from the point of disposal out into surface water, reducing the amount of time for pollutants to be removed by natural polishing from the limestone.

"Corals require clear, clean, nutrient-free waters to thrive."⁶³ Nutrients, including nitrates and phosphates found in municipal wastes, suffocate the corals by depleting the available oxygen from marine waters and promoting increased numbers of plankton,

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

60. See Wiaz, *supra* note 14.

61. See *id.*

62. *Id.*

63. REEF RELIEF, *supra* note 45.

bacteria, viruses, and other small organisms.⁶⁴ These factors combine to reduce the overall clarity of the water and prevent needed sunlight from reaching the algae cells living inside the coral polyps. The death of the algae, with which the coral shares a symbiotic relationship, and the increased numbers of bacteria in the water, produce coral diseases such as black band, yellow band, white band, and coral bleaching.⁶⁵ The effects of waste disposal in the Florida Keys are multiplied by the geology and hydrology of the area, and thus pose a greater threat to the surrounding environment.

III. FEDERAL REGULATION OF NONPOINT SOURCE POLLUTION IN THE FLORIDA KEYS

There are several federal resources addressing the problem of water pollution both generally for the United States, and also specifically in the Florida Keys. The bulk of actual federal *regulation* of this pollution is aimed at point sources, which are easier to identify and control. Nonpoint sources are not only hard to identify, but they are also difficult to classify and therefore difficult to fit into a regulatory scheme. Much of the law relating to nonpoint source pollution is targeted at encouraging states to identify their own individualized NPS pollution problems and to develop their own plans for control and restoration. In this respect, the federal government's regulatory hold over NPS pollution is weak and insufficient for solving problems such as the one faced in the Florida Keys.

A. Florida Keys National Marine Sanctuary and Protection Act

The National Marine Sanctuary and Protection Act designated the Florida Keys National Marine Sanctuary in 1990, recognizing that the coral reef ecosystem adjacent to the Florida Keys encompasses a diverse and valuable environment, which is "the marine equivalent of tropical rain forests" in supporting biological diversity.⁶⁶ The Act directs the Secretary of Commerce to develop a comprehensive management plan, in consultation with federal, state and local government authorities, and with the Advisory Council, to implement regulations for achieving the policy and purposes of the Act.⁶⁷ The Act specifies that the comprehensive plan shall address

64. *See id.*

65. *Id.* *See also* Craig, *supra* note 49.

66. Sanctuary Act, *supra* note 4 at § 2.

67. *Id.* at § 7.

areas of public and private use, zoning, enforcement regulation, research and monitoring, funding, intergovernmental coordination, and promotion of education among Sanctuary users.⁶⁸

The Act also directs the Administrator of the EPA and the Governor of Florida to develop a comprehensive Water Quality Protection Program (WQPP) for the Sanctuary, to recommend priority corrective actions and compliance schedules addressing pollution sources, so that they may restore and maintain the biological integrity of the Sanctuary.⁶⁹ The Act specifies that the WQPP should use a variety of methods for achieving its goals, including adopting new water quality standards for the Sanctuary, adopting new pollution control measures, establishing a water monitoring program, allowing public participation, and identifying funding.⁷⁰ "Since 1996, a WQPP Steering Committee has recommended priority corrective actions and compliance schedules addressing pollution sources and aims to restore and maintain the balance of life found in and on the water."⁷¹ The EPA has also issued millions of dollars in grants to fund projects identified by the WQPP, but not specifically for eliminating nonpoint sources of pollution.⁷²

B. Clean Water Act

The Clean Water Act⁷³ has been in effect for over twenty-five years, yet remains ineffective in combating all sources of water pollution. The Act regulates the discharge of pollutants into the nation's waters, and its stated objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."⁷⁴ The Act's enforceable regulatory provisions are directed only at discharges from point sources, and the primary regulatory mechanism of the Act is the National Pollutant Discharge Elimination System (NPDES), which requires permits to be issued for discharges of any pollutant or combination of pollutants from point sources into navigable waters.⁷⁵

68. *Id.*

69. *Id.*

70. *Id.* at § 8.

71. Donald Sutherland, *The Florida Keys National Marine Sanctuary Threatened by Sewage* (1999) at <http://www.deeperblue.net/content/1999/travel/floridakeys/1.shtml> (last visited May 22, 2001) (quoting Chris Rich, USGS researcher).

72. *See id.*

73. Clean Water Act, 33 U. S. C. §§ 1251-1387 (1999).

74. *Id.*

75. *Id.* at § 1342.

Nonpoint sources, in contrast, are addressed primarily through non-regulatory means, often as directives for states to implement their own regulation and enforcement. Section 319 of the Act directs each state to provide assessment reports and to coordinate the development of nonpoint source management programs.⁷⁶ The purposes of the reports and programs are: to identify waters within the state that are not expected to attain applicable water quality standards; to identify the sources of nonpoint source pollution that are problematic; and to anticipate processes that will be necessary for the control of these sources.⁷⁷ While providing particular provisions for nonpoint source pollution indicates the importance of such pollution as a factor in our nation's water quality, this section provides no regulatory enforcement provisions such as those with the NPDES permitting. Rather, the Act only attempts to encourage states to identify their own individual nonpoint source problems and to design individual methods for addressing such problems.⁷⁸

C. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA)⁷⁹ was amended in 1990 to address the nonpoint source pollution problem in coastal waters.⁸⁰ The Act requires the coastal states to develop Coastal Nonpoint Pollution Control Programs, describing plans for implementing nonpoint source pollution controls.⁸¹ These programs are designed to expand and update any management programs developed under section 319 of the Clean Water Act, as discussed earlier.⁸² While not explicitly providing enforceable mechanisms for compliance and control on nonpoint source pollution, the 1990 Amendments provided more of a push for states to develop their own enforceable mechanisms than previous direction from the Clean Water Act.⁸³

76. *Id.* at § 1329.

77. *See id.*

78. For more detailed information concerning section 319 of the Clean Water Act visit the Environmental Protection Agency's website at <http://www.epa.gov/owow/nps> (last visited May 22, 2001).

79. 6 U. S. C. §§ 1451-1465 (1999).

80. *Id.* at § 1455(b).

81. *Id.* *See also* OFFICE OF WATER, U.S. ENVTL. PROT. AGENCY, COASTAL ZONE ACT REAUTHORIZATION AMENDMENTS SECTION 6217, at <http://www.epa.gov/owow/nps/czmact.html> (last modified 09/15/1999).

82. *See* U.S. ENVTL. PROT. AGENCY, PUB. NO. 841-F-96-004E, PROTECTING COASTAL WATERS FROM NONPOINT SOURCE POLLUTION (1996).

83. *See* ENVTL. L. INST., ENFORCEABLE STATE MECHANISMS FOR THE CONTROL OF NONPOINT SOURCE WATER POLLUTION 1 (1997).

D. Endangered Species Act

In enacting the Endangered Species Act (ESA), Congress provided a broad mechanism of protection for species that were considered threatened or endangered, and the ESA has the potential for use in regulating water pollution.⁸⁴ One of the primary enforceable provisions within the ESA is section 7, prohibiting any discretionary federal action that would likely result in jeopardizing the continued existence of listed species or result in the adverse modification of critical habitat.⁸⁵ This restriction most likely extends to the NPDES permit program, the power of which is delegated to states from the federal government under the Clean Water Act.⁸⁶ As discussed earlier, however, these provisions only apply to point sources of pollution.

The ESA may be also applied to nonpoint source water pollution. The critical habitat provisions allow the U.S. Fish and Wildlife Service to designate "critical habitat" for endangered or listed species when it is deemed beneficial to do so.⁸⁷ The effect of such designation under section 7 is that federal agencies must ensure their actions do not "result in the destruction or adverse modification" of the designated critical habitat.⁸⁸ The West Indian Manatee, a listed species, has designated critical habitat in the Florida Keys, and therefore section 7 could be used as enforcement against federal actions allowing waste disposal in this area.⁸⁹ The largest problem with nonpoint source pollution in the Florida Keys, however, stems from septic tanks, cesspits, and other on-site disposal mechanisms, which are almost completely owned by private residents and businesses, and do not constitute federal action triggering section 7.

The ESA also includes an enforcement mechanism against private actions in section 9.⁹⁰ This section prohibits actions by individuals that constitute a "take" of a listed animal species, which is in turn defined to include "harm."⁹¹ The U.S. Fish and Wildlife Service regulations state that "harm" in this context includes

84. Endangered Species Act, 16 U. S. C. §§ 1531-44 (1999).

85. *Id.* at § 1536(a)(2).

86. See Keith G. Wagner, *State NPDES Programs and the ESA: Protecting Listed Species Under the Clean Water Act*, 23 ENVIRONS ENVTL. L. & POL'Y J. 3 (1999).

87. 16 U. S. C. § 1533.

88. *Id.* at § 1536.

89. See Final Critical Habitat, 41 Fed. Reg. 41914 (1976), 42 Fed. Reg. 47840 (1977) (designating critical habitat for the West Indian Manatee).

90. 16 U. S. C. § 1538.

91. *Id.* "Take" is defined to include "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." *Id.* at § 1532(19).

"significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."⁹²

While section 9 of the ESA can be a strong weapon against private actions that pose a threat to listed species, it would be extremely difficult, if not impossible, to use it against owners of septic tanks in the Florida Keys. Although studies have shown that septic tank effluent is one major source of nutrient loading and other contamination in the waters of the Florida Keys, there have been no studies alleging that the effluent constitutes "harm" to the manatees or any other listed species living in the area. Further, the very nature of a nonpoint source is that it is hard to identify and trace to one origin, making it all but impossible to show that one single septic tank was responsible for the "take" of any animal. The ESA might become a stronger resource for combating nonpoint source pollution in the Florida Keys if one or more of the coral species located in the area were listed as "endangered," thereby triggering the protections contained within the Act.

E. Recent Legislation

Various bills were proposed in the 2000 Florida Legislature that would have provided increased funding for cleaning up national waters. Attempts were also made to include specific provisions for the financing of projects in the Florida Keys area. The Estuaries and Clean Waters Act and the Water Resources Development Act were both successfully passed by the 106th Congress, but the language directed at the Florida Keys was dropped from the final versions of both laws.

1. The Proposed Florida Keys Water Quality Improvement Act

The first attempt at codifying specific funding provisions for the Florida Keys was made by the U.S. House of Representatives in approving the Proposed Florida Keys Water Quality Improvement Act 2000.⁹³ The Congressional findings estimate the costs of improving nearshore water quality around the Keys to be between \$184 million and \$418 million, depending on the treatment standards

92. 50 C.F.R. § 17.3 (1998). The Supreme Court has upheld the authority of the USFWS to define "harm" in this way. See *Babbitt v. Sweet Home Chapter of Communities for a Great Or.*, 515 U.S. 687 (1995).

93. H.R. 673, 106th Cong. (2000).

required.⁹⁴ Realizing that this cost is "an insurmountable burden to the 85,000 permanent residents of Monroe County," this bill sought to provide federal assistance in the form of fund matching to replace inadequate wastewater treatment systems.⁹⁵

The Act, proposed as an amendment to the Clean Water Act, authorized the Administrator of the EPA to make grants to the Florida Keys Aqueduct Authority and "other appropriate agencies for the purpose of improving water quality throughout the marine ecosystem of the Florida Keys."⁹⁶ The Act authorized appropriation of a total of \$213 million in federal funds to the Administrator of the EPA for making these grants: \$32 million for fiscal year 2001; \$31 million for fiscal year 2002; and \$50 million for each of fiscal years 2003 through 2005. Non-federal contributions of costs for approved projects were to be a minimum of 25% of the total cost.⁹⁷

Unfortunately, no action was taken on this bill after it was passed by the House of Representatives and was referred to the Senate.⁹⁸ It has been suggested that the Senate preferred more comprehensive legislation allowing all states to prioritize their clean-water needs and to seek federal funds for such projects, rather than singling out one area of concern. Several attempts were made to attach the basic language of this bill into other more comprehensive water related legislation, but it was ultimately dropped from the final text of the bills passed by Congress this session.

2. *The Estuaries and Clean Waters Act of 2000*

There was hope that the Keys Water Quality Act might be rolled into a more comprehensive bill, as it was initially added as a provision of the Senate's Proposed Clean Waters and Bays Act.⁹⁹ However, the Keys Wastewater title was removed from this bill at the request of Senate conferees, and they agreed to consider it as a provision of the Proposed Water Resources Development Act 2000.¹⁰⁰

94. *Id.*

95. *Id.*

96. *Id.*

97. *Id.*

98. See Laurie Karnatz, *Water-quality Bill Remains in Jeopardy*, FLORIDA KEYS KEYNOTER (Aug. 30, 2000).

99. See S. 835, 106th Cong. (2000).

100. See Memorandum from Nina Oviedo, Washington Correspondent, to the Florida Legislative Committee on Intergovernmental Relations (Oct. 16, 2000) (on file with author).

After removing the Keys Water Quality title from the Clean Waters and Bays Act, and then altering other minor provisions and changing the title to the Estuaries and Clean Waters Act of 2000, the Senate passed the bill. At the time of this writing, the bill was in final enrolled version, awaiting signature by the President.¹⁰¹ The primary purpose of the bill is habitat restoration in estuary ecosystems, and the bill provides for the creation of the National Estuary Program to develop and provide funding for projects to effectuate this goal. The bill also includes specific provisions for restoration in the Chesapeake Bay, Long Island Sound, Lake Pontchartrain Basin, and the Tijuana River Valley, but includes no specific provisions for Florida projects.¹⁰²

3. *Water Resources Development Act of 2000*

The Senate also proposed a new Water Resources Development Act of 2000, which initially included a significant portion of the provisions from the Proposed Florida Wastewater Act.¹⁰³ The adopted language increased the required non-federal share from 25% to 35% for project financing, and changed the total appropriation from \$214 million over 4 years, to \$100 million total.¹⁰⁴ Again, the language relating specifically to financing for the Florida Keys was dropped from the final approved version of the bill, and at the time of this writing, the bill was awaiting signature by the President.¹⁰⁵

IV. LOCAL REGULATION OF NONPOINT SOURCE POLLUTION IN THE FLORIDA KEYS

The Florida Legislature has made it a State priority to "improve and restore the quality of waters not presently meeting water quality standards," and to "protect surface and groundwater quality and quantity."¹⁰⁶ Further, it is the "public policy of this state to ... protect, maintain, and improve the quality [of the waters of the state] ... [and] that no wastes be discharged into any waters of the state without first being given the degree of treatment necessary to protect the beneficial uses of such water."¹⁰⁷ The Legislature has further stated that all sanitary sewage must meet secondary waste treatment

101. S. 835, 106th Cong. (2000) (enacted).

102. *Id.* at titles II, IV, V, VIII.

103. *See* S. 2796, 106th Cong. (2000).

104. *See id.* at § 517.

105. *See* S. 2796 (enacted).

106. FLA. STAT. §§ 187.201(8)(a), (b)(10) (1999).

107. FLA. STAT. § 403.021(2) (1999).

standards, and in certain circumstances may be required to meet advanced treatment standards.¹⁰⁸ The regulation of nonpoint sources of water pollution in Florida falls under the authority of several state agencies.

A. Florida's Surface Water Improvement and Management Act

In finding that nonpoint source pollution is one of the contributing factors in the decline of both ecological and economic values of the state's surface waters, the Legislature adopted the Surface Water Improvement and Management Act in 1987.¹⁰⁹ The Act directs the water management districts, in cooperation with the Florida Fish and Wildlife Conservation Commission, the Department of Community Affairs, and the Department of Agriculture and Consumer Services, to maintain prioritized lists of significant water bodies, and to develop surface water improvement and management plans for these areas.¹¹⁰ Much like the federal regulation of nonpoint sources, this Act directs localized governmental units and state agencies to identify their own water pollution problems and to begin to prioritize remedial measures.

B. Department of Health

The Department of Health has been charged with regulating the septic tank industry in Florida.¹¹¹ The Department is responsible for adopting rules for septic tank design and construction, permitting requirements for those who build or repair the systems, to conduct inspection of such systems, and to develop a comprehensive program to protect the public health from harmful effects of septic tank use.¹¹² Florida nuisance law further states that it is *prima facie* evidence of "maint[enance of] a nuisance injurious to health" if improperly treated waste exists or is "permitted, maintained, kept, or caused by any individual," or if septic tanks are improperly built or

108. *Id.* at § 403.086 (establishing numerical values for advanced treatment requirements, and listing various water bodies into which waste may not be disposed without advanced treatment, but not including any waters of the Florida Keys in this delineation).

109. FLA. STAT. §§ 373.451-4595 (1999).

110. *Id.* § 373.453.

111. FLA. STAT. § 381.0065 (1999). Septic tank contracting has its own chapter in the Florida Statutes, apart from general, electrical, and alarm contracting, which are regulated by the Department of Business and Professional Regulation. See FLA. STAT. §§ 489.551-558 (1999).

112. FLA. STAT. § 381.0065(3) (1999).

maintained, such that they become "harmful to human or animal life."¹¹³

While this regulatory scheme is beneficial in its own right, even properly installed and maintained septic tanks are problematic.¹¹⁴ Because of the unique geology of the islands, the effluent released from underground disposal may not be thoroughly treated in the limestone as intended with normal septic systems, and may be prematurely released into surrounding waters.¹¹⁵

C. Department of Community Affairs

Florida's statutes provide that the state land-planning agency, the Department of Community Affairs (DCA), may recommend to the Governor and Cabinet, sitting as the Administration Committee, that a particular area be designated as an "Area of Critical State Concern."¹¹⁶ DCA must include in such recommendation: the detailed boundaries of the area; principles for guiding development; a statement of the purpose for designation; a checklist of actions which when completed will repeal the designation; a list of programs for which implementation mechanisms must be in place; and a list of state agencies which administer programs that affect the purpose of the designation.¹¹⁷ Under the Act, DCA reviews local land development orders in Areas of Critical State Concern and may appeal those orders to the Florida Land and Water Adjudicatory Commission.¹¹⁸

To be designated an Area of Critical State Concern, the area must be one containing environmental or natural resources, or historical or archeological resources, of regional or statewide importance, or it must be an area that is affected by an existing or proposed major public facility or investment.¹¹⁹ Once the designation is complete, the local government must submit its existing or newly proposed land development regulations, and DCA must approve them as consistent with the principles for guiding the development of the area. If these regulations are not consistent, DCA has the authority

113. FLA. STAT. § 386.041(1) (1999).

114. See Paul, *supra* note 2.

115. Wiaz, *supra* note 14. For a discussion of the geology and hydrology of the Florida Keys as it exaggerates the septic tank problem, see *supra* text accompanying notes 50-65.

116. FLA. STAT. § 380.05 (1999).

117. *Id.* at § 380.05(1)(b).

118. *Id.* at § 380.07.

119. *Id.* at § 380.05(2).

to devise its own land development regulations for the area.¹²⁰ DCA is also given enforcement powers through judicial proceedings for upholding these land development regulations.¹²¹ In addition, the statute imposes a duty on all state agencies with rulemaking authority for programs that affect a designated area to review those programs for consistency with the purpose of the designation and the guiding principles therein. These agencies "shall adopt specific permitting standards and criteria applicable in the designated area, or otherwise amend the program."¹²²

The Florida Keys Area was designated an Area of Critical State Concern under these processes in 1979.¹²³ This designation gives Monroe County the land-use planning tools for guiding development in this area, and ensures that local decisions will conform to the guidelines as set out in the statute. Overall, the designation as an Area of Critical State Concern makes the State of Florida the ultimate authority for land use decisions in the Florida Keys to ensure that local decisions are consistent with the State Comprehensive Plan and in furthering its purposes of assigning special consideration for the Florida Keys.

D. Department of Environmental Protection

The Florida Legislature has given the Department of Environmental Protection (DEP) the authority to control and prohibit air and water pollution by developing current and long-range management plans and establishing water quality standards.¹²⁴ DEP has also been granted authority to adopt stricter permitting and enforcement for areas in the state that have been designated Areas of Critical State Concern, Outstanding Florida Waters, and Class II Shellfish Harvesting Waters, all of which have been so designated for the Florida Keys.¹²⁵

120. *Id.* at § 380.05(5), (6), (8).

121. FLA. STAT. § 380.05(13) (1999).

122. *Id.* at § 380.05(22).

123. *Id.* at § 380.0552(3)(1999). To date, only three other areas have been designated as areas of critical state concern. See FLA. STAT. §§ 380.055 (designating Big Cypress Swamp in 1973), 380.0551 (designating Green Swamp in 1979), and 380.0555 (designating Apalachicola Bay in 1985) (1999).

124. See FLA. STAT. § 403.061 (1999).

125. *Id.* See also FLA. STAT. § 380.0552 (1999) (designating the Keys as an Area of Critical State Concern); FLA. ADMIN. CODE ANN. r. 62-302.700 (1999) (designating the waters and canals of the Keys as Outstanding Florida Waters); FLA. ADMIN. CODE ANN. r. 62-302.400 (2000) (designating waters of the Keys as Class II Shellfish Harvesting Waters).

DEP has stated that the nutrient loading from excessive levels of nitrogen and phosphorous is "one of the most severe water quality problems facing the State."¹²⁶ In an effort to combat the nutrient loading problem as well as other water quality issues, DEP has classified all the surface waters in the State based on use, at levels I (Potable Water Use) through V (Industrial Use), and has assigned coordinating water quality standards, with Class I waters receiving the most stringent water quality criteria.¹²⁷ In general, most surface waters are classified as Class III, but exceptions are made for increased designation and heightened water quality standards in certain areas, including the entire Monroe County coastline, which is a Class II (Shellfish Harvesting) water.¹²⁸ The highest level of protection of the waters and canals of the Florida Keys is accomplished through its designation as an Outstanding Florida Water, of which no degradation of water quality is to be allowed.¹²⁹ Through the mechanisms at its disposal, DEP has made water quality in the area of the Florida Keys an issue of utmost priority.

E. Monroe County

Through local regulations, Monroe County officials are fighting to curtail the sewage pollution with stricter nutrient removal treatment regulations. Illegal cesspits have been banned, and building permits have been capped at 255 per year, with each permit obtained under a cesspit replacement credit system.¹³⁰ Because increased development presents an additional threat to the quality of water in Florida Bay and the Florida Keys, adequate wastewater treatment must not inadvertently increase development pressure in the Keys in creating a false notion that the problem is solved. Monroe County must adhere to the guidelines outlined in its comprehensive plan. Monroe County, however, does not have the resources to implement a full-scale replacement of all countywide sewage treatment. It must look to the federal government and other possible funding sources before an increase in treatment standards will be possible.

126. FLA. ADMIN. CODE ANN. r. 62-302.300(13) (1999).

127. FLA. ADMIN. CODE ANN. r. 62-302.400 (1999).

128. *Id.* For a table listing surface water quality criteria for all classifications, see FLA. ADMIN. CODE ANN. r. 62-302.530 (1999).

129. FLA. ADMIN. CODE ANN. r. 62-302.700 (1999).

130. MONROE COUNTY, FLA. CODE, ch. 9.5, art. IV, div. 1.5 (1999) (outlining the Rate of Growth Ordinance for the County), and ch. 15.5, art. II (1999) (listing unpermitted on-site treatment and disposal systems).

F. Florida Keys Aqueduct Authority

The Florida Keys Aqueduct Authority (FKAA) was first created as the Florida Keys Aqueduct Commission by the Florida Legislature in 1937.¹³¹ In 1970, the Legislature abolished the Commission and recreated it as the Aqueduct Authority, whose responsibilities included oversight of wastewater services in Monroe County.¹³² In 1976, the Legislature once again abolished and recreated the Authority to expand its authority and powers, and in 1998 amended the enabling act to reinforce the FKAA's involvement in wastewater for Monroe County.¹³³ Pursuant to that legislation, Monroe County identifies priority areas and establishes treatment plant sites; FKAA implements the County's plan by designing, constructing and operating those wastewater treatment systems. The FKAA's primary goal is an increase in the area's wastewater treatment levels, and FKAA works through Monroe County to implement management plans. FKAA has already obtained a contract with Ogden Water Systems to build a centralized municipal wastewater treatment facility in Key Largo, as discussed below in more detail.

V. THE OGDEN FACILITY

As a step to combat the growing problem of wastewater in the Florida Keys, FKAA and Monroe County at the time of this writing had executed a formal agreement with Ogden Water Systems for the construction of a municipal wastewater treatment plant in Key Largo.¹³⁴

A. The Proposal

The Ogden facility will remove pollution levels not just to secondary standards as typically required, but also to advanced treatment standards.¹³⁵ This will require all residents and businesses in this area, the largest unincorporated area in Monroe County, to

131. Act effective June 11, 1937, ch. 18530, 1937 FLA. LAWS 358.

132. Act effective July 1, 1970, ch. 70-810, 1970 FLA. LAWS 915.

133. Act effective Sept. 15, 1976, ch. 76-441, 1976 FLA. LAWS 304, as amended by an Act effective May 23, 1998, ch. 98-519, Volume II, 1998 FLA. LAWS 294 (published, without attribution, at the back of Volume I, Part Four, 1998 FLA. LAWS).

134. Key Largo Wastewater Treatment System Design/Build Contract, FKAA Project No. 4004-00 (July 5, 2000) (on file with author) [hereinafter Contract].

135. See, e.g., FLA. STAT. § 403.086 (1999) (establishing standards for secondary and advanced treatment).

abandon the use of all septic tanks and other waste treatment methods.¹³⁶

The proposed service area for the new system includes the entire area between Mile Marker 106 and Mile Marker 90, servicing an estimated 12,200 equivalent dwelling units (EDUs).¹³⁷ The Ogden proposal is for a 3.0 Million Gallons per Day wastewater treatment facility, where the treated wastewater effluent would be injected into a Class V deep injection well, and residual sludge waste would then be transported back to Miami and placed in a landfill.¹³⁸

The agreed upon purchase price for the facility was \$59.8 million, which includes the treatment plant, collection systems, disposal of effluent and residual wastes, decommissioning of on-site systems and hook-ups to residences. This will result in an average cost of \$4,905 per EDU, and Ogden proposes a \$2,500 one-time hook-up fee and a \$35 continuing monthly fee for residential customers.¹³⁹ Residents are outraged at the costs, and are in the process of filing suit against Monroe County Commissioners for a violation under Florida's Sunshine Law.¹⁴⁰

B. The Problem of Costs

Because the microscopic nutrients, viruses and bacteria that are contaminating the waters in and around the Keys are not visible with the human eye, residents don't often recognize that a problem exists. Even those who concede that wastewater does pose a threat to the local environment are not often willing to pay the costs associated with remediation.

1. Residents of Key Largo

In a recent survey of local residents conducted for the Florida Keys Water Quality Report in March 2000, 95% of those surveyed

136. *Id.*

137. An equivalent dwelling unit (EDU) is the average typical flow measured in gallons per day from a single residential dwelling unit. To calculate the EDU values for non-residential uses, this average gallons per day figure is divided by the total flows expected from the business or industry. Contract, *supra* note 134.

138. *Id.*

139. *Id.*

140. *Florida Keys Water Quality Report, Florida Keys Survey Results* (March 2000), at <http://www.keyswaterquality.org/report1s.htm> (last visited May. 22, 2001) [hereinafter *Survey*]. Residents have filed suit under Florida's Sunshine Law, which requires all meetings of two or more state officials to be noticed and open to the public, claiming that most of the decisions for the Ogden facility were made in private phone conversations between members of the Monroe County Commission. *Id.*

reported that they are concerned about the quality of local waters.¹⁴¹ Sixty percent indicated that they believed leakage of wastewater entering the marine system from cesspits, septic tanks and inadequate sewage treatment in the Keys was a major problem contributing to the water quality; 77% noted that damage to coral reefs, wildlife, and the environment were serious problems associated with a decline in water quality.¹⁴²

Even though residents appear to be concerned about the wastewater problem, they do not appear to be quite as willing to pay for a solution. Increasing wastewater treatment standards with the Ogden facility would require residents to abandon their septic and cesspit systems and hook into new municipal systems. As noted above, the Ogden plans estimate the hooking into the new facility will cost residents \$2,500, in addition to a continuing \$35 monthly operation and maintenance fee.¹⁴³

When asked about their willingness to pay for an upgrade of wastewater services, only 45% of those polled indicated that they would support such a change at the proposed fee levels. That support drops to 23% with hypothetical fees of \$3,500 and \$45, and drops further to 15% with fees of \$4,500 and \$55.¹⁴⁴ As one resident recently commented, the inevitable costs are "like a wave that's going to crash and wipe out the family mom-and-pop vacation area ... Key Largo will become a playground for the rich and famous."¹⁴⁵ Residents, who do not often see the immediate effects of the pollution, have waged a war against County efforts to upgrade to a centralized system, preferring to remain on their current methods.¹⁴⁶ Not all residents are dissuaded by the cost issues. Many residents express concerns over the threatened environment, and think that centralized sewage, which is standard in most metropolitan areas, is long overdue in the Keys. "[W]e need some kind of a sewer or it's going to completely ruin the ecosystem down here ... [S]omething needs to be done."¹⁴⁷

141. *Id.*

142. *Id.*

143. Contract, *supra* note 134.

144. Survey, *supra* note 140.

145. Jennifer Babson, *Sewer Project Talk of the Town*, MIAMI HERALD, July 30, 2000, at 1B (quoting Linda Popp, owner of Popp's Motel).

146. Karnatz, *supra* note 98 (discussion of sunshine law).

147. Babson, *supra* note 145 (quoting Chuck Walsh, a resident of Key Largo for over 10 years).

2. *Tourism-based Businesses*

Over 3 million tourists visit the Keys each year, and protecting the marine environment is a must for local eco-tourism based businesses.¹⁴⁸ According to an economic survey of the tourist industry and its reliance on recreation and the Sanctuary's resources, water recreational activities sustains the majority of the \$1.3 billion spent in Monroe County and 46 percent of the employment in the Keys.¹⁴⁹ These businesses stand to lose more over the next few years if the marine environment is depleted and the tourism business fades than they would spend to hook into a centralized system such as the one proposed by Ogden for Key Largo.

CONCLUSION AND RECOMMENDATIONS

The beautiful waters of the Florida Keys contain an exceptional yet finite environmental resource. As more and more people visit the Keys each year, and the number of permanent residents increases, the volume of wastes that must be disposed will continue to increase. The coral reefs are sensitive creations and in the Florida Keys they are already sending the warning that all is not well in the marine environment. Studies have already shown significant increases in viral pathogens, bacteria levels, and nutrient loading in the canals and offshore waters, and have attributed these findings to septic tanks and cesspits commonly used throughout the islands. Municipal wastewater treatment systems, common in most urban areas, were never installed in the islands, and because of the unique geology and hydrology of the Keys, the impacts of the wastewater are multiplied on the environment.

Septic tanks, cesspits, and other nonpoint sources of water pollution come under a variety of federal and state regulation. Congress has recognized that water pollution as a whole is an issue in the United States, and has even singled out nonpoint source pollution as a particular problem. Because of the difficulties in even classifying nonpoint sources, however, most federal "regulation" comes in the form of directives to states for development of localized control plans, rather than enforceable provisions as they have outlined for point sources.

148. VERNON R. LEEWORTHY & PETER C. WILEY, U.S. DEP'T OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, VISITOR PROFILES: FLORIDA KEY/KEY WEST (1996).

149. *Survey*, *supra* note 140.

The nonpoint source problem in the Florida Keys is not yet at state of emergency proportions, but it is nevertheless a problem. If we are to avoid addressing the problem retroactively once the environment is destroyed, stricter regulatory measures must be put into place today to prevent an emergency status from ever developing. The new Ogden water treatment facility proposed for Key Largo is a large step in the right direction in that it will eliminate thousands of septic tanks on the island, but this is only a small portion of a larger situation.

The State of Florida must examine its regulation of nonpoint source pollution and increase efforts at protecting the waters of the Florida Keys from the strains of growth and development. As an Area of Critical State Concern, the State has the power to force Monroe County to adopt stricter development regulations and treatment standards to help protect this valuable environmental resource. Until stricter federal regulation is in place, specifically for providing enforceable mechanisms of controlling nonpoint sources of pollution, the primary responsibility rests with Monroe County to acknowledge their unique situation and to continue taking steps to prevent the deterioration of their ecosystem.