

FLORIDA WATER RESOURCE DEVELOPMENT: A CALL FOR STATEWIDE LEADERSHIP

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I. FLORIDA WATER DEVELOPMENT¹ NEEDS

Florida has experienced a severe drought over the past few years.² In 2000 and 2001, the drought and increased demands on public drinking water systems put many communities' drinking water supplies at risk.³ In South Florida, water restrictions were so severe that public water utilities were ordered to reduce water

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1. "Water resource development" and "water supply development" are defined terms in Section 373.019, Florida Statutes. FLA. STAT. §§ 373.019(19), (21) (2001). However, use of these terms in this paper is not intended to imply these specific statutory definitions. Generally, "water resource development" is intended to refer to projects that develop a water source for human use, such as a reservoir. "Water supply development" is intended to imply those types of projects necessary to treat and distribute water to end consumers. Section IV of this paper discusses water resource development efforts in other states, and in that section these terms are defined as they are used in the statutes and planning documents of those states.

2. See *Florida Responds to the Drought*, PIPELINE, Mar. 12, 2001, at 1 (de la Parte & Gilbert, P.A., Tampa, Fla.).

3. See Alisa Ulferts, *Water Summit Prepares for Drought's Worst*, ST. PETERSBURG TIMES, Mar. 24, 2001, at 1B (discussing state and federal officials' search for solutions to the water shortage).

pressure to dangerously low levels.⁴ In Tampa, the city's reservoir ran dry.⁵ One distraught regional water management district official said about Florida's water supply shortfall, "*I'm ready to go slit my wrists. This is a gloomy, gloomy situation we've got here.*"⁶ These extreme conditions were due in part to the drought, but they were also the result of a systematic failure throughout urban Florida to keep pace with growing water supply needs as Florida grows and develops. Fingers can be pointed in many directions, but, as demonstrated below, the primary reason for this failure is a lack of statewide leadership in water resource planning and development.⁷

The need to develop new water sources for growing urban areas is not a new phenomenon in American history, nor is it unique to Florida. In New York City, the need for a public water system was recognized before the Revolutionary War. However, it was not until the late 1790's, when faced with deteriorating water quality, population pressures and progress in other competing eastern cities, that New York business leaders demanded that the city government take action. For instance, the *New York Daily Advertiser* warned its readers in 1798: "Citizens of New York, what are you doing[?] If you procrastinate, you are ruined; while you are immersed in business or sunk in pleasure, careless of the future, other towns, your rivals in trade, have vigorously begun the effectual measures of precautions."⁸

In 1799, Alexander Hamilton convinced the New York City Council that it could not raise sufficient capital through loans and taxes to complete the water system and, instead, that New York State should charter a private corporation to acquire and distribute water for New York City.⁹ Aaron Burr, then a member of the New York State Assembly, rushed the bill chartering the corporation through the New York Legislature in three days.¹⁰ Unfortunately,

4. Brad Bennett, *S. Florida District Says Existing Limits Failing*, MIAMI HERALD, Mar. 16, 2001 at 1A. For a discussion about the drastic restrictions on water use imposed in South Florida, see Robert P. King, *Drastic Steps for Drought Toughened Water Limits to Affect Lawns, Businesses, Fountains*, PALM BEACH POST, Mar. 16, 2001, at A1.

5. Steve Huettel, *Tampa's Water Crisis Getting Worse*, ST. PETERSBURG TIMES, May 12, 2000 at 3B; *Report Underscores Tampa's Drought Woes*, ST. PETERSBURG TIMES, Feb. 20, 2001, at 3B.

6. Ulferts, *supra* note 3 (quoting Sonny Vergara, the executive director of the Southwest Florida Water Management District). (Emphasis added.)

7. See, e.g., CHARLES J. MEYERS ET AL., WATER RESOURCE MANAGEMENT 2 (1998) (arguing that Florida's decentralized allocation system has hindered water resource development).

8. Michael C. Finnegan, *New York City's Watershed Agreement: A Lesson in Sharing Responsibility*, 14 PACE ENVTL. L. REV. 577, 588 (1997).

9. *Id.*

10. *Id.*

creating a private company to supply water to growing New York City was a dismal failure.¹¹ By 1832, only twenty-three miles of pipe had been laid, and the city did not have a reliable water supply. Two years later, the city started one of the first of many large public works projects to construct a reservoir and aqueducts to supply the city with safe, reliable drinking water.¹²

While Florida is not facing the same public health threats from inadequate water supply that our nation's founding fathers faced in New York City, the economic effects of inadequate and unreliable water supplies are being felt in present-day Florida.¹³ When local economic development officials were bidding to bring semiconductor manufacturers to the Tampa Bay Area,¹⁴ one of the most significant problems cited by the manufacturers was an inadequate and unreliable water supply.¹⁵ In addition to the availability and reliability of water supplies, the increasing cost of water may affect economic development in the Tampa Bay Area. In June 2001, Tampa Bay Water announced that its wholesale cost of water will reach \$2.50 per thousand gallons by the year 2010 and may reach as high as \$3.12.¹⁶ These escalating water rates are certain to discourage siting of water-dependent industries such as semiconductor plants, and they have the potential to impact real estate markets as well. This projected surge in the cost of water for Tampa Bay Area businesses and residents is the result of Tampa Bay Water's aggressive development of alternative water supplies, such as desalinization.¹⁷ This increase in water cost is projected to occur even though the Southwest Florida Water Management District (SWFWMD) has pledged to invest \$183 million towards

11. *See id.* at 589 n.75.

12. *Id.* at 589.

13. *See* Robert Trigaux, *Wanted: Aggressive Strategy to Solve Florida Water Woes*, ST. PETERSBURG TIMES, Mar. 18, 2001, at 1H.

14. James Thorner, *Computer Chip Plant Considers Area Sites*, ST. PETERSBURG TIMES, Aug. 26, 1999, at 2E.

15. *Agency Pushes for Chip Plants*, ST. PETERSBURG TIMES, June 13, 1997, at 1E.

16. James Thorner, *Water Prices to Surge*, ST. PETERSBURG TIMES, June 9, 2001, at 1E. *See generally* Tampa Bay Water, Board Agenda (June 11, 2001) (outlining the agenda for its regular Board of Directors meeting and scheduling a discussion of the 2001/02 Budget under item G1 on that agenda) (on file with author); Memorandum from Koni M. Cassini, Director of Finance and Administration, Tampa Bay Water, to Jerry L. Maxwell, General Manager, Tampa Bay Water (May 29, 2001) (outlining the changes to Tampa Bay Water's Proposed Budget 2001-2002 scheduled to be reviewed before the Board of Directors as Agenda Item G1) (on file with author).

17. *See* Thorner, *supra* note 16.

development of water sources¹⁸ and federal grants have been used to underwrite some of the cost of other new water supply projects.

Florida is not an arid, water-scarce state. Florida receives an annual average rainfall of 53 inches.¹⁹ In total, Florida receives an annual average of 150 billion gallons per day of rainfall and 25 billion gallons per day of inflow from Georgia and Alabama.²⁰ However, difficulties have arisen in meeting Florida's growing water needs. The problem has two characteristics. The first is distribution, both temporal and geographic. Most of the water in Florida is in the wrong place at the wrong time. Seasonal fluctuations result in large quantities of water when demand is low and less water in winter months when demand is high.²¹ In addition to this temporal distribution problem, the available water is frequently not in the part of the state where the demand is greatest. While most Florida residents live near the coast, most of the available fresh water supply sources are inland.²² Although there are large reservoirs of brackish water on Florida's coasts in the form of bays, estuaries, and coastal brackish aquifers, desalinating this water is still relatively expensive and permitting desalination facilities in Florida's fragile coastal ecosystems is challenging. Consequently, there is a geographic distribution problem as well as a temporal distribution problem.

The second characteristic limiting water resource development is Florida's water-dependent environment, which needs large quantities of fresh water for its sustained health.²³ To the casual observer, it would appear that Florida is a water-rich state with plenty of water available to meet the demands of Florida's growing population and economic development. However, according to some ecologists and water regulators, the demands of Florida's environment are so great that only a very limited quantity of water is available for human use.²⁴ For this reason, in many parts of

18. Northern Tampa Bay New Water Supply and Ground Water Withdrawal Reduction Agreement, between West Coast Regional Water Supply Authority, Hillsborough County, Pasco County, Pinellas County, City of Tampa, City of St. Petersburg, City of New Port Richey, and Southwest Florida Water Management District 13-14 (Apr. 28, 1998) [hereinafter Partnership Agreement] (on file with author); S.W. FLA. WATER MGMT. DIST., REGIONAL WATER SUPPLY PLAN 112 (2001) [hereinafter REGIONAL WATER SUPPLY PLAN].

19. EDWARD A. FERNALD & ELIZIBETH D. PURDUM, WATER RESOURCES ATLAS OF FLORIDA 10 (1998).

20. Ronald A. Christaldi, *Sharing the Cup: A Proposal for the Allocation of Florida's Water Resources*, 23 FLA. ST. U. L. REV. 1063, 1064 n.5 (1996).

21. *Id.*

22. *Id.* at 1064-65.

23. FERNALD & PURDUM, *supra* note 19, at 11-12.

24. See, e.g., Partnership Agreement, *supra* note 18, at 3-4, 17-18 in which SWFWMD required reductions in groundwater withdrawals from the 11 public supply wellfields in the Northern Tampa Bay Area far below historic withdrawals due to environmental impacts

Florida water is not naturally scarce but has been made scarce through environmental regulation.

II. FLORIDA WATER RESOURCE MANAGEMENT

Modern Florida water law evolved from the common law to a statutory permitting system. Florida common law water rights were originally governed by the "riparian" and "reasonable use" theories.²⁵ In a landmark water law decision, the Florida Supreme Court described the common law system as follows:

Prior to the adoption of the Water Resources Act [i.e., Chapter 373, Florida Statutes], Florida followed the reasonable use rule; that is, a landowner, who, in the course of using his own land, removes percolating water to the injury of his neighbor, must be making a reasonable exercise of his proprietary rights, *i.e.*, such an exercise as may be reasonably necessary for some useful or beneficial purpose, generally relating to the land in which the waters are found.²⁶

Many riparian jurisdictions did not allow diversion of surplus waters beyond the boundaries of the riparian land. However, such water transport was allowed under Florida common law.²⁷

In 1955, the Florida Legislature created the Water Resources Study Commission to conduct a comprehensive study pertaining to the possible enactment of water legislation.²⁸ In December 1956, the Commission submitted a report to the Governor and the Legislature, which it entitled, *Florida's Water Resources, A Study of the Physical, Administrative, and Legal Aspects of Water Problems and Water Management (the Commission Report)*. The *Commission Report* presented a thorough examination of Florida water law as it then existed and made specific recommendations for new legislation.

SWFWMD believed were caused by the withdrawals. The 11 wellfields were initially authorized under the Partnership Agreement for sustained production of water up to 158 million gallons per day ("mgd"), but to protect the environment, SWFWMD has mandated a schedule of reductions to 90 mgd. Partnership Agreement, *supra* note 18, at 17-18. The wellfields regulated by the Partnership Agreement, some of which date back to the 1920s, had been historically permitted to produce, cumulatively, about 192 mgd on an annual average. Interview with Richard McLean, SWFWMD Deputy Executive Director for Regulation when the Partnership Agreement was negotiated.

25. Christaldi, *supra* note 20, at 1066-68.

26. *Vill. of Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 663, 672 (Fla. 1979).

27. *See City of St. Petersburg v. S.W. Fla. Water Mgmt. Dist.*, 355 So. 2d 796, 798 (Fla. 2d DCA 1977).

28. Act effective May 30, 1955, ch. 29748, 1955 Fla. Laws.

The *Commission Report* resulted in the Florida Water Resources Act of 1957, which was codified in Chapter 373, Florida Statutes (the 1957 Act).²⁹ Under the 1957 Act, the existing water management districts, then involved primarily in flood control, could be authorized to regulate water use but only in a manner which would not interfere with reasonable existing uses of water.³⁰

In 1972, Professor Frank Maloney published *A Model Water Code, with Commentary*.³¹ That same year, the Legislature significantly revised Chapter 373 by enacting the Florida Water Resources Act of 1972 (the 1972 Act).³² The 1972 Act is largely based on Professor Maloney's *Model Water Code*, but some significant alternations were made. One of the more significant alterations to the *Model Water Code* was the decentralization of water resource management and development. The *Model Water Code* called for a statewide board, in addition to the creation of water management districts.³³ When the Legislature enacted the 1972 Act, the statewide board was omitted; consequently, many of the statewide governmental functions in the *Model Water Code* were omitted from the 1972 Act. Instead of a statewide board, the 1972 Act provided for the Department of Environmental Regulation (now, the Department of Environmental Protection) and the state's five regional water management districts to be principally responsible for assessing and regulating water resource needs. Under the 1972 Act, the Department of Environmental Protection (DEP) delegated to the water management districts not only day-to-day administration of water resource management functions but considerable policymaking authority.³⁴ The resulting two-tiered structure created inefficient, decentralized water resource planning and development agencies with little statewide coordination.³⁵

Also omitted from the 1972 Act were statutory provisions implementing water resource development programs. One of the functions of the statewide board that was not assigned to either the water management districts or DEP was holding "annually a

29. See Ch. 57-380, 1957 Fla. Laws.

30. *Id.* §§ 5, 8(1)(a).

31. FRANK MALONEY, ET AL., *A MODEL WATER CODE, WITH COMMENTARY* (Univ. of Fla. Press 1972).

32. See Ch. 72-299, 1972 Fla. Laws (codified at FLA. STAT. ch. 373).

33. MALONEY, *supra* note 31, § 1.05.

34. See FLA. H.R. COMM. ON NATURAL RES., *ANALYSIS AND MODELING OF WATER SUPPLY ISSUES FOR THE REGION BOUNDED BY HILLSBOROUGH, MANATEE, PASCO AND PINELLAS COUNTIES 13-15* (1994) (on file with committee) [hereinafter HOUSE NATURAL RES. COMM. REPORT].

35. See *id.* at 12-15.

conference on water resource development programs.”³⁶ At this statewide conference, under the *Model Water Code*, the state board would select the projects that met certain criteria and request funding for these projects.³⁷ Each entity in the state that was responsible for state, regional, or local water resource development activities was to present water resource development programs that needed financial assistance from the federal government.

The *Model Water Code* also called for the creation of a Water Resources Development Account.³⁸ According to the *Model Water Code* commentary, the purpose of the account was to “provide continuity in long-term programs of planning, research and construction”; this account was not to fund normal administrative expenses.³⁹ The Water Resources Development Account, as described in the *Model Water Code*, was not carried over into the 1972 Act. Other financial mechanisms have been used to fund the water management districts; however, little of these funds have been used for water resource development as envisioned by the *Model Water Code*. One funding mechanism is a constitutional one mill property tax for water management purposes.⁴⁰ The Florida Legislature has authorized the state’s five water management districts to levy these property taxes, subject to statutory caps.⁴¹

The 1972 Act did adopt one statewide water resource planning function included in the *Model Water Code*, the Florida Water Plan.⁴² However, because a statewide water agency was not created, the statewide plan became merely a compilation of the regional plans by Florida’s five regional water management districts, without any statewide planning or analysis completed.

One important planning tool recommended in the *Model Water Code* and included in the 1972 Act was the establishment of minimum flows and levels.⁴³ Originally, minimum flows and levels

36. MALONEY, *supra* note 31, § 1.06(12)(a).

37. *Id.* § 1.06(12)(b).

38. *Id.* § 1.14.

39. *Id.* § 1.14 cmt.

40. FLA. CONST. art. VII, § 9(b). In the northwestern portion of the state, the ad valorem tax is limited to 0.05 mill.

41. FLA. STAT. § 373.503(3)(a) (2001). The Legislature vested in Florida's five water management districts the authority to levy the ad valorem tax for water management purposes. The Legislature set the maximum millage rates for the water management district at:

1. Northwest Florida Water Management District: 0.05 mill.
2. Suwannee River Water Management District: 0.75 mill.
3. St. Johns River Water Management District: 0.6 mill.
4. Southwest Florida Water Management District: 1.0 mill.
5. South Florida Water Management District: 0.80 mill.

42. MALONEY, *supra* note 31, § 1.07; FLA. STAT. § 373.036 (2001).

43. MALONEY, *supra* note 31, § 1.07; FLA. STAT. § 373.042(1) (2001).

were to be part of the statewide board's planning efforts as part of the State Water Use Plan.⁴⁴ The purpose of the minimum flows and levels was to ensure instream water would be available for public purposes, such as boating, fishing, swimming, and environmental protection.⁴⁵ In addition, the minimum flows and levels were to serve as guidelines for protecting non-consumptive water uses when issuing water use permits.⁴⁶ In other words, establishing minimum flows and levels enabled the water managers and the water users to determine how much water was available from a waterbody for consumptive use. This type of information is critical to proper planning for future water resource development needs. Unfortunately, the five regional water management districts generally failed to establish minimum flows and levels for over twenty years after the passage of the 1972 Act.⁴⁷ Water users and environmental advocates became so frustrated with the regional water management districts' inability to fulfill this critical planning element of the *Model Water Code* and the 1972 Act that they filed suit to force the establishment of minimum flows and levels.⁴⁸ In 1996 and 1997, the Florida Legislature passed laws emphasizing the importance of minimum flows and levels and requiring that priority schedules for establishing minimum flows and levels be adopted by Florida's five regional water management districts.⁴⁹

In 1997, the Florida Legislature amended the Florida Water Resources Act (the 1997 Amendments) to establish additional water resource development planning initiatives to be conducted by Florida's five regional water management districts.⁵⁰ The primary goal of the 1997 Amendments was to increase the water supply "pie," meaning that the enhanced planning functions of the regional water management districts were intended to provide the information necessary to identify supply shortfalls and develop the additional water supplies necessary to avoid competition for water supplies as Florida's population and economy continued to grow.

In addition, a regional water supply planning element was added that required the regional water management districts to

44. MALONEY, *supra* note 31, § 1.07(4), (5).

45. *Id.* § 1.07(4) cmt.

46. *Id.* § 1.07(5) cmt.

47. HOUSE NATURAL RES. COMM. REPORT, *supra* note 34, at 14 - 15 (In 1994, only two minimum flows had been established by rule.)

48. *See, e.g.*, Pinellas County v. S.W. Fla. Water Mgmt. Dist., FLWAC Case No. RFR 95-001 (Final Order, Feb. 14, 1996); Concerned Citizens of Putnam County for Responsive Gov't, Inc. v. St. Johns River Water Mgmt. Dist., 622 So. 2d 520 (Fla. 5th DCA 1993).

49. Act effective May 31, 1996, ch. 96-339, 1996 Fla. Laws 1952, at 1953; Act effective May 29, 1997, ch. 97-160, 1997 Fla. Laws 3002.

50. Ch. 97-160, §§ 3, & 4, 1997 Fla. Laws 3007-12 (amending FLA. STAT. §§ 373.036 & 373.0361 (1996)).

identify both water supply needs for the region and available water supply sources.⁵¹

As a result of the 1997 legislation Florida's five water management districts each embarked on ambitious regional water supply planning efforts. The water management districts' regional water supply plans have identified looming water supply shortfalls,⁵² but they have not proven to be useful tools to develop water sources necessary to meet Florida's growing water needs. The regional water supply plans, and other related plans, have typically only produced lists of possible sources without proposing specific sources to meet identified water supply deficits.⁵³ Additionally, the water management districts have not realistically evaluated ratepayer acceptance of the costs of the proposed projects or identified alternative funding sources.⁵⁴ As part of the 1997

51. See FLA. STAT. § 373.0361(2) (2001), which provides, in pertinent part:

Each regional water supply plan shall be based on at least a 20-year planning period and shall include, but not be limited to:

(a) A water supply development component that includes:

1. A quantification of the water supply needs for all existing and reasonably projected future uses within the planning horizon. The level-of-certainty planning goal associated with identifying the water supply needs of existing and future reasonable-beneficial uses shall be based upon meeting those needs for a 1-in-10-year drought event.

2. A list of water source options for water supply development, including traditional and alternative sources, from which local government, government-owned and privately owned utilities, self-suppliers, and others may choose, which will exceed the needs identified in subparagraph 1.

3. For each option listed in subparagraph 2., the estimated amount of water available for use and the estimated costs of and potential sources of funding for water supply development.

4. A list of water supply development projects that meet the criteria in s. 373.0831(4).

(b) A water resource development component that includes:

1. A listing of those water resource development projects that support water supply development.

2. For each water resource development project listed:

a. An estimate of the amount of water to become available through the project.

b. The timetable for implementing or constructing the project and the estimated costs for implementing, operating, and maintaining the project.

c. Sources of funding and funding needs.

d. Who will implement the project and how it will be implemented.

(c) The Recovery and Prevention Strategy described in s. 373.0421(2).

(d) A funding strategy for water resource development projects, which shall be reasonable and sufficient to pay the cost of constructing or implementing all of the listed projects.

52. See, e.g., REGIONAL WATER SUPPLY PLAN, *supra* note 18, at 69-73; ST. JOHNS RIVER WATER MGMT. DIST., DISTRICT WATER SUPPLY PLAN 77-84 (2000).

53. See, e.g., REGIONAL WATER SUPPLY PLAN, *supra* note 18, at 76-109, 231-42.

54. For an economic analysis of the impacts of increases in water supply costs, see U.K. DEP'T FOR ENV'T, FOOD AND RURAL AFFAIRS, ECONOMIC INSTRUMENTS IN RELATION TO WATER

amendments, the Legislature provided that the water management districts must fund and implement water resource development⁵⁵ and charged them with securing the necessary funding for regionally significant water resource development projects.⁵⁶ However, the water management districts have generally been unwilling to fulfill this leadership role. Instead, the water management districts have emphasized efforts to reduce demand, citing the need to "reinforce a conservation ethic aimed at changing the water-use habits of the populace."⁵⁷ While water conservation is a worthwhile goal, Florida cannot hope that its residents, tourists, businesses, and farmers will reduce water use and then rely on such hope as a dependable source of water to meet future needs. Water resource plans that rely on reduction in water demand through rationing measures such as increased water charges and moratoriums on groundwater withdrawals, as some Florida regional water supply plans suggest,⁵⁸ are ineffective and unreliable.⁵⁹

The water management districts' failure to effectively lead state or regional water resource development efforts is largely a symptom of a failure of Florida's water management structure. Under the *Model Water Code* and the 1972 Act, the water management districts are charged with serving two masters. They are charged with preserving Florida's water resources,⁶⁰ as well as maximizing the reasonable-beneficial use of water to meet Florida's economic needs.⁶¹ At best, these functions are inconsistent; at worst, they are contradictory. In Hawaii, another state that adopted the *Model Water Code* proposed by Professor Maloney, questions regarding the inconsistent roles of water management agencies have also surfaced. A member of Hawaii's Review Commission of its State Water Code wrote:

ABSTRACTION (2000). Through surveys and economic analysis, the likely impacts of planning and regulatory approaches were evaluated as part of a regulatory and water resource planning process.

55. FLA. STAT. § 373.0831(2)(b) (2001).

56. FLA. STAT. § 373.0831(4)(a) (2001).

57. REGIONAL WATER SUPPLY PLAN, *supra* note 18, at 119; Regional water supply plans have emphasized "demand management" for residential and agricultural water users by identifying these "demand management" activities as "new" water sources available to meet future growth. *Id.* at 36, 113; S. FLA. WATER MGMT. DIST., LOWER EAST COAST REGIONAL WATER SUPPLY 241-248 (2000).

58. SWFWMD did not evaluate or identify any new fresh groundwater sources in its regional water supply plan. REGIONAL WATER SUPPLY PLAN, *supra* note 18, at 61.

59. U.N. ECON. COMM'N FOR LATIN AM. AND THE CARIBBEAN, THE WATER RESOURCES OF LATIN AMERICA AND THE CARIBBEAN—PLANNING, HAZARDS AND POLLUTION 88 (1990).

60. *See, e.g.*, FLA. STAT. § 373.016(3)(g) (2001).

61. *See, e.g.*, FLA. STAT. §§ 373.036(2)(d)1, 373.0831(2)(b) (2001).

If in a particular context the [water management agency] views its mission fundamentally as conservator of the resource for the benefit of the public interest, its commitment to maximize private water use will become secondary. If on the other hand the [water management agency] sees itself as primarily in business to allocate water for maximum beneficial uses, determined more or less by land uses and water needs of individual users, it will in some degree compromise its role as conservator.⁶²

As Florida's water management districts entered into the regional supply planning process, it appears that they viewed their role primarily as conservators of water resources, rather than as agents for promotion of the maximum reasonable-beneficial use of the water resources of the state.⁶³ Consequently, the planning process has not produced any strong coordination or leadership in the development of new water supplies on a statewide basis. The present piecemeal process through which utilities separately develop individual water supplies will continue to become less and less effective as water is made increasingly scarce in Florida. In other states, statewide leadership in water resource development has been provided in a number of different ways; the following sections of this paper will outline some of these initiatives.

It is unfair to infer that Florida's water management districts have not taken any steps to facilitate water resource development. Indeed, the SWFWMD has made a laudable effort to assist in water resource development through its New Water Sources Initiative (NWSI) and through its assistance to Tampa Bay Water in the Partnership Agreement. As noted earlier, the SWFWMD has pledged \$186 million in water resource development assistance to Tampa Bay Water.⁶⁴ However, the SWFWMD is the only water

62. Douglas W. MacDougal, *Private Hopes and Public Values in the "Reasonable Beneficial Use" of Hawaii's Water: Is Balance Possible?*, 18 U. HAW. L. REV. 1, 3 (1996).

63. REGIONAL WATER SUPPLY PLAN, *supra* note 18, at 259. The plan recommendations for water resource development funding consist of environmental protection functions such as "adequate funding to maintain expertise relative to conducting hydrologic and biologic assessments," funding the establishment of minimum flows and levels, and "adequate funding for implementation of the water use permitting program as one of the essential District tools in managing water supply issues." *Id.* at 260.

64. Tampa Bay Water, formerly known as the West Coast Regional Water Supply Authority, is a regional interlocal agency created by three cities and three counties. Pinellas County, Pasco County, Hillsborough County, the City of Tampa, the City of St. Petersburg, and the City of New Port Richey reorganized and renamed the authority "Tampa Bay Water" in 1998 through an interlocal agreement executed pursuant to sections 163.01 and 373.1963 of the Florida Statutes. TAMPA BAY WATER, AMENDED AND RESTATED INTERLOCAL

management district in Florida that has made a substantial financial commitment to the development of new water supplies.

Unfortunately, even the efforts of the SWFWMD were not part of a deliberative regional or statewide planning effort. The SWFWMD's commitment to Tampa Bay Water was made as an incentive in the Partnership Agreement for Tampa Bay Water and its member governments to agree to settle related litigation and reduce groundwater withdrawals.⁶⁵ Ultimately, the SWFWMD's financial assistance was incorporated into Tampa Bay Water's regional water resource planning effort, the Master Water Plan. However, it should be noted that SWFWMD's Regional Water Supply Plan and Tampa Bay Water's Master Water Plan are not entirely consistent, and some of the regional water sources identified in Tampa Bay Water's Master Water Plan are not recognized in the Regional Water Supply Plan.

III. THE BASICS OF AMERICAN WATER LAW

An understanding of water allocation systems is necessary to evaluate water resource development options. Generally, water rights in the United States are usufructory, which means that one may have a right to use a natural resource without actually owning the property.⁶⁶ Historically, two schools of water rights developed within the United States. In the water-rich eastern United States, the riparian system developed from the English Common Law.⁶⁷ In the arid western United States, the "prior appropriation" doctrine developed from the local customary practices of western settlers.⁶⁸

A. *The Riparian System*

The essence of the riparian doctrine is that only the landowner adjacent to a watercourse has a right to use its water.⁶⁹ Most eastern states initially adopted the English "natural flow" doctrine of riparian rights, which eventually evolved into the "reasonable

AGREEMENT REORGANIZING THE WEST COAST REGIONAL WATER SUPPLY AUTHORITY (June 10, 1998). The SWFWMD provided financial assistance through an agreement colloquially known as the Partnership Agreement, *supra* note 18.

65. See Partnership Agreement, *supra* note 18 at 26-7.

66. A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 3:10 (June 2002) (citing *Tyler v. Wilkinson*, 24 Fed. Cas. 472 (C.C.D.R.I. 1827)).

67. JOSEPH L. SAX & ROBERT H. ABRAMS, LEGAL CONTROL OF WATER RESOURCES 154, 158-62 (1986).

68. *Id.* at 154.

69. *Id.* at 154-55.

use" doctrine followed today in most American riparian jurisdictions.⁷⁰

Before underground hydrology was understood and the frequent interconnection between ground water and surface water was recognized, courts in eastern states generally made legal distinctions between: (1) ground waters containing percolating waters, (2) groundwaters containing underground streams, and (3) surface water courses.⁷¹ Water from underground streams was treated the same as surface water courses.⁷² However, water use from ground water containing percolating waters was treated differently. Percolating waters were considered waters "without any permanent, distinct, or definite channel, [that] percolate in veins or filter from the lands of one owner to those of another."⁷³ Under common law, a landowner could use as much percolating ground water as needed, regardless of the adverse effect it might have on other landowners, as long as the use was reasonably related to the natural use of the overlying land.⁷⁴ This rule, known as the "English Rule", was first articulated in 1843, before the interconnecting nature of groundwaters and surfacewaters was recognized.⁷⁵ For instance, a landowner could use water for agricultural, domestic, or industrial purposes on his overlying land but could not sell or transfer the water to other property if it would impair the ground water supply of another landowner.

In contrast, the rights of riparian landowners to use waters from a surface watercourse were more limited. A lower riparian owner was generally entitled to protection when diversion by an upper riparian owner interfered with his use of water. Under the reasonable use doctrine, each riparian owner could use the water, so long as that use did not unreasonably interfere with its reasonable use by other riparians.⁷⁶ The determination of whether a use is reasonable is generally made on a case-by-case basis under the common law.⁷⁷

70. TARLOCK, *supra* note 66, §§ 3:55, & 3:56, & 3:60.

71. Christaldi, *supra* note 20, at 1067.

72. *Nourse v. Andrews*, 255 S.W. 84, 86 (1923).

73. *Tampa Waterworks Co. v. Cline*, 20 So. 780, 782 (Fla. 1896).

74. TARLOCK, *supra* note 66, § 4:6.

75. *Acton v. Blundell*, 152 Eng. Rep. 1223, 1235 (1843). The court's declaration of the English Rule has been said to come from the maxim: "To whomsoever the soil belongs, he owns also to the sky and to the depths." *Vill. of Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 663, 666 (Fla. 1979) (citing *F. MALONEY ET AL., WATER LAW AND ADMINISTRATION* 155 (1968)).

76. TARLOCK, *supra* note 66, § 3:60.

77. *See* RESTATEMENT (SECOND) OF TORTS § 850A (1979). The Restatement lists the following considerations for determining if a use is reasonable: (1) The purpose of the use; (2) suitability of the use to the watershed or lake; (3) the economic value of the use; (4) the social value of the use; (5) the extent and amount of harm the use causes; (6) the practicality of

Although the riparian system ensured that downstream landowners had a right to a certain quantity and quality of water, the system had a number of deficiencies. First and foremost, the reasonable use doctrine created uncertainty because water users could not reliably know the amount of water that could be used at any given time; the reasonableness of their use was largely contingent on the use of other riparian users. A second deficiency emanated from the limitation on transferring water over land to non-riparian property, which precluded potential uses that were otherwise economically viable and, thereby, limited economic growth.

B. Prior Appropriation

Water law in much of the western United States developed in a different social and economic environment than in the eastern United States. The western prior appropriation doctrine grew from the customary law that developed among miners and ranchers in arid areas where large quantities of water were necessary for the predominant economic enterprises.⁷⁸ The basic tenet of the prior appropriation doctrine was termed "first in time, first in right."⁷⁹ Any landowner could divert as much water as he could successfully use, so long as it was beneficially employed.⁸⁰ Unlike the riparian system, water could be used on lands unconnected with the water body from which it was withdrawn. The concept of "beneficial use" developed as part of the prior appropriation doctrine in an attempt to prevent waste of water resources.⁸¹ Without this limitation, those users with prior claims could have diverted all the water from a watercourse and eliminated any other economic uses of the water. Under the beneficial use standard, water users whose rights were junior, or newer, frequently had legal recourse to ensure that water was not wasted and that it satisfied the beneficial use standard.⁸²

While the prior appropriation doctrine was useful, if not essential, in the development of the western United States, in more recent times it has been criticized for a number of reasons. First, since water rights are often held in perpetuity, the prior

avoiding the harm by adjusting the use or method of use of one proprietor or the other; (7) the practicality of adjusting the quantity of water uses by each proprietor; (8) the protection of values of water uses, land, investments and enterprises; and (9) the justice of requiring the use causing harm to bear the loss. *Id.* § 850.

78. TARLOCK, *supra* note 66, § 5:3.

79. SAX & ABRAMS, *supra* note 67, at 279.

80. TARLOCK, *supra* note 66, § 5:66.

81. *Id.* §§ 5:66, & 5:68.

82. *Id.* §§ 5:66, & 5:67.

appropriation doctrine has had a tendency to freeze initial patterns of water use and allocation.⁸³ In some instances, it has been difficult to reallocate water to respond to western population growth and economic development.⁸⁴ Second, under the prior appropriation doctrine a water user will lose its water rights if the water is not beneficially used.⁸⁵ Consequently, water users have an incentive to withdraw and use as much water as possible, regardless of the potential conservation.

IV. WATER RESOURCE DEVELOPMENT IN OTHER STATES

A. Selected Eastern States

1. North Carolina

In January 2001, the North Carolina Department of Environment and Natural Resources completed a State Water Supply Plan that identified present water supplies and projected water supply shortfalls in the state's thirty-eight defined river basins.⁸⁶ This State Water Supply Plan provides information similar to Florida's regional water supply plans, such as identifying water supply shortfalls and generic options for new water sources such as on-stream reservoirs, groundwater supplies, and water conservation. The North Carolina State Water Supply Plan is built upon local water supply plans developed by local and regional water suppliers under North Carolina General Assembly House Bill 157

83. Christaldi, *supra* note 20, at 1070. For an excellent article discussing how the prior appropriation doctrine has evolved to provide more flexibility in water use and allocation see A. Dan Tarlock *Prior Appropriation: Rule, Principle, or Rhetoric?*, 76 N.D. L. REV. 881 (2000).

84. For example, at the beginning of the twentieth century, in a bitter battle that lasted over 20 years, the City of Los Angeles acquired through various means lands in the Owens Valley for the purpose of transferring agricultural water uses to municipal use. *See generally*, William L. Kahrl, *Part II Politics of California Water: Owens Valley and the Los Angeles Aqueduct, 1900-1927*, 6 HASTINGS W.-N.W.J. ENVTL. L. & POL'Y 255 (2000). This controversial expropriation of land and water rights in rural California has colored water reallocation efforts ever since and led to distrust between rural and urban communities.

The absence of trading in California also has cultural explanations, in particular the memories of the land-grab that Los Angeles made for Owens Valley. In folk memory giving up rural water to city folk means desolating a thriving farming community-as happened in Owens Valley.

This Little Water Went To Market (Water Trading), THE ECONOMIST, Aug. 4, 1990, at 19.

85. *See, e.g.*, Danielson v. Milne, 765 P.2d 372, 375 (Colo. 1988); State Dept. of Ecology v. Theodoratus, P.2d 1941 (Wash. 1998); State Dept. of Parks v. Idaho Dept. of Water Resources, 530 P.2d 924 (Idaho 1974); CAL. WATER CODE ANN. § 275, 1241 (2001). For a thorough discussion of the beneficial use doctrine see Janet C. Newman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENVTL. L. 919 (1998).

86. DEP'T OF ENV'T & NATURAL RES., NORTH CAROLINA STATE WATER SUPPLY PLAN ES-1 (Jan. 2001).

passed in 1989.⁸⁷ This process has created a "bottom-up" approach to water supply planning through which the local water supply plans developed by the local governments have become the essential data sources for local and regional water supply planning in North Carolina. Notably, this "bottom-up" approach created a state plan fairly consistent with local water resource development goals.

Unlike Florida, North Carolina has used its planning process to focus leadership of water resources development at a statewide level. The North Carolina Legislature requires the Department of Environment and Natural Resources to prepare a statewide plan before July 1 each year covering water resource development projects for a period of six years.⁸⁸ This plan is required to include: projects approved by the United States Congress; projects for which Congress has appropriated funds; projects for which grant applications have been submitted under two North Carolina water supply grant programs; and planned federal reservoir projects for which no federal funds are scheduled.⁸⁹ The North Carolina Department of Environment and Natural Resources is required to rank each project within these categories to either prioritize funding or recommend no funding. To accomplish this task, the Department must base its review on the following four criteria: "[1] local interest in the project, [2] the cost of the project to the State, [3] the benefit of the project to the State, and [4] the environmental impact of the project."⁹⁰

The resulting priority list for state water resource development is submitted to the North Carolina Director of the Budget and distributed to the Budget Advisory Commission and the North Carolina General Assembly as part of the recommended budget.⁹¹ The Director of the Budget has discretion to decide which of the water resource development projects prioritized by the Department of Environment and Natural Resources will be recommended for funding.⁹² Through this process, North Carolina has provided two important leadership functions. First, it has identified those projects that are of statewide importance and will be supported by the Department of Environment and Natural Resources. Second, it allows the Department to emphasize its support for the most important projects, which would not otherwise be cost-effective, to ensure that important projects are completed when the water

87. N.C. GEN. STAT. § 143-355(1), (m) (2000).

88. *Id.* § 143-215.73A(a).

89. *Id.* § 143-215.73A(b)(1)-(5).

90. *Id.* § 143-215.73A(c).

91. *Id.* § 143-215.73A(e).

92. *Id.* § 143-215.73A(f).

supplies are needed and not postponed until a water supply crisis develops.

2. New York

As noted earlier, New York State has been searching for new water supplies for New York City's ever-growing population since the Revolutionary War. In the nineteenth century, New York City completed two regional reservoir and aqueduct projects that stretched through three upstate New York counties.⁹³ The second of these public works programs, completed at the end of the nineteenth century, was constructed for New York City by the New York State Board of Aqueduct Commissioners⁹⁴, which was created by the New York State Legislature in 1883 for the sole purpose of building large public works projects to supply New York City with reliable sources of drinking water.⁹⁵

After the success of the state-sponsored reservoir and aqueduct projects, New York City looked again to private water developers to provide water for New York City's projected additional population growth. In 1895, the New York State Legislature chartered a second private water supply company with the authority to acquire land and water rights in upstate New York.⁹⁶ Unfortunately, this second attempt to leverage private capital to supply New York City with water failed and, in 1901, the charter was repealed.⁹⁷

In 1905, the New York State Water Supply Commission was created and vested with the authority to develop the state's water resources.⁹⁸ Under the leadership of the State Water Supply Commission, New York City was able to develop water supplies in the Catskill region; although, it was required to provide water at cost to other growing communities along the route of the aqueduct from the Catskills to New York City.⁹⁹

In the twentieth century, New York City continued to develop water supplies in upstate New York but with frequent conflicts between the residents of the rural areas where the water supplies were developed and the New York City government.¹⁰⁰ Frequently,

93. Finnegan, *supra* note 8, at 590-97.

94. *Id.* at 597.

95. Act of June 1, 1883, ch. 490, sections 1-2, 1883 N.Y. Laws 666.

96. Finnegan, *supra* note 8, at 597.

97. *Id.* at 597-98.

98. *Id.* at 598.

99. *Id.* at 599.

100. *Id.* at 598-601.

the city condemned land in rural areas for water supply development and was very heavy-handed with the local residents.¹⁰¹

In recent years, New York City has developed a more cooperative approach. As part of an effort to maintain water quality around the city's upstate watersheds, a new watershed agreement was reached between the city and the upstate local governments.¹⁰² Innovative provisions within the agreement provide a level of benefit to the residents in the locality of the source-water bodies through the formation of the Watershed Corporation, an independent and locally administered not-for-profit corporation paid for primarily by New York City.¹⁰³ Activities that the Watershed Corporation will undertake in the upstate region surrounding the city's reservoirs include sewage treatment, sewer system expansions, storm water control, replacement of septic systems, and other water quality improvement projects.¹⁰⁴ New York City's commitment under the agreement for funding these projects exceeds \$300 million.¹⁰⁵ In addition, the Watershed Agreement requires the city to provide \$75 million dollars for the "Catskill Fund for the Future," which is used to provide grants and loans for economic development projects that encourage environmentally sound development and job growth.¹⁰⁶ Finally, payments in excess of \$9.6 million have been made directly to the upstate local governments in the vicinity of the city's reservoirs.¹⁰⁷

B. Selected Western States

1. Texas

Since 1957, the Texas Water Development Board has been charged with preparing a comprehensive long-term plan for the development and management of water resources.¹⁰⁸ The most recent statewide plan was completed in 1997; it outlines current and future needs for water and wastewater treatment projects in Texas for the next fifty years and then assigns state priorities to these projects based on the needs identified in the plan.¹⁰⁹ The State

101. *Id.* at 602-05.

102. *Id.* at 625.

103. *Id.* at 631.

104. *Id.* at 635-36.

105. *Id.* at 636.

106. *Id.* at 641.

107. *Id.* at 642-43.

108. TEX. H.R., HOUSE RESEARCH ORG., TEXAS AT A WATERSHED: PLANNING NOW FOR FUTURE NEEDS 2 (1997) [hereinafter TEXAS AT A WATERSHED].

109. See TEX. WATER DEV. BD., WATER FOR TEXAS TODAY AND TOMORROW: A CONSENSUS-BASED UPDATE TO THE STATE WATER PLAN, 1-2 – 1-3 (1997).

Water Plan generally identifies key water-management tools to be used statewide in managing demand and developing new water supplies. These key water-management tools include: water conservation, expanded use of existing supplies, reallocation of reservoir storage, water marketing, water yield enhancement, inter-basin transfers, and new water supply development.¹¹⁰ The State Water Plan emphasizes that implementation of the solutions identified in the plan will be challenging and will require leadership and financial commitment from the state, as well as from regional and local governments. Thus, the executive summary of the 1997 State Water Plan concludes:

Implementing the State Water Plan will not be easy. The state still requires considerable efforts to improve water planning and management, and to provide additional financial assistance. Improved public participation and education, as well as intra- and inter-regional cooperation, are absolutely essential to the future well-being of Texas. The magnitude of these efforts is significant and will require an ongoing commitment of its citizens and governments to ensure its implementation.¹¹¹

Texas voters first authorized public development of water resources in 1904; since then, six plans have been officially adopted.¹¹² Prior to the 1980's, Texas state water plans had primarily identified new water supply development projects to meet growing water supply demands. In 1984, the Texas Water Development Board adopted a state water plan that, in addition to traditional water supply projects such as reservoirs and wellfield development, also included demand management, water conservation, and development of alternative water supplies.¹¹³

Yet, the Texas Water Development Board has recognized that demand management, conservation, and alternative water supplies are not sufficient to meet the growing state need for cost effective water supplies. For instance, inter-basin transfers and new reservoirs will be necessary.¹¹⁴ While the State Water Use Plan does express a preference for developing water supplies within river basins, the plan also recognizes that inter-basin transfers are at

110. *Id.*

111. *Id.* at XI.

112. *Id.*

113. *Id.*

114. *Id.*

times necessary to provide cost-effective water supplies.¹¹⁵ In 1997, approximately twenty to twenty-five percent of Texas' total surface water use was supplied from inter-basin transfers, including a significant percentage of water supplies for major metropolitan areas.¹¹⁶ The Texas State Water Plan also identified that approximately one million acre-feet per year, or 4.6% of the projected new water supply needs by the year 2050 will be met through inter-basin transfers.¹¹⁷ The Texas Water Development Board found that inter-basin transfers would have a "pronounced effect on resolving the prospective default deficit situations for many of the state's major metropolitan growth areas."¹¹⁸

While emphasizing conservation, the Texas Water Development Board has not abandoned the traditional approach of developing water supplies for growing urban areas in Texas, which is development of reservoirs. The Texas Water Development Board found:

State and local decision makers must not be misled that the magnitude of prospective growth in Texas can be addressed only through expanded use of existing supplies, minor local supply development, improved management measures, or inter-basin transfers. Even after all of this, there remains a need for additional water supply development. Eight new reservoirs ... have been recommended to meet remaining 'economic' water needs of the state by 2050.¹¹⁹

Another important aspect of the Texas State Water Plan is that it recognizes how essential cost-effective water supplies are for continued economic development in the state.¹²⁰ While industrial water users sometimes self-supply their water needs, manufacturers in water-scarce areas frequently rely on water utilities to provide their process water needs. Consequently, the cost of water provided by water supply utilities can have a direct impact on multiple economic sectors, including manufacturing operations.

The Texas State Water Plan identifies recommended major project needs, including: eight new reservoirs, three projects

115. *Id.* at 2-3, & 3-31.

116. *Id.*

117. *Id.*

118. *Id.* at 3-31.

119. *Id.*

120. *Id.*

reallocating currently permitted water storage, and two projects that would divert return flow into off-channel reservoirs.¹²¹ In addition, the State Water Plan recommends twenty-eight major conveyance projects, such as pipelines or canals to provide additional access to existing water supplies or new supply development.¹²² Of these recommended conveyance projects, twelve projects would involve inter-basin transfers of water.¹²³ This listing of recommended major projects is intended to provide an "organized schedule of needed activities that best balance competing needs, economic considerations, supply availability and acceptable environmental impact."¹²⁴ Because of the uncertainties in identifying projects for development over a fifty-year horizon, the State Water Use Plan also identifies a variety of other water supply development sites that could serve as alternatives for the recommended projects identified in the plan.

Texas provides funding for regional water supply projects through a number of programs. One method is through state participation in regional water supply projects.¹²⁵ Any local government or local water supply corporation constructing a regional water supply project can apply to the Texas Water Development Board for participation in the project.¹²⁶ The goal of the program is to allow for optimization of regional projects where the regional projects would be unaffordable without state participation.¹²⁷ Under this participation program, the state initially absorbs some of the cost of the projects; however, when the local sponsors need those additional water supplies, the state ultimately recovers its investment as those local sponsors buy out the state-funded portions of the project.

The Texas Water Development Board also operates a regional water supply facility-planning program. Through this program, the state of Texas provides financial assistance for developing the most feasible alternatives to meet regional water supply needs and for identifying institutional structures to provide regional water supplies.¹²⁸ These grants are only for regional efforts that include more than one service area or political subdivision and are consistent with applicable regional and statewide plans, such as the Texas State Water Plan.

121. *Id.*

122. *Id.*

123. *Id.*

124. *Id.*

125. *See* TEX. WATER CODE ANN. §§ 15.301-15.326 (Vernon 2000).

126. *See* 31 TEX. ADMIN. CODE § 363.4 (West 2002).

127. *See* TEX. WATER CODE ANN. § 15.306 (Vernon 2000).

128. *See* TEX. WATER CODE ANN. § 15.4061 (Vernon 2000).

Another way that Texas has provided leadership in developing statewide solutions to Texas' water needs is through the Texas Water Bank. The Texas Legislature created the Texas Water Bank in 1993 as a mechanism for voluntary transfer of water rights between willing buyers and sellers.¹²⁹ The transfers may be either temporary or permanent and, in most cases, will require a permit modification from the Texas Natural Resources Conservation Commission. The Water Bank is part of the Texas Water Development Board, which assists in the marketing and transfer of water throughout the state by identifying the availability and needs for water on a statewide basis.¹³⁰

The Texas water management system presents an important model for Florida policy-makers to consider. Unlike Florida, Texas has two separate state agencies involved in water management. The first is the Texas Water Development Board, which, as discussed above, focuses on the development of water supplies sufficient to meet the needs of Texas' growing population and economy. This agency serves as an advocate and provides statewide leadership in developing water supplies and overcoming obstacles to efficient and cost effective water supply development. The second agency is the Texas Natural Resource Conservation Commission. This agency is charged with the permitting of water resources to ensure environmental protection and conservation of natural resources.¹³¹ The Natural Resource Conservation Commission issues water permits, enforces water quality standards, permits surface water discharges, and administers the state's safe drinking water program. These are the types of environmental protection activities that are essential to protect the public health and natural resources of a modern society, but which can come in conflict with the efficiency and economic goals of statewide water supply development. As noted above, in states where the water supply development and water resource protection functions are conducted by the same agencies, one of the two mandates takes priority, and the other is neglected. This has frequently occurred in Florida and, as noted earlier, has also occurred in Hawaii where a similar statutory water management structure is in place. Texas has avoided this conflict by delegating these responsibilities to two separate agencies.

129. TEXAS AT A WATERSHED, *supra* note 108, at 11.

130. *See id.*

131. *See id.* ch. 297. *See generally* TEX. ADMIN. CODE ch. 295 (West 2000).

2. Kansas

In 1917, the Kansas Legislature created the State Water Commission to develop “a general plan for development of all the watersheds in the state to ensure that the [w]ater development of all kinds throughout the state ... conform[ed] to the general plans.”¹³² This was the beginning of strong state leadership in developing water supplies for agriculture, population growth, and other economic needs in the twentieth century. The Kansas State Water Commission was also charged with studying state water laws and proposing any necessary revisions.¹³³ Ultimately, in 1945, based on the recommendations of a subsequent study commission, the Kansas Legislature created a water permit administrative system that essentially converted Kansas’ water law from the eastern riparian rights system to the western prior appropriation system, with grandfathering of pre-existing riparian rights.¹³⁴ While Kansas’ water management statutes have changed over the years, there has consistently been a statewide water management agency charged with statewide water resource planning functions.¹³⁵

In the 1980’s, the Kansas Legislature created the Kansas Water Office as the water supply planning, policy, and coordination agency for the state of Kansas. The Kansas State Water Resource Planning Act mandates that the Kansas Water Office formulate, on a continuing basis, a state water plan for management, conservation, and development of the water resources of the state.¹³⁶ The Kansas Water Office conducts an annual water planning process with the goal of achieving “the proper utilization and control of the water resources of the state through comprehensive planning which coordinates and provides guidance for the management, conservation and development of the state’s water resources.”¹³⁷ One of the purposes of the annual water planning process is to avoid competing water needs. At the state level, the Kansas Department of Agriculture’s Division of Water Resources and the Kansas Office of Water have historically had large roles in the development of a variety of programs to address water competition in terms of water demand, availability, and accessibility. The Department of Agriculture’s Division of Water Resources is the state’s regulatory

132. John C. Peck, *The Kansas Water Appropriation Act: A Fifty-Year Perspective*, 43 U. KAN. L. REV. 735, 738 (1995) (quoting Act of Mar. 13, 1917, ch. 172 § 4, 1917 Kan. Sess. Laws 218, 218-19) (alterations in original) (citation omitted).

133. *Id.* at 739.

134. *Id.* at 741-42.

135. *Id.* at 751.

136. KAN. STAT. ANN. § 82a-903 (1997).

137. KAN. STAT. ANN. § 82a-901 (1997).

agency administering the Kansas Water Appropriations Act, and the Kansas Water Office is the state's planning agency that plans for development of necessary water supplies through the Kansas Water Planning Act.¹³⁸

The Kansas Legislature has established a number of programs to assist local agencies in meeting Kansas' water supply needs. One of these programs is the Kansas Water Assurance Program, which facilitates transfer of rights to storage space in twelve federal reservoirs in Kansas.¹³⁹ These surface water reservoirs were funded with both state and federal funds, and the water marketing program sells long-term, low interest contracts to water users to recover the state and federal governments' investments in the construction of the additional water supply storage space.¹⁴⁰

In 1985, the Kansas Office of Water developed the "multipurpose small lakes program act."¹⁴¹ This program uses existing, planned flood control dams as sources for water supply for small towns and rural areas. Under this program, the state pays for the cost of adding additional water supply storage over the immediate needs for flood control or other needs of the local project sponsors. The Kansas Water Office then enters into contracts with the local water users to repay the state's costs over time, and rights to the water are transferred to the local user as the state's costs are repaid.

3. Arizona

Historically in Arizona, urban growth relied heavily on use of large aquifers that received recharge from surface water systems at rates much lower than the rates of groundwater withdrawal necessary to meet urban needs. This created a situation where reliance on the groundwater aquifers for public supply was not sustainable.¹⁴² In response, the Arizona Legislature established a number of active management areas to manage the groundwater resource by increasing recharge and reducing withdrawals to achieve a "safe-yield."¹⁴³ One of the mechanisms used to achieve this safe-yield was establishment of the Assured Water Supply Program, which requires new growth to demonstrate that any

138. Memorandum from Raney Gilliland, Principal Analyst, & Mary Torrence, Revisor of Statute's Office, to the Special Committee on Environment, 1, 18-20 (August 27, 1999), available at <http://skyways.lib.ks.us/ksleg/KLRD/29028att.pdf> (last visited Oct. 14, 2002) (on file with author) [hereinafter Memorandum].

139. KAN. STAT. ANN. §§ 82a-1330 - 82a-1348 (1997).

140. Memorandum, *supra* note 138, at 9, 18-19.

141. KAN. STAT. ANN. § 82a-1601 (1997).

142. See Holly Jo Franz et al., *An Insatiable Thirst: The Impact of Water Law on Sprawl in the West*, 15 NAT. RESOURCES & ENV'T 228 (2001).

143. ARIZ. REV. STAT. ANN. § 45-562 (West 2002); Franz, et al., *supra* note 142, at 229-30.

increased demands placed on the aquifer system would be offset by increased groundwater recharge within the active management area.¹⁴⁴

Surface water supplies have been used to recharge the aquifer system as part of the Assured Water Supply Program.¹⁴⁵ One example of a large regional surface water delivery system used to recharge the aquifer system is the Central Arizona Project that diverts water from the Colorado River. Local government water utilities and private water suppliers are now faced with the problem of how to construct and finance the needed infrastructure to provide aquifer recharge, as well as supply drinking-water treatment and distribution systems.

Since direct grants for water supply development have become increasingly rare in Arizona, the state has looked to other methods of financing public works projects and infrastructure costs. One mechanism is the Arizona Water Infrastructure Finance Authority (WIFA).¹⁴⁶ The WIFA provides loans to local governments for the purpose of providing funding for public water supplies and the often-required groundwater recharge.¹⁴⁷ Frequently, a special district is established encompassing the area of benefit of the groundwater recharge or water supply infrastructure, and then the special district is used as the mechanism for funding.¹⁴⁸ This may be through either property taxes levied by the special district or special assessments on the properties benefiting from the groundwater recharge activities of the special district or the water supply infrastructure.¹⁴⁹ One type of special district in Arizona that is available for financing water supply related activities is a Domestic Water Improvement District.¹⁵⁰ Alternatively, local governments in Arizona can create multi-jurisdictional special districts through intra-local agreement.¹⁵¹ Through this mechanism, local governments could create a regional special district that could levy special assessments for funding aquifer recharge projects or water supply infrastructure.

144. ARIZ. ADMIN. CODE R4-28-B1202 (2002).

145. ARIZ. REV. STAT. § 45-576 (2001).

146. ARIZ. REV. STAT. § 9-571 (1996).

147. *Id.*

148. *See* ARIZ. REV. STAT. §§ 48-1019, 48-2011.01 (2000); Governor's Water Mgmt. Comm'n, Draft Tucson AMA Safe-Yield Task Force Issue Outline (July 3, 2000) [hereinafter Issue Outline]. (On file with author.)

149. ARIZ. REV. STAT. §§ 48-1019, & 48-2011.01.

150. *Id.* § 48-1019. *See* Issue Outline, *supra* note 148.

151. Issue Outline, *supra* note 148 (explaining that although Title 48 does not provide for special districts that would span multiple jurisdictions, a multi-way intergovernmental agreement is a potential financing mechanism that does not create a multi-jurisdictional district).

One of the reasons that special districts are used to finance water resource projects, rather than simply paying for these projects through water rates, is that paying for all related costs through rates is not always equitable.¹⁵² Repayment of costs through water rates establishes a level of equity among current water users (i.e., the more you use, the more you pay), but future users gain the benefit of a healthy water resource without having to pay for it, and the region as a whole benefits from the improved environmental conditions. However, payment of costs through special assessments or property taxes provides equity based on the ability to pay and enjoyment of the benefits of improved environmental protection even though some taxpayers may be subsidizing the water use of others. In addition, using assessments or property taxes from a special district to fund aquifer recharge and water supply infrastructure ensures that all water users in the special district who benefit from the aquifer recharge activities will pay equitably for the cost. For instance, where there are self-suppliers using either local domestic wells or permitted wells for agricultural or industrial water use, each of these water users would be bearing the cost of the aquifer restoration activities. If these restoration activities were paid for solely through water rates, these self-suppliers would benefit from the improved condition of the aquifer and the improved environmental conditions, but they would not be required to bear part of the cost.

4. California

California is a unique state, and its approach to water management is no exception. California has a dual system of water rights for surface water, which recognizes both riparian and prior appropriation rights. California has also developed a variety of approaches to developing water resources, including a number of large federal and federal/state water diversion and conveyance projects.¹⁵³ These include the Central Valley Project, CALFED Project, the Colorado River Aqueduct, and other regional reservoirs and water conveyances.¹⁵⁴

California's water supply development efforts are coordinated through the California Water Plan. The California Water Plan was first published in 1957 and has been updated at regular intervals subsequently.¹⁵⁵ The purpose of the updates to the California Water

152. See Issue Outline, *supra* note 148, at 2.

153. See, e.g., CAL. DEP'T OF WATER RES., CALIFORNIA WATER PLAN BULLETIN 160-98, 2-2 (1998) [hereinafter CALIFORNIA WATER PLAN BULLETIN].

154. CAL. DEP'T OF WATER RES., CALIFORNIA WATER PLAN BULLETIN 160-93 (October 1994).

155. *Id.*

Plan is to assess agricultural, environmental, and urban water needs and evaluate the available supplies so that the gap between future water demand and the corresponding water supplies may be quantified.¹⁵⁶ In addition, the update presents an overview of the current water management activities and provides water managers with a basis for prioritizing water resource efforts.¹⁵⁷

Much of California's water supply development has been in the form of regional water supply projects constructed by both the state and federal governments. For instance, in 1960, California voters approved a \$1.75 billion bond issue to build the California State Water Project.¹⁵⁸ This public works project was designed and constructed by the California Department of Water Resources, and by 1973 the initial facilities were completed and water delivery to southern California commenced.¹⁵⁹ The cost of the State Water Project is being repaid primarily through user fees paid by the project beneficiaries.¹⁶⁰ The operation and maintenance costs of the State Water Project are born primarily by twenty-nine water use contractors that the State Water Project supplies.¹⁶¹ The twenty-nine contractors with the state water project are primarily local water districts or water supply utilities.¹⁶² They supply water for domestic use, irrigation of commercial agricultural operations, and, in some cases, industrial and manufacturing uses.

In addition to a substantial financial commitment to water resource development at the state level, the California Legislature has enacted a number of initiatives intended to increase the incentives for water users to more efficiently use available water supplies and allow market forces to reallocate available water supplies as economic conditions change. For instance, in 1991, California established the Drought Water Bank, which was intended to supply water only in times of critical need.¹⁶³ The bank was charged with purchasing water from willing sellers and holding it to sell to water users with critical needs.¹⁶⁴ The Drought Water Bank has generally proven to be successful as a method of

156. *Id.*

157. CALIFORNIA WATER PLAN BULLETIN, *supra* note 153, at 1-1.

158. CAL. DEP'T OF WATER RES., MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT BULLETIN 132-99, 3 (Mar. 2001).

159. *Id.*

160. CALIFORNIA WATER PLAN BULLETIN, *supra* note 153.

161. *Id.*

162. *Id.*

163. CAL. DEPT. OF WATER RESOURCES, 1991 DROUGHT WATER BANK, 2 (January 1992) [hereinafter 1991 DROUGHT WATER BANK].

164. OFFICE OF TECH. ASSESSMENT, U.S. CONGRESS, PREPARING FOR AN UNCERTAIN CLIMATE, OTA-0-567 (1993).

reallocating supplies during times of drought.¹⁶⁵ Subsequently, additional water banks have been established to facilitate water trading and transfers.¹⁶⁶ California has established other programs promoting water trading and water marketing;¹⁶⁷ however, the success of these initiatives has been limited, and significant obstacles to effective and efficient water trading still exist.¹⁶⁸

It is important to note that the California Department of Water Resources, which is charged with planning for California's water supply needs through the State Water Plan and with developing, operating, and maintaining the State Water Project, is separate and independent from the California Water Resources Control Board, the state's water regulatory agency. This division of responsibilities appears to have served the residents of California well; while the Department of Water Resources has been able to devote its energies to ensuring a safe and reliable water supply for the growing population and economic development, the State Water Resources Control Board has been able to focus on managing water rights and protecting water resources.

V. ALTERNATIVES IN FLORIDA

It is obvious from the diverse approaches to water resource development highlighted above that there is no single model for successful statewide water resource development. Each of the

165. See generally, 1991 DROUGHT WATER BANK, *supra* note 165 and LOYD S. DIXON, NANCY Y. MOORE, SUSAN W. SCHECHTER, RAND INSTITUTE, CALIFORNIA'S 1991 DROUGHT WATER BANK, 66 - 71 (1993); but see Joseph W. Dellapenna, *The Importance Of Getting Names Right: The Myth Of Markets For Water*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 317, 362-63 (2000) (criticizing the 1991 Drought Water Bank for its limited scope and the relatively small quantity of water made available for use).

166. California also operated drought water banks in 1992, 1994 and 1995, which were also significant drought years. CAL. DEP'T OF WATER RES., MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT BULLETIN 132-96, Ch. 3 (1996). Local groundwater banks have also been established in California, such as the Kern Water Bank. WATER TRANSFER WORKGROUP, WATER TRANSFER ISSUES IN CALIFORNIA, FINAL REPORT TO THE STATE WATER RESOURCES CONTROL BOARD, 21-2 (JUNE 2000) [hereinafter WATER TRANSFER ISSUES IN CALIFORNIA].

167. One example is innovative legislation intended to allow transfers of conserved water. This effort is analyzed in Jennifer L. Cordua, *The Search for new Supplies: Salvaging the Remains of Agricultural Water Conservation in California*, 31 U.C. DAVIS L. REV. 591 (1998).

168. One obstacle to efficient water trading is the transmission of water from the existing point of use to the new point of use, thereby effectuating the transfer. In 1986 California Legislature passed legislation to facilitate water "wheeling," so that water could be conveyed through existing infrastructure with excess capacity. See CAL. WATER CODE ANN. § 1810 (2001). However, litigation over the rights of transferors to wheel water has been the subject of intense litigation that has limited large-scale transfers of water. *San Luis Coastal Unified School Dist. v. City of Morro Bay*, 97 Cal.Rptr.2d 323, 81 Cal.App.4th 1044 (App. 2 Dist. 2000); *Metropolitan Water Dist. of Southern California v. Imperial Irr. Dist.*, 96 Cal.Rptr.2d 314, 80 Cal.App.4th 1403 (App. 2 Dist. 2000). A detailed analysis of other obstacles to efficient water transfers in California is provided in WATER TRANSFER ISSUES IN CALIFORNIA, *supra* note 166.

states discussed has taken a different path to successfully achieving effective statewide water resource development.

Some of these methods are easily applicable to Florida's water management system, and others are not.¹⁶⁹ Below, a number of proposals are identified that could effectively increase water resource development in Florida without the need for revision of Florida's administrative water use permitting system.

A. Improve State Leadership

The Legislature should establish an office of state government whose sole purpose is to address Florida's water supply needs on a statewide basis. This office's sole mission would be to coordinate, develop, and implement plans to reduce and eliminate identified shortfalls in the water supplies necessary to meet the needs of Florida's growing population and economy.

Florida's water supply planning process has adequately identified water supply shortfalls throughout the state. Unfortunately, the next step in the planning process has been lacking. Frequently, the water supply planning process has produced a laundry list of water source options without any prioritization or identification of specific sources to meet specific needs. The costs estimated for these water supply options are often inaccurate or unrealistic. It is possible, with the right leadership, to identify cost-effective water supply sources to meet projected needs through a consensus building process with local governments, water suppliers, environmental interests, and other stakeholders. This was done in the planning process for the Lower East Coast Regional Water Supply Plan, and it may yet prove to be an effective water supply development tool.

The primary problem is that Florida's water management districts are tasked with two inconsistent and sometimes contradictory missions: development of sufficient water resources to meet all reasonable-beneficial uses and preservation of water resources.¹⁷⁰ Since their creation almost thirty years ago, the water

169. For instance, the water marketing and banking efforts initiated in western states such as Texas, California, and Kansas are not easily adaptable to Florida's water use permitting system. While the prior appropriation system in most western states is very conducive to reallocating water rights through water marketing and water banking, implementing similar reallocation systems in Florida would require reform of Florida's administrative water permitting system. A discussion of reforms of this nature is outside the scope of this paper.

170. See FLA. STAT. § 373.016(3) (2001); see also FLA. STAT. § 373.036(2)(d) (2001), which provides, in pertinent part:

In the formulation of the district water management plan, the governing board shall give due consideration to:

1. The attainment of maximum reasonable-beneficial use of water

management districts have delegated more and more responsibilities, without the necessary resources to fulfill these responsibilities. One function that has suffered is water resource development. Generally, the water management districts have given water resource preservation priority over water resource development. It is time for the state to create an advocate for development of the water supplies necessary to Florida's water needs and end the neglect of this important government function.

B. Coordinate Statewide Funding

The State should coordinate statewide funding for water resource development projects. Historically, the State of Florida has not played a significant role in the development of water resources. Most water resources development has been funded piecemeal by the local governments, special districts, and private utility companies. However, the era of easy, cheap water resource development in Florida has ended, and it is time for the state to play a leadership role.

The state could provide direct financial assistance to develop regional projects, like Texas provides through its state participation program or as Kansas provides through its reservoir and multi-purpose lake projects. Alternatively, the state could prioritize water resource projects for funding consistent with statewide water planning efforts, as is done in North Carolina.

However, the state can provide leadership in the development of water supplies without necessarily providing direct state funding. One way is by coordinating statewide water resource development funding through a statewide planning process. When water supply shortfalls are identified through state and regional planning efforts, the state should develop mechanisms to ensure that the financial resources will be available to meet water needs and limit the adverse public health and economic impacts of water shortages. There are numerous ways this could be done, one of which is by facilitating regional cooperation and leveraging regional, local, and

resources.

2. The maximum economic development of the water resources consistent with other uses.
3. The management of water resources for such purposes as environmental protection, drainage, flood control, and water storage.
4. The quantity of water available for application to a reasonable-beneficial use.
5. The prevention of wasteful, uneconomical, impractical, or unreasonable uses of water resources.
6. Presently exercised domestic use and permit rights.
7. The preservation and enhancement of the water quality of the state.

private financial resources. Pooling of regional resources could be done through regional special districts, which are discussed below in recommendation C. The state could also pursue facilitation through state bonding, as was done in California in 1960 and in 2000. This can be done with very little net cost to the state when the debt is repaid through fees paid by water users, as was the case with the California State Water Project. Florida is already moving in this direction through the bonding of its state revolving loan programs,¹⁷¹ and with additional effort, it may be possible to use these funds or a similar funding mechanism to facilitate regional water supply development projects.

C. Facilitate Creation of Local Revenue Sources

The legislature should authorize the establishment of regional water resource development districts. These special districts could be created either by special act or by local governments, and they could be used to facilitate the financing of regional water resource projects. It may be possible to create a special district to perform some water resource development function under present state law.¹⁷² However, legislation articulating the powers and functions of regional water resource development districts is necessary to clarify the legal authority and possibly expand the powers of the special district.

Enabling legislation for water resource development districts should include criteria for creation and dissolution of the district, as well as authorizing revenue options. The districts would need to be regional in nature and include two or more local governments or utility service areas. At a minimum, the districts should be authorized to levy special assessments for water resource development purposes. Additionally, the water resource development districts should be able to access a portion of the one mil property tax authorized for water management purposes by Article VII, section 9(b) of the Florida Constitution.

Notably, there is precedent for this approach in Florida law. In 1978, the Florida Legislature dedicated 0.1 mil of that one mil for water management purposes to West Coast Regional Water Supply Authority for a period of ten years. This funding source was essential to the development of the West Coast Regional Water Supply Authority (the predecessor to Tampa Bay Water), as well as to the present success of Tampa Bay Water. This type of taxing authority is not dissimilar from the establishment of a municipal

171. See Act effective June 14, 2000, ch. 00-271, 2000 Fla. Laws 2804.

172. See, e.g., FLA. STAT. § 373.1962 (2001).

services taxing unit (MSTU) by a county government in order to access the ten mills available under the Florida Constitution for municipalities.¹⁷³

Another innovative approach that would also enable local water resource development districts to access the one mill property tax for water management purposes is tax increment financing. Under this approach the water resource development district would be entitled to any increases in revenue over the existing revenues raised by the water management districts within a designated area. This funding mechanism is similar to the increment tax financing mechanism for community redevelopment agencies.¹⁷⁴

D. Authorize Cooperative Water Transfer Agreements

As water supplies in Florida become more limited, pressure will increase to transport water from water-rich areas of the state to water-scarce areas of the state. Frequently, this is the most cost-effective method of developing new water supplies. In many cases, the water-rich areas of Florida are rural areas with limited opportunities for economic development. Therefore, the legislature should authorize inter-local agreements between local governments, allowing water-rich areas to benefit financially from the transfer of water to the water-scarce areas of Florida. Such an agreement could be similar to the New York watershed agreement where revenues are paid over a period of years for both environmental protection and economic development activities in the water "donor" area.

173. See FLA. STAT. § 200.071 (2001).

174. See FLA. STAT. § 163.330-163.463 (2001).