

# CAPACITY SHARING: THE NEXT STEP IN FLORIDA'S EVOLVING WATER ECONOMY

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## INTRODUCTION

It has been said that the problems related to the availability of quality freshwater do not stem from a shortage of water.<sup>1</sup> Rather, the problems stem from a shortage in sound water policy which looks comprehensively at what should be done with the available water and the resulting consequences of the use.<sup>2</sup> In Florida, this shortage in sound water policy has led to increased friction and competition between agricultural and public supply groundwater users and a growing dissatisfaction with the way groundwater is allocated.

*Harloff v. City of Sarasota*<sup>3</sup> best exemplifies growing competition between agricultural and public supply users. Significantly, the district court noted that the opinion was written, in part, because:

[W]e fear that the facts of this case may become a common theme in Florida as urban and agricultural demands on groundwater reach the capacity of this resource. Whether our current statutory and regulatory structure provides the optimum method to fairly allocate water between competing neighbors is not the issue in this appeal. The facts of this case, however, may be helpful to those in the Legislature who are responsible for establishing our state's water policy.<sup>4</sup>

The City of Sarasota, in Sarasota County, Florida, obtains water

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1. See David H. Getches, *From Askhabad, to Wellton-Mohawk, to Los Angeles: The Drought in Water Policy*, 64 U. COLO. L. REV. 523, 540-41 (1993).

2. See *id.*

3. 575 So. 2d 1324 (Fla. 2d Dist. Ct. App. 1991).

4. *Id.* at 1325.

for its residents from a wellfield located very close to Mr. Harloff's farmland in Manatee County.<sup>5</sup> The City possesses a consumptive use permit<sup>6</sup> from Southwest Florida Water Management District (SWFWMD). The permit allows the City to withdraw an average of 6 million gallons of groundwater per day (mg/d) with a maximum withdrawal of 7 mg/d.<sup>7</sup>

In 1988, Mr. Harloff applied to SWFWMD for a consumptive use permit<sup>8</sup> in order to increase production on his farmland.<sup>9</sup> The permit ultimately requested 26 mg/d as a seasonal average, 32 mg/d as a seasonal daily maximum, and 15 mg/d as an annual average.<sup>10</sup> Mr. Harloff farmed nearly 8500 acres, employed 200 full-time workers and over 800 part-time workers, and his operation was important to the local economy.<sup>11</sup> His existing irrigation system was a semi-closed system used extensively by Florida farmers.<sup>12</sup>

The City challenged Mr. Harloff's request.<sup>13</sup> It argued that the water table at the wellfield had declined dramatically since 1966, and Mr. Harloff's proposed use would interfere with the City's current use of the water.<sup>14</sup> SWFWMD's staff studied Mr. Harloff's request and determined that a permit should be granted, but only for a greatly reduced quantity of water.<sup>15</sup> The District determined that Mr. Harloff could only withdraw 15.6 mg/d as a seasonal average, 20.1 mg/d as a seasonal daily maximum, and 11.1 mg/d as an annual

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5. *See id.* The Verna Wellfield is in the northeast corner of Sarasota County near the southern boundary of Manatee County. It was constructed in 1966 and helps supply the water for Sarasota's approximate 75,000 residents. *See id.*

6. *See infra* notes 100–40 and accompanying text.

7. *See Harloff*, 575 So. 2d at 1326. This permit expired in January 1991. *See id.*

8. Any person or entity seeking to withdraw water for non-domestic consumption, must seek a permit from the appropriate water management district authorizing the consumptive use of particular quantities of water. *See* FLA. STAT. §§ 373.216 to .219 (1995).

9. *See Harloff*, 575 So. 2d at 1326.

10. *See id.*

11. *See id.*

12. *See id.*

13. To obtain the permit Mr. Harloff would have to prove that his proposed use of water was reasonable, would not interfere with the City's existing legal use of water and would be consistent with the public interest under the existing environmental conditions. *See id.* at 1327; *see also* FLA. STAT. § 373.2295 (Supp. 1996) (regarding conditions for a permit).

14. *See Harloff*, 575 So. 2d at 1326. In fact, the demand became so great on the wellfield that it was unable to meet the peak demand in the spring of 1989. *See id.*

15. *See id.* at 1325.

average.<sup>16</sup>

A hearing ensued as a result of the City's challenge.<sup>17</sup> The hearing officer approved an extensive set of factual findings, which included findings that Mr. Harloff's requested consumption would result in an additional drawdown of 1.7 feet in the aquifer underlying the City's wellfield, and that the amount of drawdown would significantly degrade the productive capacity of the City's wellfield.<sup>18</sup> Mr. Harloff's proposed and approved findings of fact stated that there was no evidence as to how much additional impact the City's wellfield could withstand.<sup>19</sup> Despite the findings, the hearing officer recommended that Mr. Harloff receive a permit to withdraw water at the full amount requested; the City filed exceptions to the findings.<sup>20</sup>

SWFWMD accepted the hearing officer's factual findings but rejected the hearing officer's legal conclusions and granted Mr. Harloff a permit, not at the requested levels, but at the lower levels recommended by its staff.<sup>21</sup> Mr. Harloff appealed.<sup>22</sup>

In the framework of the *Harloff* case, this Article examines the evolution of Florida's water economy from a groundwater perspective. It begins with a brief overview of water use in Florida, proceeds to a discussion of the common law of groundwater, continues with an analysis of the Florida Water Resources Act of 1972, and then suggests a new approach toward slicing the new groundwater pie. This new approach, known as capacity sharing, alleviates many of the problems identified with Florida's current water rights allocation system. The facts from *Harloff* will be applied to each of the three approaches to allocating groundwater.

#### WATER USE IN FLORIDA

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16. *See id.* at 1326.

17. *See id.* at 1327.

18. *See Harloff*, 575 So. 2d at 1327.

19. *See id.*

20. *See id.* The groundwater that Mr. Harloff intended to withdraw was from a deeper aquifer than the City's wellfield. However, both aquifers are geologically interrelated. *See id.* at 1326.

21. *See id.* at 1327.

22. *See id.* The SWFWMD concluded that Mr. Harloff had not proven the factors required for his requested permit. *See id.*

Throughout history, water law has provided consumers with little incentive to save water or to consider whether water was being used in the most efficient or productive fashion.<sup>23</sup> Thus, water consumers, whether agricultural, domestic, industrial, or commercial, traditionally use significantly more water than its real cost would justify.<sup>24</sup> Florida's own water use exemplifies this history.

In 1990, Floridians withdrew groundwater at a rate of approximately 4665 mg/d.<sup>25</sup> That means that over 4.6 billion gallons of groundwater were removed from the various underground aquifers each day, ranking Florida as the largest consumptive user of groundwater for all states east of the Mississippi River.<sup>26</sup> Florida's reliance on groundwater as a primary source of freshwater has increased dramatically over the last forty years. Groundwater accounted for 62% of all freshwater withdrawals in 1990, compared to 51% in 1980, and 21% in 1950.<sup>27</sup> Between 1970 and 1990, use of groundwater has increased 63%.<sup>28</sup>

The high demand for groundwater in Florida is likely to continue. It is the primary source of public supply water because it is relatively easy to access and is of generally high quality.<sup>29</sup> Moreover,

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23. See Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 671, 673 (1993).

24. See *id.* at 673-74.

25. See RICHARD L. MARELLA, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 92-4140, WATER WITHDRAWALS, USE, AND TRENDS IN FLORIDA 1990, at 6 (1992). Groundwater is actually a subclass of the subsurface water classification system which also includes the zone of aeration. See FRANK E. MALONEY ET AL., WATER RESOURCES RESEARCH CTR., FLORIDA WATER LAW 1980, at 27 [hereinafter MALONEY ET AL.]. The aeration zone is the water which is available for plants. See *id.* The space between rocks in this zone contains both air and water. See *id.* Groundwater is water that percolates through the zone of aeration to the zone of saturation, where the water fills the space between the rocks. See *id.*

26. See MARELLA, *supra* note 25. Overall, Florida ranked sixth in the nation in groundwater withdrawals. See *id.*

27. See *id.*

28. See *id.*

29. RICHARD L. MARELLA, U.S. GEOLOGICAL SURVEY, WATER-RESOURCES INVESTIGATIONS REPORT 91-4123, FACTORS THAT AFFECT PUBLIC-SUPPLY WATER USE IN FLORIDA, WITH A SECTION ON PROJECTED WATER USE TO THE YEAR 2020, at 27 (1992). The largest source of groundwater is the Floridan aquifer followed by the Biscayne aquifer. See MARELLA, *supra* note 25, at 13.

Florida ranks second in the nation, behind California, in its dependency on groundwater for public supply. It withdraws at a rate of 1699 mg/d. See *id.* Nearly 1.7 billion gallons per day represents the total usage from all sources for public supply. See *id.*

Florida's population is expected to increase from nearly twelve million in 1993 to almost sixteen million by the year 2000, eighteen million by 2010, and nearly twenty million by the year 2020.<sup>30</sup> As a result, groundwater use will likely increase as well.

Floridians could hardly be described as conservative in their use of water resources. Statewide, the use of public supply water in 1990 was 171 gallons per person per day based upon the total public supply water withdrawn.<sup>31</sup> The use of public supply water solely for domestic purposes equaled 111 gallons per person per day.<sup>32</sup> Based on the projected increase in Florida's population, public supply water use is expected to increase to nearly 2310 mg/d by the year 2000, to 2610 mg/d by 2010, and to 2890 mg/d by the year 2020.<sup>33</sup>

Unfortunately, the available supply of quality groundwater is not able to keep pace with the increasing demand placed upon it.<sup>34</sup> In addition to increased use for agriculture and public supply, groundwater supplies have also suffered from drought conditions in various parts of the state.<sup>35</sup> For example, the period from October 1, 1989 through September 30, 1992, was the third driest four year period since 1915.<sup>36</sup> Total rain shortfall within that period was twenty-three and one half inches.<sup>37</sup> These drought conditions can have a dramatic affect upon groundwater supplies. In Southwest Florida, the average annual rainfall is fifty-three inches.<sup>38</sup> Of the fifty-three inches of rain received, thirty-nine inches are lost to evaporation and transpiration, and an additional nine inches are lost to storm water runoff.<sup>39</sup> That leaves only five to six inches of rain to recharge the groundwater in Florida.<sup>40</sup> Thus, drought conditions exacerbate

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30. See MARELLA, *supra* note 29, at 27. These figures are median projections. See *id.*

31. See MARELLA, *supra* note 25, at 13. This figure includes public supply water delivered for commercial, industrial, and public as well as domestic uses. See *id.*

32. See *id.* Domestic use includes bathing, drinking, cooking, and sanitation. See *id.*

33. See MARELLA, *supra* note 29, at 30. If the population should exceed the median projections, public supply water use could reach as high as 3900 mg/d by the year 2020. See *id.*

34. See *id.*

35. SOUTHWEST FLA. WATER MANAGEMENT DIST., 1992 ANNUAL REPORT 3 (1993).

36. See *id.*

37. See *id.*

38. See SOUTHWEST FLA. WATER MANAGEMENT DIST., 1990 ANNUAL REPORT 2 (1991).

39. See *id.* Transpiration is that water lost through plant respiration. See *id.*

40. See *id.*

the growing pressures on the limited groundwater resources.

When groundwater withdrawals exceed an aquifer's rate of recharge, overdraft of the aquifer results<sup>41</sup> and groundwater levels begin to fall. In addition to depleting an important resource, falling groundwater levels can create several other severe difficulties. Overdraft can cause saltwater intrusion into the groundwater from nearby saline waters or underlying saline aquifers.<sup>42</sup> Saltwater intrusions occur because freshwater is less dense than saltwater. When too much freshwater is removed from an aquifer, the pressure from the weight of the freshwater is no longer sufficient to counterbalance the pressure from the more dense saltwater and prevent the saltwater from intruding into the aquifer.<sup>43</sup> Saline water renders the groundwater non-potable and unfit for most agricultural and industrial purposes.

Overdraft can also cause subsidence of the overlying land.<sup>44</sup> Subsidence occurs when underground cavities, which would normally be filled with water, are unable to bear the weight from the overlying layers of rock and soil.<sup>45</sup> These underground cavities may eventually become sinkholes.<sup>46</sup> Finally, as groundwater is intimately linked with many surface waters, declining groundwater levels may also contribute to lower lake and stream levels and may cause harm to wetlands.<sup>47</sup>

Two major uses that compete for and depend upon a ready supply of groundwater are agricultural irrigation (43%) and public supply (36%), which account for the majority of groundwater consumption.<sup>48</sup> The balance of groundwater use involves self-supplied commercial/industrial (14%), self-supplied domestic (6%), and thermo-electric power (1%).<sup>49</sup> When self-supplied domestic use is combined with public supply use, the combined demand is virtually identical to agricultural demand. With the expected increase in Florida's pop-

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41. See MALONEY ET AL., *supra* note 25, at 33.

42. See *id.* at 34.

43. See *id.* at 35–36.

44. See *id.* at 54.

45. See *id.* at 55.

46. See *id.* at 53–57 for a discussion of case law regarding liability for subsidence resulting from over-drawing groundwater.

47. See Thompson, *supra* note 23, at 685.

48. See MARELLA, *supra* note 25, at 6. Public supply means all water supplied by public entities to domestic, agricultural, commercial, or industrial users. See *id.* at 13.

49. See *id.* Self-supply refers to the operation of private wells. See *id.*

ulation and the corresponding increase in demand upon groundwater for public supply,<sup>50</sup> competition and conflict between agricultural and public needs will also increase.

A growing population clearly requires more water for its own domestic needs. However, a growing population also increases the water needs of those commercial and industrial users, supplied by public supply, which service the needs of the population. The agricultural industry's water requirements will increase correspondingly as it attempts to produce more crops to feed the larger population. As the main source of freshwater for these two user groups,<sup>51</sup> it is essential to develop an allocation system that protects both the groundwater and the groups utilizing it.

### COMMON LAW OF GROUNDWATER

#### Generally

The common law classifies groundwater into two categories; underground streams and percolating waters.<sup>52</sup> Underground streams generally flow in well-defined channels with ascertainable courses.<sup>53</sup> Percolating waters filter through the soil until they reach the zone of saturation.<sup>54</sup> Florida's groundwaters are predominantly percolating<sup>55</sup> and this discussion will be limited to the laws relating to this classification.<sup>56</sup> There are three major rules relating to percolating groundwater at common law: (1) the English, or absolute ownership doctrine; (2) the American, or reasonable use rule; and (3) the correlative rights doctrine.<sup>57</sup>

The English rule, or absolute ownership doctrine, provides that a landowner may withdraw an unlimited quantity of groundwater

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50. See *supra* notes 29–30 and accompanying text.

51. See MALONEY ET AL., *supra* note 25, at 27.

52. See Richard Ausness, *Water Rights Legislation in the East: A Program for Reform*, 24 WM. & MARY L. REV. 547, 550 (1983).

53. See *id.*

54. See MALONEY ET AL., *supra* note 25, at 27.

55. See *id.*

56. Underground streams are governed by the same rules as surface streams. See Ausness, *supra* note 52, at 550.

57. See *id.* at 551; see also MALONEY ET AL., *supra* note 25, at 44–45. In addition to the three rules cited, “many western states now apply the prior appropriation system to ground water.” *Id.* at 45.

from the landowner's property.<sup>58</sup> The water may then be used on either overlying or distant lands notwithstanding harm to neighboring landowners.<sup>59</sup> This rule recognizes a vested property right in the percolating waters similar to the landowner's rights to the rocks and stones in the land itself.<sup>60</sup> However, since there is no cause of action against an adjacent landowner who is also withdrawing groundwater, the property right involved is actually the exclusive right of access to groundwater passing through the land.<sup>61</sup> Liability exists only for waste or malicious injury to another.<sup>62</sup>

The American rule, or reasonable use rule, enables a landowner to use as much groundwater as he needs so long as the use is reasonably related to a natural use of the overlying land.<sup>63</sup> The use of the groundwater must be beneficial; waste or malicious injury are unreasonable *per se*.<sup>64</sup> Again, as with the English rule, harm to adjacent landowners is irrelevant.<sup>65</sup> However, unlike the English rule, the American rule forbids the use of the groundwater on distant lands if the use inhibits the groundwater supply of another landowner.<sup>66</sup>

The correlative rights doctrine provides that each landowner has an equal and correlative right to a common pool of groundwater.<sup>67</sup> The use of the water is limited to the beneficial use of the overlying land.<sup>68</sup> In times of shortage, groundwater must be apportioned in equal shares among all landowners.<sup>69</sup>

Of these three rules, Florida adopted the American rule.<sup>70</sup> The rule, as enunciated in Florida, is that a landowner who removes groundwater to the detriment of others, must be making a reasonable and beneficial use of the water generally related to the land

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58. See Ausness, *supra* note 52, at 551; MALONEY ET AL., *supra* note 25, at 45.

59. See Ausness, *supra* note 52, at 551.

60. See MALONEY ET AL., *supra* note 25, at 46.

61. See *id.*

62. See Ausness, *supra* note 52, at 551.

63. See MALONEY ET AL., *supra* note 25, at 48.

64. See *id.*

65. See *id.*

66. See *id.*

67. See Ausness, *supra* note 52, at 552; MALONEY ET AL., *supra* note 25, at 49.

68. See Ausness, *supra* note 52, at 552.

69. See MALONEY ET AL., *supra* note 25, at 49.

70. See *Village of Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 663, 666-67 (Fla. 1979); see also *Koch v. Wick*, 87 So. 2d 47, 48 (Fla. 1956); *Cason v. Florida Power Co.*, 76 So. 535, 536-37 (Fla. 1917).

over which the water was found.<sup>71</sup> Of course, the reasonableness of any given use has traditionally been hard to define and is subject to change over time.

### *Harloff* Under the Common Law

Applying this common-law rule to the facts of the *Harloff* case,<sup>72</sup> it seems clear that, had the City not challenged Mr. Harloff's use, Mr. Harloff would have been permitted to use all the groundwater he originally requested, if not more. The district court specifically determined that Mr. Harloff's intentions to grow produce and his current farming practices established a reasonable and beneficial use of the water.<sup>73</sup> The water was to be used on the overlying property, and no evidence of malicious intent or waste existed. Thus, under the American rule, Mr. Harloff would have been able to withdraw the groundwater despite the potential adverse effects to the City's water supply.

The probable outcome in *Harloff* is indicative of some of the problems identified with the common-law doctrines. Under the common law, if Mr. Harloff wanted or needed more water, all he had to do was sink a well and start withdrawing the water. So long as he was making a reasonable and beneficial use on the overlying land, there was no disinterested third party to determine that the use was the most efficient or most productive use of the water. From a practical standpoint, the City would not have known about Mr. Harloff's use until some injury had occurred to its own source of water. Finally, even if the City was aware of Mr. Harloff's use, the City could only prevent the use by proving that it was unreasonable, wasteful, or malicious. Thus, the City's existing legal use of the groundwater was only minimally protected under the common law.

Other problems have also been identified with the common-law rules. Neither the English nor the American rule protects small users nor require shortages to be shared equally by all users.<sup>74</sup> Uncertainty as to rights in the groundwater exist because any use must

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71. See *Village of Tequesta*, 371 So. 2d at 666–67 (citing *Finley v. Teeter Stone, Inc.*, 248 A.2d 106, 111–12 (Md. 1968)).

72. See *supra* notes 63–66 and accompanying text for a discussion of the common-law American rule. See also *supra* notes 3–22 for the *Harloff* facts.

73. See *Harloff*, 575 So. 2d at 1326.

74. See *Ausness*, *supra* note 52, at 553.

be reasonable and the meaning of reasonable changes over time.<sup>75</sup> The correlative rights doctrine, while generally more equitable, is difficult to apply in uncertain or changeable conditions.<sup>76</sup> Additionally, neither the correlative rights nor the American rule provides for obtaining additional water from distant water supplies by purchase or contract.<sup>77</sup>

### THE FLORIDA WATER RESOURCES ACT OF 1972

#### In General

As problems with the common-law water rights system became increasingly apparent, many states supplemented or replaced common-law rules for water allocation with a statutory system.<sup>78</sup> The Florida Legislature broke with the common law in 1972 when it enacted the Florida Water Resources Act (the Act).<sup>79</sup> Declaring that the waters of the State of Florida were among its basic resources,<sup>80</sup> the Legislature passed this Act, in pertinent part, to “provide for the management of water and related land resources; . . . promote the conservation, development, and proper utilization of surface and groundwater”; and “protect, maintain, and improve [water] quality.”<sup>81</sup> The Legislature expressed its clear intention that the newly created Water Management Districts (WMDs or Districts) were to have the lead role in the conservation, protection, management, and control of all state waters.<sup>82</sup> While primary authority was vested in the Department of Environmental Protection (DEP), this authority was to be delegated to the WMDs “to the greatest extent practicable.”<sup>83</sup>

In an effort to effectuate the purposes and policies of the Act, the DEP and the WMDs were required to create a state water use

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75. See MALONEY ET AL., *supra* note 25, at 57.

76. See Ausness, *supra* note 52, at 553.

77. See *id.*

78. See *id.* at 547.

79. 1972 Fla. Laws ch. 299 (codified as amended at FLA. STAT. §§ 373.012 to .63 (1995)).

80. See FLA. STAT. § 373.016(1) (1995).

81. FLA. STAT. §§ 373.016(2)(a), (b), (g), 403.021(2) (1995). Subsection (g) incorporates by reference the public policy set forth in § 403.021 of the Florida Air and Water Pollution Control Act.

82. See FLA. STAT. § 373.016(3) (1995).

83. *Id.*

plan.<sup>84</sup> In creating the plan, the DEP must consider, among other things: (1) “the attainment of the maximum reasonable-beneficial use of water”; (2) “the maximum economic development of water consistent with other uses”; (3) “the quantity of water available for application to a reasonable-beneficial use”; (4) “the prevention of wasteful [and] uneconomical . . . uses of water”; and (5) “the preservation and enhancement of the water quality of the state.”<sup>85</sup> The Act defines reasonable-beneficial use as “the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest.”<sup>86</sup> As stated by the Florida Supreme Court, the Act created a statewide and comprehensive framework for regulating, protecting, and permitting the consumptive uses of water.<sup>87</sup>

#### Groundwater Under the Act

The Legislature intended to include groundwater within the ambit of the Act. The Act defines “water” and “waters in the state” to include any waters percolating, standing, or flowing beneath the surface of the ground.<sup>88</sup> Having laid this definitional groundwork, the Act then subjects all waters in the state to regulation.<sup>89</sup> Additionally, the Act circumvents the common-law difficulties of different rules for percolating groundwater and underground streams by defining groundwater to mean “water beneath the surface of the ground, whether or not flowing in known or definite channels.”<sup>90</sup> Thus, WMDs have clear authority over groundwater.

In fact, the Act gives the WMDs broad authority over ground-

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84. *See id.* § 373.036.

85. *Id.* § 373.036(2)(a), (b), (d), (e), (g). In formulating the state water use plan, the DEP should also consider: (1) “the control of such waters for such purposes as environmental protection, drainage, flood control, and water storage”; (2) the current domestic use; and (3) the legislative intent as expressed in Florida Water Resources Act. FLA. STAT. § 373.036(2)(c), (f), (h).

86. *Id.* § 373.019(4).

87. *See Osceola County v. St. Johns River Water Management Dist.*, 504 So. 2d 385, 386 (Fla. 1987).

88. *See* FLA. STAT. § 373.019(8) (1995).

89. *See id.* § 373.023(1). “All waters in the state are subject to regulation under the provisions of this chapter unless specifically exempted by general or special law.” *Id.*

90. *Id.* § 373.019(9).

water supply in each of the five Districts.<sup>91</sup> This authority includes the power to buy or exchange water, distribute water to a user in exchange for no longer extracting groundwater, inject water into the ground, manage and control water for the beneficial use of persons or property within the District, and build any works necessary to achieve groundwater replenishment.<sup>92</sup> Moreover, WMDs are empowered to regulate groundwater levels<sup>93</sup> as well as regulate the use of groundwater through apportioning, limiting, rotating, or banning certain uses in order to obtain the most beneficial use of the water and to protect the public health.<sup>94</sup>

As the agency responsible for the administration of the Act at the state level,<sup>95</sup> DEP is charged with the responsibility of establishing priorities for the development of a computerized groundwater data base focusing on three factors: (1) areas prone to groundwater contamination, (2) areas directly connected with any confined aquifer used as a source for drinking water, and (3) areas dependent on a single source aquifer.<sup>96</sup> DEP is also responsible for identifying those areas where saltwater intrusion threatens freshwater resources, including groundwater.<sup>97</sup>

Additionally, each WMD is required to develop a "groundwater basin resource availability inventory."<sup>98</sup> The inventory must include a hydrogeologic study which defines the basin and its associated recharge area, areas deemed prone to overdraft from current or future use, and potential quantities of water which are available for consumptive uses.<sup>99</sup>

### Consumptive Use Permits

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91. *See id.* § 373.016(3). "A water management district may do any act necessary to replenish the groundwater of the district." *Id.* § 373.106(3).

92. *See id.* § 373.106(3)(a)–(f).

93. *See* FLA. STAT. §§ 373.042(2), .086(1) (1995).

94. *See id.* § 373.171(1)(b).

95. *See id.* § 373.026. "The department or its successor agency, shall be responsible for the administration of this chapter at the state level." *Id.*

96. *See id.* § 373.026(2)(b)(1)–(3).

97. *See id.* § 373.026(5). DEP is also directed to conduct research toward a weather modification program. *See id.* § 373.026(6).

98. FLA. STAT. § 373.0395 (1995). After completing its inventory, the DEP is to submit a copy to each affected municipality, county, and planning agency so that they may review it and prepare their local government comprehensive plans accordingly. *See id.*

99. *See id.* § 373.0395(1)–(3), (7).

One of the principal components of the Act is the consumptive use permit (CUP).<sup>100</sup> The Act empowers the WMDs to require CUPs for groundwater withdrawals and to impose reasonable conditions upon those permits as circumstances require.<sup>101</sup> The Act also requires permits for all uses existing prior to its enactment in order to continue to withdraw water.<sup>102</sup>

However, the necessity of CUPs for a given user, and the conditions of the permit are left to the discretion of the individual WMDs.<sup>103</sup> For example, only South Florida Water Management District (SOFWMD) regulates water use of less than 100,000 gallons per day (g/d).<sup>104</sup> Within the other WMDs, a permit is required only if a user exceeds a certain threshold of water use.<sup>105</sup> This threshold in-

100. *See id.* §§ 373.203 to .250. Consumptive use permits authorize the use of particular quantities of water deemed appropriate. However, no permits are required for domestic water consumption. *See id.* § 373.219(1).

101. *See* FLA. STAT. § 373.219 (1995).

102. *See id.* § 373.226(1). This requirement seems strange in light of the fact that the Legislature exempts artesian wells from the provisions of the CUP requirements unless the DEP can demonstrate that the uncontrolled flow from a well does not have a reasonable and beneficial use, thereby putting the onus on the DEP to determine which wells do and do not require CUPs. *See id.* § 373.209. The Act does not mandate the use of CUPs. *See id.* § 373.219.

103. *See id.* § 373.219. The *Florida Statutes* dictate:

(1) The governing board or the department may require such permits for consumptive use of water and may impose such reasonable conditions as are necessary to assure that such use is consistent with the overall objections of the district or department and is not harmful to the water resources of the area. However, no permit shall be required for domestic consumption of water by individual users.

(2) In the event that any person shall file a complaint with the governing board or the department that any other person is making a diversion, withdrawal, impoundment, or consumptive use of water not expressly exempted under the provisions of this chapter and without a permit to do so, the governing board or the department shall cause an investigation to be made, and if the facts stated in the complaint are verified the governing board or the department shall order the discontinuance of the use.

*Id.*

104. *See* FLA. ADMIN. CODE ANN. r. 40E-20.302 (1996).

105. *See id.* r. 40D-2.041(1). This rule provides:

(1) Unless expressly permitted by law or District rule, a Water Use Permit must be obtained from the District prior to withdrawal of water if any of the following thresholds are exceeded:

(a) Total withdrawal capacity from any source or combined sources is greater than or equal to 1,000,000 gallons per day (gpd).

(b) Annual average withdrawal from any source or combined sources is greater than or equal to 100,000 gpd.

cludes any one of the following: (1) a total withdrawal capacity of 1 mg/d,<sup>106</sup> (2) an annual average withdrawal equal to or exceeding 100,000 g/d,<sup>107</sup> or (3) a well having an outside diameter at the surface of six inches or more.<sup>108</sup> Thus, it is possible to have, in four of the five WMDs, a large number of groundwater users pumping up to 3.6 million gallons per year, without being regulated or monitored.

The Act imposes three conditions which must be considered before a CUP can be issued. First, the water withdrawn must be for a reasonable-beneficial use as defined by the Act.<sup>109</sup> Second, the use must not interfere with any legally existing use of the water.<sup>110</sup> Third, the proposed use must be consistent with the public interest.<sup>111</sup>

SWFWMD places the burden upon the applicant to show that its application meets the statutory criteria.<sup>112</sup> All applicants must

(c) Withdrawal is from a well having an outside diameter of 6 inches or more at the surface.

(d) Withdrawal is from a surface water body and the outside diameter of the withdrawal pipe or the sum of the outside diameters of the withdrawal pipes is 4 inches or greater.

(e) In addition to the thresholds set forth in (1)(a) through (1)(d) above, a permit is required within the Most Impacted Area (MIA) . . . when withdrawal is from wells having a cumulative outside diameter greater than 6 inches at the surface any of which wells is constructed after April 11, 1994. This paragraph (e) shall not apply to any proposed well less than 6 inches in diameter at the surface when it is of the same diameter or smaller than a well it replaces and an application to plug the replaced well in accordance with 40D-3.531 is filled with the application to construct the replacement well in accordance with 40D-3.041.

*Id.*

106. *See id.* r. 40D-2.041(1)(a).

Additionally, the Governing Board must approve a Water Use Permit if the annual average daily withdrawal equals or exceed 500,000 g/d. *See id.* r. 40D-2.041(2). The District may issue a general permit where the annual average daily withdrawal is less than 500,000 g/d and shall require a permit where there is evidence that a withdrawal may result in a significant adverse impact to existing water or land uses or the water resource. *See id.* r. 40D-2.041(3), (4).

107. *See id.* r. 40D-2.041(1)(b).

108. *See id.* r. 40D-2.041(1)(c). Within a Most Impacted Area, a permit is required for all wells with an outside diameter at the surface of four inches or more. *See id.* r. 40D-2.041(1)(e).

109. *See* FLA. STAT. § 373.223(1)(a) (1995).

110. *See id.* § 373.223(1)(b).

111. *See id.* § 373.223(1)(c).

112. *See* FLA. ADMIN. CODE ANN. r. 40D-2.301 (1996) (stating that applicants must demonstrate that "the water use is reasonable and beneficial, is in the public interest,

provide, *inter alia*, reasonable assurances that the use is necessary to fulfill a certain reasonable demand,<sup>113</sup> will not cause quantity or quality changes that adversely impact the resource,<sup>114</sup> will not cause water levels to drop below minimum established levels,<sup>115</sup> will not significantly induce saltwater intrusion or pollution into the aquifer,<sup>116</sup> and will not cause waste.<sup>117</sup> Furthermore the applicant must show that the use will utilize the lowest quality water the applicant is able to use,<sup>118</sup> will incorporate water conservation measures,<sup>119</sup> and will incorporate reuse measures to the greatest extent practicable.<sup>120</sup> Thus, the burden is squarely on the shoulders of each and every applicant to perform the necessary tests and research in order to secure a CUP. Intuitively, this appears to be a costly and time-consuming process with no guarantee that a permit will be granted or that the applicant will receive the amount of water requested.<sup>121</sup>

In addition to complying with the burdens of the application process, CUP applicants may also be competing with other applicants seeking to withdraw water from the same resource. In the case of competing applications to withdraw water from an inadequate resource, WMDs may “approve or modify the application which best serves the public interest.”<sup>122</sup> Preference is given to a renewal application over an initial application only if all other factors are equal.<sup>123</sup>

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and will not interfere with any existing legal use of water, by providing reasonable assurances” on various factors of the water use).

113. *See id.* r. 40D-2.301(1)(a).

114. *See id.* r. 40D-2.301(1)(b).

115. *See id.* r. 40D-2.301(1)(d).

116. *See id.* r. 40D-2.301(1)(f), (1)(g).

117. *See* FLA. ADMIN. CODE ANN. r. 40D-2.301(1)(m) (1996).

118. *See id.* r. 40D-2.301(1)(e).

119. *See id.* r. 40D-2.301(1)(k).

120. *See id.* r. 40D-2.301(1)(l). The applicant must provide other reasonable assurances, which include: the water use “[w]ill not adversely impact offsite land uses existing at the time of the application”; “[w]ill not adversely impact an existing legal withdrawal”; and that such water uses “[w]ill utilize local water resources to the greatest extent practicable.” *Id.* r. 40D-2.301(1)(h)–(j). Finally, a user must assure that the water use “[w]ill not otherwise be harmful to the water resources within the District.” *Id.* r. 40D-2.301(1)(n).

121. *See generally* Harloff v. City of Sarasota, 575 So. 2d 1324 (Fla. 2d Dist. Ct. App. 1991); *see also supra* notes 3–21 and accompanying text.

122. FLA. STAT. § 373.233(1) (Supp. 1996) (providing that applicants must establish the proposed water use is for a reasonable-beneficial use, will not interfere with any presently existing legal water use, and is consistent with the public interest).

123. *See id.* § 373.233(2); FLA. ADMIN. CODE ANN. r. 40D-2.311(2) (1996). The Code states:

An otherwise sufficient application is, therefore, subjected to the vagaries of an administrative determination as to what the public interest is and which competing use serves it best.

Permits may be granted for a period of up to twenty years,<sup>124</sup> although in practice the WMDs issue permits of much shorter duration.<sup>125</sup> For example, within SWFWMD, the duration of a permit will not be greater than six years if the application is for a new use which equals or exceeds 500,000 g/d, the District determines that there is potential for serious adverse impacts, or a renewal permit significantly increases the amount of water used.<sup>126</sup> The duration of a permit will not be greater than ten years if the application is for a new use under 500,000 g/d, the permit is for a renewal which contains an effective mitigation plan, or does not significantly increase water use.<sup>127</sup>

Once a CUP as been issued by a WMD, the permits are also subject to the conditions of the CUP itself.<sup>128</sup> Standard conditions of all permits issued by SWFWMD give the District the right (1) to alter the permit pursuant to the District's declaration of a water shortage, (2) to reasonable access to inspect the permitted facility, (3) to stop withdrawals from an aquifer if it drops below minimum levels established by the District, and (4) to establish special regulations in Water-Use Caution Areas.<sup>129</sup> Other conditions on the per-

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(1) If two or more applications for permits, which otherwise comply with these rules and with Governing Board orders, are pending for a quantity of water that is inadequate for both or all, or which for any other reason are in conflict, the Governing Board shall have the right to approve or modify the applications in a manner which best serves the public interest as determined by the Governing Board.

(2) In the event that two or more competing applications qualify equally under the provisions of subsection (1), the Governing Board will give preference to a renewal application over an initial application.

*Id.* r. 40D-2.311(1), (2).

124. See FLA. STAT. § 373.236(1) (Supp. 1996). Municipalities are eligible for 50-year permits. See *id.* § 373.236(2). This provision allows for other governmental bodies, public works, and/or public service corporations to be eligible for a 50-year permit "where such a period is required to provide for the retirement of bonds for the construction of waterworks and waste disposal facilities." *Id.*; see also FLA. ADMIN. CODE ANN. r. 40D-2.321(4) (1996).

125. See Ausness, *supra* note 52, at 559.

126. FLA. ADMIN. CODE ANN. r. 40D-2.321(2) (1996).

127. See *id.* r. 40D-2.321(3).

128. See *id.* r. 40D-2.381.

129. See *id.* r. 40D-2.381(3)(d), (f), (i), (k). A Water-Use Caution Area arises when the WMD determines that regional action is necessary to address cumulative groundwa-

mit require the permittee (1) to practice water conservation in order to decrease waste and reduce runoff, and (2) to mitigate to the satisfaction of the District any adverse impacts on existing uses or impacts on environmental features which result from the withdrawal of groundwater.<sup>130</sup>

A CUP is subject to revocation at any time if, after notice and a hearing, the District should determine that the permitted use is no longer reasonable, beneficial, or in the public interest.<sup>131</sup> In determining whether to revoke a permit, the WMD is required to consider materially false statements made to the WMD, willful violations of the conditions of the permit, unresolved violations of the conditions of the permit, nonuse of the water supply allowed by the permit for more than two years, or significant adverse impacts on the water resource or to existing legal users which the permittee is unable to mitigate to the satisfaction of the WMD.<sup>132</sup>

Persons obtaining a CUP are required to notify the WMD within thirty days in the event of the sale of permitted water withdrawal facilities.<sup>133</sup> The new owner must apply to the WMD for a transfer of the permit or for a new permit.<sup>134</sup> However, the WMD is on

ter withdrawals which may have an adverse impact on the water and related land resources. *See id.* r. 40D-2.801.

130. *See id.* r. 40D-2.381(j), (l), (m).

131. *See* FLA. ADMIN. CODE ANN. r. 40D-2.341(1) (1996).

132. *See id.* r. 40D-2.341(2)(a)-(e); *see also* FLA. STAT. § 373.243 (1995). The statute reads:

The governing board or the department may revoke a permit as follows:

(1) For any material false statement in an application to continue, initiate, or modify a use, or for any material false statement in any report or statement of fact required of the user pursuant to the provisions of this chapter, the governing board or the department may revoke the user's permit, in whole or in part, permanently.

(2) For wilful violation of the conditions of the permit, the governing board or the department may permanently or temporarily revoke the permit, in whole or in part.

*Id.* § 373.243(1)-(2).

133. *See* FLA. ADMIN. CODE ANN. r. 40D-2.351(1) (1996). In the situation where a permit has been issued to a party whose legal control or ownership of the permitted water withdrawal facilities subsequently expires or terminates, this subsequent party "controlling the permitted water withdrawal facilities may apply to transfer the permit to himself or herself up until the renewal date of the transferor's permit notwithstanding the provisions of Chapter 40D-0.381(1) . . . [of the Florida Administrative Code]." *Id.* r. 40D-2.351(1). "The District will transfer the permit provided the source, use and withdrawal quantities remain the same, [whereupon all terms and conditions of the permit shall become binding on the transferee." *Id.*

134. *Id.* r. 40D-2.351(1). In fact, a subsequent party "controlling the permitted with-

ly obligated to transfer the permit if it is for the same source, use, and withdrawal quantities as the previous owner.<sup>135</sup> Thus, the permit is attached to the permitted facility and is not the property of the facility's owner.

The Act allows permits for the interdistrict transfer of groundwater.<sup>136</sup> This process involves the withdrawal of groundwater from one district for use within the boundaries of another district.<sup>137</sup> In addition to the normal permitting procedure, the WMD from which the groundwater is to be withdrawn must determine that the application is consistent with the public interest.<sup>138</sup> This determination must consider the projected population as well as other evidence material to the future needs of the withdrawal area.<sup>139</sup> Furthermore, the District from which the groundwater is to be withdrawn must give notice to the District where the water is to be used, request comments on the application and the future needs of the proposed use area, issue a notice of intended agency action, and receive comments from any interested person prior to issuing a final agency order.<sup>140</sup>

#### The *Harloff* Decision Under the Act

Mr. Harloff applied for a CUP requesting daily withdrawals substantially in excess of the threshold amount.<sup>141</sup> Thus, his application required him to establish that the proposed use of water was for a reasonable-beneficial use, would not interfere with a legal existing use, and was in the public interest as established by the Act and SWFWMD.<sup>142</sup> In issuing the permit to Mr. Harloff at an amount significantly lower than requested, SWFWMD concluded that the applicant failed to establish that the desired use would not have an adverse effect on Sarasota's existing legal use.<sup>143</sup> The Sec

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drawal facilities will be in violation for making any withdrawals" until a new permit is obtained or the permit transfer is approved. *Id.* r. 40D-2.351(2).

135. *See id.* r. 40D-2.351(1).

136. *See* FLA. STAT. § 373.2295 (Supp. 1996).

137. *See id.* § 373.2295(1).

138. *See id.* § 373.2295(4).

139. *See id.*

140. *See id.* § 373.2295(5), (6).

141. *See supra* notes 8–22, 103–08 and accompanying text.

142. *See supra* notes 109–21 and accompanying text.

143. *See Harloff v. City of Sarasota*, 575 So. 2d 1324, 1327 (Fla. 2d Dist. Ct. App.

ond District Court of Appeal deferred to SWFWMD's legal conclusions.<sup>144</sup> The court noted that the City was under no obligation to prove that it would be harmed by the proposed use.<sup>145</sup> Rather, Mr. Harloff had the burden of proving no adverse impacts to the City by his use.<sup>146</sup> Thus, SWFWMD only permitted Mr. Harloff to withdraw a greatly reduced quantity of water than he had originally requested. The record does not reveal whether the amount finally permitted was sufficient to allow the proposed expansion or whether the time and expense of attempting to obtain the permit was for naught. The District protected the City of Sarasota's wellfield, but at what cost to Mr. Harloff, the local economy of Manatee County, or neighboring farmers' future plans to expand their own operations?

The outcome in *Harloff* clearly identifies some of the shortcomings of the Act. Mr. Harloff's ability to obtain certain specific water rights or potential water rights is tremendously difficult to ascertain and seems inherently susceptible to a certain amount of politics. Each WMD has broad discretion in deciding whether to grant an applicant a CUP. The Act and its supporting administrative regulations contain numerous subjective words and phrases such as "reasonable assurances," "reasonable demand," "consistent with the public interest," "best serves the public interest," and "to the satis-

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1991). After Mr. Harloff applied for a consumptive permit, the city requested an administrative hearing to prevent the District from issuing a permit. *See id.* at 1326. The hearing officer made a recommendation that Mr. Harloff should receive the entire allowance of water that was requested. *See id.* at 1327. The District affirmed the hearing officer's findings of fact; however, it found the officer erred as a matter of law. *See id.*

144. The court recognized the District's broad powers granting it the ability to reject the hearing officer's conclusions of law where penalties are not involved. *See id.* at 1325 (citing *Hunter v. Department of Prof'l Regulation*, 458 So. 2d 842 (Fla. 1984) and *MacPherson v. School Bd.*, 505 So. 2d 682 (Fla. 3d Dist. Ct. App. 1987)). Then, the Second District discussed the policy reasoning behind this ruling, stating:

[T]here is merit in placing the power to interpret this narrow area of the law in the hands of the District's Board. The District is responsible for implementation of the state water plan . . . . If that plan is to be fairly, consistently, and uniformly applied while interpreting such complex concepts as "reasonable-beneficial use" and "interference," permits must be carefully reviewed by a single experienced governmental body that is responsible for that function and responsive to the electorate.

*Harloff*, 575 So. 2d at 1327.

145. *See id.*

146. *See id.* In fact, Mr. Harloff presented evidence indicating that neither party had conducted an analysis demonstrating the extent of how his proposed water use would additionally impact the wellfield. *See id.* The court later remarked that this evidence "was quite damaging to his [Mr. Harloff's] case." *Id.* at 1328.

faction of the district.” With such broad discretion given to the WMDs, how can a potential applicant make an accurate assessment of the chances of receiving a CUP?

Furthermore, an application for, and subsequent decision on, a CUP cannot be viewed in a vacuum. For example, Mr. Harloff’s decision to apply for a CUP to increase his groundwater use was surely part of an overall strategy to expand his farming operations. Such a strategy must have also included decisions regarding capital investment in necessary equipment and decisions on the size of the workforce, among other things. Given the expense and uncertainties of the CUP application process, how can such long term decisions be logically and rationally made?

Finally, as the district court noted, the City may soon need to apply for a larger CUP in order to fulfill its future water needs.<sup>147</sup> At the very least, the City will eventually have to renew its existing permit. In either event, the balance of power will presumably have shifted to Mr. Harloff and the burden will fall upon the City to show that its new permit will not interfere with Mr. Harloff’s legal existing use. There are three potential outcomes from this event. First, SWFWMD might grant a permit depending on whether the City meets its burden, along with all other statutory and regulatory requirements. This outcome would be the optimal scenario. A second potential outcome is that the City would be unable to meet its burden and would be issued a permit for less than the amount of groundwater it requested. Under this scenario, SWFWMD would force the City to curtail growth or to ration its water allotment. Last, SWFWMD might determine that the City’s use is more consistent with or better serves the public interest than another user or group of users, despite the City’s inability to meet its burden. Under this scenario, the SWFWMD would modify a user’s or group of users’ CUPs downward to allow the City to withdraw the groundwater it needs. The Act, therefore, creates, or at least engenders, a great deal of uncertainty about both obtaining and maintaining specific, secure water rights.

An essential purpose of any system which allocates water rights must be to encourage the highest and best use of the resource.<sup>148</sup> In order to accomplish this objective, the system must specifically allo-

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147. *See id.*

148. *See Ausness, supra* note 52, at 576.

cate water rights so the user knows what rights he or she has.<sup>149</sup> WMDs must also secure water rights so that the user knows what he or she has in relation to other users and is able to make rational decisions about the use or non-use of the right.<sup>150</sup> On the other hand, the allocation system must remain flexible enough to reallocate water from less productive to more productive uses.<sup>151</sup> Any system devised to allocate water rights among competing users should engender a sense of fairness, a sense that reasonable expectations will not be frustrated, and a sense of freedom from arbitrary treatment or arbitrary decisionmaking.<sup>152</sup> In addition to the problems noted above, this Article identifies three main problems with the Eastern states' current systems (including Florida's) of water rights allocation which frustrate these essential purposes: exempted users, short term permits, and water rights transfers.<sup>153</sup>

In Florida, the Act exempts self-supplied domestic users from the permitting requirements.<sup>154</sup> Thus, all persons who draw their own groundwater for the household purposes of drinking, bathing, cooking, or sanitation need not acquire a CUP from their local District for that use.<sup>155</sup> While such a use may not seem significant, in 1990 self-supplied domestic withdrawals of groundwater amounted to 299 mg/d or six percent of all groundwater withdrawals.<sup>156</sup> In addition to this statutorily-exempted class of users, only one WMD requires permits for persons withdrawing less than 100,000 g/d.<sup>157</sup> WMDs grant these exemptions because the cumulative impact of these users upon the groundwater is insufficient to warrant the cost of regulating the use.<sup>158</sup>

The problem with exempting certain groups of users is that a bifurcated system is created that gives preferential treatment to the

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149. *See id.*

150. *See id.*

151. *See id.*

152. *See id.*

153. *See Ausness, supra* note 52, at 577-89.

154. *See supra* note 102 and accompanying text.

155. *See* FLA. STAT. § 373.019(6) (1995). All other uses of water are not considered to fit within the definition of domestic use. *See id.* The Legislature amended section 373.19 in 1996 by adding the definition for "[i]ndependent scientific peer review." *See* 1996 Fla. Laws ch. 96-339.

156. *See* MARELLA, *supra* note 25, at 6.

157. *See* FLA. ADMIN. CODE ANN. r. 40E-20.302 (1996).

158. *See Ausness, supra* note 52, at 578.

exempted users.<sup>159</sup> Under such a system, during water shortages exempted users may continue to use or even increase water consumption and withdrawals at the same time that permitted users may be required to reduce their usage.<sup>160</sup> Such an inequitable situation subverts public and user confidence in the entire permit system.<sup>161</sup> Moreover, by its very nature, exemption removes the use from the administrative scrutiny of reasonable-beneficial use consistent with the public interest.

Short-term permits constitute another problem identified with our current system. As noted earlier, the WMDs typically limit the duration of permits to much shorter periods than allowed by the Act.<sup>162</sup> WMDs grant short-term permits because they allow periodic reallocation of the groundwater to a more productive use or a use more in the public interest.<sup>163</sup> Short-term permits also allow WMDs to correct mistakes and make better decisions based on new information.<sup>164</sup>

However, short-term permits have deleterious consequences from both an economic and an equitable standpoint.<sup>165</sup> The District may decide not to renew a permit because there are no guarantees given to users.<sup>166</sup> The user whose renewal permit has either been denied or whose use has been reallocated to another use does not receive any compensation, as an expired permit has no value.<sup>167</sup> This uncertainty creates concern about the long-term availability of water and discourages capital investment in industries which require groundwater because short-term permits rarely provide sufficient time to amortize the users investment.<sup>168</sup> Moreover, users may find long-term financing difficult to find or prohibitively expensive to obtain if repayment is dependent upon the long-term availability of

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159. *See id.*

160. *See id.*

161. *See id.*

162. *See supra* notes 124–27 and accompanying text.

163. *See Ausness, supra* note 52, at 584–85.

164. *See id.* at 585.

165. *See id.*

166. Note, however, the *Florida Administrative Code* provides that renewal permit applications will be given preference over initial applications, all other factors being equal. *See* FLA. ADMIN. CODE ANN. r. 40D-2.311(2) (1996); *see also supra* notes 122–23 and accompanying text.

167. *See Ausness, supra* note 52, at 585.

168. *See id.*

water.<sup>169</sup>

The inability of users to transfer their water rights causes a further problem identified with our current water allocation system: redistribution of water from one jurisdiction to another.<sup>170</sup> This inability to transfer water rights prevents the formation of markets for water rights.<sup>171</sup> Under the Act, the CUP attaches to the water-using facility and does not become a vested property right of the facility owner.<sup>172</sup> However, water rights which are tied to a particular facility inevitably lead to inefficiencies and waste.<sup>173</sup> The absence of water markets, combined with the “use it or lose it” philosophy of the Act,<sup>174</sup> provides disincentives to conserving water.<sup>175</sup> Under our current system, a user must utilize his entire allotment over a two-year period or face having the permit modified downward or revoked.<sup>176</sup> This situation is analogous to the governmental spending frenzy at the end of every fiscal year. Conversely, water markets enable water users to trade water among themselves, which leads to greater and more efficient water conservation.<sup>177</sup>

The lack of water markets also leads to inflexibility in meeting changing water needs and conditions.<sup>178</sup> The needs of agricultural, domestic, and commercial-industrial users change over time and demand flexibility in water allocation. Moreover, droughts and other changes in water availability increase the need for flexibility. Trading within water markets permits conserved water to flow to more economically valuable uses and to satisfy demand at the lowest cost.<sup>179</sup>

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169. *See id.*

170. *See id.* at 587–89; Thompson, *supra* note 23, at 673–79.

171. *See* Thompson, *supra* note 23, at 676–79.

172. *See supra* notes 133–35 and accompanying text.

173. *See* Thompson, *supra* note 23, at 704–08.

174. *See* FLA. ADMIN. CODE ANN. r. 40D-2.341(2)(d) (1996). The regulation states: In determining whether the use is not reasonable, beneficial or in the public interest, the Governing Board shall consider . . . [n]onuse of the water supply allowed by the permit for a period of 2 years or more unless the user can prove that his nonuse was due to extreme hardship caused by factors beyond his control.

*Id.*

175. *See* Thompson, *supra* note 23, at 704–08.

176. *See supra* note 174 and accompanying text.

177. *See* Thompson, *supra* note 23, at 701–03.

178. *See id.* at 676–79.

179. *See id.* at 702–03.

At present, the WMD leaves a user who is denied adequate water virtually without any options if his or her plan is water-dependent. With transferable water rights, some users facing an inadequate supply of water will always value water more than other users. Water markets decrease economic loss from water shortfalls.<sup>180</sup> Thus, making water rights transferable would increase the overall efficiency of our water allocation system.

To be sure, the Act provides a vast improvement over the common-law groundwater rules and an important step in the evolution of Florida's water rights allocation system. Nevertheless, further improvements and refinements are necessary if the system is to continue to evolve.

### CAPACITY SHARING

#### Generally

The concept of capacity sharing was initially proposed as a system for allocating water stored in surface reservoirs. Capacity sharing allocates a percentage share of a reservoir's capacity, as distinguished from its contents, to a user or user group plus a percentage share of the net stream inflows (net inflows) into the reservoir.<sup>181</sup> Net inflows per time period equal inflows minus evaporation and seepage.<sup>182</sup> Capacity sharing acts as if each user owns a small reservoir on a little stream of his or her own, with the right to make withdrawals from his or her own particular reservoir with minimum interference from water authorities or other users.<sup>183</sup> The contents of the individual reservoir cannot exceed its own capacity or become negative.<sup>184</sup> In the event that a capacity shareholder empties his or her share, his or her consumption is limited to future net inflows plus any water obtained legally from other shareholders.<sup>185</sup>

Capacity sharing utilizes the fact that reservoir capacity, unlike a reservoir's contents, is both divisible and fixed, thus making the

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180. *See id.*

181. Norman J. Dudley & Warren F. Musgrave, *Capacity Sharing of Water Reservoirs*, 24 WATER RESERVOIR RES. 649, 650 (1988).

182. *See id.*

183. *See* Norman J. Dudley, *Urban Capacity Sharing — An Innovative Property Right for Maturing Water Economies*, 30 NAT. RESOURCES J. 381, 386 (1990).

184. *See id.*

185. *See id.* at 389.

application of property rights relatively simple.<sup>186</sup> The novelty of capacity sharing with respect to its structure of property rights is that private property rights attach directly to the capacity of the reservoirs and the net inflows to the reservoir, but only indirectly to the water stored in the reservoir at any given moment.<sup>187</sup> Thus, capacity sharing makes property rights of users explicit, enforceable, exclusive, and transferable (i.e. non-attenuated); yet attaches those property rights directly to the capacity of and inflow to the reservoir, rather than to the water stored at any one time.<sup>188</sup>

Norman J. Dudley and Warren F. Musgrave, the original proponents of capacity sharing, provided the following example:

To illustrate the fundamentals of reservoir capacity sharing as envisaged in this paper, first assume that the single reservoir in question is cube shaped. Imagine that vertical watertight partitions are inserted into this cube . . . dividing the cube into nine equal-sized cells. Thus the plan or birds-eye view of the reservoir would show nine equal-sized squares. Each of nine users would be allocated exclusive use of a cell, able to withdraw from it over time as wished, and each receiving an equal share (one-ninth) of net inflows to the reservoir unless the relevant cell was too full to take their net inflow share. In the latter case, the net inflow in excess of that required to fill the cell would be lost to that user.<sup>189</sup>

Capacity sharing is also similar to a bank. A bank will not allow a user to incur a negative balance, nor will its insurance cover deposits in excess of the maximum amount allowed. However, unlike a bank, the user can not control the amount and timing of the deposits into the account.<sup>190</sup>

Dudley and Musgrave performed economic analyses which indicated that the accumulation of surplus “seems to be an unavoidable by-product of capacity sharing with emphasis on individual user freedom.”<sup>191</sup> A capacity sharing system stores all surplus accumulations and excess net inflows in a separate fund and periodically reallocates that surplus across user groups, excluding those users whose

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186. *See id.* at 385.

187. *See* Dudley, *supra* note 183, at 385.

188. *See id.*

189. Dudley & Musgrave, *supra* note 181, at 650.

190. *See id.*

191. *See id.* at 652.

cells are already full.<sup>192</sup>

As is typical with our current system of water allocation, water meters record the amount of water withdrawn under capacity sharing.<sup>193</sup> These records are read periodically, and entered into a computer system which already contains information on the reservoir system.<sup>194</sup> The computer then calculates the new contents of the users' capacity by adding the users' share of net inflows to their previous contents and subtracting the metered usage.<sup>195</sup> The capacity sharing system could then establish penalties for overdrawing the users' capacity, which would be set at such a level so as to prevent or seriously curtail overdrafts.<sup>196</sup>

Under capacity sharing, the capacity share owners, rather than the water authority, perform demand management.<sup>197</sup> With capacity sharing each user has secure long-term title to his or her percentage of capacity and net inflows. This secure title gives users with varying degrees of risk aversion the flexibility to manage their own individual sub-systems in accordance with their specific stability requirements.<sup>198</sup>

#### Application of Capacity Sharing to Groundwater

It is fairly easy to conceptualize capacity sharing as it applies to surface reservoirs. Fortunately, surface reservoirs are similar enough to groundwater reservoirs for the application of capacity sharing to groundwater. The Florida Water Resources Act requires the WMDs establish minimum aquifer levels.<sup>199</sup> These established minimum levels can serve as the "bottom" of the reservoir, or the level at which the reservoir is "empty." In the alternative, the level of groundwater at which saltwater intrusion becomes unacceptable could also serve as the reservoir's empty point. Furthermore, a WMD need not establish the top of the aquifer as the upper limit of the reservoir. Instead, the District could simply provide that a cer-

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192. *See id.* at 651.

193. *See id.*

194. *See* Dudley, *supra* note 183, at 386.

195. *See id.*

196. *See id.* at 386–87.

197. *See id.* at 387.

198. Dudley & Musgrave, *supra* note 181, at 652.

199. *See supra* notes 88–99 and accompanying text.

tain, specific amount over and above the amount established as the “bottom” of the reservoir equals the capacity of the aquifer/reservoir. In this manner, the WMD would have a margin of error within the reservoir in which to store excess inflows and to hold water in abeyance in case of emergency.

Net inflows for groundwater can simply be calculated as a function of the rainfall and any other water supplied to known aquifer recharge areas. Calculating the net inflows could actually be less difficult for a groundwater reservoir as there is less need to account for evaporation and seepage. Thus, capacity sharing is readily adapted to groundwater.

#### Allocation of Capacity Shares

The District may allocate capacity shares at either a macro or a micro level. Thus, shares may be allocated to large user groups that would, in turn, distribute shares to users within the group. Alternatively, the District could allocate shares to either individuals or to a combination of groups and individuals as is the current practice under the Act.<sup>200</sup>

Water authorities in Florida are aware of how the different user categories are utilizing the groundwater.<sup>201</sup> This knowledge, combined with the known limits of the aquifers will allow the WMDs to formulate appropriate allocations which best serve the needs of the users while allowing the groundwater reservoirs to be protected. Initially, the District could make bulk allocations to agricultural irrigation, public supply, self-supply commercial/industrial, self-supply domestic, and thermo-electric (if necessary) users. In addition, bulk allocations should also be made to public welfare/environmental “users” in order to protect wetlands and surface water levels. The District could also make another bulk allocation to a “bank” which could serve as an extra source of groundwater in times of emergencies. During the initial allocation of shares, all legal existing uses would presumptively be entitled to capacity shares.

#### Does Capacity Sharing Address the Shortcomings Identified

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200. *See supra* notes 100–40 and accompanying text. Under the Act, the large user groups permitted are the public supply facilities, whereas other uses are generally permitted on an individual basis. *See* FLA. STAT. §§ 373.106, .117, .118, & .213 to .245.

201. *See supra* notes 30–31 and accompanying text.

with the Act?

The concept of capacity sharing deals effectively with the problems of exempted users, short-term permits, and non-transferability of water rights previously identified with the Act.<sup>202</sup> First, capacity sharing does not exempt users from the system. The WMD allocates to each user or user group a specific percentage of the reservoirs capacity and net inflows until the entire capacity of the reservoir is allocated. As a result, this allocation also takes small users into consideration. Certainly there is some point at which a use does not warrant the cost of regulation. However, by initially allocating a small percentage of the reservoir's capacity, or by having a special fund in which excess inflows are stored, a WMD may accumulate water to be used by the small user. Thus, capacity sharing prevents the problem of bifurcation of the water rights system and treats all users equally.

Second, the capacity sharing system provides secure tenure in the water rights which are relatively unaffected by intervention from other users. This system grants users or user groups these long-term rights in a specific percentage of reservoir storage as well as a specific percentage of the net inflows into the reservoir. Such long-term security encourages efficient and rational long-term planning decisions which cannot be disturbed without sufficient compensation to the user. This long-term control allows a water user to take into account the full opportunity costs of the water stored in the inventory.<sup>203</sup> In other words, the user makes efficient decisions about water use based upon the value of the water to the user at any given point, in addition to the value of the water to the user in all uses open to the user through time.<sup>204</sup>

Furthermore, capacity sharing still allows for the protection provided by short-term permits, the reallocation of water to more productive uses, and the utilization of new information. In the event that a WMD determines that a use is no longer in the public interest or no longer the most productive use of the water, the user's allocation may be "condemned" in the same manner as real property. In this manner, the user whose capacity share is being condemned

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202. See *supra* notes 145–80 and accompanying text.

203. See Dudley & Musgrave, *supra* note 181, at 651.

204. See *id.*

receives the fair market value of his share of the capacity and net inflows.

Third, capacity sharing grants users the transferability of water rights and establishes water markets. Within these water markets, the users may trade water itself in the short term or trade capacity shares or shares of net inflows in the long term.<sup>205</sup> Because each capacity shareholder has secure long-term rights to his or her water and is presumably aware of his or her long and short term needs, each is in the position to decide the amount of water they wish to buy or sell. Water markets lead to the most efficient use of the groundwater resource and supply natural incentives to conserve the water. The sound, non-attenuated property rights nature of capacity sharing provides a solid basis for such water markets.

To provide a degree of protection to third parties, WMDs may subject water rights transfers to agency regulation or approval. WMDs also could limit water rights transfers within user groups. For example, agricultural users could only trade in the water markets with other agricultural users. Although necessary, such user group restrictions would diminish the efficiency of the market.

#### Other Advantages to Capacity Sharing

In addition to addressing the weaknesses of the Act as described above, capacity sharing offers several other advantages. First, the Act subjects each and every person desiring a CUP to the time and expense of the CUP process without any assurance that his or her expectations will be satisfactorily met. Permit renewals require the repetition of this time and expense whenever the permit is scheduled to be renewed. Further, the permit holder must take into account new CUP applications to challenge other would-be users that might threaten the permittee's use. This process is repeated for each permit applicant and each permit holder. However, under capacity sharing, the WMD determines initially on a large scale how much water is available for the safe use of the aquifer, and makes periodic adjustments as necessary. Then, the WMD makes a determination on how to allocate the shares of the aquifer's capacity in an appropriate fashion. Once these two decisions are made, the majority of the work is finished. Thus, society as a whole bears the time and

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205. See Dudley, *supra* note 183, at 388.

expense of these determinations. Any user or user group desiring a capacity share may either apply to the WMD or, if all of the shares have been allocated, purchase the desired amount of water in the water market. As noted above, all legal existing uses of groundwater would be entitled to capacity shares.

Capacity sharing offers another advantage: the framework for implementing the capacity sharing system already exists. The Act and its supporting regulations have created the WMDs to oversee the entire system, mandated the acquisition of the necessary information upon which the allocation determinations may be made, and provided the mechanism by which water rights transfers could be regulated.<sup>206</sup> Thus, the implementation of capacity sharing would not entail the high cost of starting from “ground zero.”

#### *Harloff and Capacity Sharing*

In all likelihood, capacity sharing would not have forced Mr. Harloff to resort to the court system. This premise can best be explored by reexamining the basic facts of the case. Mr. Harloff had a large farming operation which he desired to expand.<sup>207</sup> The proposed expansion would require Mr. Harloff to use more water than he currently had the rights to use. With respect to the proposed expansion, capacity sharing (as compared to the Act), greatly simplifies Mr. Harloff's decisionmaking process. Under the Act, Mr. Harloff was confronted with a great deal of uncertainty concerning his application for a CUP.<sup>208</sup> Even after investing a considerable amount of time, effort, and money into the application process, he had no assurance that he could meet all of the conditions of the permit. He also had no assurance that, even if he met all permit conditions, that the permit would be granted, and no assurance that, if granted a permit, he would retain it long enough to realize any benefit from his investment. Only after Mr. Harloff had completed the application process and only after he felt that his application was unfairly limited could he then make a rational decision as to his alternatives. Unfortunately, the Act resulted in leaving Mr. Harloff's best alternative to fight the decision in court.

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206. *See supra* notes 78–99 and accompanying text.

207. *See supra* notes 3–22 and accompanying text.

208. *See supra* notes 142–47 and accompanying text.

In contrast, under capacity sharing Mr. Harloff could determine in the early planning stages and with a minimum of time and effort whether or not the necessary water would be available to irrigate the proposed expansion. He could easily determine whether there were unallocated shares available from the WMD for agricultural users as well as the availability and fair market value of the desired quantity of water within the water market. Mr. Harloff could then balance these considerations against other options such as the implementation of a more efficient irrigation system that would increase his yield using the same amount of water. Alternatively, Mr. Harloff could downsize his proposed expansion or simply decide not to expand at all. Thus, capacity sharing provides the user with better opportunities to make long-term planning decisions than under the Act as it now exists.

#### *CONCLUSION*

In light of the current and projected groundwater use in Florida, it seems inevitable that conflicts between competing groundwater users will occur. Although the Florida Water Resources Act of 1972 is a better system for allocating scarce water resources than the common-law system it replaced, many problems still exist. The Act is insufficient to equitably deal with the conflicts which are certain to arise. Furthermore, the deficiencies of the Act foster use inefficiency, disincentives to conserve water, and a lack of user confidence in the overall system.

Capacity sharing was introduced as a novel approach to allocating water rights. It provides specific, secure tenure rights to a percentage share of the capacity of a reservoir plus a percentage share of the net inflows into the reservoir. As a non-attenuated property right, capacity sharing provides an ideal basis for the formation of water markets. These water markets can allow for much needed flexibility to water allocation and will enhance greater efficiency and conservation in water use decisions. Given the current state of Florida's groundwater allocation system, capacity sharing is the next logical step in Florida's evolving water economy.