

TECHNICAL PUBLICATION SJ2006-2D

**ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
DISTRICT WATER SUPPLY PLAN
2005**

**FOURTH ADDENDUM
MAY 12, 2009**



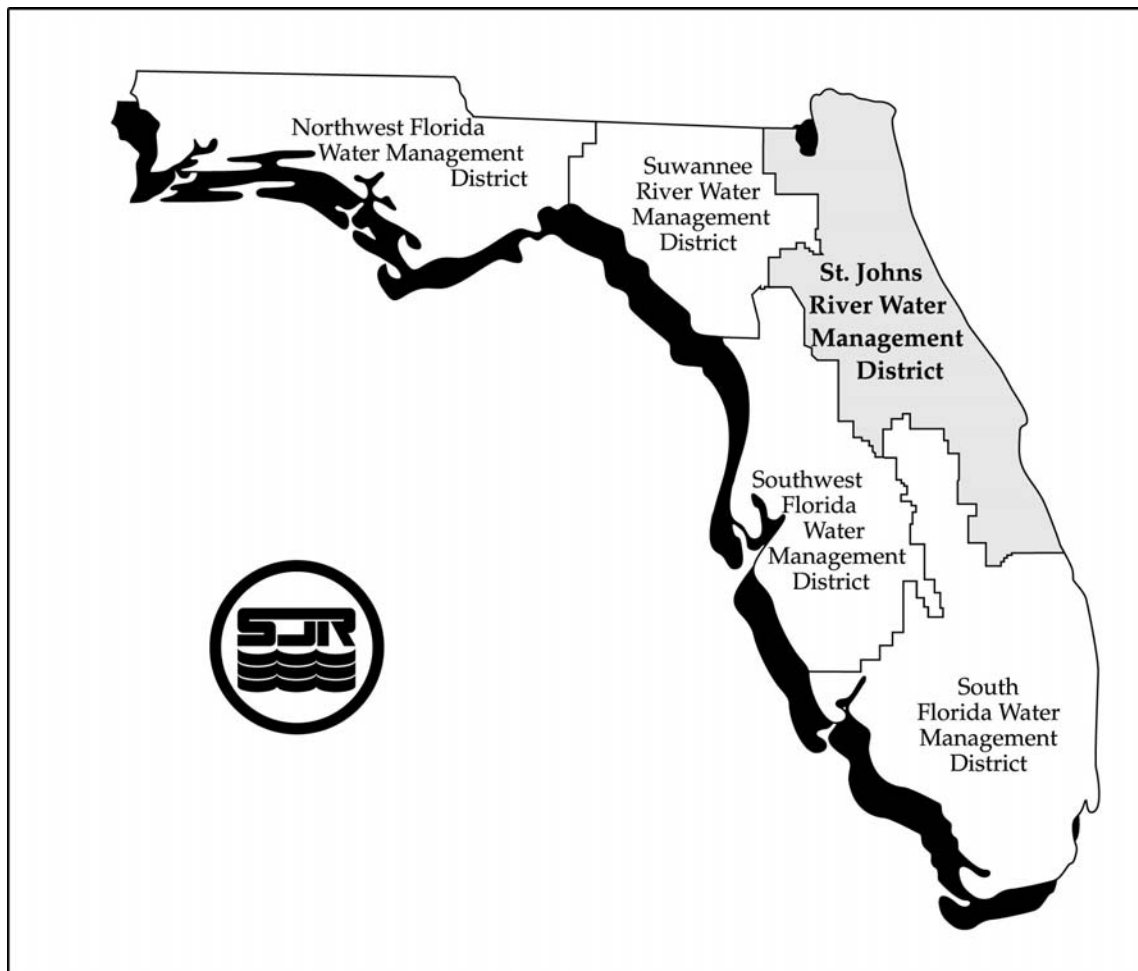
Technical Publication SJ2006-2D

St. Johns River Water Management District
District Water Supply Plan
2005

Fourth Addendum
May 12, 2009

St. Johns River Water Management District
Palatka, Florida

2009



The St. Johns River Water Management District (SJRWMD) was created by the Florida Legislature in 1972 to be one of five water management districts in Florida. It includes all or part of 18 counties in northeast Florida. The mission of SJRWMD is to ensure the sustainable use and protection of water resources for the benefit of the people of the District and the state of Florida. SJRWMD accomplishes its mission through regulation; applied research; assistance to federal, state, and local governments; operation and maintenance of water control works; and land acquisition and management.

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DISTRICT WATER SUPPLY PLAN

2005

FOURTH ADDENDUM

MAY 12, 2009

The St. Johns River Water Management District (SJRWMD) approved its *District Water Supply Plan 2005 (DWSP 2005)* on February 7, 2006. *DWSP 2005* has been published by SJRWMD as Technical Publication SJ2006-2. The SJRWMD Governing Board approved an addendum (first addendum) to *DWSP 2005* on October 10, 2006. A second addendum to *DWSP 2005* was approved on December 11, 2007, and a third addendum to *DWSP 2005* was approved on May 13, 2008. Except as described below, this fourth addendum to *DWSP 2005* incorporates by reference *DWSP 2005*. It has been prepared for the purposes of adding an expanded description of the role of water conservation and the use of reclaimed water in meeting projected water demands, removing four water supply development projects, identifying 16 completed water supply development projects, and refining descriptions of water supply development projects. As a result and as set forth below, the fourth addendum supersedes the water supply development project options described in Technical Publication SJ2006-2 and in the first, second, and third addenda. The revised information contained within this fourth addendum is: (1) required for SJRWMD's Water Protection and Sustainability Program; and (2) essential in SJRWMD's efforts to develop technical assistance documents for local governments to use in updating their comprehensive plans to address water supply issues, including the identification of alternative and traditional water supply projects necessary for meeting the water supply needs within their jurisdictions. This fourth addendum to *DWSP 2005* supersedes all previous addenda. Following are enumerated changes to *DWSP 2005* associated with this fourth addendum.

Amendment to Executive Summary: Replacement of the list of *DWSP 2005* components on page v of the Executive Summary with the following list:

- A water conservation component
- A minimum flows and levels component
- A water supply development component
- A water resource development component

Amendment to Introduction chapter: Replacement of the list of *DWSP 2005* components on page 1 of the Introduction chapter with the following list:

- A water conservation component
- A minimum flows and levels component
- A water supply development component

- A water resource development component

Addition of new chapter titled Water Conservation Component: Add the following new chapter titled Water Conservation Component to *DWSP 2005* immediately following the chapter titled Resource Analysis.

Water conservation is generally defined as the process of efficient and effective use of water. Water conservation is typically practiced for the purpose of sustaining, or at least extending, existing water supplies. SJRWMD strives to maximize water conservation within its jurisdiction, to the extent economically, environmentally, and technically feasible, through its regulatory, water supply planning, and public outreach programs.

SJRWMD prepared its initial water supply assessment in 1998 and district water supply plan in 2000, with updates in 2003 and 2005, respectively. As the water supply planning process has become more mature, citizens of SJRWMD have become increasingly aware of the likely potential for harm to water resources if traditional groundwater sources are exclusively relied upon to meet future demands and of the need to explore alternative water sources to avoid this harm. Based on investigations and discussions related to developing alternative water supply sources, there has also been a realization that alternative water supply projects will be significantly more costly than projects that rely on traditional groundwater sources and pose additional concerns about harm to water resources. This reality has focused heightened attention on water conservation.

SJRWMD has estimated that 200 million gallons per day (mgd) of alternative water supplies or a reduction in demand through water conservation and increased use of reclaimed water (see subsection titled Replacement of Potable Water Supply Use) would have to be implemented to meet the projected water demands identified in *Water Supply Assessment 2003 (WSA 2003)* without resultant unacceptable impacts to water resources and related natural systems. If this 200-mgd deficit were to be met solely by conservation of potable quality water by public water supply utilities and their customers in priority water resource caution areas (PWRCAs), the average gross per capita water use of these utilities would have to decrease from 172 gallons per capita per day to 105 gallons per capita per day, a reduction of 39%. Even if such a decrease in gross per capita water use occurred, it would not necessarily ensure that projected demands would be met without unacceptable impacts to water resources and related natural systems. This is because reductions in groundwater withdrawals would not result in a consistent magnitude of reduced impacts throughout PWRCAs due to the hydrogeologic variability throughout identified PWRCAs.

SJRWMD has a long history of emphasizing water conservation through its regulatory program. SJRWMD's regulatory requirements related to water conservation are applied to each consumptive use permit issued by SJRWMD and are designed to ensure that all feasible water conservation measures will be implemented before an allocation of water from additional potable water supplies is authorized.

Water Conservation Potential

There are several water conservation options that public supply utilities can use to reduce their future water supply demands. Analysis indicates a reasonable possibility that a substantial portion of the projected increase in SJRWMD water use between 2005 and 2025 could be met through improved water use efficiency, provided aggressive programs are implemented and funded by water supply utilities and local governments to promote and enforce the necessary practices consistent with SJRWMD's authority under Chapter 373, *Florida Statutes* (F.S.). A high potential exists for improved efficiency but the actual degree that will be attained cannot be specifically known until it is accomplished. Success of this approach is highly dependent upon aggressive implementation. Furthermore, the aggregate cost for extensive retrofits, better irrigation systems, and other practices needed to reach the projected potential water savings would be measured in hundreds of millions of dollars, just as the development of alternative water supplies would be, and many of those costs would be incurred without certainty of the amount of water that would be made available.

Estimated water savings and initial capital costs per gallon of water savings for five groups of conservation practices are shown in Table 4 of *DWSP 2005*. The 20-year (2005 through 2025) total cost of outreach and education practices are integrated into the total costs for other water conservation practices. Costs are calculated only for new water savings and are incremental to the cost of existing programs and practices. Descriptions and critiques of available conservation practices and a list of those considered to be cost-effective and potentially applicable in SJRWMD appear in Appendix E of *DWSP 2005*. Explanations of the methodologies used to derive estimated water savings and costs for individual conservation practices are provided in Appendix F of *DWSP 2005*. Additional tables providing the results of calculations of water savings and costs for individual conservation practices are found in Appendix G of *DWSP 2005*.

The capital costs for individual conservation practices range up to \$14.17 per gallon per day of water-saving capacity. These costs are comparable to the costs of constructing water supply production capacity for alternative water supply projects identified in *DWSP 2005*. Ongoing operation and maintenance costs comparable to the unit production cost of water supply facilities also would be incurred. The ongoing costs for some practices, such as retrofitted low-flow toilets, may be no more than the cost of maintaining existing older toilets, but the cost of other practices, such as ordinance enforcement, may be substantial.

Several factors limit the precision of these estimates: (1) The actual market penetration that will be obtained is unknown. It is not possible to determine in advance how many people in the target groups will adopt any specific conservation practice, particularly voluntary practices. A population penetration rate of 50% over the 20-year planning period through 2025 is used throughout for voluntary conservation practices to provide an example of possible water savings from the listed conservation practices at a given level of implementation. (2) The aggregate impact of more than one practice addressing savings from the same type of water use is

Table 4. Water savings (millions of gallons per day) and costs (millions of dollars) by county by conservation practice group.

County	Existing Indoor Use		Existing Outdoor Use		New Construction Indoor		New Construction Outdoor		General		Total Water Saved	Total Cost
	Saving	Cost	Saving	Cost	Saving	Cost	Saving	Cost	Saving	Cost		
Alachua	4.42	18.69	0.93	7.18	0.43	4.55	3.29	37.64	1.38	0.00	10.46	68.06
Baker	0.44	1.14	0.15	0.82	0.00	0.03	0.59	2.35	0.22	0.00	1.41	4.34
Bradford	0.03	0.08	0.00	0.04	0.00	0.00	0.00	0.06	0.00	0.00	0.03	0.19
Brevard	13.00	51.22	2.63	20.43	0.77	8.07	9.49	83.35	4.04	0.00	29.92	163.06
Clay	3.35	16.47	0.89	6.70	0.21	1.92	3.71	42.54	1.45	0.00	9.60	67.62
Duval	22.17	114.19	5.36	26.52	1.31	12.92	18.63	101.16	7.82	0.00	55.29	254.79
Flagler	1.01	6.11	0.41	4.00	0.11	1.19	3.16	33.18	1.11	0.00	5.80	44.47
Indian River	3.02	17.91	0.76	5.90	0.35	3.83	2.98	33.56	1.21	0.00	8.31	61.20
Lake	4.86	25.58	3.30	12.66	0.33	3.44	10.31	94.86	3.83	0.00	22.63	136.54
Marion	4.34	22.66	0.93	10.56	0.13	1.37	3.71	39.58	1.48	0.00	10.58	74.17
Nassau	1.37	7.45	1.04	3.22	0.10	0.95	3.37	14.49	1.20	0.00	7.08	26.11
Okeechobee	0.02	0.08	0.00	0.03	0.00	0.00	0.00	0.05	0.00	0.00	0.02	0.16
Orange	17.13	89.89	4.73	29.14	1.99	18.81	17.48	122.70	6.73	0.00	48.05	260.54
Osceola	0.04	0.20	0.00	0.10	0.01	0.08	0.00	0.93	0.00	0.00	0.05	1.31
Putnam	1.84	8.83	0.47	2.77	0.01	0.08	1.48	3.94	0.62	0.00	4.43	15.63
St. Johns	2.83	17.09	0.93	7.96	0.39	3.95	5.89	45.11	2.11	0.00	12.15	74.11
Seminole	9.81	53.21	3.10	15.44	0.92	8.73	11.70	76.53	4.66	0.00	30.19	153.91
Volusia	12.28	67.01	2.89	17.35	0.60	6.43	11.33	69.56	4.64	0.00	31.74	160.35
Education	*	12.75	*	3.56	*	0.96	*	11.65	*	5.31	*	38.10
SJRWMD TOTAL	101.96	530.55	28.50	174.39	7.66	77.28	107.11	813.23	42.50	5.31	287.73	1604.64
Cap. cost per gal	5.20		6.12		10.09		7.59		0.13		5.58	

*No water savings is attributed directly to outreach and education, to avoid double-counting with the direct savings of other practices that are promoted by education. However, outreach and education contribute to the adoption of various water-saving practices that probably would not be adopted without outreach and education.

uncertain. Attempts have been made to avoid double or multiple counting of the same water saved by two or more practices. The assumptions used in this process are described in Appendix G of DWSP 2005. (3) It is not always possible to determine with reasonable certainty which cost resulted in what specific water savings.

SJRWMD expects that many of these factors contributing to uncertainty will be addressed through the ongoing Conserve Florida water conservation program, a cooperative effort between Florida Department of Environmental Protection (FDEP), the water management districts, American Water Works Association (AWWA), and various public supply utilities. The emphasis of the program is to develop a clearinghouse and detailed database documenting individual utility service area characteristics, water conservation practices, and water use data documenting the beneficial impacts of water conservation practices and to develop and maintain a software tool to assimilate this information for the development of goal-based public supply water conservation plans. The information will then be used by water management districts and water supply utilities to maximize water conservation benefits based on utility and customer characteristics. SJRWMD proposes to continue supporting this effort.

Specific Water Conservation Measures Required for Consumptive Use Permits

Chapter 40C-2, *Florida Administrative Code (F.A.C.)*, applies to all consumptive use permit (CUP) applications, including for large-volume water users such as public water supply utilities. Water users who are required to apply for a consumptive use permit from SJRWMD include those whose average annual daily withdrawal exceeds 100,000 gallons, whose capacity to withdraw water exceeds a million gallons per day, or those with a well of 6 inches in diameter or greater.

Chapter 40C-2.301(4)(e), *F.A.C.*, requires water conservation as a part of all CUP applications and states that "... all available water conservation measures must be implemented unless the applicant demonstrates that implementation is not economically, environmentally or technologically feasible ..." (Subsection 40C-2.301(4)(e) Conditions for Issuance of Permits).

Public supply utilities in SJRWMD are required to have water conservation plans to ensure that all available water conservation measures are implemented (unless infeasible). Section 12.2.5 of the *Consumptive Use Permit Handbook* specifies water conservation practices for public supply CUPs that, if implemented, are deemed to meet the water conservation requirements of 40C-2.301(4)(e), *F.A.C.* These practices are summarized below.

- Perform a system-wide audit of the amount of water used in the applicant's production and treatment facilities, transmission lines, and distribution system.
- Perform a meter survey, and correct the water audit to account for meter error if the initial, unaccounted-for water is 10% or greater based on the results of the initial water audit.

- Perform a leak detection evaluation and then either implement a leak detection program immediately or develop an alternative plan of corrective action (and submit a new water audit), if the initial water audit shows greater than 10% unaccounted-for water use.
- Implement a meter replacement program if the meter survey indicates that a group or type of meters is less than 95% accurate.
- Implement a customer and employee water conservation education program containing specific listed elements.
- Submit and implement a water conservation-promoting rate structure or amend an existing conservation rate structure to improve its effectiveness in promoting water conservation, unless the cost is not justified because it will have little or no effect on reducing water use.
- Submit a management plan designed to minimize the need for augmentation if the permit includes a backup water source to meet peak demands for reclaimed water.
- Additional water conservation measures may be required when an audit and/or other available information indicates there is a need to reduce a project's water use to a level consistent with that of other similar projects or that additional significant water savings can be achieved and are feasible.

Other types of water users, including agriculture and industry, have a similar list of specific water conservation requirements. In the case of agriculture, emphasis is placed on upgrading irrigation systems to improve efficiencies, commodity-specific improvements that result in water savings, the capture and use of storm water for irrigation, and the use of reclaimed water from nearby utility providers. For industrial users, emphasis is on water-saving process improvements, recycling of water, use of lowest-acceptable water quality sources, and providing reclaimed water or storm water for use.

Watering Restrictions for Landscape Irrigation

SJRWMD has the most stringent, districtwide, year-round watering restrictions of any water management district in Florida (Rule 40C-2.042, *F.A.C.*, General Permit by Rule), which are designed to ensure the efficient use of water for landscape irrigation. The mandatory restrictions specify the time when watering may occur, the amount of water that may be applied, and the days when watering may occur for residential and nonresidential locations. These days depend on whether the address ends in an odd or even number, and on the time of year. This rule also authorizes local governments to enforce these restrictions within their respective jurisdictions by adopting them by an ordinance that is fully consistent with the rule. The rule amendment prescribes which days of the week landscape irrigation may be allowed by a local government ordinance.

Summary of the watering restrictions:

- Irrigation is prohibited between 10 a.m. and 4 p.m.
- During daylight saving time (second Sunday in March until the first Sunday in November) irrigation is limited to no more than two days per week on scheduled days.
 - Residential irrigation at odd-numbered addresses or no addresses is allowed on Wednesday and Saturday.
 - Residential irrigation at even-numbered addresses is allowed on Thursday and Sunday.
 - Nonresidential irrigation is allowed on Tuesday and Friday.
- During Eastern Standard Time (first Sunday in November until the second Sunday in March) irrigation is limited to no more than one day per week on scheduled days.
 - Residential irrigation at odd-numbered addresses or no addresses is allowed on Saturday.
 - Residential irrigation at even-numbered addresses is allowed on Sunday.
 - Nonresidential irrigation is allowed on Tuesday.
- Irrigation is limited to no more than $\frac{3}{4}$ inch of water per zone per irrigation day.
- Irrigation is limited to no more than one hour per irrigation zone per irrigation day.
- Irrigation is limited to only that amount necessary to meet landscape needs.
- When reclaimed water is available for irrigation use, the use of private irrigation wells is not authorized by Rule 40C-2.042, *F.A.C.*
- Irrigation limitations apply to water withdrawn from ground or surface water, from a private well or pump, or from a public or private utility.
- Irrigation limitations apply to all landscape irrigation not currently regulated by a consumptive use permit. Typically, this includes residential, commercial, and industrial establishments.
- Persons irrigating with an automatic lawn irrigation system installed after May 1, 1991, must install, maintain, and operate a rain sensor device or switch that overrides the system when adequate rainfall has occurred.
- Limited exceptions apply for certain highly efficient microirrigation systems, hand watering with an automatic shutoff device, irrigation of newly planted landscape daily for the initial 30 days and then every second day for the next 30 days (for a total of one 60-day period), and use of reclaimed water or storm water.

Non-Regulatory Water Conservation Initiatives

In addition to its regulatory program, SJRWMD has also initiated a number of other projects and initiatives to improve water conservation and expand the efficient use of reclaimed water.

Conserve Florida Water Conservation Information Clearinghouse

SJRWMD is a participant in the development of a comprehensive, statewide water conservation program for public water supply. This effort includes FDEP, the five water management districts, the Florida Rural Water Association, Florida Section AWWA, Florida Water Environment Association, and the Florida Public Service Commission. Major parts of this effort are the development of a clearinghouse for water conservation information and software to assist in the development of goal-based water conservation plans for public supply utilities. SJRWMD proposes to continue support of this effort in the hope that it will provide information valuable to determining the cost and effectiveness of various water conservation approaches. This project is included in the Hydrologic Data Collection and Analysis Project, which is described in the Water Resource Development Component of this document.

Landscape Water Conservation Ordinance Guidelines

SJRWMD has developed a document (SJRWMD 2005b) to provide guidance and example language for the creation of local landscape water conservation ordinances that meet the requirements specified in Section 373.185, F.S. (SJRWMD 2007). Local governments are required by Sections 125.568 and 166.048, F.S., to consider adopting ordinances that will reduce the amount of water used to irrigate landscape. SJRWMD will update and revise its document that provides guidance and example language to take into account its recently amended water conservation rule and other new information and developments concerning water conservation practices and technology.

SJRWMD has also contributed technical expertise to the statewide effort, required by Section 373.228, F.S., to develop landscape irrigation and Xeriscape design standards for new construction. These standards incorporate scientifically based model guidelines for urban, commercial, and residential landscape irrigation, including drip irrigation, for plants, trees, sod, and other landscaping. Section 373.228, F.S., requires local governments to use these standards and guidelines when developing landscape irrigation and Xeriscape ordinances. SJRWMD now promotes these statewide standards and will incorporate them in its revised document that provides guidance and example language.

Water Conservation Public Awareness Campaign

SJRWMD partners with local governments and water supply utilities to conduct an annual multimedia campaign, which has included television, radio, newspaper, the Internet, direct mail and billboards, a Web site, and printed materials. The budget for the campaign in fiscal year 2008–2009 was \$2.431 million, which includes partners' and SJRWMD funding. This campaign has successfully increased public awareness of water conservation.

SJRWMD Strategic Water Conservation Initiative

The Strategic Water Conservation Initiative's goal is to improve water conservation efforts by reviewing key elements of SJRWMD's current water conservation-related programs and modifying them as needed to optimize their effectiveness. Major current conservation efforts include the following:

- Consumptive use permitting, which requires conservation plans and reporting from permittees
- Water demand forecasting
- Calculating the costs of conservation strategies
- Local government technical assistance
- Florida Water StarSM certification program for efficient construction
- Public education and communication programs
- Coordination with other water management districts, principally in the process of rulemaking

This review will allow SJRWMD to avoid duplication of effort and to take advantage of opportunities to collaborate and coordinate efforts. The other overarching goal is to develop new actions, including a water conservation cost-share program to achieve a significant reduction in water use for landscape irrigation, indoor use, and agricultural irrigation.

SJRWMD will utilize outside experts from the University of Florida's Water Institute to peer-review SJRWMD's major water conservation goals and initiatives.

Environmental Resource Permit (ERP) and Consumptive Use Permit (CUP) Linkage

SJRWMD is planning to initiate rulemaking in the near future to more closely link the ERP and CUP permitting processes for certain projects with landscape requiring irrigation. Key concepts of this ERP/CUP linkage include the following:

- Requiring maximum feasible reuse of storm water for landscape irrigation
- Setting landscape design standards for maximum residential per capita irrigation use (regardless of water source)
- Requiring covenants and restrictions for developments to include efficient landscaping/irrigation system design requirements
- Prohibiting covenants and restrictions for developments from containing language that prevents use of landscape/irrigation system design standards adopted by SJRWMD

Amendment to the Reclaimed Water section by the addition of a new subsection titled Replacement of Potable Public Water Supply Use: Amend the Reclaimed Water section by appending a new subsection after the Projected Quantities of Reclaimed Water subsection on page 71 of *DWSP 2005* with the following paragraph:

Replacement of Potable Public Water Supply Use: As described elsewhere in this addendum, SJRWMD has estimated that 200 mgd of alternative water supplies or a reduction in demand through water conservation and increased use of reclaimed water would have to be implemented to meet the projected water demands identified in WSA 2003 without resultant unacceptable impacts to water resources and related natural systems. It is estimated that treated wastewater that is currently not reused plus additional wastewater flows within the PWRCAs by 2025 would total 240 mgd of additional reclaimed water available for use. However, due to seasonal variability in availability and demand, it is not possible to utilize all of this water during wet times and still meet demand during dry times without augmentation from other sources. Based on the experience of utilities in the central Florida region, it has typically been feasible to reuse 50 to 60% of a wastewater treatment facility's annual flow without resorting to augmentation (FWEA, personal communication, 2009). Assuming it is feasible to reuse a minimum of 50 to 60% of available treated wastewater without augmentation, 120 to 144 mgd could be counted on to be available for replacement of potable water use. However, given the need to maximize the use of this supply in the future, the goal should be to increase the portion of reclaimed water that is used during the 20-year planning horizon. Under an optimal condition, such as apparently demonstrated by the city of Altamonte Springs, the most thoroughly built-out reuse system in SJRWMD, it appears to be reasonable to reuse as much as 85% of a wastewater treatment facility's annual flow without resorting to augmentation. Thus, it may be possible to achieve as much as 200 mgd of reclaimed water (85% of projected flows) if water is used efficiently during peak demand periods, and large quantities of storage are constructed to go along with dual distribution systems. This level of required storage likely represents a very substantial cost. Further, reclaimed water, historically, has not been used efficiently, probably due to very low or fixed cost rates. However, experience with the city of Ocoee has shown that reclaimed water can replace potable water at a 1-to-1 ratio if rates for reclaimed water are close to that of potable water (Burton and Associates 2008).

Use of an additional 204 mgd of reclaimed water would not necessarily ensure that projected demands would be met without unacceptable impacts to water resources and related natural systems. This is because reductions in groundwater withdrawals and placement of reclaimed water at land surface for lawn and landscape irrigation purposes would not result in a consistent magnitude of reduced impacts throughout PWRCAs due to the hydrogeologic variability throughout identified PWRCAs.

Amendment to the subsection titled Potential Uses of Reclaimed Water: Amend the title of subsection Potential Uses of Reclaimed Water on page 71 of *DWSP 2005* to Other Potential Uses of Reclaimed Water.

Removal of water supply development projects from *DWSP 2005* as amended: The following water supply development projects are removed for the reasons described:

- DWSP Project Number 9: St. Johns River Near Lake Monroe Project — This project has been removed because other water supply projects that would utilize withdrawals of water from the St. Johns River Near Lake Monroe have been identified by water supply entities.
- DWSP Project Number 11: St. Johns River Near Lake George Project — This project has been removed because none of the water supply entities identified as potential users of water from this project have expressed an interest in the project and all are identified in association with other potential water supply development projects that, if developed, would be adequate to meet their projected demands through 2025.
- DWSP Project Number 15: Intracoastal Waterway at New Smyrna Beach Project — This project has been removed because the water supply entity that owns the property where the facility would be located has indicated that it does not plan to pursue this project.
- DWSP Project Number 57: Winter Park Windsong Stormwater Reuse Demonstration Project — This project has been removed because the project’s sponsor has indicated that they do not plan to pursue this project.

Water supply development projects: Replaces the list of water supply development projects, beginning on page vi of the Executive Summary and on page 116 in *DWSP 2005*, to include all of the projects included on List 1 included in this fourth addendum to *DWSP 2005*.

Identification of projects using reclaimed water: Replaces the list of projects using reclaimed water, as identified on pages 76 and 77 of *DWSP 2005*, to include all of the projects included on List 2 in this fourth addendum to *DWSP 2005*.

Amendment to Recommendations chapter: The following amendments are made.

- Delete the Other Water Supply Projects section, which had its contents revised and expanded within the new chapter titled Water Conservation Component.
- Add “Water conservation and reuse” as a new first bullet to the categories of implementation strategies.
- Add the following Water Conservation and Reuse recommendation before the Minimum Flows and Levels recommendation:
 - Water Conservation and Reuse
 - Proposed Action
 - Implement the projects as described in the Water Conservation and Reuse chapter of this fourth addendum.
 - Initiate rulemaking to create linkage between certain environmental resource permit and consumptive use permit applications
 - Enforce water restrictions for landscape irrigation

- Evaluate the amount of reclaimed water use as a percentage of wastewater flows and measures to ensure efficient use of reclaimed water when considering cooperative funding grants for alternative water supply development or other cooperative funding grant programs of SJRWMD
- Evaluate measures in place to encourage or improve conservation as measured by a reduction in gross per capita water use and residential per capita water use when considering cooperative funding grants for alternative water supply development or other cooperative funding grant programs of SJRWMD.
- Encourage local governments to adopt and enforce ordinances consistent with SJRWMD's water restrictions for landscape irrigation and evaluate the status of such ordinances and enforcement efforts when considering cooperative funding grants for alternative water supply development or other cooperative funding grant programs of SJRWMD.

Amendment to subsection titled Proposed Action in section titled Water Supply Development Projects in Recommendations chapter: Replace the paragraph immediately preceding the last bullet in the subsection, on page 165, with the following paragraph:

Thus, SJRWMD's priority in funding support should be for projects that will provide significant quantities of new, naturally occurring sources of water to users within PWRCAs or areas that would otherwise be designated as PWRCAs; provided water supply entities that would be served by such projects have maximized water conservation and the use of reclaimed water to replace potable demands to the extent environmentally, economically, and technically feasible.

Figure 5. Multijurisdictional water supply development projects 2005. As presented in this addendum, Figure 5 shows the project location of multijurisdictional projects. Figure 5 in this addendum supersedes Figure 5 appearing in *DWSP 2005* and the first, second, and third addenda to *DWSP 2005*.

Figure 6. Single-entity water supply development projects 2005. As presented in this addendum, Figure 6 shows the location of single-entity projects. Figure 6 in this addendum supersedes Figure 6 appearing in *DWSP 2005* and the first, second, and third addenda to *DWSP 2005*.

Table 13. Quantities and estimated costs of alternative water supply development projects. As presented in this addendum to *DWSP 2005*, Table 13 reflects the removal of four projects. Table 13 in this addendum supersedes Table 13 appearing in *DWSP 2005* and the first, second, and third addenda to *DWSP 2005*.

Table 14. SJRWMD — Public water supply entities and associated alternative water supply development projects. As presented in this addendum, Table 14 reflects the removal from *DWSP 2005* as amended of four projects (Project Numbers 9, 11, 15 and 57), the removal

of two water supply entities in Orange County (Shadow Hills Mobile Home Park and Zellwood Station Utilities), corrections to the names of three water supply entities, and changes in the projects that should be considered by some water supply entities. Table 14 supersedes Table 14 appearing in *DWSP 2005* and the first, second, and third addenda to *DWSP 2005*.

Table 15. Status of water supply development projects. As presented in this addendum, Table 15 includes the updated status of 16 projects and the removal of four projects (Project Numbers 9, 11, 15 and 57) from *DWSP 2005* as amended. Table 15 supersedes Table 15 appearing in *DWSP 2005* and the first, second, and third addenda to *DWSP 2005*.

Reference: Replaces the reference list beginning on page 175 of *DWSP 2005* to include recent references associated with projects in the plan and the fourth addendum. This reference list supersedes the reference list contained in *DWSP 2005*.

Appendix M: This appendix contains historical water use by county and by water use category for 1995 to 2007.

Appendix N: This appendix contains detailed project descriptions for water supply development projects. This new appendix contains project descriptions for each water supply development project included in this fourth addendum.

All of the water supply development project options in *DWSP 2005* as amended by this fourth addendum would develop alternative water supplies as defined by Section 373.019, F.S., and all of the options would use water from nontraditional water supply sources. Since SJRWMD began to collect and report water use data in 1978, the majority of water use has been supplied by groundwater sources. Since 1995, the base year for assessing the impacts of groundwater withdrawals in SJRWMD's water supply assessment and planning process, groundwater has accounted for about 79% of the total reported water use in SJRWMD (Appendix M). Also, since 1995, fresh groundwater has generally been the first source of choice for increased water supplies by water supply entities in SJRWMD, because it has generally been readily available near the location of use and is relatively inexpensive to treat — about \$1 per 1,000 gallons as compared to about \$3 to \$4 per 1,000 gallons for identified surface water sources (Wycoff, personal communication 2009) and \$5.71 to \$7.08 per 1,000 gallons for desalination (Salsano, personal communication 2009). Public supply utilities account for about 90% of proposed increased water use in SJRWMD from 1995–2025 (SJRWMD 2006). Proposals, primarily by public water supply utilities, to develop increased quantities of fresh groundwater have been the basis of SJRWMD's identification of priority water resource caution areas since the first statutorily required districtwide water supply assessment was prepared in 1994 (Vergara 1994). Fresh surface water is currently being used as a source of public water supply by only two public supply utilities in SJRWMD: the city of Melbourne and the city of Cocoa. Surface water sources were developed by these utilities only after fresh groundwater sources in reasonable proximity to the locations of use were no longer sustainable. Fresh surface water sources that have been identified as potential sources of future water supply are typically located relatively long

distances from the likely locations of use. Although the cost of treating water from these fresh surface water sources may be similar to the cost of treating fresh groundwater and is considerably less than the cost of treating brackish water, the capital investment necessary to construct the relatively long transmission facilities to transport the water to the locations of use has, historically, been a disincentive to the development of these sources. Therefore, for water supply planning purposes, SJRWMD has recognized and continues in this fourth addendum to recognize fresh groundwater as the only traditional water supply source in its jurisdiction. Likewise, in this addendum, SJRWMD continues to consider and designate all water supply sources other than fresh groundwater to be nontraditional water supply sources. Water supply sources other than fresh groundwater account for such a small portion of total water demand within SJRWMD that it considers their development to be nontraditional.

List 1: Projects included in *DWSP 2005*, as amended by fourth addendum

DWSP Project Number	Project Name
Brackish Groundwater Source for Potable Use	
1	Dunes Community Development District Brackish Groundwater Project*
2	East Putnam Regional Water System Project*
3	Melbourne Reverse Osmosis (RO) Plant Expansion Project*
4	Ormond Beach Water Treatment Plant Expansion Project*
5	St. Augustine Water Supply Project*
6	St. Johns County Water Supply Project*
Surface Water Source for Potable Use	
7	Lower Ocklawaha River in Putnam County Project
8	St. Johns River Near SR 50 Project
10	St. Johns River Near DeLand Project
12	St. Johns River/Taylor Creek Reservoir Water Supply Project
61	Lower Ocklawaha River in Marion County Project
62	Sanford ASR Well for Surface Potable Water Storage Project*
63	Sanford Surface WTP on Lake Monroe Project*
64	St. Johns River Near SR 46 Project
65	St. Johns River Near Yankee Lake Project
Seawater Source for Potable Use	
13	Indian River Lagoon at FPL Cape Canaveral Power Plant Project
14	Indian River Lagoon at Reliant Energy Power Plant Project
66	Coquina Coast Seawater Desalination Project
Reclaimed Water Source	
16	Alafaya (Utilities Inc. of Florida) Reclaimed Water Storage and High-Service Pumps Project*
17	Altamonte Springs and Apopka Project APRICOT
18	Apopka and Winter Garden Reuse Partnership Project
19	Bellevue and Spruce Creek Golf Course Reclaimed Water System Expansion Project*
20	Beverly Beach Integrated Reclaimed Water and Stormwater Reuse Project, Phase II*
21	Clermont Reclaimed and Stormwater System Expansion Project*
22	Cocoa and Rockledge Reclaimed Water Line Connection Project
23	Daytona Beach Reclaimed Water System Project*

List 1.—*Continued*

DWSP Project Number	Project Name
25	Eastern Orange and Seminole Counties Regional Reuse Project
26	Edgewater Reclaimed Water System Interconnect to Southeast Volusia County Project*
27	Eustis Reclaimed Water System Expansion and Augmentation Project*
28	Flagler County Bulow Reclaimed Water System Project*
29	Holly Hill-Ormond Beach Reclaimed Water System Expansion Project*
30	Lady Lake Phase II Reclaimed Water System*
31	Lake Utility Services (Utilities Inc. of Florida) Lake Groves WWTF Reclaimed Water System Expansion Project*
32	Leesburg Reclaimed Water Reuse Project*
33	Melbourne Reclaimed Water System Expansion Project*
34	Minneola Reclaimed Water Reuse Project*
35	Mount Dora Country Club Golf Course Reclaimed Water Project*
37	Ocoee Reuse System Expansion Project*
38	Orange County Northwest Reclaimed Water Project*
39	Orange County Southeastern Reclaimed Water System Expansion
40	Orlando Utilities Commission Project RENEW
41	Ormond Beach North Peninsula Reclaimed Water Storage Project*
42	Ormond Beach South Peninsula Reuse Improvement Project*
43	Palm Coast Reclaimed Water System Expansion Project*
44	Port Orange Airport Road Reclaimed Water Transmission Main Project*
45	Port Orange Pioneer Trail Storage and Pumping Facility Project*
46	Port Orange Reclaimed Water Reservoir and Recharge Basin Project*
47	Rockledge Reclaimed Water Storage Project*
48	Rockledge Reclaimed Water System Expansion – ASR Project*
49	South Daytona Reclaimed Water System Expansion Project*
50	Tavares Reclaimed Water Treatment System Expansion Project*
51	Volusia County Southwest Reclaimed Water System Project*
52	West Melbourne Above Ground Reclaimed Water Storage Tank*
53	Winter Garden Reclaimed Water Pumping and Transmission Project*
56	University of Central Florida (UCF) Reclaimed Water and Stormwater Integration Project*
67	Heathrow Boulevard Reclaimed Water Transmission Main Project
68	Markham Woods Road Reclaimed Water Transmission Main Project*

List 1.—Continued

DWSP Project Number	Project Name
69	Orange Boulevard Reclaimed Water Transmission Main Project
70	Oviedo Reclaimed Water Project*
71	Seminole County Residential Reclaimed Water Retrofit Project—Phase 1
72	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project
73	Spruce Creek Golf and Country Club Reclaimed Water Project*
74	Timacuan Reclaimed Water Main Upgrade Project
75	West Melbourne – Reuse Distribution System Improvements Project*
76	Western Ormond Beach Reclaimed Water Distribution Project*
78	Sanford and Volusia Interconnect Reclaimed/Augmentation Project
81	City of Flagler Beach Reclaimed Water Treatment System Project*
84	City of Ocoee Northwest Reuse Re-Pump Station and Interconnection Mains Project*
Reclaimed Augmentation Source	
24	DeLand Reclaimed Water and Surface Water Augmentation Project*
36	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project
54	Lake Apopka Reuse Augmentation Project*
55	Seminole County Yankee Lake Reclaimed Water System Augmentation Project*
58	Winter Springs–Lake Jesup Reclaimed Water Augmentation Project*
77	Nova Canal Reclaimed Augmentation Project
79	St. Johns River Near SR 46 – Non-Potable With Storage Project
80	Umatilla Reclaimed Development and Surface Water Reclaimed Supply Project*
82	Securing Minneola’s Alternative Resources for Tomorrow (SMART) Project*
83	Silver Springs Citrus Industrial Waste for Reuse Blending and Augmentation Project*
Other	
59	Cherry Lake Tree Farm Lake Withdrawal for Agricultural Irrigation Project*
60	Holloway Farms Agricultural Irrigation Rainwater Collection System Project*

Note: Blue shading indicates a completed project.

*Indicates projects that will service one water supply entity only.

List 2. Reclaimed water projects included in *DWSP 2005*, as amended by fourth addendum

DWSP Project Number	Project Name
Reclaimed Water Source Projects	
16	Alafaya (Utilities Inc. of Florida) Reclaimed Water Storage and High-Service Pumps Project*
17	Altamonte Springs and Apopka Project APRICOT
18	Apopka and Winter Garden Reuse Partnership Project
19	Bellevue and Spruce Creek Golf Course Reclaimed Water System Expansion Project*
20	Beverly Beach Integrated Reclaimed Water and Stormwater Reuse Project, Phase II*
21	Clermont Reclaimed and Stormwater System Expansion Project*
22	Cocoa and Rockledge Reclaimed Water Line Connection Project
23	Daytona Beach Reclaimed Water System Project*
25	Eastern Orange and Seminole Counties Regional Reuse Project
26	Edgewater Reclaimed Water System Interconnect to Southeast Volusia County Project*
27	Eustis Reclaimed Water System Expansion and Augmentation Project*
28	Flagler County Bulow Reclaimed Water System Project*
29	Holly Hill-Ormond Beach Reclaimed Water System Expansion Project *
30	Lady Lake Phase II Reclaimed Water System*
31	Lake Utility Services (Utilities Inc. of Florida) Lake Groves WWTF Reclaimed Water System Expansion Project*
32	Leesburg Reclaimed Water Reuse Project*
33	Melbourne Reclaimed Water System Expansion Project*
34	Minneola Reclaimed Water Reuse Project*
35	Mount Dora Country Club Golf Course Reclaimed Water Project*
37	Ocoee Reuse System Expansion Project*
38	Orange County Northwest Reclaimed Water Project*
39	Orange County Southeastern Reclaimed Water System Expansion*
40	Orlando Utilities Commission Project RENEW
41	Ormond Beach North Peninsula Reclaimed Water Storage Project*
42	Ormond Beach South Peninsula Reuse Improvement Project*
43	Palm Coast Reclaimed Water System Expansion Project*
44	Port Orange Airport Road Reclaimed Water Transmission Main Project*
45	Port Orange Pioneer Trail Storage and Pumping Facility Project*
46	Port Orange Reclaimed Water Reservoir and Recharge Basin Project*
47	Rockledge Reclaimed Water Storage Project*

List 2.—Continued

DWSP Project Number	Project Name
48	Rockledge Reclaimed Water System Expansion – ASR Project*
49	South Daytona Reclaimed Water System Expansion Project*
50	Tavares Reclaimed Water Treatment System Expansion Project*
51	Volusia County Southwest Reclaimed Water System Project*
52	West Melbourne Above Ground Reclaimed Water Storage Tank*
53	Winter Garden Reclaimed Water Pumping and Transmission Project*
56	University of Central Florida (UCF) Reclaimed Water and Stormwater Integration Project*
67	Heathrow Boulevard Reclaimed Water Transmission Main Project
68	Markham Woods Road Reclaimed Water Transmission Main Project*
69	Orange Boulevard Reclaimed Water Transmission Main Project
70	Oviedo Reclaimed Water Project*
71	Seminole County Residential Reclaimed Water Retrofit Project – Phase 1
72	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project
73	Spruce Creek Golf and Country Club Reclaimed Water Project*
74	Timacuan Reclaimed Water Main Upgrade Project
75	West Melbourne – Reuse Distribution System Improvements Project*
76	Western Ormond Beach Reclaimed Water Distribution Project*
78	Sanford and Volusia Interconnect Reclaimed/Augmentation Project
81	City of Flagler Beach Reclaimed Water Treatment System Project*
84	City of Ocoee Northwest Reuse Re-Pump Station and Interconnection Mains Project*
Reclaimed Augmentation Source Projects	
24	DeLand Reclaimed Water and Surface Water Augmentation Project*
36	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project
54	Lake Apopka Reuse Augmentation Project*
55	Seminole County Yankee Lake Reclaimed Water System Augmentation Project*
58	Winter Springs–Lake Jesup Reclaimed Water Augmentation Project*
77	Nova Canal Reclaimed Augmentation Project
79	St. Johns River Near SR 46 – Non-Potable With Storage Project
80	Umatilla Reclaimed Development and Surface Water Reclaimed Supply Project*
82	Securing Minneola's Alternative Resources for Tomorrow (SMART) Project*
83	Silver Springs Citrus Industrial Waste for Reuse Blending and Augmentation Project*
Note:	Blue shading indicates a completed project.

*Indicates projects that will service one water supply entity only.

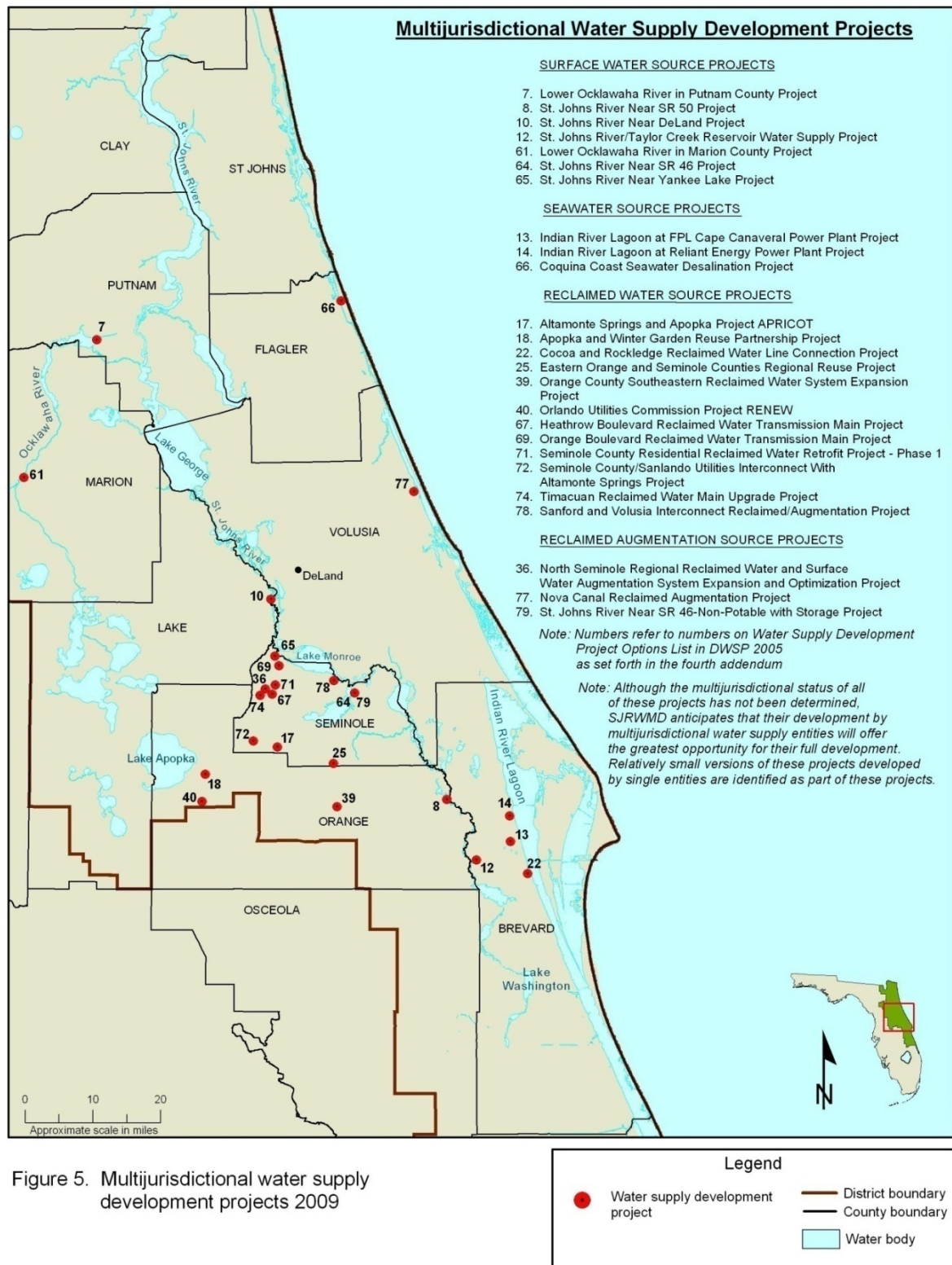


Figure 5. Multijurisdictional water supply development projects 2009



Figure 6. Single-entity water supply development projects 2009

Table 13. Quantities and estimated costs of alternative water supply development projects

DWSP Project Number	Project Name	Capacity Average Daily Flow (mgd)	Estimated Costs			
			Construction \$M	Total Capital \$M	O&M \$/M/yr	Unit Production \$/1,000 gallons
Brackish Groundwater Source for Potable Use						
1	Dunes Community Development District Brackish Groundwater Project	1.00	\$9.50	\$10.40	\$0.18	\$2.65
2	East Putnam Regional Water System Project	0.63	\$21.8 ±	\$11.22	\$0.40	\$5.39
3	Melbourne Reverse Osmosis (RO) Plant Expansion Project	2.50	\$7.3 ±	\$5.80	\$2.83	\$3.54
4	Ormond Beach Water Treatment Plant Expansion Project	4.00	\$14.62	\$15.82	\$0.43	\$0.69
5	St. Augustine Water Supply Project	6.00	\$11.8 ±	\$14.70	\$1.98	\$1.69
6	St. Johns County Water Supply Project	6.66	\$20.00	\$22.00	\$2.00	\$1.51
Surface Water Source for Potable Use						
7	Lower Ocklawaha River in Putnam County Project	20.00	\$201.00	\$266.00	\$5.79	\$3.16
8	St. Johns River Near SR 50 Project	10.00	\$76.00	\$95.00	\$4.35	\$3.01
10	St. Johns River Near DeLand Project	20.00	\$563.00 ±	\$703.00 ±	\$52.20 ±	\$4.23 ±
12	St. Johns River/Taylor Creek Reservoir Water Supply Project	40.00	\$174.00	\$215.00	\$11.83	\$1.87
61	Lower Ocklawaha River in Marion County Project	83.85	\$623.00 ±	\$811.00 ±	\$40.14	\$3.04 ±
62	Sanford ASR Well for Surface Potable Water Storage Project	1.00	\$2.72	\$2.72	\$0.18	na
63	Sanford Surface WTP on Lake Monroe Project	4.00	\$9.50	\$13.80	\$0.37	\$0.62
64	St. Johns River Near SR 46 Project	63.13	\$501.15	\$625.78	\$51.51	\$4.06
65	St. Johns River Near Yankee Lake Project	86.33	\$198	\$741.00 ±	\$60.00 ±	\$3.59 ±
Seawater Source for Potable Use						
13	Indian River Lagoon at FPL Cape Canaveral Power Plant Project	15.00	\$111.00	\$140.00	\$7.51	\$3.43
14	Indian River Lagoon at Reliant Energy Power Plant Project	15.00	\$113.00	\$141.00	\$8.10	\$3.57
66	Coquina Coast Seawater Desalination Project	64.30	\$1,010.00 ±	\$1,270.00±	\$63.50 ±	\$6.28 ±
Reclaimed Water Source						
16	Alafaya (Utilities Inc. of Florida) Reclaimed Water Storage and High-Service Pumps Project	0.41	\$2.02	\$2.44	\$0.03	\$1.25
17	Altamonte Springs and Apopka Project APRICOT	6.63	\$9.33 ±	\$13.52	\$0.20	\$0.46
18	Apopka and Winter Garden Reuse Partnership Project	3.00	\$5.21 ±	\$5.21	\$0.07	\$0.38

Table 13.—Continued

DWSP Project Number	Project Name	Capacity Average Daily Flow (mgd)	Estimated Costs			
			Construction \$M	Total Capital \$M	O&M \$/M/yr	Unit Production \$/1,000 gallons
19	Bellevue and Spruce Creek Golf Course Reclaimed Water System Expansion Project	1.00	\$1.55 ‡	\$2.37	\$0.03	\$0.55
20	Beverly Beach Integrated Reclaimed Water and Stormwater Reuse Project, Phase II	0.50	\$2.20 ‡	\$2.64	\$0.05	\$1.28
21	Clermont Reclaimed and Stormwater System Expansion Project	5.10	\$15.60 ‡	\$22.68	\$0.92	\$1.28
22	Cocoa and Rockledge Reclaimed Water Line Connection Project	0.25	\$1.53 ‡	\$1.29	\$0.02	\$1.14
23	Daytona Beach Reclaimed Water System Project	26.00	\$19.01 ‡	\$25.41	\$1.83	\$0.36
25	Eastern Orange and Seminole Counties Regional Reuse Project	20.00	\$32.99 ‡	\$28.94	\$0.36	\$0.32
26	Edgewater Reclaimed Water System Interconnect to Southeast Volusia County Project	1.00	\$5.38 ‡	\$6.30	\$0.15	\$1.49
27	Eustis Reclaimed Water System Expansion and Augmentation Project	1.10	\$1.87	\$2.26	\$0.10	\$0.60
28	Flagler County Bulow Reclaimed Water System Project	1.70	\$1.48 ‡	\$2.14	\$0.19	\$0.53
29	Holly Hill-Ormond Beach Reclaimed Water System Expansion Project	0.60	\$0.37 ‡	\$0.49	\$0.05	\$0.36
30	Lady Lake Phase II Reclaimed Water System	0.50	\$2.00	\$2.20	\$0.23	\$2.05
31	Lake Utility Services (Utilities Inc. of Florida) Lake Groves WWTF Reclaimed Water System Expansion Project	1.00	\$3.60	\$4.35	\$0.22	\$1.43
32	Leesburg Reclaimed Water Reuse Project	7.05	\$26.60 ‡	\$27.82	\$0.33	\$0.88
33	Melbourne Reclaimed Water System Expansion Project	1.50	\$6.60 ‡	\$4.87	\$0.37	\$1.30
34	Minneola Reclaimed Water Reuse Project	1.00	\$7.78	\$11.46	\$0.14	\$1.01
35	Mount Dora Country Club Golf Course Reclaimed Water Project	0.26	\$0.40 ‡	\$0.40	\$0.02	\$0.49
37	Ocoee Reuse System Expansion Project	0.35	\$2.33	\$2.69	\$0.00	\$1.33
38	Orange County Northwest Reclaimed Water Project	3.00	\$10.00	\$10.25	\$0.30	\$0.87

Table 13.—Continued

DWSP Project Number	Project Name	Capacity Average Daily Flow (mgd)	Estimated Costs			
			Construction \$M	Total Capital \$M	O&M \$M/yr	Unit Production \$1,000 gallons
39	Orange County Southeastern Reclaimed Water System Expansion	12.50	\$7.62±	\$13.21	\$0.35	\$0.27
40	Orlando Utilities Commission Project RENEW	9.20	\$43.20 ±	\$62.75	\$1.61	\$1.66
41	Ormond Beach North Peninsula Reclaimed Water Storage Project	0.49	\$2.90 ±	\$2.97	\$0.14	\$1.94
42	Ormond Beach South Peninsula Reuse Improvement Project	2.13	\$9.16±	\$9.91	\$0.19	\$1.06
43	Palm Coast Reclaimed Water System Expansion Project	8.23	\$13.91	\$16.61	\$1.23	\$0.77
44	Port Orange Airport Road Reclaimed Water Transmission Main Project	1.00	\$1.33 ±	\$1.93	\$0.08	\$0.56
45	Port Orange Pioneer Trail Storage and Pumping Facility Project	2.00	\$1.75±	\$2.83	\$0.18	\$0.50
46	Port Orange Reclaimed Water Reservoir and Recharge Basin Project	2.70	\$8.78	\$10.06	\$0.11	\$0.82
47	Rockledge Reclaimed Water Storage Project	0.16	\$1.68	\$2.03	\$0.01	\$2.36
48	Rockledge Reclaimed Water System Expansion – ASR Project	0.55	\$3.36 ±	\$2.43	\$0.05	\$1.25
49	South Daytona Reclaimed Water System Expansion Project	0.14	\$1.37±	\$0.87	\$0.01	\$1.32
50	Tavares Reclaimed Water Treatment System Expansion Project	0.60	\$6.33 ±	\$5.69	\$0.05	\$1.86
51	Volusia County Southwest Reclaimed Water System Project	0.20	\$2.00 ±	\$1.43	\$0.02	\$1.46
52	West Melbourne Above Ground Reclaimed Water Storage Tank	2.48	\$2.51	\$2.76	\$0.10	\$0.31
53	Winter Garden Reclaimed Water Pumping and Transmission Project	4.00	\$6.70±	\$17.40	\$0.50	\$1.09
56	University of Central Florida (UCF) Reclaimed Water and Stormwater Integration Project	0.41	\$0.88	\$1.06	\$0.05	\$0.80
67	Heathrow Boulevard Reclaimed Water Transmission Main Project	2.50	\$1.50	\$2.10	\$0.00	\$0.15

Table 13.—Continued

DWSP Project Number	Project Name	Capacity Average Daily Flow (mgd)	Estimated Costs			
			Construction \$M	Total Capital \$M	O&M \$/yr	Unit Production \$/1,000 gallons
68	Markham Woods Road Reclaimed Water Transmission Main Project	3.00	\$3.40	\$4.90	\$0.00	\$0.29
69	Orange Boulevard Reclaimed Water Transmission Main Project	2.50	\$0.35	\$0.50	\$0.00	\$0.04
70	Oviedo Reclaimed Water Project	1.50	\$4.50	\$6.50	\$0.00	\$0.76
71	Seminole County Residential Reclaimed Water Retrofit Project—Phase 1	1.09	\$3.40	\$4.80	\$0.00	\$0.76
72	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project	3.80	\$4.40	\$6.40	\$0.00	\$0.29
73	Spruce Creek Golf and Country Club Reclaimed Water Project	0.55	\$1.59	\$1.83	\$0.12	\$0.56
74	Timacuan Reclaimed Water Main Upgrade Project	2.90	\$0.70	\$1.00	\$0.00	\$0.05
75	West Melbourne – Reuse Distribution System Improvements Project	2.48	\$3.10	\$3.10	\$0.30	\$2.29
76	Western Ormond Beach Reclaimed Water Distribution Project	2.70	\$4.54	\$5.27	\$0.89	\$1.12
78	Sanford and Volusia Interconnect Reclaimed/Augmentation Project	2.00	\$1.68	\$3.36	\$0.04	\$0.96
81	City of Flagler Beach Reclaimed Water Treatment System Project	0.75	\$4.02	\$4.80	\$0.09	\$1.97
84	City of Ocoee Northwest Reuse Re-Pump Station and Interconnection Mains Project	1.20	\$2.30	\$2.87	\$0.23	\$0.23
Reclaimed Augmentation Source						
24	DeLand Reclaimed Water and Surface Water Augmentation Project	1.70	\$5.55±	\$5.55	\$0.33	\$1.15
36	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project	7.76	\$10.30 ±	\$10.30	\$0.51	\$0.43
54	Lake Apopka Reuse Augmentation Project	1.00	\$7.27	\$8.79	\$0.11	\$1.99
55	Seminole County Yankee Lake Reclaimed Water System Augmentation Project	10.00	\$48.00 ±	\$31.36	\$3.16	\$1.26

Table 13.—Continued

DWSP Project Number	Project Name	Capacity Average Daily Flow (mgd)	Estimated Costs			
			Construction \$M	Total Capital \$M	O&M \$M/yr	Unit Production \$/1,000 gallons
58	Winter Springs – Lake Jesup Reclaimed Water Augmentation Project	2.25	\$7.70±	\$8.50±	\$0.20±	\$2.07±
77	Nova Canal Reclaimed Augmentation Project	9.40	\$41.30 ±	\$46.00 ±	\$0.27	\$1.05
79	St. Johns River Near SR 46 – Non-Potable With Storage Project	6.90	\$21.03	\$28.66	\$0.02	\$0.82
80	Umatilla Reclaimed Development and Surface Water Reclaimed Supply Project	0.20	\$3.00±	\$3.04	\$0.30	\$2.84
82	Securing Minneola's Alternative Resources for Tomorrow (SMART) Project	5.00	\$25.00	\$26.70	\$2.50	\$5.00
83	Silver Springs Citrus Industrial Waste for Reuse Blending and Augmentation Project	0.35	\$3.15	\$3.58	\$0.32	\$2.84±
Other						
59	Cherry Lake Tree Farm Lake Withdrawal for Agricultural Irrigation Project	0.77		\$0.68	\$0.82	\$0.06
60	Holloway Farms Agricultural Irrigation Rainwater Collection System Project	0.08		\$1.29	\$1.55	\$0.00
Notes:	Blue shading indicates a completed project.					
*	quantities of water are assumed to be available from the proposed sources based on SJRWMD's planning-level analyses. SJRWMD anticipates that quantities finally developed will be determined based on additional evaluation of need, environmental studies, established MFLs, and other regulatory criteria.					
±	as an update to the project cost from the proposed cost in DWSP 2005, first addendum, second addendum, or third addendum, based on newly available information.					

mgd = million gallons per day

O&M = operation and maintenance

Cost totals for project categories have been rounded. Dollars are in millions (M) for construction, total capital, and operation and maintenance.

Table 14. SJRWMD public water supply entities and associated alternative water supply development projects

Water Supply Entities	Apopka and Winter Garden Reuse Partnership Project	Cocoa and Rockledge Reclaimed Water Line Connection Project	Eastern Orange and Seminole Counties Regional Reclaimed Reuse System	Indian River Lagoon at FPL Cape Canaveral Power Plant	Indian River Lagoon at Reliant Energy Power Plant	Lower Ocklawaha River in Putnam County	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project	Altamonte Springs and Apopka Project APRICOT	Orange County Southeastern Reclaimed Water System Expansion Project	St. Johns River Near SR 50 Project	St. Johns River Near DeLand Project	St. Johns River/Taylor Creek Reservoir Water Supply Project	*Single Water Supply Entity Project Number
Priority Water Resource Caution Areas (PWRCA's)													
East-Central Florida Area													
Altamonte Springs, City of (Seminole)								●					
Apopka, City of (Orange)	●							●					54
Aqua Utilities Florida Inc. (Lake)													
Aqua Utilities Florida Inc. (Seminole)													
Bellevue, City of (Marion)													19
Casselberry, City of (Seminole)													
Hometown America (Orange)													
Hometown America (Lake)											●		
Cherry Lake Tree Farm (Lake)													59
Clerbrook Golf and RV Resort (Lake)											●		
Clermont, City of (Lake)											●		21
Cocoa, City of (Brevard)		●		●	●							●	
East-Central Florida Services (Brevard, Orange, Osceola)												●	
Eatonville, Town of (Orange)													
Eustis, City of (Lake)													27
Fruitland Park, City of (Lake)													
Groveland, City of (Lake)													
Harbor Hills Utilities LP (Lake)											●		
Hawthorne at Leesburg (Lake)											●		
Holloway Farms (Lake)													60
Howey-in-the-Hills, Town of (Lake)													
Lady Lake, Town of (Lake)													30
Lake Griffin Isles (Lake)											●		
Lake Mary, City of (Seminole)							●						
Leesburg, City of (Lake)											●		32
Longwood, City of (Seminole)													
Maitland, City of (Orange)													
Marion County (Marion)													73
Mascotte, City of (Lake)											●		
Melbourne, City of (Brevard)													3, 33
Mid-Florida Lakes MHP (Lake)											●		
Minneola, City of (Lake)													34, 82
Montverde, Town of (Lake)											●		
Mount Dora, City of (Lake)											●		

Table 14.—Continued

Water Supply Entities	Apopka and Winter Garden Reuse Partnership Project	Cocoa and Rockledge Reclaimed Water Line Connection Project	Eastern Orange and Seminole Counties Regional Reclaimed Reuse System	Indian River Lagoon at FPL Cape Canaveral Power Plant	Indian River Lagoon at Reliant Energy Power Plant	Lower Ocklawaha River in Putnam County	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project	Altamonte Springs and Apopka Project APRICOT	Orange County Southeastern Reclaimed Water System Expansion Project	St. Johns River Near SR 50 Project	St. Johns River Near DeLand Project	St. Johns River/ Taylor Creek Reservoir Water Supply Project	*Single Water Supply Entity Project Number
Mount Dora Country Club													35
Oakland, Town of (Orange)											●		
Oak Springs MHP (Lake)											●		
Ocoee, City of (Orange)													37, 84
Orange County (Orange)			●	●	●				●			●	38
Orlando, City of (Orange)			●						●				
Orlando Utilities Commission (Orange)			●	●	●				●			●	
Oviedo, City of (Seminole)			●										70
Hometown America (Seminole)													
Pennbrooke Utilities Inc. (Lake)											●		
Rock Springs MHP (Orange)											●		
Rockledge, City of (Brevard)		●											47, 48
Sanford, City of (Seminole)							●						62, 63
Seminole County (Seminole)			●				●						55, 68
Silver Springs Citrus													83
Southlake Utilities (Lake)											●		
Sunshine Utilities (Marion)													
Sunlake Estates (Lake)											●		
Tavares, City of (Lake)											●		50
Titusville, City of (Brevard)				●	●					●		●	
Toho Water Authority (Osceola)												●	
Umatilla, City of (Lake)													80
University of Central Florida (Orange)			●										56
Utilities Inc. of Florida (Lake)											●		31
Utilities Inc. of Florida (Orange)													
Utilities Inc. of Florida (Seminole)													16
Villages of Lake-Sumter (Lake)													
Water Oak Estates (Lake)											●		
Wedgewood Homeowners Association (Lake)											●		
West Melbourne, City of (Brevard)													52, 75
Winter Garden, City of (Orange)	●												53
Winter Park, City of (Orange)													
Winter Springs, City of (Seminole)													58
Zellwood Water Association (Orange)											●		

Table 14.—Continued

Water Supply Entities	Apopka and Winter Garden Reuse Partnership Project	Cocoa and Rockledge Reclaimed Water Line Connection Project	Eastern Orange and Seminole Counties Regional Reclaimed Reuse System	Indian River Lagoon at FPL Cape Canaveral Power Plant	Indian River Lagoon at Reliant Energy Power Plant	Lower Ocklawaha River in Putnam County	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project	Altamonte Springs and Apopka Project APRICOT	Orange County Southeastern Reclaimed Water System Expansion Project	St. Johns River Near SR 50 Project	St. Johns River Near DeLand Project	St. Johns River/Taylor Creek Reservoir Water Supply Project	*Single Water Supply Entity Project Number
Flagler Area													
Bunnell, City of													
Dunes Community Development District													1
Flagler Beach, City of													81
Flagler County													20, 28
Ormond Beach, City of													76, 41, 42
Palm Coast, City of													43
Volusia Area													
Daytona Beach, City of						●							23
DeLand, City of						●					●		24
Deltona, City of						●					●		
Edgewater, City of						●							26
Holly Hill, City of													29
Lake Beresford Water Association											●		
Lake Helen, City of											●		
Orange City, City of											●		
Ormond Beach, City of						●							4, 41, 42
Pierson, Town of													
Port Orange, City of						●							44, 45, 46
South Daytona Beach, City of													49
Utilities Commission of New Smyrna Beach						●							
Volusia County						●	●				●		51
Water Authority of Volusia (WAV)													
Areas that would be identified as PWRCAs if proposed alternative water supply development projects were not implemented													
East Putnam Water System (Putnam)													2
St. Augustine, City of (St. Johns)													5
St. Johns County (St. Johns)													6

Table 14—Continued

Water Supply Entities	Lower Ocklawaha River in Marion County Project	St. Johns River Near SR 46 Project	St. Johns River Near Yankee Lake Project	Coquina Coast Seawater Desalination Project	Heathrow Boulevard Reclaimed Water Transmission Main Project	Orange Boulevard Reclaimed Water Transmission Main Project	Seminole County Residential Reclaimed Water Retrofit Project – Phase 1	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project	Timacuan Reclaimed Water Main Upgrade Project	Sanford and Volusia Interconnect Reclaimed/Augmentation Project	St. Johns River Near SR 46 – Non-Potable With Storage Project	Nova Canal Reclaimed Augmentation Project	Orlando Utilities Commission Project RENEW++
Priority Water Resource Caution Areas (PWRCA's)													
East-Central Florida Area													
Altamonte Springs, City of (Seminole)								●					●
Apopka, City of (Orange)			●										
Aqua Utilities Florida Inc. (Lake)	●		●										
Aqua Utilities Florida Inc. (Seminole)			●										
Bellevue, City of (Marion)	●												
Casselberry, City of (Seminole)		●											
Hometown America (Orange)		●	●										
Hometown America (Lake)													
Cherry Lake Tree Farm (Lake)													
Clerbrook Golf and RV Resort (Lake)													
Clermont, City of (Lake)	●												
Cocoa, City of (Brevard)													
East-Central Florida Services (Brevard, Orange, Osceola)													
Eatonville, Town of (Orange)		●	●										
Eustis, City of (Lake)			●										
Fruitland Park, City of (Lake)	●												
Groveland, City of (Lake)	●												
Harbor Hills Utilities LP (Lake)													
Hawthorne at Leesburg (Lake)													
Holloway Farms (Lake)													
Howey-in-the-Hills, Town of (Lake)													
Lady Lake, Town of (Lake)	●												
Lake Griffin Isles (Lake)													
Lake Mary, City of (Seminole)			●		●	●	●		●				
Leesburg, City of (Lake)	●			●									
Longwood, City of (Seminole)			●										
Maitland, City of (Orange)		●	●										
Marion County (Marion)	●			●									
Mascotte, City of (Lake)													
Melbourne, City of (Brevard)													
Mid-Florida Lakes MHP (Lake)													
Minneola, City of (Lake)													
Montverde, Town of (Lake)													
Mount Dora, City of (Lake)	●		●	●									
Mount Dora Country Club													

Table 14—Continued

Water Supply Entities	Lower Ocklawaha River in Marion County Project	St. Johns River Near SR 46 Project	St. Johns River Near Yankee Lake Project	Coquina Coast Seawater Desalination Project	Heathrow Boulevard Reclaimed Water Transmission Main Project	Orange Boulevard Reclaimed Water Transmission Main Project	Seminole County Residential Reclaimed Water Retrofit Project – Phase 1	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project	Timacuan Reclaimed Water Main Upgrade Project	Sanford and Volusia Interconnect Reclaimed/Augmentation Project	St. Johns River Near SR 46 – Non-Potable With Storage Project	Nova Canal Reclaimed Augmentation Project	Orlando Utilities Commission Project RENEW++
Oakland, Town of (Orange)													
Oak Springs MHP (Lake)			●										
Ocoee, City of (Orange)													●
Orange County (Orange)		●											
Orlando, City of (Orange)													●
Orlando Utilities Commission (Orange)													●
Oviedo, City of (Seminole)		●	●								●		
Hometown America (Seminole)		●	●										
Pennbrooke Utilities Inc. (Lake)													
Rock Springs MHP (Orange)			●										
Rockledge, City of (Brevard)													
Sanford, City of (Seminole)		●	●		●	●	●	●	●	●	●		
Seminole County (Seminole)			●		●	●	●		●		●		
Silver Springs Citrus													
Southlake Utilities (Lake)													
Sunshine Utilities (Marion)				●									
Sunlake Estates (Lake)													
Tavares, City of (Lake)	●												
Titusville, City of (Brevard)													
Toho Water Authority (Osceola)													
Umatilla, City of (Lake)													
University of Central Florida (Orange)													
Utilities Inc. of Florida (Lake)	●												
Utilities Inc. of Florida (Orange)		●	●										
Utilities Inc. of Florida (Seminole)								●					
Villages of Lake-Sumter (Lake)	●												
Water Oak Estates (Lake)													
Wedgewood Homeowners Association (Lake)													
West Melbourne, City of (Brevard)													
Winter Garden, City of (Orange)			●										●
Winter Park, City of (Orange)			●										
Winter Springs, City of (Seminole)		●						●			●		
Zellwood Water Association (Orange)													

Table 14—Continued

Water Supply Entities	Lower Ocklawaha River in Marion County Project	St. Johns River Near SR 46 Project	St. Johns River Near Yankee Lake Project	Coquina Coast Seawater Desalination Project	Heathrow Boulevard Reclaimed Water Transmission Main Project	Orange Boulevard Reclaimed Water Transmission Main Project	Seminole County Residential Reclaimed Water Retrofit Project – Phase 1	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project	Timacuan Reclaimed Water Main Upgrade Project	Sanford and Volusia Interconnect Reclaimed/Augmentation Project	St. Johns River Near SR 46 – Non-Potable With Storage Project	Nova Canal Reclaimed Augmentation Project	Orlando Utilities Commission Project RENEW++
Flagler Area													
Bunnell, City of				●									
Dunes Community Development District				●									
Flagler Beach, City of				●									
Flagler County				●									
Ormond Beach, City of													
Palm Coast, City of				●									
Volusia Area													
Daytona Beach, City of												●	
DeLand, City of			●	●									
Deltona, City of		●	●										
Edgewater, City of													
Holly Hill, City of												●	
Lake Beresford Water Association													
Lake Helen, City of													
Orange City, City of			●										
Ormond Beach, City of												●	
Pierson, Town of				●									
Port Orange, City of												●	
South Daytona Beach, City of												●	
Utilities Commission of New Smyrna Beach													
Volusia County			●							●	●		
Water Authority of Volusia (WAV)				●									
Areas that would be identified as PWRCAs if proposed alternative water supply development projects were not implemented													
East Putnam Water System (Putnam)													
St. Augustine, City of (St. Johns)													
St. Johns County (St. Johns)													

Notes: Inclusion of a project on this table is not assurance that the project will receive funding through the Water Protection and Sustainability Program (WPSP).
Any water supply development option could be used by any water supply entity. However, the development of some options are less reasonable than others because of factors such as distance and cost.
The water supply development project options identified on this table in association with specific water supply entities are those that SJRWMD considers most reasonable.
*Single water supply entity project numbers identified beginning on page 116
++Single water supply entity project changed to multijurisdictional water supply entity

Table 15. Status of water supply development projects

DWSP Project Number	Projects	Multi-jurisdictional	Selected for Implementation	Project Sponsor(s)	Proposed Quantity	Funding Source	Project Planning	Engineering Design	Permitting	Construction
Brackish Groundwater Source for Potable Use										
1	Dunes Community Development District Brackish Groundwater Project	no	yes	Dunes Community Development District	1.00 mgd	Dunes Community Development District, WPSP funds requested	Complete	Complete‡	Complete	Complete‡
2	East Putnam Regional Water System Project	no	yes	Putnam County	0.63 mgd	U.S. Department of Agriculture Rural Development Fund, Florida Department of Environmental Protection grant, WPSP funds requested	Complete	In progress	In progress	2005–2007
3	Melbourne Reverse Osmosis (RO) Plant Expansion Project	no	yes	City of Melbourne	2.50 mgd	City of Melbourne, WPSP funds requested	Complete‡	2012‡	2012‡	2014‡
4	Ormond Beach Treatment Plant Expansion Project	no	yes	City of Ormond Beach	4.00 mgd	City of Ormond Beach, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
5	St. Augustine Water Supply Project	no	yes	City of St. Augustine	6.00 mgd	City of St. Augustine, WPSP funds requested	Complete	In progress	In progress	2006–2007
6	St. Johns County Water Supply Project	no	yes	St. Johns County	6.66 mgd	St. Johns County, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
Surface Water Source for Potable Use										
7	Lower Ocklawaha River in Putnam County Project	*to be determined	no	to be identified	20.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
8	St. Johns River Near SR 50 Project	*to be determined	no	to be identified	up to 10.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
10	St. Johns River Near DeLand Project	*to be determined	no	to be identified	up to 20.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
12	St. Johns River/Taylor Creek Reservoir Water Supply Project	yes	yes	City of Cocoa, City of Titusville, East Central Florida Services, Inc., Orange County, Orlando Utilities Commission, South Florida Water Management District, St. Johns River Water Management District, Toho Water Authority	up to 40.00 mgd	Project sponsors, State and Tribal Assistance Grant (STAG), WPSP funds requested	2006–2008‡	2006–2009‡	2008–2009	2013–2015‡
61	Lower Ocklawaha River in Marion County Project	yes	no	to be identified	83.85 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
62	Sanford ASR Well for Surface Potable Water Storage Project	no	yes	City of Sanford	1.00 mgd	to be identified	2007‡	2007‡	Not scheduled	2008‡
63	Sanford Surface WTP on Lake Monroe Project	no	no	City of Sanford	4.00 mgd	to be identified	2015–2020‡	Not scheduled	Not scheduled	Not scheduled
64	St. Johns River Near SR 46 Project	yes	no	to be identified	63.13 mgd	to be identified	2007‡	2009–2011‡	Not scheduled	2011–2014‡
65	St. Johns River Near Yankee Lake Project	yes	yes	Seminole County	86.33 mgd	to be identified	2009	2010	2011	2013
Seawater Source for Potable Use										
13	Indian River Lagoon at FPL Cape Canaveral Power Plant Project	*to be determined	no	to be identified	15.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
14	Indian River Lagoon at Reliant Energy Power Plant Project	*to be determined	no	to be identified	15.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
66	Coquina Coast Seawater Desalination Project	yes	no	to be identified	64.30 mgd	to be identified	2010‡	2010–2015‡	Not scheduled	2010–2015‡
Reclaimed Water Source										
16	Alafaya Reclaimed Water Storage and High-Service Pumps Project	no	yes	Utilities Inc. of Florida (Seminole)	0.41 mgd	Utilities Inc. of Florida (Seminole), WPSP funds requested	Complete	Complete	Complete‡	Complete‡

Table 15.—Continued

DWSP Project Number	Projects	Multi-jurisdictional	Selected for Implementation	Project Sponsor(s)	Proposed Quantity	Funding Source	Project Planning	Engineering Design	Permitting	Construction
17	Altamonte Springs and Apopka Project APRICOT	yes	yes	Altamonte Springs, Apopka	6.63 mgd	Project sponsors, WPSP funds requested	Complete	2006	2006	2007
18	Apopka and Winter Garden Reuse Partnership Project	yes	yes	Apopka, Winter Garden	3.00 mgd	Project sponsors, WPSP funds requested	Complete	Not scheduled	Not scheduled	Not scheduled
19	Bellevue and Spruce Creek Golf Course Reclaimed Water System Expansion Project	no	yes	Bellevue	1.00 mgd	Project sponsors, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
20	Beverly Beach Integrated Reclaimed Water and Stormwater Reuse Project, Phase II	no	yes	Flagler County	0.50 mgd	Flagler County, Rural Development, WPSP funds requested, others to be identified	Complete	2006	2006	2006–2007
21	Clermont Reclaimed and Stormwater System Expansion Project	no	yes	City of Clermont	5.10 mgd	City of Clermont, WPSP funds requested	2004–2006	2005–2007	2006–2007	2007–2008
22	Cocoa and Rockledge Reclaimed Water Line Connection Project	yes	yes	City of Cocoa, City of Rockledge	0.25 mgd	City of Cocoa, City of Rockledge, WPSP funds requested	2006	2006	2006	2007
23	Daytona Beach Reclaimed Water System Project	no	yes	City of Daytona Beach	26.00 mgd	City of Daytona Beach, WPSP funds requested	Complete	2005–2006	2006–2007	2007–2008
25	Eastern Orange and Seminole Counties Regional Reuse Project	yes	yes	City of Orlando, Orange County, Orlando Utilities Commission, Seminole County, City of Oviedo, University of Central Florida	20.00 mgd	Project partners, State and Tribal Assistance Grant (STAG), WPSP funds requested	Complete	Complete	2007	2004–2007
26	Edgewater Reclaimed Water System Interconnect to Southeast Volusia County Project	no	yes	City of Edgewater	1.00 mgd	City of Edgewater, WPSP funds requested	Complete	Not scheduled‡	Not scheduled‡	Not scheduled‡
27	Eustis Reclaimed Water System Expansion and Augmentation Project	no	yes	City of Eustis	1.10 mgd	City of Eustis, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
28	Flagler County Bulow Reuse Water System Project	no	yes	Flagler County	1.70 mgd	Flagler County, WPSP funds requested	Complete	2006–2007	2007	2007–2008
29	Holly Hill-Ormond Beach Reclaimed Water System Expansion Project	no	yes	City of Holly Hill	0.60 mgd	City of Holly Hill, WPSP funds requested	Complete	Complete‡	Complete‡	2008
30	Lady Lake Phase II Reclaimed Water System	no	yes	Town of Lady Lake	0.50 mgd	Town of Lady Lake, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
31	Lake Utility Services Inc. (Utilities Inc. of Florida) Lake Groves WWTF Reclaimed Water Expansion Project	no	yes	Utilities Inc. of Florida	1.00 mgd	Utilities Inc. of Florida, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
32	Leesburg Reclaimed Water Reuse Project	no	yes	City of Leesburg	7.05 mgd	City of Leesburg, WPSP funds requested	Complete	Complete	2006	2006–2007
33	Melbourne Reclaimed Water System Expansion Project	no	yes	City of Melbourne	1.50 mgd	City of Melbourne, WPSP funds requested	Complete	2008‡	2008‡	2010‡
34	Minneola Reclaimed Water Reuse Project	No	yes	City of Minneola	1.00 mgd	City of Minneola, WPSP funds requested	Complete	Complete	Complete	Complete‡
35	Mount Dora Country Club Golf Course Reclaimed Water Project	no	yes	Mount Dora Country Club	0.26 mgd	Mount Dora Country Club, WPSP funds requested	Complete	Not scheduled	Not scheduled	Not scheduled
37	Ocoee Reuse System Expansion Project	no	yes	City of Ocoee	0.35 mgd	City of Ocoee, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡

Table 15.—Continued

DWSP Project Number	Projects	Multi-jurisdictional	Selected for Implementation	Project Sponsor(s)	Proposed Quantity	Funding Source	Project Planning	Engineering Design	Permitting	Construction
38	Orange County Northwest Reclaimed Water Project	no	yes	Orange County	3.00 mgd	Orange County, WPSP funds requested	Complete	Complete‡	2006–2008‡	2010‡
39	Orange County Southeastern Reclaimed Water System Expansion	yes	yes	Orange County, Orlando Utilities Commission, City of Orlando	12.50 mgd	Orange County, WPSP funds requested	Complete	Complete‡	2006–2008	2010‡
40	Orlando Utilities Commission Project RENEW	yes	yes	Orlando Utilities Commission	9.20 mgd	Orlando Utilities Commission, WPSP funds requested	2005–2007	2008–2009	2009–2010	2010–2011
41	Ormond Beach North Peninsula Reclaimed Water Storage Project	no	yes	City of Ormond Beach	0.49 mgd	City of Ormond Beach, Florida Forever Trust Fund, WPSP funds requested	Complete	2008‡	2008‡	2010‡
42	Ormond Beach South Peninsula Reuse Improvement Project	no	yes	City of Ormond Beach	2.13 mgd	City of Ormond Beach, WPSP funds requested	Complete	Not scheduled‡	Not scheduled‡	Not scheduled‡
43	Palm Coast Reclaimed Water System Expansion Project	no	yes	City of Palm Coast	8.23 mgd	City of Palm Coast, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
44	Port Orange Airport Road Reclaimed Water Transmission Main Project	no	yes	City of Port Orange	1.00 mgd	City of Port Orange, WPSP funds requested	Complete	Complete	2006	2006
45	Port Orange Pioneer Trail Storage and Pumping Facility Project	no	yes	City of Port Orange	2.00 mgd	City of Port Orange, WPSP funds requested	Complete	Complete‡	2008	2010‡
46	Port Orange Reclaimed Water Reservoir and Recharge Basin Project	no	yes	City of Port Orange	2.70 mgd	City of Port Orange, Florida Forever Trust Fund, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
47	Rockledge Reclaimed Water Storage Project	no	yes	City of Rockledge	0.16 mgd	City of Rockledge, WPSP funds requested	Complete	Complete	Complete	Complete‡
48	Rockledge Reclaimed Water System Expansion – ASR Project	no	yes	City of Rockledge	0.55 mgd	City of Rockledge, WPSP funds requested	Complete	Complete	2005–2006	2006
49	South Daytona Reclaimed Water System Expansion Project	no	yes	City of South Daytona	0.14 mgd	City of South Daytona, WPSP funds requested	Complete	2005–2006	2006–2007	2006–2007
50	Tavares Reclaimed Water Treatment System Expansion Project	no	yes	City of Tavares	0.6 mgd	City of Tavares, WPSP funds requested	2009‡	2009‡	2009‡	2011‡
51	Volusia County Southwest Reclaimed Water System Project	no	yes	Volusia County	0.20 mgd	Volusia County, WPSP funds requested	Complete	2006	2006	2007
52	West Melbourne Above Ground Reclaimed Water Storage Tank	no	yes	City of West Melbourne	2.48 mgd	City of West Melbourne, STAG funds, WPSP funds requested	Complete	Complete‡	Complete‡	Complete‡
53	Winter Garden Reclaimed Water Pumping and Transmission Project	no	yes	City of Winter Garden	4.00 mgd	City of Winter Garden, WPSP funds requested	Complete	2005–2006	2006	2006–2008
56	University of Central Florida (UCF) Reclaimed Water and Stormwater Integration Project	no	yes	University of Central Florida	0.41 mgd	University of Central Florida, SJRWMD Stormwater Cost-share funds, WPSP funds requested	Complete	2006	2006	2006
67	Heathrow Boulevard Reclaimed Water Transmission Main Project	yes	no	to be identified	2.50 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
68	Markham Woods Road Reclaimed Water Transmission Main Project	no	no	to be identified	3.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
69	Orange Boulevard Reclaimed Water Transmission Main Project	yes	no	to be identified	2.50 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled

Table 15.—Continued

DWSP Project Number	Projects	Multi- jurisdictional	Selected for Implementation	Project Sponsor(s)	Proposed Quantity	Funding Source	Project Planning	Engineering Design	Permitting	Construction
70	Oviedo Reclaimed Water Project	no	no	to be identified	1.50 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
71	Seminole County Residential Reclaimed Water Retrofit Project – Phase 1	yes	no	to be identified	1.09 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
72	Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project	yes	no	to be identified	3.80 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
73	Spruce Creek Golf and Country Club Reclaimed Water Project	no	yes	Marion County Utilities	0.55 mgd	Marion County Utilities, WPSP funds requested	2007	2009	2009	2010
74	Timacuan Reclaimed Water Main Upgrade Project	yes	no	to be identified	2.90 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
75	West Melbourne – Reuse Distribution System Improvements Project	no	yes	City of West Melbourne	2.48 mgd	City of West Melbourne	Complete	2007	2007	2008
76	Western Ormond Beach Reclaimed Water Distribution Project	no	yes	City of Ormond Beach	2.70 mgd	City of Ormond Beach, WPSP funds requested	2011	2011	2011	2013
78	Sanford and Volusia Interconnect Reclaimed/Augmentation Project	yes	yes	City of Sanford	2.00 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
81	City of Flagler Beach Reclaimed Water Treatment System Project	No	yes	Ginn Development Company	0.75 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
84	City of Ocoee Northwest Reuse Re-Pump Station and Interconnection Mains Project	No	yes	City of Ocoee	1.20 mgd	to be identified	2009	2009	2009	2011
Reclaimed Augmentation Source										
24	DeLand Reclaimed Water and Surface Water Augmentation Project	no	yes	City of DeLand	1.70 mgd	City of DeLand, Florida Forever Trust Fund, WPSP funds requested	Complete	Complete	2006‡	2009
36	North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project	yes	yes	City of Sanford, City of Lake Mary, Seminole County	7.76 mgd	Project partners, Florida Forever Trust Fund, WPSP funds requested	Complete	In progress	In progress	2005–2009
54	Lake Apopka Reuse Augmentation Project	no	yes	City of Apopka	1.00 mgd	City of Apopka, WPSP funds requested	Complete‡	Complete‡	2008‡	2009‡
55	Seminole County Yankee Lake Reclaimed Water System Augmentation Project	no	yes	Seminole County	10.00 mgd	Seminole County, WPSP funds requested	Complete	In progress‡	2006	2006–2007
58	Winter Springs – Lake Jesup Reclaimed Water Augmentation Project	no	yes	City of Winter Springs	2.25 mgd	City of Winter Springs, WPSP funds requested	Complete‡	Complete‡	Complete‡	2009
77	Nova Canal Reclaimed Augmentation Project	yes	no	to be identified	9.40 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
79	St. Johns River Near SR 46–Non-Potable With Storage Project	yes	no	to be identified	6.90 mgd	to be identified	Not scheduled	Not scheduled	Not scheduled	Not scheduled
80	Umatilla Reclaimed Development and Surface Water Reclaimed Supply Project	no	yes	City of Umatilla	0.20 mgd	State of Florida, federal funds, WPSP funds requested	2009‡	2010‡	2010‡	2010‡

Table 15.—Continued

DWSP Project Number	Projects	Multi- jurisdictional	Selected for Implementation	Project Sponsor(s)	Proposed Quantity	Funding Source	Project Planning	Engineering Design	Permitting	Construction
82	Securing Minneola’s Alternative Resources for Tomorrow (SMART) Project	no	yes	City of Minneola	5.00 mgd	to be identified	2009	2009	2009	2009
83	Silver Springs Citrus Industrial Waste for Reuse Blending and Augmentation Project	no	yes	Silver Springs Citrus	0.35 mgd	to be identified	2008	2008	2009	2010
Other										
59	Cherry Lake Tree Farm Lake Withdrawal for Agricultural Irrigation Project	no	yes	Cherry Lake Tree Farm	0.77 mgd	Cherry Lake Tree Farm, SJRWMD funds requested	Complete	Complete‡	Complete‡	Complete‡
60	Holloway Farms Agricultural Irrigation Rainwater Collection System Project	no	yes	Holloway Farms	0.08 mgd	Holloway Farms, WPSP funds requested	Complete‡	Complete‡	Complete‡	Complete‡

Note: mgd = million gallons per day

Blue shading indicates a completed project.

* Although the multijurisdictional status of these projects has not been determined, SJRWMD anticipates that their development by multijurisdictional water supply entities will likely offer the greatest opportunity for their full development. Relatively small versions of these projects, which are to be developed by single entities, are identified as part of these projects.

‡ Indicates an update to the project schedule from the proposed schedule in *DWSP 2005*, first addendum, second addendum, or third addendum

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APPENDIX M.—HISTORICAL WATER USE, 1995 TO 2007

Historical water use data for 1995 to 2007 was compiled by the St. Johns River Water Management District (SJRWMD) from SJRWMD EN-50 reports and other data sources, such as Florida Department of Environmental Protection (FDEP) monthly operating reports (MORs). The water use data was summarized by total annual water use from a water source within a county and by annual water use category of water use from a source within a county. The annual water use from 1995 to 2007 by water source and water use category is presented in Table M-1. Table M-2 presents the annual water use from 1995 to 2007 by water source and by water use category for each county in SJRWMD or the part of the county in SJRWMD.

Table M-1. Freshwater source withdrawals by water use category in the St. Johns River Water Management District, 1995–2007

Freshwater withdrawals by category in the St. Johns River Water Management District, 1995–2007
(All values in million gallons per day)

Year	<u>Public Supply</u>		<u>Domestic Self-Supply</u>		<u>Commercial-Industrial-Institutional</u>		<u>Agricultural</u>		<u>Recreational</u>		<u>Power Generation</u>		<u>Total Freshwater Withdrawn</u>		Totals
	Ground	Surface	Ground	Surface	Ground	Surface	Ground	Surface	Ground	Surface	Ground	Surface	Ground	Surface	
1995	449.52	12.15	93.20	0.00	95.74	35.88	304.53	189.89	15.40	7.51	7.66	84.80	966.05	330.23	1,296.28
1996	474.81	11.07	85.61	0.00	108.17	17.99	311.52	189.13	28.20	12.23	19.07	17.71	1,027.38	248.13	1,275.51
1997	474.15	11.85	82.27	0.00	100.50	18.20	228.55	129.79	27.15	11.51	7.70	20.25	920.32	191.60	1,111.92
1998	517.39	12.15	90.33	0.00	97.26	34.49	415.04	197.07	32.77	13.69	7.89	19.27	1,160.68	276.67	1,437.35
1999	530.55	12.11	90.38	0.00	93.85	33.86	227.02	116.14	22.66	9.76	8.00	17.78	972.46	189.65	1,162.11
2000	558.47	14.08	51.10	0.00	90.62	31.80	387.85	213.74	72.66	31.94	10.86	18.91	1,171.56	310.47	1,482.03
2001	538.93	14.08	53.08	0.00	77.26	27.24	235.97	150.99	28.80	20.75	8.83	23.56	942.87	236.62	1,179.49
2002	519.68	15.57	68.62	0.00	69.92	26.78	246.82	130.98	18.56	21.27	8.96	27.04	932.56	221.64	1,154.20
2003	536.58	26.84	70.57	0.00	81.90	62.97	253.63	171.99	29.07	27.86	2.64	22.68	974.39	312.34	1,286.73
2004	571.48	25.08	72.91	0.00	78.85	71.23	275.99	207.33	28.13	35.09	3.15	28.31	1,030.51	367.04	1,397.55
2005	565.83	15.87	70.74	0.00	80.15	30.38	252.74	127.67	16.09	28.25	1.66	0.78	987.21	202.95	1,190.16
2006	632.95	20.44	72.91	0.00	92.15	31.12	459.73	210.83	24.45	37.92	2.27	1.19	1,284.46	301.50	1,585.96
2007	590.43	21.04	72.46	0.00	81.71	23.30	346.93	68.03	21.01	33.21	7.69	0.00	1,120.24	145.56	1,265.80

The estimation procedure for domestic self-supplied withdrawals changed for 2000 because a different per capita was used to calculate withdrawals as compared to previous years.
Agricultural includes water withdrawn for crop irrigation, livestock, and fish farming purposes.
Recreational includes water used for all turf grass (golf, commercial, industrial, and public) irrigation.
Data sources: 1995–2007, St. Johns River Water Management District
Excludes Polk County for all years

Table M-2. Freshwater withdrawals by county and water use category in the St. Johns River Water Management District, 1995–2007

Agricultural Irrigation														Agricultural Irrigation														Agricultural Irrigation													
Groundwater														Surface water														Total Freshwater													
County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007		
ALACHUA	3.28	4.16	2.87	6.14	3.70	4.13	2.32	3.40	6.01	7.60	3.72	7.13	6.66	0.05	0.07	0.06	0.04	0.03	0.04	0.03	0.02	0.03	0.03	0.03	0.03	0.00	3.33	4.23	2.93	6.18	3.73	4.17	2.35	3.42	6.04	7.63	3.75	7.16	6.66		
BAKER	0.93	1.99	1.82	1.35	1.17	2.67	1.76	1.47	4.39	1.61	1.50	2.23	0.95	0.63	0.94	0.80	0.51	0.37	1.64	1.08	0.90	2.69	0.99	0.92	1.37	0.00	1.56	2.93	2.62	1.86	1.54	4.31	2.84	2.37	7.08	2.60	2.42	3.60	0.95		
BRADFORD	0.09	0.11	0.07	0.13	0.09	0.00	0.00	0.01	0.10	0.15	0.05	0.08	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.02	0.03	0.01	0.00	0.09	0.11	0.07	0.13	0.09	0.00	0.00	0.02	0.12	0.19	0.07	0.11	0.15		
BREVARD	89.65	96.61	50.67	165.68	50.25	118.79	50.83	78.87	61.32	61.21	45.12	78.08	67.96	8.58	9.33	5.01	13.29	5.28	18.03	6.27	15.21	12.54	12.32	3.35	6.17	5.89	98.23	105.94	55.68	178.97	55.53	136.82	57.10	94.08	73.86	73.53	48.47	84.25	73.86		
CLAY	0.73	1.12	1.01	1.10	1.10	5.92	3.60	3.89	3.57	3.96	2.32	5.46	3.99	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.73	1.12	1.01	1.10	1.10	5.96	3.60	3.89	3.57	4.57	2.32	5.46	3.99		
DUVAL	1.11	1.09	0.94	1.30	0.92	3.74	1.53	2.33	3.00	1.47	1.95	3.60	3.10	0.05	0.08	0.06	0.09	0.06	0.33	0.10	0.19	0.21	0.07	0.17	0.30	0.00	1.16	1.17	1.00	1.39	0.98	4.07	1.63	2.52	3.21	1.54	2.12	3.90	3.10		
FLAGLER	6.67	6.66	6.07	8.22	9.46	15.67	5.85	8.51	7.68	9.02	6.11	16.97	22.98	0.26	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	3.19	0.00	0.00	6.93	6.66	6.07	8.22	9.46	15.70	5.85	8.51	7.68	9.02	9.30	16.97	22.98		
INDIAN RIVER	56.34	49.80	33.72	54.36	38.47	64.63	47.96	39.97	54.95	71.53	52.03	87.11	39.06	135.30	128.56	85.90	120.86	95.78	157.86	116.93	92.72	109.87	146.99	105.61	180.52	54.03	191.64	178.36	119.62	175.22	134.25	222.49	164.89	132.69	164.82	218.52	157.64	267.63	93.09		
LAKE	34.09	37.21	35.07	53.13	27.42	28.85	25.36	21.76	16.39	19.08	14.61	25.42	30.89	5.72	6.48	5.97	9.64	5.00	5.16	3.73	3.60	4.47	5.40	4.43	6.02	4.29	39.81	43.69	41.04	62.77	32.42	34.01	29.09	25.36	20.86	24.48	19.04	31.44	35.18		
MARION	3.30	4.27	4.67	6.10	3.63	11.10	6.40	5.15	4.44	3.96	3.54	11.17	12.44	0.36	0.46	0.50	0.74	0.40	0.78	0.59	0.42	0.11	0.12	0.08	0.25	0.00	3.66	4.73	5.17	6.84	4.03	11.88	6.99	5.57	4.55	4.08	3.62	11.42	12.44		
NASSAU	0.19	0.18	0.18	0.19	0.14	0.68	0.05	0.15	0.16	0.16	0.02	0.36	0.63	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.18	0.18	0.19	0.14	0.70	0.05	0.15	0.16	0.16	0.02	0.36	0.63		
OKEECHOBEE	11.87	10.18	6.70	11.46	7.79	15.16	11.63	7.63	4.68	6.43	16.87	27.45	21.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.87	10.18	6.70	11.46	7.79	15.16	11.63	7.63	4.68	6.43	16.87	27.45	21.23		
ORANGE	12.74	14.64	13.30	17.62	6.23	6.84	4.49	5.60	6.72	7.54	10.57	15.29	23.21	23.95	29.14	19.89	32.80	1.67	3.35	1.33	1.93	2.19	2.46	2.59	3.73	2.42	36.69	43.78	33.19	50.42	7.90	10.19	5.82	7.53	8.91	10.00	13.16	19.02	25.63		
OSCEOLA	5.39	5.19	4.28	8.15	2.54	29.30	20.67	12.25	20.30	22.46	50.88	95.03	26.43	9.20	8.25	7.46	14.77	2.95	19.06	15.05	9.28	29.91	32.13	0.74	1.78	0.00	14.59	13.44	11.74	22.92	5.49	48.36	35.72	21.53	50.21	54.59	51.62	96.81	26.43		
PUTNAM	14.25	16.14	13.17	14.76	15.31	11.69	9.19	9.23	9.32	8.25	6.52	12.79	13.44	1.08	1.12	0.70	0.77	0.88	3.50	2.66	3.59	5.27	2.93	2.34	1.71	0.87	15.33	17.26	13.87	15.53	16.19	15.19	11.85	12.82	14.59	11.18	8.86	14.50	14.31		
ST JOHNS	31.38	28.24	26.23	32.73	32.36	28.59	18.67	22.65	6.16	7.04	15.02	34.75	35.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	31.38	28.24	26.23	32.73	32.36	28.59	18.67	22.65	6.19	7.07	15.02	34.75	35.27		
SEMINOLE	6.99	6.24	6.73	7.67	4.39	11.06	5.33	4.49	18.86	24.56	8.39	9.39	13.09	0.26	0.21	0.37	0.22	0.14	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	7.25	6.45	7.10	7.89	4.53	11.08	5.33	4.52	18.86	24.56	8.39	9.39	13.09		
VOLUSIA	25.53	27.69	21.05	24.95	22.05	29.03	20.33	19.46	25.58	19.96	13.52	27.42	25.47	4.45	4.49	3.07	3.34	3.58	3.88	3.22	3.08	4.65	3.21	4.20	8.92	0.50	29.98	32.18	24.12	28.29	25.63	32.91	23.55	22.54	30.23	23.17	17.72	36.34	25.97		
Totals	304.53	311.52	228.55	415.04	227.02	387.85	235.97	246.82	253.63	275.99	252.74	459.73	346.93	189.89	189.13	129.79	197.07	116.14	213.74	150.99	130.98	171.99	207.33	127.67	210.83	68.03	494.42	500.65	358.34	612.11	343.16	601.59	386.96	377.80	425.62	483.32	380.41	670.56	414.96		

Recreational Irrigation														Recreational Irrigation														Recreational Irrigation													
Groundwater														Surface water														Total Freshwater													
County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007		
ALACHUA	0.48	1.58	1.50	2.09	1.41	4.11	1.90	0.44	0.49	0.68	0.25	0.32	0.28	0.06	0.09	0.09	0.11	0.08	0.24	0.00	0.09	0.18	0.16	0.17	0.19	0.17	0.54	1.67	1.59	2.20	1.49	4.35	1.90	0.53	0.67	0.84	0.42	0.51	0.45		
BAKER	0.09	0.17	0.15	0.16	0.12	0.14	0.10	0.09	0.07	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.17	0.15	0.16	0.12	0.23	0.10	0.09	0.07	0.08	0.01	0.00	0.00		
BRADFORD	0.06	0.10	0.18	0.24	0.16	0.20	0.02	0.00	1.21	1.25	0.36	0.68	0.15	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.10	0.18	0.24	0.16	0.22	0.03	0.00	1.21	1.25	0.36	0.68	0.15		
BREVARD	1.07	3.29	2.38	3.17	2.22	7.75	2.73	1.25	2.19	2.39	2.84	1.92	1.88	1.77	2.79	2.22	2.73	1.92	7.08	1.16	2.49	3.37	2.20	2.51	3.45	3.39	2.84	6.08	4.60	5.90	4.14	14.83	3.89	3.74	5.56	4.59	5.35	5.37	5.27		
CLAY	0.46	0.86	0.88	0.96	0.86	1.77	1.03	0.56	0.71	0.59	0.13	1.74	1.13	0.24	0.31	0.31	0.35	0.45	0.48	0.73	0.47	0.28	0.48	0.39	0.69	0.45	0.70	1.17	1.19	1.31	1.31	2.25	1.76	1.03	0.99	1.07	0.52	2.43	1.58		
DUVAL	1.79	2.97	3.03	3.34	2.76	6.17	3.02	2.20</																																	

Table M-2.—Continued

Commercial/Industrial/Institutional Groundwater													
County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
ALACHUA	1.91	1.91	1.54	1.64	1.71	2.04	1.92	0.95	0.60	0.54	0.34	0.67	0.36
BAKER	0.19	0.19	0.19	0.21	0.20	0.17	0.17	0.15	0.60	0.44	0.35	0.45	0.53
BRADFORD	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	1.21	1.17	0.88	0.82	0.59
BREVARD	1.80	1.75	1.67	3.46	2.66	1.04	1.28	0.97	3.74	3.08	3.67	4.98	4.45
CLAY	4.46	5.02	4.37	2.74	2.68	6.87	4.02	3.82	2.77	3.27	2.73	1.14	0.74
DUVAL	24.75	24.15	25.83	22.02	16.37	12.51	13.73	13.05	19.53	16.82	15.49	21.46	18.35
FLAGLER	0.18	0.07	0.07	0.06	0.05	0.20	0.15	0.16	0.14	0.43	0.01	0.10	0.00
INDIAN RIVER	0.16	0.14	0.11	0.15	0.13	0.12	0.14	0.14	1.75	2.06	0.00	0.00	0.17
LAKE	10.23	8.51	8.81	8.83	10.38	10.44	8.61	10.43	9.89	8.91	9.54	8.77	7.19
MARION	1.85	1.76	1.75	1.05	1.36	1.95	1.52	1.40	2.82	3.04	2.68	4.09	4.48
NASSAU	34.49	35.73	35.23	35.03	30.56	32.46	31.43	30.70	29.98	29.73	36.17	34.98	32.43
OKEECHOBEE	0.03	0.03	0.03	0.03	0.03	0.06	0.08	0.08	0.05	0.07	0.00	0.00	0.00
ORANGE	3.61	3.15	2.74	1.72	2.83	3.04	2.57	2.99	2.71	3.09	3.06	2.97	3.20
OSCEOLA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUTNAM	11.19	20.36	17.54	19.55	24.16	19.14	11.10	4.55	4.09	3.68	3.49	10.01	7.13
ST JOHNS	0.06	0.05	0.06	0.06	0.06	0.01	0.01	0.02	0.79	0.36	0.63	0.88	1.08
SEMINOLE	0.14	0.15	0.16	0.15	0.09	0.08	0.07	0.06	0.51	0.61	0.39	0.00	0.12
VOLUSIA	0.69	5.20	0.40	0.56	0.58	0.49	0.45	0.44	0.72	1.55	0.72	0.83	0.89
Totals	95.74	108.17	100.50	97.26	93.85	90.62	77.26	69.92	81.90	78.85	80.15	92.15	81.71

Thermoelectric Power Generation Groundwater													
County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
ALACHUA	0.40	0.19	0.17	0.24	0.32	0.15	0.17	0.30	0.21	0.42	0.17	0.18	0.36
BAKER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRADFORD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BREVARD	0.31	0.33	0.34	0.49	0.41	0.39	0.35	0.29	0.31	0.31	0.14	0.12	0.13
CLAY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DUVAL	5.47	4.54	5.44	5.28	5.54	8.33	6.23	6.33	0.55	0.61	0.50	1.25	5.74
FLAGLER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDIAN RIVER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAKE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MARION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NASSAU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OKEECHOBEE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ORANGE	0.41	0.72	0.71	0.76	0.64	0.76	0.74	0.73	0.82	0.85	0.45	0.50	0.46
OSCEOLA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PUTNAM	0.70	0.55	0.61	0.61	0.58	0.69	0.82	0.73	0.26	0.64	0.02	0.01	0.70
ST JOHNS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEMINOLE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VOLUSIA	0.37	12.74	0.43	0.51	0.51	0.54	0.52	0.58	0.49	0.32	0.36	0.21	0.30
Totals	7.66	19.07	7.70	7.89	8.00	10.86	8.83	8.96	2.64	3.15	1.66	2.27	7.69

Commercial/Industrial/Institutional												
Surface water												
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	6.27	7.91	0.91	1.56	1.40
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	2.07	3.97	2.77	1.33	1.14
0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.07	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.21	0.00	0.00	0.00
1.14	0.73	0.73	0.49	0.21	0.60	0.00	0.00	26.08	28.42	0.00	2.66	2.18
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.22	0.15	0.13	0.14
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.13	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.55	2.82	1.03	0.70	0.75
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34.74	17.26	17.47	33.98	33.65	31.12	26.90	26.69	25.32	23.04	25.09	24.51	17.44
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.58	0.30	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.23	0.25
35.88	17.99	18.20	34.49	33.86	31.80	27.24	26.78	62.97	71.23	30.38	31.12	23.30

Thermoelectric Power Generation												
Surface water												
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.50	15.91	17.19	16.33	14.39	13.90	17.88	15.39	14.14	17.37	0.78	1.19	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.30	1.80	3.06	2.94	3.39	5.01	5.68	11.65	8.54	10.94	0.00	0.00	0.00
84.80	17.71	20.25	19.27	17.78	18.91	23.56	27.04	22.68	28.31	0.78	1.19	0.00

Commercial/Industrial/Institutional												
Total Freshwater												
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1.91	1.91	1.54	1.66	1.71	2.04	1.92	0.95	0.60	0.60	0.34	0.67	0.36
0.19	0.19	0.19	0.21	0.20	0.17	0.17	0.15	0.60	0.44	0.35	0.45	0.53
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	1.21	1.17	0.88	0.82	0.59
1.80	1.75	1.67	3.46	2.66	1.05	1.29	0.99	10.01	10.99	4.58	6.54	5.85
4.46	5.02	4.37	2.74	2.68	6.87	4.02	3.82	2.77	4.22	2.73	1.14	0.74
24.75	24.15	25.83	22.02	16.37	12.51	13.98	13.05	21.60	20.79	18.26	22.79	19.49
0.18	0.07	0.07	0.06	0.05	0.27	0.22	0.23	0.14	0.43	0.01	0.10	0.00
0.16	0.14	0.11	0.15	0.13	0.12	0.15	0.14	1.75	2.27	0.00	0.00	0.17
11.37	9.24	9.54	9.32	10.59	11.04	8.61	10.43	35.97	37.33	9.54	11.43	9.37
1.85	1.76	1.75	1.05	1.36	1.95	1.52	1.40	2.82	6.26	2.83	4.22	4.62
34.49	35.73	35.23	35.03	30.56	32.46	31.43	30.70	29.99	29.78	36.30	34.98	32.43
0.03	0.03	0.03	0.03	0.03	0.06	0.08	0.08	0.05	0.07	0.00	0.00	0.00
3.61	3.15	2.74	1.72	2.83	3.04	2.57	2.99	5.26	5.91	4.09	3.67	3.95
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.93	37.62	35.01	53.53	57.81	50.26	38.00	31.24	29.41	26.72	28.58	34.52	24.57
0.06	0.05	0.06	0.06	0.06	0.01	0.01	0.02	1.42	0.94	0.93	0.88	1.08
0.14	0.15	0.16	0.15	0.09	0.08	0.07	0.06	0.54	0.61	0.39	0.00	0.12
0.69	5.20	0.40	0.56	0.58	0.49	0.45	0.44	0.73	1.55	0.72	1.06	1.14
131.62	126.16	118.70	131.75	127.71	122.42	104.50	96.70	144.87	150.08	110.53	123.27	105.01

District Water Supply Plan 2005—Fourth Addendum

Table M-2.—Continued

Domestic Self-Supply

Groundwater

County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
ALACHUA	3.29	1.29	1.50	1.23	1.24	0.65	0.54	0.68	0.67	0.68	2.02	2.04	1.03
BAKER	2.50	2.44	2.47	2.36	2.52	1.78	1.76	2.81	2.86	2.93	3.37	3.51	3.45
BRADFORD	0.16	0.12	0.12	0.00	0.09	0.18	0.10	0.12	0.12	0.13	0.89	0.90	0.1
BREVARD	5.23	5.36	5.23	5.21	5.10	1.90	1.99	1.45	1.50	1.54	1.01	1.03	1.83
CLAY	3.59	2.33	2.44	3.63	3.99	4.24	4.02	4.97	5.16	5.40	3.57	3.72	5.70
DUVAL	11.87	11.50	11.18	11.57	13.88	4.46	4.79	6.81	6.94	7.07	7.54	7.70	6.74
FLAGLER	1.85	1.83	1.96	2.13	2.54	0.62	0.50	0.46	0.50	0.57	0.29	0.33	1.31
INDIAN RIVER	6.91	7.37	5.72	6.68	6.24	1.87	1.90	1.65	1.68	1.76	1.68	1.75	1.35
LAKE	2.49	2.00	1.62	2.55	2.71	4.04	3.89	5.57	5.83	6.10	6.52	6.86	9.32
MARION	16.72	17.49	15.44	16.36	17.76	8.87	7.39	7.20	7.52	7.82	9.33	9.64	8.28
NASSAU	4.23	4.58	4.96	5.41	6.58	3.48	3.52	8.30	8.56	8.83	8.20	8.50	7.49
OKEECHOBEE	0.08	0.08	0.08	0.09	0.09	0.06	0.08	0.09	0.09	0.10	0.08	0.08	0.09
ORANGE	10.41	9.41	10.94	12.73	11.87	6.12	9.76	12.27	12.54	12.93	8.16	8.44	8.24
OSCEOLA	0.49	0.51	0.51	0.25	0.26	0.18	0.19	0.25	0.27	0.29	0.24	0.26	0.11
PUTNAM	8.23	8.60	6.72	8.48	5.78	4.99	4.98	6.99	7.07	7.19	10.34	10.43	8.09
ST JOHNS	2.89	2.69	2.80	2.82	3.10	1.91	1.82	1.91	2.00	2.13	2.05	2.16	3.62
SEMINOLE	8.63	5.64	5.95	5.90	3.89	2.73	3.07	3.71	3.79	3.87	2.70	2.76	1.95
VOLUSIA	3.63	2.37	2.63	2.93	2.74	3.02	2.78	3.38	3.47	3.57	2.75	2.80	3.75
Totals	93.20	85.61	82.27	90.33	90.38	51.10	53.08	68.62	70.57	72.91	70.74	72.91	72.46

Public Supply

Groundwater

County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
ALACHUA	22.15	22.70	22.71	25.21	25.40	25.83	26.52	26.10	27.04	27.85	25.01	28.21	27.51
BAKER	0.68	0.75	0.76	0.77	0.82	0.88	0.83	0.80	0.82	0.82	0.86	0.87	0.92
BRADFORD	0.04	0.04	0.04	0.00	0.04	0.05	0.11	0.12	0.35	0.45	0.45	0.00	0.55
BREVARD	39.20	42.50	38.73	40.79	39.41	39.27	40.05	40.02	43.42	49.46	42.76	40.83	33.58
CLAY	12.04	12.19	11.45	13.49	14.54	14.77	14.29	14.26	15.93	18.17	13.96	17.05	16.22
DUVAL	99.59	106.81	104.93	107.43	112.47	119.12	111.80	113.42	112.52	128.16	137.92	138.54	138.13
FLAGLER	4.51	4.50	4.93	5.22	6.08	6.22	11.23	7.01	7.27	7.49	8.92	9.71	9.34
INDIAN RIVER	11.16	11.36	11.62	12.97	13.37	13.93	14.61	13.31	18.70	18.13	16.76	15.50	14.97
LAKE	26.46	29.35	30.50	35.49	36.50	39.92	39.98	38.75	41.54	42.68	41.25	50.32	50.30
MARION	14.38	15.15	15.93	16.51	17.26	19.77	19.28	19.33	20.32	20.47	18.33	30.69	21.19
NASSAU	4.96	5.01	5.06	5.98	6.86	6.81	6.47	6.09	6.11	6.65	6.50	7.74	8.32
OKEECHOBEE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ORANGE	100.99	108.66	105.82	118.87	124.37	130.27	126.32	111.89	115.98	116.63	121.10	147.80	128.72
OSCEOLA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUTNAM	3.59	3.91	3.25	3.87	2.96	3.20	3.03	3.01	3.41	3.42	2.98	2.83	2.97
ST JOHN	10.30	11.53	12.32	13.88	14.89	16.49	13.64	14.02	15.29	17.15	14.34	16.59	16.39
SEMINOLE	50.69	50.76	54.82	61.01	60.08	66.90	57.29	56.11	53.21	56.06	56.14	64.18	61.80
VOLUSIA	48.78	49.59	51.28	55.90	55.50	55.04	53.48	55.44	54.67	57.89	58.55	62.09	59.52
Totals	449.52	474.81	474.15	517.39	530.55	558.47	538.93	519.68	536.58	571.48	565.83	632.95	590.43

Domestic Self-Supply

Surface water

[illegible]

Public Supply

Surface water

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.15	11.07	11.85	12.15	12.11	14.08	14.08	15.57	18.36	16.13	15.85	20.44	21.04
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.20	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.79	3.96	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.38	3.09	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.19	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.10	0.02	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.73	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.06	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.62	0.00	0.00	0.00
12.15	11.07	11.85	12.15	12.11	14.08	14.08	15.57	26.84	25.08	15.87	20.44	21.04

Domestic Self-Supply

Total Freshwater

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
3.29	1.29	1.50	1.23	1.24	0.65	0.54	0.68	0.67	0.68	2.02	2.04	1.03
2.50	2.44	2.47	2.36	2.52	1.78	1.76	2.81	2.86	2.93	3.37	3.51	3.45
0.16	0.12	0.12	0.00	0.09	0.18	0.10	0.12	0.12	0.13	0.89	0.90	0.10
5.23	5.36	5.23	5.21	5.10	1.90	1.99	1.45	1.50	1.54	1.01	1.03	1.83
3.59	2.33	2.44	3.63	3.99	4.24	4.02	4.97	5.16	5.40	3.57	3.72	5.70
11.87	11.50	11.18	11.57	13.88	4.46	4.79	6.81	6.94	7.07	7.54	7.70	6.74
1.85	1.83	1.96	2.13	2.54	0.62	0.50	0.46	0.50	0.57	0.29	0.33	1.31
6.91	7.37	5.72	6.68	6.24	1.87	1.90	1.65	1.68	1.76	1.68	1.75	1.35
2.49	2.00	1.62	2.55	2.71	4.04	3.89	5.57	5.83	6.10	6.52	6.86	9.32
16.72	17.49	15.44	16.36	17.76	8.87	7.39	7.20	7.52	7.82	9.33	9.64	8.28
4.23	4.58	4.96	5.41	6.58	3.48	3.52	8.30	8.56	8.83	8.20	8.50	7.49
0.08	0.08	0.08	0.09	0.09	0.06	0.08	0.09	0.09	0.10	0.08	0.08	0.09
10.41	9.41	10.94	12.73	11.87	6.12	9.76	12.27	12.54	12.93	8.16	8.44	8.24
0.49	0.51	0.51	0.25	0.26	0.18	0.19	0.25	0.27	0.29	0.24	0.26	0.11
8.23	8.60	6.72	8.48	5.78	4.99	4.98	6.99	7.07	7.19	10.34	10.43	8.09
2.89	2.69	2.80	2.82	3.10	1.91	1.82	1.91	2.00	2.13	2.05	2.16	3.62
8.63	5.64	5.95	5.90	3.89	2.73	3.07	3.71	3.79	3.87	2.70	2.76	1.95
3.63	2.37	2.63	2.93	2.74	3.02	2.78	3.38	3.47	3.57	2.75	2.80	3.75
93.20	85.61	82.27	90.33	90.38	51.10	53.08	68.62	70.57	72.91	70.74	72.91	72.46

Public Supply

Total Freshwater

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
22.15	22.70	22.71	25.21	25.40	25.83	26.52	26.10	27.04	27.85	25.01	28.21	27.51
0.68	0.75	0.76	0.77	0.82	0.88	0.83	0.80	0.82	0.82	0.86	0.87	0.92
0.04	0.04	0.04	0.00	0.04	0.05	0.11	0.12	0.35	0.45	0.45	0.00	0.55
51.35	53.57	50.58	52.94	51.52	53.35	54.13	55.59	61.78	65.59	58.61	61.27	54.62
12.04	12.19	11.45	13.49	14.54	14.77	14.29	14.26	15.93	18.17	13.96	17.05	16.22
99.59	106.81	104.93	107.43	112.47	119.12	111.80	113.42	112.52	128.16	137.92	138.54	138.13
4.51	4.50	4.93	5.22	6.08	6.22	11.23	7.01	7.41	7.69	8.92	9.71	9.34
11.16	11.36	11.62	12.97	13.37	13.93	14.61	13.31	22.49	22.09	16.76	15.50	14.97
26.46	29.35	30.50	35.49	36.50	39.92	39.98	38.75	44.92	45.77	41.25	50.32	50.30
14.38	15.15	15.93	16.51	17.26	19.77	19.28	19.33	20.40	20.66	18.33	30.69	21.19
4.96	5.01	5.06	5.98	6.86	6.81	6.47	6.09	6.11	6.65	6.50	7.74	8.32
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.99	108.66	105.82	118.87	124.37	130.27	126.32	111.89	116.02	116.73	121.12	147.80	128.72
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.59	3.91	3.25	3.87	2.96	3.20	3.03	3.01	3.41	3.42	2.98	2.83	2.97
10.30	11.53	12.32	13.88	14.89	16.49	13.64	14.02	15.64	17.88	14.34	16.59	16.39
50.69	50.76	54.82	61.01	60.08	66.90	57.29	56.11	53.32	56.12	56.14	64.18	61.80
48.78	49.59	51.28	55.90	55.50	55.04	53.48	55.44	55.26	58.51	58.55	62.09	59.52
461.67	485.88	486.00	529.54	542.66	572.55	553.01	535.25	563.42	596.56	581.70	653.39	611.47

Table M-2.—Continued

Total Water Use														Total Water Use														Total Water Use													
Groundwater														Surface water														Total Freshwater													
County	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007		
ALACHUA	31.51	31.83	30.29	36.55	33.78	36.91	33.37	31.87	35.02	37.77	31.51	38.55	36.20	0.11	0.16	0.15	0.17	0.11	0.28	0.03	0.11	0.21	0.25	0.20	0.22	0.17	31.62	31.99	30.44	36.72	33.89	37.19	33.40	31.98	35.23	38.02	31.71	38.77	36.37		
BAKER	4.39	5.54	5.39	4.85	4.83	5.64	4.62	5.32	8.74	5.88	6.09	7.06	5.85	0.63	0.94	0.80	0.51	0.37	1.73	1.08	0.90	2.69	0.99	0.92	1.37	0.00	5.02	6.48	6.19	5.36	5.20	7.37	5.70	6.22	11.43	6.87	7.01	8.43	5.85		
BRADFORD	0.35	0.37	0.41	0.37	0.38	0.43	0.24	0.26	2.99	3.15	2.63	2.48	1.54	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.02	0.04	0.02	0.03	0.01	0.35	0.37	0.41	0.37	0.38	0.45	0.25	0.27	3.01	3.19	2.65	2.51	1.55		
BREVARD	137.26	149.84	99.02	218.80	100.05	169.14	97.23	122.85	112.48	117.99	95.54	126.96	109.83	22.50	23.19	19.08	28.17	19.31	39.20	21.52	33.29	40.54	38.56	22.62	31.62	31.72	159.76	173.03	118.10	246.97	119.36	208.34	118.75	156.14	153.02	156.55	118.16	158.58	141.55		
CLAY	21.28	21.52	20.15	21.92	23.17	33.57	26.96	27.50	28.14	31.39	22.71	29.11	27.78	0.24	0.31	0.31	0.35	0.45	0.52	0.73	0.47	0.28	2.04	0.39	0.69	0.45	21.52	21.83	20.46	22.27	23.62	34.09	27.69	27.97	28.42	33.43	23.10	29.80	28.23		
DUVAL	144.58	151.06	151.35	150.94	151.94	154.33	141.10	144.14	146.48	158.38	165.11	175.43	174.83	0.48	0.73	0.73	0.82	0.66	1.65	2.66	3.52	6.13	7.27	6.39	4.76	4.16	145.06	151.79	152.08	151.76	152.60	155.98	143.76	147.66	152.61	165.65	171.50	180.19	178.99		
FLAGLER	13.30	13.24	13.21	15.83	18.28	24.55	18.57	16.23	15.79	17.73	15.51	27.82	34.46	0.85	1.42	1.44	1.63	1.23	3.60	0.36	0.33	0.14	0.94	3.75	1.29	1.50	14.15	14.66	14.65	17.46	19.51	28.15	18.93	16.56	15.93	18.67	19.26	29.11	35.96		
INDIAN RIVER	76.58	71.09	53.24	76.32	59.90	87.36	66.90	57.27	79.27	96.78	71.59	106.30	57.16	136.29	129.86	87.00	122.01	96.69	161.08	121.06	97.04	120.04	162.72	111.99	189.12	61.19	212.87	200.95	140.24	198.33	156.59	248.44	187.96	154.31	199.31	259.50	183.58	295.42	118.35		
LAKE	74.13	78.55	77.38	101.90	78.15	88.61	84.15	80.86	77.92	82.52	75.70	97.36	102.50	7.56	8.25	7.69	11.47	6.01	9.63	6.53	6.91	38.74	41.29	10.32	17.15	13.25	81.69	86.80	85.07	113.37	84.16	98.24	90.68	87.77	116.66	123.81	86.02	114.51	115.75		
MARION	36.78	39.63	38.88	41.13	40.79	43.92	36.21	34.08	39.48	37.97	35.40	57.41	48.02	0.75	1.02	1.14	1.38	0.86	1.94	2.58	1.78	1.91	4.65	1.19	1.88	1.49	37.53	40.65	40.02	42.51	41.65	45.86	38.79	35.86	41.39	42.62	36.59	59.29	49.51		
NASSAU	44.54	46.79	46.82	47.99	45.24	46.53	43.26	46.79	47.86	47.14	52.01	53.34	50.46	0.11	0.19	0.21	0.21	0.16	0.48	0.78	0.88	2.39	0.69	1.84	1.40	1.26	44.65	46.98	47.03	48.20	45.40	47.01	44.04	47.67	50.25	47.83	53.85	54.74	51.72		
OKEECHOBEE	11.98	10.29	6.81	11.58	7.91	15.28	11.79	7.80	4.82	6.60	16.95	27.53	21.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.98	10.29	6.81	11.58	7.91	15.28	11.79	7.80	4.82	6.60	16.95	27.53	21.32		
ORANGE	129.58	139.49	136.20	155.30	148.01	157.28	146.99	135.37	140.96	142.41	144.62	176.06	164.95	24.23	29.70	20.41	33.50	2.06	5.32	2.85	2.54	5.53	6.44	4.57	5.04	3.82	153.81	169.19	156.61	188.80	150.07	162.60	149.84	137.91	146.49	148.85	149.19	181.10	168.77		
OSCEOLA	5.88	5.70	4.79	8.40	2.80	29.48	20.86	12.50	20.57	22.75	51.14	95.29	26.54	9.20	8.25	7.46	14.77	2.95	19.06	15.05	9.28	29.91	32.13	0.74	1.78	0.00	15.08	13.95	12.25	23.17	5.75	48.54	35.91	21.78	50.48	54.88	51.88	97.07	26.54		
PUTNAM	38.11	49.88	41.61	47.63	49.06	40.35	29.76	24.72	24.49	23.44	23.44	36.22	32.44	50.32	34.29	35.36	51.08	48.92	48.92	47.69	45.80	44.80	43.34	28.28	27.57	18.42	88.43	84.17	76.97	98.71	97.98	89.27	77.45	70.52	69.29	66.78	51.72	63.79	50.86		
ST JOHNS	45.73	44.16	42.89	51.33	51.75	52.55	34.70	39.62	25.08	28.46	32.34	55.41	57.20	0.64	0.93	0.84	1.04	0.77	3.16	2.08	1.97	3.24	4.35	3.21	4.40	3.61	46.37	45.09	43.73	52.37	52.52	55.71	36.78	41.59	28.32	32.81	35.55	59.81	60.81		
SEMINOLE	68.91	66.53	71.78	79.43	71.52	88.47	67.12	65.32	77.58	85.82	68.28	77.58	78.11	0.88	1.10	1.35	1.33	0.87	1.78	1.36	0.76	1.14	0.97	0.94	1.17	1.08	69.79	67.63	73.13	80.76	72.39	90.25	68.48	66.08	78.72	86.79	69.22	78.75	79.19		
VOLUSIA	81.16	101.87	80.10	90.41	84.90	97.16	79.04	80.06	86.72	84.33	76.64	94.55	91.05	75.44	7.79	7.63	8.23	8.23	12.10	10.25	16.05	14.63	20.37	5.58	12.01	3.43	156.60	109.66	87.73	98.64	93.13	109.26	89.29	96.11	101.35	104.70	82.22	106.56	94.48		
Totals	966.05	1,027.38	920.32	1,160.68	972.46	1,171.56	942.87	932.56	974.39	1,030.51	987.21	1,284.46	1,120.24	330.23	248.13	191.60	276.67	189.65	310.47	236.62	221.64	312.34	367.04	202.95	301.50	145.56	1,296.28	1,275.51	1,111.92	1,437.35	1,162.11	1,482.03	1,179.49	1,154.20	1,286.73	1,397.55	1,190.16	1,585.96	1,265.80		

APPENDIX N.—DETAILED DESCRIPTIONS OF WATER SUPPLY DEVELOPMENT PROJECTS

Appendix N contains planning-level, project-specific information for alternative water supply development projects identified in *District Water Supply Plan 2005 (DWSP 2005)*, as amended. The project descriptions included in Appendix N should be considered planning-level and conceptual in nature because final planning, design, permitting, and construction of these projects is incomplete. For these conceptual projects, St. Johns River Water Management District (SJRWMD) recognizes that the details of the project descriptions (including, but not limited to, estimated quantities of water produced, anticipated time frames, project costs and components, and the number and identity of water supply entities involved in these projects) may change as these projects progress.

Brackish Groundwater Source Project Descriptions

Name of project options and project numbers:

Project name: Project names are identified on Lists 1 and 2, Tables 13, 14, and 15 of this fourth addendum to *District Water Supply Plan 2005 (DWSP 2005)* as brackish groundwater source for potable use projects.

Project numbers: 2, 3, and 5 (Note: Brackish groundwater source for potable use projects, identified as being complete in this fourth addendum, are not described here.)

Traditional or an alternative water supply option:

These projects are alternative water supply options.

Type of alternative water supply (AWS) project option:

These projects will develop a brackish groundwater source and will supply water from a nontraditional source. SJRWMD generally identifies as “brackish” waters those source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids. SJRWMD considers brackish water sources as alternative water supply sources. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Descriptions of projects:

These projects are described in the project descriptions included on pages 64–65 of this appendix and in Tables 13, 14, and 15 of this fourth addendum to *DWSP 2005*.

Amount of water estimated to become available through these project options expressed as average daily flow (measured in million gallons per day [mgd]):

The quantities of water estimated to become available through these project options are indicated by project; project descriptions are included on pages 64–65 of this appendix and in Tables 13 and 15 of this fourth addendum to *DWSP 2005*.

Time frame in which project option should be implemented:

The time frames in which these project options should be implemented are indicated in Table 15 of this fourth addendum to *DWSP 2005*.

Estimated planning-level costs:

Estimated planning-level costs for these projects are indicated in Table 13 of this fourth addendum to *DWSP 2005*.

Basis for planning-level costs:

These cost estimates are based on information provided by the project sponsors. SJRWMD reviewed this cost information to make certain that it appeared to be reasonable.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for projects implementing the project options:

Established MFLs for water bodies that are located in areas that may experience water level declines as a result of the groundwater withdrawals associated with these projects would be considered in the CUP application review process for these projects. The established MFLs for Lake Washington would apply to Project 3: Melbourne Reverse Osmosis (RO) Plant Expansion Project. Currently, there are no established MFLs that affect the other projects.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

SJRWMD has established MFLs for numerous lakes and springs (Chapter 40C-8, *Florida Administrative Code [F.A.C.]*). SJRWMD used its regional groundwater flow models to estimate the projected change in the elevation of the potentiometric surface of the Floridan aquifer that would result if proposed groundwater withdrawals, including brackish groundwater withdrawals to support these potential projects, were realized. These projected changes were evaluated in light of established MFLs to determine if these withdrawals would cause water levels or flows to fall below established MFLs. For Projects 2 and 5, projected water level declines do not extend to the locations of water bodies where MFLs have been established. For Project 3, projected water level declines would occur in the Floridan aquifer at Lake Washington. However, the projected decline would not cause water levels in Lake Washington to fall below established MFLs. As a result of these analyses, SJRWMD concluded that these withdrawals would not cause water levels or flows to fall below established MFLs (SJRWMD 2006). Based on this planning-level analysis, MFLs would not constrain these projects. In addition, there are no recovery or prevention strategies or water use reservations that would constrain these projects. At the time of preparation of this fourth addendum, consumptive use permits had been issued for Projects 2, 3, and 5. Applicable MFLs were addressed during the permit review process. The details of these reviews are addressed in the technical staff reports for the permits associated with these projects.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The names of the entity or entities that should implement these project options are indicated, by project, on Table 14 of this fourth addendum to *DWSP 2005*. The status of these projects is described, by project, on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: Thirty-one public water supply facilities in SJRWMD use demineralization treatment processes (FDEP 2009), although these facilities do not all use brackish groundwater sources. Fifteen public water supply facilities and associated withdrawals of brackish groundwater have been authorized in SJRWMD pursuant to Florida Department of Environmental Protection (FDEP) and SJRWMD permitting requirements. Many of these facilities have been in operation for many years. The water treatment technologies necessary to support these projects are widely recognized as being technically feasible. For water supply planning purposes, SJRWMD

assessed the environmental feasibility of these projects based on the use of its regional groundwater models and water resource constraints as described in the *Water Supply Assessment 2003* (SJRWMD 2006) and on the approach proposed by each project sponsor to management of the water treatment process byproduct (concentrate). Based on this assessment, these projects in combination with all other proposed groundwater withdrawals through 2025 would meet these environmental constraints. Further, all of these projects, with the exception of Project 3: Melbourne Reverse Osmosis (RO) Plant Expansion Project, have valid permits issued by FDEP for management of the concentrate. Concentrate from the East Putnam Regional Water System Project (Project 2) is to be managed by discharge to the St. Johns River and concentrate from the St. Augustine Water Supply Project (Project 5) is to be managed by mixing the concentrate with the city's reclaimed water. The city of Melbourne, the sponsor of the Melbourne Reverse Osmosis (RO) Plant Expansion Project, is currently planning to manage the concentrate from this project by discharging it to an injection well that would be permitted by FDEP pursuant to the requirements of Chapter 62-528, *F.A.C.* Since this proposed injection well would be located in an area that has existing injection wells used for municipal wastewater discharge, SJRWMD considers that it would be technically feasible to install another injection well in the same area for concentrate management purposes. Therefore, from a water supply planning perspective, SJRWMD considers these projects to be environmentally feasible. SJRWMD considered the economic feasibility of these projects based on the estimated unit production costs presented in Table 13 of this fourth addendum to *DWSP 2005* and on the willingness of the public supply utilities sponsoring the projects to implement them. These brackish groundwater source projects have all been proposed by public supply utilities. SJRWMD assumes that these public supply utilities assessed the economic feasibilities of these projects and found the feasibilities to be acceptable prior to requesting that they be included in *DWSP 2005*.

Permittability: Implementation of brackish groundwater source projects requires the issuance of permits by both SJRWMD and FDEP. For water supply planning purposes, SJRWMD considers these projects to be permittable from a planning-level perspective if they are considered environmentally feasible, as previously described. This link between environmental feasibility and permittability is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the projects' impacts with the water resource constraints should not be interpreted as the determination or application of the consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. Therefore, these projects are considered to be permittable from a planning-level perspective, because they are considered environmentally feasible, as previously described. At the time of preparation of this fourth addendum, consumptive use permits had been issued for Projects 2, 3, and 5.

Analysis of funding needs and sources of possible funding options:

The estimated level of funding required to support implementation of these projects is described on Table 13 of this fourth addendum to *DWSP 2005*. Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program,

SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

These projects will provide water from an alternative water source. They will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those they serve as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the sponsoring public supply utilities and others whom they may serve. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), *Florida Statutes* (F.S.).

Project number: 2

Project name: East Putnam Regional Water System Project

Project sponsor(s): Putnam County

Project type: Brackish groundwater

Purpose: This project will provide potable public supply water to take the place of private wells and support new water uses within the East Putnam Regional Water System service area. Parts of the service area currently have naturally occurring water quality that does not meet state drinking water standards for one or more dissolved inorganic constituents or may have locally polluted groundwater from malfunctioning septic tanks. The project would be designed to provide a safe source of drinking water for customers in these parts of the service area.

Water source: Brackish groundwater

Water use/destination: Public drinking water supply in East Palatka, San Mateo, and surrounding areas in Putnam County

Quantity of water to be made available: 0.63 mgd

Estimated construction cost: \$21,800,000

Project components: Currently, the project's components include a reverse osmosis facility including filtration and disinfection, wells, pipelines, pumps, elevated water storage tank, and an emergency generator.

Project number: 3

Project name: Melbourne Reverse Osmosis (RO) Plant Expansion Project

Project sponsor(s): City of Melbourne

Project type: Brackish groundwater

Purpose: This project will increase the existing reverse osmosis (RO) water treatment plant capacity. The expanded capacity will enable the city of Melbourne to meet increased future water supply needs.

Water source: Brackish groundwater

Water use/destination: Public drinking water supply for city of Melbourne

Quantity of water to be made available: 5.00 mgd

Estimated construction cost: \$7,300,000

Project components: This project consists of reverse osmosis facility expansion and upgrades, including filtration and disinfection.

Project number: 5

Project name: St. Augustine Water Supply Project

Project sponsor(s): City of St. Augustine

Project type: Brackish groundwater

Purpose: This project is to prevent impacts to wetland vegetation that would be expected to result if projected water use increases are met from the city of St. Augustine's existing surficial aquifer wellfield.

Water source: Brackish groundwater

Water use/destination: Public drinking water supply for city of St. Augustine

Quantity of water to be made available: 6.00 mgd

Estimated construction cost: \$11,800,000

Project components: This projects consists of a reverse osmosis facility including filtration and disinfection, pumps, emergency generator, wells and a demineralization concentrate transmission main that will connect with the city's wastewater collection system.

Surface Water Source Project Descriptions

Name of project option and project number:

Project name: Lower Ocklawaha River in Putnam County Project

Project number: 7

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a fresh surface water source and will supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water supply entities in the fall of 2005. The conceptual-level project description included potential locations of water delivery and estimated project costs. The diagram developed for the conceptual project developed in 2005 is shown on Figure 7-1. The source of water for this project is the Lower Ocklawaha River in Putnam County. The project includes an intake for surface water from the Lower Ocklawaha River near Rodman Dam, fresh surface water treatment, point-of-connection ground storage, and a potable water transmission system through a portion of Putnam County to final delivery points in Volusia County. The project cost estimates are based on the distribution of potable water to the following locations: the cities of Daytona Beach, DeLand, Deltona, Edgewater, New Smyrna Beach, Ormond Beach, and Port Orange; and to Volusia County.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 20.0 mgd.

Time frame in which project option should be implemented:

As of December 2008, there are no public water supply utilities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2005.

- a. Total capital: \$266,000,000
- b. Construction: \$201,000,000
- c. Operation and maintenance: \$5,790,000 per year
- d. Unit production cost: \$3.16 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2005 pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have not been established for the Lower Ocklawaha River or for the St. Johns River downstream of its confluence with the Lower Ocklawaha River.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are currently no established MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. However, SJRWMD is working to develop minimum flows and levels for the Ocklawaha River at State Road (SR) 40. A wide range of technical work is currently under way to support the establishment of this MFL. The draft St. Johns River Water Management District (SJRWMD) *2008 Minimum Flows and Levels Priority List and Schedule*, approved by the SJRWMD Governing Board on November 11, 2008, for transmittal to the Florida Department of Environmental Protection, reflects that this MFL is scheduled to be established by 2011.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The following water supply entities should consider implementation of this project: the cities of Daytona Beach, DeLand, Deltona, Edgewater, New Smyrna Beach, Ormond Beach, and Port Orange; and Volusia County. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project involves similar water treatment technologies as used by the city of Melbourne and city of Cocoa, and therefore the project is considered technically and financially feasible. The city of Melbourne has been using freshwater from the St. Johns River since the 1950s. The city of Cocoa has been using freshwater from Taylor Creek Reservoir since 2001. Planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: SJRWMD has investigated the availability of water from the Lower Ocklawaha River in response to legislation enacted by the 1994 Florida Legislature. A report of this investigation titled *Ocklawaha River Allocation Study* was published by SJRWMD as Technical Publication SJ2005-1. This report indicates that up to 107 mgd could be withdrawn from the Lower Ocklawaha River, with or without the existing reservoir, without causing unacceptable environmental harm. Given the results of the report and the amount of water estimated to become available (20.0 mgd), the project is environmentally feasible and, therefore, appears to be reasonably permissible based on a planning-level analysis. However, if other projects were

implemented upstream on the Ocklawaha River prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), *Florida Statutes* (F.S.), as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

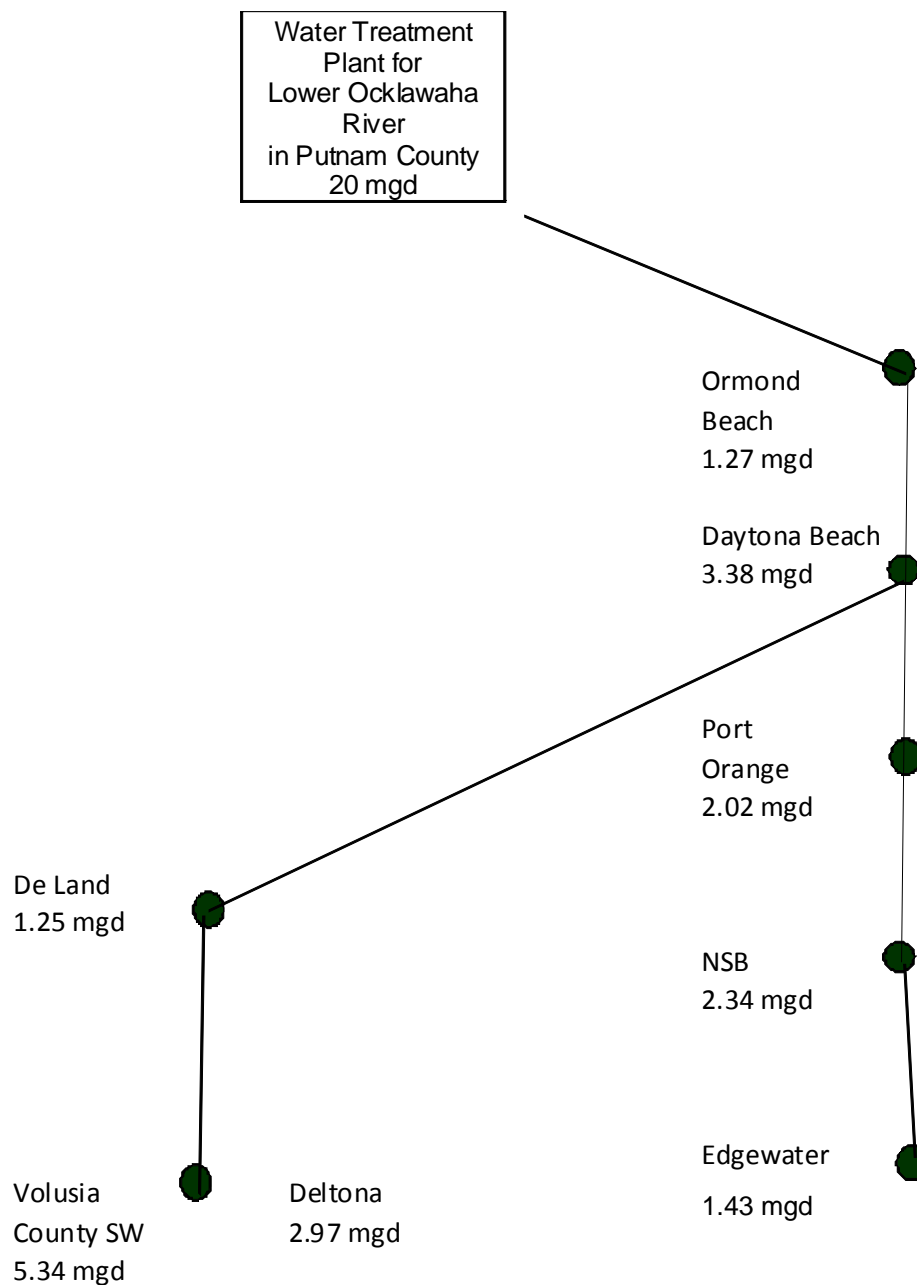
Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of

sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.



NSB = New Smyrna Beach

Figure 7-1. Conceptual-level diagram showing the potable water transmission system for the Lower Ocklawaha River in Putnam County pursuant to conceptual project description developed in 2005 (not to scale)

Name of project option and project number:

Project name: St. Johns River Near SR 50 Project

Project number: 8

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and will supply water from a nontraditional source. SJRWMD generally identifies as “brackish” waters those source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in the fall of 2005. The conceptual-level project description included potential location of facilities and project costs. The conceptual diagram developed for the 2005 project description is shown on Figure 8-1. The source of water for this project is the St. Johns River near SR 50. The project includes an intake for surface water from the St. Johns River, brackish surface water treatment and concentrate management facilities, point-of-connection ground storage, aquifer storage and recovery (ASR), and a potable water transmission system.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 10.0 mgd.

Time frame in which project option should be implemented:

As of December 2008, there are no public water supply utilities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2005.

- a. Total capital: \$95,000,000
- b. Construction: \$76,000,000
- c. Operation and maintenance: \$4,350,000 per year
- d. Unit production cost: \$3.01 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2005 and earlier costing information adjusted to 2005 dollars pursuant to methods described in SJRWMD Special

Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

MFLs have been established for the St. Johns River at SR 50 [Rule 40C-8.031(1)(h), *Florida Administrative Code (F.A.C.)*], the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*], and the St. Johns River at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. The MFLs at all three of these locations would apply if a consumptive use permit (CUP) were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at SR 50 [Rule 40C-8.031(1)(h), *F.A.C.*], the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*], and the St. Johns River at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. MFLs at SR 50 are likely to be the most restrictive with respect to withdrawals from the St. Johns River for this project.

Rao (2006) evaluated the potential additional water supply yield of the St. Johns River at SR 50 using compliance with the MFLs at SR 50 as a constraint. Rao used three separate methods for evaluating the potential additional water supply yield. Two methods were based on the U.S. Geological Survey (USGS) historic record of river flows at SR 50. The historic record used for these two methods was from 1933 to 2006. A third method used a watershed model for the Upper St. Johns River Basin (Rao 2004). The modeling approach was based on the status of the SJRWMD Upper St. Johns River Basin Project as of 2004 and rainfall data for the period from 1942 to 2001. For each of the three methods used, Rao evaluated a variety of withdrawal scenarios that limited rates of withdrawal based on various instantaneous minimum river flow rates. Rao reported maximum average yields of 42.1 mgd, 57.3 mgd, and 75.5 mgd for the three methods he used. Actual yields for individual years varied, emphasizing the importance of storage for developing a water supply project at this location.

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below these established MFLs. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. SJRWMD used the same methodology to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. Even considering these additional permitted

withdrawals, implementation of this project would not cause water levels to fall below the established MFLs for the St. Johns River at SR 44 near DeLand or at Lake Monroe. If other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

The project, as conceptualized in 2005, would produce 10.0 mgd on an average daily basis. A withdrawal of up to 12.1 mgd would be necessary to produce 10.0 mgd of product water. This is because withdrawals may need to exceed delivered water quantities by approximately 21%, assuming a 97% recovery for pretreatment processes and an 85% recovery for the reverse osmosis process [e.g., $1/(0.97*0.85) = 1.21$] (Wycoff 2008). Actual withdrawal rates will vary depending upon the location of the point of withdrawal, specific components of the overall treatment train, and other factors.

Based on this planning-level analysis, there are no MFLs that would constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The water supply entities that should consider this project are the city of Titusville and water users in northern Brevard County. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically feasible based on information developed through SJRWMD's water resource development work program (Surface Water In-Stream Monitoring and Treatability Studies project). The results of this study have been published by SJRWMD as special publications SJ2004-SP20, SJ2004-SP21, and SJ2004-SP22 (CH2M HILL 2004 a, b, c). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because it would not cause water levels or flows to fall below established MFLs and based on an evaluation performed by CH2M HILL, which indicates that concentrate discharge to the river can likely be accomplished within current Florida Department of Environmental Protection (FDEP) permitting requirements (CH2M HILL 2008 draft).

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting (CUP) process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be

reviewed for consistency with all of the SJRWMD's CUP criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use in multiple counties, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

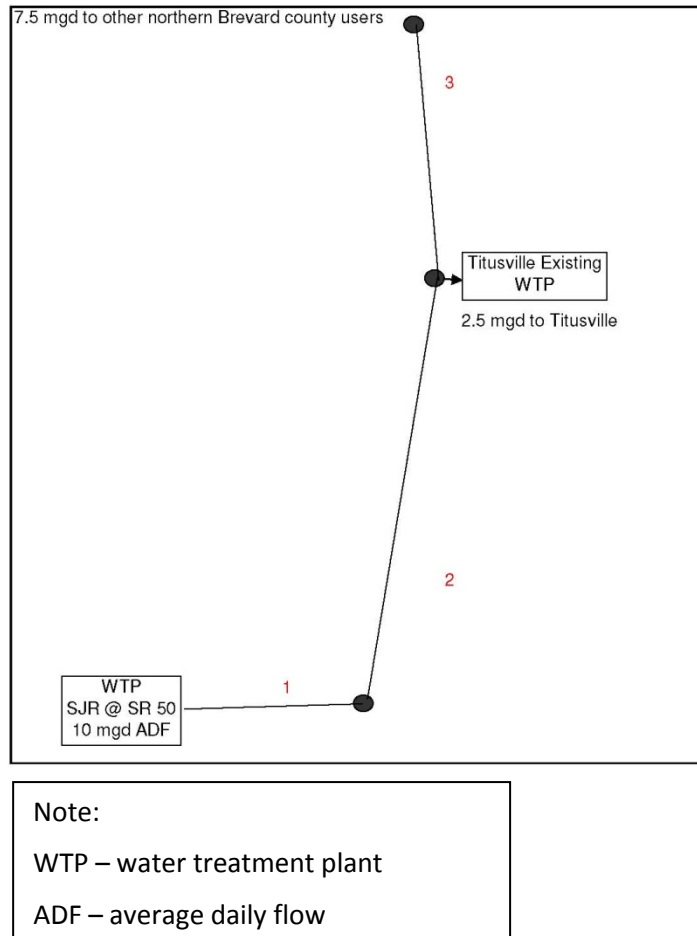


Figure 8-1. Schematic potable water transmission system for the St. Johns River Near SR 50 Project pursuant to conceptual project description developed in 2005

Name of project option and project number:

Project name: St. Johns River Near DeLand Project

Project number: 10

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option:

This project will develop a brackish surface water source and will supply water from a nontraditional source. SJRWMD generally identifies source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids as “brackish” waters. SJRWMD considers brackish water sources as alternative water supply sources (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water suppliers in the fall of 2005. The conceptual-level project description included potential location of facilities and project costs. The source of water for this project is the St. Johns River near DeLand, which is brackish at this location. The project includes an intake for surface water from the St. Johns River, brackish surface water treatment and concentrate management facilities, point-of-connection ground storage, aquifer storage and recovery, and a potable water transmission system. This project was described in *DWSP 2005* and the first, second, and third addenda.

This project was redefined in the fall of 2007 for a different set of water supply entities in Volusia and Lake counties, including: DeLand, Orange City, Deltona, Volusia County, Mount Dora, Tavares, Leesburg, Clermont, and Utilities Inc. of Florida (Lake Louisa). This project description is for the project as redefined in the fall of 2007. A schematic of the transmission system for the 2007 project is shown on Figure 10-1.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The current conceptual-level project description is based on an average daily flow of 64.2 mgd.

Time frame in which project option should be implemented:

As of December 2008, there are no public water supply utilities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the project as redefined in the fall of 2007.

- a. Total capital: \$703,000,000

- b. Construction: \$563,000,000
- c. Operation and maintenance: \$52,200,000 per year
- d. Unit production cost: \$4.23 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs for this project are based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have been established for the St. Johns River at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. The minimum flows and levels at this location would apply if a consumptive use permit were sought for this project. Due to the extremely low gradient of the St. Johns River between DeLand and Lake Monroe, the MFLs for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] would also need to be considered if a consumptive use permit were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below established MFLs for the St. Johns River at Lake Monroe and at SR 44 near DeLand. Based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004), calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. As part of this model analysis, it was determined that a steady withdrawal of 155 mgd at DeLand would not cause water levels in Lake Monroe to fall below the established MFLs for the St. Johns River at Lake Monroe (personal communication, Robison 2009). A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. The amount of water proposed for this project in combination with the 15 mgd already allocated would be less than the 155-mgd withdrawal limit previously described. If other projects are implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

The project, as currently conceptualized, would produce approximately 64 mgd of product water on an average daily basis. A withdrawal of approximately 77.4 mgd would be necessary to produce 64 mgd of product water. This is because withdrawals from the St. Johns River may need to exceed delivered water quantities by approximately 21% using a reasonable recovery rate of 97% for pretreatment processes and 85% for the reverse osmosis process [e.g.,

$(1/(0.97*0.85)) = 1.21]$ (Wycoff 2008). Actual withdrawal rates will vary depending upon the location of the project, specific components of the overall treatment train, potential constraints to discharge of concentrate, and possibly other factors. If the reverse osmosis treatment process byproduct (concentrate) is discharged to the river, then the net withdrawal would be less. Based on this planning-level analysis, the minimum flows and levels at both of these locations would not constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project. However, if other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The water supply entities that participated in the development of the description of this project (Figure 10-1) and that should consider this project are: DeLand, Orange City, Deltona, Volusia County, Mount Dora, Tavares, Leesburg, Clermont, and Utilities Inc. of Florida (Lake Louisa). In addition, the following water supply entities that are not identified in the current project description should consider this project because of the relatively close proximity of the entities to the project: Hometown America (Lake County), Clerbrook Golf and RV Resort (Lake County), Harbor Hills Utilities LP (Lake County), Hawthorne at Leesburg (Lake County), Lake Griffin Isles (Lake County), city of Mascotte (Lake County), Mid-Florida Lakes Mobile Home Park (MHP) (Lake County), town of Monte Verde (Lake County), town of Oakland (Orange County), Oak Springs Mobile Home Park (MHP) (Lake County), Pennbrooke Utilities, Inc. (Lake County), Rock Springs Mobile Home Park (MHP) (Orange County), Southlake Utilities (Lake County), Sunlake Estates (Lake County), Water Oak Estates (Lake County), Wedgewood Homeowners Association (Lake County), Zellwood Water Association (Orange County), Lake Beresford Water Association (Lake County), and the city of Lake Helen (Volusia County). The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically feasible based on information developed through SJRWMD's water resource development project: Surface Water In-Stream Monitoring and Treatability Studies. The results of this study have been published by SJRWMD as Special Publications SJ2004-SP20, SJ2004-SP21, and SJ2004-SP22 (CH2M HILL 2004 a, b, c). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because it would not cause water levels or flows to fall below established MFLs and based on an evaluation performed by CH2M HILL, which indicates that concentrate discharge to the river can likely be accomplished within current FDEP permitting requirements (CH2M HILL 2008).

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and

the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

SJR @ DeLand Potable Project Fall 2007
System Schematic
(no scale)

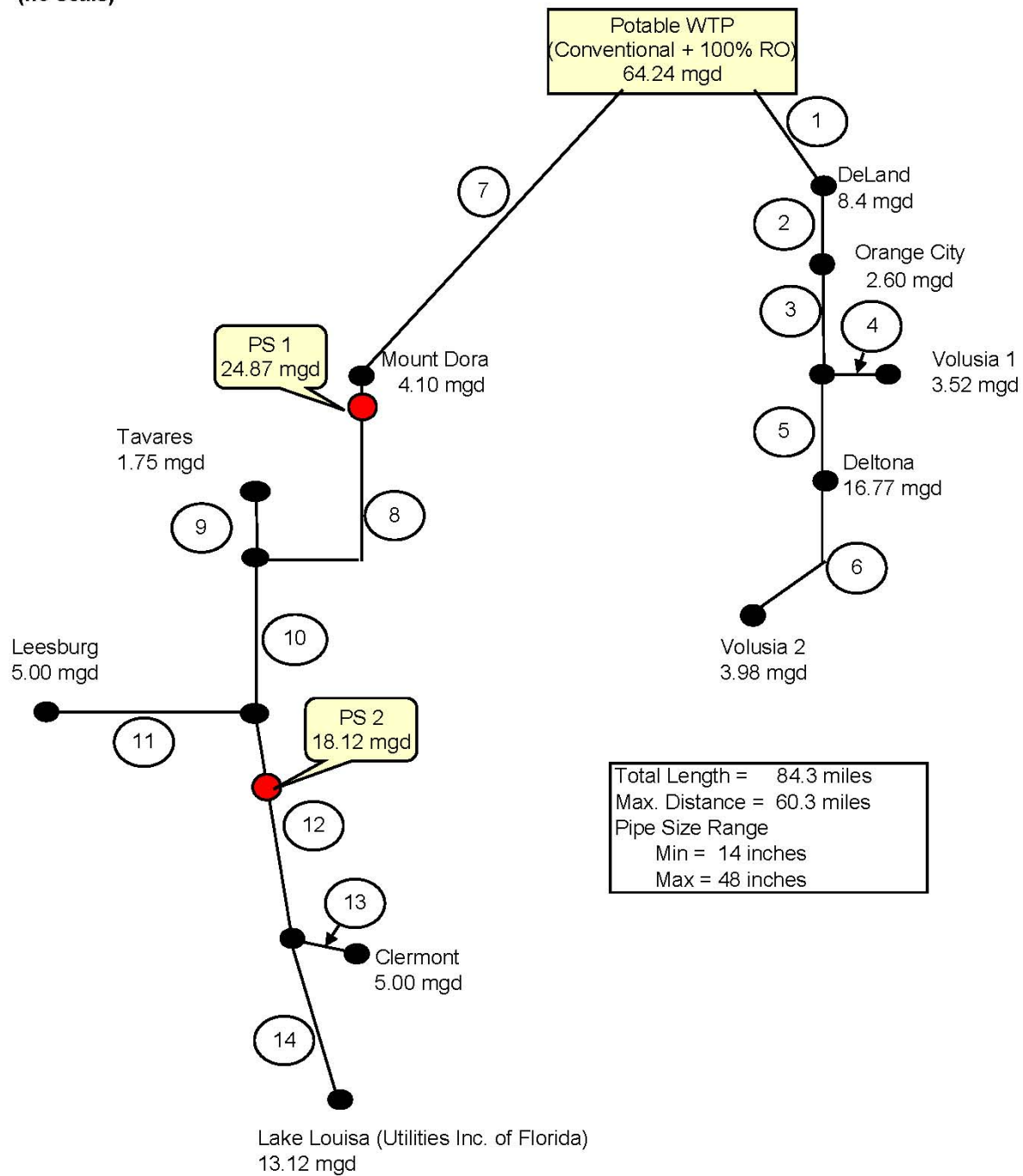


Figure 10-1. Conceptual diagram showing the potable water transmission system for the St. Johns River at DeLand (not to scale)

Name of project option and project number:

Project name: St. Johns River/Taylor Creek Reservoir Water Supply Project

Project number: 12

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a fresh surface water source and would supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.) It will also involve the addition of new storage capacity for surface or groundwater and will utilize surface water captured predominantly during wet-weather flows.

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water supply entities in the fall of 2005. The conceptual-level project description included potential location of facilities and project costs. The conceptual diagram developed for the 2005 conceptual-level project description is shown on Figure 12-1. The source of water for this project is the St. Johns River and Taylor Creek Reservoir. The project includes an intake for surface water from the St. Johns River, point-of-connection ground storage, and a potable water transmission system. A key component of the project includes off-stream storage of water withdrawn from the St. Johns River in Taylor Creek Reservoir and a possible additional reservoir.

Since 2005, a number of water supply entities have been cooperating to implement this project. These entities include Orange County, the cities of Cocoa and Titusville, Orlando Utilities Commission, Toho Water Authority, and East Central Florida Services. These water supply entities entered into a memorandum of agreement in December 2006 to develop a preliminary design report and environmental information document (PDR/EID) for this project. Work on the PDR/EID began in June 2006. As of November 2008, both the scope and the schedule for the project were being revised to possibly include an environmental impact statement. Project participants have also discussed the possibility that some water might be produced for reuse augmentation. The engineering consultants retained to prepare the PDR/EID are currently engaged in the optimization of project design alternatives, which is anticipated to be complete in the spring of 2009. It is likely that the optimal design will include the construction of an additional reservoir in order to increase reliability and yield.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 40.0 mgd.

Time frame in which project option should be implemented:

Preliminary design began in 2006. Project construction was originally anticipated to be complete by 2013, but additional federal requirements may delay project completion until as late as 2015.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2005.

- a. Total capital: \$215,000,000
- b. Construction: \$174,000,000
- c. Operation and maintenance: \$11,800,000 per year
- d. Unit production cost: \$1.87 per 1,000 gallons

The 2008 project partners are different from the partners proposed for the 2005 conceptual project description.

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2005 and earlier costing information adjusted to 2005 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have been established for the St. Johns River at SR 50 [Rule 40C-8.031(1)(h), *F.A.C.*], the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*], the St. Johns River at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*], and Taylor Creek [Rule 40C-8.031(1)(e)]. The minimum flows and levels at all four of these locations would apply if a consumptive use permit were to be sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at SR 50 [Rule 40C-8.031(1)(h), *F.A.C.*], the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*], the St. Johns River at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*], and Taylor Creek [Rule 40C-8.031(1)(e), *F.A.C.*]. MFLs at SR 50 are likely to be the most restrictive constraint with respect to withdrawals from the St. Johns River for this project.

SJRWMD evaluated the potential additional water supply yield of the St. Johns River at SR 50 using compliance with the MFLs at SR 50 as a constraint. (Rao 2008). Three separate methods were used for evaluating the potential additional water supply yield. Two methods were based on the USGS historic record of river flows at SR 50. The historic record used for these two methods was from 1933 to 2006. A third method used a watershed model for the Upper St. Johns River Basin (Rao 2004). The modeling approach was based on the status of the SJRWMD Upper St. Johns River Basin Project as of 2004 and rainfall data for the period from 1942 to 2001. For each

of the three methods Rao used, he evaluated a variety of withdrawal scenarios that limited rates of withdrawal based on various instantaneous minimum river flow rates. Based on the three methods used, the maximum average yields were, respectively, 42.1 mgd, 57.3 mgd, and 75.5 mgd. Actual yields for individual years varied, emphasizing the importance of storage for developing a water supply project at this location.

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below these established MFLs. Based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004), calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. SJRWMD used the same methodology to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. Even considering these additional permitted withdrawals, implementation of this project would not cause water levels to fall below the established MFLs for the St. Johns River at SR 44 near DeLand or at Lake Monroe. If other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

SJRWMD operates the water control structures at Taylor Creek Reservoir to maintain established MFLs for Taylor Creek. Any operating plan developed for the project would need to ensure that there is adequate water available in Taylor Creek Reservoir to meet MFLs for Taylor Creek.

The project, as conceptualized in 2005, would produce 40.0 mgd on an average daily basis using conventional surface water treatment facilities. The water supply entities that entered into a memorandum of agreement in December 2006 to develop a preliminary design report and environmental information document (PDR/EID) for this project have discussed the possibility of using advanced water treatment to treat brackish water. However, as of December 2008, it appeared likely that the project would be developed with conventional surface water treatment facilities in lieu of advanced treatment (NF/RO membranes). This is because any additional yield that may be realized when using advanced treatments is offset by the rejection volumes associated with these treatment technologies.

For example, if the cooperating water supply entities decide to use advanced water treatment facilities, a withdrawal of up to 48.4 mgd would be necessary to produce 40.0 mgd of product water. This is because withdrawals may need to exceed delivered water quantities by approximately 21%, assuming a 97% recovery for pretreatment processes and an 85% recovery for the reverse osmosis process [e.g., $1/(0.97 \times 0.85) = 1.21$]. Actual withdrawal rates will vary

depending upon the location of the point of withdrawal, specific components of the overall treatment train and other factors.

Based on this planning-level analysis, no established MFLs would constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a regional project with the following cooperating water supply entities: Orange County, city of Cocoa, Orlando Utilities Commission, city of Titusville, Toho Water Authority, and East Central Florida Services. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The city of Melbourne has been successfully using freshwater from the St. Johns River since the 1950s. The city of Cocoa has been successfully using freshwater from Taylor Creek Reservoir since 2001. This project involves similar water treatment technologies as used by Melbourne and Cocoa, and therefore the project is considered technically and financially feasible.

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible, because it would not cause water levels or flows to fall below established MFLs.

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Lower Ocklawaha River in Marion County Project

Project number: 61

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a fresh surface water source and would supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water suppliers in the fall of 2007. The conceptual-level project description included the potential location of water delivery and project costs. The conceptual diagram developed for the project in 2007 is shown on Figure 61-1. The source of water for this project is the Lower Ocklawaha River in Marion County. The project includes an intake for surface water from the Lower Ocklawaha River near Eureka, fresh surface water treatment, point-of-connection ground storage, and a potable water transmission system through a portion of Marion County to final delivery points in Putnam, Marion, and Lake counties. The project cost estimates are based on the distribution of potable water to the following locations: the cities of Palatka, Ocala, Belleview, The Villages, Lady Lake, Fruitland Park, Aqua Utilities Florida Inc. (Silver Lakes), Mount Dora, Tavares, Leesburg, Groveland, Clermont, and Utilities Inc. of Florida (Lake Louisa); and to Putnam and Marion counties.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 83.8 mgd.

Time frame in which project option should be implemented:

As of December 2008, there were no water supply entities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007.

- e. Total capital: \$811,000,000
- f. Construction: \$632,000,000
- g. Operation and maintenance: \$40,100,000 per year
- h. Unit production cost: \$3.04 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2005, with the cost basis updated to the fall of 2007, pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have not been established for the Lower Ocklawaha River or for the St. Johns River downstream of its confluence with the Lower Ocklawaha River. However, SJRWMD is working to develop minimum flows and levels for the Ocklawaha River at SR 40. A wide range of technical work is currently under way to support the establishment of this MFL. The draft SJRWMD *2008 Minimum Flows and Levels Priority List and Schedule*, approved by the SJRWMD Governing Board on November 11, 2008, for transmittal to the FDEP, reflects that the MFL is scheduled to be adopted in 2011.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no established MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. Following the establishment of MFLs for the Lower Ocklawaha River, CUP applications for proposed projects would consider established MFLs at locations upstream of the proposed projects. In addition, five-year compliance reviews for such projects would consider established MFLs.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The water supply entities that participated in the development of the description of this project (Figure 61-1) and that should consider this project are: the cities of Palatka, Ocala, Belleview, The Villages, Lady Lake, Fruitland Park, Aqua Utilities Florida Inc. (Silver Lakes), Mount Dora, Tavares, Leesburg, Groveland, Clermont, and Utilities Inc. of Florida (Lake Louisa); and to Putnam and Marion counties. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project involves similar water treatment technologies as used by the city of Melbourne and city of Cocoa, and therefore the project is considered technically and financially feasible. The city of Melbourne has been using freshwater from the St. Johns River since the 1950s. The city of Cocoa has been using freshwater from Taylor Creek Reservoir since 2001. Planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: SJRWMD has investigated the availability of water from the Lower Ocklawaha River in response to legislation enacted by the 1994 Florida Legislature. A report of this investigation titled *Ocklawaha River Allocation Study* was published by SJRWMD as Technical

Publication SJ2005-1. This report indicates that up to 107 mgd could be withdrawn from the Lower Ocklawaha River, with or without the existing reservoir, without causing unacceptable environmental harm. A yield of 107 mgd is for the entire Ocklawaha River Basin. The proposed point of withdrawal for this conceptual project is located farther upstream near Eureka Dam, where it is anticipated that less water would be available. SJRWMD compared the period of record flows for the gauging station on the Ocklawaha River at Eureka with a concurrent period of record representing total discharge from the Ocklawaha River. That comparison was used to proportionately reduce the yield of the Ocklawaha River at Eureka, and indicated a potential yield of 85 mgd might be environmentally feasible from the Ocklawaha River at Eureka (Wycoff, personal communication 2008c). This project has a proposed withdrawal of 83.8 mgd, and appears to be reasonably permittable from a planning-level of analysis.

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

LOR Single WTP AWS Project Fall 2007
System Schematic
 (no scale)

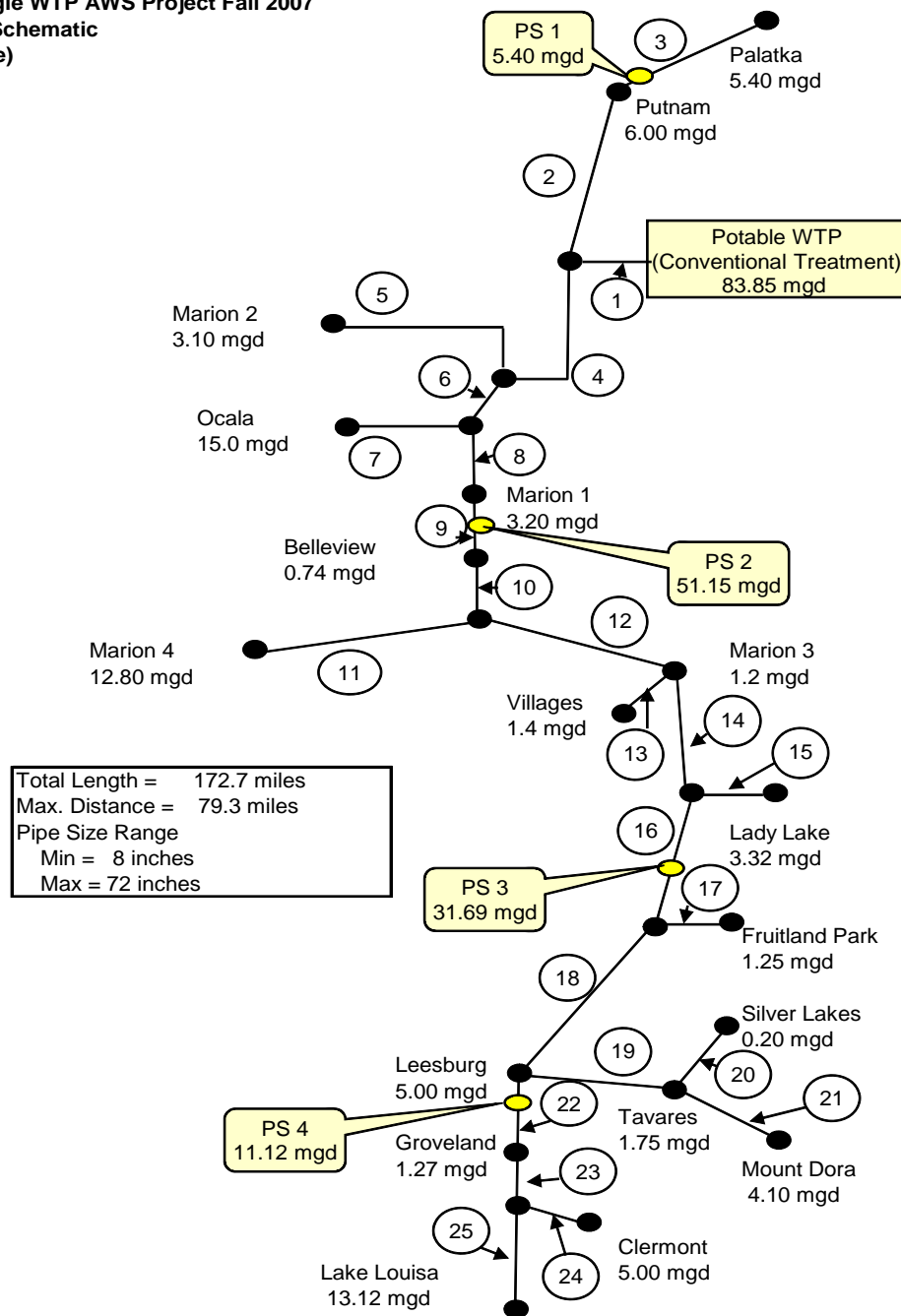


Figure 61-1. Conceptual-level diagram showing the potable water transmission system for the Lower Ocklawaha River in Marion County pursuant to conceptual project description developed in 2007 (not to scale)

Name of project option and project number:

Project name: Sanford ASR Well for Surface Potable Water Storage Project

Project number: 62

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project would store water withdrawn from a nontraditional source, most likely brackish surface water from the St. Johns River. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

SJRWMD has been working with the city of Sanford and other cooperators on projects to evaluate the feasibility of ASR as part of its water resource development work program. The ASR project includes the construction and testing of an ASR well in the city of Sanford. The objective of the cooperative project with the city of Sanford is to provide additional storage of potable water from sources of water that will not be available all of the time. Water will be withdrawn from seasonally available sources, typically during periods of lower overall water demands, treated to drinking water standards, and injected into the ASR well for underground storage. Water will be recovered from the ASR well when system demands exceed the permitted capacities of the city's sources. The project includes an ASR well, associated piping and pumping equipment, and additional facilities for dechlorination and degasification prior to underground storage. The ASR well is located at the city's auxiliary plant at 3100 Orlando Drive. The source of water for testing the well will be potable water from the city's groundwater wells. If testing is successful and the project receives an operational permit from FDEP, the source of water is anticipated to be Project 63: Sanford Surface Water Treatment Plant on Lake Monroe Project. Sanford has also been participating in the development of Project 65: St. Johns River Near Yankee Lake Project and could potentially store water underground from one or more projects that develop additional surface water supplies. Information provided by Sanford in November of 2008 indicates that the city is considering construction of a second ASR well; however, the location of the proposed second ASR well has not yet been determined.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The planned capacity of the ASR well is 1.00 mgd. The water supply yield of the project will not be known until after ASR testing is completed, but it is anticipated to be approximately 0.33 mgd based on preliminary estimates of source availability and recovery operations averaging four months per year.

Time frame in which project option should be implemented:

Construction of the ASR well was completed in late 2007. Construction of surface facilities was substantially completed by December 2008. Testing is anticipated to be completed in 2009. A schedule for implementation of the proposed second ASR well has not yet been submitted to SJRWMD.

Estimated planning-level costs:

The planning-level construction cost estimate for the project was \$2,720,000 in 2007. The following updated costs were provided by the city of Sanford in November 2008.

- a. Total capital: \$4,170,000
- b. Construction: \$2,870,000
- c. Operation and maintenance: \$180,000 per year
- d. Unit production cost: not available

Basis for planning-level costs:

Cost information was provided by the city of Sanford.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

This project is for underground storage only and does not include a separate surface water withdrawal component. The source of water for this project is anticipated to be Project 63: Sanford Surface Water Treatment Plant on Lake Monroe Project and/or Project 65: St. Johns River Near Yankee Lake Project. The discussion of MFLs is covered as part of those projects.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

This project is for underground storage only and does not include a separate surface water withdrawal component. The source of water is anticipated to be Project 63: Sanford Surface Water Treatment Plant on Lake Monroe Project and/or Project 65: St. Johns River Near Yankee Lake Project. The discussion of MFLs is covered as part of those projects.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project being implemented by the city of Sanford. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The project appears to be technically feasible based upon work that SJRWMD has been doing to evaluate the feasibility of ASR as part of its Water Resource Development Work Program. ASR has been in use in many locations around the United States and in Florida. The city of Sanford considered the financial feasibility of this project when making a decision to plan and construct it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: The project appears to be reasonably permissible from a planning-level perspective and based on work that SJRWMD has conducted in its ASR feasibility program.

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these

constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds have been and will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies by storing and making available water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Sanford Surface Water Treatment Plant on Lake Monroe Project

Project number: 63

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and is from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed as part of the Seminole County Water Supply Plan in 2007. The source of water for this project is Lake Monroe. The project as developed for the Seminole County Water Supply Plan includes an Actiflo treatment process, followed by filtration through Dynasand filters, and chlorine disinfection. SJRWMD believes that it is likely that more advanced treatment, such reverse osmosis desalination, will likely be needed for this project since the source of water is brackish.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 4.00 mgd.

Time frame in which project option should be implemented:

As of December 2008, there were no public water supply utilities working to implement this project; however, the city of Sanford has reported that it is interested in pursuing this project and may begin planning work in 2015. Project design and construction have not yet been scheduled.

Estimated planning-level costs:

Planning-level costs were developed for the conceptual-level project in the Seminole County Water Supply Plan as follows:

- a. Total capital: \$13,800,000
- b. Construction: \$9,500,000
- c. Operation and maintenance: \$370,000 per year
- d. Unit production cost: \$0.62 per 1,000 gallons

These costs do not include costs for advanced water treatment facilities such as reverse osmosis desalination.

Basis for planning-level costs:

Estimated planning-level costs were based on costing information developed for the Seminole County Water Supply Plan in 2007. Preparation of the plan was funded by SJRWMD and the plan was reviewed by SJRWMD staff.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. The minimum flows and levels at both of these locations would apply if a consumptive use permit were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

Minimum flows and levels have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below these established MFLs. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. SJRWMD used the same methodology to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. The amount of water proposed for this project in combination with the 15 mgd already allocated would be less than the withdrawal limits previously described. If other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

The project as currently conceptualized, would produce 4.00 mgd on an average daily basis. A withdrawal of about 4.84 mgd would be necessary to produce 4.00 mgd of product water. This is because withdrawals from the St. Johns River may need to exceed delivered water quantities by approximately 21% using a reasonable recovery rate of 97% for pretreatment processes and 85% for the reverse osmosis process [e.g., $(1/(0.97*0.85)) = 1.21$] (Wycoff 2008). Actual withdrawal rates will vary depending upon the location of the project, specific components of the overall treatment train, potential constraints to discharge of concentrate, and possibly other factors. If the reverse osmosis treatment process byproduct (concentrate) is discharged to the river, then the net withdrawal would be less. Based on this planning-level analysis, the minimum flows and levels at both of these locations would not constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project that is being considered by the city of Sanford. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically feasible based on information developed through SJRWMD's water resource development project: Surface Water In-Stream Monitoring and Treatability Studies. The results of this study have been published by SJRWMD as Special Publications SJ2004-SP20, 21, and 22 (CH2M HILL 2004 a, b, c). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because it would not cause water levels or flows to fall below established MFLs and based on an evaluation performed by CH2M HILL, which indicates that concentrate discharge to the river can likely be accomplished within current FDEP permitting requirements (CH2M HILL 2008 draft).

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources

include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: St. Johns River Near SR 46 Project

Project number: 64

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and supply water from a nontraditional source. SJRWMD generally identifies source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids as “brackish” waters. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water suppliers in the fall of 2007. The conceptual-level project description included potential location of facilities and project costs. The conceptual diagram for the conceptual-level project description is shown on Figure 64-1. The source of water for this project is the St. Johns River Near SR 46 Project. The project includes an intake for surface water from the St. Johns River, brackish surface water treatment and concentrate management facilities, point-of-connection ground storage, and a potable water transmission system. Project participants have also discussed the possibility that some water might be produced for reuse augmentation. As of March 2009, the participants interested in pursuing the project included Orange County; the cities of Casselberry, Deltona, Maitland, Oviedo, Sanford, and Winter Springs. The other DWSP project that will use the surface water developed as part of this project is Project 79: St. Johns River Near 46–Non-Potable With Storage Project. Whether the project is for potable water or a combination of potable and nonpotable will be determined during the project’s preliminary design phase. If the potable water plant is implemented, some of the water may also be used for nonpotable uses.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 63.1 mgd.

Time frame in which project option should be implemented:

Design is anticipated to be completed from 2009 to 2011. Subject to the permitting process, construction is anticipated to be completed from 2011 to 2014.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007.

- a. Total capital: \$629,000,000
- b. Construction: \$501,000,000
- c. Operation and maintenance: \$51,500,000 per year
- d. Unit production cost: \$4.07 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

Minimum flows and levels have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. The minimum flows and levels at both of these locations would apply if a consumptive use permit were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

Minimum flows and levels have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below these established MFLs. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. SJRWMD used the same methodology to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. Even considering these additional permitted withdrawals, implementation of this project would not cause water levels to fall below the established MFLs for the St. Johns River at SR 44 near DeLand or at Lake Monroe. If other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

The project as currently conceptualized, would produce 63.1 mgd on an average daily basis. A withdrawal of about 76.4 mgd would be necessary to produce 63.1 mgd of product water. This is because withdrawals from the St. Johns River may need to exceed delivered water quantities by approximately 21% using a reasonable recovery rate of 97% for pretreatment processes and 85%

for the reverse osmosis process [i.e., $(1/(0.97*0.85)) = 1.21$] (Wycoff 2008). Actual withdrawal rates will vary depending upon the location of the project, specific components of the overall treatment train, potential constraints to discharge of concentrate, and possibly other factors. If the reverse osmosis treatment process byproduct (concentrate) is discharged to the river, then the net withdrawal would be less. Based on this planning-level analysis, the minimum flows and levels at both of these locations would not constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The water supply entities that participated in the development of the description of this project (Figure 64-1) and that should consider this project are: Orange County and the cities of Casselberry, Deltona, Maitland, Oviedo, Sanford, and Winter Springs. In addition, the following water supply entities that are not identified in the current project description should consider this project because of the relatively close proximity of the entities to the project: Hometown America (Orange County), town of Eatonville (Orange County), Hometown America (Seminole County), and Utilities Inc. of Florida (Orange County). The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically feasible based on information developed through SJRWMD's water resource development project: Surface Water In-Stream Monitoring and Treatability Studies. The results of this study have been published by SJRWMD as Special Publications SJ2004-SP20, 21, and 22 (CH2M HILL 2004 a, b, c). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because it would not cause water levels or flows to fall below established MFLs and based on an evaluation performed by CH2M HILL, which indicates that concentrate discharge to the river can likely be accomplished within current FDEP permitting requirements (CH2M HILL 2008).

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to

address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria (“local sources first”) during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

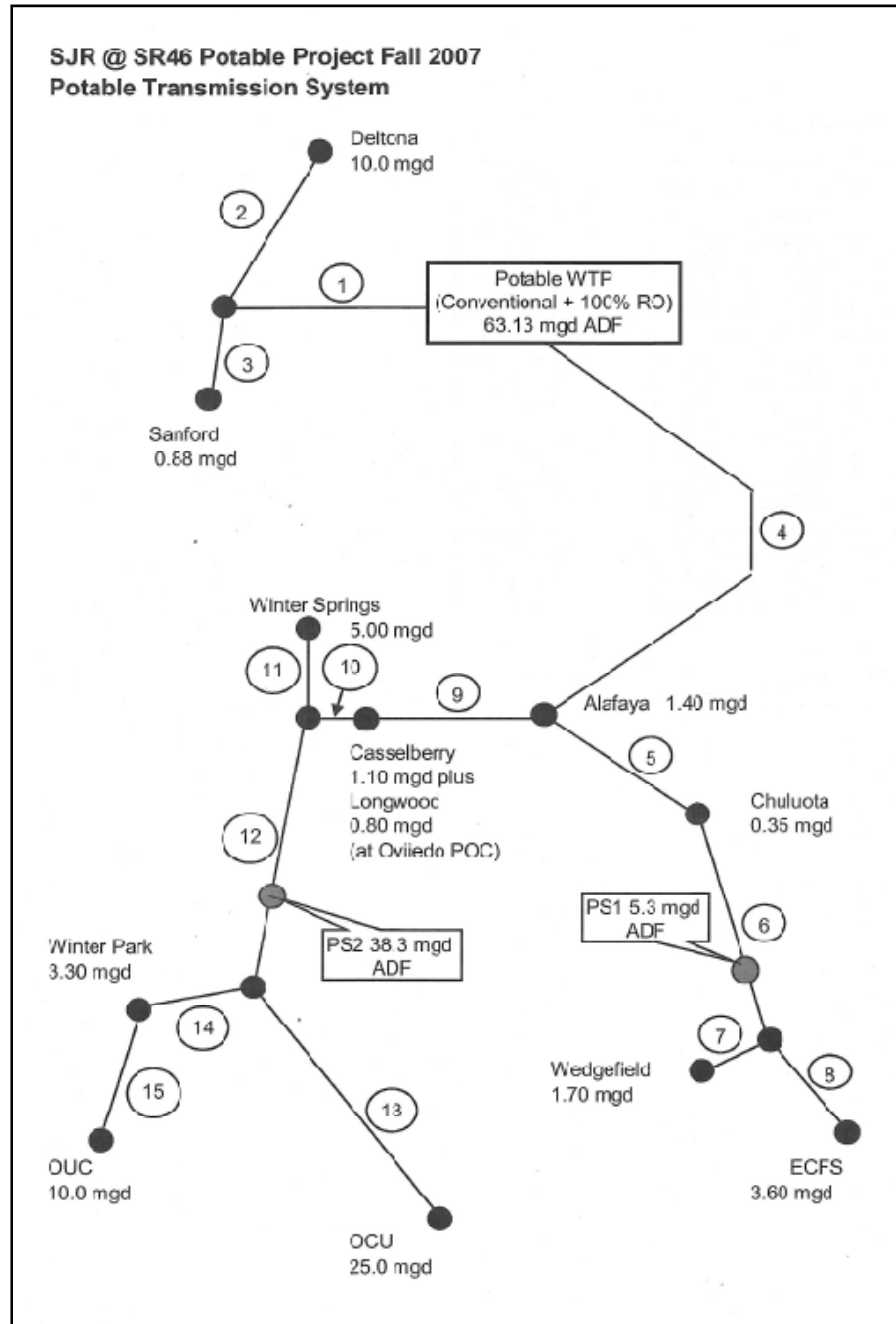


Figure 64-1. Schematic potable water transmission system for the St. Johns River Near SR 46 Project pursuant to conceptual project description developed in 2007

Name of project option and project number:

Project name: St. Johns River Near Yankee Lake Project

Project number: 65

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and will supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by Seminole County in cooperation with other interested water suppliers in early 2007. The conceptual-level project description included potential location of facilities and project costs. The source of water for this project is the St. Johns River near Yankee Lake. The project includes an intake for surface water from the St. Johns River, brackish surface water treatment and concentrate management facilities, point-of-connection ground storage, and a potable water transmission system. Project participants have also discussed the possibility that some water might be produced for reuse augmentation.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 86.3 mgd.

Time frame in which project option should be implemented:

Design is anticipated to be completed in 2010. Subject to permitting, construction is anticipated to be completed from 2011 to 2013.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project as provided by Seminole County in 2007.

- a. Total capital: \$741,000,000
- b. Construction: Not available
- c. Operation and maintenance: \$60,000,000 per year
- d. Unit production cost: \$3.59 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were provided by Seminole County in 2008 and determined to be reasonable by SJRWMD staff.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. The MFLs at both of these locations would apply if a consumptive use permit were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below established MFLs for the St. Johns River at Lake Monroe and at SR 44 near DeLand. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. The same methodology was used to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. Even considering these additional permitted withdrawals, implementation of this project would not cause water levels to fall below the established MFLs for the St. Johns River at SR 44 near DeLand or at Lake Monroe. If other projects are implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

The project as currently conceptualized, would produce 86.3 mgd on an average daily basis. The Yankee Lake conceptual design was prepared for Seminole County by CH2M HILL and relies in large part on the results of work completed by CH2M HILL for SJRWMD (*Surface Water Treatability and Demineralization Study*, prepared for St. Johns River Water Management District, by CH2M HILL, 2004). Treatment processes included in the conceptual design include Actiflo, ultra filtration (UF), and brackish water reverse osmosis (RO). The Yankee Lake conceptual design assumed 100% RO treatment with an 85% recovery. The remaining 15% becomes waste concentrate. With a 97% recovery from the upstream pre-treatment processes and an 85% recovery for the RO treatment, the ratio of raw water to product water is 1.21 [i.e., $1/(0.97*0.85) = 1.21$] (Wycoff 2008). This results in a water supply withdrawal of approximately 104 mgd.

If the reverse osmosis treatment process byproduct (concentrate) is discharged to the river, then the net withdrawal would be less. Based on this planning-level analysis, there are no existing

MFLs that would constrain this project. In addition, there are no recovery or prevention strategies or water use reservations that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a regional project with the following cooperators: the cities of Apopka, DeLand, Deltona, Eustis, Lake Mary, Longwood, Maitland, Mount Dora, Oviedo, Sanford, Winter Garden, Winter Park, and Orange City; Seminole and Volusia counties, Aqua Utilities Florida of Lake and Seminole counties. In addition to these cooperators, the following water supply entities that are not identified in the current project description should consider this project because of the relatively close proximity of the entities to the project: Hometown America (Orange County), town of Eatonville (Orange County), Oak Springs Mobile Home Park (MHP) (Lake County), Hometown America (Seminole County), Rock Springs Mobile Home Park (Orange County), and Utilities Inc. of Florida (Orange County). The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically feasible based on information developed through SJRWMD's water resource development project: Surface Water In-Stream Monitoring and Treatability Studies. The results of this study have been published by SJRWMD as Special Publications SJ2004-SP20, SJ2004-SP21, and SJ2004-SP22 (CH2M HILL 2004 a, b, c). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: The project appears to be reasonably permissible from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because it would not cause water levels or flows to fall below established MFLs and based on an evaluation performed by CH2M HILL, which indicates that concentrate discharge to the river can likely be accomplished within current Florida Department of Environmental Protection (FDEP) permitting requirements (CH2M HILL 2008 draft).

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across

county boundaries, the Governing Board will also consider the factors in Section 373.223(3), F.S., as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), F.S. As required by Section 373.223(3), F.S., SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria (“local sources first”) during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Seawater Source Project Descriptions

Name of project option and project number:

Project name: Indian River Lagoon at FPL Cape Canaveral Power Plant Project

Project number: 13

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a seawater (salt water) source and is from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by R.W. Beck for SJRWMD in 2004 and updated in 2005. The conceptual-level project description included potential location of facilities and project costs. The source of water for this project is the seawater (salt water) from the Indian River Lagoon. This seawater demineralization project is collocated with the Florida Power and Light (FPL) power generation facility. This project will require a complete high-pressure reverse osmosis seawater treatment plant. The project site has an existing once-through seawater cooling system that may provide both inflow to the treatment plant and concentrate disposal facility. The approximate location of this project is shown on Figure 5 in this fourth addendum to *DWSP 2005*.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 15.0 mgd. However, while the original conceptual capacity was 15.0 mgd, subsequent studies by the SJRWMD have indicated that it is not likely that more than 5–10 mgd of total capacity could be developed in this portion of the Indian River Lagoon without causing unacceptable environmental impacts (Applied Technology and Management, Inc. 2007).

Time frame in which project option should be implemented:

As of December 2008, no public water supply utilities were working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was developed in 2004 and updated in 2005.

- a. Total capital: \$140,000,000
- b. Construction: \$111,000,000
- c. Operation and maintenance: \$7,510,000 per year
- d. Unit production cost: \$3.43 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no MFLs that apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. However, the potential impacts of this project on preferred seagrass habitat in the Indian River Lagoon would constrain the quantities of water that can be developed in association with this project (Applied Technology and Management, Inc. 2007).

Name of entity or entities that should implement the project option and current status of project option's implementation:

The following water supply entities should consider implementation of this project: cities of Cocoa and Titusville, Orange County, and Orlando Utilities Commission. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically and financially feasible based on information developed by R.W. Beck for SJRWMD (R.W. Beck, Inc. 2004. *Final Report on Five Potential Seawater Demineralization Project Sites – Task C.5*. Special Publication SJ2004-SP6. Palatka, Fla.: St. Johns River Water Management District.) R.W. Beck provided estimates of unit production costs ranging from \$2.63 per 1,000 gallons to \$3.06 per 1,000 gallons for project capacities ranging from 10 to 30 mgd of potable water. In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: SJRWMD included this project and Project 14: Indian River Lagoon at Reliant Energy Power Plant Project in the *DWSP 2005* based on a screening feasibility study that was completed by R.W. Beck for SJRWMD in 2004. R.W. Beck provided estimates of unit production costs for project capacities of 10 mgd, 20 mgd, and 30 mgd of potable water. R.W. Beck recognized that discharge of concentrate into the Indian River Lagoon might be an environmental constraint due to the shallow water depths in the Indian River Lagoon and potentially poor tidal flushing. SJRWMD completed a more detailed study of these constraints in 2007 (Applied Technology and Management, Inc. 2007. Technical Memorandum 2.G, *Final Report for the Evaluation of Potential Impacts of Demineralization Concentrate Discharge to the Indian River Lagoon*. Palatka, Fla.: St. Johns River Water Management District). The latter report concluded that a combined potable water production capacity of 20–30 mgd from both project sites would not be feasible due to the potential level of ecological impacts. The report

also concluded that depending upon the choice of allowable level of acceptable loss of preferred seagrass habitat, total plant capacities less than or equal to 10 mgd, either as a single plant or combined, may be feasible. Therefore, SJRWMD considers this project to be reasonably permittable if total plant capacities are less than or equal to 10.0 mgd. However, if similar projects were implemented in the Indian River Lagoon prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), *Florida Statutes* (F.S.).

Name of project option and project number:

Project name: Indian River Lagoon at Reliant Energy Power Plant Project

Project number: 14

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a seawater source and is from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by R.W. Beck for SJRWMD in 2004 and updated in 2005. The conceptual-level project description included potential location of facilities and project costs. The source of water for this project is seawater from the Indian River Lagoon. This seawater demineralization project is collocated with the Reliant Energy power generation facility. This project will require a complete high-pressure reverse osmosis seawater treatment plant. The project site has an existing once-through seawater cooling system that may provide both inflow to the treatment plant and concentrate disposal facility.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 15.0 mgd. However, while the original conceptual capacity was 15.0 mgd, subsequent studies by the SJRWMD have indicated that it is not likely that more than 5–10 mgd of total capacity could be developed in this portion of the Indian River Lagoon without causing unacceptable environmental impacts (Applied Technology and Management, Inc. 2007).

Time frame in which project option should be implemented:

As of December 2008, no public water supply utilities were working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was developed in 2004 and updated in 2005.

- a. Total capital: \$141,000,000
- b. Construction: \$113,000,000
- c. Operation and maintenance: \$8,100,000 per year
- d. Unit production cost: \$3.57 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no MFLs that apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no MFLs, recovery or prevention strategies, or water use reservations that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The following water supply entities should consider implementation of this project: cities of Cocoa and Titusville, Orange County, and Orlando Utilities Commission. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically and financially feasible based on information developed by R.W. Beck for SJRWMD (R.W. Beck, Inc. 2004. *Final Report on Five Potential Seawater Demineralization Project Sites — Task C.5*. Special Publication SJ2004-SP6. Palatka, Fla.: St. Johns River Water Management District). R.W. Beck provided estimates of unit production costs ranging from \$2.69 per 1,000 gallons to \$3.06 per 1,000 gallons for project capacities ranging from 10–30 mgd of potable water. In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: SJRWMD included this project and Project 13: Indian River Lagoon at FPL Cape Canaveral Power Plant Project in the *DWSP 2005* based on a screening feasibility study that was completed by R.W. Beck for SJRWMD in 2004. R.W. Beck provided estimates of unit production costs for project capacities of 10 mgd, 20 mgd, and 30 mgd of potable water. R.W. Beck recognized that discharge of concentrate into the Indian River Lagoon might be an environmental constraint due to the shallow water depths in the Indian River Lagoon and potentially poor tidal flushing. SJRWMD completed a more detailed study of these constraints in 2007 (Applied Technology and Management, Inc. 2007. Technical Memorandum 2.G, *Final Report for the Evaluation of Potential Impacts of Demineralization Concentrate Discharge to the Indian River Lagoon*. Palatka, Fla.: St. Johns River Water Management District). The latter report concluded that a combined potable water production capacity of 20–30 mgd from both project sites would not be feasible due to the potential level of ecological impacts. The report also concluded that depending upon the choice of allowable level of acceptable loss of preferred seagrass habitat, total plant capacities less than or equal to 10 mgd, either as a single plant or combined, may be feasible. Therefore, SJRWMD considers this project to be reasonably permissible if total plant capacities are less than or equal to 10 mgd. However, if similar projects were implemented in the Indian River Lagoon prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Coquina Coast Seawater Desalination Project

Project number: 66

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a seawater source and is from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by SJRWMD in cooperation with interested water suppliers in early 2008. The conceptual-level project description includes potential location of facilities and project costs. The Coquina Coast Seawater Desalination Project, as currently proposed, is a seawater desalination project that includes five main components including: intake, treatment, concentrate management, storage, and transmission. The source of water will be the Atlantic Ocean with a likely point of withdrawal off shore of Flagler County. A reverse osmosis (RO) treatment facility is proposed to treat the seawater to drinking water standards. Distribution of potable water from the facility to users will take place using existing infrastructure to the extent possible but will require construction of some additional transmission and storage facilities.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description is based on an estimated average daily flow of 64.9 mgd of product water.

Time frame in which project option should be implemented:

Planning is anticipated to be complete in 2010. Design and construction is anticipated to be completed from 2010 to 2015.

Estimated planning-level costs:

The following planning-level costs were developed for a conceptual-level project description that was completed in late 2007 and early 2008.

- a. Total capital: \$1,270,000,000
- b. Construction: \$1,010,000,000
- c. Operation and maintenance: \$63,500,000 per year
- d. Unit production cost: \$6.28 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no established MFLs that apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no MFLs, recovery or prevention strategies, or water use reservations that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a multijurisdictional project. A memorandum of agreement for preliminary design was executed in June 2008 and later amended to include additional members. As of November 2008, the project included seven entities participating in developing the project (the city of Bunnell, Dunes Community Development District, Flagler County, the city of Leesburg, the city of Mount Dora, the city of Palm Coast, St. Johns County), and four additional water-supply entities that are participating as ex officio members (the city of DeLand, the city of Flagler Beach, Marion County, and the Water Authority of Volusia). In addition, the following water supply entities that are not identified in the current project description should consider this project because of the relatively close proximity of the entities to the project: these water supply entities, Sunshine Utilities (Marion County), and the town of Pierson (Volusia County). The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is considered technically and economically feasible based on information developed by R.W Beck for SJRWMD (R.W. Beck, Inc. 2004. *Final Report on Five Potential Seawater Demineralization Project Sites — Task C.5*. Special Publication SJ2004-SP6. Palatka, Fla.: St. Johns River Water Management District). In addition, planning-level information developed by SJRWMD indicates that this project is financially feasible (Burton and Associates, Inc. 2004, 2005).

Permissibility: This project appears to be reasonably permissible based from a planning-level perspective and based on the experiences of other seawater projects in Florida and elsewhere in the United States. Work completed by CH2M HILL in 2008 (*Demineralization Concentrate Ocean Outfall Feasibility Study, Phase 2A, Conceptual Ocean Outfall Evaluation*, SJRWMD Special Publication SJ2008-SP22) indicates that it appears feasible to obtain a permit for discharge of concentrate into the ocean.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This project will serve the public interest by providing water to meet basic public health, safety, and welfare needs of those it serves as well as provide water for commercial, industrial, institutional, recreational, and other typical public supply system needs within the public supply service areas of the project partners. This project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Reclaimed Water Source Project Descriptions

Name of project options and project numbers:

Project names: Projects are identified on Lists 1 and 2, Tables 13, 14, and 15 of this fourth addendum to *DWSP 2005* as reclaimed water source projects.

Project numbers: 17–23, 25–26, 28–29, 32–33, 35, 38–42, 44–45, 48–51, 53, 67–76, 78, 81, and 84 (Note: Reclaimed water source projects identified as being complete in this fourth addendum are not described here.)

Traditional or an alternative water supply option:

These projects are alternative water supply options.

Type of alternative water supply (AWS) project option:

These projects will develop a water source that has been reclaimed after public supply use and will supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Descriptions of projects:

These projects are described in the project descriptions included on pages 122–140 of this appendix and in Tables 13, 14, and 15 of this fourth addendum to *DWSP 2005*. The approximate locations of these projects are shown on Figures 5 and 6 of this fourth addendum to *DWSP 2005*.

Amount of water estimated to become available through these project options expressed as average daily flow (measured in million gallons per day [mgd]):

The quantities of water estimated to become available through these project options are indicated, by project, in the project descriptions included on pages 122–140 of this appendix and in Tables 13 and 15 of this fourth addendum to *DWSP 2005*.

Time frame in which project option should be implemented:

The time frames in which these project options should be implemented are indicated in Table 14 of this fourth addendum to *DWSP 2005*.

Estimated planning-level costs:

Estimated planning-level costs for these projects are indicated in Table 13 of this fourth addendum to *DWSP 2005*.

Basis for planning-level costs:

These cost estimates are based on information provided by the project sponsors. SJRWMD requested that these cost estimates be based on guidance provided in the document *Form for Required Response to District Water Supply Plan 2005 – Water Supply Entity Notification*, which is available at <http://www.sjrwmd.com/watersupplyplanning/index.html> and reviewed this cost information to ensure that it appeared to be reasonable.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for projects implementing the project options:

These project options utilize water reclaimed after public supply use and do not involve withdrawals from surface water or groundwater sources. Therefore, minimum flows and levels are not applicable to any of these project options.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

These project options utilize water reclaimed after public supply use and do not involve withdrawals from surface water or groundwater sources. Therefore, minimum flows and levels, recovery strategies, or water use reservations are not applicable to these project options.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The names of the entity or entities that should implement these projects options are indicated, by project, on Table 14 of this fourth addendum to *DWSP 2005*. The status of these projects is described, by project, on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: Numerous reclaimed water projects have been implemented in SJRWMD pursuant to Florida Department of Environmental Protection (FDEP) and SJRWMD permitting requirements. In the consumptive use permitting process, SJRWMD generally requires the use of reclaimed water unless such use is demonstrated by the permit applicant not to be economically, environmentally, and technically feasible. Determinations of feasibility are based on the guidelines contained in a document titled *Guidelines For Preparation of Reuse Feasibility Studies for Applicants Having Responsibility for Wastewater Management*, which was published by FDEP in November 1991. Reclaimed water source projects identified in this fourth addendum to *DWSP 2005*, have all been proposed by wastewater managers. SJRWMD assumes that these wastewater managers assessed the feasibilities of these projects and found the feasibilities to be acceptable prior to requesting that they be included in *DWSP 2005*.

Permissibility: Implementation of reclaimed water projects requires the issuance of permits by both SJRWMD and FDEP. The conceptual descriptions of the reclaimed water source projects identified in this appendix to the fourth addendum to *DWSP 2005* are all based on the production, storage, distribution, and use of reclaimed water that has been treated to applicable FDEP standards. (See project descriptions on pages 122–140 of this appendix to the fourth addendum to *DWSP 2005*.) Although the details of these projects may change as the projects progress, SJRWMD considers these projects as conceptualized to be permissible.

Analysis of funding needs and sources of possible funding options:

The estimated level of funding required to support implementation of these projects is described on Table 13 of this fourth addendum to *DWSP 2005*. Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of

construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” These reclaimed water project options will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. These projects will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), *Florida Statutes*, (F.S.).

Project number: 17

Project name: Altamonte Springs and Apopka Project APRICOT

Project sponsor(s): City of Altamonte Springs

Project type: Reuse

Purpose: Part 1 — The purpose of this project is to deliver reclaimed water from the city of Altamonte Springs to the city of Apopka water reclamation facility, where Apopka will redistribute it to customers and/or storage ponds.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 6.63 mgd

Estimated construction cost: \$9,325,000

Project components: Part 1 — This project consists of construction of a reclaimed water main, storage tank, and booster pump station, high-level disinfection and filtration.

Project number: 18

Project name: Apopka and Winter Garden Reuse Partnership Project

Project sponsor(s): City of Apopka and city of Winter Garden

Project type: Reuse

Purpose: The purpose of this project is to transport reclaimed water between the city of Apopka and the city of Winter Garden to increase reuse.

Water source: Reclaimed water

Water use/destination: Landscape irrigation

Quantity of water to be made available: 3.00 mgd

Estimated construction cost: \$5,210,000

Project components: This project consists of construction of a transmission pipeline and pump station.

Project number: 19

Project name: Belleview and Spruce Creek Golf Course Reclaimed Water System Expansion Project

Project sponsor(s): City of Belleview

Project type: Reuse

Purpose: The purpose of this project is to divert reclaimed water currently being disposed of at a sprayfield to use for golf course irrigation to reduce use of groundwater.

Water source: Reclaimed water

Water use/destination: Golf course irrigation at Spruce Creek Golf Course

Quantity of water to be made available: 1.00 mgd

Estimated construction cost: \$1,550,000

Project components: This project consists of construction of a transmission pipeline and pump stations. It is part of a larger project that includes a wastewater treatment facility upgrade and expansion.

Project number: 20

Project name: Beverly Beach Integrated Reclaimed Water and Stormwater Reuse Project, Phase II

Project sponsor(s): City of Beverly Beach

Project type: Reuse

Purpose: The purpose of this project is to capture storm water, eliminate effluent discharge to the Intracoastal Waterway, make reclaimed water available for expanded public reuse.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.50 mgd

Estimated construction cost: \$2,200,000

Project components: This project consists of construction of water loss reduction and reuse facilities, a horizontal well system to capture storm water, and a University of Central Florida-patented I2 water integrator for blending storm water, pipelines, pumps, and controls.

Project number: 21

Project name: Clermont Reclaimed and Stormwater System Expansion Project

Project sponsor(s): City of Clermont

Project type: Reuse

Purpose: Part 1 — The purpose of this project is to transfer reclaimed water flow to the East Side water resource facility and, thereby, increase the supply of reclaimed water to service area customers. Part 2 — Provide on-site storage to allow the city to receive reclaimed water supplements from other reclaimed water systems or pursue stormwater and surface water supplements to the reclaimed water supply. Part 3 — Allow the city to substitute reclaimed water for Floridan aquifer water.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 8.69 mgd

Estimated construction cost: \$15,600,000

Project components: This project involves construction of the following: Part 1 — Master lift station and force mains. Part 2 — Ground storage tank and a high-service pump station. Part 3 — Reclaimed water transmission mains and pump stations.

Project number: 22

Project name: Cocoa and Rockledge Reclaimed Water Line Connection Project

Project sponsor(s): City of Cocoa and city of Rockledge

Project type: Reuse

Purpose: The purpose of this project is to allow both utilities to expand their reclaimed water distribution systems by making more water available during high-demand times, as well as to provide reclaimed water supply in lieu of groundwater for nonpotable use.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.25 mgd

Estimated construction cost: \$1,530,000

Project components: This project consists of construction of a reclaimed water transmission line and pump stations.

Project number: 23

Project name: Daytona Beach Reclaimed Water System Project

Project sponsor(s): City of Daytona Beach

Project type: Reuse

Purpose: The purpose of this project is to utilize currently unused water treated at the Bethune Point Waste Water Treatment Plant (WWTP) and the Westside Regional WWTP. The project will contribute to use of reclaimed water in place of potable water for landscape irrigation for new development within Daytona Beach.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 26.0 mgd

Estimated construction cost: \$19,010,000

Project components: This project consists of construction of ground storage, reclaimed water transmission and distribution pipelines, and pump stations.

Project number: 25

Project name: Eastern Orange and Seminole Counties Regional Reuse Project

Project sponsor(s): City of Orlando

Project type: Reuse

Purpose: The purpose of this project is to utilize reclaimed water from the Iron Bridge Regional Water Reclamation Facility. Project will provide reclaimed water as an alternative water supply that will replace potable water for nonpotable uses.

Water source: Reclaimed water

Water use/destination: Public reuse system, including commercial, and residential landscape irrigation

Quantity of water to be made available: 20.00 mgd

Estimated construction cost: \$32,990,000

Project components: This project consists of construction of ground storage, reclaimed water transmission line, and pump stations.

Project number: 26

Project name: Edgewater Reclaimed Water System Interconnection to Southeast Volusia County Project

Project sponsor(s): City of Edgewater

Project type: Reuse

Purpose: The purpose of this project is to interconnect the city of Edgewater's existing distribution system to Volusia County's Southeast Wastewater Treatment Plant. This will complete the system interconnect and allow flow of reclaimed water to supplement reclaimed water supply from the Edgewater plant.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation in Edgewater

Quantity of water to be made available: 1.00 mgd

Estimated construction cost: \$5,340,000

Project components: This project consists of construction of ground storage tanks, reclaimed water transmission pipeline, and high-service pumps.

Project number: 28

Project name: Flagler County Bulow Reclaimed Water System Project

Project sponsor(s): Flagler County

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water to the Bulow WWTP service area. The reuse system water supply will come from Bulow WWTP and stormwater retention ponds.

Water source: Reclaimed water and storm water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 1.70 mgd

Estimated construction cost: \$1,480,000

Project components: This project consists of construction of filtration treatment facilities, transmission pipelines, reclaimed water, and stormwater pumping stations.

Project number: 29

Project name: Holly Hill-Ormond Beach Reclaimed Water System Expansion Project

Project sponsor(s): City of Holly Hill

Project type: Reuse

Purpose: The purpose of this project is to interconnect a Holly Hill reclaimed water transmission main to the existing Ormond Beach main located in the Nova Road right of way. Holly Hill will divert up to 0.750 mgd of reclaimed water into the Ormond Beach system.

Water source: Reclaimed water

Water use/destination: Tomoka Oaks Golf Course, Volusia Memorial Park, and the Nova Road medians

Quantity of water to be made available: 0.60 mgd

Estimated construction cost: \$370,000

Project components: This project consists of construction of reclaimed water transmission line and pump stations.

Project number: 32

Project name: Leesburg Reclaimed Water Reuse Project

Project sponsor(s): City of Leesburg

Project type: Reuse

Purpose: The purpose of this project is to maximize the beneficial use of all available reclaimed water.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 7.05 mgd

Estimated construction cost: \$26,600,000

Project components: This project consists of construction of wastewater treatment facility upgrades, surface and ground storage, reclaimed water transmission and distribution lines, and pump stations.

Project number: 33

Project name: Melbourne Reclaimed Water System Expansion Project

Project sponsor(s): City of Melbourne

Project type: Reuse

Purpose: The purpose of this project is to provide improvements to the Grant Street WWTP reuse production and distribution facilities to increase reclaimed water capacity.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 1.50 mgd

Estimated construction cost: \$6,600,000

Project components: This project will involve relocation of existing filter, addition of a new filter, new disinfection facilities, reclaimed water storage/chlorine contact tank, and a high-service pump station.

Project number: 35

Project name: Mount Dora Country Club Golf Course Reclaimed Water Project

Project sponsor(s): Mount Dora Country Club

Project type: Reuse

Purpose: The purpose of this project is to transport reclaimed water to golf course for irrigation.

Water source: Reclaimed water

Water use/destination: Golf Course irrigation at Mount Dora Country Club

Quantity of water to be made available: 0.26 mgd

Estimated construction cost: \$400,000

Project components: This project consists of construction of reclaimed water transmission pipeline and a pump station.

Project number: 38

Project name: Orange County Northwest Reclaimed Water Project

Project sponsor(s): Orange County

Project type: Reuse

Purpose: The purpose of this project is to provide a bidirectional pipeline that will increase the operational flexibility of the county's Northwest Water Reclamation Facility (NWWRF) and jointly owned (Orange County and city of Orlando) Water CONSERV II facilities. This project will allow the county to direct flow of reclaimed water from Water CONSERV II to the NWWRF, where it can be used to support the NWWRF service area reclaimed water irrigation supply and aquifer recharge projects. Conversely, flows from the NWWRF can be directed to the Water CONSERV II facilities, to augment reclaimed water irrigation supplies for the orange groves served by Water CONSERV II and residential development in the county's southwest service area.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 3.00 mgd

Estimated construction cost: \$10,000,000

Project components: This project consists of construction of reclaimed water transmission pipelines and pump stations.

Project number: 39

Project name: Orange County Southeastern Reclaimed Water System Expansion

Project sponsor(s): Orange County

Project type: Reuse

Purpose: The purpose of this project is to increase the availability of reclaimed water in Orange County's southeast reclaimed water service area for green space irrigation and for electrical power plant cooling.

Water source: Reclaimed water

Water use/destination: Green space landscape irrigation and electrical power generation

Quantity of water to be made available: 6.50 mgd

Estimated construction cost: \$7,620,000

Project components: This project involves construction of reclaimed water mains and a booster pump station, conversion of rapid infiltration basins to storage basins, construction of ground storage tanks and a high-service pump station, and expansion of the Eastern Water Reclamation Facility's (EWRf) reclaimed water pumping capacity.

Project number: 40

Project name: Orlando Utilities Commission Project RENEW

Project sponsor(s): Orlando Utilities Commission

Project type: Reuse

Purpose: The purpose of this project is to transfer reclaimed water from the east side of Orange County to meet irrigation needs in northwest and west-central Orange County. Raw wastewater that was being sent to the city of Orlando's Iron Bridge Regional Water Reclamation Facility will be intercepted and diverted to the city of Orlando's McLeod Road Water Reclamation Facility, which feeds into Water CONSERV II.

Water source: The water source is raw wastewater that will be diverted to alternative treatment facilities for reclamation and distribution.

Water use/destination: After treatment, 8.55 mgd of the reclaimed water will be pumped to the City of Apopka via new transmission mains and 0.65 mgd of the reclaimed water will be pumped to the City of Winter Garden via the existing Conserv II transmission system. The water will be used primarily for residential irrigation.

Quantity of water to be made available: 9.20 mgd

Estimated construction cost: \$43,200,000

Project components: This project consists of construction of reclaimed water transmission pipelines and pump stations.

Project number: 41

Project name: Ormond Beach North Peninsula Reclaimed Water Storage Project

Project sponsor(s): City of Ormond Beach

Project type: Reuse

Purpose: The purpose of this project is to serve the Ormond Beach north peninsula reclaimed water service area. Reclaimed water will be provided to the Oceanside Golf Course and surrounding areas.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.49 mgd

Estimated construction cost: \$2,900,000

Project components: This project consists of construction of a reclaimed water storage basin.

Project number: 42

Project name: Ormond Beach South Peninsula Reuse Improvement Project

Project sponsor(s): City of Ormond Beach

Project type: Reuse

Purpose: The purpose of this project is to provide the infrastructure required to serve the south half of the peninsula reclaimed water service area with reclaimed water.

Water source: Reclaimed water

Water use/destination: Commercial, governmental /institutional, and residential landscape irrigation

Quantity of water to be made available: 2.13 mgd

Estimated construction cost: \$9,160,000

Project components: This project consists of construction of a ground storage tank, high-service pump station, reclaimed water transmission and distribution lines, and pump station improvements.

Project number: 44

Project name: Port Orange Airport Road Reclaimed Water Transmission Main Project

Project sponsor(s): City of Port Orange

Project type: Reuse

Purpose: The purpose of this project is to allow increased reclaimed water service to residential and commercial users in the following subdivisions: Summertrees, Sawgrass Point, Taylor Woods, Cypress Head, Sanctuary, Waters Edge, Sabal Creek, Sterling Chase, and Ashton Lakes.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 1.00 mgd

Estimated construction cost: \$1,330,000

Project components: This project consists of construction of a reclaimed water transmission main and pump station.

Project number: 45

Project name: Port Orange Pioneer Trail Storage and Pumping Facility Project

Project sponsor(s): City of Port Orange

Project type: Reuse

Purpose: The purpose of this project is to provide storage and pumping facilities to make greater use of available reclaimed water. The project's location is near the service area boundary with New Smyrna Beach and would be well suited to a reclaimed water interconnect with New Smyrna Beach.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 2.00 mgd

Estimated construction cost: \$1,750,000

Project components: This project consists of construction of a ground storage tank and high-service distribution pumps.

Project number: 48

Project name: Rockledge Reclaimed Water System Expansion – ASR Project

Project sponsor(s): City of Rockledge

Project type: Reuse

Purpose: The purpose of this project is to provide an aquifer storage and recovery (ASR) system that will provide in-ground storage to allow the city to further expand its reclaimed water system and to provide service during peak periods.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.55 mgd

Estimated construction cost: \$3,360,000

Project components: This project consists of construction of two ASR wells, monitoring wells, and pump stations.

Project number: 49

Project name: South Daytona Reclaimed Water System Expansion Project

Project sponsor(s): City of South Daytona

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water for irrigation to city-maintained medians, developed and redeveloped properties along U.S. Route 1, the Piggotte City Community Center, Riverfront Park, and the city's Big Tree Ball Park. Current planned redevelopment includes increased landscaped/irrigated areas and new condominium projects, which will use the reclaimed water for landscape irrigation.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.14 mgd

Estimated construction cost: \$1,370,000

Project components: This project consists of construction of reclaimed water transmission and distribution lines and pump stations.

Project number: 50

Project name: Tavares Reclaimed Water System Expansion Project

Project sponsor(s): City of Tavares

Project type: Reuse

Purpose: The purpose of this project is for transmission system expansion that will extend reclaimed water service to Lake Harris Reserve, Lane Park Ridge, Foxborough, Martin's Grove, and Oak Bend. Other potential customers include Bay Tree Golf Course and Tavares Cemetery.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation; potential future use for golf course and cemetery irrigation

Quantity of water to be made available: 3.50 mgd

Estimated construction cost: \$6,330,000

Project components: This project consists of construction of an operations building, ground storage tank, and reclaimed water transmission pipelines. It will integrate with a high-service pump station that has already been constructed.

Project number: 51

Project name: Volusia County Southwest Reclaimed Water System Project

Project sponsor(s): Volusia County

Project type: Reuse

Purpose: The purpose of this project is to connect developer-installed reclaimed water lines to the county's active reclaimed water distribution system. The systems to be activated include: Glen Abbey Units 6, 7, and 8; Glen Abbey Club, Spring Glen, Woodlands, and Fawn Ridge.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.25 mgd

Estimated construction cost: \$2,000,000

Project components: This project consists of construction of pipeline interconnections.

Project number: 53

Project name: Winter Garden Reclaimed Water Pumping and Transmission Project

Project sponsor(s): City of Winter Garden

Project type: Reuse

Purpose: The purpose of this project is to provide additional reclaimed water service in Winter Garden and Ocoee service areas.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation. Reclaimed water service will be extended from the treatment plant to the Louis Dreyfus site and to subdivisions with reclaimed dry lines in Winter Garden. The connection with the city of Ocoee will extend reclaimed service to Westyn Bay, Forest Brooke, Vineyards, and Eagles Landing.

Quantity of water to be made available: 4.00 mgd

Estimated construction cost: \$6,700,000

Project components: This project consists of construction of ground storage tank, reclaimed water transmission mains, and pump stations.

Project number: 56

Project name: University of Central Florida (UCF) Reclaimed Water and Stormwater Intergration Project

Project sponsor(s): University of Central Florida

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water to replace potable water for irrigation.

Water source: Reclaimed water

Water use/destination: Institutional landscape irrigation; reclaimed water service will be extended from treatment plant(s) to locations on the UCF campus.

Quantity of water to be made available: 0.41 mgd

Estimated construction cost: \$880,000

Project components: This project consists of the installation of reclaimed water distribution piping, transmission main, and pump stations.

Project number: 67

Project name: Heathrow Boulevard Reclaimed Water Transmission Main Project

Project sponsor(s): (to be determined)

Project type: Reuse

Purpose: The purpose of this project is to provide for interconnection that will allow reclaimed water to be moved to Sanford, Lake Mary, and Seminole County for general reuse.

Water source: Reclaimed water

Water use/destination: Commercial, institutional, and residential landscape irrigation in Sanford, Lake Mary, and Seminole County

Quantity of water to be made available: 2.50 mgd

Estimated construction cost: \$1,500,000

Project components: This project consists of construction of a reclaimed water transmission pipeline.

Project number: 68

Project name: Markham Woods Road Reclaimed Water Transmission Main Project

Project sponsor(s): Seminole County

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water for landscape irrigation along Markham Woods Road.

Water source: Reclaimed water

Water use/destination: Commercial and residential irrigation

Quantity of water to be made available: 3.00 mgd

Estimated construction cost: \$3,400,000

Project components: This project consists of construction of a reclaimed water transmission pipeline.

Project number: 69

Project name: Orange Boulevard Reclaimed Water Transmission Main Project

Project sponsor(s): (to be determined)

Project type: Reuse

Purpose: The purpose of this project is to increase capacity and interconnectivity to Sanford, Lake Mary, and Seminole County.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 2.50 mgd

Estimated construction cost: \$350,000

Project components: This project consists of construction of a reclaimed water transmission pipeline.

Project number: 70

Project name: Oviedo Reclaimed Water Project

Project sponsor(s): Oviedo

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water for landscape irrigation in place of groundwater.

Water source: Reclaimed water

Water use/destination: Commercial and residential irrigation in Kingsbridge West subdivision, Lake Rogers, Big Oak, Twin Rivers, Alafaya Woods, Division Street, Lake Charm Country Estates, and the Meadows

Quantity of water to be made available: 1.50 mgd

Estimated construction cost: \$4,500,000

Project components: This project consists of the construction of reclaimed water distribution pipelines and pumps.

Project number: 71

Project name: Seminole County Residential Reclaimed Water Retrofit Project – Phase 1

Project sponsor(s): Sanford, Lake Mary, and Seminole County

Project type: Reuse

Purpose: The purpose of this project is to distribute reclaimed water from Yankee Lake Wastewater Treatment Plant for landscape irrigation.

Water source: Reclaimed water

Water use/destination: This project is for commercial and residential landscape irrigation in the subdivisions of: Heathrow Woods, Bristol Park, Chestnut Hill, East Camden, and Magnolia Plantation, to directly offset potable water currently used for irrigation.

Quantity of water to be made available: 1.09 mgd

Estimated construction cost: \$3,400,000

Project components: This project consists of the construction and retrofit of reclaimed water distribution pipelines and pump stations.

Project number: 72

Project name: Seminole County/Sanlando Utilities Interconnect With Altamonte Springs Project

Project sponsor(s): Altamonte Springs, Sanford, Winter Springs, and Utilities Inc./Sanlando Utilities

Project type: Reuse

Purpose: The purpose of this project is to make more reclaimed water available for replacement of potable water.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 3.80 mgd

Estimated construction cost: \$4,400,000

Project components: This project consists of construction of reclaimed water transmission pipeline.

Project number: 73

Project name: Spruce Creek Golf and Country Club Reclaimed Water Project

Project sponsor(s): Marion County

Project type: Reuse

Purpose: The purpose of this project is to provide reclaimed water to take the place of groundwater for golf course irrigation.

Water source: Reclaimed water

Water use/destination: Spruce Creek Golf and Country Club irrigation

Quantity of water to be made available: 0.55 mgd

Estimated construction cost: \$1,586,000

Project components: This project consists of the construction of reclaimed transmission water pipeline and a pump station.

Project number: 74

Project name: Timacuan Reclaimed Water Main Upgrade Project

Project sponsor(s): Sanford, Lake Mary, and Seminole County

Project type: Reuse

Purpose: The purpose of this project is to increase use of reclaimed water.

Water source: Reclaimed water

Water use/destination: Golf course irrigation, commercial and residential landscape irrigation, East Lake Mary Boulevard, Sanford International Airport, Victoria Street, Willow Avenue, Riverview Avenue

Quantity of water to be made available: 2.90 mgd

Estimated construction cost: \$700,000

Project components: This project consists of construction of a reclaimed water transmission main.

Project number: 75

Project name: West Melbourne – Reuse Distribution System Improvements Project

Project sponsor(s): West Melbourne

Project type: Reuse

Purpose: The purpose of this project is to expand reclaimed water service area and increase use of reclaimed water.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation in West Melbourne

Quantity of water to be made available: 2.48 mgd

Estimated construction cost: \$3,104,000

Project components: This project consists of the construction of reclaimed water transmission and distribution pipelines and pump stations.

Project number: 76

Project name: Western Ormond Beach Reclaimed Water Distribution Project

Project sponsor(s): Ormond Beach

Project type: Reuse

Purpose: The purpose of this project is to expand the reclaimed water service area and increase the use of reclaimed water.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation in west Ormond Beach

Quantity of water to be made available: 2.70 mgd

Estimated construction cost: \$4,540,000

Project components: This project consists of construction of reclaimed water transmission and distribution pipelines and pump stations.

Project number: 78

Project name: Sanford and Volusia Interconnect Reclaimed Augmentation Project

Project sponsor(s): City of Sanford and Volusia County

Project type: Reuse

Purpose: The purpose of this project is to transfer reclaimed water from the city of Sanford wastewater reclamation facility to a Volusia County reuse system for expansion of Volusia County's reuse service area.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation in southeastern Volusia County

Quantity of water to be made available: 2.00 mgd

Estimated construction cost: \$1,682,000

Project components: This project consists of the construction of reclaimed water transmission pipeline and a high-service pump station.

Project number: 81

Project name: City of Flagler Beach Reclaimed Water Treatment System Project

Project sponsor(s): City of Flagler Beach

Project type: Reuse

Purpose: The purpose of this project is to upgrade wastewater treatment to produce reclaimed water suitable for public area reuse.

Water source: Reclaimed water

Water use/destination: Commercial and residential landscape irrigation

Quantity of water to be made available: 0.75 mgd

Estimated construction cost: \$4,020,000

Project components: This project consists of construction of a wastewater treatment facility upgrade.

Project number: 84

Project name: City of Ocoee Northwest Reuse Re-Pump Station and Interconnection Mains Project

Project sponsor(s): City of Ocoee

Project type: Reuse

Purpose: The purpose of this project is to increase availability of reclaimed water for distribution.

Water source: Reclaimed water

Water use/destination: Landscape irrigation in Ocoee and vicinity

Quantity of water to be made available: 1.20 mgd

Estimated construction cost: \$2,300,000

Project components: This project consists of construction of reclaimed water transmission pipelines and pump stations.

Reclaimed Augmentation Source Project Descriptions

Name of project option and project number:

Project name: DeLand Reclaimed Water and Surface Water Augmentation Project

Project number: 24

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by the city of DeLand in the fall of 2005. The sources of water for this project are reclaimed water, storm water, and brackish surface water. The project description developed by the city of DeLand in 2005 described facilities to store and recharge storm water and reclaimed water. Additionally, the project included facilities to withdraw brackish surface water for reclaimed water augmentation. The brackish surface water will not require reverse osmosis treatment for reclaimed water augmentation and, therefore, will not produce a concentrate. In April 2006, the city obtained a consumptive use permit from the SJRWMD to withdraw 2.0 mgd from the St. Johns River to augment its reclaimed water.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

In 2006, the design capacity of the project was revised to 2.0 mgd from the original capacity of 1.7 mgd; 2.0 mgd is the permitted capacity of the surface water withdrawal from the St. Johns River for reclaimed water augmentation. The total maximum capacity of the DeLand reclaimed water system including all sources is 6.0 mgd.

Time frame in which project option should be implemented:

The project design and permitting is completed. Construction has not been scheduled.

Estimated planning-level costs:

The following planning-level costs were developed for the project description that was submitted to the SJRWMD in 2005.

- a. Total capital: \$5,550,000
- b. Construction: \$4,830,000
- c. Operation and maintenance: \$328,000 per year
- d. Unit production cost: \$1.15 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were provided by the city of DeLand.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

MFLs established for the St. Johns River at SR 44 near DeLand [Rule 40C-8.031(1)(f), *Florida Administrative Code (F.A.C.)*] apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn in association with this project without causing flows to fall below established MFLs for the St. Johns River at SR 44 near DeLand. These calculations were made based on varying operating assumptions and the assumption that only current permitted withdrawals from the river would continue in addition to this project. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. There is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project which is being implemented by the city of DeLand. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. The city of DeLand considered the financial feasibility of this project when making a decision to plan and implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: A CUP was issued in April 2006 for 2.0 mgd of surface water withdrawal. This project has been designed, but construction had not been scheduled as of the fall of 2008.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water. The city of DeLand proposes to treat the water associated with this

project to applicable Florida Department of Environmental Protection (FDEP) standards for public access reuse. Therefore, the portion of this project that includes the treatment of this water is likely permissible based on applicable FDEP requirements.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source. This reclaimed augmentation project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), *Florida Statutes* (F.S.), contains the Florida Legislature's finding that reuse of reclaimed water is a "state objective" and is "considered to be in the public interest." In addition, this project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project

Project number: 36

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

This project description was developed by interested water suppliers in 2004 (CPH, 2004) and updated in 2007 and 2008. The 2004 project description was developed in collaboration among Seminole County and the cities of Sanford and Lake Mary and based on a variety of separate projects that were already under way. The sources of water for this project are brackish surface water from Lake Monroe and reclaimed water. The brackish surface water will be used for reclaimed water augmentation. The project includes a surface water intake, additional treatment and disinfection facilities at the city of Sanford's reclaimed water treatment plant, and an expansion of the regional reclaimed water transmission system, including pumping and storage.

The design capacity of the reclaimed water transmission system part of the project is 7.76 mgd. The other DWSP projects that will use the water developed as part of this project are Project 78: Sanford and Volusia Interconnect Reclaimed/Augmentation Project and Project 79: St. Johns River Near 46–Non-Potable With Storage Project.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The project description developed in 2005 described a transmission design capacity of 7.76 mgd. The project will withdraw up to 2.59 mgd from Lake Monroe.

Time frame in which project option should be implemented:

The master planning will be completed in 2013. Construction of the surface water treatment system is under way and will be completed in 2009. The reclaimed water system expansion is also under way, but new projects are being planned and it is undetermined when the construction will be completed.

Estimated planning-level costs:

The following planning-level costs were developed for the project description that completed in 2004. They are from Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project Report (CPH 2004), as incorporated into *DWSP 2005*. The various components that comprise this 2005 project are listed in the Seminole County Water Supply Plan; SJRWMD SJ2007-SP18 (Arcadis USA, 2004). Individual life cycle costs are reported in this planning document.

- a. Total capital: \$10,300,000
- b. Construction: \$8,780,000
- c. Operation and maintenance: \$505,000
- d. Unit production cost: \$0.43 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on information from Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project Report (CPH 2004), as incorporated into the *DWSP 2005*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

SJRWMD issued a consumptive use permit for this project in 1999. There were no applicable minimum flows and levels established at the time this project was permitted. However, minimum flows and levels were established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*] after this project was permitted.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

Minimum flows and levels (MFLs) have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below these established MFLs. These calculations are based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004). These calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. SJRWMD used the same methodology to determine that a steady withdrawal of 116 mgd could be withdrawn from Lake Monroe and upstream areas. Based on the proportion between 155 and 116 (75%), it is estimated that 107–131 mgd could be withdrawn from Lake Monroe and upstream areas without causing flows to fall below the established MFLs for the St. Johns River at Lake Monroe. A review of consumptive use permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. The amount of water permitted for this project (2.59 mgd) was included in the additional 15 mgd allocated and did not cause the previously described withdrawal limits to be exceeded.

SJRWMD relied on studies and yield analyses completed by CH2M HILL when permitting this project. CH2M HILL (1997e) reported a maximum reliable yield of 279 mgd for the St. Johns River at Sanford and a maximum reliable yield of 351 mgd for the St. Johns River near DeLand. This report was based on an earlier report for SJRWMD completed by CH2M HILL (1996a).

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a regional project with the following cooperators: cities of Lake Mary, Sanford, Seminole County, and Volusia County. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources, including surface water, demineralization concentrate, and groundwater, is practiced successfully by several reclaimed water utilities within SJRWMD. The proposed project is similar in concept to these other projects. The cooperating water supply entities considered the financial feasibility of

this project when making a decision to plan and implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permittability: A consumptive use permit (CUP) was issued in June 1999 for 2.59 mgd of surface water withdrawal. This CUP expires in 2019 and requires five-year compliance reports. This project was under construction in 2008. At that time the CUP for withdrawal from Lake Monroe was issued, there were no minimum flows and levels (MFLs) established for Lake Monroe or a location downstream in the St. Johns River. As part of its five-year compliance reviews, SJRWMD will consider all relevant and available information to ensure that the project continues to meet applicable consumptive use permitting criteria.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water. The city of Sanford proposes to treat the water associated with this project to applicable FDEP standards for public access reuse. Therefore, the portion of this project that includes the treatment of this water appears permissible based on applicable FDEP requirements.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. These reclaimed water project options will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature's finding that reuse of reclaimed water is a "state objective" and is "considered to be in the public interest." In addition, this project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Lake Apopka Reuse Augmentation Project

Project number: 54

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a fresh surface water source and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.) This project will also involve the capture of surface water predominantly during wet weather flows.

Description of project:

A conceptual-level project description was developed by the city of Apopka in 2005. The conceptual-level project description described a 1.00-mgd project that would withdraw water directly or indirectly from Lake Apopka. As the project has moved forward through planning, design, and permitting there have been some changes to the project description. Pursuant to a settlement agreement involving SJRWMD, the city of Apopka, and the Lake County Water Authority, the source of water for this project will be limited to withdrawals of surplus surface water from the North Shore Restoration Area (NSRA) of the Lake Apopka Basin. It is anticipated that surplus surface water will be captured and stored in the NSRA and available for use by the city predominantly during wet weather conditions. This settlement agreement was approved by SJRWMD's Governing Board in December 2008. The project includes an intake for surface water from the NSRA and associated treatment and transmission facilities to produce augmentation water for the city of Apopka's reclaimed water system.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 described an average daily flow of 1.00 mgd. SJRWMD issued a 20-year consumptive use permit to the city of Apopka for 5.0 mgd for this project in December 2008. The permit will expire on December 10, 2028.

Time frame in which project option should be implemented:

Construction is scheduled to start in 2009.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2005. The costs shown below were for a 1.0-mgd project.

- a. Total capital: \$8,790,000
- b. Construction: \$7,270,000
- c. Operation and maintenance: \$114,000 per year
- d. Unit production cost: \$1.99 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were provided by the city of Apopka.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no established MFLs that apply to this project. SJRWMD is working to develop minimum flows and levels for the Ocklawaha River at SR 40 which may have some applicability to this project. A wide range of technical work is currently under way to support the establishment of this MFL. The draft SJRWMD *2008 Minimum Flows and Levels Priority List and Schedule* was approved by the SJRWMD Governing Board on November 11, 2008, for transmittal to the FDEP, reflects that this MFL is scheduled for adoption in 2011.

SJRWMD has committed to developing MFLs for Lakes Apopka, Beauclair, Dora, Harris, Eustis, and Griffin. Pursuant to a settlement agreement with the Lake County Water Authority approved by the SJRWMD Governing Board on November 11, 2008, SJRWMD will work to establish MFLs for these lakes by 2013.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are currently no existing MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. SJRWMD is working to develop MFLs for the Ocklawaha River at SR 40 and for Lakes Apopka, Beauclair, Dora, Harris, Eustis, and Griffin. In principle, the establishment of MFLs for these water bodies may have some impact upon the amount of water available for this project. The city of Apopka received a 20-year CUP from SJRWMD for up to 5.0 mgd of water from the NSRA. This settlement agreement was approved by SJRWMD's Governing Board in December 2008. Applicable MFLs, when established, will be considered in the renewal of the city of Apopka's CUP authorizing withdrawal from NSRA.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project which is being implemented by the city of Apopka. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources, including surface water, demineralization concentrate, and groundwater, is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. This project is considered financially feasible based on information provided by the sponsor in the following report by Boyle Engineering Corporation, *Lake Apopka Reclaimed Water Supplement Final Technical Report*, May 2006. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: SJRWMD issued a 20-year consumptive use permit to the city of Apopka for this project for 5.0 mgd of water withdrawn from the NSRA in December 2008.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water. The city of Apopka proposes to treat the water associated with this project to applicable FDEP standards for public access reuse. Therefore, the portion of this project that includes the treatment of this water is likely permissible based on applicable FDEP requirements.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source. This reclaimed water project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature's finding that reuse of reclaimed water is a "state objective" and is "considered to be in the public interest." In addition, this project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Seminole County Yankee Lake Reclaimed Water System Augmentation Project

Project number: 55

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and supply water from a nontraditional source. SJRWMD generally identifies source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids as “brackish” waters. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by Seminole County in 2005 and updated in the fall of 2007. The source of water for this project is the St. Johns River near Yankee Lake. The project includes construction of a 10.0-mgd supply and treatment system to treat water from the St. Johns River, including an intake for surface water from the St. Johns River. The treated water will be used to augment reclaimed water supplies only. Therefore, it will not require reverse osmosis or produce a concentrate.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 describes an average daily flow of 10.0 mgd.

Time frame in which project option should be implemented:

Design is nearly complete. Construction will proceed as shown on Table 15 of this fourth addendum.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007. The costs for this project are included in the costs for another DWSP Project, which is Project 65: St. Johns River Near Yankee Lake Project.

- a. Total capital: Not available
- b. Construction: \$48,000,000
- c. Operation and maintenance: Not available
- d. Unit production cost: Not available

Basis for planning-level costs:

Estimated planning-level costs were provided by Seminole County in 2007.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. The MFLs at both of these locations would apply if a CUP were sought for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below established MFLs for the St. Johns River at Lake Monroe and at SR 44 near DeLand. Based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004), calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. As part of this model analysis, it was determined that a steady withdrawal of 155 mgd at DeLand would not cause water levels in Lake Monroe to fall below the establish MFLs for the St. Johns River at Lake Monroe (Robison, personal communication 2009). A review of consumptive used permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. The amount of water proposed for this project (10.0 mgd) in combination with the 15 mgd already allocated would be less than the 155 mgd withdrawal limit previously described. If other projects are implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Reverse osmosis treatment will not be needed and therefore process byproduct (concentrate) will not be discharged to the river. Based on this planning-level analysis, there are no established MFLs that would not constrain this project. In addition, there are no recovery or prevention strategies or water use reservations that would constrain this project.

Name of entity or entities that should implement the project option and current status of project Option's implementation:

This is a single-entity project that is being implemented by Seminole County. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. Seminole County considered the financial feasibility of this project when making a decision to plan and implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permittability: The project appears to be reasonably permittable from a planning-level perspective based on the previously described conclusion that this project is environmentally feasible because would not cause water levels or flows to fall below established MFLs and there will be no concentrate discharge to the river. Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water.

This link between environmental feasibility and permittability is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), *F.S.*, as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), *F.S.* As required by Section 373.223(3), *F.S.*, SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source. This reclaimed water augmentation project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” In addition, this project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Winter Springs–Lake Jesup Reclaimed Water Augmentation Project

Project number: 58

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and will supply water from a nontraditional source. SJRWMD generally identifies source waters that do not always meet federal and state drinking water standards for chloride, sulfate, or total dissolved solids as “brackish” waters. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by the city of Winter Springs in 2005 and updated in the fall of 2007. The source of water for this project is reclaimed water and brackish surface water for reclaimed water augmentation. The project includes an intake for surface water from Lake Jesup, surface water treatment, tank storage, and transmission lines. The water produced will be for reclaimed water augmentation only. As a result, it will not require reverse osmosis or produce a concentrate. SJRWMD issued a consumptive use permit (CUP) for the withdrawal in April 2007. The permit will expire on April 10, 2027.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2005 and updated in 2007 described an average daily flow of 2.23 mgd, which would be withdrawn from Lake Jesup and an artesian well flowing into Lake Jesup. A CUP was issued in April 2007 for 2.23 mgd of surface water withdrawal.

Time frame in which project option should be implemented:

Construction is anticipated to be completed in 2009.

Estimated planning-level costs:

The following planning-level costs were developed for the project description that was submitted in 2007.

- a. Total capital: \$8,500,000
- b. Construction: \$7,700,000
- c. Operation and maintenance: \$200,000 per year
- d. Unit production cost: \$2.07 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were provided by the city of Winter Springs in 2007.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. MFLs at this location were considered during review and issuance of the consumptive use permit for this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

MFLs have been established for the St. Johns River at Lake Monroe [Rule 40C-8.031(1)(i), *F.A.C.*] and at SR 44 near DeLand [Rule 40C-8.031(1)(f), *F.A.C.*]. SJRWMD calculated quantities of water that could be withdrawn without causing flows to fall below established MFLs for the St. Johns River at Lake Monroe and at SR 44 near DeLand. Based on use of the MSJR SSARR Model as described in SJRWMD Technical Publication SJ2004-2 (Robison 2004), calculations indicate that a steady withdrawal of 155 mgd could be withdrawn upstream of DeLand without causing flows to fall below the established MFLs for the St. Johns River at SR 44 near DeLand. Further analysis indicated a range of 143–175 mgd would be available depending on the operating assumptions. As part of this model analysis, it was determined a steady withdrawal of 155 mgd at DeLand would not cause water levels in Lake Monroe to fall below the establish MFLs for the St. Johns River at Lake Monroe (Robison, personal communication 2009). A review of consumptive used permits issued by SJRWMD through October 2008 indicates that SJRWMD has permitted additional withdrawals from the river totaling about 15 mgd since the initial calculations were made. The amount of water proposed for this project (10.0 mgd) in combination with the 15 mgd already allocated would be less than the 155 mgd withdrawal limit previously described. If other projects are implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project that is being implemented by the city of Winter Springs. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: This project is technically feasible based on the current use of surface water for reclaimed water augmentation by various entities in Florida and the United States. The city of Winter Springs considered the financial feasibility of this project when making a decision to plan and implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permittability: A CUP was issued for this project in April 2007 for 2.23 mgd of surface water withdrawal. This project was under construction as of the fall of 2008. Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water.

This link between environmental feasibility and permissibility is based on the relationship between the water resource constraints used in SJRWMD's water supply planning process and the environmental protection criteria used in the consumptive use permitting process; these constraints and criteria are conceptually consistent. However, consistency of the project's impacts with the water resource constraints should not be interpreted as the determination or application of the SJRWMD's consumptive use permitting criteria. Before such a determination can be made, all details of the project's design and operation must be prepared by a permit applicant and submitted to SJRWMD in a permit application. The application must then be reviewed for consistency with all of the SJRWMD's consumptive use permitting criteria applicable to the project, including established MFLs and other environmental protection criteria. The proposed project may be further refined during the permit application review process to address different permitting criteria. Such refinements may include changes to the schedule when water is proposed to be withdrawn, the addition of off-line storage facilities, or, if appropriate, mitigation. In addition, since this is a regional project that would provide water for use across county boundaries, the Governing Board will also consider the factors in Section 373.223(3), *F.S.*, as part of the completed permit application for a specific project, in making a determination of whether the project is consistent with the public interest pursuant to Section 373.223(5), *F.S.* As required by Section 373.223(3), *F.S.*, SJRWMD will use the information in *DWSP 2005*, including this addendum, as the basis for its consideration of the special public interest criteria ("local sources first") during its review of the permit application.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source. This reclaimed water project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” In addition, this project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Nova Canal Reclaimed Augmentation Project

Project number: 77

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a reclaimed water augmentation source from storm water, which is a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

SJRWMD developed a conceptual-level project description in cooperation with interested water suppliers in the fall of 2007 as described in the SJRWMD (2008 draft) special publication prepared by Zafar Hyder, Ph.D., P.E., Bengal Engineering Inc., and Bill Dunn, Ph.D., Watershed Connections Inc., *Feasibility Assessment of the Use of Stormwater from the Nova Canal System as Supplemental Source for Reclaimed Water in Volusia County*. The conceptual-level project description included the potential location of facilities and project costs. The location map and conceptual diagram developed for the 2007 conceptual-level project description are shown on Figures 77-1 and 77-2. The source of water are the 11th Street Canal, Reed Canal, and Halifax Canal basins, which all drain into Nova Canal and are located in the cities of Holly Hill, South Daytona, and Port Orange, respectively. The Nova Canal Reclaimed Augmentation Project would divert storm water from the Nova Canal basin drainage system to supplement regional reclaimed water systems. This project would provide other regional benefits including flood relief and improvement of water quality in the Halifax River. The project consists of intake structures, storage, piping, and treatment. As of September 2008, the participants interested in pursuing the project included the cities of Daytona Beach, Holly Hill, Ormond Beach, South Daytona, Port Orange; Utilities Commission of New Smyrna Beach; and Volusia County.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 9.4 mgd.

Time frame in which project option should be implemented:

As of December 2008, there were no public water supply utilities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007.

- a. Total capital: \$46,000,000
- b. Construction: \$41,300,000
- c. Operation and maintenance: \$270,000 per year
- d. Unit production cost: \$1.05 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

No minimum flows and levels apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

Minimum flows and levels do not constrain this project. In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The following water supply entities should consider the implementation of this project: the cities of Daytona Beach, Holly Hill, Ormond Beach, South Daytona Beach, and Port Orange. The status of this project is described on Table 15 of this fourth addendum to DWSP 2005.**Project feasibility and permissibility:**

Feasibility: This project appears to be technically and economically feasible based on a SJRWMD special publication prepared by Zafar Hyder, Ph.D., P.E., Bengal Engineering Inc., and Bill Dunn, Ph.D., Watershed Connections Inc., *Feasibility Assessment of the Use of Stormwater from the Nova Canal System as Supplemental Source for Reclaimed Water in Volusia County*, 2008. Further, the augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. Therefore, SJRWMD assumes that the project is both technically and economically feasible.

Permissibility: Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids

limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water. SJRWMD assumes that this project would be developed in a manner consistent with these requirements. Therefore, this project is considered to be permittable.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source. This reclaimed water project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature's finding that reuse of reclaimed water is a "state objective" and is "considered to be in the public interest." In addition, this project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

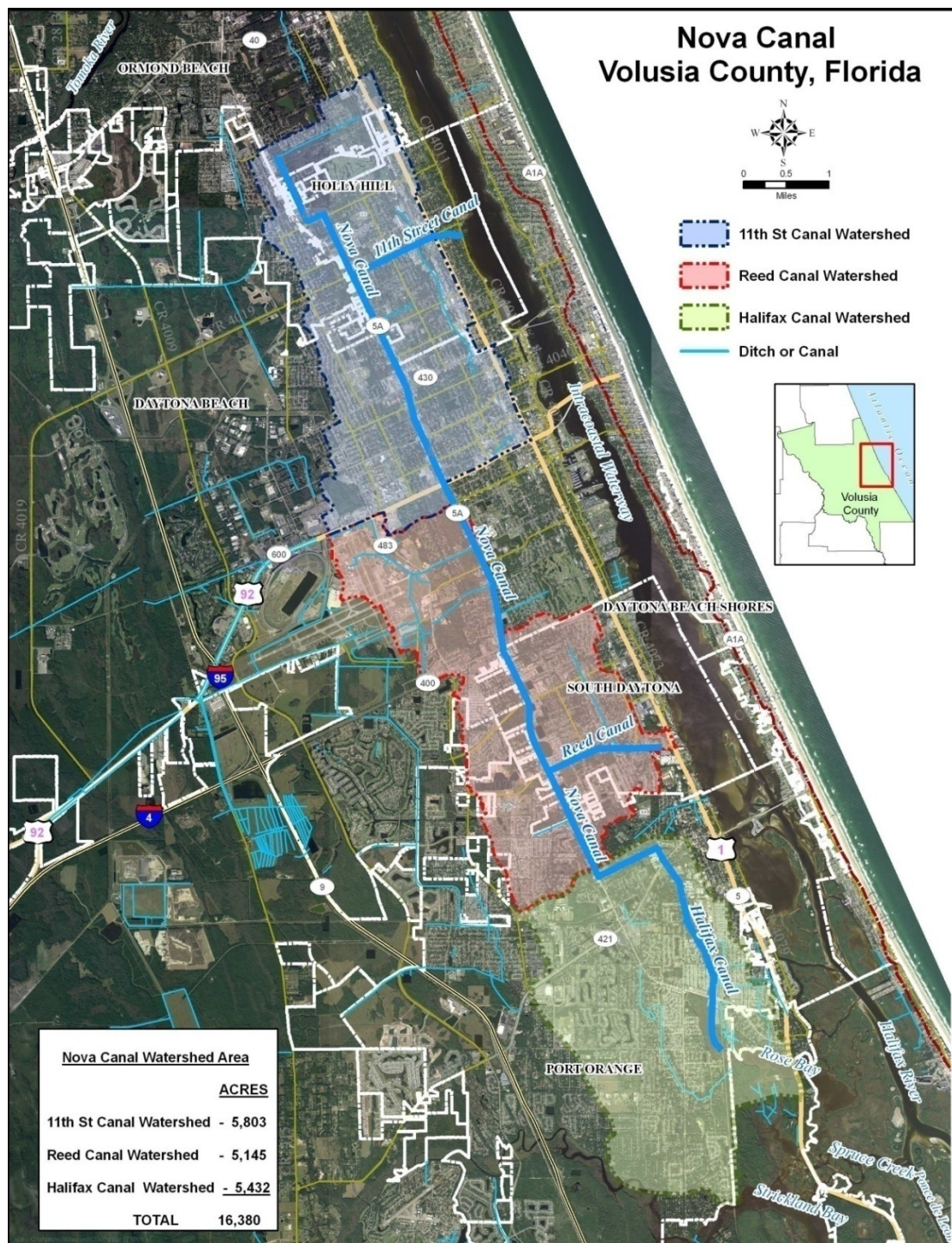


Figure 77-1. Area map showing the location of the Nova Canal Reclaimed Augmentation Project

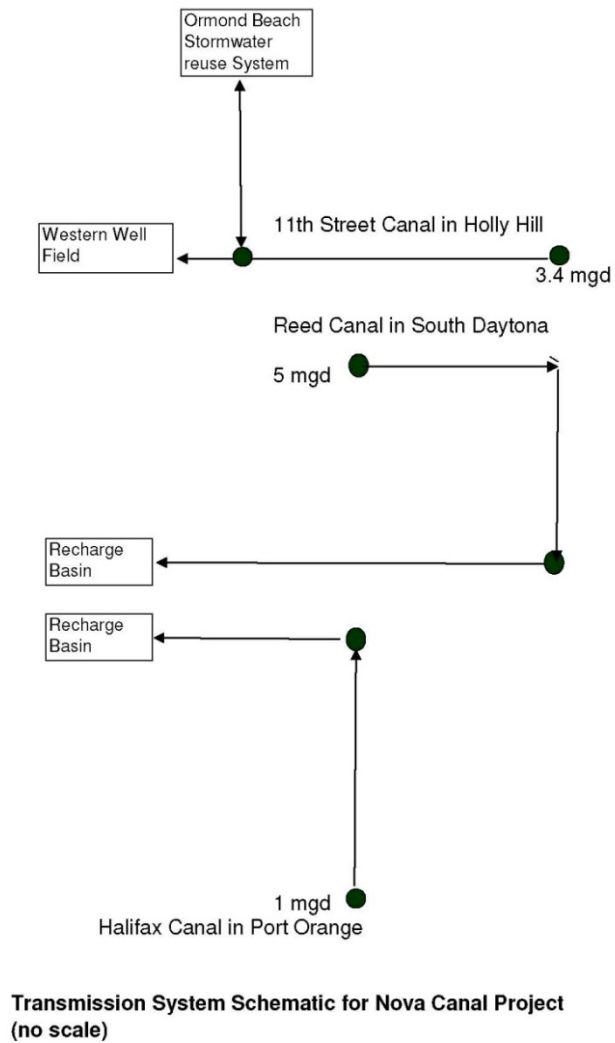


Figure 77-2. Schematic pipeline for diversion of storm water from Nova Canal system for the Nova Canal Reclaimed Augmentation Project pursuant to conceptual project description developed in 2007

Name of project option and project number:

Project name: St. Johns River Near SR 46–Non-Potable With Storage Project

Project number: 79

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a brackish surface water source and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by interested water suppliers in the fall of 2007. The conceptual-level project description included potential location of facilities and project costs. The project includes a point of connection, ground storage, and a nonpotable water transmission system. The proposed use of the water is reclaimed water augmentation and is intended to supplement the project partners' reclaimed water supply with treated surface water for the purpose of maximizing their use of reclaimed water throughout the year. The project will not require reverse osmosis and therefore not produce a concentrate. The source of water may be supplied partially by Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project, but the primary source of supply is anticipated to be Project 64: St. Johns River Near SR 46 Project. The quantity of water necessary to supply this project are included in Projects 36 and 64.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 by the city of Sanford described an average daily flow of 6.9 mgd.

Time frame in which project option should be implemented:

As of December 2008, there are no public water supply utilities working to implement this project. Therefore, a project implementation schedule has not been prepared.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007. The unit production cost is listed below.

- a. Total capital: \$28,7000,000
- b. Construction: \$21,000,000
- c. Operation and maintenance: \$15,000 per year
- d. Unit production cost: \$0.72 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

This project does not include a surface water withdrawal. The source of water will be either Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project or Project 64: St. Johns River Near SR 46 Project. The discussion of MFLs is covered as part of those projects.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

This project does not include a surface water withdrawal. The source of water will be either Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project or Project 64: St. Johns River Near SR 46 Project. The discussion of MFLs is covered as part of those projects.

In addition, there is no recovery or prevention strategy or water use reservation that would constrain this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

The following water supply entities should consider implementing this project: the cities of Oviedo, Sanford, and Winter Springs, Seminole and Volusia counties. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. The water supply entities considered the financial feasibility of this project when making a decision to evaluate it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: Permissibility is covered under Project 36: North Seminole Regional Reclaimed Water and Surface Water Augmentation System Expansion and Optimization Project and Project 64: St. Johns River Near SR 46 Project.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established

for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a regional project that will supplement existing traditional groundwater supplies with water from an alternative water source.

This reclaimed water project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” In addition, this project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Umatilla Reclaimed Development and Surface Water Reclaimed Supply Project

Project number: 80

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a fresh surface water source for reclaimed water augmentation and will supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by the city of Umatilla in the fall of 2007. The conceptual-level project description included project costs. The source of water is fresh surface water from Lake Yale and reclaimed water from the city of Umatilla wastewater facility. The project includes a surface water intake structure and improvements to a wastewater plant. The project is to supplement the city of Umatilla's reclaimed water with treated surface water for the purpose of maximizing the use of reclaimed water throughout the year.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described 0.1 mgd coming from Lake Yale to augment reclaimed water. The project will produce a total of 0.2 mgd from a combination of reclaimed and surface water.

Time frame in which project option should be implemented:

The project is scheduled for design in 2009 and construction in 2010.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007.

- a. Total capital: \$3,040,000
- b. Construction: \$3,000,000
- c. Operation and maintenance: \$297,000 per year
- d. Unit production cost: \$2.84 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information provided by the city of Umatilla and were reviewed by SJRWMD staff.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no established MFLs that would apply to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. In addition, preliminary information suggests that with the construction of additional off-stream storage a limited amount of surface water is available in the Upper Ocklawaha River Basin, (technical memorandum [Wycoff 2008 draft]: *Evaluation of the Feasibility of Water Supply Withdrawals from the Upper Ocklawaha River Basin – Phase 2: Investigation of Potential Water Supply Yield at Moss Bluff*). The proposed withdrawal of 0.1 mgd from Lake Yale is well within the estimated quantity of available water.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project which is being implemented by the city of Umatilla. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. The water supply entity considered the financial feasibility of this project when making a decision to implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: Preliminary information suggests that with the construction of additional off-stream storage a limited amount of surface water is available in the Upper Ocklawaha River Basin (technical memorandum [Wycoff 2008 draft]: *Evaluation of the Feasibility of Water Supply Withdrawals from the Upper Ocklawaha River Basin – Phase 2: Investigation of Potential Water Supply Yield at Moss Bluff*). The proposed withdrawal of 0.1 mgd from Lake Yale is well within the estimated quantity of available water. Therefore, the portion of this project that includes withdrawal of water from Lake Yale is likely permissible based on SJRWMD's CUP requirements. However, if other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to these rules, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water.

The city of Umatilla proposes to treat the water associated with this project to applicable FDEP standards for public access reuse. Therefore, the portion of this project that includes the treatment of this water is likely permittable based on applicable FDEP requirements.

Analysis of funding needs and sources of possible funding options:

Funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source.

This reclaimed water project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” In addition, this project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Securing Minneola's Alternative Resources for Tomorrow (SMART) Project

Project number: 82

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will develop a surface water source and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by the city of Minneola in the fall of 2007. This conceptual-level project description includes project costs. The proposed source of water for this project is Lake Apopka. It is anticipated that water will be available only when water releases are being made from Lake Apopka. The project includes an intake for surface water from Lake Apopka, surface water treatment, storage, and a reclaimed water transmission system.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description described a surface water treatment plant with an average daily flow of 5.00 mgd.

Time frame in which project option should be implemented:

The project is scheduled for planning, design, and construction starting in 2009.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description.

- a. Total capital: \$26,700,000
- b. Construction: \$25,000,000
- c. Operation and maintenance: \$2,500,000 per year
- d. Unit production cost: \$5 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on information provided by the city of Minneola.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

There are no established MFLs that would apply to this project option.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

There are no MFLs, recovery or prevention strategies, or water use reservations that would constrain this project. However, SJRWMD believes that water will only be available for this project when water is being released from Lake Apopka through the Apopka-Beaclair Canal. Evaluations performed by SJRWMD indicate that limited quantities of water could be developed from the Upper Ocklawaha River, which includes the Lake Apopka Basin (Wycoff 2008). SJRWMD anticipates that diversions of water to an off-line reservoir could extend the reliability of this project. Withdrawals of water from this reservoir could be made in order to supply the needed water to augment the city's reclaimed water system.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project which is being considered by the city of Minneola. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. The water supply entity considered the financial feasibility of this project when making a decision to plan it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: This project is likely permissible if diversions from Lake Apopka to an off-line reservoir to support this project only occur when water is being released from Lake Apopka. Under such conditions, the yield of the project may be less than the 5.0-mgd conceptual project yield proposed by the city of Minneola. However, if other projects were implemented prior to implementation of this project, then the total available quantity for this project would need to be reevaluated.

Regulatory requirements for the use of surface water and storm water as a supplement to reclaimed water are provided in Chapter 62-610, *F.A.C.* According to the code, surface water and storm water may be used to supplement a reclaimed water supply if sufficient treatment and disinfection is provided such that the fecal coliform and total suspended solids limits established for high-level disinfection in Rule 62-600.440(5), *F.A.C.*, are met for the source before mixing with the reclaimed water. The city of Minneola proposes to treat the water associated with this project to applicable FDEP standards for public access reuse. Therefore, the portion of this

project that includes the treatment of this water is likely permissible in regards to applicable FDEP requirements.

Analysis of funding needs and sources of possible funding options:

Significant funds will be required to support implementation of this project. (See estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source.

This reclaimed water augmentation project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature’s finding that reuse of reclaimed water is a “state objective” and is “considered to be in the public interest.” In addition, this project will contribute to meeting the Florida Legislature’s declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.

Name of project option and project number:

Project name: Silver Springs Citrus Industrial Waste for Reuse Blending and Augmentation Project

Project number: 83

Traditional or an alternative water supply option:

This project is an alternative water supply option.

Type of alternative water supply (AWS) project option: This project will use waste byproduct from an existing industrial use to augment an existing reclaimed water supply and supply water from a nontraditional source. (Note: SJRWMD considers all sources other than fresh groundwater to be nontraditional.)

Description of project:

A conceptual-level project description was developed by Silver Springs Citrus in the fall of 2007. The conceptual-level project description included project costs. The source of water for this project is waste byproduct from the Silver Springs Citrus processing plant near Howey-in-the-Hills. The project includes a treatment facility and associated system to facilitate the use of treated citrus processing waste to blend with reclaimed water. The blended product will be used for irrigation.

Amount of water estimated to become available through the project option expressed as average daily flow (measured in million gallons per day [mgd]):

The conceptual-level project description developed in 2007 described an average daily flow of 0.353 mgd.

Time frame in which project option should be implemented:

The project was scheduled for design in 2008 and construction in 2009–2010.

Estimated planning-level costs:

The following planning-level costs were developed for the conceptual-level project description that was completed in 2007.

- a. Total capital: \$3,580,000
- b. Construction: \$3,150,000
- c. Operation and maintenance: \$315,000 per year
- d. Unit production cost: \$2.94 per 1,000 gallons

Basis for planning-level costs:

Estimated planning-level costs were based on costing information available in 2007 and earlier costing information adjusted to 2007 dollars pursuant to methods described in SJRWMD Special Publication SJ2005-SP1, *Cost Estimating and Economic Criteria for 2005 District Water Supply Plan*.

Have any minimum flows or levels (MFLs) been established that would apply if a consumptive use permit (CUP) were sought for a project implementing the project option:

This project option utilizes water reclaimed after an industrial use and not water directly from a surface water or groundwater source. Therefore, MFLs are not applicable to this project.

Consideration of any applicable existing water resource constraints such as MFLs, any recovery or prevention strategy, or water use reservation:

This project option utilizes water reclaimed after industrial use and not water directly from a surface water or groundwater source. Therefore, MFLs, recovery strategies, or water use reservations are not applicable to this project.

Name of entity or entities that should implement the project option and current status of project option's implementation:

This is a single-entity project which is being implemented by Silver Springs Citrus. The status of this project is described on Table 15 of this fourth addendum to *DWSP 2005*.

Project feasibility and permissibility:

Feasibility: The augmentation of reclaimed water with water from other sources including surface water, demineralization concentrate, and groundwater is successfully practiced by several reclaimed water utilities in SJRWMD. The proposed project is similar in concept to these other projects. The cooperating water supply entities considered the financial feasibility of this project when making a decision to plan and implement it. Therefore, SJRWMD assumes that the project is both technically and financially feasible.

Permissibility: The reuse of treated citrus processing wastes is permissible under Chapter 62-610, *F.A.C., Reuse of Reclaimed Water and Land Application*, or Chapter 62-660, *F.A.C., Industrial Wastewater Facilities*.

Analysis of funding needs and sources of possible funding options:

Funding will be required to support implementation of this project (see estimated planning-level costs as described elsewhere in this project description.) Possible funding sources include revenues derived from customer charges, state of Florida Water Protection and Sustainability Program, SJRWMD ad valorem tax revenues, impact fees for new development, contributions in aid of construction, Florida Forever Trust Fund, federal revenues, local government ad valorem tax revenues, local government special assessments, and private investment. These possible sources are described in more detail in the Water Supply Development Funding Sources section of *DWSP 2005*.

Consideration of how the public interest is served by the project option or how the project option will save costs overall by preventing the loss of natural resources or avoiding greater future expenditures for water resource development or water supply development:

This is a project that will supplement existing traditional groundwater supplies with water from an alternative water source.

This reclaimed water augmentation project option will increase the availability of reclaimed water to meet nonpotable water supply demands that would otherwise be met by water treated to potable water standards by public supply utility systems. This increased use of reclaimed water will serve the public interest by increasing the availability of water for reasonable-beneficial uses. Subsection 373.250(1), F.S., contains the Florida Legislature's finding that reuse of reclaimed water is a "state objective" and is "considered to be in the public interest." In addition, this project will contribute to meeting the Florida Legislature's declared policy to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, as described in Paragraph 373.016(3)(d), F.S.