

6.0 EVALUATION AND RANKING OF ALTERNATIVE WATER SUPPLY PROJECTS

This Chapter evaluates the potential regional alternative water supply (AWS) and reclaimed water development projects identified in Technical Memorandum No. 1 (TM #1).

The potable water source projects were graded relative to their general feasibility for supply development, using a qualitative evaluation matrix. The evaluation provides input to the WRWSA's prioritization process where the potential AWS projects will be compared to the expected needs of Member governments.

The reclaimed water projects were discussed relative to their value for water supply development, using a County-by-County narrative. The evaluation provides input to Member governments seeking to prioritize reclaimed water projects.

6.1 POTABLE AWS PROJECTS

In TM #1 five alternatives for more detailed evaluation as viable potable water sources of alternate surface water were identified for the WRSWA. The five projects include:

- Lake Rousseau
- Withlacoochee River near Holder - Reservoir
- North Sumter "Conjunctive Use" Supply
- Crystal River Power Plant Desalination
- Withlacoochee River Aquifer Recharge near Trilby

6.2 AWS PROJECT EVALUATION CRITERIA

The AWS Project Evaluation Criteria developed for this more detailed AWS review includes seven (7) categories which highlight the significant decision elements. These categories which are described in detail in Table 6-1 include:

1. Environmental Impacts;
2. Ability to Permit;
3. Public Perception;
4. Long-Term Viability of Source;
5. Costs;
6. Ability to Serve Multiple Users; and
7. Estimated Time to Implement.

A brief discussion of each AWS project is included, along with a discussion focused on the evaluation criteria and grading for each element. Table 6-2 summarizes the scoring for each alternative for each category.

6.3 LAKE ROUSSEAU

6.3.1 PROJECT DESCRIPTION

This large, regional, surface water treatment plant (SWTP) is anticipated to serve communities and utility companies in four counties. These users are anticipated to be located in Citrus, Marion, Sumter, and Hernando County. This project conceptual design includes a 40 mgd pump station to withdrawn water from Lake Rousseau, and approximately 4.5 miles of 60" raw water transmission piping from the point of intake to the SWTP. It is anticipated that no or minimal raw water storage will be required for this location due to sufficient water volumes in Lake Rousseau during the dry season. The SWTP will be a conventional treatment system consisting of coagulation, ballasted flocculation, sedimentation, filtration, and disinfection. A finished water transmission system would include approximately 130 miles of 8-inch through 60-inch pipe to deliver water to the multiple users.

6.3.2 ENVIRONMENTAL IMPACTS

MFLs are scheduled for adoption by the SWFWMD at Lake Rousseau in 2011. However, a proxy MFL could not be estimated for Lake Rousseau at this time due to its history of structural alteration and the restoration efforts that are underway. Environmental impacts from a potential withdrawal at Lake Rousseau are difficult to assess without further information, imparting considerable uncertainty to the environmental viability of the withdrawal.

In addition, the intake structure and raw water pump station will have some impact in the immediate area of construction and operation. Intake velocities would be designed to minimize impacts to the Lake ecology.

Grade: C

6.3.3 ABILITY TO PERMIT

The Corps of Engineers (COE) regulates the discharge schedule from Lake Rousseau and may provide an obstacle to a direct withdrawal from the lake. Additionally, some competition for water may occur due to resource management issues with low levels and muck accumulation in Lake Rousseau, and saltwater intrusion patterns in the Lower Withlacoochee. A withdrawal schedule based on a "percent flow reduction" would be developed to protect downstream resources. Obtaining approval from both the COE and SWFWMD would likely include identification of constraints on the project.

Grade: C

6.3.4 PUBLIC PERCEPTION

The public is accustomed to groundwater supply sources which do not have any perceived impact to surface water features. Lake Rousseau is a major recreational resource and experiences resource management issues with low levels and muck

accumulation. Consequently, it is likely the public will react negatively to a water supply alternative involving removal of water from Lake Rousseau.

Grade: C

6.3.5 LONG-TERM VIABILITY OF SOURCE

Phase I estimated potentially available yield ranging from 87 to 98 mgd at Lake Rousseau. Although a reduction in yield could occur with future environmental studies to return freshwater to the Lower Withlacoochee or climatic variability, with the baseflow from the Rainbow River few negative water supply viability issues are identified. Since a proxy MFLs could not be estimated for Lake Rousseau, its yield is uncertain and could be affected by the need to return freshwater to the Lower Withlacoochee River for ecological restoration reasons.

Grade: B

6.3.6 COST

The cost estimate for Lake Rousseau is about 20% less than the Holder Alternative, which is the other major Withlacoochee River withdrawal alternative. The cost per million gallons of water supplied is also slightly less than the Crystal River desalination alternative. The significantly higher capacity of this system compared to the smaller North Sumter and Aquifer Recharge alternatives make direct cost comparisons to these two alternatives invalid.

Grade: B

6.3.7 ABILITY TO SERVE MULTIPLE USERS

The high system capacity and source reliability make this alternative very favorable for supplying multiple users throughout the WRWSA service area.

Grade: A

6.3.8 ESTIMATED TIME TO IMPLEMENT

This alternative has an extended implementation schedule. Obtaining approvals and permits from the COE and SWFWMD for the intake structure and withdrawal is considered a significant obstacle which will take a long time to negotiate. The design and construction of the entire withdrawal, treatment, and transmission system after permit approvals also create a very long implementation schedule for this alternative.

Grade: C

6.3.9 OVERALL RANKING

The Lake Rousseau AWS project gets high marks (B or higher) for 3 of the 7 evaluation criteria. However, environmental impacts, permissibility, public perception and schedule are rated low.

Grade: C+

6.4 WITHLACOOCHEE RIVER NEAR HOLDER - RESERVOIR

6.4.1 PROJECT DESCRIPTION

This large, regional, SWTP is anticipated to serve communities and utility companies in four counties. These users are anticipated to be located in Citrus, Marion, Sumter, and Hernando County. While this project location is more centrally located than Lake Rousseau, the limitations in water withdrawal will require a raw water storage reservoir.

This project conceptual design includes an 80 mgd pump station to withdrawn water from the Withlacoochee River near Holder. The storage reservoir is assumed to be about 750 acres and contain about 4.8 billion gallons of water to provide a 120 day storage capacity. The SWTP will be a conventional treatment system consisting of coagulation, ballasted flocculation, sedimentation, filtration, and disinfection. A finished water transmission system would include approximately 120 miles of 8-inch through 60-inch pipe to deliver water to the multiple users.

6.4.2 ENVIRONMENTAL IMPACTS

MFLs are scheduled for adoption by the SWFWMD at Holder in 2009. However, a proxy MFL is estimated for Holder that reduces the uncertainty in yield associated with the future MFLs. The storage reservoir will provide some flexibility in water withdrawals when compared to the Lake Rousseau alternative, to buffer and reduce environmental impacts to the river ecology.

In addition, the intake structure and raw water pump station will have some impact in the immediate area of construction and operation. Intake velocities would be designed to minimize impacts to the River ecology.

Grade: B

6.4.3 ABILITY TO PERMIT

The SWFWMD would be the primary agency to approve this alternative. The location of the facility is sufficiently upstream of Lake Rousseau that the COE would not have as active a role as for the Lake Rousseau alternative. Consequently, it is assumed this alternative provides a much more acceptable high-volume surface water withdrawal when compared to other alternatives.

Grade: A

6.4.4 PUBLIC PERCEPTION

The public is accustomed to groundwater supply sources which do not have any perceived impact to surface water features. The Withlacoochee River is a major recreational resource and naturally experiences low water level fluctuations. Therefore, it is likely the public will react negatively to a water supply alternative involving removal of water from the Withlacoochee River near Holder.

Grade: C

6.4.5 LONG-TERM VIABILITY OF SOURCE

A proxy MFL is estimated for Holder that reduces the uncertainty in yield associated with the future MFLs there. The adopted MFLs for Lake Panasoffkee and Tsala Apopka, and the public ownership of the Withlacoochee River headwaters at the Green Swamp, will also help maintain flows at Holder. Although a reduction in yield could occur with future establishment of MFLs or climatic variability, few negative water supply viability issues are identified.

Grade: B

6.4.6 COST

The cost estimate for Withlacoochee River near Holder alternative is about 20% higher than the Lake Rousseau alternative, which is the other major Withlacoochee River withdrawal alternative. The reservoir cost is a significant factor in this higher cost. The cost per million gallons of water supplied is also higher than the Crystal River desalination alternative. The significantly higher capacity of this system compared to the smaller North Sumter and Aquifer Recharge alternatives make direct cost comparisons to these two alternatives invalid.

Grade: C

6.4.7 ABILITY TO SERVE MULTIPLE USERS

The high system capacity makes this alternative very favorable for supplying multiple users throughout the WRWSA service area.

Grade: A

6.4.8 ESTIMATED TIME TO IMPLEMENT

This alternative has a shorter implementation schedule than Lake Rousseau. Obtaining approvals and permits from SWFWMD for the intake structure and withdrawal is should not be a major obstacle. However, the design and construction of the entire withdrawal, reservoir, treatment, and transmission system after permit approvals will create a long implementation schedule.

Grade: B

6.4.9 OVERALL RANKING

The Holder AWS project gets high marks (B or higher) for 5 of the 7 evaluation criteria. However, cost and public perception are significant factors and are rated low.

Grade: C

6.5 NORTH SUMTER “CONJUNCTIVE USE” SUPPLY

6.5.1 PROJECT DESCRIPTION

The North Sumter Surface Water project includes “conjunctive” use, meaning it would rely on surface water and groundwater. Surface water would be supplied when available from the Withlacoochee River, and groundwater would be utilized during low flows when surface water is not available. By utilizing groundwater during periods of low flow, the project would not require a costly reservoir that also incurs evaporative and seepage losses. By utilizing the Withlacoochee River in Sumter County, a conjunctive use project would reduce the transmission from a Lake Rousseau or Holder project.

The design withdrawal for the facility would be 15 mgd on a median annual basis at the Wysong-Coogler Water Conservation Structure. The treatment system for the North Sumter SWTP will be a conventional treatment system consisting of coagulation, ballasted flocculation, sedimentation, filtration, and disinfection. No raw water storage reservoir is required. A finished water transmission system would include approximately 23 miles of 30-inch and 36-inch pipe to deliver water to utilities in the northeast Sumter County area, including Wildwood and the Villages.

6.5.2 ENVIRONMENTAL IMPACTS

The presence of sensitive environmental features in the area of the surface water withdrawal, including Lake Panasoffkee and the Tsala Apopka Chain of Lakes, make this project ranking very low. Although Lake Panasoffkee and the Tsala Apopka Chain have adopted MFLs, the potential for overall negative environmental impacts based on the combined surface water and groundwater withdrawal is considered high.

Grade: C

6.5.3 ABILITY TO PERMIT

The SWFWMD has expressed interest in conjunctive use water supply projects which allow for operational flexibility to protect water resources. While the hydraulic relationships between the river system, lake inflows and outflows, and lake stages will require consideration in the permitting of the withdrawal, the overall project concept should be favorable to the SWFWMD and, therefore, permissible with few issues.

Grade: B

6.5.4 PUBLIC PERCEPTION

The public is accustomed to groundwater supply sources which do not have any perceived impact to surface water features. Because Lake Panasoffkee and the Tsala Apopka Chain of Lakes are major recreational resources and naturally experience low water fluctuations, it is likely the public will react negatively to a water supply alternative involving removal of water from the Withlacoochee River near Wysong.

Grade: C

6.5.5 LONG-TERM VIABILITY OF SOURCE

The potentially available yield for this alternative is 22 mgd and is consistent with the proxy MFLs in the Withlacoochee River system. This reduces the uncertainty in yield associated with the future MFLs there. The adopted MFLs for Lake Panasoffkee and Tsala Apopka, and the public ownership of the Withlacoochee River headwaters at the Green Swamp, will help maintain flows at Wysong. Since the project combines a surface water and groundwater withdrawal focused on supply of water to northern Sumter County, it is assumed few negative water supply viability issues would be identified.

Grade: B

6.5.6 COST

The cost per million gallons of water supplied is less than the Crystal River desalination alternative and the Withlacoochee River alternatives. However, the cost is higher than the Aquifer Recharge alternative near Trilby assuming a suitable site is found there. The cost also does not include the cost of groundwater supplementation.

Grade: B

6.5.7 ABILITY TO SERVE MULTIPLE USERS

The low system capacity make this alternative less favorable for supplying multiple users as it is restricted to north Sumter County.

Grade: B

6.5.8 ESTIMATED TIME TO IMPLEMENT

This alternative has a shorter implementation schedule than Lake Rousseau and Holder. Obtaining approvals and permits from SWFWMD for the intake structure and withdrawal is should not be a major obstacle. The smaller transmission system will also result in a shorter design and construction schedule.

Grade: B

6.5.9 OVERALL RANKING

The North Sumter Surface Water AWS project gets high marks (B or higher) for 5 of the 7 evaluation criteria. However, public perception is a significant factor and is rated low. Environmental impacts are also rated low.

Grade: B-

6.6 CRYSTAL RIVER POWER PLANT DESALINATION

6.6.1 PROJECT DESCRIPTION

The concept of co-locating a seawater desalination facility with a once through coastal power plant was evaluated and proposed by the SWFWMD in 1995. The synergy of this combined operation is the ability to utilize the in-place intake and discharge system (used for cooling purposes) employed by the power plant to meet the supply and discharge needs for the desalination facility. The result is a more cost-efficient and environmentally acceptable seawater desalination process.

The desalination facility would be co-located at the Progress Energy Crystal River Power Plant site. The desalination facility would utilize the heated water from the plant cooling operation to feed the desalination reverse osmosis (RO) process. Treatment to potable standards would be provided by a seawater RO system with post chlorination. The concentrate discharge created by the desalination process would be mixed with the Plant cooling water discharge immediately down-pipe from the intake for the desalination plant feed water.

The proposed design of capacity of the Project is 25 mgd. This design capacity is more limited by the potable water demand than the capacity of the combined plant desalination facility. Assuming a 16:1 dilution ration for the concentrate effluent, as required by FDEP for the Tampa Bay facility, the total capacity of the Crystal River facility could be as high as 85 mgd of potable water production.

A minimum of 10 million gallons of storage tank facilities will be required for plant downtime and transmission system interruptions. . A finished water transmission system would include approximately 100 miles of 8-inch through 48-inch pipe to deliver water to the multiple users in Citrus, Hernando and Marion Counties.

6.6.2 ENVIRONMENTAL IMPACTS

Water supply will be the Gulf of Mexico. The existing Progress Energy Plant facility intake and discharge canal will serve as both source water source and then dilution water source for the concentrate disposal. The intake capacity of the Plant ranges from 1.5 to 2.5 billion gallons per day, so there would not be any noticeable environmental impact related to the 25 mgd associated with the desalination facility.

Grade: A

6.6.3 ABILITY TO PERMIT

Seawater, as a source water, does not require a water use permit from the SWFWMD at this time. The concentrate disposal would require approval by the Florida Department of Environmental Protection (FDEP) and the power plant facility permits would require modification and coordination with the Nuclear Regulatory Commission (NRC). Although time consuming, this project should be permissible.

Grade: B

6.6.4 PUBLIC PERCEPTION

The public is accustomed to groundwater supply sources which do not have any perceived impact to surface water features. Desalination appears to be the preferred "next best option" for water supply as minimal direct impacts can be seen by the public.

Grade: A

6.6.5 LONG-TERM VIABILITY OF SOURCE

The amount of source will only be limited by the amount of seawater taken into the Progress Energy Plant facility which will serve as both source water source and then dilution water source for the concentrate disposal. The plant intake is oceanic, rather than estuarine, which should limit the fluctuations in incoming seawater quality

Grade: A

6.6.6 COST

The cost per million gallons of water supplied is higher than the Lake Rousseau alternative and only slightly lower than the Holder alternative. Consequently it is rated similar to the Holder alternative.

Grade: C

6.6.7 ABILITY TO SERVE MULTIPLE USERS

The system capacity and high source reliability make this alternative favorable for supplying multiple users throughout the WRWSA service area.

Grade: A

6.6.8 ESTIMATED TIME TO IMPLEMENT

This alternative has an extended implementation schedule. Negotiating joint use with Progress Energy and obtaining approvals and permits from the FDEP and NRC will take a long time to negotiate. The design and construction of the entire withdrawal, treatment, and transmission system after permit approvals also create a very long implementation schedule for this alternative.

Grade: C

6.6.9 OVERALL RANKING

The Crystal River Desalination AWS project gets high marks (B or higher) for 5 of the 7 evaluation criteria. However, cost is a very significant factor and is rated low. Schedule is also rated low.

Grade: C+

6.7 WITHLACOOCHEE RIVER AQUIFER RECHARGE NEAR TRILBY

6.7.1 PROJECT DESCRIPTION

This alternative project would use flows from the river to recharge local Upper Floridan Aquifer (UFA) groundwater supplies. The intent of this project is that the river water would be recharged locally through a recharge basin/reservoir and that the recharged water would be withdrawn from the UFA within this ground-water basin, down gradient of the recharge reservoir.

The location of the concrete intake structure is proposed to be on the west bank of the Withlacoochee River near Trilby, approximately 2.4 miles west of State Road 93. A pump station would deliver raw water to a shallow, excavated reservoir to provide about 325 acres of storage and subsequent aquifer recharge. The recharge potential of the specific site assumed for this analysis ranges from 650,000 gpd to 6,500,000 gpd, depending on specific conditions at the site. As this project is further developed, other locations would be investigated to maximize the recharge rates and project value. On a median annual basis, about 15 mgd is available from the river at Trilby. This project only requires a transmission line from the river pump station to the reservoir. It does not require treatment or distribution system transmission lines.

6.7.2 ENVIRONMENTAL IMPACTS

MFLs are scheduled for adoption by the SWFWMD at Trilby in 2009. However, a proxy MFL is estimated for Trilby that reduces the uncertainty in yield associated with the future MFLs. In addition, the design withdrawal for this facility is based on site specific geology rather than river yield. The recharge reservoir provides considerable flexibility in water withdrawals when compared to the Lake Rousseau alternative, since daily transmission to utility users is not required.

Although this project is configured solely as a recharge project for this report, final site selection could consider recreational, flood control and environmental benefits that a recharge project could provide.

Grade: A

6.7.3 ABILITY TO PERMIT

The anticipated Southwest Florida Water Management District (SWFWMD) regulatory strategy for the recharge project is for the groundwater benefit to be available only to users located within the groundwater basin where the project is located. Since water would be withdrawn only during high flow conditions in the river, the permissibility of this project is high.

Grade: A

6.7.4 PUBLIC PERCEPTION

The public is accustomed to groundwater supply sources which do not have any perceived impact to surface water features. The Withlacoochee River near Trilby is a major recreational resource and naturally experiences low water fluctuations, including periods of no flow. In addition, Lake Panasoffkee and the Tsala Apopka Chain of Lakes are dependent on upstream flows from the river. Therefore, it is likely the public will react negatively to a water supply alternative involving removal of water from the Withlacoochee River near Trilby.

Grade: C

6.7.5 LONG-TERM VIABILITY OF SOURCE

The estimated potentially available yield for this alternative is 15 mgd and is consistent with the proxy MFL at Trilby, reducing uncertainty in the yield estimate. However, since the surface water is used for recharge and not directly for public water supply, interruptions in the availability of water during low flow conditions would not impact the overall project value. No negative water supply viability issues are identified.

Grade: A

6.7.6 COST

Assuming suitable sites are available within a reasonable distance of the intake, the cost for this project will be very favorable. However, the cost benefit ratio will be impacted by the suitability of sites and distance from the source. Consequently, a variable ranking is shown as the actual cost is currently hard to predict.

Grade: A / C

6.7.7 ABILITY TO SERVE MULTIPLE USERS

The ability to recharge groundwater that can be utilized within multiple use categories – such as agricultural, recreational, and public supply - within a larger regional area makes this alternative attractive even though the low system capacity restricts the volume of water available.

Grade: A

6.7.8 ESTIMATED TIME TO IMPLEMENT

This alternative has the shortest time to implement of all the alternatives discussed. Because there is no treatment facility required, permitting, design and construction schedules would all be relatively short.

Grade: A

6.7.9 OVERALL RANKING

The Aquifer Recharge AWS project gets high marks (B or higher) for all 7 evaluation criteria. The only possible score reduction is for cost if suitable sites are not identified within a reasonable distance of the intake structure.

Grade: A / C

6.8 RECLAIMED PROJECTS

In TM #1 eight alternatives for more detailed evaluation as viable reclaimed water sources were identified. The eight projects include:

- Brookridge WWTP
- Sugarmill Woods WWTP
- Crystal River WWTP
- Beverly Hills WWTP
- Berkeley Manor WWTP
- Bushnell WWTP
- Meadowcrest WWTP
- Brentwood WWTP

6.9 RECLAIMED PROJECT EVALUATION CRITERIA

The reclaimed project evaluation developed for this review includes five (5) categories to assist Member governments with prioritization of reclaimed water projects. These categories include:

- Location;
- Cost;

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- Identification of End Users;
- Capacity;
- Per Capita;

A discussion focused on the evaluation categories relevant to the reclaimed water projects is presented below.

6.10 HERNANDO COUNTY

Among the WWTF conceptual designs developed in TM 1, Berkeley Manor WWTF and Brookridge WWTF are the highest priorities in terms of WWTF project development, as they are both situated in an area approaching significant groundwater resource limitations. Each facility is within the area where 2025 UFA cumulative drawdowns of between 1.1 to 2.0 feet could occur if water demand continues to be met by groundwater. Drawdowns of this magnitude will likely impact MFL waterbodies, including Weeki Wachee Springs which is scheduled for 2008, increasing the need for careful management of groundwater resources. The use of reclaimed water in the vicinity of these facilities can help offset groundwater use and thereby assist in the minimization of drawdown effects and consequent resource limitations.

Each of these facilities has projected capacities of 0.75 mgd. Interconnects between facilities and additional storage can increase the efficiency of a reuse project. Further analysis of a relationship between these facilities could, if pursued, help produce lower costs and potentially more efficient distribution to end users. No users have been identified for Berkeley Manor, so there may be additionally end users other than the golf courses identified as potential customers near Brookridge.

The 2005 unadjusted gross per capita rate for Hernando County Utility Department customers was estimated by the District to be 171 gallons per capita per day (gpcd). This is above the District's gross per capita rate target of 150 gpcd. Therefore, providing reuse to public supply customers may provide an opportunity to assist in lowering this per capita rate. These customers are typically less efficient users than golf courses, however, so this end use may be less desirable for the purposes of preserving the County's water resources, particularly when considering the potential groundwater limitations of the area. If reuse water exceeding golf course needs is available, public supply use would likely be a more valuable option.

6.11 SUMTER COUNTY

Bushnell WWTF in Sumter County the only WWTF in Sumter County selected for conceptual design in the Phase II screening process. This facility is located in an area where further review of groundwater availability is pending. This facility could have high resource value pending the review of modeling in Sumter County, particularly due to its projected capacity of 1.0 mgd. Additionally, this WWTF has the lowest estimated unit production cost of \$1.48/1,000 gallons and has a golf course nearby that could potentially be served. Since the 2005 gross per capita rate of Bushnell is 205 gpcd, reuse flows exceeding those diverted to the golf course could be used for public supply irrigation to assist in lowering groundwater irrigation consumption for these users.

6.12 CITRUS COUNTY

A total of five plants have been identified for further analysis in Citrus County. Based on the modeling results, which estimate relatively minimal 2025 cumulative drawdowns in the UFA of up to 0.25 feet, resource limitations in Citrus County do not appear to be looming. Therefore, the positive effect of maximizing beneficial reuse flows in this County is not so much to reduce stress on groundwater but to proactively aid in sustaining the groundwater resources and connected waterbodies.

Due to the proximity of facilities such as Meadowcrest and Brentwood WWTFs, an interconnect may optimize the development of reuse supply to end users by these facilities. Both these facilities have estimated costs of \$1.75 and \$1.69, respectively, which are on the lower-end compared with other identified WWTFs, which could be reduced further if an interconnection was established between plants. Potential golf courses to be served were identified for each of these facilities. Public supply customers located within Citrus County Utilities service areas with 2005 gross per capita rates up ranging from 129 gpcd to 233 gpcd. Given that groundwater limitations are not anticipated in the foreseeable future, more benefit may be seen by supplying public supply users to service areas with high per capita rates.

In addition to these plants, considering the 2.0 mgd projected capacity of Crystal River WWTF (the highest projected capacity of all facilities in the WRWSA), there is opportunity to not only supply users with high flows, but to do so in a cost effective manner. Users have not been identified for this facility at this point. The 2005 gross per capita rate for the City is 187 gpcd, so public supply irrigation should be considered in an effort to reduce groundwater consumption by these users.

Table 6-1

WRWSA Alternative Water Supply Evaluation Criteria

Evaluation Information

Criteria Categories	Grading Explanation
<p>1. Environmental Impacts - This criterion considers the potential environmental impacts or benefits of developing the supply at the given location, including disposal of wastes generated in the treatment process. It includes the impacts to the environment, groundwater, surface water flows, and downstream resources. Minimum flows and levels and stressed lakes will be considered. This criterion does not include environmental impacts from a specific construction footprint.</p>	<p>C - Reasonable likelihood of significant adverse environmental impacts B - Low likelihood of significant adverse environmental impacts A - No likelihood of significant adverse environmental impacts</p>
<p>2. Ability to Permit - This criterion assesses the probability of complying with current rules and regulations of the applicable agencies, including permits for water use and environmental resources. It also includes the probability of being compatible with other existing legal users of water, and compatibility with minimum flows and levels.</p>	<p>C - Difficult to permit due to various regulatory reasons or local government opinion B - Permitting will follow normal permitting course with few issues A - Permitting will follow normal permitting course and likely will be supported by local governments and the WMDs</p>
<p>3. Public Perception - This criterion assesses the anticipated public reaction to each sensitive water supply option, taking into account both the local and regional perceptions.</p>	<p>C - Significant negative perception of water supply development B - Negative perception of supply development A - Positive to neutral perception of overall impacts of supply development</p>
<p>4. Long-Term Viability of Source - This criterion relates to the quantity of water available for treatment, relative to projected demands. It includes the probability of long term availability without resulting in system or withdrawal termination. It considers the characteristics of the hydrogeology and/or surface water resources.</p>	<p>C - Significant negative water quantity or supply variability issues B - Few negative water quantity or supply variability issues A - No negative water quantity, variability, or resource issues</p>
<p>5. Cost - This criterion includes evaluation of the facility's anticipated design, treatment, and storage requirements. It also includes construction time, need for transmission lines and interconnections, waste disposal needs, and facility operations and maintenance. It is relative to other new supply alternatives under consideration.</p>	<p>C - High anticipated costs resulting from enhanced treatment, conventional treatment and transmission needs, or storage and transmission needs B - Moderate anticipated costs resulting from conventional treatment or transmission needs A - Low anticipated costs due to good source quality and limited transmission needs</p>

Table 6-1

WRWSA Alternative Water Supply Evaluation Criteria

Evaluation Information

Criteria Categories	Grading Explanation
<p>6. Ability to Serve Multiple Users - This criterion addresses the project's ability to serve multiple users with water supply needs. It also considers the location of the project relative to these areas of water supply need. This criterion also encompasses multiple use categories, such as agriculture, public supply, recreation, etc.</p>	<p>C -Project area is significantly distant from 3 or more users and has development duration. B - Project area is reasonably proximate to 3 or more users and has development duration. A - Project area is reasonably or closely proximate to 3 or more users.</p>
<p>7. Estimated Time to Implement - This criterion evaluates the project schedule relative to the jurisdictional issues, permitting, complexity of design and construction.</p>	<p>C - Project schedule could have significant delays due to complex issues and uncertainties; has a greater than 10 year development duration. B - Project schedule could be extended due to complex issues and uncertainties; has a greater than 10 year development duration. A - Project schedule is not impacted by any significant issues; has less than 10 year development duration.</p>
<p>OVERALL GRADE:</p>	<p>C - Project is not recommended for further consideration without significant modifications B - Project is recommended for further consideration with qualifications A - Project is recommended for further consideration</p>

Table 6-2

WRWSA AWS Comparison

General Characteristics	Withlacoochee River System Potable Supply			Desalination	Withlacoochee River System Aquifer Recharge
	Lake Rousseau	Near Holder	North Sumter	Crystal River Power Plant	Near Trilby
Potential Yield (MGD) ¹	87-98	52	22	85	15 ²
Water Quality	Fresh	Fresh	Fresh	Saline	Fresh
Criteria Categories					
1. Environmental Impacts	C	B	C	A	A
2. Ability to Permit	C	A	B	B	A
3. Public Perception	C	C	C	A	C
4. Long-term Viability of Source	B	B	B	A	A
5. Cost	B	C	B	C	A/C
6. Ability to Serve Multiple Users	A	A	B	A	A
7. Estimated Time to Implement	C	B	B	C	A
	C(+)	C	B(-)	C(+)	A/C

Notes: 1 Potential surface water yield may be affected by future MFLs and other factors. See respective chapters in Tech Memo #1 for details.
 2 Project yield is contingent on locating suitable site(s).