

## **POLK COUNTY BLENDED LFA DISTRIBUTED WELLS**

(Water Supply Options numbers 6-9, 11, 14, 16-18, 21-24, 26, 30, 37)

### **DESCRIPTION OF PROJECT**

The project is a combination of projects under the category of brackish/non-traditional water supply, totaling 9.84 mgd for public supply. These 16 individual projects are new Lower Floridan aquifer wells to be drilled for blending with existing Upper Floridan aquifer well sources at 16 water treatment plants distributed throughout Polk County in 14 cities. This project is proposed as an alternative to a concentrated Lower Floridan aquifer wellfield in Southeast Polk County at 30 mgd; the benefit being to distribute the impact of the withdrawals across a larger area in the Lower Floridan aquifer. The remaining 20.16 mgd in this scenario will still need to come from a source such as the Southeast Wellfield to meet a total of 30 mgd of future demands.

The capital cost for these 16 projects totals approximately \$39 million and does not include the membrane treatment cost or disposal costs, if needed, as the water is anticipated to be blended with high quality Upper Floridan aquifer water. It is assumed that a majority of the infrastructure components needed for this project are existing. Capital costs include drilling the well, disinfection, and high service pumping. In addition, given the higher anticipated demand for the City of Lakeland and the City of Winter Haven, costs for booster stations and one 1-million gallon per day (mgd) storage tank for each utility have been included. The weighted average production cost for the same is \$0.8 per 1,000 gallons; the maximum being \$3.76 per 1,000 gallons for Lake Hamilton.

### **PLANNING LEVEL DESIGN OF PROJECT**

The project include the following systems and components: Lower Floridan production wells and raw water pipelines. The project includes a total of 16 Lower Floridan wells throughout Polk County located at or near the project partner's existing water treatment facilities. This project will blend the brackish Lower Floridan water with potable Upper Floridan water to meet the required drinking water standards so no specialized treatment is included in this project.

### **ESTIMATED PLANNING-LEVEL COSTS**

Polk County Comprehensive Water Supply Plan quantities and individual Cost Estimating team tool spreadsheets for each project was used as the basis for the planning-level cost estimates.

<b>Planning Level Cost Estimate:</b>	
Construction Costs	\$32,331,932
Non-construction costs	\$6,466,388
Land Costs	-
Total Capital Costs	\$38,798,320
Equivalent Annual Costs (over 30 yrs)	\$2,053,063
Operation and Maintenance	\$625,873
Total Annual Costs	\$2,678,936
Unit Cost of Production	\$0.8/1,000 gal

Costs for developing the remaining 20.16 mgd in this scenario will still need to come from a source such as the Southeast Wellfield to meet a total of 30 mgd of future demands.

## **ESTIMATED IMPLEMENTATION SCHEDULE**

Water supply in Polk County is not expected to need substantial increase until after 2035; however, specific projects may be needed sooner to satisfy demands prior to large alternative water supply sources are made available.

## **WATER RESOURCE CONSTRAINTS**

The area of Polk County generally south of Interstate 4 in the SWFWMD is included within the Southern Water Use Caution Area (SWUCA). This area was designated as a water use caution area in 1992 by the SWFWMD in response to impacts to environmental systems from regional groundwater withdrawals. Principal resource concerns include saltwater intrusion in coastal areas of the basin, lowered lake levels, and decreased baseflows to the Upper Peace River. In 2006 the SWFWMD Governing Board adopted a Saltwater Intrusion Minimum Aquifer Level (SWIMAL), minimum levels on eight lakes and minimum “low” flows on the Upper Peace River. Because these levels and flows were not being met, a Recovery Strategy for the SWUCA was adopted to restore these water levels and flows to impacted water bodies. Currently, within Polk County, seven of 15 lakes with minimum levels are not meeting adopted levels and minimum “low” flows in the Upper Peace River are not being met. As part of the strategy, the SWFWMD adopted levels for two sets of Upper Floridan aquifer wells for

the Upper Peace River (UPR) and Lake Wales Ridge (LWR) areas that are used in their Regulatory program to assess cumulative effects of withdrawals in the basin. Though these levels are currently being met, the LWR levels are projected to fall below the adopted threshold level as a result of 2015 withdrawals, whereas, the UPR levels are projected to remain above the adopted threshold level.

Evaluation of withdrawals from this project indicates that up to 0.3 feet of additional lowering of water levels in the UFA will occur beneath lakes not meeting minimum levels. These lakes include Eagle, McCleod, Crooked, and Wales. A review of projected water level drawdowns in the surficial aquifer indicates the potential for the project to also result in the lowering of non-MFL water bodies. Additionally, the project is anticipated to cause further lowering of the LWR wells level that is projected to be below the threshold value as a result of 2015 pumping.

## **PROJECT FEASIBILITY**

Economies of scale benefits and the need to increase Upper Floridan aquifer withdrawals to effectively blend for suitable water quality both decrease the feasibility of this project proposal substantially. The assumption has been made that the property needed for the 16 proposed wells and substantial infrastructure and interconnections are already in place. However, this combination project would need to be compared to a regional alternative water supply project that can singly supply the demand with pipeline transmission costs included. This would provide an equitable comparison from a financial as well as an environmental impact perspective.

## **FUNDING SOURCES**

Proposed funding sources include SWFWMD and formation of a regional water supply entity within Polk County with the Project partners listed herein. Additional funding may be secured through the offering of municipal bonds and impact fees.

## **COST BENEFIT ANALYSIS OF YIELD**

Polk County and numerous municipalities within Polk County currently provide public water supplies through a network of water supply systems utilizing groundwater from the Upper Floridan aquifer. This existing system can be augmented with supplies from the Lower Floridan aquifer to meet future demands. Although the project lacks the economies of scale associated with regional, multijurisdictional water supply development, it does not include the large cost associated with extensive transmission piping of considerable

distance. The distributed use will compliment distribution of the potential impacts associated with groundwater withdrawals.

## **POTENTIAL PARTNERS AND PROJECT GOVERNANCE**

A total of 14 municipalities have been identified as potential locations for drilling a Lower Floridan aquifer well for blending, and ultimately these municipalities, along with others in Polk County, including Polk County Utilities, will form a regional water supply entity. The individual municipalities will incur the costs and receive the benefits from their own Lower Floridan well; however, these municipalities will need to receive supplies beyond the 9.84 mgd from another alternative water supply source such as the Southeast Wellfield through the regional entity.

The potential municipal locations and the estimated portion of the Lower Floridan groundwater they anticipate for their respective service areas are shown below:

Auburndale	up to 0.62 mgd	Lake Alfred	up to 0.18 mgd
Bartow	up to 0.63 mgd	Lake Hamilton	up to 0.06 mgd
Davenport	up to 0.17 mgd	Lake Wales	up to 0.66 mgd
Dundee	up to 0.11 mgd	Lakeland	up to 4.23 mgd
Fort Meade	up to 0.16 mgd	Mulberry	up to 0.09 mgd
Frostproof	up to 0.22 mgd	Polk City	up to 0.06 mgd
Haines City	up to 0.66 mgd	Winter Haven	up to 10.00 mgd

## **OTHER CONSIDERATIONS**

Polk County and SWFWMD are in the process of finalizing an agreement referred to as the Central Florida Development Agreement, which indirectly includes this project. That agreement is the foundation for the funding of alternative water supply projects within Polk County and addresses the formation of the regional water supply entity between Polk County Utilities and their municipal project partners identified above. A water use permit has been issued by SFWMD for the Polk County Southeast Wellfield for 30 mgd of base-load public supply within Polk County, to include municipal partners identified above. This distributed Lower Floridan project has been identified as an alternative to a portion of the

projected public supply from the Polk County Southeast Wellfield project. This project will be pursued if deemed more favorable in terms of environmental constraints and financial considerations in comparison to implementing the full 30 mgd as permitted for the Southeast Wellfield project.

It is assumed that 3.4 mgd of additional Upper Floridan quantities will be permitted and currently permitted Upper Floridan quantities will be upheld for blending with 6.4 mgd of Lower Floridan in order to meet targeted water quality goals for these utilities.