

# **WATER AND SEWER SYSTEM MASTER PLAN**

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## WATER AND SEWER SYSTEM MASTER PLAN SUMMARY

Seacoast Utility Authority acquired the assets of Seacoast Utilities from the John D. and Catherine T. MacArthur Foundation on December 20, 1988. Prior to the acquisition, the Authority's professional consultants thoroughly analyzed the utility system, identifying capital needs and establishing a financing plan to correct existing deficiencies and provide for growth.

Since completion of the 1988 pre-acquisition feasibility study, nearly every significant factor which influences water and sewer service demand or availability has changed. For example:

- Political jurisdictions have adopted Comprehensive Land Use Plans establishing definitive population growth projections and land use patterns
- Per capita demand for water service has declined
- System defects identified in the earlier report have either been corrected or are being addressed through established continuing maintenance programs
- A more clear picture of regional water supply availability has emerged
- Water and wastewater treatment and transmission facilities have been decommissioned, expanded, or upgraded such that in-place capacity has changed radically
- Regulatory considerations have broadened the range of wastewater disposal alternatives

In July, 1996, the Authority's general engineering consultant, Lindahl, Browning, Ferrari, and Hellstrom, completed a report entitled Water and Wastewater Combined Master Plan Amendment, 1995 (Master Plan). This report addresses changing conditions, projects future needs, and details the Authority's plan for meeting service demand through buildout. Further, since the Authority's financing plan establishes connection charges as its system capacity funding mechanism, the Master Plan confirms that the Authority's connection charges are sufficient to meet capital needs.

The Master Plan summary estimates future water and sewer service demands based on population projections and "levels of service" (gallons per capita per day, GPCD) found in the respective comprehensive land use plans. Since level of service factors include an allowance for incidental non-residential flow, they are quite useful in projecting future demands. It is obviously impractical, however, to assess connection charges on a per capita basis.

The Authority has therefore established the Equivalent Residential Connection (ERC) as its benchmark capacity reservation unit. The Authority's Uniform Extension Policy defines an ERC as the service equivalent of one single family residence, further defined as 350 gallons per day (GPD) of potable water demand and 275 GPD of sewage system capacity. Connection charges for all land uses other than single family dwellings are calculated by converting to ERC's.

As the document which links capital improvements with their financing, Chapter 6 of the Master Plan was incorporated as part of the Seacoast Utility Authority Water and Sewer Service Code. The following synopsis briefly outlines the improvements required through buildout and the engineer's reasoning. A more thorough analysis is provided in the Master Plan itself.

## **MASTER PLAN COMPONENTS**

The Master Plan divides the Authority's system into five parts: Water Supply, Water Treatment, Water Transmission/Distribution, Wastewater Treatment, and Wastewater Collection/Transmission. The engineer evaluated each component for present utilization, available capacity, and the most cost-effective means for expansion.

### **WATER SUPPLY**

The South Florida Water Management District has since confirmed that combined surficial and Florida aquifer water supply exists which is adequate to meet projected demands through year 2032.

### **WATER TREATMENT**

In 2014, the Authority placed a 30.5 million gallon per day (MGD) membrane water treatment plant in service, providing capacity sufficient to meet projected system buildout demand.

### **WATER TRANSMISSION/DISTRIBUTION**

To properly plan water transmission system expansion, the geographical distribution of projected demand has been estimated. Most of the service area's undeveloped property lies within the City of Palm Beach Gardens, west of the Loxahatchee Slough. The Authority plans to serve development within this region through service interconnects with neighboring systems.

Authority staff and the consulting engineer prepared a conceptual development scenario which was reviewed by City planning staff and found to be reasonable. Water and wastewater service demands were then input into a hydraulic computer model which yielded pipeline, pumping, and appurtenance sizes.

Facilities intended to serve a limited geographical area are installed by the developer or customer, then deeded to the Authority without cost for operation and maintenance. Neither the cost nor the hydraulic capacity of such water distribution facilities has been considered in developing the Master Plan water transmission system. Only large diameter water transmission mains which are deemed hydraulically essential to meet regional demands are included in the Authority's Master Plan obligation.

### **WASTEWATER TREATMENT**

Expansion of the Authority's PGA Wastewater Treatment Plant to 12.0 MGD is complete, and another expansion will be required to reach buildout capacity of 16.0 MGD.

While beneficial from a water resource perspective, reuse is of marginal value as a disposal option, primarily due to wet weather limitations. The Authority's existing deep injection well is not of sufficient capacity to handle projected buildout flow. As such, construction of a second deep injection disposal well may be required, perhaps at a separate location.

### **WASTEWATER PUMPING/TRANSMISSION**

The system flow distribution methodology used to plan water transmission Master Plan improvements was likewise implemented for the wastewater pumping and transmission system. In addition to improvements required to serve the undeveloped western service area, the hydraulic computer model indicated that the force main system serving the eastern region had reached its capacity. As with the potable water transmission system, only those pipe and

pumping systems necessary to meet regional service demands are included in the Master Plan. In conformance with established Authority policy, all gravity sewer, lift station, and force main improvements constructed to serve smaller, well-defined geographical areas will be developer obligations.

## **SUMMARY**

Based on the comprehensive land use plans of the entities which it serves, Seacoast Utility Authority must provide capacity to meet projected increased service demand. While a portion of this demand can be met with existing unutilized capacity, additional facilities will be required.

The Authority's Master Plan indicates that current connection charges of approximately \$1,500 per potable water ERC and \$1,200 per domestic wastewater ERC will adequately fund the capital improvement program.