

058-19 APPENDIX A – TECHNICAL SPECIFICATIONS
Innovative Wastewater Treatment Program

SECTION 1: OBJECTIVES AND DESCRIPTION OF PROJECT

1.1 General

JEA is seeking a solution or group of solutions to efficiently and cost effectively provide wastewater treatment to those areas of Duval County where septic tanks are in use. The Consultant will provide a solution(s) that takes into account public health, environmental protection, is cost effective, and operationally sustainable.

The Consultant will assemble a highly qualified team experienced with various wastewater treatment processes and develop innovative solutions that will minimize both construction and operation costs and community impact during construction. The team's task will be to evaluate and recommend treatment and/or collection processes and determine their applicability to various locations, including potential final effluent management methods if localized treatment is a viable solution. All solutions must comply with the Florida Department of Environmental Protection and Department of Health rules and regulations.

JEA is guided by four values that are reflected in its corporate goals and objectives. The value that each response brings to the project will impact the overall evaluation of the response. The four areas of value to be measured are:

- Customer value
- Community impact value
- Environmental value
- Financial value

It is the intent of JEA to award a single contract for this service. Project execution will be in four phases.

1.2 Project Description

The JEA wastewater collection system serves customers in Duval, St. Johns, Nassau and Clay Counties. In Duval County the collection system provides service primarily in the densely populated areas near the core city and to the south. It does not extend to the all parts of the County. The areas outside of the current collection system and some areas within the collection system are served by septic systems. JEA and the City of Jacksonville have initiated a Septic Tank Phase Out (STPO) program to extend the collection system to those areas near the existing system that have failing septic tank systems and are negatively impacting the water quality of nearby water bodies. That program is currently estimated to take at least 30 or more years to complete and is planned to address 22,000 locations at an estimated cost of \$708M. The purpose of this project is to identify a technology and/or commercial solution that will accelerate the phase out process and/or provide a solution that would reduce the overall cost.

The objective of this project is to perform a detailed review and evaluation of the various wastewater treatment and management technologies, techniques and commercial arrangements that may be available for use with a range of customers from single family homes and entire subdivisions to commercial and industrial customers.

Phase 1: Work shall include a technical literature and industry best practices review and evaluation of available technologies and commercial solutions. The review shall discuss the advantages and disadvantages of each solution with regard to feasibility, total life cycle cost, operational concerns, environmental impact, and public health at a minimum. The findings of the evaluation will be prioritized and high level cost estimates will be developed for each. A decision matrix will be required that will aid in determining which solution would best serve a particular customer type in a given location. Anticipated project deliverables include draft and final copies of a Technical Report that

discusses and provides the findings of the literature and industry review. This phase will most likely include several progress meetings and at least one meeting to present the findings to JEA's Senior Leadership Team.

Phase 2: Develop a Master Conceptual plan utilizing the solutions developed in Phase I. Anticipated project deliverables include draft and final copies of the plan with maps as appropriate for clearly defining the technology/solution selected for each geographic area of the plan. In addition to meetings with JEA team members and Senior Leadership, there may be additional meetings required with regulators and city leaders.

Phase 3: Pilot testing (optional) of an individual technology (or technologies) such as distributed treatment or any other technology that may be chosen based upon the results of the evaluation from Phase I. Consultant in conjunction with JEA, will select one or possibly more technologies to Pilot test. Duration and scope to be determined. Consultant will be expected to assist in the site location, testing protocol development and operation as requested of the technology.

Anticipated Phase 3 deliverable would include a pilot testing summary report discussing observations and conclusions, constructability and pros and cons.

Phase 4: The completion of Phases I and II may highlight the need for public education regarding any technology or commercial solution selected and schedule for its implementation. This phase would provide for the development of a public education program including materials and meetings with customers as well as regulators and governmental leaders.

1.3 Background

Providing central water and wastewater infrastructure has been an issue for decades in Duval County. The issue was highlighted in the work leading up to the city and county consolidation in the late 1960s and remains a concern within the community. The City of Jacksonville and JEA have completed many capital infrastructure projects over the years and the work continues today with the current Septic Tank Phase Out program.

During the late 70's and the 80's through early 2000's, the City of Jacksonville and JEA phased out old and poorly maintained and operated package wastewater plants. Originally the package plants were installed by developers to provide wastewater service to new subdivisions in areas where centralized utilities were not provided. Typically these were low cost, secondary-only ring steel treatment plants that were not focused on nutrient removal or exceptional value, and many were not operated efficaciously. Phase out of these plants greatly improved the treatment efficiency and water quality.

The phase out of package plants represented a vast improvement in the overall treatment of wastewater and the impact on the environment in the Jacksonville area. JEA wishes to be a leader in the development and implementation of innovative solutions that can be applied in the Jacksonville area as well as throughout the State of Florida.

Today approximately 65,000 septic tanks remain in Duval County/City of Jacksonville. Many are failing and negatively impacting the environment. It is estimated that there are approximately 35,000 private residential water wells. The estimate to replace all 65,000 septic tanks is approximately \$2.1B and to provide water service, an additional \$208M.

The current Septic Tank Phase Out Program has identified, evaluated, and ranked thirty-five (35) neighborhoods served by 22,000 septic tanks. The completion of the first three neighborhoods (1614 septic tanks) in this portion of the phase-out program is anticipated to take approximately seven years as currently proposed. The need for alternatives to traditional gravity sewer system is apparent and the focus of this RFP. The output of this project will reduce costs and ultimately the time required to phase-out septic tanks. While not all septic tanks or wells will need to be phased out depending upon development densities, soil conditions and proximity to backbone infrastructure, alternatives that can provide a dependable and more cost effective means of wastewater treatment are needed.

SECTION 2: SCOPE OF PROFESSIONAL SERVICES

The Consultant shall provide the professional services associated with the Objectives described in Section 1, as needed, to perform the services outlined below. These services should be delivered with the goal of developing a planning document for the technologies that provide solution(s) that takes into account public health, environmental protection, a stable and well-functioning process and is cost effective. A final scope of services will be determined with the selected Consultant. The anticipated project schedule for the work is **12** months from notice to proceed. The Consultant shall meet monthly with the JEA team to review progress of each deliverable. All documentation should be delivered in triplicate, along with electronic Microsoft Word and Adobe PDF files.

2.1 Phase 1: Literature & Industry Best Practices Review

Work shall include a literature and industry best practices review and evaluation of available technologies and commercial solutions. The review shall discuss the advantages and disadvantages of each, with regard to total life cycle costs, operational concerns, environmental impacts, and public health at a minimum. The findings of the evaluation will be prioritized and high level cost estimates will be developed for each. A decision matrix will be required that will aid in determining which solution would best serve a particular customer type in a given location.

The high-level matrix may consider the following suggested items when implementing and considering a decentralized wastewater system. All solutions will consider application to existing septic tank users. JEA has provided some examples for the matrix criteria that may be used but the Consultant is not bound to use all of these criteria and is free to add other criteria as applicable. They are shown in no particular order of importance for consideration:

- Proximity to existing infrastructure with capacity (e.g. lift station, gravity manhole, treatment plant, etc.)
- Total life cycle costs – with clear distinction between capital and O&M
- Depending upon type of technology and/or commercial solution selected, availability of reclaimed water or disposal options
- Operational requirements, utility or suitable for contract operations
- Property size
- Age of existing system/development area
- Housing/population density
- Water source: well or JEA
- Outfall distance to property line
- Odor control issues, if applicable
- R/W width and road surface type and width
- Pros/Cons and Risk/Reward

In Phase I, JEA does not wish to put limitations on the technologies or commercial solutions that may be considered and encourages the Consultant to explore all possible avenues. Below are some technologies that are currently available but the Consultant should not consider this list all encompassing and is not limited to just this group:

- Gravity collection system
- Low Pressure Systems (LPS)
- Vacuum collection
- Effluent Distribution Technologies – for effluent management consider:
 - Reuse options
 - Drain fields
 - Surface water discharge
 - Comingled with storm water
 - RIBs or other recharge

- Treatment Technologies
 - Advanced nutrient removal (at least MLE level) Package Plants
 - Constructed Wetlands
 - Other Liquid–solid separation technologies capable of meeting environmental limits for effluent management
 - Performance based site treatment and disposal systems
- Other innovative technologies, techniques and commercial solutions

Project deliverables will include draft and final copies of a Technical Report that discusses and provides the findings of the literature and industry review. This phase will most likely include several progress meetings and at least one meeting to present the findings to JEA’s Senior Leadership Team.

2.2 Phase 2: Geographical Conceptual Plan

Develop a Master Conceptual plan utilizing the solutions developed in Phase I. The Consultant will work with the JEA staff to determine a prioritization matrix for determining an appropriate technology solution for a particular area. JEA will provide information (maps and septic tank locations) that has been developed in support of the current septic tank phase out program to aid in the development of this plan.

Anticipated project deliverables include draft and final copies of the conceptual plan with maps as appropriate for clearly defining the implementation of the plan. In addition to meetings with JEA team members and Senior Leadership, there may be additional meetings required with regulators and governmental leaders.

Prepare conceptual level plan with applicable details for the prioritized areas determined for the multi-year plan. JEA will select specific sites after the completion of Phase 1.

The extension of the existing water distribution system may be included in specific areas depending upon location and need. While not the primary focus of this effort, the Consultant should be mindful of this potential need in developing the multi-year plan. JEA may request the Consultant to plan water system improvements and provide budget level cost estimates for specific sites.

2.3 Phase 3: Potential Pilot Test

Depending upon the type of technologies and/or commercial solutions recommended, JEA may elect to pilot test one or more. The Consultant may be requested to assist JEA in this effort through development of the pilot testing protocol, implementation, analysis of test data and recommendations. ***(Funding for this phase would be contracted separately from this project.)***

2.4 Phase 4: Public Education

The completion of Phases I and II may highlight the need for public education regarding the technology and/or commercial solution selected and schedule for implementation. JEA may require assistance in preparing appropriate materials for use in its public education effort as well as discussions with regulators and city leaders. ***(Funding for this phase would be contracted separately from this project.)***