

FLORIDA UTILITY SERVICES 1, LLC  
3336 GRAND BLVD. SUITE 102  
HOLIDAY, FL. 34690  
863-904-5574

September 27, 2016

Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Blvd.  
Tallahassee, FL. 32399

RE: Docket # 150257-WS, Application for staff-assisted rate case in Marion County by East Marion Utilities, LLC.

Dear Commission Clerk:

Enclosed please find the " Offer of Engineering Assistance" from the Florida Rural Water Association. Changing the tank requires a DEP permit which requires an engineer. Please add to the rate case.

On behalf of the utility,



Mike Smallridge

# FLORIDA RURAL WATER ASSOCIATION

2970 WELLINGTON CIRCLE • TALLAHASSEE, FL 32309-7813  
(850) 668-2746

January 6, 2016

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Mr. Mike Smallridge  
East Marion Utilities, LLC (aka Trails East Subdivision)  
Florida Utility Services  
1645 W. Main St.  
Inverness, FL. 34450  
Phone: (352) 302-7406  
Email: [MichaelSmallridge@gmail.com](mailto:MichaelSmallridge@gmail.com)

**Re:   Hydropneumatic Tank Replacement  
      East Marion Utilities, Marion Co., PWS: 3424789**

Dear Mr. Smallridge:

It was a pleasure to discuss the possibility of a Hydropneumatic Tank Replacement this for East Marion Utilities that is failing and needs replacement.

You have two (2) choices:

1. Install a **new 2,500 gallon Hydropneumatic Tank built to ASME standards**. This first option includes permitting, engineering evaluation of needed tank sizing, etc. The estimated installation cost of this option for tank purchase, installation, new piping, and valves is in the range of \$20,000 to \$30,000 – plus a permit fee is about \$650, and a contribution to FRWA for \$2,500. Based on the assumptions stated herein, and is provided **ONLY** for budgeting purposes and needs to be field verified.
2. Replace the **existing 6,000 gallon Hydropneumatic Tank with one of the same size**. This tank would be like-for-like but built to ASME standards. No permitting / engineering would be involved. A list of tank manufacturers for your information and research is attached. The estimated installation cost of this option for tank purchase, installation, new piping, and valves is in the range of \$35,000 to \$40,000.

We are here to help you as a FRWA Membership benefit and should you choose Option No. 1 we would ask that you provide a \$2,500 contribution to FRWA in aid of engineering assistance -- *if you had not been a FRWA member we would have asked for a \$3,500 contribution.*

Consultants often charge anywhere from \$5,000 to \$10,000 for this type of service, report, and permitting assistance. If this project description is inaccurate please let us know by return mail – we want to clearly understand your project and expectations.

**Backlog Notice:** There may be a delay before we can work on your project. Please understand at the moment the engineering backlog is several months long and we are committed until at least April 30, 2016. If this delay is too lengthy, please contact an engineering consultant to assist you. There are a few FRWA engineers to help systems statewide.

**Existing System Demands and Capacities.** Based on the FDEP database East Marion Utilities the following is summarized and estimated.

Permitted Design Capacity .....	180,000 gpd	FDEP Sanitary Survey
Connections .....	64	FDEP database
Population .....	224	FDEP database
Average Daily Demand (ADD) .....	13,612 gpd	9.4 gpm ~ MORs
Maximum Daily Demand (MDD) .....	20,000 gpd	14 gpm ~ MORs
Peaking Factor – MDD:ADD .....	1.5	per calculated
Peak Hour Demand (PHD) .....	38 gpm	calculated
Peaking Factor - PHD:ADD .....	4	per experience
Peak Instantaneous Demand (PID) .....	94 gpm	calculated
Peaking Factor - PID:ADD .....	10	per experience
Well Pump Sizing .....	250 gpm	FDEP Sanitary Survey

**ASME Certification Required for all New Hydropneumatic Tanks greater than 120 gallons.** All NEW Hydropneumatic tanks installed after August 28, 2003 are required to be ASME Certified per subsection 62-555.320(20), FAC, which references Ten States Standards “Recommended Standards for Water Works” section 7.2.

**FDEP Acceptance of Non-ASME Certified Hydropneumatic Tanks 120 gallons and smaller.** These tanks must be ANSI/WSC Standard PST 2000 pressurized water storage tanks. The Water Systems Council (WSC) maintains a list of tanks and manufacturers meeting WSC PST 2000 at, this list is attached <https://www.watersystemscouncil.org/resources/well-standards/ansiwsc-pst-2000-2014/>. Approved manufacturers include: A. O. Smith Water Systems; Amtrol, Inc.; Flexcon Industries; and Pentair Water Group/ Wellmate Division. These new tanks must not exceed 120 gallons. FDEP allows the installation of multiple tanks.

**Tank Bypasses are Required.** All water tanks need to have a bypass for isolation and normal operation and maintenance per AWWA and FDEP standards per rule 62-555.520(4)(a)6.b., FAC (including residuals handling operations), chemical application points, water pumping facilities, bypass arrangements, and recycle flows. Isolation of tanks is required for annual inspections by the utility per FDEP rule 62-555.270(2), FAC. Also in the same rule all tanks must be cleaned at least once every five years to remove biogrowths, calcium or iron/manganese deposits, and sludge from inside the tanks, and have an engineering inspection of the tank structural and coating integrity.

**Hydropneumatic Tanks Purpose & Description.**

Hydropneumatic tanks are pressure-sustaining vessels -- primarily used as buffers in water systems to maintain pressure during times when pumps are off, dampens water hammer, and reduces the number of times that pumps must operate. Since hydropneumatic tanks quickly lose the ability to supply water when the pump no longer functions, they cannot be emptied under normal operation, and are not strictly water storage tanks. Much like a water hose does when the tap is turned off.

**Hydropneumatic Tank Sizing for Peak Instantaneous Water Demand.**

Subsection 62-555.320(19) 2., FAC relating to small water systems with hydropneumatic tanks permitted after August 28, 2003 must demonstrate that, *“the capacity of the water system's source,*

*treatment, and finished-water pumping facilities, the water system's total useful finished-water storage capacity (i.e., the water system's total effective hydropneumatic tank volume) is sufficient to meet the water system's peak instantaneous water demand for at least 20 consecutive minutes."*

Ten States Standards "Recommended Standards for Water Works" section 7.2.2 states that "the capacity of the wells and pumps in a hydropneumatic system should be at least ten times the average daily consumption rate." Thus, ten (10) times Average Daily Demand = Peak Instantaneous Water Demand (PID), or:

Peak Instantaneous Demand (PID) = 10 x (ADD)

$$\text{PID} = 10 \times 9.4 \text{ gpm ADD} = \mathbf{94 \text{ gpm}}$$

The existing well pump is rated at **250 gpm**

→ Test: Is the Well Pump Capacity greater than the Peak Instantaneous Demand?

→ 250 gpm ≥ 94 gpm? **YES!**

The existing well pump is **SUFFICIENT** to meet the water system's peak instantaneous water demand (PID) of 94 gpm for at least 20 consecutive minutes without assistance of the hydropneumatic tank!

#### **Hydropneumatic Tank Sizing per Ten States Standards.**

Hydropneumatic tanks are also governed by subsection 62-555.320(20), F.A.C., which references Ten States Standards "Recommended Standards for Water Works" section 7.2. *"The gross volume of the hydropneumatic tank, in gallons, should be at least ten times the capacity of the pump capacity of the largest pump, rated in gallons per minute. For example, a 250 gpm pump should have a 2,500 gallon pressure tank, unless other measures (e.g. variable speed drives in conjunction with the pump motors) are provided to meet the maximum demand."*

The well pumps should not cycle frequently (6 to 8 cycles/hour is generally considered acceptable). Frequent or constant operation of the pressure pump can indicate a "waterlogged" tank or improper settings. When a pressure tank is "water logged" the pump will build up to cut-off pressure, stop, and a very short time later start up again. This cycle will continue over and over, eventually causing damage to the pump. If a pressure gauge is installed on the system, the gauge will show a steady drop in pressure, even though no water is leaving the water plant. To remedy this problem it is necessary to drain and refill the pressure tank.

So the formula to size hydropneumatic tanks is:

PHD Formula for Estimating Appropriate Tank Size

$$Q_T = Q_P \times 10$$

Where:

$Q_T$  = Tank volume in gallons

$Q_P$  = Pump Capacity of the largest pump, gpm

The existing well pump is rated at **250 gpm**

→  $Q_T = 250 \text{ gpm} \times 10 = \mathbf{2,500\text{-gallons}}$  (minimum size)

→ **Ten States Standards is the controlling factor for tank sizing.**

Ten States Standards also states clearly that, *"hydropneumatic tank storage is not to be permitted for fire protection purposes."* (paragraph 7.2) [emphasis added], but the Insurance Services Office (ISO) allows fire protection rating to be evaluated if the water system can meet the demand for the duration

of the fire. Further bladder tanks are not specifically excluded by FAC 62-555.520(20)(c).

**Information Required From You.** Before we will begin to work on your project we must have all of the listed information about your system. If you have any questions please ask Jason Southerland, your FRWA Water Circuit Rider to review this checklist to see if you have everything before sending it.

1. **Property Plan.** Please send a drawing or sketch of your property. See attached sample – use a property survey or google aerial photo. Please show:

- North arrow
- Property lines
- Buildings
- Location of existing well(s)
- You can sketch your plant by hand -- it doesn't have to look pretty, just representative of what's actually there on-site and readable.
- Water lines
- Water Treatment Plant
- Etc.

2. **Well House or Water Plant Plan.** Please send a drawing or sketch of your well house or water plant. See attached sample. Please show:

- North arrow
- Scale or dimensions of the building, tank diameters, etc.
- Well
- Pumps
- You can sketch your plant by hand -- it doesn't have to look pretty, just representative of what's actually there on-site and readable.
- Tanks
- Water Lines
- Valves
- Meters
- Etc.

3. **24+ Photographs** – Please take photographs inside, outside, and, around the well, tanks, buildings, WTP property – please send 24 or more photographs, on a CD, SD Card, flash drive, or via e-mail. We'll send the SD Card or flash drive right back to you. This doesn't take a lot of time to take these photos.

- Photos are inexpensive and easy to take when compared to travel time and effort to do a site visit. The more photos we get the better - take pictures of EVERYTHING. We need close-ups of your well, tanks, and piping, enough to see what's going on, and we need overall shots (panoramas) to give a sense of what is around on the property.
- If you don't have a digital camera just use a regular film camera, take a whole roll of film, and have a CD made during developing and send us the CD - it costs less than \$20.

**PRIORITIES.** We work on projects based on the following priorities: (1) First come, first served; (2) Readiness to proceed and completeness of data -- send all items listed above; (3) Need. Systems with regulatory compliance issues have priority. Economically challenged systems have priority - if you can hire a consulting firm, you are encouraged to do so. Community water systems, schools, churches, daycares, public facilities, etc. have priority over businesses; (4) Cooperation and appreciation for services; and (5) you must be a FRWA Member.

**OPTIONS FOR YOUR PROJECT:** As we described, you have several options to obtain the required Specific Assistance you need for your system:

1. You can always hire a consulting firm to do the work for you!
  - If you are able to hire a consulting firm we encourage you use them.
  - If you need immediate assistance and cannot wait for FRWA Engineers to get to your project.

2. You can ask FRWA to assist you as a membership benefit:

- Make a **\$2,500 contribution** to support FRWA's Engineering Program
- You must **commit to collecting the data listed above**
- You must be a **FRWA Member** and commit to long-term membership
- We ask that you **be patient** – we have lots of work and few engineers
- You agree to hold FRWA **harmless** for our assistance efforts (does not apply to cities, counties, and governmental entities)

Please sign the FRWA Specific Assistance Agreement attached and return it to us for our files. Because you have requested FRWA's Specific Assistance you should be willing to enter into this agreement and acknowledge that FRWA is non-profit membership association and this service is a membership benefit. FRWA is dedicated to assisting water and wastewater systems provide Floridians with an ample affordable supply of high quality water.

Sincerely,



Sterling L. Carroll, P.E.  
FL PE # 46151  
State Engineer for FRWA

Copy: Donnie Morrison, FRWA Circuit Rider

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*Please review sign and return the acknowledgment below:*

## **FRWA Specific Assistance Agreement / Acknowledgment**

The **East Marion Utilities** (hereafter referred to as "FRWA Member") requests FRWA's assistance and by doing so willingly and freely enters into this agreement for FRWA membership assistance with **Hydropneumatic Tank Replacement**.

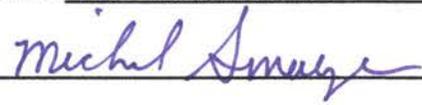
The FRWA Member understands that FRWA Engineers have a heavy backlog of work, cannot immediately work on this project because they serve statewide needs, and are assisting members on a first come first served basis.

This agreement is made upon the express condition that the FRWA Member agrees to hold the Florida Rural Water Association, its agents and employees harmless for any loss, damage, expense, cost, or legal liability. **The FRWA Member understands it can hire a consulting firm to do the work at any time in lieu of making a \$2,500 contribution to support FRWA's Engineering Program, once the work is complete.**

The FRWA Member acknowledges that FRWA is non-profit membership association dedicated to assisting water and wastewater systems provide Floridians with an ample affordable supply of high quality water. Further the FRWA Member agrees to commit to gather the data, maps, and information about its own system; and recognizes the backlog of work and is willing to be patient until FRWA can get to its project; and appreciates this membership service.

The FRWA Member has the option to hire an engineering consultant at any time, if the project cannot wait for FRWA Engineers' availability – FRWA would be happy to provide a refund.

FRWA Member: East Marion Utilities

Signature:  Date: 9-27-16

***Please RSVP by February 6, 2016!*** Because FRWA engineering services are in high demand we ask for your response to this offer within 30-days. If you need more time for your decision-making process just let us know. We understand if you choose to proceed in another way and support you in that decision. We're always here to assist water and wastewater systems. Please drop a quick line to let us know or sign the agreement and return it to us. If we have not heard from you within 30-days we will assume that this offer has expired and remove your system off our list of utilities desiring FRWA engineering services.