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March 27, 2017

Mr. Riley Smith  
City of Pembroke Pines  
Senator Howard C. Forman Campus  
8300 South Palm Drive  
Pembroke Pines, FL 33025  
[rismith@ppines.com](mailto:rismith@ppines.com)

Re: **CITY OF PEMBROKE PINES, REHABILITATION OF ANION EXCHANGE SYSTEM 1-8  
ESTIMATE PROPOSAL REV 7**

Dear Mr. Smith:

We have revised our scope letter in accordance with Revision 1 of our proposal dated January 25, 2017. This proposal encompasses all 8 Ion Exchange Units as well as the Brine Tanks/Feed system and the Ion Exchange Feed Pumps. The proposal is based on the TONKA WATER report dated February 11, 2016 received from Envirosales on December 16 in conjunction with observations from my field visit with Oscar Diaz (Cardinal) on 12/19/2016 AND subsequent conference calls, scope clarifications, and site visits on 12/27/2016, 1/4/2017, 1/5/2017 and 1/12/2017.

Work includes the following items listed in detail for your use and information:

Vessels 5-8:

1. remove the existing resin and solids buildup from vessels 5-8
2. remove the existing brine headers and laterals inside of the units
3. install new OWNER SUPPLIED brine headers and laterals
4. replace corroded 8" DIP spools on drain/waste manifold (qty 4)
5. replace 8" actuated butterfly valves (qty 8)
6. replace 10" magnetic flow meter/transmitters (qty 4)
7. replace 1" ARV and associated piping with stainless steel piping
8. replace 3" PVC butterfly valves - manual w/ lever (qty 4)
9. replace 3" actuated butterfly valves (qty 4)
10. replace manway bolts with 316ss
11. replace manway gaskets
12. furnish and install new PVC at Vessels 5-8

Vessels 1-4:

1. remove the existing resin and solids buildup from vessels 1-4
2. remove the existing brine headers and laterals inside of the units
3. install new OWNER SUPPLIED brine headers and laterals
4. replace corroded 8" DIP spools on drain/waste manifold (qty 4)
5. replace 8" actuated butterfly valves (qty 8)

6. replace 10" magnetic flow meter/transmitters (qty 4)
7. replace 1" ARV and associated piping with stainless steel piping
8. replace 3" PVC butterfly valves - manual w/ lever (qty 4)
9. replace 3" actuated butterfly valves (qty 4)
10. replace manway bolts with 316ss
11. replace manway gaskets
12. furnish and install new PVC at Vessels 5-8

#### Tank containment area:

1. replace potable water piping system at brine tank area
2. replace brine feed pumps
3. replace brine feed piping
4. replace brine waste pump in kind
5. replace FRP tank ladders with Aluminum
6. replace clear PVC sight glass with GEMS magnetic level sight indicators
7. replace 3" brine flow meter

#### Ion exchange feed pumps

1. replace qty (6) vertical split case pumps in kind manufacturer PACO
2. replace (6) 8" control valves
3. furnish and install new 8" 316ss knife gate valves qty (12)
4. furnish and install new 8" spool pieces and megaflanges at pumps

#### General items

1. prep and paint all DIP piping associated with units 1-8 and brine system
2. prep and paint PVC piping (new and existing) associated with units 1-8 and brine system
3. prep and paint FRP tanks (if not damaged - coating on domes are severely deteriorated)
4. sand blast and paint the interior brine containment area
5. furnish and install new waste conductivity probe
6. associated electrical and I&C work
7. install safety climb devices on aluminum ladders (units 1-8 and FRP tanks - qty 12 devices total)
8. furnish and install new 2" backflow preventer at containment area

#### Exclusions

1. permitting - if permits are required, Owner to submit for DEP/Health Department and/or Building
2. lightning protection
3. re-certification of the grounding system
4. bacteriological testing shall be provided by the City of Pembroke Pines (disinfection by Cardinal)
5. earthwork is not required
6. brush blast and paint anion exchange vessels not required
7. any items not specifically INCLUDED above

Our proposal is to rehabilitate the system as it is currently designed. The system was designed so that Vessels 1-4 and 5-8 operate independently from each other and cannot run concurrently. As a note, we understand from conversations with the City and Calvin Giordano & Associates that running both Anion Exchange Systems (1-4 & 5-8) concurrently adversely impacts the hydraulics of the filters. Our proposal does not include the piping modifications and engineering necessary to modify the plant to run both systems concurrently.

Our proposal also does not include changes to the piping discharge location into the clearwell. There was previously some engineering investigation into modifying this. We have considered this outside the scope of the work and need additional information to price the aforementioned modifications. This can be done if the city expresses an interest and need for the modifications. We would need the assistance of CGA to develop the design.

**The REVISED total Lump Sum Cost of the work identified amounts to \$2,389,854.00.**

If added to the existing Filter Project Contract, a time extension of 180 days will be required for the procurement and construction additional work. Thank you for the opportunity to provide this proposal. The current version of this proposal requires the City to furnish the materials identified as Owner Furnished. Cardinal has assisted and will continue to assist the coordination with Tonka to furnish the PACO Ion Exchange Feed Pumps, the Brine Waste Pump, the Actuated Valves, Flow Meters and other valves under their current PO with the City.

If you have any questions, please call me to discuss.

Respectfully,

Cardinal Contractors, Inc.

  
Michael Brandao

cc: Paul Thompson/Cardinal Contractors, Inc.  
Eric Macek/Cardinal Contractors, Inc.