

**Specifications for Rehabilitation
Hudson #1A & Video Inspection of Foster Island 41**

1) Scope of Work

The scope of this proposal is:

Foster Island 41 – Pull Pump & Motor, Video Inspection*, Reinstall Pump & Motor.

Hudson Street Well #1A - clean and rehabilitate.

*Depending on the results of Video inspection, the Elmira Water Board may contract with winning bidder to perform well Rehabilitation on Foster Island 41 before well pump and motor are reinstalled.

No unnecessary delays or work stoppages will be tolerated. The Contractor shall be held responsible, and payment may be withheld for damages done to the well due to any cause of negligence or faulty operation. For the project “OVERTIME WORK”, shall not apply.

2) Mobilization and Equipment

The Contractor shall furnish and supply all necessary rigging and associated equipment to perform a thorough cleaning of the well screens and rehabilitation of the well. This item includes moving material and equipment to and from the site. It also includes cleanup of the well site at completion of the contract.

(a) The Contractor shall remove any debris from the bottom of the well using a bailing or air lifting method approved by the Owner’s representative to the depth specified by the Well Design. The debris, if any, shall be collected at the surface and properly disposed of offsite.

(b) The Contractor is responsible for the containment, removal, and disposal of all sludge and debris as part of this contract.

3) Preliminary Test

Prior to pulling the pump & motor the Elmira Water Board personnel shall conduct flow tests on Hudson #1A with a calibrated orifice, to measure the wells present capacity compared to its original performance and provide results to the successful contractor.

4) Pull Pump & Inspect

The Contractor shall remove the pump and motor from the well using all precautions to avoid any damage. The pump’s assembly shall be stored at the well site and dismantled for inspection by the Contractor. All bearing tolerances will be noted along with a complete inspection of the pump column and related parts. A written report will be submitted to the Owner. A cost estimate of necessary labor and material will be included if repair work is recommended.

5) Video Inspection of the Well

Immediately after pulling the pumps, the Contractor will perform an underwater inspection of the casing and the screen on Hudson 1A and Foster Island 41. The camera must provide a clear color video image of the casing, the well screen and joints. After the final rehabilitation of the well, another video inspection will be made on the rehabilitated well. The Owner will be provided a DVD or digital video of the inspection. If final redevelopment indicates additional cleaning of the screen is necessary, a video log after this cleaning will be done at no cost to the Owner.

6) Well Rehabilitation

The objective of this well rehabilitation project is to clean and rehabilitate the well to improve its yield. The rehabilitation will be carried out in three phases:

Phase 1 - Wire Brushing of the Well

The contractor shall wire brush and scrape the well for a period of not less than 15 min per 20-foot interval. The wires should maintain a touch fit to the inside diameter and be capable of rotating while being raised and lowered.

After brushing is complete, the Contractor shall remove all debris from the well bottom by airlifting or bailing. The waste shall be neutralized by the Contractor to a pH greater than 6.5 and less than 8.5 and disposed of by the Contractor in accordance with current Environmental Regulations.

Alternate - The Contractor may employ a percussion or air blast type energy system to clean the screen and the casing. Provide details on the type of air system being used.

Phase 2-Acid Treatment - To address the biological fouling and loss of production capacity a strong chemical and mechanical agitation process will be used.

For Hudson #1A - The chemical wash shall be: 80 gallons of phosphoric acid (75%Activity), 30 gallons of biodispersant (Johnson Screen NW-310/QC21), 2 gallon of NW-400 surfactant.

The Contractor shall furnish all labor, equipment, and material and services to acid clean the well. Material Safety Data Sheet (MSDS) for all additives must be submitted to the Owner's representative for approval prior to use of said additives. Care shall be taken throughout the entire well rehabilitation process to follow all the Federal, State, and local regulations pertaining to the handling and disposal of the acid and other chemicals. All chemicals must be NFS certified.

The chemicals shall be batched in a polyethylene tank and the chemicals added to the water and mixed with a small circulating pump.

Specifications Continued

The mixed solution should have a pH of 1.0 or less and is to be introduced into the casing with a small pipe starting at the standing water level to the bottom of the well. At the Owners discretion samples may be pumped or lifted to determine the pH. Acid must be added if necessary to keep the pH @3.0 or less.

After the chemicals are added, an aggressive surging will be used to force the chemistry into the formation. The Contractor will swab the entire casing with a minimum 20' double surge block from the bottom of the well to the standing water level. Each 20' section of casing will be swabbed for 20 minutes and each 10' of screen shall be swabbed for 30 minutes. If the pH is above three, additional acid will be added and swabbed into place using the double surge block.

After working the well, the first day, the solution shall stand overnight (12 hours). After 12 hours, a pH sample will be taken by the Contractor and witnessed by the Owner's representative. If the pH is greater than 3.0 acid will be added to bring it below 3.0. Maintain the pH at 3.0 or below during the entire cleaning process. The EWB will pay for any additional cost of acid to maintain a PH less than 3.0.

The second day the well will be surged 6-8 hours before pump out following the same surging procedure as before except surging shall begin at the standing water level and work downward to the bottom of the well. At the discretion of the Owner's representative the well will be allowed to stand for an additional period of 48 to 72 hours following determination of the pH. The EWB will pay for one additional day of soak time. Any soak time beyond this time will be negotiated.

The Contractor shall, by air lifting or pumping, remove the acid in the well following a determination of the pH at the bottom. The pumping will be continuous at a minimum of 250gpm from each 20'section of screen for 15 minutes. Pumping shall begin at the bottom of the screen and work up to the top of the screen. The Contractor shall continue to pump or air lift from the well until the pH of the well water is between 6.8 and 7.4 and until the water remains clear for a minimum of five minutes.

All of the acid treated water will be neutralized to 6.5 to 8.5 pH prior to disposal by the Contractor, according to the current Environmental Standards. The Owners representative will continue to monitor the well discharge to assure the Contractor is meeting the targeted pH range and all chemicals have been removed from the well.

Phase 3 -Mud and Fine Sediment Removal - Following the acid wash a second phase of redevelopment should occur to remove mud and fines from the well and the gravel pack.

Specifications Continued

The wells are to be surged with Johnson Screen NW-220 (clay dispersant) at a ratio of 1:250. The water and NW-220 shall be batched in a minimum 3000 gal tank and added to the casing with a small pipe from the standing water level to the depth of the well.

Following injection of the chemicals the Contractor will swab the entire casing with a minimum 20' long snug fitting double surge block from the bottom of the well to the standing water level. Each 10' casing section will be swabbed for 30 minutes.

The well will be allowed to stand for two hours. Immediately after the 2 hours, the Contractor will then swab each 10' section for 15 minutes. Swabbing will begin at the top and work down.

After the second swabbing, the Contractor shall remove the chemistry and mud mixture by continuously pumping or air lifting at a minimum rate of 250gpm from each 10' section of screen for a minimum of 15 minutes, starting from the bottom of the screen up. The Contractor shall continue pumping or lifting until the water remains clear for a minimum of 5 minutes and it is apparent the sediment is no longer being removed from the well.

All redevelopment water shall be disposed of by the Contractor after it has been neutralized and settled in accordance with current Environmental Regulations. All discharge water shall be neutralized by the Contractor to pH greater than 6.5 and less than 8.5. The Contractor will be responsible for monitoring the pH level, treating, testing and disposing of the water. The Owner's representative will additionally monitor the pH of the water discharged to assure the Contractor is achieving the desired results. The Contractor will continue to pump from the well until the Owner's rep is satisfied all chemicals have been removed from the well.

7) Disinfection

The Contractor shall furnish labor, equipment, material and services to "super chlorinate" Hudson #1A. Mix a solution of 500 mg/l residual chlorine by mixing a solution of Hydroxyacetic Acid, Sodium Hypochlorite, NW-400. Add one gallon of NW400 for each 1,000 gallons of water. The Contractor shall use an appropriately sized polyethylene tank to mix the chemicals.

Inject the mixed solution through a snug fitting double surge block. A quantity of 300 gallons of mixed solution shall be injected per 20' interval of well screen and swabbed into place. Swab from top of screen down to bottom. Samples shall be taken from the screened area to determine the chlorine residual. The total number of samples shall not exceed 6 to determine chlorine residual. The residual should be between 250ppm and 500ppm. The residual shall not be lower than 200ppm and pH greater than 7.0 or increased dosage is required.

Specifications Continued

After 24 hours, the chlorine shall be air lifted continuously for 15 minutes for each 20-foot section of screen. Lifting shall begin at the base of the well and work upward to the top of the screen. The Contractor shall neutralize the chlorine discharge to a pH of 6.5 to 8.5 prior to allowing water to be discharged from the site. Disposal by the Contractor shall meet current Environmental Specifications. After the above procedure, the Contractor shall pump water from the well to allow the Owner's rep to collect water samples necessary for analysis.

8) Reinstallation of Pump & Final Pump Test for Hudson #1A

A three-hour final pump test will be conducted by the Contractor after installation of the pump. The well will be pumped for one hour at the following rates; 450gpm, 650gpm, 850gpm. The final report will record water level, flow, drawdown, pressure and amps.

9) Report

Following the completion of all work the Contractor will prepare a report outlining in detail all the work done in the rehabilitation and results obtained for the well.

10) Bidding

The Contractors bid, for all the individual items listed below, shall indicate:

- the quantity of time required or term lump sum calculation
- the hourly rate or lump sum price
- the total costs

Specifications Continued

Bid Items:

Mobilization

Pull Pump

Pump Inspection & Report

Before & After Video Inspection

Phase 1 -Air Clean or Wire Brush

Phase 2-Acid Clean

Chemicals (note amount calculated for well)

Phase 3-Mud & Fine Cleaning

Chemicals (note amount calculated for well)

Disinfection

Reinstallation Pump & Final Test

Any Rental Equipment

Other