

SCOPE OF WORK

REHABILITATE IRRIGATION WELL **HOUSTON NATIONAL CEMETERY, HOUSTON, TEXAS**

- A. **The Contractor:** Shall furnish all labor, material, equipment, and supervision necessary to rehabilitate the existing irrigation system well at Houston National Cemetery in accordance with the contract requirements specified below and per applicable industry standards and codes.
- B. **Well Description:** The well was drilled in 1988 and has a design capacity of 850 gallons per minute (gpm) at 710 feet of total dynamic head (TDH). The pump setting depth is 480 feet. The upper casing diameter is 14 inches to 548 feet. The lower casing diameter is 8 inches from 548 feet to Total Depth (TD), approximately 1,200 feet (per as-built information). The casing alternates between perforated screens and blank liners (at unknown intervals) below pump setting. The well is gravel packed the entire length from pump setting to TD. There is a camera and video survey of the well casing available for review. The camera survey results show 80 to 85% physically plugged and/or incrustated screens.
- C. **The Work:** The Work shall be split into three line items: 1) mechanically scrubbing the well casing to remove incrustation and air lifting of debris; 2) controlled shape charge blasting, and well inspection (video and camera survey); and 3) acid treatment reconditioning. The Work shall include, but shall not be limited to the following (generally in the order indicated):
1. CLIN 1: Initial Incrustation Removal
 - a. Thoroughly review the existing initial camera survey.
 - b. Remove the incrustation by mechanically scrubbing the length of well casing from pump setting height to TD using steel wire brushes.
 - c. Remove loosened material by air lift jetting, bailing, or other means. Collect and dispose of debris off site, and control discharge of waste water to prevent site erosion.
 - d. Perform video and camera survey (provide copy to COR); make recommendations on follow-on rehabilitation method.
 2. CLIN 2: SONAR-JET® Rehabilitation
 - a. Include all labor, material, and equipment associated with reconditioning the well screen and aquifer using controlled shape charge blasting such as the SONAR-JET® system to increase the capacity of the well as close to its original condition as possible.

SONAR-JET®: Water Well Redevelopers, Inc.; 2881 Blue Star Street; Anaheim, CA 92806; (800) 213-5095 or (714) 632-700; Fax: (714) 632-7306; E-Mail: sonar7003@sbcglobal.net; Website: <http://www.sonar-jet.com>
 - b. Perform video and camera survey (provide copy to COR); make recommendations on follow-on rehabilitation method.
 3. CLIN 3: Acid Treatment Rehabilitation and Reconditioning
 - a. Include one acid treatment utilizing 2,000 gallons of 20% hydrochloric acid solution. Introduce the mixed solution into the well through a double disk surge block in discrete intervals. Each section of the screen will be individually cleaned and redeveloped utilizing the disk surge block. The surging and swabbing operations will continue for a minimum 4 - 5 hour period. The solution will then be allowed to stand in the well overnight. The next day, the swabbing, pumping and re-injection operations will recommence for another 4 hour period. During this treatment phase the pH of the chemical solution will be monitored.
 - b. The pump off shall continue for 2 hours at a maximum rate, to thoroughly remove all loosened mineral deposits from the screen and surrounding gravel pack. Neutralize pumped solution and pump

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- to natural drainage in an approved manner to avoid erosion.
- c. The SDS for any acid(s) or chemicals shall be submitted to the COR for approval. Chemicals shall be added to the well by a Competent Professional. The Contractor shall abide by the manufacturer's recommended concentration, contact time, and shall monitor pH levels. If the pH rises above 4/5, the procedure will stop and the spent chemical will be neutralized and pumped to waste.
 - d. The well shall be developed to correct damage from the reconditioning process, remove fines from the aquifer, and increase local permeability until an insignificant amount of sand can be pumped.
 - e. Perform final video and camera survey (provide copy to COR) to determine effectiveness of rehabilitation.
- 4. The Competent Professional identified in the Contractor's accepted proposal must be on site during all reconditioning work, and must directly supervise all reconditioning work.
 - 5. The reinstallation of the pump and system functionality test IS NOT part of this scope.
 - 6. Haul away & dispose of all debris and waste to an approved disposal site.
 - 7. Thoroughly clean up the work area at the end of each day's work, and at completion of the project. Leave premises clean and free of waste, scrap, used equipment, or other material intentionally or incidentally delivered to the site by Contractor or Contractor's personnel.
 - 8. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
 - 9. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site not to be removed and do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
 - 10. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.
 - 11. Materials and equipment accruing from work removed, or parts thereof, shall be disposed of as follows:
 - a. Items which are to remain property of the Government are to be turned over to the COR. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse.
 - b. Items not reserved shall become property of the Contractor and be removed by Contractor from the cemetery and disposed of in an approved landfill.

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12. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COTR before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
13. Upon completion of contract, deliver work complete and undamaged. Existing work (mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
14. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

15. EXPERIENCE REQUIREMENTS

- a. Offers will be considered only from contractors who are regularly established in the well rehabilitation and reconditioning business and who in the judgment of the Contracting Officer are financially responsible and able to show evidence of their reliability, ability, experience, equipment, facilities, and personnel directly employed or supervised by them to render prompt and satisfactory service.
- b. The Contractor must demonstrate with their technical proposal, using persons directly employed by the Contractor, experience with the rehabilitation of at least five (5) water wells of similar depth and size over the past three (3) years using similar methods as described in this Scope. Each contract submitted must have been satisfactorily completed, or if not yet completed, must be marked by satisfactory progress. The Government will not consider a contract that is less than 50% complete or an effort that concluded more than 3 years ago. NOTE: Water intake wells in oil and gas fields will NOT be considered.
- c. Contractor Supervisor: A competent and experienced English-speaking Contractor Supervisor shall be provided by the Contractor whenever work is being performed - other than trash and debris pick-up. The Contractor Supervisor must have not less than three (3) years of experience as a direct supervisor of well rehabilitation projects that included the controlled shape charge method. Offerors shall submit a resume for the Contractor Supervisor as part of the technical proposal. All permanent substitutions, whether of prime supervisors or sub-contractors, will be identified and reported to the COR and Contracting Officer, if not prior to, as soon as possible after occurrence.
- d. The Contractor Supervisor shall review and approve submittals, ensure all specifications are being met, inspect the quality of work performed, ensure contract work does not conflict with ceremonies and funerals, ensure employees are adequately supervised and proper conduct maintained, and certify the completed work for payment and other purposes.

16. STANDARDS OF EMPLOYEE CONDUCT:

- a. The National Cemetery Administration honors veterans with a final resting place and lasting memorials that commemorate their service to our Nation. National Cemeteries are national shrines. The standards of work, appearance, and procedures performed by the contractor at this cemetery shall

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reflect this nations concern for those interred there. Due to the sensitive mission of the cemetery, contractor personnel must exercise and exhibit absolute decorum, composure, and stability at all times.

- b. Contractor personnel shall be required to adhere to the following standards of dress and conduct, as briefly mentioned here, while performing work in the National Cemetery. These standards and regulations are enforceable under Title 38, U.S.C., Part I, Chapter 9, Section 5901.
 - c. Clothing shall be presentable and suitable to the work while maintaining proper appearance and decorum indicative for a National Shrine. Uniform shirts and hats are preferred. Clothing shall be clean and cleanliness and personal hygiene are imperative. T-shirts and/or tank tops as outer garments are prohibited. Protective/safety clothing and shoes shall meet or exceed OSHA and state requirements.
 - d. Behavior and language must be appropriate, reverent, and respectful at all times.
 - e. Eating and drinking (except water) is prohibited in the work areas and within sight of a committal shelter during a service.
 - f. Use of intoxicating beverages, any tobacco products, and illegal drugs on the Cemetery premises is strictly prohibited.
 - g. Contractor personnel shall not lean, sit, or stand on or against headstones or monuments. No tools, equipment or other items will be placed or leaned on headstones or monuments.
 - h. The Contractor shall be responsible for maintaining satisfactory standards of personnel conduct and work performance and shall administer disciplinary action as required. The Contractor is expected to remove any employees from the Cemetery for cause, to include, but not limited to, safety violations, other misconduct in performance of duty under these specifications and/or conduct contrary to the best interests of the Government. If the Contractor fails to act in this regard, or the reason for a removal is immediately required to protect the interests of the Government, the COTR may direct the removal of an employee from the premises. Contractor objections to any such action will be referred to the Contracting Officer (CO) for final resolution; however, the Contractor will first immediately comply with COTR direction pending any CO final resolution at a later time or date. The Contractor will not be due any type of compensation for their costs incurred as a result of an employee being removed for cause; unless the removal is directed by the COTR, and is later found invalid and/or unreasonable by the Contracting Officer.
- C. Time of Completion: The project shall be completed within 30 calendar days after contract award. Contractor shall submit a detailed project schedule to the COR at most five (5) business days after Notice to Proceed.
- D. Code Compliance: All work shall be performed in accordance with National, State, and Local Codes including the International Building Code (IBC), the International Mechanical Code (IMC), the International Plumbing Code (IPC), and the National Electrical Code (NEC).
- E. Submittals After Award: Submit manufacture's literature and specifications for the all systems, equipment, and materials used to perform the work to the COR for review and approval.
- F. Plans/details:
- 1. Attachment A, Drawing, As-Built
 - 2. Attachment B, Site Location
 - 3. Attachment C, Pictures
- G. POC: The Contracting Officer's Representative (COR) for this project is Andrew Van Marter, Foreman, Houston National Cemetery.

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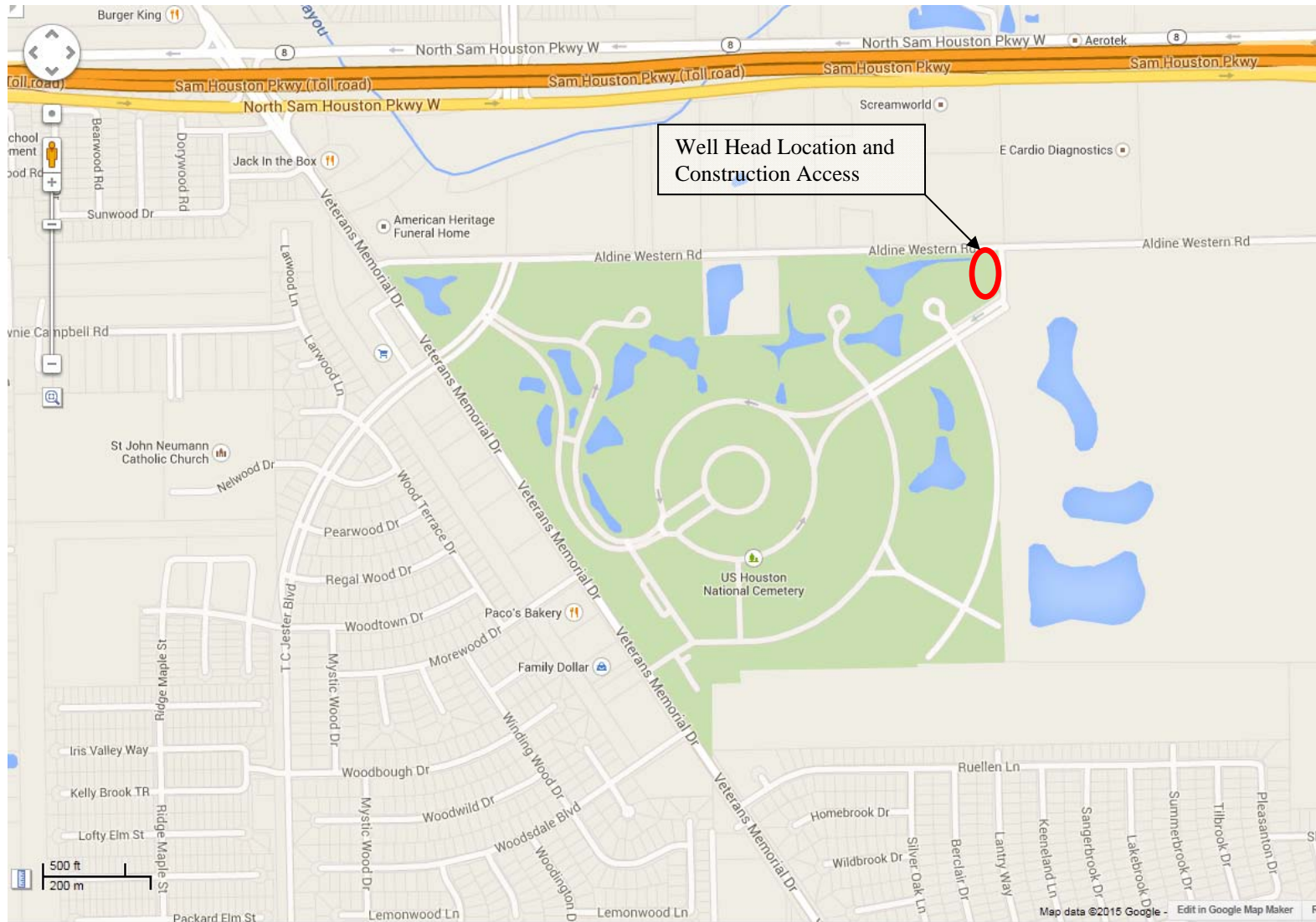
- H. Project completion: The project site shall be protected and/or restored to a condition equal to that existing prior to the commencement of work.

END OF SCOPE OF WORK

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ATTACHMENT B PROJECT LOCATION



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ATTACHMENT C PICTURES



Figure 1: Well head and pump motor



Figure 2: Pulling the pump



Figure 3: Pulled 10" pipe and tube shaft
(currently still on site)