BEAUMONT-CHERRY VALLEY WATER DISTRICT

WELL No. 23 PUMPING UNIT REPAIR AND WEL REHABILITATION

CONTRACT FOR PUBLIC WORK

1. Parties and Date

This Contract is entered into this ____ day of _____, 2021, between the BEAUMONT-CHERRY VALLEY WATER DISTRICT, a California Irrigation (Special) District ("District"), and ("Contractor"), for the Work described as follows: Removing, Refurbishing, Furnishing, and Installing "Well No. 23 Pumping Unit and Well Rehabilitation".

2. Consideration

In consideration of the mutual covenants hereinafter contained, District and Contractor agree to comply with the terms of this Contract and to faithfully perform their duties hereunder.

3. Duties of Contractor

3.1 Contractor agrees to furnish all labor, tools, and equipment necessary to complete the work hereinafter described. Contractor hereby guarantees that all work to be performed by it hereunder will be performed in a good and workmanlike manner. The Work to be performed by Contractor is described on Exhibit "A" attached hereto and by this reference incorporated herein. Pursuant to Public Contract Code Section 3300, Contractor shall possess an active and current Contractor's License, Class A or C-57, which shall be maintained throughout the term of this Contract.

3.2 Contractor shall complete all work required herein on or before **February 10, 2022**.

3.3 Contractor shall furnish District with labor and material releases from all subcontractors performing work on, or furnishing materials for, the job prior to final payment by District.

3.4 Contractor hereby guarantees that all new materials and workmanship furnished by him under the Contract will meet fully all requirements thereof as to quality or workmanship and of materials furnished by him. Contractor hereby agrees to replace all materials and pay for all installation costs made necessary by defects in materials or workmanship supplied by him that become evident within twelve (12) months after the date of final payment and to pay for all work necessary to remove, restore, and replace the materials to full serviceability and to full compliance with the requirements of the Contract, including the test requirements for any part of the materials furnished hereunder which, during said twelve (12) month period, are found to be deficient with respect to any provision of the Contract. Contractor also agrees and does hereby hold District harmless from claims of any kind which may arise from injury or damage due to said defects. Contractor shall replace all defective materials promptly upon receipt of written orders for same from District.

3.5 Copies of the prevailing rate of per diem wages for each craft, classification or type of worker needed to execute this Contract are available to interested parties upon request. If the total amount of this Contract is $1,000 or more, Contractor agrees to pay such prevailing rates to each workman needed to execute the work required under this Contract and further agrees to comply with the penalty provisions of Section 1775 of the Labor Code in the event of its failure to pay prevailing rates. Pursuant to Section 1727 of the Labor Code, all wages and penalties withheld for failure of Contractor to pay such per diem wages shall be transferred by District to the State Labor Commissioner for disbursement, should Contractor fail to bring suit for recovery within ninety (90) days after completion of the Contract or acceptance of the work.

3.6 Contractor shall pay travel subsistence payments to each workman needed to execute the work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with Section 1773.8 of the Labor Code.

3.7 When Contractor employs workmen in an apprenticeable craft or trade, Contractor shall comply with the provisions of Section 1777.5 of the Labor Code with respect to the employment of properly registered apprentices upon public works. The primary responsibility for compliance with said section for all apprenticeable occupations shall be with Contractor.

3.8 Contractor is advised that eight (8) hours labor constitutes a legal day's work. Pursuant to Section 1813 of the Labor Code, Contractor shall forfeit a penalty of $25.00 per worker for each day that each worker is permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week, except when payment for overtime is made at not less than one and one-half (1-1/2) times the basic rate for that worker.

3.9 In accordance with the requirements of Labor Code Section 1776, Contractor shall keep accurate payroll records on forms provided by the Division of Labor Standards Enforcement or keep payroll records containing the same information required by such forms and shall make any such records available for inspection.

3.10 Contractor shall keep himself fully informed of all laws and regulations in any manner affecting the performance of the Contract work and shall indemnify District and District's agents against any liability arising from violation of any such law or regulation.

3.11 Contractor shall at its own expense maintain at least the following insurance coverages throughout the performance of this Contract:

(a) Worker's compensation insurance coverages for all persons employed or to be employed in the performance of this Contract, which insurance shall at all times be maintained in strict accordance with the requirements of the current California Worker's Compensation Insurance Laws.

(b) General commercial liability insurance coverage of at least $1,000,000 per occurrence and $2,000,000 general aggregate insuring Contractor and naming District as an additional insured for all claims for bodily injury, personal injury and property damage, arising out of or in connection with any operations under this Contract.

(c) Automobile liability insurance coverage with a limit of liability of $1,000,000 per accident Combined Single Limit.

(d) Course of construction insurance with a limit of liability equal to the full contract amount, unless waived in writing by District.

Prior to commencement of any work under this Contract, Contractor shall obtain and furnish to District a Certificate of Insurance as to each type of insurance required, which certificate shall be on the form provided to Contractor by District.

3.12 Contractor shall be responsible for all loss and damage which may arise out of the nature of the work agreed to herein, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the work until same is fully completed and accepted by District. However, Contractor shall be responsible for damage proximately caused by an act of God within the meaning of Section 4150 of the Government Code only to the extent of five percent (5%) of the contract amount.

3.13 Contractor shall indemnify and hold harmless District, its agents and employees, from and against all claims, damages, losses and expenses, including attorney's fees, arising out of or resulting from performance of work under this Contract and which are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom, caused in whole or in part by any negligent or willful act or omission of the Contractor or anyone directly or indirectly employed by him or for whose acts he may be liable.

3.14 Contractor shall be responsible for securing and paying for all permits and licenses necessary to perform the work described herein.

3.15 If the work entails trenching of five (5) feet or more in depth, Contractor shall make adequate provisions for shoring, bracing, sloping, or other protection from the hazard of caving ground.

3.16 As required by Public Contract Code Section 7104, Contractor shall promptly, and prior to disturbance of conditions, notify District of (a) any material discovered in excavation that Contractor believes to be a hazardous waste that is required to be removed to a Class I, Class II, or Class III disposal site; (b) subsurface or latent physical conditions at the site differing from those indicated by District; and (c) unknown physical conditions of an unusual nature at the site, significantly different from those ordinarily encountered in such contract work. Upon notification, District will promptly investigate the conditions to determine whether a change order is appropriate. In the event of a dispute, Contractor shall not be excused from any scheduled completion date but will retain all rights provided by the Contract or by law for resolving the dispute.

4. District's Responsibilities

4.1 As consideration for performance of the work required herein, District agrees to pay Contractor the total contract amount of _____, provided that such amount shall be subject to adjustment pursuant to written change orders signed in advance by District.

4.2 Contractor shall submit progress payment invoices to District at the end of each calendar month during the term of the Contract. All progress payment invoices shall be subject to approval by the District prior to payment by the District. Such progress payment invoices shall be made in accordance with Section 20104.50 of the California Public Contract Code, requiring District to make a determination of suitability of the payment request within seven (7) days of receipt of such request and further requiring District to make payment on properly submitted progress payment invoices within thirty (30) days in order to avoid interest payments to the Contractor upon such amounts.

4.3 When the Contractor determines that he has completed the work required herein, Contractor shall so notify District in writing and shall furnish all labor and material releases required by Section 3.3 of this Contract. District shall thereupon inspect the work and, if acceptable, shall pay to Contractor the contract price, less any amount which District may be authorized or directed by law to retain. Payment of retention proceeds due to Contractor shall be made no later than sixty (60) calendar days after such final acceptance by District, in accordance with Section 7107 of the California Public Contract Code. Contractor is hereby alerted to provisions of Section 7107 of the California Public Contract Code, requiring Contractor to pay each of its subcontractors from whom retention has been withheld, each subcontractor's share of the retention received, within ten (10) calendar days from the time that all or any portion of such retention proceeds are received by Contractor from District. District will allow Contractor to substitute qualified securities, deposited with District or a qualified escrow agent, in lieu of contract retentions in accordance with provisions of California Public Contract Code, Section 22300. The escrow agreement used in such instance shall be substantially similar to that form set out in Section 22300 of the Public Contract Code. District will provide this form to the Contractor upon request.

4.4 To the extent required by Section 4215 of the Government Code, District shall compensate Contractor for the costs of locating and repairing damage to underground utility facilities not due to the failure of Contractor to exercise reasonable care and removing or relocating underground utility facilities not indicated in the construction drawings and for equipment necessarily idled during such work. Contractor shall not be assessed liquidated damages for delay caused by failure of District to provide for removal or relocation of such utility facilities.

5. Contractual Relationship

It is expressly agreed that Contractor is an independent contractor, and neither Contractor nor any of its employees shall be deemed employees of District. Contractor shall have full supervision over all workers on the job, including equipment, drivers, and operators, and neither District

nor any of District's agents shall be held responsible for any action of Contractor under this Contract. Should any question arise regarding the meaning or import of any of the provisions of this Contract or written or oral instructions from District, the matter shall be referred to District's General Manager, whose decision shall be binding upon Contractor.

6. Assignment Forbidden

Contractor shall not assign or transfer this Contract or any right, title or interest herein without the prior written consent of District. If contractor attempts an assignment of this Contract or any right or interest herein, District may, at its option, terminate and revoke the Contract and shall thereupon be relieved from any and all obligations to Contractor or his assignee or transferee.

7. Time of Essence

Time is of the essence in the performance of this Contract. Contractor will be assessed liquidated damages in the amount of $200.00 per calendar day for each day of unauthorized delay in completing performance.

8. Termination

This Contract may be terminated by District at any time by giving Contractor seven (7) days advance written notice. In the event of termination by District for any reason other than the fault of the Contractor, District shall pay Contractor for all work performed up to that time as provided herein. In the event of breach of the Contract by Contractor, District may terminate the Contract immediately without notice, may reduce payment to the Contractor in the amount necessary to offset District's resulting damages, and may pursue any other available recourse against Contractor.

9. Dispute Resolution

Any separate demand by Contractor for the payment of money or damages shall be resolved in accordance with Public Contract Code Sections 20104 et seq., if they apply. Copies of those sections are available upon request and by this reference are incorporated herein.

10. Attorney's Fees and Costs

If any action is necessary to enforce or interpret the terms of this Contract, the prevailing party shall be entitled to recover from the losing party attorney's fees in an amount determined to be reasonable by the court, together with costs and necessary disbursements.

11. Notices

Any notice required to be given under the terms of this Contract shall be sufficient and complete upon depositing the same in the United States mail, with postage prepaid and addressed as follows:

DISTRICT

Beaumont-Cherry Valley Water District
P.O. Box
2037560 Magnolia Avenue
Beaumont, CA 9223

Contractor

12. Counterparts

This Contract shall be executed in two (2) counterparts, each of which shall constitute an original.

13. Certification of License

Contractor certifies that as of the date of execution of this contract, Contractor has a current contractor's license of the classification indicated below Contractor's signature hereto.

IN WITNESS WHEREOF, each of the parties has caused this Contract to be executed on the day and year first above written.

ATTEST:

(Contractor)

Secretary

By:

Title:

Contractor's License Number & Classification

BEAUMONT-CHERRY VALLEY WATER DISTRICT

ATTEST:

By:

Daniel K. Jaggers
General Manager

Andy Ramirez
Secretary to the Board

CERTIFICATION

LABOR CODE – SECTION 1861

I, the undersigned Contractor, am aware of the provisions of Section 3700 et seq. of the Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of the Code, and I, the undersigned Contractor, agree to and will comply with such provisions before commencing the performance of the work of this Contract.

_____
Contractor

By: _____

Title: _____

Exhibit A

Well 23 Pumping Unit Repair Work
Scope of Work Fee Schedule

Well 23 Pumping Unit Rehabilitation
And Well Rehabilitation
Special Requirements

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 23 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 23 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
101	Permits, insurance, and management.	1	L.S.	N/A	$
102	Mobilize and demobilize well pump removal crew and equipment necessary to remove and reinstall an 800 hp well pumping unit and motor.	1	L.S.	N/A	$
103	Remove and inspect pump column, tube, and shaft. Tag well to determine presence/amount of fill. Haul tube and shaft from the District's Well 23 site to the Vendor's yard for evaluation (as necessary). Inspect and provide comments and/or recommendations regarding conditions and serviceability of pump column, tube and shaft.	760	L.F.	$	$
104	Remove pumping unit (14RHHC, 10-Stage) and all related work.	1	L.S.	$	$
105	Haul Well 23's 800 hp electric motor to the District's electric motor vendor (Sulzer Colton Service Center 620 S. Rancho Ave, Colton CA 92324)	1	L.S.	N/A	$
106	Haul bowl assembly to Vendor's yard for evaluation. Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to Owner. Return disassembled bowl to contractor's yard for storage (if not rebuilt as part of this contract).	1	L.S.	$	$
107 (See 107 B Alternative Bid item Below)	Disassemble, inspect, recondition, and reassemble 760' of 3-1/2" Enclosing Tube and 2-7/16" Line Shaft, C1045 and bearings	760	L.F.	$	$
108	Bail well clean. Payment will be based on actual time required to remove fill.	8	Hrs	$	$

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 23 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 23 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
109	Clarify water in preparation for initial video log. Perform color video log of well and provide comments and recommendations to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).	1	L.S.	N/A	$
110	Wire brush well from ground surface to total depth of well (18" diameter from 0' to 1500' below ground surface) and bail well clean.	24	Hrs.	$	$
111	Mechanically develop (swab) perforated area of well from top of perforations to total depth of well (18" diameter from 650' to 1,500' below ground surface) and bail well clean.	36	Hrs	$	$
112 (See 112B Alternative Bid Item Below)	Refurbish and rebuild existing pumping unit (14RHHC, 10-Stage). Vendor shall anticipate that pumping unit rebuild will require new impellers, bearings, etc.	1	L.S.	N/A	$
113	Inspect and refurbish existing pump discharge head as necessary and install new shaft bushing, as required.	1	L.S.	N/A	$
114	Clarify water in preparation for post brushing and development video log. Perform color video log of well and provide video inspection comments to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).	1	L.S.	N/A	$
115	Install pumping unit bowl assembly, and all related work	1	L.S.	N/A	$

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 23 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 23 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
116	Pick up District's 800 hp electric motor from the District's electrical repair vendor, Sulzer, and install said 800hp electric motor including leveling (centering) of motor on pump shaft, reconnection of existing motor power feed and control conductors to existing motor control equipment for the lump sum of.	1	L.S.	N/A	$
117	Provide coordination (as necessary) with District Staff of installation of District furnished and installed Baker type tank for well water clarification. District to furnish temporary tank and piping as required.	1	L.S.	N/A	$
118	Provide start up and performance testing of all new and existing equipment, controls and instrumentation for the lump sum of.	1	L.S.	N/A	$
119	Disinfect well in accordance with Specification Section 11320, State of California Department of Health Service requirements and in accordance with AWWA procedures for the lump sum of	1	L.S.	N/A	$

TOTAL AMOUNT (Sum of Fee Items 101 through 107A, and 108 through 112A, and 113 through 119 (**Item 107B and 112B shall be provided as an alternative cost only**):

_____ Dollars $_____
(words) (figures)

Vendor hereby acknowledges that all bid prices include any amounts payable by District for taxes which may result from this proposal.

Vendor's Authorized Representative

Vendor (Company Name)	Signature
	Name (Print)
	Title (Print)

ADDATIVE BID ITEM 107B AND 112B

Item	Description	Qty	Unit	Unit Cost	Amount
107 B (See Bid Item 107 above)	Furnish and install 760' of new 3-1/2" Enclosing Tube (5' nominal length), 2-7/16" Line Shaft, C1045 and bearings	760	L.F.	$	$
112 B (See Bid Item 112 above)	Furnish new replacement bowl (14RHHC, 10-Stage) assembly with ductile iron double bolted construction (as required to meet pressure ratings required in Specification Section 11320). Bowl assembly shall be Flowserve, Goulds, or District approved equal.	1	L.S.	N/A	$

ADDATIVE FEE SCHEDULE: CHEMICAL WELL REHABILITATION

Item	Description	Qty	Unit	Unit Cost	Amount
201	Provide chemical well rehabilitation in accordance with Specification Section 11330	1	L.S.	N/A	$

ADDATIVE FEE SCHEDULE: PROJECT BONDS

Item	Description	Qty	Unit	Unit Cost	Amount
301	Project Payment Bond equal to 50% of Full Contract Amount.	1	L.S.	N/A	$
302	Project Maintenance Bond equal to 100% of Full Contract Amount for a period of 30 months.	1	L.S.	N/A	$

ADDATIVE FEE SCHEDULE: PROJECT BONDS

Item	Description	Qty	Unit	Unit Cost	Amount
401	12" Column, 0.375" Wall (20' nominal length)	38	L.F.	$	$
402	12" Column coupling	1	EA.	N/A	$
403	3-1/2" Enclosing Tube (5' nominal length)	5	L.F.	$	$
404	2-7/16" Line Shaft, C1045	38	L.F.	$	$
405	Line Shaft Bearings	1	EA.	N/A	$

EXHIBIT A

WELL 23 PUMPING UNIT REPAIR

SPECIAL REQUIREMENTS

1. The Work

The Work shall include all labor, materials, equipment, and methods required for inspection and repair or replacement of the District's existing Well 23 domestic water well in accordance with the Scope of Work-Fee Schedule.

Specific work to be performed includes removing, inspecting, rehabilitating, and refurbishing the existing well pump bowl assembly or furnishing a new bowl assembly (based upon existing equipment inspection), re-installing the existing or new equipment for Well 23.

Contractor shall complete all items included in the Scope of Work Fee Schedule. The Work will include all work listed in the Scope of Work-Fee Schedule and Alternate Work-Fee Schedule and as described herein.

District will notify Contractor of acceptance of total Project Amount with a Notice of Award and a Notice to Proceed letter.

A. The Contractor shall furnish all materials, labor, equipment, tools, transportation and services for the removal of the District's existing Well 23 pumping unit, inspection of said pumping unit, rehabilitating existing pumping unit assembly (or re-equipping with new pump bowl assembly) and reinstallation and/or installation of same.

Well 23 is located within a below grade vault with a removable access hatch on the north side of Brookside Avenue, approximately 1,250 feet east of the intersection of Brookside Avenue and Beaumont Avenue, in the City of Beaumont, California (39500 Brookside Ave. Beaumont, CA 92223). Plan view of the Site and Site Photographs are attached in Appendix "C".

B. The Work includes all work set for on the Scope of Work-Fee Schedule and generally as described in the following items:

Work To be Performed by Contractor

- Provide temporary facilities as necessary for removal of pumping facilities. In the event the Contractor proposes to land the pumping unit on the top of the below grade vault during the removal process, the Contractor shall provide a temporary support system (i.e. steel beams, etc.) which bridge the top of the vault lid to provide pumping unit support without loading said vault lid. Specifically, support shall at least reach from vault side wall (approximately 18'-6").
- Disassemble and remove Well 23 access hatches, gates, etc. as necessary to access well head facilities.
- Remove existing Well 23 pumping unit equipment including existing 800 horsepower electric motor, discharge head, approximately 760' of 12" Column, Tube and Line Shaft (including couplings, and bearings) for oil lubricated pumping

unit. Tag well to determine presence of fill.

- Inspect and provide comments and/or recommendations regarding serviceability of pump Column, Tube, and Line Shaft.
- Deliver the District's existing 800 hp electric motor from the Well 23 project site to Sulzer, the District's Electrical repair vendor at 620 S. Rancho Ave. Colton, Ca 92324.
- Haul Column, Tube, and Line Shaft and pump bowl assembly to Contractor yard for evaluation regarding condition and serviceability of the Column, Tube, and Line Shaft.
- Recondition (as required) approximately 760' of existing 12" pump column.
- Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to District of Bowl conditions and refurbishment options. In the event the District elects to install a new pumping unit, the existing disassembled pumping unit assembly shall be delivered to the District's Well 2 site for storage subsequent to disassembly and inspection.
- Disassemble and inspect existing approximately 760' of 2-7/16" line shaft and 3-1/2" enclosing tube removed from Well 23. Measure and record wear and damage. Provide report and recommendations to District of column, tube, and line shaft conditions and serviceability.
- Bail well clean.
- Clarify water in preparation for initial (pre cleaning) video log. Perform color video log of well and provide comments and recommendations to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).
- Wire brush well from ground surface to total depth of well 18" casing 0-1500' below ground surface, and bail well clean.
- If District elects to chemically and/or sonar jet, and mechanically rehabilitate the well, the Contractor shall chemically and/or sonar jet, and mechanically rehabilitate the well as set forth in the Technical Well Rehabilitation Specifications Section 11330. Fee shall be based upon actual work the District elects to perform and as set forth on alternative scope of work fee schedule bid items related to same.
- Alternatively, Contractor shall only mechanically rehabilitate the well as set forth in the scope of work and the specifications.
- Clarify water in preparation for final (post cleaning) video log. Perform color video log of well and provide comments to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).
- Furnish new replacement pumping unit as required and approved by the District in accordance with the Scope of Work Fee Schedule Additive Item 112B . Pumping unit assembly shall be furnished and installed to meet pumping unit requirements set forth in Specification Section 11320. New pumping unit bowl assembly (if required) shall be manufactured by Flowserve, Goulds, or approved equal.
- Refurbish existing pump discharge head as necessary, as required.
- Pick up the District's 800 hp electric motor from the District's electrical repair Contractor, Sulzer and deliver to the Well 23 project site.
- Install pumping unit including new or refurbished bowl assembly, and

appurtenances, existing or new 12" pump column, tube and line shaft, discharge head and level discharge head.

- Coordinate installation of Owner furnished and installed Baker Tank (for water clarification) and associated temporary piping at well site/Noble Creek Recharge Facility. Owner will furnish and install Baker Tank and discharge piping for well startup water clarification prior to discharge as needed.
- Start up and performance test of well pumping unit, including 800 hp electric motor and existing equipment, controls and instrumentation. Contractor shall operate pump as required.
- Disinfect well in accordance with Specification Section 11330, State of California Department of Health Service requirements and in accordance with AWWA procedures
- Reassemble Well 23 below grade vault access hatch, gates, etc. removed to access well head facilities.
- Clean up well site.

Work to be Performed by District's Staff

- District will perform bacteriological testing and assist Contractor with pumping unit startup and testing.
- Baker Tank installation and associated temporary piping for well startup and testing water clarification prior to discharge, as necessary.

C. Payment for rehabilitating and equipping of the well will be based on actual quantities furnished, installed, or constructed based upon final project negotiated prices in accordance with the prices set forth on the Scope of Work-Fee Schedule for various lump sum or unit price items. If information indicates that the completion of the work at any time is not warranted, the District reserves the right to terminate all further work. In such an event, the Contractor will be paid for the value of his work completed to that time on the basis of prices stated in the bid schedule.

D. All materials, supplies, equipment, and labor, except those services expressly stipulated to be furnished by the District, shall be supplied by the Contractor. The Contractor shall leave the premises in a neat and orderly condition.

E. The Contractor shall record and notify the District of the commencement and completion of each contract operation and work item.

2. Disposal of Disinfection and Testing Water

Disposal of chlorinated water and testing water will be to the existing well site blow off pond through the existing blowoff piping. It is anticipated that the water will percolate into the sandy soil. However, Contractor will note that any water which exits the District-owned site shall be in strict compliance with Riverside County Flood Control & Water Conservation District (RCFC&WCD), therefore, Contractor shall shut down any flushing or startup activities if discharge water begins to exit/leave said District-owned site.

3. Notice of Award and Authorization to Proceed

Owner will provide a Notice of Award and an Authorization to Proceed Letter to the Contractor. Upon receipt of the Authorization to Proceed letter, the Contractor shall execute the District contract and submit insurance certification. The Contractor will then be authorized to begin Contract Work submittal document submission, material ordering, and construction scheduling.

4. Working Hours

Contractor shall perform all work between 7:00 AM and 5:00 PM, Monday through Friday. Contractor shall not work on Owner holidays. Said holidays are as follows:

New Year's Day
Martin Luther King Jr. Day
Presidents Day
Memorial Day
Independence Day
Labor Day
Veterans Day - November 11
Thanksgiving Day
Day After Thanksgiving Day
Christmas Day

When a legal holiday falls on a Saturday, it is observed on the preceding Friday, when it falls on a Sunday, it is observed on the following Monday.

5. Permits, Certificates, Laws, and Ordinances

Contractor shall, at his own expense, procure all permits, certificates, and licenses required of him by the State of California, County of Riverside, County of Riverside, California Regional Water Quality Control Board, South Coast Air Quality Management District, or any other authority or agency having jurisdiction for the execution of the Work. Contractor shall comply with all federal, state, and local laws, ordinances, or rules and regulations relating to the performance of said Work.

6. Records

The Contractor shall keep records providing the following information for those items of work that are performed:

A. A complete daily log and record of all well rehabilitation, equipment removal, equipment replacement and/or refurbishing and all related work shall be furnished to the District.

B. As-Built Drawings/Submittals documenting final construction.

7. Project Completion Date

Project completion date shall be 45 days from the date of the Authorization to Proceed Letter issued by the District. The 45 day completion date will be adjusted to provide for material acquisition delays in the event the existing Goulds 14RHHC pumping unit is not refurbished and

a new ductile iron bowl pumping unit is required.

8. Liquidated Damages for Delay

Contractor shall pay to Owner, as fixed and agreed, liquidated damages for each calendar day's delay in the completion of all the work beyond the time agreed upon, the amount of $500.00.

9. Contract Information/Drawings

The following Appendices are made a part of these Contract Documents:

APPENDIX LIST
(Attached in the back of these Contract Documents)

Title	Appendix No.
Specification 11320-Deepwell Vertical Turbine Pumping Unit Technical Specifications	A
Specification Section 11330-Technical Well Rehabilitation Specifications Rehabilitation of Well 23	B
Well 23 Location Map, Site Plan, and Photos	C
Maintenance Bond	D
Existing Well 23 and Pumping Unit Information	E
Well 23 SCE Efficiency Test	F

10. Right to Change Work

District reserves the right to direct Contractor to cease work upon the well at any phase and to determine payment for work performed in accordance with the bid unit prices. District also reserves the right to either increase or decrease other related work in accordance with the aforementioned unit prices. Payment for all work shall be predicated upon work completed.

11. Payment Requests

Contractor shall submit all partial payment requests and final payment request to District. Payment requests shall be submitted by the 18th day of the month preceding the month in which payment will be made. On approval by the District, partial payments will be made by the first day of the month following the month in which request for payment is made.

All payment requests shall show all Scope of Work-Fee Items and sub items for the Contract Work. In addition, said requests shall show the percentage of completion of each Fee Item and sub item and the amount thereof, said amounts being totaled to arrive at the value of the completed Work. The net partial payment amount shall equal 95% of said total.

12. Site Maintenance

A. The Contractor shall at all times maintain the well site and discharge site in a neat and orderly fashion, free from trash and construction waste materials. All cleared and waste material shall become the property of the Contractor and shall be disposed of by him outside the limits of the work in accordance with applicable ordinances and regulations of governmental agencies having jurisdictions.

B. Unattended construction materials and equipment shall be left in a manner such that they do not constitute fire hazards, exposed to vandalism, or become a nuisance or danger due to forces of nature such as rain or wind.

C. Existing improvements as designated by the District, whether on the construction site or on other property, shall be protected in place and shall be provided with adequate access.

D. While construction is being conducted, the Contractor shall provide safety in the area of construction.

E. Contractor shall remove any sediment deposited to city streets or storm drains on a daily basis.

13. Data to be Submitted by Contractor

Contractor shall furnish District the following data and said data must be accepted by District prior to performing any Contract Work appurtenant to specific submittal items. Data (two copies) shall be submitted directly to the District for review and acceptance or rejection. Contractor shall submit five copies of accepted data the District for distribution of same.

A. Material and Equipment Lists with Catalogs

Pump shaft, tube, bearing, and coupling manufacturer's data sheets

B. Fabrication and Component Drawings with Diagrams

Pumping unit bowl assembly and appurtenances (only if Fee Item 112 is required)

C. Construction Schedule

Construction Schedule

14. Contractor Cooperation and Coordination

Contractor shall cooperate with District and all jurisdictional agencies. Contractor shall establish a work schedule sufficiently in advance of work to permit coordination of work with District and other agencies. Owner will have representatives on site to observe and verify compliance with Contract Documents. Contractor shall not operate any existing facilities, including opening or closing of pipeline valves.

15. Construction Water and Power

Owner will provide a reasonable quantity of construction water free of charge from Owner's existing potable water system. Contractor shall apply for an Owner supplied meter. Contractor shall furnish and install Owner approved backflow device and all necessary piping and appurtenances, including pumps and water trucks, necessary to convey water from Owner's meter to work location.

Contractor shall provide required power to perform all phases of work.

16. Specified Model Numbers

All model numbers used herein are provided for information only, to assist Contractor in selecting equipment that conforms to Specifications. In case of any conflict between model numbers given herein and the descriptive specifications or performance specified, the descriptive specifications and performance specified shall govern.

17. Well Protection

The Contractor shall protect open wells by installing a steel locking cover which shall be maintained in place at all times unless work within the well is actively in progress.

18. Well Disinfection

Unless otherwise stated, the Contractor shall use the following procedure to disinfect well and that the Contractor shall perform and assist District's Staff with disinfection and pump startup as described hereafter and as necessary to achieve well disinfection:

A. Immediately prior to installation of permanent pumping equipment, Contractor shall disinfect pumping unit components with chlorine.

B. Upon completion of well pumping unit installation, the Contractor shall disinfect the well and installed pumping unit with chlorine solution.

1) Contractor shall dose the well by adding liquid chlorine solution to well to obtain required concentration of at least 100 parts per million.

2) Immediately after dosing the well, District and Contractor shall pump water to ground surface until chlorine is detected and shall then allow the water to return into the well. Contractor shall repeat said procedure twice at one hour intervals.

3) The well will then be allowed to stand without pumping or agitation for 24 hours.

4) The District and the Contractor shall then pump the well to waste until chlorine is no longer evident, and shall continue to pump the well to waste for 15 minutes thereafter.

5) The District and the Contractor shall then allow the well to stand without pumping or agitation for 24 hours prior to sampling.

6) The District will then secure two samples of water from the well in approved containers and have said samples analyzed by a State certified analytical laboratory for total coliform (presence/absence), fecal coliform (presence/absence), and heterotrophic plate count. The District will secure the first sample within five minutes of starting the pump at the specified pumping rate, and the second sample thirty minutes thereafter.

7) The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of fecal coliform bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml).

8) If the sample analysis results do not indicate that the well was properly disinfected, the District and the Contractor shall repeat the entire disinfection procedure, including sampling, sample analysis, and reporting of sample analysis results.

C. After 24 hours, the Contractor will assist the District, as necessary, to secure two samples of water from the well in approved sealed containers. District will have said samples analyzed by a State certified analytical laboratory for chlorine residual, total coliform (presence/absence), *e. coli* (presence/absence), and heterotrophic plate count. The District will secure the first sample within five minutes of starting the pump at the specified pumping rate, and the second sample thirty minutes thereafter.

D. The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of *e. coli* bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml)

APPENDIX A

Specification Section 11320
Deepwell Vertical Turbine Pumping Unit
Technical Specifications

APPENDIX A

SECTION 11320

DEEPWELL VERTICAL TURBINE PUMPING UNIT
TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 Specific Project Description

Contractor shall remove and refurbish the existing Well 23 pumping unit in accordance with Fee Schedule Item 111A or in the event the existing pump bowls are identified to be irreparable, provide a new bowl assemble in accordance with Fee Schedule Item 111B and Item 1.02, hereafter. Specific pumping unit related work to be performed as part of this project is identified in the Fee Schedule-Scope of Work and Generally as follows:

- Remove and store pump column and shaft onsite. Tag well to determine presence/amount of fill. Inspect and provide comments and/or recommendations regarding conditions and serviceability of pump column, tube and shaft
- Haul Column, Tube and Shaft to Contractor's shop for inspection, refurbishment, and cleaning.
- Haul bowl assembly to Contractor's shop for evaluation. Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to District.
- Refurbish existing Goulds 14RHHC bowl assembly, including replace wear rings on existing pump bowls (10 total), Reassemble pump bowl assembly and return to site, or alternatively replace bowls as described hereafter.
- Refurbish existing 3.5", Schedule 80 tube and 2-7/16" C-1045 steel line shaft to replace existing 3.5" Schedule 80 tube and 2-3/16" C-1045 steel line shaft.
- Install pumping unit, including refurbished or new pumps bowls, existing 10' suction pipe and strainer, column, tube and shaft, discharge head, and appurtenances including leveling pumping unit and all related work
- Pick up existing 800 hp electric motor from District Electrical Repair Vendor Sulzer and install 800 hp electric motor including leveling (centering) of motor on pump shaft, connection of water cooled motor bearing lines to motor fittings, reconnection of existing motor power feed and control conductors to existing motor control equipment
- Provide start up and performance testing of all new and existing equipment, controls and instrumentation
- Disinfect well in accordance with Specification Section 11320, State of California Department of Health Service requirements and in accordance with AWWA procedures

Alternatively, upon removal and inspection of the existing pumping unit bowl assembly and determination that the existing pumping unit is not capable of being rebuilt, and at the discretion of the District: Contractor shall provide one (1) new deepwell vertical turbine pumping unit (bowl assembly) to meet the specific project pumping unit requirements described in Section 1.03, below.

1.02 Specific Project Pumping Unit Requirements

A. General

If the existing pumping unit bowl assemblies are found irreparable, the Contractor shall provide a complete new deep well pump bowl assembly (bowls, bearings, impellers, etc) consisting of a ductile iron double bolted bowl assembly to meet pumping unit performance requirements described herein.

The existing pumping unit consists of an oil lubricated line shaft pump. All new pumping unit components shall meet the performance requirements of this specification section, as listed below.

Bidders shall submit fabrication drawings for the new bowl assembly and certified pump performance curves per Section 1.03 herein.

B. Well No. 23 Pump (Required if Fee Schedule Item 111B – New Bowl Option is Selected)

1. Performance (Pump preliminary performance criteria set forth is based on existing Goulds 14RHHC - 10 stages)

Discharge Capacity (GPM)	Bowl Head (Feet)	Minimum Bowl Efficiency	Maximum Net Positive Suction Head Required (Feet)
Shutoff Head	1100 (min)	NA	NA
1,500	950±30	68 %	15
2,000	910±20	78 %	20
2,500	840±10	83 %	25
2,800*	760±5	83 %	30
3,500	550±15	75 %	43

* Design condition

2. Pumping unit shall be of the enclosed line shaft (oil lubricated), enclosed impeller deepwell vertical turbine unit design.

3. Maximum Horsepower - Speed – Maximum Thrust Factor: 800 hp - 1770 rpm - 16 lb/ft.

At no point on the pump curve shall the existing driving equipment be overloaded.

4. Bowl Assembly Diameter: 16" maximum (14” or 15” diameter preferred), (double bolted ductile iron bowl and discharge case assembly)

5. Column Piping: Wire brush, clean and reuse 760' of existing 12" diameter column piping.

6. Furnish and install 760'± of new 2-3/16" enclosed line shafting (oil lubricated)

within 3-1/2" schedule 80 tube. Contractor to verify dimensions. Provide all couplings, bearings, keys, bolts and nuts.

7. Discharge Head: Reuse existing discharge head. Contractor shall refurbish existing discharge head. Contractor shall re-plumb and reinstall pump line shaft and oil line to the discharge head.

   Existing discharge head:
   Fabricated steel

8. Pump manufacturer shall select pump and verify performance. Selected pump shall be approved by District.

9. Existing pump: Goulds 14RHHC - 10 stages (See Appendix E for specific information)

E. Existing Motor - Furnished by the District, installed by the Contractor

1. Horsepower: 800 Hp

   Brake Horsepower (Field) shall not exceed nameplate rating within entire operating range.

2. Power: 3 phase, 60 hertz, 460 volts.

3. Speed: 1800 RPM (no load).

4. Starting Characteristics: Solid State Motor Controller.

1.03 Pumping Unit Data to be Submitted by Bidder (Required if Fee Schedule Item 112 – New Bowl Option is Selected)

Unless specified otherwise in Section 1.02 herein, bidder shall submit a certified pumping unit component drawing for each different pumping unit to be furnished and it shall show dimensions of pumping unit and its components including bowl assembly, column assembly, tube and shaft assembly, discharge head assembly, motor, and related appurtenances.

Bidders shall submit a certified pump performance curve together with design calculations for each different pump to be furnished. Each curve shall show head versus capacity, pump bowl efficiency versus capacity, brake horsepower versus capacity, overall (wire to water) efficiency versus capacity, all for full operating range specified.

Each certified pump curve shall be continuous from zero capacity to maximum pumping unit capacity on the abscissa. It shall be furnished full size on 8-1/2 inches (ordinate) x 11 inches (abscissa) paper. Bidder shall indicate certified values on each curve for the following characteristics at all specified design points since consideration will be given thereto in selecting units to be furnished.

A. Discharge capacity in gallon per minute.

B. Total discharge head in feet (bowl head).

C. Pump bowl efficiency.

D. Brake horsepower (including losses in pump, shaft, column, and head).

E. Wire to water efficiency (including losses in motor, pump, shaft, column, and head).

F. Down thrust and momentary up thrust.

G. Net positive suction head (close coupled booster application only).

Bidder shall submit a guaranteed motor performance curve together with other performance data for each different motor to be furnished. Each curve shall denote horsepower, service factor, efficiency, locked rotor current, and temperature rise and each curve shall show efficiency, power factor, speed, kilowatt input, current, and line voltage under operating range between full load and half load.

1.04 Contractor Submittals <u>(Provide Submittals Only for New Equipment)</u>

Complete submittals (shop drawings) showing performances, fabrication, assembly, and installation, together with detailed specifications and data covering performance and materials of construction, power drive assembly, parts, devices, wiring diagrams, and other accessories forming a part of the pumping units shall be submitted per Section 01300 Contractor Submittals. Submittals shall include, but shall not be limited to, the following:

A. Submit the following minimum information for each pumping unit specified herein for the District's review and approval:

1. Items as specified in Section 1.03

2. Type and model number with reference to pumping unit’s suitability for service for pumps specific intended use.

3. Assembly drawing, nomenclature and material list.

4. Type, manufacturer, model numbers, location and spacing of bearings.

5. Impeller diameter, eye area, sphere size, and identification number.

6. Maximum rotative speed.

7. Complete performance curves indicating total dynamic head, flow rate, brake horsepower, shutoff head, net positive suction head required, RPM, and efficiency.

   The manufacturer shall indicate by arrows to points on the H/Q curves the limits recommended for stable operation, between which pumps are to be operated to prevent surging, cavitation, and vibration. The stable operating range shall be as large as possible and shall be based on actual hydraulic and mechanical characteristics of the units.

   Provide certified performance curves prior to shipment.

8. Motor data, including the manufacturer, size, type designation, minimum guaranteed efficiency and power factor at full load, 3/4 load, and 1/2 load, locked motor current in amps, full load current in amps, the motor speed in rpm, mounting details, and other data as required in the Contract Documents.

9. Outline dimensions and weights of pumping unit components and as assembled.

10. Materials of pump construction including bowls, bowl lining, shafts bearings, impellers and castings. Written certification of pumping unit's capability to withstand specified pressures.

11. Protective coating of pumping unit.

12. Installation instructions.

13. Operation and maintenance manuals.

1.06 Quality

A. All pumping equipment furnished under this Section shall be of a design and manufacture that has been used in similar applications. Manufacturer shall demonstrate to the satisfaction of the District that pumps of similar construction are in service and functioning properly. Manufacturers as specified herein manufacture pumping units with acceptable quality or experience. Manufacturers must, however, meet the performance requirements stated herein for the actual pumps specified. Listing of said manufacturers does not imply that said performance requirements can be met for each pumping unit specified. Contractor shall be responsible to verify that manufacturers supplying equipment meet the size and capacity requirement specified herein.

B. Pump manufacturer shall verify applicability of pumping equipment with respect to NPSHA, suction piping, can and discharge geometry to assure prevention of cavitation, vibration, surging, overheating, corrosion, and vortexing.

C. Pumping unit Supplier shall be an authorized distributor approved by District. Said distributor shall have adequate service facilities within a 60 mile radius of District's office and shall have a service organization, machine shop facilities, and parts inventory such that servicing or replacement of pumping units can be provided with minimum delay.

PART 2 - PRODUCTS

2.01 General

Deepwell vertical turbine pumps shall be enclosed line shaft (oil lubricated) or open line shaft (water lubricated) type, whichever is specified, with aboveground flanged discharge and enclosed impellers.

All parts of the pump exposed to water shall be of stainless steel, brass, heavy cast iron, or equivalent corrosion resistant material.

Unless otherwise specified herein, all applicable provisions of AWWA E 101 (Part A), latest, are hereby made a part of these Specifications.

Pumps shall be manufactured by Flowserve, Floway, Goulds, Peerless, or approved equal.

2.02 Pump and Components

A. Pump Bowls

Bowls shall be of ductile iron double bolted or close-grained, gray cast iron, Class 30, precision cast, free from blow holes, sand pockets, and other detrimental defects as required by pump working and shutoff pressures specified under Item 1.02. Water passageways in said bowls shall be smooth so as to allow freedom from cavitation and permit maximum efficiency. Each bowl shall have end or side seal (or both) to prevent slippage of water between bowl and impeller.

Bowls shall be lined with vitreous porcelain enamel, or equal, to produce long effective life (said lining shall not be applied for the purpose of short time gain in efficiency). Lining, identical to that furnished hereunder, shall have been used in the field under similar conditions with satisfactory results for at least a five-year period.

Bowls shall be of such size to fit the well casing with proper clearance (net clearance of 2 inches or more). Bowls shall be capable of withstanding 1-1/2 times the pump shut-off head pressure (zero discharge) or twice the rated capacity pressure, whichever is greater. Bowl materials shall have a minimum tensile strength of 30,000 psi.

B. Pump Impellers

Impellers shall be of the enclosed type, constructed of SAE 40 bronze. They shall be balanced hydraulically and dynamically to prevent vibration and shall be smoothly finished on all surfaces for minimum friction. Impellers shall be accurately fitted and securely locked to the pump shaft. Vertical adjustment of impellers shall be possible by adjusting top shaft nut. Impellers in multi-stage pumps shall all have the same diameter and trim.

C. Pump Shaft

Pump shaft shall be constructed of AISI-410 or 416 stainless steel and shall be accurately machined to provide smooth operation. It shall easily withstand torsional loads and other stresses encountered within the pump. Pump shaft shall have adequate bearing support at every bowl section and at top bottom and case section and shall be equipped with a suitable steel coupling for connection to the line shaft.

D. Pump Bearings

Pump bearings shall be sleeve type constructed of SAE 40, 64, 67, or 660 bronze, or approved equal. Bearing area, bearing cooling, and bearing lubrication shall be ample for long, trouble-free operation.

E. Discharge Case

Discharge case shall securely fasten the pump bowl assembly to the column piping. It shall be heavily reinforced with streamlined fluid passages, and it shall contain sleeve bearings for the pump shaft. Discharge case shall be provided with a means of reducing to a minimum the leakage of water into the shaft enclosing tube. It shall have bypass ports of sufficient area to permit the escape of water that leaks through the seal bushing.

F. Suction Case

Suction case shall securely fasten the suction piping to the bowl assembly. It shall be heavily reinforced with streamlined fluid passages, and it shall contain a sleeve bearing for the pump shaft which is effectively plugged at the bottom to form a grease container. A sand collar shall prevent sand from entering the suction case bearing.

G. Suction Pipe and Strainer

Unless specified otherwise, the suction pipe shall be 10 feet in length and comprised of the same material and diameter as the column piping. A cone type strainer shall be provided for attachment to the suction pipe. The strainer shall be galvanized steel, bronze, or equivalent and shall have a net inlet area of a least four times the suction pipe area. The maximum strainer opening shall not be more than 75% of the minimum opening of the water passage through the bowl or impeller.

H. Column Piping

Column piping shall be threaded pipe conforming to the following diameters and weights per foot, unless specified otherwise.

Nominal Size (Inches)	Outside Diameter (Inches)	Weight Per Foot (Pounds)
6	6.625	18.97
8	8.625	24.70
10	10.750	34.24
12	12.750	43.77
14	14.000	54.57
16	16.000	62.58

Pipe shall be furnished in interchangeable sections of 20-foot nominal length for enclosed line shaft and 10-foot length for open line shaft, with the exception of the top column section which shall be of 5-foot nominal length and the bottom column section which may be of shorter length. Column pipe sections shall be connected with threaded steel sleeve type couplings. Ends of each pipe section shall be faced normal to section axis and machined with threads to permit ends to butt to ensure proper alignment when assembled. Coating of the column piping, either interior or exterior, is not required.

I. Line Shaft

Line shaft shall be comprised of AISI C-1045 material or approved equal. Line shaft sections excluding top and bottom sections shall match column sections (10-foot or 20-foot nominal length). Top and bottom shaft sections shall match top and bottom column sections. Unless specified otherwise, top shaft shall be two (2) piece with coupling within discharge head.

Shaft enclosing tubing shall be Schedule 80 extra heavy steel pipe, maximum 5-foot lengths. Enclosed line shafting shall be supported by bronze bearings which shall also join tube sections. Open line shafting shall be supported by rubber bearings with bronze retainers which shall also join column sections.

When enclosed line shaft is specified, molded rubber stabilizing spiders that will deform to permit proper alignment of the shafting and tubing assembly within the column shall be furnished and spaced every 40 feet maximum throughout the column length.

2.03 Discharge Head (Not Required)

Discharge head shall be constructed of high grade cast iron or fabricated steel as shown on the Drawings as specified in Section 1.02 and shall be capable of withstanding all loads imposed during normal operation. Discharge head shall be furnished with a tube tension and seal assembly, as approved by District, for enclosed line shaft and a stuffing box assembly for open line shaft.

Discharge head shall be suitably enclosed to prevent the entrance of dust and foreign material. Access to the tube tension and seal or stuffing box assembly shall be ample. Drain plugs shall be provided at the bottom. Unless specified otherwise, discharge head shall accommodate two (2) piece top shaft with coupling.

Discharge head shall have a standard flanged outlet of the size specified except where otherwise permitted. If the discharge flange is not the size specified, an adapter consisting of a smooth eccentric increaser (with bottoms level) or reducer (with tops level) shall be provided. Said adapter shall be flanged to mate the discharge head at one end and as specified at the other.

Discharge head assembly shall be capable of withstanding 1-1/2 times the pump shut-off head pressure (zero discharge) or twice the rated capacity pressure, whichever is greater.

Motor base, column flange face, and discharge flange face shall be accurately machined, faced, and drilled to NEMA and ASA Standards. Upon assembly, motor and discharge head shall form an integral unit.

2.04 Lubrication System (Not Required)

Oil lubrication system shall be automatic gravity feed and it shall consist of an oil reservoir, solenoid control valve, sight feed valve, and appurtenant supports and oil lines. It shall be furnished with sight glass or other plainly visible oil indicator device.

Unless specified otherwise, oil reservoir shall have a capacity of two gallons and it shall be Peerless or approved equal. It shall be mounted on the pump discharge head unless specified otherwise.

Oiler solenoid control valve shall open or close upon command of control system and it shall be ASCO 826111, or approved equal. It shall automatically start or stop the flow of lubricating oil to the bearings. It shall also permit manual operation upon control system failure. It shall be rated 120 psi minimum, 120 volt, 60 hertz, unless specified otherwise.

Oil piping shall be sized according to the viscosity of the oil recommended by the pump manufacturer and ambient temperature at the pumping unit. Said piping shall permit conveyance of full oil supply required by pumping unit.

Water lubrication system shall be automatic unless specified otherwise. It shall consist of piping or tubing from a source of water pressurized when pump is off, solenoid control valve, and appurtenant piping supports. System shall comply with pump manufacturer's recommendations for flow.

Water solenoid control valve shall open or close upon command of control system. It shall automatically start or stop the flow of water to the shaft bearings. It shall also permit manual operation upon control system failure.

2.05 Nameplate (Required)

Nameplate, easy to read and corrosion resistant, shall be provided with each pump and shall contain complete pump information including manufacturer, serial number, model number, capacity in gallons per minute, total dynamic head in feet, and pump speed, all at specified design point. Said nameplate shall be mounted on pump head.

2.06 Vertical Hollow Shaft Electric Motor (Not Required)

A. General

Vertical hollow shaft electric motors shall be Design B, high thrust, squirrel cage, induction type having NEMA weather protected Type I enclosures unless specified otherwise. Motors shall be built to form an integral part of pump head assembly and shall be suitable electrically and mechanically to efficiently and effectively drive pumps specified. Motors shall operate in accordance with these Specifications.

Motors shall be manufactured by General Electric Corporation, U.S. Electrical Motors Division Emerson Electric Co., or Westinghouse Electric Corporation, or approved equal. Unless specified otherwise all materials, workmanship, and tests shall conform with the applicable specifications of the National Electrical Manufacturers Association (NEMA), Institute of Electrical and Electronic Engineers (IEEE), and American Standards Association (ASA), and the Anti-Friction Bearing Manufacturers Association (AFBMA).

B. Power

Unless specified otherwise, motors shall be nameplate rated, 3 phase, 60 hertz, 460 volts.

C. Speed

Unless specified otherwise, motors shall be 4 pole and shall have no load speed of 1800 rpm.

D. Starting Characteristics

Motors rated 200 hp and smaller shall be full voltage line start and motors rated 250 hp and larger shall be part winding increment start, unless specified otherwise.

E. Efficiency

All motors shall be rated premium efficiency, unless specified otherwise. Rated efficiencies shall be based on NEMA Standard MG1-12.536. Guaranteed efficiencies shall be determined in accordance with IEEE #12, Test Method B and E, latest revision.

F. Service Factor

Rated service factor shall be 1.15 or greater.

G. Insulation System

All motors shall be provided with Class "F" or better insulation systems except that motor lead insulation may be Class "B" or better. Impregnating materials shall be rated Class "F" (155 degrees C) minimum. Completed windings, when tested in accordance with IEEE #57, latest revision, shall show a thermal rating of not less than 150 degrees C for 30,000 hour's life.

Windings shall be held firmly in stator slots to prevent coil shift. Sharp edges and burrs shall be removed from stator slots prior to winding or inserting coils. Slot liners and coil end phase insulation, in addition to the coating, shall be provided. Stator windings shall be of high conductivity copper magnet wire.

Completed stator windings shall be provided with a properly cured, uniform impregnation for mechanical rigidity, moisture resistance, and protection against winding failures from accumulation of foreign conductive matter. The completed insulation system shall be capable of withstanding phase-to-ground rms voltage of 600 volts continuous and 2,300 volts instantaneous (surge or transient).

H. Temperature Rise

Rated temperature rise above 40 degrees C ambient temperature measured by resistance at service factor load of 1.15 shall not exceed 90 degrees C.

I. Inrush Current

Motors rated between 10 hp and 50 hp shall be rated NEMA locked rotor Code H or better and motors rated 50 hp and larger shall be rated NEMA locked rotor Code G or better except where NEMA locked rotor Code H is specifically permitted.

J. Load Conditions

Actual motor loads shall not exceed the nameplate rating (horsepower) unless specified otherwise.

K. Motor Balance

Motors shall be dynamically balanced to a maximum of .001 inches peak to peak amplitude, especially at upper bearing housing.

L. Bearings

Motors shall be equipped with anti-friction type thrust and guide bearings. Angular contact ball thrust bearings shall be used in preference to spherical roller thrust bearings wherever possible. Angular contact ball thrust bearing shall be self cooled wherever possible. Water cooled angular contact ball thrust bearings shall be used only when approved by District. Spherical roller thrust bearings shall be water cooled.

Bearings shall be of sufficient capacity to carry all static and dynamic up and down thrust loads, both momentary and continuous, imposed by the pump. Bearings shall provide minimum 3 year B10 life (26,300 hours) based on continuous design thrust load or minimum 1 year B10 life (8770 hours) based on maximum pump shutoff thrust load, whichever is greater. Bearings shall also provide for minimum momentary upthrust equal to 30% of rated downthrust.

M. Bushings

Motors shall be equipped with lower end head shaft steady bushings unless specified otherwise.

N. Lubrication System

Motor thrust bearings shall be oil lubricated; however, motor guide bearings may be grease lubricated. Oil lubrication systems shall provide optimum lubrication of bearings. Said systems shall have sufficient oil storage and oil cooling capacity to limit oil bath temperature rise to 45 degrees C above 40 degrees C ambient temperature unless temperature rise of 50 degrees C is specifically permitted. Oil lubricated motors shall have visual level indicators and accessible fill and drain plugs. Indicators and plugs shall be located 180 degrees from pump discharge unless specified otherwise. Grease lubrication systems shall be regreasable and shall provide for automatic flushing or purging of grease cavity during regreasing.

O. Thermal Protection

Motors shall be equipped with 120 volt thermal sensors, one for each phase, affixed to or embedded in motor windings, set to open control circuit at 135 degrees C. All thermal sensor leads shall terminate in motor terminal box. Control modules and reset switches shall be furnished with the thermal sensors. The thermal sensors shall be Texas Instruments 4BA or 7BA or approved equal. The control modules shall be Texas Instruments 50AA or approved equal.

P. Space Heaters

Motors shall be equipped with 120 volt single phase belt type space heaters capable of raising motor temperature 10 degrees C above ambient temperature to prevent condensation. All space heater leads shall terminate in motor terminal box.

Q. Non-Reverse Protection

Motors shall be equipped with non-reverse mechanisms which shall limit maximum reversal to within 10 degrees of rotation.

R. Terminal Box

Motors shall be equipped with extra large heavy duty split type conduit boxes. Unless specified otherwise, motor terminal boxes shall be located 90 degrees from pump discharge.

S. Screens

Motors shall be equipped with suitable corrosion resistant safety and rodent screens. Said screens shall not interfere with motor cooling or motor heat dissipation.

T. Nameplates

Nameplates, easy to read and corrosion resistant, shall be provided with each motor and said nameplates shall include the following information:

1. Motor Data Nameplate - Manufacturer, serial number, model number, rated horsepower, service factor, frequency, phase, load voltage, full load current, full load speed, design designation, locked rotor-code, insulation class, temperature rise, ambient temperature, thermal sensor setting, NEMA nominal efficiency, guaranteed minimum efficiency, and full load power factor.

2. Connection Data Nameplate - Motor start, motor run characteristics, and motor connection diagram.

3. Bearing Data Nameplate - Manufacturers, bearing types (thrust and guide), bearing numbers, thrust capacity, oil type, minimum operating oil viscosity, maximum operating oil bath temperature, required cooling water flow, and maximum cooling water pressure.

PART 3 - EXECUTION

3.01. Pumping Unit Factory Performance Test (Not Required)

Each completed pumping unit (pump bowl assembly and vertical hollow shaft motor to be furnished) shall be given a certified factory performance test by pump manufacturer prior to shipment from factory. Pumping unit shall be tested at all design points for verification of certified performance curve furnished by Bidder and approved by District.

Tests shall be performed using suitable equipment for measuring bowl capacity, bowl head, power (input, brake, and water), and speed, all as approved by District. Equipment shall include a power meter for measuring input power (wire), a dynamometer for determination of pump brake horsepower, and a water meter for measuring output power (water). Contractor shall submit three copies of each certified factory performance test for acceptance by District. District reserves the right to have a representative present during any tests and to witness same.

3.02. Pumping Unit Installation (Required)

Contractor shall bear full responsibility for the satisfactory installation and initial operation of all pumping units furnished under these Specifications and shall provide sufficient personal supervision over all installation and startup procedures accordingly, unless otherwise specified. Contractor shall also provide all test equipment necessary to determine initial operating performance.

During installation, Contractor shall disinfect all portions of the pump bowl assembly and column piping with a chlorine solution and method acceptable to District.

3.03. Pumping Unit Field Performance Test (Acceptance Test)

After equipment has been completely installed, field tests shall be performed by the Contractor which shall be witnessed by District. Each pumping unit furnished hereunder shall be operated for a period of two weeks during which time acceptance tests may be conducted. Head capacity, overall efficiency, and input and output horsepower shall be determined for at least three different operating conditions in the operating range of the pumping unit, including the specified design point, for comparison with the certified pump curves and the factory performance test results, both as approved by District.

Pumping units (pump and motor) shall perform in the field substantially in accordance with the certified pump curves and the factory performance test results as adjusted for field conditions. If, in the opinion of District, the equipment furnished does not perform in accordance with these Specifications, Contractor shall promptly make all necessary repairs or corrections so that the equipment fully complies with these Specifications. Contractor shall remove, restore, and replace the equipment if required. Factory and field performance tests shall be rerun if necessary. Pump manufacturer's field service engineer shall assist District in the proper conduct of the above field acceptance tests.

3.04. Pumping Unit Vibration

Completed pumping unit (pump and motor) shall receive a final field trim balance, as may be required, and vibration of unit shall not exceed 0.0025 inches, peak to peak amplitude when operating. Contractor shall field measure vibration with a suitable calibrated instrument and all measurements shall be witnessed by District. Vibration shall be measured at motor thrust bearing housing and at any other locations on pumping unit as directed by District.

END OF SECTION

APPENDIX B

Specification Section 11330
Technical Well Rehabilitation Specification
Rehabilitation of Well 23

APPENDIX B

SECTION 11330

TECHNICAL WELL REHABILITATION SPECIFICATIONS
REHABILITATION OF WELL 23

INCLUDES ADDATIVE BID ITEM FOR CHEMICAL WELL REHABILITATION

PART 1 - GENERAL

1.01 General

If selected as an Addative Bid Item, the Contractor shall furnish all labor, equipment, materials, and services to rehabilitate wells as specified in the bidding sheets (or Scope of Work, as applicable) including removal of pumping unit, inspection of pumping unit, removal of oil from the surface of the water, wire brushing, cleaning debris from the bottom of the well, chemical treatment, disinfection, and installation of pumping unit. All work will be performed during normal working hours as set forth in the Special Requirements.

PART 2 - REHABILITATION OF WATER WELL

2.01 Removal of Pumping Unit

Contractor shall furnish all labor, equipment, materials, and services to remove and reinstall the motor, pump discharge head, column pipe, tube, shaft, and pump for the Well. All connecting appurtenances and equipment removed from the Well shall be properly lubricated and sealed from dirt, dust, water, condensation, and any other form of contamination.

Contractor shall inspect and make recommendations for repair of pumping unit bowl assembly, column for cracking/defects and tubing for defects/oil leakage.

2.02 Removal of Oil from Well (if pumping unit is an oil lubricated pump)

(a) Contractor shall furnish all labor, equipment, materials and services to remove the line shaft turbine pump oil from the water table surface following the completion of the pump removal. The oil shall be gently bailed from each well and placed in suitable leak proof containers.

(b) Contractor shall properly dispose of oil removed from each well. Disposal shall be in accordance with all federal, state and local regulations.

2.03 Video Logging of Wells

The successful bidder will provide two (2) color video logs for the well; one before and one after rehabilitation. The Contractor shall provide equipment that is capable of producing a clear video image of the well casing both submerged and out of the water. The camera must be capable of providing a clear video image of the Well and must be capable of displaying a right angle, side-scan view of the Well casing at the direction of the District. The equipment shall indicate digitally on screen the depth of the camera within one (1) foot of its actual location at one-foot intervals. The District must be present during the video scan. The successful bidder will provide a written field log of the observations from each video scan. Two (2) DVD Copies of each inspection scan shall be provided to the District upon completion of each video-logging run. The successful bidder will schedule the video loggings with the District at least two (2) Working Days in advance. Prior to performing videologs, water shall be added to the well in sufficient quantity and for sufficient duration to clarify the water in the well.

2.04 Bailing Well Clean

Contractor shall remove the debris from the bottom of the Well using a bottom bailer or a District-approved bailing method to depths specified for the Well.

2.05 Wire Brushing of Well

The well shall be cleaned using a **rotary brush method**. The brush shall be a minimum of five (5) feet in length and have 100% contact for the length of the brush with the well casing. The brush shall turn no less than ten (10) revolutions per minute. The rate of brushing shall be no more than forty (40) feet per hour. The bristle material shall be manufactured of stainless steel, low carbon steel, or nylon. Nylon bristles shall be used for wire-wrap screens. As the well casing is cleaned, the scale and encrustation being removed will be allowed to settle to the bottom of the Well. Actual method and tool must be submitted to the District for approval prior to the start of work. The successful bidder is responsible for safely controlling all fluid and debris around and exiting the site.

2.06 Chemical Treatment of Well (Addative Bid Item)

A. At the Districts discretion subsequent to performance of the first video log (pre rehabilitiation) the District will determine if it will exercise the chemical treatment of the well addative bid item. Contractor shall furnish all labor, equipment, materials, and services to chemically treat the well. Care shall be taken to follow all Federal, State, and local regulations pertaining to the handling and disposal of the waste chemicals.

B. Prior to commencing the Work, Contractor shall supply to the District a copy of the manufacturer's Safety Data Sheets (SDS) for all well treatment and neutralizing chemicals for the District's approval and a shop drawing of the snug

fitting double surge block assembly. A Certificate of Analysis (COA) from the manufacturer/supplier must be provided for the acid used. In addition, the Contractor shall provide their proposed program to apply the chemicals, method of neutralizing the acid, method of disposal, Emergency Response Plan, and list of staff qualified to handle the above chemicals. Said list shall include training and certifications received by each individual pertinent to their duties.

All individuals involved in handling well treatment chemicals shall possess all certifications, authorizations and licenses required by local, state and federal authorities to perform the work.

C. Contractor shall chemically treat the well utilizing the method specified below.

1. The well shall be pretreated to disrupt the fouling mechanisms existing within the well column. Pretreatment shall consist of wire brushing of the entire wetted portion of the well as specified herein, followed by bailing the well clean.

2. A treatment solution consisting of the following chemicals shall be mixed above-ground and injected into the existing perforated sections of the casing starting from the bottom of the lower perforated casing to the top of the perforated casing using a double packer tremie method:

    a. Hydrochloric acid (approximately 30% activity): 9% of Total Well Volume
    b. Biodispersant (Johnson Screens NW-310 or equivalent): 3% of Total Well Volume
    c. Nonionic surfactant (Johnson Screens NW-400 or equivalent): 0.1% of Total Well Volume

2. Total Well Volume shall mean 1.5 X the volume of standing water within the well casing.

3. Immediately following the injection of the treatment solution, the Contractor shall swab the perforated sections of the casing with a minimum 20 foot long, snug fitting double surge block. Swabbing shall begin at the bottom of the lower perforated casing and work continuously upwards to the top of the upper perforated casing. After the upper most portion of the well is swabbed, Contractor shall secure a water sample to verify the pH. The sample may be secured by air lifting, submersible pumping, or thief sampling. **If the pH is above three (3), additional treatment solution will be added to the well at the discretion of the District**. If additional treatment solution is needed, the solution will be added and swabbed into place using the double surge block. Sampling and treatment solution addition shall continue until pH is equal to three (3) or less.

4. Contractor shall them wire-brush the well as specified in Section 2.05 above.

5. The well will then be allowed to stand for 12 hours. Immediately after 12 hours the Contractor shall swab each 20 foot perforated section for 15 minutes with the double surge block. Swabbing shall begin at the top of the upper perforated casing and work continuously downward to the bottom of the lower perforated casing.

D. Contractor shall remove and dispose of the treatment chemicals as outlined below.

1. After completion of swabbing as described above, the Contractor shall remove five (5) volumes of wastewater from the well into an above-ground portable tank, such as a Baker Tank. The wastewater will be removed continuously from the well by air lifting or pumping. Air lifting or pumping shall begin at the bottom of the well and work upward to the top of the upper perforated casing interval. The well should be continually purged until the pH has stabilized to a normal background level and the turbidity of the discharge has dissipated.

2. At the discretion of the District, water samples will be secured from the well after removal of the treated water to determine pH after removal. The total number of samples will not exceed four (4) in order to determine pH. Should the pH be greater than nine (9) or less than six (6), the Contractor will remove additional wastewater from the well at the direction of the District and dispose of same.

3. After removal of the wastewater, and at the direction of the District, Contractor shall bail the well clean.

4. Prior to disposal, Contractor shall neutralize the pH of the wastewater in the above-ground tank by adding sufficient soda ash (powder), magnesium hydroxide (slurry), potassium hydroxide (liquid), or other pre-approved neutralizing agent. **Neutralization will not be allowed in the well casing**.

5. All wastewater and residual solids from chemical treatment shall be disposed of by the Contractor in a manner and at the facility designated by the Contractor and approved by the District, in accordance with the attached Scope of Work.

6. Contractor shall discharge the neutralized wastewater onsite at a controlled rate to avoid erosion, as directed by District.

E. Contractor has the option of submitting in writing to District alternative methods of chemically treating the well, such as the use of available proprietary chemical well treatment systems. Alternative methods may only be used if approved by District in advance of bid opening by issuance of a Contract Addendum.

F. All chemicals used in treating the well shall be of food-grade quality. All biodispersants, surfactants and additives, both proprietary and non-proprietary, shall be NSF approved for potable well use.

2.07 Well Disinfection

After wire brushing and removal of debris, the well shall be disinfected with a chlorine solution. Unless otherwise permitted, Contractor shall use the following procedure to disinfect the well:

a. Before dosing, the Contractor shall check the pH of the well to determine if buffering of the chlorine will be necessary. If the pH is above 7.5 a chlorine enhancing chemical such as Johnson Screen's "NW-410," Layne-Christensen's "Oximate," or other District pre-approved equivalent must be used to lower the pH and enhance the effectiveness of chlorination. The chlorine enhancing chemical shall be used at a rate of 1.5 gallons per 1,000 gallons of disinfectant solution for a target pH of 6.5 to 7.5 during chlorination.

b. Contractor shall prepare a disinfectant solution consisting of water, sodium hypochlorite solution, and, if necessary, chlorine enhancing chemical, above-ground for addition to the well. The disinfectant solution shall have a free chlorine concentration of 300 parts per million (ppm). To achieve 300 ppm of chlorine, approximately 2.4 gallons of 12.5% Sodium Hypochlorite solution will be required per 1,000 gallons of disinfectant solution. The sodium hypochlorite solution used shall not have been stored more than 60 days.

c. Contractor shall dose the well by adding two times the Well Casing Volume of disinfectant solution to the well. The method used to introduce the disinfectant solution into the well shall ensure that the disinfectant solution reaches all portions of the well in which contamination might have occurred during construction.

d. Immediately after dosing the well, Contractor shall agitate the chlorinated water within the well by swabbing the well.

e. After the well has been swabbed, Contractor shall secure a water sample to verify the chlorine concentration. The sample may be secured by air lifting, submersible pumping, or thief sampling. If the chlorine concentration is less than 100 ppm, additional disinfectant solution will be added to the well, at the discretion of the District. Sampling and disinfectant solution addition shall continue until the

chlorine concentration is between 100 and 300 ppm. **A chlorine concentration of greater than 500 ppm is not permitted.**

f. Contractor shall repeat the agitation, sampling, and disinfectant solution addition procedure twice at one hour intervals.

g. Contractor shall then allow the well to stand without pumping or agitation for at least 6 hours.

h. Contractor shall then reinstall the permanent pumping unit into the well, and shall pump the chlorinated water from the well into an above-ground portable tank, such as a Baker Tank until chlorine is no longer evident and shall continue to pump until 15 minutes thereafter.

i. Contractor shall then allow the well to stand without pumping or agitation for 24 hours prior to sampling.

j. District will then secure two (2) samples of water from the well in approved containers, and have said samples analyzed by a State Certified analytical laboratory for total coliform (presence/absence), fecal coliform (presence/absence), and heterotrophic plate count. District will secure the first sample within five (5) minutes of starting the pump at the specified pumping rate, and the second sample thirty (30) minutes thereafter. District will furnish results of said analyses to Contractor within 48 hours of sampling.

k. The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of fecal coliform bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml).

l. If the sample analysis results do not indicate that the well was properly disinfected, the Contractor shall repeat the entire disinfection procedure, including sampling, sample analysis, and reporting of sample analysis results. Contractor shall continue to repeat the entire disinfection procedure until sample analysis results indicate that the well has been properly disinfected.

m. The chlorinated water shall be dechlorinated to less than 0.1 ppm of chlorine prior to disposal. Dechlorination shall take place within the above-ground portable tank. The dechlorinated water shall be discharged off site at a controlled rate to avoid erosion, as directed by District.

PART 3 - CLEANUP

3.01 Cleanup

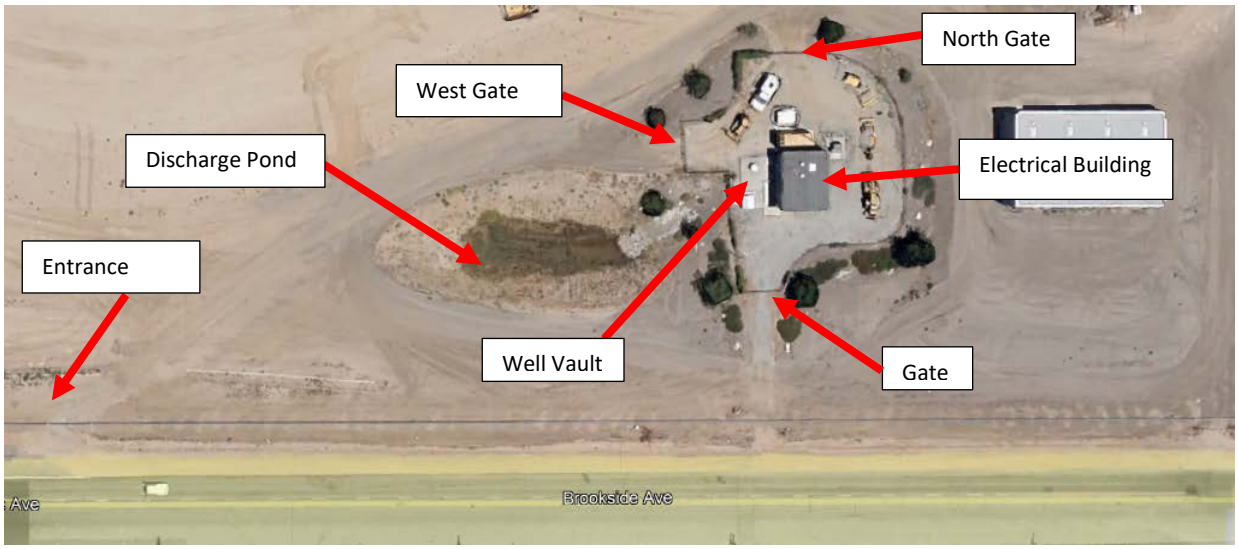
Contractor shall clean and restore all areas occupied by Contractor in connection with the Work to preconstruction condition. Cleanup shall include, but shall not be limited to, removal and disposal of equipment, rubbish, excess materials, temporary structures, deposited sediments, and excavated materials and restoration of equipment, fences, pavements, trees, shrubs, piping, and ground surface. All parts of work site shall be left in a neat and presentable condition, all to satisfaction of District.

APPENDIX C

Well 23 Location Map, Site Plan and Photos

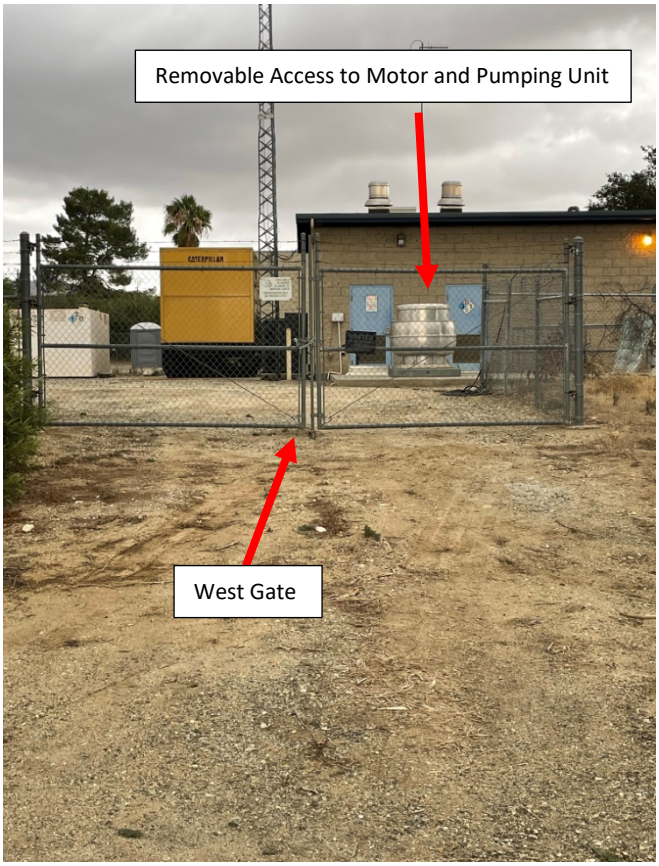
APPENDIX C

Well 23 Location Map



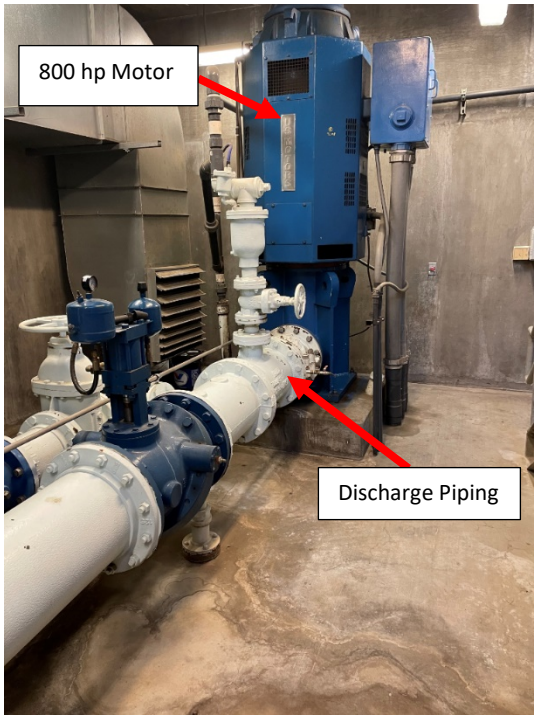
APPENDIX C

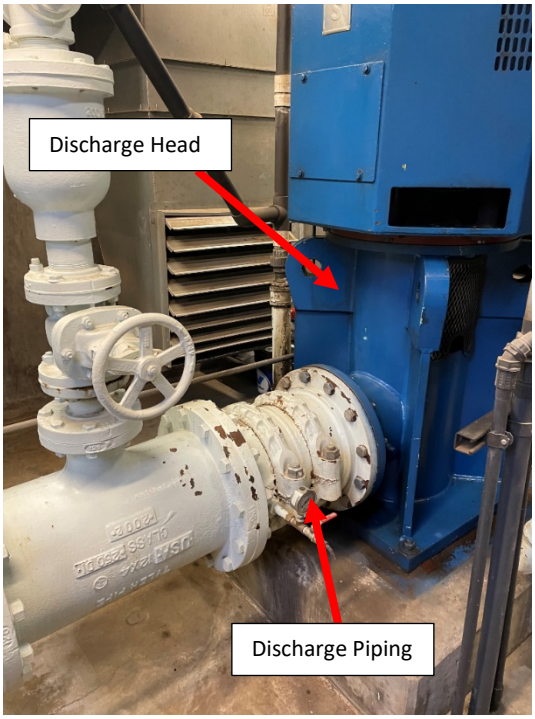
Well 23 Site Plan Image



APPENDIX C

Well 23 Motor and Discharge Piping Photos





APPENDIX D

Maintenance Bond Example

M A I N T E N A N C E B O N D
FOR PUMPING EQUIPMENT
(by Supplier)

KNOW ALL MEN BY THESE PRESENTS, that we, _____, as Surety, hereinafter called Surety, are held and firmly bound unto Beaumont-Cherry Valley Water District , hereinafter called District, in the penal sum of $_____, for the payment whereof (Supplier) and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these present.

WHEREAS, Supplier has provided pumping equipment for District project _____ _____ in accordance with the Specifications.

NOW, THEREFORE, the condition of the obligation is such that, if Supplier shall remedy any defects due to faulty materials or workmanship which shall appear within a period of 2 years from the date the project is accepted as provided for in the specification, then this obligation is to be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the District shall give Supplier and Surety notice of observed defects with reasonable promptness.

Signed and sealed this _____ day of_____, 20____

Supplier (SEAL)	Surety (SEAL)
Title	Title

APPENDIX E

Well 23 Well and Pumping Unit Information

BEAUMONT CHERRY VALLEY WATER DISTRICT
WELL 23 PUMPING UNIT REPAIR WORK

WELL PLANT NO. 23 EXISTING WELL AND EQUIPMENT INFORMATION

Diameter:	0' – 1,500' bgs 18 inches, inside diameter
Well Total Depth:	1,500' Below Ground Surface (bgs)
Blank Casing	0-650 ft bgs
Full Flo Louver	650-710 ft bgs
Blank Casing	710-800 ft bgs
Full Flo Louver	800-1,480 ft bgs
Blank Casing	1,480 1,500 ft bgs
Water Level Information (1)**:**	
Standing Water Level:	502 ft ± bgs
Pumping Water Level:	565 ft ± bgs
Specific Capacity:	42.4 ft ± bgs
Discharge Pressure Range	115 ft to 175 ft (at Well Pump Discharge Head Centerline)
Existing Pump Information:	Goulds Pump 14RHHC, 10 stage, oil lubricated bow assembly with top 4 stages plus discharge case ductile iron double bolted, bottom 6 stages cast iron, bronze bowl bearings, silicon bronze impellers, carbon steel taperlock (installed new Nov., 2009, see Appendix D)
Existing Column, Tube, Shaft Information:	
Column:	12.75 inch, Outside Diameter (0.375” Wall Thickness)
Column Length:	755’ to 760’
Tube:	3.5 inch, Schedule 80
Shaft:	2-7/16”, C-1045 Steel
Suction Pipe:	10’
Suction Strainer:	Yes

Notes:

1. See additional project information located in Appendix A through Appendix E, Attached.

(1) (Acquired from 3/5/2018 SCE pump test for Well 23)

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

March 5, 2018

DWAN LEE
BEAUMONT CHERRY VALLEY WATER
560 MAGNOLIA AVENUE
BEAUMONT, CA 92223-2258

HYDRAULIC TEST RESULTS: WELL #23
Location: 39500 BROOKSIDE AVE, CHERRY VLY, CA 92223-4602
Cust #: 0-000-0808 Serv. Acct. #: 024-1429-57
Meter: V349N-006525 Pump Ref.#: 27474

In accordance with your request, an energy efficiency test was performed on your turbine well pump on February 21, 2018. If you have any questions regarding the results which follow, please contact Anthony Jimenez at +1 (909) 820-5209.

Equipment
HP: 800.0
Pump: NA No: NA
Motor: US No: 03040162100R01

Results	Test 1	Test 2
Discharge Pressure, PSI	**68.5**	**79.8**
Standing Water Level, Feet	**502.5**	**502.5**
Drawdown, Feet	**63.3**	**62.3**
Discharge Head, Feet	**158.2**	**184.3**
Pumping Water Level, Feet	**565.8**	**564.8**
Total Head, Feet	**724.0**	**749.1**
Capacity, GPM	**2,655**	**2,520**
GPM per Foot Drawdown	**41.9**	**40.4**
Acre Feet Pumped in 24 Hours	**11.735**	**11.138**
kW Input to Motor	**577.0**	**576.0**
HP Input to Motor	**773.8**	**772.4**
Motor Load (%)	**91.9**	**91.7**
Measured Speed of Pump, RPM	**1,777**	**1,776**
Customer Meter, GPM	**2,736**	
kWh per Acre Foot	**1,180**	**1,241**
Overall Plant Efficiency (%)	**62.7**	**61.7**

Test 1 is the normal operation of this pump at the time of the above test(s). The other results were obtained by throttling the discharge.

Ronald Ford
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

March 5, 2018

DWAN LEE
BEAUMONT CHERRY VALLEY WATER
560 MAGNOLIA AVENUE
BEAUMONT, CA 92223-2258

PUMPING COST ANALYSIS: WELL #23
Location: 39500 BROOKSIDE AVE, CHERRY VLY, CA 92223-4602

CSS Cust #:	0-000-0808	CRM Cust #:	0064455441	Pump Ref.#:	27474
CSS Serv. Acct.:	024-1429-57	CRM Serv. Acct.:	0050314118	Meter:	V349N-006525

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on February 21, 2018, billing history for the past 12 months, and your current rate of TOU-8-B.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 62.7 % to 70.0 %.
2. This can save you up to 269,194 kWh and $32,302.00 annually.
3. These kWh savings translate to a 117.10 - ton decrease in CO_2

		Plant Efficiency	
	Existing	Improved	Savings
Total kWh	**2,594,388**	**2,325,194**	**269,194**
kW Input	**577.0**	**517.1**	**59.9**
kWh per Acre Foot	**1,180**	**1,058**	**122**
Acre Feet per Year	**2,198.1**		
Average Cost per kWh	**$0.12**		
Average Cost per Acre Foot	**$141.63**	**$126.94**	**$14.70**
Overall Plant Efficiency (%)	**62.7**	**70.0**	
Total Annual Cost	**$311,326.56**	**$279,024.56**	**$32,302.00**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Anthony Jimenez at +1 (909) 820-5209.

Ronald Ford
Manager
Hydraulic Services