

**INVITATION FOR BID
May 30, 2023**

INVITATION FOR BID NUMBER	IFB 23-030
NAME OF BID	Purchase of Two Replacement Pumps for Hillcrest
BIDS WILL BE RECEIVED AT	MAWSS Bid Box Donaghey Business Entrance 4725A Moffett Road or PO Box 180249 Mobile, AL 36618
BID OPENING DATE	June 7, 2023
BID CLOSING TIME	10:30 am Central Time
AWARD WILL BE MADE BY	Total Cost & Lead Time
MATERIAL DELIVERED TO	EM Stickney Water Treatment Plant 4800 Moffett Rd Mobile, AL 36618
ADDITIONAL INFORMATION CONTACT	Zachary Butler (251) 378-3487 Email: zbutler@mawss.com John Jordan (251) 378-3492 Email: jjordan@mawss.com Markus Moore (251) 721-0828 Email: mamoore@mawss.com
APPLICABLE SDP POLICY	None


Sealed bids must be in the Purchasing Department no later than the time specified in order to be considered. Submissions received after the deadline will not be considered. Envelopes must bear the name of the supplier, company address and the words "IFB 23-030 Replacement Pumps" or "IFB 23-030 NO QUOTE." Facsimile or email bids will not be accepted.

All bids must be submitted on the attached forms or your bid will be disqualified. Bidder shall furnish all the information required by the solicitation. The bidder's name must be typed or printed on the bid sheet, and signed by the bidder or appropriate authorized executive officer of the bidder's company. Bidders must initial any changes or erasures. Bidders should retain a copy of bids for their records.

Bidders shall acknowledge receipt of all addenda to this solicitation by signing and returning each addendum or by identifying the addendum number and the date on the bid form. Failure to acknowledge receipt of any addendum by a bidder will result in rejection of the bid if MAWSS determines that the addendum contains information that materially changes the requirements.

All bids shall be quoted FOB Destination, freight prepaid with no additional charges. Unless otherwise specified in the bid, all prices will be on a firm-fixed price basis and are not subject to adjustments based on costs incurred. MAWSS reserves the right to reject any or all bids submitted, to waive any informality in any bid or in the bid process, or to terminate the bid process at any time, if deemed by MAWSS to be in MAWSS's best interest.

A Purchase Order and this "Invitation for Bid" with "Specifications," "Conditions," "Bid Form," signed by the successful bidder's authorized representative, and all attached drawings and other documents furnished by MAWSS to the bidders with the Invitation for Bid in order to illustrate the contract requirements, will constitute a contract for the goods and/or services to be purchased.


Joyce Sawyer, Buyer II
Board of Water and Sewer Commissioners

IFB 23-030 REPLACEMENT PUMPS PURCHASE CONDITIONS

The Board of Water and Sewer Commissioners of the City of Mobile will accept bids for the **Purchase of Two Replacement Pumps** in our Purchasing Department Bid Box located at 4725 Moffett Road Suite A, Mobile, AL 36618 **no later than 10:30 a.m.** local time on **June 7, 2023**. Award will be by **Total Cost & Lead Time (Time Is Of The Essence)**. The bidder offers and agrees, if this bid is accepted, to furnish the items as defined in the specifications for the unit price set opposite each item. Pricing shall be FOB Mobile, Alabama. All items shall be delivered to our **EM Stickney WTP located at 4800 Moffett Rd., Mobile, AL 36618** or to the job site as needed. The bidder shall state the expected length of delivery time on the Bid Form.

Bidder understands and agrees that manufacturer and part numbers are provided for descriptive purposes only. Items of equal or better quality will be considered but must be approved by MAWSS in writing. Upon delivery, if the quality, durability or performance of any product represented as equal or better is determined by MAWSS to be unsatisfactory, MAWSS will require a suitable substitute or will require that the originally specified item be delivered, at the unit price originally offered by bidder. No substitution for items to be provided pursuant to this contract shall be permitted during the contract period without the express written consent of MAWSS. All items provided shall be for commercial use and for the purposes reflected in the contract documents.

No bid on closed out or discontinued item(s) will be accepted. Item(s) that have a determinable shelf life must be disclosed at the time of bid submittal. Bidder understands that his/her bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Bidder understands and agrees that quantities will be purchased by MAWSS on an "as needed" basis to replenish inventory. MAWSS shall not be committed to the purchase of a pre-established minimum quantity for any one item.

A bidder may not modify its bid after bid opening. Errors in the extension of unit prices stated in a bid or in multiplication, division, addition or subtraction in a bid may be corrected by the MAWSS Purchasing Buyer prior to award. In such cases, unit prices shall not be changed.

It is the responsibility of the bidder to determine prior to the bid opening whether any amendment, additions, deletions or changes of any type have been made to this Invitation for Bid, Conditions, Specifications, Bid Form or any of the other bid documents. Bid documents and any amendments made to this bid will be posted on our website at www.mawss.com.

Invoicing Requirements: MAWSS is requiring additional information for all work performed and services provided. Included with the vendor's invoice for payment should be a detailed listing of work performed, services provided, dates completed, locations involved and any other pertinent information needed to verify the work and/or services were completed in accordance to the bid specs. This additional information can be supplied in the form of detailed invoices, work orders, checklists or any other documents used to track the work performed or services provided. A copy of the invoice and these additional details must be sent to the "**ADDITIONAL INFORMATION CONTACT**" found on Page 1 of the bid documents and a copy emailed to Accounts Payable at AcctsPayable@mawss.com.

END OF CONDITIONS

**IFB 23-030 REPLACEMENT PUMPS PURCHASE
 BID SHEET**

Two Vertical Column Lineshaft Pumps with vertical electric motor drives				
Qty	Desc.	Mfr/Model	Pump Curve	Unit Cost
2 ea	Pump and Motor Combination			
Total Cost				
Pump Lead Time				
Motor Lead Time (if different from pump)				

Payment Terms _____

Company Name _____

Address _____

City, State, Zip _____

Submitted By _____ **Title** _____
Please Print

Phone _____ **Email Address** _____
Please Print

The signer declares under penalty of perjury that she/he is authorized to sign this document and bind the company or organization to the all of the terms and conditions of this agreement.

Signature _____ **Date** _____

IFB 23-030 SPECIFICATIONS

SECTION 43 24 27

PUMPING EQUIPMENT: VERTICAL COLUMN DISCHARGE LINE SHAFT

PART 1 - GENERAL

1.1 DESCRIPTION

A. This bid is for the replacement of two (2) Aurora 1160 Vertical Turbine finished water pumps with US Electrical Motors vertical electric motor drives at the E.M. Stickney Water Treatment Plant. The bowl assembly, flanged column assembly, discharge head and driver dimensions and flange orientation shall be compatible with the existing piping configurations and flange diameters so that MAWSS does not have to reconfigure the existing piping and the unit will fit on the existing pump mounting pad. Photographs depicting installation location with existing pumps removed, existing pumps' plan view configuration drawing, existing electric motor information, as well as existing pump cut sheet are provided in Attachment A.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Society of Mechanical Engineers (ASME):
 - a. B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.B. Unit Responsibility
2. American Bearing Manufacturer's Association (ABMA)
3. ANSI/Hydraulic Institute (ANSI/HI):
 - a. 9.6.3, Rotodynamic (Centrifugal and Vertical) Pumps – Guideline for Allowable Operating Region.
 - b. 9.6.4, Rotodynamic Pumps for Vibration Measurements and Allowable Values.
 - c. 14.6, Rotodynamic Pumps for Hydraulic Performance Acceptance Tests.
4. National Electrical Manufacturer's Association (NEMA)

1.3 SUBMITTALS

A. Shop Drawings:

1. Make, model, weight, and horsepower.
2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
3. Performance data curves showing head, capacity, horsepower demand, and pump hydraulic efficiency over entire operating range of pump from shutoff to maximum capacity.
4. Detailed drawings showing equipment dimensions, size and locations of connections and weights.
5. Power and control wiring diagrams, including terminals and numbers. Include all signal references with note for connecting to existing control system on the Drawings.
6. Complete motor nameplate data, as defined by NEMA, motor manufacturer.
7. Factory finish (coating) system data sheets.
8. Lead time for delivery to facility

B. Operation and Maintenance Manual (electronic copy: PDF and hard copy: 3-ring binder, 8.5x11-inch with 11x17 folded).

1. Include pump and electric drive information with wiring diagrams and schematics for pump.
2. Items noted in 1.3.C.

C. Informational Submittals (also to be included in Operation and Maintenance Manual)

1. Factory functional test reports.

2. Manufacturer's Certification of Compliance indicating pump and motor are compliant with Common Product Requirements and factory finish system complies with requirements noted herein.
3. Special shipping, storage and protection, and handling instructions.
4. Manufacturer's installation instructions.
5. Suggested spare parts list to maintain the equipment in service for a period of 1 to 5 years. Include a list of special tools required for checking, testing, parts replacement, and maintenance with current price information.
6. List special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Coordinate pump requirements with electric motor drive manufacturer and be responsible for pump and motor requirements.
- B. The pump manufacturer shall supply the pump and necessary accessories for proper pump and motor installation.
- C. All components that come into contact with potable water shall be NSF/ANSI 61 compliant.

2.2 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 1. Pumps
 - a. Morrison
 - b. Flowsolve
 - c. Peerless
 - d. Floway
 - e. Cascade
 - f. Or approved equal.
 2. Motors
 - a. US,
 - b. GE,
 - c. TECO/Westinghouse,
 - d. Reliance

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

- A. Performance Parameters:
 1. Provide pumps with the minimum flow within the acceptable operating region.
 - a. Primary Design Point: 7,600 gpm at 44 ft TDH with NPSHr < 20 feet and minimum Bowl Efficiency of 86%
 - b. Secondary Design Condition: Can be operated at less than 20 ft of TDH with NPSHr < 27 feet.

2.4 ACCESSORIES

- A. Thrust lugs: 316SST
- B. Flange bolts: 316 SST
- C. Gaskets: EPDM

2.5 COMPONENTS

- A. General:
 1. Furnish units consisting of a vertical shaft turbine, direct connected to a vertical solid shaft motor. Design unit with non-reversing ratchets.

2. Weight of revolving parts of pump including unbalanced hydraulic thrust of impeller is carried by thrust bearing in driver.
3. Provide adjustable coupling at driver shaft for adjusting impeller with reference to bowls.
4. Pump components that come in contact with potable water must have NSF/ANSI 61 compatible materials.

B. Column:

1. Construct discharge column pipe of steel and supply with flanged connections.
2. Sandblast column and coat with a minimum 15 mils dry film thickness epoxy system at the factory.
3. Column and coat shall be NSF certified.
4. See exterior coating requirements below.

C. Open Line Shaft:

1. Duplex Stainless Steel, S31803.
2. Undercutting of shafting at sleeve locations is not permitted.
3. Provide rubber bearings at each column connection supported by retainers butted between machined faces of discharge column.

D. Pump Bowl and Suction Bell:

1. Provide bowl, suction bell, and wear ring constructed of 316 stainless steel, free from imperfections and accurately machined and fitted.
2. Design to ensure easy removal of bearings and impeller.
3. Furnish suction bell with flared end to reduce entrance losses and with a sufficient number of vanes to support weight of impeller and pump shaft when dismantling pump.
4. Bowls to be flanged.
5. See exterior coating requirements below.
6. Existing bowl assembly dimensions:
 - 1) 72-inch from bottom of bowl assembly to bottom of base plate.

E. Bearings:

1. Provide units with sleeve bearings nitrile rubber in each diffuser.
2. Provide for lubrication of bowl bearings with pumped liquid.

F. Column Adapter:

1. Provide to ensure proper transition from the bowl assembly to the column assembly. It shall contain an extra long support bearing.
2. Provide cast iron column adapter with two by-pass port openings to drain leakage into sump.

G. Pump Shaft and Impeller:

1. Provide pump unit shaft constructed of rolled and ground duplex stainless steel, S31803. stainless steel.
2. Furnish mixed-flow impeller constructed of nickel-aluminum-bronze (ASTM B148) or 316L stainless steel.
3. Impeller to be securely attached to impeller shaft.
4. Ensure impeller is accurately fitted and statically and dynamically balanced.

H. Discharge Head Assemblies:

1. Design discharge head assembly for 150 psi working pressure and 250 psi test pressure.
2. Provide discharge head for above ground mounting constructed of fabricated steel with integral discharge flange.
3. Furnish ASME B16.1, 125/150 LB flange.
4. Mount discharge head base flange on existing 36-inches fabricated steel suction barrel and connect discharge flange to existing 20-inch diameter flanged discharge piping; distance from base plate to centerline of 20-inch diameter discharge is 20-inches. Discharge head base and discharge flanged bolt hole configuration to match existing configuration.
5. Supply base plate with lifting lugs capable of supporting weight of entire unit.

6. Furnish stuffing box constructed of cast iron. Lubrication to be with product water. Provide 416 stainless steel shaft sleeve at top section of line shaft where it passes through stuffing box. Provide bronze upper shaft bearing directly below stuffing box, in the head, to eliminate any shaft whip which could damage the seal. Hard pipe stuffing box bleedoff to edge of slab, under kickplate. A Plan 13 shall be included for discharge pressures greater than 100 psi.
7. Discharge head assembly discharge pipe to have 1/2-inch tap.
8. Mount discharge head base to have 2-inch tap for air relief.
9. Existing discharge head dimensions:
 - 1) Discharge, Horizontal: 20-inch, 150 lb flat face discharge flange
 - 2) Height to Motor Connection: 49-inch
 - 3) Height to Discharge Centerline: 20-inch
 - 4) Length from Centerline of Column/Shaft to Discharge Flange: 22-inch
 - 5) Base flange: 36-inch (to connect to existing 36-inch vertical piping column)
 - a) Connections: (32) holes - 1.63-inch diameter

I. Motors:

1. Vertical solid shaft, squirrel cage, induction type.
2. Inverter duty rated.
3. 460 V, 60 HZ, 3 PH.
4. WP-I type with 1.15 service factor.
5. 125 HP
6. Design motor for 40 DegC ambient.

J. Data Plates:

1. Provide stainless steel data plate securely attached to pump.
2. Pump: Include manufacturer's name, pump size and type, serial number, speed, impeller diameter, capacity and head rating, and other pertinent data.
3. Motor: Include manufacturer's name, horse power, RPM, Voltage, Phase, Hertz, serial number, and other pertinent data.

K. Coating: (column, discharge head, and motor enclosure)

1. Provide coating by Tnemec, Sherwin Williams, or Koppers approved for use with potable water and to be dark blue (potable water). Generic description along with name brand per Sherwin Williams noted below; Tnemec and/or Koppers equal products also acceptable.
2. High Performance Industrial Coatings:

GENERIC DESCRIPTION	PRODUCT NAME (SHERWIN WILLIAMS)
Modified Polyamine Epoxy (NSF 61)	Duraplate UHS
Polyamidoamine Epoxy	Macropoxy 646 (available in 100 g/L)
Zinc-Rich Urethane	Corothane I Galvapak 1k, 2k, 100 2k
Modified Polyamidoamine Epoxy	Macropoxy 646 (available in 100 g/l)
Polyamidoamine Epoxy (NSF 61)	Macropoxy 5500
Polyfunctional Hybrid Urethane (Gloss)	Acrolon Ultra or Acrolon WB Urethane
Polyfunctional Hybrid Urethane (Semi-Gloss)	Acrolon Ultra or Acrolon WB Urethane

3. Coating Systems and Surface Preparation per Environment:

Environment	Surface Preparation	Prime Coat	Intermediate Coats	Finish Coat
Ferrous Metals (Structural & Miscellaneous Metals)				
Exterior atmospheric	SSPC SP-6/ NACE No. 3	3.0 to 4.0 mil Galvapak	3.0 to 4.0 mil Macropoxy 646	2.0 to 3.0 mil Acrolon Ultra
Ductile Iron Piping				
Immersion – NSF 61	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	2.0 to 3.0 mil Macropoxy 5500 (red oxide)		20.0 to 25.0 mil Duraplate UHS
Exterior atmospheric	Pipe: NAPF 500-03-04 Fittings: NAPF 500-03-05	3.0 to 4.0 mil Macropoxy 646	3.0 to 4.0 mil Macropoxy 646	2.5 to 3.5 mil Acrolon Ultra
Cast Iron Piping				
Exterior atmospheric	SSPC SP-1	3.0 to 5.0 mil Macropoxy 646	3.0 to 4.0 mil Macropoxy 646	2.0 to 3.0 mil Acrolon Ultra

2.6 WARRANTY

A. The manufacturer shall furnish the following to the Owner:

1. Two-year parts and labor warranty issued by the manufacturer for the electric motor drive.
2. Two-year parts and labor warranty issued by the manufacturer for the pump.

2.7 QUALITY CONTROL

A. Functional Test: Perform manufacturer’s standard, motor test on equipment. Include vibration test as follows:

1. Dynamically balance rotating parts of each pump and electric motor drive before final assembly.
2. Limits:
 - a. Electric Motor Drive Alone: Less than 80% of NEMA MG1 limits.
 - b. Complete rotating assembly including coupling and electric drive motor: Less than 90% of limits established in the HI standards.

B. Shop Tests

1. The Engineer shall have the right to witness the factory tests and inspect any equipment to be furnished under this Section prior to their shipment from place of manufacture.
 - a. A complete test report for each pump, including certified characteristic curves of the pump, consisting of at least all information required above, except for NPSHR, and certified copies of the hydrostatic test report, shall be submitted to and approved by the Engineer before the pumps are shipped.
2. Each pump specified herein shall be factory tested in accordance with the latest edition of the Hydraulic Institute Standards. Test shall be performed on each pump produced or a scaled model per ANSI.HI 14.6. Notification of such test and a list of test equipment and procedures shall be furnished to the Engineer at least 10 working days before the schedule test date.
 - a. Each pump shall be tested and data recorded at its operating conditions of service. Sufficient test point readings shall be made to establish complete head flow capacity, efficiency and brake horsepower curves for each pump.
 - b. A minimum speed curve shall be plotted on the performance curve basis the affinity laws and the test data.

- c. All gauges and other test instruments shall be calibrated within 30 days of the scheduled test and certified calibration data shall be provided.
- d. Perform under simulated operating conditions.
- e. Test for a continuous one (1) hour period without malfunction.

2.8 MANUFACTURER'S SERVICES

A. Manufacturer's Representative: Present at site.

- 1. One (1) person for one half (1/2) of a day for installation, assistance, and inspection.

END OF SECTION

ATTACHMENT A:
E.M. STICKNEY WATER TREATMENT PLANT
ADDITIONAL VERTICAL TURBINE PUMP INFORMATION



**PHOTOGRAPH 1: VERTICAL TURBINE PUMP AND DISCHARGE HEAD
INSTALLATION LOCATION (PUMP REMOVED)**



PHOTOGRAPH 2: EXISTING VERTICAL TURBINE PUMP AND DISCHARGE



PHOTOGRAPH 3: EXISTING VERTICAL TURBINE PUMP AND DISCHARGE



EQUIPMENT SCHEDULE

- ① MIXED FLUID PUMP - LINE MODEL 14 HF WITH 6 MIN CAPACITY OF 7600 GPM AT 31 FT. TOTAL DYNAMIC HEAD @ 1750 RPM. SHUT-OFF HEAD RATED @ 37 FT. THE MOTOR SHALL BE VPI SOLID SHAFT, 100 HP, 460V, 3Φ, 60Hz.
- ② FLOW SWITCH - MERVINELL MODEL NO. PS7-L.
- ③ 20" Ø MECHANICAL COUPLING WITH FLANGE ANCHORS - MECHANICAL COUPLING SHALL BE 'PRESSURE COUPLING', STYLE 3P.
- ④ CHECK VALVE - MANSION 200 - CHECK VALVE WITH CAST IRON BODY & PLATE, BUNA-N SEALS, STEEL-NICKEL SPRING, 3/16" SS PIN, 3/16" SS SPRING, AND A CAST IRON PIN RETAINER.

NOTES

- 1 PIPE 20" Ø AND SMALLER SHALL BE DUCTILE IRON
- 2 PIPE LARGER THAN 20" Ø SHALL BE EITHER FLANGED RIGID IRON OR FLANGED PRESTRESSED CONCRETE CYLINDER PIPE.
- 3 Concrete Cylinder Pipe shall meet requirements of AWWA C301, Latest Edition, Standard for Reinforced Concrete Water Pipe - Steel Cylinder Type, Prestressed for u Design, Pressure of 150 PSI and for Depth of Cover of 6 Ft. Each Length of Pipe, shall be clearly marked to show the Pressure Rating, Length of Pipe, Depth of Allowable Cover and Name of Manufacturer.

EXISTING VERTICAL TURBINE PUMP PLAN VIEW

