MEPNN Supplier Scouting Opportunity Synopsis

Section 1: General Information

Scouting Number	2025-217
Item to be Scouted	BABA Compliant Submersible Propeller Mixers (Anaerobic and Anoxic Basins)
Days to be scouted	30
Response Due By	07/25/2025
Description	United States manufacturers of BABAA-compliant Submersible Propeller Mixers (Anaerobic and Anoxic Basins).

Section 2: Technical Information

Type of supplier being sought	Manufacturer
Reason	Re-shore
Describe the manufacturing processes (elaborate to provide as much detail as possible)	Electronic and Mechanical Assembly
Provide dimensions / size / tolerances / performance specifications for the item	See attached project specifications that list the performance requirements and the features required for the mixer assemblies.
List required materials needed to make the product, including materials of product components	Stainless Steel and additional components as indicated in the attached specification document.
Are there applicable certification requirements?	Yes
Details	Build America Buy America Compliant, National Electrical Manufacturers Association (NEMA), American Society for Testing and Materials (ASTM)
Are there applicable regulations?	Yes
Details	National Electrical Manufacturers Association (NEMA), American Society for Testing and Materials (ASTM) compliant
Are there any other stndards, requirements, etc.?	No
Additional Technical Comments	Manufacturers shall specialize and have experience in the manufacturing of the designated component. Domestic components in each of the BABAA compliant manufactured products must exceed 55% of the total component cost and be assembled in the United States. Basis of Design for the Submersible Propeller Mixers (Anaerobic and Anoxic Basin) is Ovivo.

Section 4: Business Information

Estimated potential business volume	3 Submersible Propeller Mixers Anaerobic Basin (1.5 HP) 2 Submersible Propeller Mixers Anoxic Basin (3 HP)
Estimated target price / unit cost information (if unavailable explain)	Best available, as this is related to BABA, acceptable pricing is to be determined in negotiation.
When is it needed by?	2025

Describe packaging requirements	Pallet
Where will this item be shipped?	Sandy Hook, KY

Additional Comments

Is there other information you would like to include?	Nationwide Search Agency providing funds - Agriculture, U.S. Department of Name/POC for BABA related questions - Caitlin Collins Email address of contact – Caitlin.Collins@chickasaw.com Provide written documentation of being a current Build America Buy America Act compliant manufacturer of the product with experience manufacturing components meeting the product performance requirements. Information on BABAA compliance requirements can be found at Made in America Office link https://www.madeinamerica.gov/.

EQUIPMENT SECTION 11276
OXIDIATION DITCH SUBMERSIBLE PROPELLER MIXERS (ANAEROBIC BASINS)

PART 1 - GENERAL

1.01 PERFORMANCE REQUIREMENTS

Number of Mixers:	THREE
Nominal Propeller Speed	840 **RPM**
Electric Motor Nominal Motor Horsepower	1.5 HP
Electrical voltage and Characteristics	460V, 3 phase, 60 Hertz
Nominal Motor/Propeller Speed	840 **RPM**
Nominal Number of Starts per Hour	15 (or unlimited on VFD)
Nominal Cable Length (ft.)	30
Mixer Installation System	Hot Dipped Galvanized

PART 2 - PRODUCTS

2.01 MIXER ASSEMBLIES

A. The submersible mixers for the System shall be supplied by the same manufacturer, and, where possible, shall be of the identical model. Each mixer shall be constant speed driven by squirrel cage induction motors that are certified for use with variable speed drives. Each mixer shall be mounted in the basin using a mast or rail retrieval system that does not require anyone entering the basin to install or remove the mixer. Each mixer shall be submersible provided with a non-clogging propeller, designed for mixing raw or processed sewage.

B. General Mixing Unit Requirements:

The submersible mixers shall be non-clogging, with backward curved propeller blades of a cross section which reduces drag while eliminating fibrous build up. The integral squirrel cage, electric induction motor, shall drive the mixer's propeller. Each mixer shall include a motor, bearings, mechanical seals, stainless steel shafts, A48 class 30 Cast Iron housing, and machined fits for circular cross section O-rings.

The mixers shall be the submersible type and shall be installed in location as shown in the plans. The manufacturer shall design the mixer motors for full load continuous operation. All major components of the mixing unit shall be manufactured from

close-grained ASTM A48 class 30 cast iron. All nuts, bolts, washers, and other fastening devices supplied with the mixers shall be AISI Type 304 stainless steel. All mating surfaces of the major castings requiring a watertight seal shall be machined for fit and fitted with O-rings. Mixers shall be furnished with propellers as detailed in the equipment listing above. Mixer support frame (including angular adjustment brackets) shall be manufactured from hot dipped galvanized steel as detailed in the submersible mixer tabulated data above.

C. Mixer Stator and Seal Casings:

Casings shall be manufactured from ASTM A48 Class 30 close-grained cast iron. The outside contours of the mixer(s) shall be shaped to reduce hydraulic losses and to aid in mixing efficiency. Each casting shall be free from porosity, voids, casting fins, and other casting quality defects. The surface shall be smooth to the touch and free from all sharp edges. Corners shall have smooth radius contours to avoid sharp edged corners and surfaces.

D. Propellers:

Mixer Propellers shall be manufactured from either ductile cast iron or steel which is resistant chemical effects and provides the highest mixing efficiency due to the blade cross section. The propeller vanes shall be smooth, finished throughout, and shall be free from sharp edges. The surface of the propeller shall be free from fused on sand, scale, and shall be smooth. Runners, risers fins, and other cast-on pieces shall be removed. The outer periphery of the propeller shall be reduced, trimmed, as required to meet performance specifications without adversely affecting surface finish, microstructure, hardness, dimensional tolerance and other special requirements. All sharp edges and corners resulting from machining shall be deburred and radiused. Radius size and tolerance shall equal the as cast dimensions. Minor surface defects of the propeller may not be corrected by welding, or sealed by impregnation with a sealing medium, or coated. All corrective work is subject to the same quality standards as are used to inspect the impeller. Metal addition shall not be allowed on any blade surface. Metal addition that adversely affects surface finish, microstructure, hardness, dimensional tolerance and other special requirements. Metal addition other than specified in this subsection shall not be allowed. The propeller shall then be coated with PVC or epoxy.

Propellers shall be statically and dynamically balanced after assembly to the rotor. Propellers shall be securely held to the shaft and the arrangement shall be such that the propeller cannot unscrew or be loosened by torque from either forward or reverse rotation.

E. Shafts:

Mixer shafts shall be stainless steel. Carbon steel shafts with or without shaft sleeves are not acceptable or equal to stainless steel. Shafts shall be supported by bearings for axial and radial thrust and bearing life shall be designed to provide minimum B10 = 50,000 hours at design flowrate. All shafts shall be dynamically balanced and shall be amply sized to minimize shaft deflection.

F. Sealing Devices:

Each mixer shall be provided with a mechanical seal running in an oil bath. The metal components of the mechanical seal case shall be constructed of 316 stainless steel. A moisture sensor shall be furnished in the seal pre-chamber area of each

mixer. The sensor shall be wired to the control panel or motor control center and wired to shut down the motor if moisture is sensed.

G. Power and Control Cables:

Power and control cables shall be furnished in lengths to run continuously from the mixer to the mixer control panel. Cables shall terminate with conductor sleeves. Cables shall be of the "NSSHOU" type and shall conform to industry standards for loads, resistance under submersion against sewage, and be of stranded construction. The cables shall enter the mixer through a heavy-duty entry assembly that shall be provided with an internal grommet assembly to protect against tension once secured and must have a strain relief assembly as part of standard construction. The cables for each mixer shall be bundled in 1O ft, segments for overall neatness and ease of mixer removal.

H. Motors:

Each mixer shall be furnished with a squirrel cage, induction motor enclosed in a watertight housing suitable for use and compatible with variable frequency drive systems without special order requirements such as "inverter duty". The motors shall be furnished with moisture resistant Class F insulation treated to be moisture resistant, NEMA B design, 1.15 service factor, designed for continuous duty and shall be non overloading throughout the entire mixer range of operation without utilizing the motor service factor. Motors shall be capable of sustaining 15 starts per hour (unlimited starts with VFD) at a minimum ambient temperature of 40°C. Motors shall be capable of uninterrupted operation with a voltage drop of 10%. The power cables entering the motor housing shall prevent the moisture from gaining access to the motor even in the event of complete power or control cable break while under water. The motor rotor and stator, as well as all bearings shall be located in an air filled chamber that is isolated from the seal chamber. Motor cooling shall be accomplished by submergence in the mixed liquid. Thermal switches shall be furnished to monitor stator temperatures. The stator shall be equipped with two (2) thermal switches, embedded in the end coils of the stator winding. Thermal switches shall automatically de-energize the motor when its temperature exceeds a preset limit. The *mixer* manufacturer's nameplates shall be engraved or stamped on stainless steel and fastened to the motor casing with stainless steel screws or drive pins.

I. Mixer Mount Assembly

Each mixer shall be provided with a hot dipped galvanized mixer mount assembly to serve as a guide for the mixer during installation and to guide the mixer for removal from the liquid for service. The assembly shall consist of a tube and an upper and lower bracket constructed of hot dipped galvanized A36 steel. The assembly shall also contain a hot dipped galvanized floor-mounted bracket to support and securely hold the mast assembly.

The mast assembly shall be capable of proper operation with the mixer operating in any direction. The mixer mast shall be designed in such a way that the mixer can be lowered onto and off of the mast.

Each mixer shall be provided with a crane assembly permanently located at

the top of the basin over each mixer. The boom arm of the mixer shall be designed to properly reach and locate the mixer and to alter the angle of the mixer to assure proper mixing angles. The boom shall include a rotational turning handle and shall be capable of rotating a minimum of 270 degrees. Each crane assembly shall include a winch and a minimum 1/4", 316 stainless steel lift cable with proper length to remove and set the mixer on the walkway. The winch assembly shall be capable of manual lift. All anchor bolts for the rail, mast and crane assembly shall be 304 stainless steel.

EQUIPMENT

SECTION 11277

OXIDATION DITCH SUBMERSIBLE PROPELLER MIXERS
(Anoxic Basin Mixers)

PART 1 - GENERAL

1.01 DESCRIPTION

A. The General Contractor shall furnish (at each anoxic basin location), install, test and place in satisfactory operation, as shown on the Plans and specified, two (2) submersible mixer total, complete with all appurtenances, and accessories as will be required to produce a complete and workable installation.

1.02 PERFORMANCE REQUIREMENTS

Number of Mixers:

Propeller	3 Blade
Nominal Propeller Speed	254 RPM
Electric Motor Nominal Motor Horsepower	2.3 HP
Electrical voltage and Characteristics	460 Volts, 3 phase, 60Hertz
Nominal Motor Speed	1080 RPM
Nominal Number of Starts per Hour	15 (or unlimited on VFD)
Nominal Cable Length (ft.)	30
Mixer Installation System	Hot Dipped Galvanized

PART 2 - MATERIALS

2.01 MIXER ASSEMBLIES

A. The submersible mixers for the System shall be supplied by the same manufacturer, and, where possible, shall be of the identical model. Each mixer shall be constant speed driven by squirrel cage induction motors that are certified for use with variable speed drives. Each mixer shall be mounted in the basin using a mast or rail retrieval system that does not require anyone entering the basin to install or remove the mixer. Each mixer shall be submersible provided with a non-clogging propeller, designed for mixing raw or processed sewage.

B. General Mixing Unit Requirements:

The submersible mixers shall be non-clogging, with backward curved propeller blades of a cross section which reduces drag while eliminating fibrous build up. A gear section connected to an integral squirrel cage, electric induction motor, shall drive the mixer's propeller. Each mixer shall include a motor, gear reduction section,

bearings, mechanical seals, stainless steel shafts, A48 class 30 Cast Iron housing, and machined fits for circular cross section O-rings.

The mixers shall be the submersible type and shall be installed in location(s) as shown in the plans. The manufacturer shall design the mixer motors for full load continuous operation. All major components of the mixing unit shall be manufactured from close-grained ASTM A48 class 30 cast iron. All nuts, bolts, washers, and other fastening devices supplied with the mixers shall be **AISI** Type 304 stainless steel. All mating surfaces of the major castings requiring a watertight seal shall be machined for fit and fitted with O-rings. Mixers shall be furnished with polyurethane propellers as detailed in the equipment listing above. Mixer support frame (including angular adjustment brackets) shall be manufactured from hot dipped galvanized steel as detailed in the submersible mixer tabulated data above.

C. Mixer Stator and Seal Casings:

Casings shall be manufactured from ASTM A48 Class 30 close-grained cast iron. The outside contours of the mixer(s) shall be shaped to reduce hydraulic losses and to aid in mixing efficiency. Each casting shall be free from porosity, voids, casting fins, and other casting quality defects. The surface shall be smooth to the touch and free from all sharp edges. Corners shall have smooth radius contours to avoid sharp edged corners and surfaces.

D. Propellers:

Mixer propellers shall be PUR (polyurethane resin) that is resistant to chemical effects and provides the highest mixing efficiency due to the blade cross section. The propeller vanes shall be smooth, finished throughout, and shall be free from sharp edges. The surface of the propeller shall be free from defects and surface protrusions and shall be smooth. The outer periphery of the propeller shall be designed and manufactured, as required to meet performance specifications without adversely affecting surface finish, microstructure, hardness, dimensional tolerance and other special requirements. All sharp edges and corners shall be deburred and radiused. Minor surface defects of the propeller may not be sealed by impregnation with a sealing medium, or coated. All corrective work is subject to the same quality standards as are used to inspect the impeller.

Propellers shall be statically and dynamically balanced after assembly to the rotor. Propellers shall be securely held to the shaft and the arrangement shall be such that the propeller cannot unscrew or be loosened by torque from either forward or reverse rotation.

E. Shafts:

Mixer shafts shall be stainless steel. Shafts shall be supported by bearings for axial and radial thrust and bearing life shall be designed to provide minimum B10 = 100,000 hours at design flowrate. All shafts shall be dynamically balanced and shall be amply sized to minimize shaft deflection.

F. Sealing Devices:

Each submersible mixer shall be provided with two separate seal oil chambers. Each mixer shall be provided with two sets of independent mechanical seals running in an oil bath. The two mechanical seals shall be interchangeable from one location

to the other. The metal components of the mechanical seal case shall be constructed of 316 stainless steel. A moisture sensor shall be furnished in the seal oil pre-chamber of each mixer. The sensor shall be wired to the control panel or motor control center and wired to shut down the motor if moisture is sensed.

G. Power and Control Cables:

Power and control cables shall be furnished in lengths to run continuously from the mixer to the mixer control panel. Cables shall terminate with conductor sleeves. Cables shall be of the "NSSHOU" type and shall conform to industry standards for loads, resistance under submersion against sewage, and be of stranded construction. The cables shall enter the mixer through a heavy-duty entry assembly that shall be provided with an internal grommet assembly to protect against tension once secured and must have a strain relief assembly as part of standard construction. The cables for each mixer shall be bundled in 10 ft segments for overall neatness and ease of mixer removal.

H. Motors:

Each mixer shall be furnished with a squirrel cage, induction motor enclosed in a watertight housing suitable for use and compatible with variable frequency drive systems without special order requirements such as "inverter duty". The motors shall be furnished with moisture resistant Class F insulation treated to be moisture resistant, NEMA B design, 1.13 service factor, designed for continuous duty and shall be non overloading throughout the entire mixer range of operation without utilizing the motor service factor. Motors shall be capable of sustaining 15 starts per hour (unlimited starts with VFD) at a minimum ambient temperature of 40°C. Motors shall be capable of uninterrupted operation with a voltage drop of 10%. The power cables entering the motor housing shall prevent the moisture from gaining access to the motor even in the event of complete power or control cable break while under water. The motor rotor and stator, as well as all bearings shall be located in an air filled chamber that is isolated from the seal chamber. Motor cooling shall be accomplished by submergence in the mixed liquid. Thermal switches shall be furnished to monitor stator temperatures. The stator shall be equipped with two (2) thermal switches, embedded in the end coils of the stator winding. Thermal switches shall automatically de-energize the motor when its temperature exceeds a preset limit. The mixer manufacturer's nameplates shall be engraved or stamped on stainless steel and fastened to the motor casing with stainless steel screws or drive pins.

I. Gear Reduction Drive System

The motor shall drive the submersible mixer propeller through a gear reduction drive system. The motor shaft shall be fitted with a gear that uses high efficiency teeth to engage the gear section. The gear system shall be custom matched to allow for propeller speed changes by ordering and installing new gearing. The gear section shall be designed to withstand 100 % lock stress from the propeller without gear or bearing damage. Each gear shall be supplied with precision bearings, which are lubricated by the gear lubricant in the gear chamber. The gear section shall be fitted to the output propeller shafting by the use of a straight spline connection. The gear section design shall be such that with regular oil changes, no further maintenance

should be required during the life of the submersible mixer in the installation. Gear oil changes shall be easily made using external stainless steel pipe plugs that are sealed via nylon washers. Standard 80 to 90-weight gear oil either normal or synthetic shall lubricate the gear section.

J. Mixer Mount Assembly

Each mixer shall be provided with a hot dipped galvanized mixer mount assembly to serve as a guide for the mixer during installation and to guide the mixer for removal from the liquid for service. The assembly shall consist of a minimum 3 inch by 3inch tube and an upper and lower bracket constructed of hot dipped galvanized A36 steel. The assembly shall also contain a hot dipped galvanized floor-mounted bracket to support and secure_ly hold the mast assembly.

The mast assembly shall be capable of proper operation with the mixer operating in any direction. The mixer mast shall be designed in such a way that the mixer can be lowered onto and off of the mast.

Each mixer shall be provided with a crane assembly permanently located at the top of the basin over each mixer. The boom arm of the mixer shall be designed to properly reach and locate the mixer and to alter the angle of the mixer to assure proper mixing angles. The boom shall include a rotational turning handle and shall be capable of rotating a minimum of 270 degrees. Each crane assembly shall include a winch and a minimum 1/4", 316 stainless steel lift cable with proper length to remove and set the mixer on the walkway. The winch assembly shall be capable of manual lift. All anchor bolts for the rail, mast and crane assembly shall be 304 stainless steel.