



## OFFICE OF WASTEWATER MANAGEMENT

WASHINGTON, D.C. 20460

### **SOLICITATION OF PUBLIC COMMENT FOR PROJECT-SPECIFIC BUILD AMERICA, BUY AMERICA NONAVAILABILITY WAIVER PROPOSAL**

**SUBJECT:** UNDER EVALUATION: Project-Specific Nonavailability Waiver of Build America, Buy America Act Manufactured Product Requirements to Towanda Municipal Authority in Pennsylvania, for Jet Motive Pumps

**Intro:** This solicitation of public comment by the U.S. Environmental Protection Agency (EPA) is to evaluate a Build America, Buy America Act (BABA) waiver request submitted by an assistance recipient based on nonavailability of multiple products for a single project.

This solicitation of public comment does not represent a final agency decision. The purpose of this proposal is to inquire whether potential alternative BABA-compliant products may be available that were not identified by the assistance recipient or through the EPA's product research efforts, and whether other factors should be considered in the evaluation of a waiver.

The EPA has completed its market research efforts and was unable to identify an alternative BABA-compliant product meeting the performance-based specifications, in sufficient and reasonably available quantities and of a satisfactory quality. The EPA makes every effort to locate BABA-compliant alternative products through its waiver process and the public comment period provides a meaningful opportunity to vet the Agency's interim research. In the EPA's experience, a viable BABA-compliant product is identified through public comment in many cases. Through this public comment period, commenters may provide information that indicates a compliant item is available. In that circumstance, the EPA would not issue a final waiver.

Public comments are requested for 15 days (specific dates noted on the EPA's website). Please submit comments to [BABA-OW@epa.gov](mailto:BABA-OW@epa.gov). Please include information in the subject of the email identifying it as a public comment on this waiver request, such as "Waiver Comment: Towanda Pumps" or similar.

#### **Background**

The Buy America Preference set forth in section 70914 of the BABA included in the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58), requires all iron, steel, manufactured products, and construction materials used for infrastructure projects under Federal financial assistance awards be produced in the U.S.

Under section 70914(b), the EPA may waive the application of the Buy America Preference, in any case in which it finds that: applying the domestic content procurement preference would be inconsistent

with the public interest; types of iron, steel, manufactured products, or construction materials are not produced in the US in sufficient and reasonably available quantities or of a satisfactory quality; or the inclusion of iron, steel, manufactured products, or construction materials produced in the U.S. will increase the cost of the overall project by more than 25 percent. All waivers must have a written explanation for the proposed determination; provide a period of not less than fifteen (15) calendar days for public comment on the proposed waiver; and submit the proposed waiver to the Office of Management and Budget's (OMB) Made in America Office for review to determine if the waiver is consistent with policy.

### **Summary**

Proposed Waiver: The EPA is soliciting comments regarding whether to issue a project waiver of the requirements of section 70914 of the BABA included in the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58), for jet motive pumps used in an infrastructure project funded through the Clean Water State Revolving Fund.

Waiver Type: Nonavailability of a BABA-compliant product in sufficient and reasonably available quantities or of a satisfactory quality.

Waiver Level and Scope: Project level waiver a single type of product for a single project. No other project will utilize the waiver.

Proposed Waiver Description: Project-specific nonavailability waiver of BABA manufactured product and/or iron and steel requirements to the Applicant in Pennsylvania, for jet motive pumps for the Wastewater Treatment Plant Upgrades Project.

Project Summary: The project will include upgrades to the existing Towanda Borough Wastewater Treatment Plant in Towanda Borough, Pennsylvania. The project includes construction of a new headworks facility, rehabilitating components of the digestion process and completing other miscellaneous improvements. The project also includes the installation of new emergency generators and improvements to the existing control and telemetry systems.

Length of the waiver: From the effective date of the final waiver until project completion, estimated to be October 30, 2028.

Summary of Items Covered in the Proposed Waiver (including NAICS): The Applicant is seeking a waiver for the following manufactured product:

Jet Motive Pumps  
NAICS Code: 39914  
PSC Code: 4310

No acceptable BABA-compliant products were identified by the recipient, or through the EPA's market research completed in June 2025. Therefore, the Applicant proposes to procure non-certified manufactured products.

For additional information on the project and waiver request, see the attached original waiver request from the assistance recipient and supporting documents. The original waiver request included foam control pumps and transfer pumps; however, these pumps were removed from the project and waiver request due to cost overruns and to allow the project to be completed

within budget.

#### **Description of Efforts Made to Avoid the Need for a Waiver**

The Applicant performed due diligence prior to requesting a waiver from the EPA. The Applicant contacted six (6) pump manufacturers. One (1) manufacturer indicated that they could provide BABA-compliant products. The pumps did not meet the project specifications, however there were only limited exceptions.

The project engineer thoroughly analyzed the BABA-compliant pumps to determine if it could be utilized without significantly altering project design. The primary exception for the jet motive pumps was the diameter of the suction and discharge flanges. The difference in connection between the current pumps and the proposed pumps meant that the proposed pumps would not be compatible with the existing pump base and housekeeping pad. Both would need to be demolished and reconstructed. Even if that work was completed, the existing piping array would then need to be modified to match the proposed pipe's diameter. This would require complete replacement of piping, since the existing piping includes integrated analytical probes that would be rendered inoperable if it is no longer in the pre-construction configuration. Based on this evaluation, the Applicant determined that attempting to use the proposed alternative pumps was not feasible as it would require an expansion of the project scope, significant redesign, project schedule delays, and additional costs.

The EPA also conducted market research. The market research process included thorough review of the waiver request submission, examination of domestic manufacturer catalogs and other technical data and marketing materials, personal communication with domestic manufacturers, inquiries of regional project officers, and outreach to contractors and engineers with expertise and familiarity with the project. During market research, the EPA contacted eleven (11) manufacturers and suppliers for pumps. No (zero) manufacturers indicated they could produce BABA-compliant products that met the technical specifications of the project.

#### **Anticipated Impact if No Waiver is Issued**

Absent a waiver from the EPA, the Applicant would be unable to complete the project. Completion of the project is necessary to improve treatment plant operations and ensure its continued, efficient operation. Without upgrades, including the construction of new facilities and installation of equipment to replace malfunctioning or obsolete equipment, the Applicant's wastewater treatment plant will eventually reach a state of catastrophic failure, and the facility would be rendered inoperable.

The Towanda Borough Wastewater Treatment Plant effluent discharges to Susquehanna River, a major waterway in the Commonwealth and the Chesapeake Bay Watershed. Should partial or complete failure of the treatment plant occur, human health would be impacted by raw sewage backups into customer connections or by the discharge of raw sewage. Aquatic life would also be impacted by partially treated wastewater discharging into the waterway. As such, completion of the project is in the best interest of the community to ensure that the quality of water resources in the area are safeguarded and potential risks to public health are mitigated.

#### **Description of Award**

Recipient Name and/or Unique Entity Identifier (UEI): Towanda Municipal Authority

Federal Financial Assistance Identification Number (FAIN): N/A

Federal Financial Assistance Listing Name: 66.458 Clean Water State Revolving Fund

Federal Financial Assistance Listing Number: 66.458

Common Government-wide Accounting Classification Code: 068

Federal Financial Assistance Funding Amount: \$6,807,020

Total Cost of Infrastructure Expenditures: \$6,807,020

## 1. Summary

The purpose of this application is to request a waiver for the Build America Buy America (BABA) requirements associated with the federal funding for the Towanda Municipal Authority Wastewater Treatment Plant Upgrades Project. The waiver would specifically cover the purchase and installation of horizontal, single stage, end suction centrifugal pumps associated with operating the existing Autothermal Thermophilic Aerobic Digestion ("ATAD") process. All pumps will be installed or maintained as shelf spare units to replace existing pumps currently in service.

<u>Waiver Type:</u>	Non-Availability
<u>Waiver Level:</u>	Project Specific
<u>Grant Recipient:</u>	Towanda Municipal Authority
<u>Infrastructure Project Title:</u>	Wastewater Treatment Plant Upgrades
<u>Awarding Agency:</u>	PENNVEST
<u>Award Number:</u>	ME-71499
<u>Financial Assistance Listing Name and Number:</u>	Clean Water State Revolving Fund (CWSRF)
<u>Project Total Estimated Expenditures:</u>	\$6,807,020
<u>Overall Project Cost:</u>	\$7,736,520
<u>Amount of Federal Assistance:</u>	\$6,807,020
<u>Other Sources of Federal Assistance:</u>	None
<u>Estimated Project Completion Date:</u>	October 30, 2026

## 2. Infrastructure Project Description and Location

The project will take place in Towanda Borough, Bradford County, Pennsylvania. The project involves upgrading the existing Towanda Borough Wastewater Treatment Plant by constructing a new headworks facility, rehabilitating or replacing components of the ATAD process, and completing other miscellaneous improvements throughout the plant site. The project also includes the installation of new emergency generators and improvements to the Authority's existing control and telemetry systems.

### 3. Proposed Products to be Waived

The products for which a waiver is being requested are all **manufactured products** and are summarized in the table below. All products are of the same product line (the [REDACTED] of process pumps) and the specific model number for each product is listed, as well as the application, quantity, and applicable PSC and NAICS codes.

Model Number	Manufacturer	Quantity	Pumping Application	PSC	NAICS Code
[REDACTED]	[REDACTED]	1	ATAD Jet Motive Pump	4310	333914
		1	ATAD Foam Control Pump	4310	333914
		1	SNDR Jet Motive Pump	4310	333914
		2	ATAD Transfer Pump	4310	333914

### 4. Description of Efforts to Avoid Waiver

The Engineer, acting on behalf of the Owner, contacted a wide variety of suppliers of pumps of comparable style and suitability to determine if any truly equivalent models could be provided within the project scope while being sourced domestically in a manner compliant with requirements of the Act. A detailed description of solicitation and due diligence efforts undertaken by Engineer is provided in Section 5 below.

## 5. Market Research Summary

Suppliers for pumps from a total of four manufacturers of domestic horizontal, single stage, end suction centrifugal pumps. In addition, suppliers for a further two manufacturers of pumps of a similar style were also contacted, but such contact revealed that the pumps are not manufactured domestically in a manner that is compliant with the requirements of the Act. A list of those manufacturers and the suppliers which would ultimately provide the pumps which were contacted is summarized in the table below.

Manufacturer	Supplier	Contact	BABA Compliance	Pump Availability
[REDACTED]	[REDACTED]	[REDACTED]	Compliant	Not Available*
[REDACTED]	[REDACTED]	[REDACTED]	Compliant	Not Available
[REDACTED]	[REDACTED]	[REDACTED]	Compliant	Not Available
[REDACTED]	[REDACTED]	[REDACTED]	Compliant	Not Available
[REDACTED]	[REDACTED]	[REDACTED]	Not Compliant	Not Available
[REDACTED]	[REDACTED]	[REDACTED]	Not Compliant	Not Available

For each of the rows in the table above, a series of emails exchanged between the Engineer and the listed contact person has been attached which note that pumps are either not manufactured domestically (BABA compliant), are not available to meet the project requirements, or both. The pumps manufactured by [REDACTED] are a special case which is described in more detail below.

Of the pumps listed above, only those manufactured by [REDACTED] and supplied by [REDACTED] were capable of meeting the requirements of the specifications with only a limited degree of exceptions which appear to be acceptable for the pumps to achieve the design and performance criteria as specified. Notably, the main exception taken to the specifications is the nominal diameter of the suction and discharge flanges for all the pumping applications aside from the ATAD Transfer Pumps. In response to the proposal provided for these pumps, Engineer analyzed the compatibility of each with the existing facilities to determine if these pumps may be installed without modifying the scope of the project as proposed.

Beginning first with the three pumping applications in which the nominal diameter of the suction and discharge flanges do not match that of the specified pumps, it quickly became clear that incorporating the [REDACTED] pumps in the project would require extensive work outside of the project scope. In each case, the dimension from the

centerline of the suction connection to the bottom of the pump differs from that of the existing pump, meaning that the entire pump base and housekeeping pad would need to be deconstructed and recreated such that the centerline of the pump would match the centerline of the existing piping to which it must join. Even in the case that that work is completed, further work would be required to modify the existing piping array such that the nominal diameter of the pump could be accommodated. In each case this would involve cutting the existing piping and installing a flanged concentric reducer to reduce the diameter of the piping. Such work is infeasible without complete replacement of the suction-side piping as several analytical probe devices have been inserted via “taps” in the piping, rendering this piping invalid for continued use unless it remains in place in its precise pre-construction configuration.

In the context of the ATAD Transfer Pumps, in which the [REDACTED] pumps match the nominal suction and discharge diameters of the existing and proposed pumps, similar work to that described above would still be required. The suction-side piping modifications would not be required since the flange connections already match that of the existing pumps, but the entire pump base and housekeeping pad assembly would require demolition and reconstruction to align the centerline of the pump suction with the existing piping to which it must connect.

Aside from being outside of the defined scope of the project, the above work would result in delays of the project which cannot comply with the project schedule. Although time delays can normally be accommodated so long as those delays do not result in realized damages to the Owner, in this case the intermediate progress milestones have been set to prevent damages to the Owner from occurring. The scope of work associated with these pumps has been intentionally limited to minimize the extent of disruption to the existing system. As such, all work is to be completed in a *30-day* period during the completion of the project. Further time delay would result in the Owner releasing significant quantities of wastewater sludge without stabilization, processing, and dewatering, greatly increasing operational costs. In summary, the work required to incorporate these pumps into the project would both require a change to the project scope and would inevitably delay project completion to the point where the Owner would realize financial damages. As such, the [REDACTED] pumps are not compliant with project requirements despite meeting most specified criteria.

## **6. Anticipated Impact Without Waiver**

If a waiver is not granted, it will not be possible to complete the project as designed. The project scope as approved by the Pennsylvania Department of Environmental Protection and for which funding has been granted by PENNVEST does not include any work outside of the replacement of the pumps and flexible, expansion couplings to which the pumps are joined. The installation of pumps which are BABA compliant would result in significant modifications to the piping array to which the pumps are joined being required. This would increase the scope of the project beyond that which is previously approved – which is forbidden in accordance with the terms of the PENNVEST funding offer under ME-71499. It would also render it impossible to



provide several of the sourced pumps as shelf spares, as the work to later integrate them into the facility would be outside the expertise of the plant operational staff and would require a specialty contractor as will be completing this project. Such an incompatibility would not allow the spare pumps to be subsequently installed without significant modifications to the existing facilities, nullifying any advantages associated with maintaining these components.

## **7. Justification of Waiver**

Based on the evidence presented in the preceding sections, granting of this waiver request is justified by inherent incompatibilities with market offerings and the specific requirements of this project and is necessary to complete the portion of the Towanda Municipal Authority Wastewater Treatment Plant Upgrades project discussed herein. The use of direct or "in-kind" replacement equipment is necessary to ensure that the project can remain within its defined scope and to prevent delays to the project which would culminate in financial damages on the part of the Owner. It was thus determined that a project specific waiver permitting the purchase and installation of horizontal, single stage, end suction centrifugal pumps which do not comply with the requirements of the Act is the only way to complete this project.

## 2.2 DESIGN REQUIREMENTS

- A. Pumps specified in this section shall be either of the horizontal, end suction, single stage, centrifugal type or the vertical, single stage, centrifugal vortex type as denoted in this specification section and on the Contract Drawings. All pumps are to be variable speed.
- B. All pumps are to be designed to handle waste activated or aerobically digested sludge with temperatures between 50°F and 160°F and solids contents between 1% and 4%.
- C. Each pump assembly, including the pump, motor, and appurtenant features, shall be provided by the pump manufacturer to ensure compatibility and integrity of the individual components.
- D. Pumps shall be supplied in accordance with the following schedule:

Pump Function	Quantity	Type
ATAD Feed	2 Installed	Vertical Centrifugal
ATAD Jet Motive	1 Spare	End Suction Centrifugal
ATAD Foam Control	1 Spare	End Suction Centrifugal
SNDR Jet Motive	1 Installed	End Suction Centrifugal
ATAD Transfer	2 Spare	End Suction Centrifugal

## 2.3 PERFORMANCE REQUIREMENTS

- A. Minimum performance requirements of the pumps specified herein are to be as denoted in the schedule below.

Pump Function	Design Pumping Rate	Design Hydraulic Head	Maximum Motor Horsepower	Minimum Hydraulic Efficiency
ATAD Feed	500 gpm	35 feet	15 HP	68%
ATAD Jet Motive	4,000 gpm	32 feet	50 HP	77%
ATAD Foam Control	1,300 gpm	65.7 feet	40 HP	72%
SNDR Jet Motive	3,580 gpm	25.5 feet	40 HP	78%
ATAD Transfer	300 gpm	37.5 feet	10 HP	57%

- B. The design set points (combination of design pumping rate and hydraulic head) are to be at a suitable point on the pump curve at or near the maximum pumping speed.

## 2.4 ATAD FEED PUMPS

- A. Materials of construction for the ATAD Feed Pumps shall be as follows:
1. Body/Volute/Impeller: ASTM A48-CL30 Cast Iron
  2. Sleeve/Shaft: Type 304 Stainless Steel
  3. Base: ASTM A283 Grade D Structural Steel
  4. Gaskets: ASTM F104
  5. O-Rings: Buna-N
- B. The casing shall be of the vertical end suction volute type having sufficient strength and thickness to withstand all stress and strain from service at full operating pressure and load. A handhole shall be provided in the casing for convenient access to the impeller and interior parts. The inner contours of the handhole shall match the volute shape of the casing interior. Discharge gauge connections (1/2" NPT) along with 3/4" NPT drain and vent connections shall be provided. Suction and discharge connections shall be 6" nominal diameter, 125#, flat face flanges in accordance with ANSI B16.1. Suction and discharge orientation shall be as shown on the Contract Drawings.
- C. The impeller shall be cast in one piece and dynamically balanced to prevent excessive vibration. It shall be specifically designed to pump raw wastewater and have the largest size sphere capacity possible to prevent clogging. The impeller shall be keyed to a tapered shaft and firmly held in place by a grade 5 zinc dichromate plated, strained, and hardened impeller fastener sealed with a gasket against the hub. The fastening arrangement shall be such that the impeller cannot be loosened by torque from either forward or reverse rotation and prevent leakage of the pumped fluid from entering the threads, causing corrosion.
- D. A common pump and motor shaft machined for straight fit at the impeller shall be provided. A renewable straight shaft sleeve of type 304 stainless steel, positive adhesive sealed to prevent leakage between the shaft and the sleeve, shall be furnished.
- E. A heavy duty integrally cast one-piece base and elbow made of cast iron conforming to ASTM A48 Class 30 shall be provided. Base elbow is to be furnished with gauge connections (1/2" NPT) and handhole cleanout located at 180° from the suction flange.
- F. The volute, front head, backhead, and motor shall be manufactured with concentric shoulder fits to assure accurate alignment. All machine bolts, nuts, and cap screws shall be of the hex head type and shall not require the use of any special tools.
- G. A flexible coupling shall be provided between the pump and motor. The coupling shall be of the all metal hub type with heavy duty flexible rubber insert. The coupling shall be dynamically balanced and rated for the appropriate horsepower and RPM. The coupling selected shall be rated at least 25% greater than the maximum load imposed by the pump. The coupling shall be locked to the pump and motor shafts by square keys and set screws.
- H. Each pump shall be supported by a fabricated steel quadruped base of sufficient strength and stiffness to support the entire pumping unit without excessive distortion or

vibration. Anchor bolt holes shall be provided to securely fasten the base to the concrete floor pad shown on the drawings. The base shall be provided with a separate suction elbow. Pedestal mounted units with an integral suction elbow will not be considered for approval.

- I. Each motor shall be supported by a cast iron or fabricated steel high ring base of sufficient strength and thickness to support the entire weight of the motor. The high ring base shall provide enough height to make the coupling accessible. The high ring base shall have machined registered fits to maintain alignment between the pump and motor shafts. The high ring base shall be mounted on the pump casing and provided with an expanded metal coupling guard.
- J. A nominal 1200-rpm vertical solid shaft motor with a horsepower rating as scheduled in Article 2.3 of this specification section shall be provided. The motor shall be dual rated for use with 230/460VAC, 3-Ph, 60-Hz electrical service and shall be installed with dripproof enclosure, Class B insulation. The service factor shall be 1.15. Motor bearing shall be designed to provide a nominal 40,000-hour L10 bearing life in accordance with methods approved by the AFBMA for the best efficiency point.

2.5 SPECIFIC END SUCTION CENTRIFUGAL PUMPS

A. ATAD Jet Motive Pump		
1. Nominal Suction Diameter:	14"	
2. Nominal Discharge Diameter:	<del>14"</del>	12"
B. ATAD Foam Control Pump		
1. Nominal Suction Diameter:	10"	
2. Nominal Discharge Diameter:	8"	
C. SNDR Jet Motive Pump		
1. Nominal Suction Diameter:	14"	
2. Nominal Discharge Diameter:	<del>14"</del>	12"
D. ATAD Transfer Pumps		
1. Nominal Suction Diameter:	6"	
2. Nominal Discharge Diameter:	<del>6"</del>	4"

- E. Deviations from any of the values specified above is prohibited due to the configuration of piping, valves, and appurtenances on the suction and discharge sides of each pump which are to remain without modification.

2.6 GENERAL END SUCTION CENTRIFUGAL REQUIREMENTS

- A. Pumps shall be designed to be capable of transferring thermophilically aerobic digested biosolids having temperatures from 50°F to 160°F and a Total Solids concentration from 1% to 4%.
- B. Each pump casing shall be of the end suction type with a self-venting top discharge. All connections shall be 125 lb flanges.

1. The casing shall be of a back pullout design, allowing for complete disassembly of the pump without disturbing any adjacent piping/fittings or the driver.
  2. Pump casing shall be supported by rigid integral cast foot mount.
  3. Casing is to be radially split, rabbited to the stuffing box cover, and adapted to ensure proper internal alignment.
    - a. There shall be a confined gasket located between the casing and stuffing box cover to ensure a positive seal is maintained. Gasket shall be constructed of PTFE.
  4. A wear plate shall be provided and utilized to protect the casing against wear and to set the impeller clearance to maintain optimal pump efficiency.
    - a. The wear plate shall be constructed of ASTM A890-3A duplex stainless steel.
- C. The pump impeller shall be of the "open" type design to maximize efficiency.
1. Impeller is to be statically and dynamically balanced to IS 1940 G6.3 standards.
  2. The impeller shall be externally adjustable by adjusting the case-mounted wear plate.
  3. Impeller is to be mounted on the shaft via a spiral key assembly and locked in place using a threaded bolt and locking washer and an O-ring shall externally seal the impeller from the shaft. The O-ring shall be constructed of EPDM rubber.
- D. The pump shaft shall be constructed of AISI 329 duplex stainless steel or equivalent.
1. The maximum shaft deflection shall be less than 0.002 at the face of the stuffing box.
  2. Pump construction shall include an adapter to ensure positive alignment of the shaft to the bearing cartridge and casing cover combination.
- E. The bearing cartridge shall be sealed with non-contacting isolators.
1. The isolator shall protect the bearing assembly from contamination by outside sources. Oil or grease seals are not acceptable.
  2. Cartridge shall be drilled on both sides to allow installation of an optional oiler. Each cartridge shall have a vent and a drain connection.
  3. Bearings are to be shoulder mounted and shall not be externally adjustable.
  4. Radial bearings are to be cylindrical roller bearings with a minimum L10 life of 100,000 hours.
  5. Axial (thrust) bearings shall be duplex 40° angular contact bearings with a minimum L10 life of 100,000 hours.
  6. Bearings shall be lubricated in an oil bath.
- F. Pumps shall be outfitted with a double mechanical seal. Pump shall be designed to accept a 1/2" potable water feed line for the pump seal.
- G. Drive Unit
1. The pump motors shall be the horizontal type with normal starting torque and low starting current characteristics.
  2. Motors shall be suitable for use with 460VAC, 3-Ph, 60-Hz electrical service.
  3. The motors shall not be overloaded at the design condition.
  4. Motors shall have copper windings and suitable for use with a variable frequency drive.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install pump per manufacturer's recommendations.
- B. Provide and connect piping, power and control conduit, and wiring to make system operational and ready for startup.

#### 3.2 FIELD QUALITY CONTROL

- A. Inspection:
  - 1. Ensure that the pumps have been installed correctly and that there is no objectionable heat or vibration.
  - 2. Check pump and motor alignment, proper motor rotation, and pump and drive units for proper lubrication.
- B. Testing:
  - 1. Operate pump on clear water at design point for continuous period of two hours, under supervision of manufacturer's representative and in presence of Engineer.
  - 2. Verify pump performance by performing time-drawdown test or time-fill test.
- C. Equipment Acceptance:
  - 1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
  - 2. Make final adjustments to equipment under direction of manufacturer's representative.
- D. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing

#### 3.3 COMMISSIONING

- A. Start pump and adjust controls and pressure setting. Replace damaged and malfunctioning controls and equipment.
- B. Commissioning is to be completed in accordance with the procedures defined in Spec. No. 019100, "Commissioning".

#### 3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel on procedures and schedules related to well and pump startup and shutdown, troubleshooting, servicing, and preventive maintenance.
- B. Review data in the operation and maintenance manuals.
- C. Schedule training with Owner with at least 7 days advance notice.

END OF SECTION 432306