

[REDACTED]
[REDACTED]
[REDACTED]

July 6, 2023

NOTE: Information in this waiver may have been redacted or removed due to issues of proprietary business information or incompatibility with Federal accessibility requirements. To request the information redacted for purposes of accessibility requirements, please email CWSRFWaiver@epa.gov.

Mr. Abram Peterson, PE
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155

157970

Subject: AIS Waiver Request
PPL Project Name: Rehab Treatment, Liquid Treatment Upgrade
PPL Project Number: 280713-PS01
Rochester Water Reclamation Plant Liquid and Solids Upgrade J4411

Dear Mr. Peterson:

This letter serves as a request for a waiver of American Iron and Steel (AIS) requirements for new air flow control valves to be incorporated into the above referenced project. This waiver request is for twenty-two (22) elliptical diaphragm flow control valves supplied by [REDACTED]. The valves will be used to control air flow rates to aerated zones in new and existing bioreactors included in the subject plant upgrade project.

This is an availability waiver request as we are not aware of a domestically manufactured valve that complies with AIS requirements and meets the project's stringent air flow control and structural durability requirements. The specified elliptical diaphragm control valve, which is the subject of this waiver request has a linear control curve from 0-100% open which provides accurate flow control across the entire range of valve positions. The valves are calibrated with flow meters that produce an accuracy necessary to effectively meet the treatment plant's goals under a new low dissolved oxygen (DO) control strategy that can reduce aeration energy demands by more than 30 percent. Pilot testing has demonstrated that other valves lack the control accuracy to produce reliable results in the new low DO control strategy. The [REDACTED] diaphragm control valves are unique air flow control valves considering their extremely low headloss and linear valve characteristic curves compared to other types of valves. In addition to superior performance, the lower headloss results in less energy usage since the process aeration blowers can run at lower pressures.

The [REDACTED] diaphragm control valves are designed and manufactured in [REDACTED]. Hence, we are seeking a waiver from the AIS requirement due to the non-availability of such valves in the USA from domestic suppliers.

Following are responses to the *Information Checklist for Waiver Request* document attached as Appendix 1 to the AIS Step-By-Step Waiver Process.

General Requirements

Description of the Foreign and Domestic Construction Materials

Diaphragm Control Valves

Unity Measure

Each

Quantity

Twenty-Two (22)

Price

██████████

Time of Delivery

March 1, 2024

Location of Construction Project

Rochester, Minnesota

Name and Address of Proposed Supplier

██████████
██████████
██████████

A detailed justification for the use of foreign construction materials. There are no known domestic manufacturers of a valve that can meet the unique project specifications and also meet comply with the AIS requirement. The specified elliptical diaphragm control valve, which is the subject of this waiver request has a linear control curve from 0-100 percent open which provides accurate flow control across the entire range of valve positions. It also provides accurate air flow measurement and control within specified design piping distances.

Availability Waiver Requests

Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials. There are no known valves with comparable performance from domestic suppliers. A request for bids that allowed an "or equal" product was publicly advertised, and bids were received and opened on June 13, 2023. There were no "of equal" products submitted.

Documentation of the assistance recipients' efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. Through a search of known valve manufacturers' on-line product information, we have identified 4 manufacturers of precision flow control valves: 1) ██████████ 2) ██████████ 3) ██████████ and 4) ██████████ We have confirmed with the local sales representatives for ██████████ that their valves are not AIS compliant. We have evaluated the performance characteristics of a ██████████ v-port ball valve and

determined that it does not meet the performance requirements of this project. To achieve the performance characteristics of a [REDACTED] diaphragm control valve, the next larger size of the [REDACTED] v-port ball valve would be required. This valve would have 4 times the weight and the larger size could not fit within the available piping configuration to meet the upstream and downstream straight-pipe requirements for accurate flow measurement. Furthermore, the [REDACTED] v-port ball valve is a ¼-turn valve, whereas the [REDACTED] valve is a 20-turn valve. A 1° change in the actuator of the [REDACTED] valve results in a 1.11% change in valve position. A 1° change in the actuator of the [REDACTED] valve results in a 0.0139% change in the valve position, providing far greater precision essential to meet the project's process control requirements.

Project Schedule. Valves must arrive onsite by March 1, 2024, to allow for project phasing while maintaining plant treatment capabilities. These valves are a critical component to allow for treatment during construction with limited reserve plant capacity. The balance of plant construction is projected to bid in October 2023 with a final completion of December 2025.

Relevant Excerpts from Project Plans, Specifications, and Permits Indicating the Required Quantity and Quality of Construction Materials

Valve Requirements

- A. General:
 - 1. Provide valves of the same type, size range and service from a single manufacturer.
 - 2. Provide new, unused valves for the work.
 - 3. Provide valve materials free from defects or flaws, with true alignment and bores.
- B. Acceptable Products:
 - 1. [REDACTED] Elliptical Diaphragm Control Valve.
 - 2. Or equal products must be pre-approved prior to submitting a bid.
- C. Design: The control valve shall have the following features:
 - 1. A single sliding plate with an elliptical control aperture specifically designed for precise and low-loss control of air flow and distribution in wastewater treatment plant aeration tanks.
 - 2. Provide an integrated pressure wave breaker to prevent high-pitched noise generation.
 - 3. Valves shall be compatible with standard ANSI 150 Class flanges.
 - 4. At full open valve position, valve clear opening shall be 100 percent of the pipe diameter with maximum 4 in WC pressure loss at full load. No obstructions from the valve shall be in the flow stream when 100 percent open.
 - 5. Gas-tight shut-off for a minimum pressure of 20 psi.
 - 6. Stroke range: From 0-100% stroke with a design range between 30-70 percent stroke.
 - 7. Provide a mechanical stroke indicator.
 - 8. All moving components (sliding gate, stem, etc.) shall be fully constrained within the body of the valve and actuator during operation.

Mr. Abram Peterson, PE
Minnesota Pollution Control Agency
July 6, 2023
Page 4

9. Sliding gate shall seal against the body of the valve using a combination of transverse, edge, and end seals. Packing or O-ring style seals are not allowed.

Valve Materials

- A. Body: Galvanized carbon steel ST37 with structural length per DIN 3202/K1.
- B. Sliding gate shall seal against the body of the valve using a combination of transverse, edge, and end seals. Packing or o-ring style seals shall not be used.
- C. Coatings:
 1. Passivation coat.
 2. Powder coated epoxy coat.
 3. Powder coated UV resistant layer of Polyurethane RAL 5020.
- D. Trim:
 1. Guides and Seals: PTFE, Viton, or HNBR.
 2. Diaphragm plate: Type 316 stainless steel.
 3. Spindle and hardware: Type 306 stainless steel.

Copies of the relevant plans and complete valve specification are included as attachments to this request.

Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought. City of Rochester and [REDACTED] have contacted the supplier and confirmed the non-availability of domestic construction materials.

Has the State received other waiver requests for the materials described in this waiver requisition for comparable projects? To the best of our knowledge there have been no other waiver requests for this valve in the state of Minnesota, however, this same valve was granted an AIS waiver for a project at the Water Pollution Control Center in Tiffin, Ohio in March of 2020.

Thank you for your review of this Waiver Request for the aeration system diaphragm control valves. Please feel free to call or email anytime with questions or comments.

Very truly yours,

[REDACTED]

[REDACTED]

Attachments: 1) Specification Section 40 05 60
AERATION CONTROL VALVES
2) Drawings

cc: [REDACTED]

SECTION 40 05 60
AERATION CONTROL VALVES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section specifies the supply of twenty-two (22) elliptical diaphragm control valves, appurtenances, and related services.
- B. Valves shall meet the operating conditions and sizing provided to accomplish optimized aeration flow control.
- C. The control valves shall be electrically modulated to control air flow to independent fine bubble aeration grids located in two separate bioreactor basins, Second Stage Bioreactor (SSB) and Third Stage Bioreactor (TSB). A single control valve shall be electrically modulated to control air flow between the two Bioreactors operating at two different pressures. SSB has 3 parallel trains with 4 aeration zones per train and TSB has 3 parallel trains with 3 aeration zones per trains.
- D. The aeration control valves and the air flow meters specified in Section 40 91 02 shall be compatible with the [REDACTED], functioning as an integrated system meeting the performance requirements specified in this Section.

1.02 REFERENCES

- A. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
ANSI 16.10	Face-to-Face and End-to-End Dimensions of Valves
ANSI B1.20.1	Pipe Threads, General Purpose
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, and 250
ANSI B16.5	Pipe Flanges and Flanged Fittings
ANSI B16.34	Valves—Flanged, Threaded, and Welding End
API 607	Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats
ASTM A48	Gray Iron Castings
ASTM A108	Steel Bars, Carbon, Cold-Finished, Standard Quality
ASTM A126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A216/A216M	Steel Castings, Carbon, Suitable for Fusion Welding, for High Temperature Service