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ADDENDUM NO. 1

CONTRACT NO. VSA-173

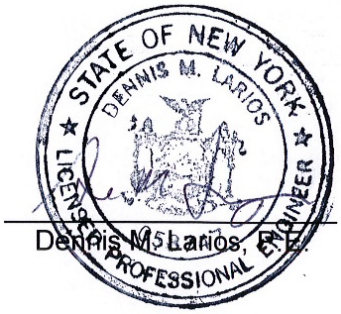
WATER SUPPLY PROTECTION: PRE-FILTER PROJECT

NY RISING COMMUNITY RECONSTRUCTION PROGRAM

NEW YORK STATE GOVERNOR'S OFFICE OF STORM RECOVERY

VILLAGE OF SAUGERTIES, ULSTER COUNTY, NEW YORK

September 13, 2018



SPECIFICATIONS:

EJCDC C-111 - Page 2	ADVERTISEMENT FOR BIDS – **Delete** last paragraph and **replace** with the following: A pre-bid conference will be held at **11:00 AM** local time on Tuesday, September 18, 2018 at the Village of Saugerties Water Treatment Facility, 24 Reservoir Road, Saugerties, New York 12477. Attendance at the pre-bid conference is highly encouraged but is not mandatory. **NOTE: CHANGE OF TIME FOR PRE-BID CONFERENCE**
EJCDC C-410 Pages 1-10	BID FORM - GENERAL CONSTRUCTION – **Delete** in its entirety and **replace** with attached. **NOTE: Inclusion of ALLOWANCE item for work related to Master Control Panel.**
Pages 01020-1 – 01020-2	SECTION 01020 – ALLOWANCES – **Add** the attached Section 01020 – Allowances to the Specifications.
Pages 11100-1 – 11100-15	SECTION 11100 - PRE-FILTER TUBE SETTLER CLARIFIER – **Delete** section in its entirety and **replace** with attached **REVISED** SECTION 11100 - PRE-FILTER TUBE SETTLER CLARIFIER.

END OF ADDENDUM NO. 1
[EXCEPT FOR ATTACHED REVISED **GC** BID FORM & REVISED SECTION 11100]

ADDENDUM NO. 1

BID FORM
GENERAL CONSTRUCTION

CONTRACT NO. VSA-173

WATER SUPPLY PROTECTION: PRE-FILTER PROJECT

FOR THE

VILLAGE OF SAUGERTIES

ULSTER COUNTY, NEW YORK

BID FORM – GENERAL CONSTRUCTION

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Village Clerk, Village of Saugerties, Village Hall, 43 Partition Street, Saugerties, New York 12477.

1.02 Bids shall be delivered by the following date and time at which point the bids will be publicly opened and read: **2:00 PM local time on Friday, September 28, 2018.**

1.03 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

2.02 Notwithstanding any inconsistent provision of any general, special or local law, whenever as a condition precedent to the reception or consideration of a bid for furnishing supplies, materials, or equipment or performing work for a political subdivision or any officer, board or agency thereof or of any district therein, a deposit of a certified check, money, bonds or other obligations is required, a person or corporation submitting a bid may withdraw the same if no award of the contract be made within forty-five days after the receipt thereof, and upon such withdrawal such deposit shall be forthwith returned. A certified check, money, bonds or other obligations or security deposited to secure a bid shall be retained under the jurisdiction and control of the chief fiscal officer or other officer of the political subdivision or district having custody of its money, until returned to the bidder or forfeited.

2.03 This project is being financed by the NYS Governor's Office of Storm Recovery. Bidder is aware of the Section 3 requirements, M/WBE goals, Federal labor standards and wage rates, online reporting requirements using Elations System, Inc. and GOSR Supplementary Contract Conditions.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum, Date

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the

Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

PROPOSAL

WATER SUPPLY PROTECTION: PRE-FILTER PROJECT

NY RISING COMMUNITY RECONSTRUCTION PROGRAM

N.Y.S. GOVERNOR'S OFFICE OF STORM RECOVERY

VILLAGE OF SAUGERTIES

GENERAL CONSTRUCTION

1. All work including but not limited to relocation of existing metal stairs; construction of concrete support pad (extension); furnishing and installing a 700 gpm tube settler (Pre-Filter) with Unit Control Panel; furnishing and installing a sludge recirculation pump, effluent transfer pump, and an anionic polymer chemical feed system; furnishing and installing piping, valves, and appurtenances; modifications to existing piping; post-installation training; and conducting a post-installation full-scale pilot study to demonstrate performance and to determine proper chemical feed rates, site restoration and all work required to complete the project as specified herein.
2. **ALLOWANCE for Owner-Selected Vendor (to be GC subcontractor) for upgrade and refurbishment of existing Master Control Panel. Details of upgrade to be determined by Owner in consultation with vendor……$150,000.00**

TOTAL LUMP SUM AMOUNT BID (ITEM 1+2) GENERAL CONSTRUCTION $_____

TOTAL AMOUNT BID WRITTEN IN WORDS:

_____

_____

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete within 300 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 360 calendar days after the date when the Contract Times commence to run.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Exhibit 1 – Non-Collusive Bidding Certification;

B. Attachment "D", Iranian Energy Sector Divestment Certification;

C. Required Bid security;

D. Required Bidder Qualification Statement with supporting data (EJCDC C-451);

E. List of Proposed Subcontractors and Suppliers;

F. List of Project References (Schedule A, B and C);

G. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

H. M/WBE Utilization Plan (PROC-2 Revised 2/2012).

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number:

Fax Number:

Contact Name and e-mail address:

NON-COLLUSIVE BIDDING CERTIFICATION REQUIRED BY SECTION 139-D OF THE STATE FINANCE LAW

SECTION 139-D, Statement of Non-Collusion in bids to the State:

BY SUBMISSION OF THIS BID, BIDDER AND EACH PERSON SIGNING ON BEHALF OF BIDDER CERTIFIES, AND IN THE CASE OF JOINT BID, EACH PARTY THERETO CERTIFIES AS TO ITS OWN ORGANIZATION, UNDER PENALTY OF PERJURY, THAT TO THE BEST OF HIS/HER KNOWLEDGE AND BELIEF:

[1] The prices of this bid have been arrived at independently, without collusion, consultation, communication, or agreement, for the purposes of restricting competition, as to any matter relating to such prices with any other Bidder or with any competitor;

[2] Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to opening, directly or indirectly, to any other Bidder or to any competitor; and

[3] No attempt has been made or will be made by the Bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A BID SHALL NOT BE CONSIDERED FOR AWARD NOR SHALL ANY AWARD BE MADE WHERE [1], [2], [3] ABOVE HAVE NOT BEEN COMPLIED WITH; PROVIDED HOWEVER, THAT IF IN ANY CASE THE BIDDER(S) CANNOT MAKE THE FOREGOING CERTIFICATION, THE BIDDER SHALL SO STATE AND SHALL FURNISH BELOW A SIGNED STATEMENT WHICH SETS FORTH IN DETAIL THE REASONS THEREFORE:

[AFFIX ADDENDUM TO THIS PAGE IF SPACE IS REQUIRED FOR STATEMENT.]

Subscribed to under penalty of perjury under the laws of the State of New York, this _____ day of_____, 20____as the act and deed of said corporation of partnership.

IF BIDDER(S) (ARE) A PARTNERSHIP, COMPLETE THE FOLLOWING:

NAMES OF PARTNERS OR PRINCIPALS	LEGAL RESIDENCE
_____	_____
_____	_____
_____	_____
_____	_____

IF BIDDER(S) (ARE) A CORPORATION, COMPLETE THE FOLLOWING:

NAME	LEGAL RESIDENCE
_____	_____
President:	
_____	_____
Secretary:	
_____	_____
Treasurer:	
_____	_____
President:	
_____	_____
Secretary:	
_____	_____
Treasurer:	

Identifying Data

Potential Contractor_____

Address_____
Street

_____
City, Town, etc.

Telephone_____ Title_____

If applicable, Responsible Corporate Officer

Name_____ Title_____

Signature_____

Joint or combined bids by companies or firms must be certified on behalf of each participant.

_____	_____
Legal name of person, firm or corporation	Legal name of person, firm or corporation
By_____	_____
Name	Name
_____	_____
Title	Title
Address_____	Address_____
Street	Street
_____	_____
City State	City State

Attachment "D"

Certification Pursuant to Section 103-g
Of the New York State
General Municipal Law

A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.

B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:

1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

_____

Signature

_____

Title

_____

Company

_____

Date

SECTION 01020 - ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. Coordinate allowance work with related work to ensure that each selection is completely integrated and interfaced with related work.

1.02 DESCRIPTION OF REQUIREMENTS:

A. Definitions and Explanations: Certain requirements of the work related to the allowance are shown and specified in contract documents. The allowance has been established in lieu of additional requirements for that work, and further requirements thereof (if any) will be issued by change order.

B. Types of allowances scheduled herein for the work include the following:

1. Lump Sum allowances.

C. Selection and Purchase: At earliest feasible date after award of Contract, advise Engineer of scheduled date when final selection and purchase of each product or system described by the allowance must be accomplished in order to avoid delays in performance of the work.

As requested by the Engineer, obtain and submit proposals for the work of the allowance for use in making final selections, include recommendations for selection which are relevant to the proper performance of the work.

Purchase products and systems as specifically selected (in writing) by the Engineer.

1.03 SUBMITTALS:

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to indicate actual quantities of material delivered to the site for use in fulfillment of each allowance.

C. Submit time sheets for all employees involved in the work shown on the drawings and outlined in this Section.

D. Payment for work performed under this Section will be paid on a time and material basis and will be based on the Contractor's related cost for materials or systems, labor costs, and overhead and profit margin as outlined in General Conditions, Supplemental Conditions and Division 1 sections of these specifications, as approved by the Engineer.

E. At Project closeout, credit unused amounts remaining in the lump sum allowance to Owner by Change Order.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCES:

A. General Contractor:

1. Allowance: The General Contractor shall include in his Contract Price Bid a lump sum allowance of $150,000.00 for upgrades and refurbishment of existing Master Control Panel (MCP), by an Owner-selected vendor (to be subcontractor to GC).

END OF SECTION 01020

REVISED SECTION 11100 – PRE-FILTER TUBE SETTLER CLARIFIER

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 QUALITY ASSURANCE

A. This specification covers the furnishing of WesTech Engineering, Inc. water treatment equipment as Base Bid. The equipment and material specified is deemed most suitable for the proposed water treatment system. The contractor shall prepare his bid on the basis of the materials and equipment listed herein. Any bid using other than the Base Bid equipment will be considered nonresponsive and the bid will not be considered for award. The contract will be awarded to the lowest responsible bidder incorporating the Base Bid equipment. Prequalified Alternates will be considered as noted below.

B. The Base Bid Equipment shall be: WesTech Model #HR31 (Microfloc™ products Trident® HSR Model #HSR-700A, hereinafter the "HSR").

1.03 PREQUALIFICATION OF ALTERNATE EQUIPMENT

A. The contractor may submit other manufacturer's equipment for consideration as an alternative to the equipment specified as the Base Bid. An addendum will be issued at least five days before the bid date naming alternate suppliers that conform to the specifications and are approved to bid equipment for the project. To qualify alternate equipment, the contractor shall provide the following information to the Engineer at least fifteen days prior to the bid date:
   1. Drawings, specifications, and product literature with adequate detail to determine that what is proposed will meet the requirements of the plans and specifications. This design pre-submittal shall be complete and shall include as a minimum, the following:
      a. Detailed Layout Drawings.
      b. Detailed component specifications and catalog cut sheets.
      c. Process Flow Diagram (PFD) Drawing.
      d. Detailed list of variations required from original design, referencing appropriate sections of the specifications and locations on the drawings.
      e. History of the process offered, including pilot data and experience.
      f. Installation list including actual scale-up data from pilot testing to full scale plant operation, also including plant contact names and telephone numbers.
      g. A detailed System Performance Guarantee.
   2. A list of ten installations of similar type and size with plant addresses and telephone numbers. The engineer and owner may contact these installation sites to determine experience. The alternate equipment supplier shall also provide a list

of total plants. The total number of units installed shall not be less than twenty for experience purposes.

3. Evidence of design capability including a description of facilities, the number and professional qualifications of personnel, and quality control practices. The alternate equipment supplier shall identify major outside fabricators for the purpose of determining experience.
4. Show evidence of being able to provide the quality of equipment and services described in this specification, the equipment supplier shall submit their ANAB-accredited ISO 9001 quality system certification. AIAO-BAR accredited systems are not a recognized equivalent and are therefore specifically prohibited. The quality procedures shall provide for a means of qualifying all sub-vendors and shall specify that the fabrication facility is a critical vendor and shall require inspection. The quality system shall be audited on-site by a third-party independent registrar at least annually. Certification shall remain in effect throughout the project start-up.
5. Evidence of technical capability to design and check out the complete alternate system, including modifications which will be required in structures, foundations, and equipment provided by others.
6. Evidence of financial responsibility adequate to complete the project and assure viability of equipment warranty.
7. A complete listing of changes which will be required in the contract plans and specifications to accommodate the alternate equipment.

B. Alternate bidders shall guarantee, in writing, signed by an officer of the company that the equipment offered will provide comparable or superior features, performance quality, and materials of construction as the equipment specified. Prior approval of the alternate equipment shall not constitute final approval of specific equipment, but rather constitute only approval of the respective equipment manufacturers to provide price quotations based on equipment meeting the specifications. Alternate equipment manufacturers shall modify their standard products as necessary to meet all provisions of the specifications without exception.

C. A photocopy of the alternate equipment manufacturer's quotation must be attached to the bid documents, to assure that the alternate equipment bid is in accordance with the equipment which has been prequalified.

D. The cost of any changes incidental to installation of the alternate equipment such as electrical wiring, relocation of piping, engineering supervision, as built drawings, etc., shall be borne by the contractor with no additional expense to the Owner.

E. If after installation the alternate equipment does not perform in accordance with the specifications or other deficiencies are noted, the owner will require the modification or replacement of such equipment to meet the specifications at no additional expense.

1.04 WORK INCLUDED

A. This section of the specification covers the furnishing and installation of Microfloc™ products Trident® HSR Model #HSR-700A clarification unit and appurtenances as shown on the drawings and as specified herein.

B. The following items are a part of this section and shall be furnished by one manufacturer to ensure a properly designed and integrated water treatment system.
   1. Factory built steel modular tank, designed with tube settling compartment.
   2. The treatment system shall include chemical treatment, tube sedimentation, automatic process valves, pumps, controllers, and the system control panel (Unit Control Panel [UCP]).

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with the pertinent provisions of the delivery schedule.

B. Equipment and materials to be shipped F.O.B. shipping points, with freight prepaid to the jobsite. Fabricated parts when delivered to the site shall be stored off the ground and protected from weather and damage. Control and electrical devices shall be stored indoors.

C. Ship fabricated assemblies in largest sections permitted by carrier regulations. Match-mark all sections for ease of field installation

D. Handle so as to prevent damage to equipment during handling and transportation.

E. Equipment supplied under this section shall not be delivered to the site until construction has progressed to the point where installation may properly commence.

1.06 JOB CONDITIONS

A. All work must be accomplished within the constraints of the construction schedule as specified.

B. All work shall be scheduled with the Owner and Engineer.

1.07 SUBMITTALS

A. Approval Drawings: Submit six sets for approval of the following:
   1. Approval drawings showing dimensions, construction and installation details,
   2. Materials used, and shipping and operating weights.
   3. Manufacturer's literature and catalog cuts of purchased items.

B. Installation, Operation & Maintenance Manuals: Submit three copies in electronic format and three copies in hard copy format, each including the following:
   1. Complete manufacturer's installation instructions with detailed installation drawings.
   2. Complete manufacturer's operational instructions.

3. Complete manufacturer's maintenance instructions with complete catalog information, electric motor information, parts list, recommended spare parts list and instructions for periodic maintenance of the treatment unit.

C. This information shall be provided to the Contractor and Engineer at least two (2) weeks prior to the shipment of the equipment.

1.08 GENERAL REQUIREMENTS

A. This equipment shall consist of one (1) WestTech Model #HR31 (Microfloc™ products Trident® HSR Model #HSR-700A) Water Treatment System with associated equipment to comprise a complete system.

B. The unit shall be for treating raw water at a design flow rate of 700 gpm.

C. The treatment system shall be furnished by a single manufacturer who shall comply with the following:
1. The single manufacturer supplying equipment to this specification shall furnish proof of a minimum of 100 installations and 10 years of manufacturing treatment systems similar to the specified system.
2. Due to a potential for higher than normal turbidities, the system manufacturer must furnish proof of treating over 60 NTU raw water for sustained periods of time, and spike loading in excess of 400 NTU.
3. Due to a potential taste and odor problem, or to provide the capability for carbon adsorption, the system manufacturer shall furnish proof of the system's ability to perform properly while feeding Powdered Activated Carbon at a minimum dosage level of 25 mg/l. This must be demonstrated by a minimum of 3 pilot studies and/or operating plants showing positive results.
4. The system must be capable of operating at a range of 50 percent to 100 percent of the standard design flow.
5. Components of the packaged treatment system shall be certified to NSF® Standard 61. Specifically, the tube settlers and paint system shall satisfy this requirement.

PART 2 - PRODUCTS

2.01 GENERAL

A. All component parts and equipment utilized in the pre-engineered water treatment system shall be furnished as a complete integrated system by one manufacturer. The equipment shall be a Microfloc™ products Trident® HSR Water Treatment Tube Settler Clarifier Model #HSR-700A. The equipment shall be as listed below:
1. Number of Tanks: …… One (1)
2. Flow per Tank (gpm): ……. 700
3. Total Plant Flow (gpm): ……..… 700
4. Tube Clarifier Area (ft2): …… 140
5. Tube Clarifier Hydraulic Loading (gpm/ft^2): ……. 5

B. A static mixer shall be provided for the HSR raw water line as shown on the drawings. Refer to Section 02750, 2.09.D (Accessories) for static mixer specifications.

C. Influent operating pressure of 20-30 feet (measured from base of tank) shall be available at the inlet to the static mixer.

2.02 PACKAGE SYSTEM CONSTRUCTION

A. Tank Fabrication
1. The clarification process shall be contained in single, rectangular steel tank. Major components shall be of the size and configuration shown on the drawings and fabricated of 0.3125 (5/16) inch thick minimum steel plate, except the bottom which should be a minimum of 0.250 (1/4) inch thick, suitably braced and supported.
2. All exterior tank connections except the sludge recirculation connection shall be provided with flanged connections.

B. Tube Clarifier Details
1. Primary clarification shall be provided by tube settlers with integral sludge recirculation system.
2. The tube clarifier influent distribution system shall be constructed of Sch. 40 steel headers with orifices located to provide uniform dispersion of the raw water across the bottom of the tube settlers. The header system shall be factory installed and supported from the settling tube supports.
3. Settling tube supports shall be provided as required by the manufacturer.
4. A fixed sludge recirculation pipe shall be provided directly below the tube settlers to allow collection of flocculated solids while minimizing grit and sand passage through the recirculation pump.
5. A sludge removal header system shall be field installed to collect the sludge from the bottom of the tube clarifier basin. The header, guide rails, cable, and sludge withdrawal hose shall be constructed from corrosion resistant materials. The guiderails shall be designed to support the header from the tank side walls. The header shall be supported from the guiderails using V-groove roller wheels to minimize friction forces.
6. A 3 inch diameter flexible high density polyethylene sludge extraction hose shall be provided to effectively remove sludge and operate within appropriate headloss constraints. The flexible hose shall be smooth on the interior and heavily ribbed on the exterior for strength and abrasion resistance. It shall be field installed to a tank wall connection which terminates with a flanged connection.
7. The sludge removal header shall include a drive unit which includes a vertical helical gear reducer driven by a ¼ horsepower TEFC, variable speed DC electric motor with stainless steel shaft, sheave arrangement and overload clutch. All drive components shall be mounted on an adjustable base. A corrosion resistant enclosure shall be provided for each drive.
8. PVC settling tubes shall include a 60 degree incline design. Modules shall be 41 inches deep and cut to fit the tank interior. Settling tubes shall be field installed.

9. A series of five sample lines and manual valves shall be provided for sample collection directly below and from within the tube settlers at various depths. The sample lines and associated valves shall be routed to a waste collection trough on the outside of the unit. The waste collection trough will be equipped with a drain coupling. The installing contractor shall provide and install drain piping to the waste sump.
10. A Sch. 80 PVC header and lateral collector shall be provided for uniform collection of clarified water. The header and laterals shall be properly supported and designed for field installation.
11. A 14 inch x 18 inch access manway shall be included near the base of the settling tube compartment to allow access to the area below the tube settlers without removing the tubes.

C. Plant Process Valves
1. The treatment plant manufacturer shall provide all process control valves in sizes shown on the drawings.
2. Automatic modulating control valve system for the tube clarifier influent line shall incorporate a mag meter and modulating valve to control the flow rate. The mag meter shall be installed in the influent line upstream of the control valve.
3. Automatic flow control system for the effluent shall incorporate an ultrasonic level sensor and VFD pump to maintain buffer tank water level. Ultrasonic level sensor shall be mounted at the top of the effluent buffer tank section and positioned to properly sense the liquid level.
4. Automatic open-close valves shall be provided for the sludge recirculation, and tube clarifier sludge blowdown for the tank.
5. The automatic valves for all systems except the sludge recirculation and blowdown shall be wafer-type butterfly valves with electric motor operators, powered by 120V. The sludge recirculation and blowdown valves shall be a diaphragm type valve. The modulating valves shall have positioners to accept a 4-20 mA signal.
6. All automatic and manual butterfly valves shall be of wafer construction with nylon coated disc, EPDM seat and seals, carbon steel stem and semi-steel body.
7. Manual wafer-type butterfly valves complete with lever actuators shall be provided by the treatment plant manufacturer. Manual butterfly valves shall be provided for influent isolation and tube clarifier pump suction isolation.
8. Manual valves for tube clarifier drain and sludge recirculation isolation shall be ball valves with lever actuators.
9. A manual plug valve shall be provided for installation in the sludge blowdown line for the purposes of controlling rate.
10. All other valves not specifically mentioned here shall be provided by the installing contractor.

D. Clarifier Transfer and Sludge Recirculation Pump Systems
1. The treatment unit shall include a clarifier transfer pump (10 HP, 208 VAC, 3 phase, 60 Hz) located in the effluent line of the tube settler system, and a sludge recirculation pump (3 HP, 208 VAC, 3 phase, 60 Hz). Both pumps shall be a product of the same manufacturer. One (1) extra clarifier transfer pump and one

(1) extra sludge recirculation pump shall be supplied to the Owner. Extra pumps shall be identical to those installed.

2. The pumps shall be designed so that they operate at maximum possible efficiency throughout the duty range, cause no overloading of motors under all operating conditions and be capable of continuous operation.
3. The centrifugal pumps shall be direct connected to the drive motor. The electric motor shall be sized to be non-overloading at all points on the pump performance curve. Motor enclosure shall be TEFC, and suitable for operation in a humid, outdoor environment. Motors shall be 3 phase, 60 Hertz, 208 volt power. All motors shall comply with manufacturer's standard design, construction and testing procedures as defined by applicable IEEE, NEMA, and ANSI standards.
4. Automatic flow adjustment of the sludge recirculation pump shall incorporate a mag meter and variable speed pump controller to maintain set point flow rate.
5. Recirculation pump and motor assemblies shall be field mounted on the treatment tanks with factory installed mounting brackets. Clarifier transfer pump and motor assemblies shall be field mounted next to the treatment tanks on a concrete base provided by the installer.
6. Automatic flow adjustment of the transfer pump shall incorporate an ultrasonic level sensor and variable speed pump controller to maintain water level in the tube settler compartment. Ultrasonic level sensor shall be mounted at the top of the tube settler section and positioned to properly sense the liquid level.

2.03 GENERAL PLANT CONTROL INFORMATION

For this project, the existing Trident Control Panel (Master Control Panel – MCP) will be UPGRADED AND REFURBISHED by an Owner-selected vendor (who will function as a subcontractor to the General Contractor), for control of the existing filters and the proposed Trident® HSR unit.

A. Influent flow to the system shall be regulated by an operator adjustable flow control loop consisting of a flow element (mag meter); PLC/PID based flow control, and modulating butterfly valve in each tank influent line.

B. The MCP shall be UPGRADED AND REFURBISHED to monitor and control the Package Treatment System. The PLC based system shall be capable of operating in an automatic mode, completely autonomously, or semi-automatic mode requiring some operator intervention. The control panel shall provide automatic starting and stopping of the Treatment System, based on tube clarifier tank level or device failure.

C. The details of the UPGRADED AND REFURBISHED MCP will be determined by the Owner in consultation with its selected vendor (GC subcontractor).

D. The Trident HSR control system shall interface with downstream process control systems to provide a coordinated operating system.

2.04 TREATMENT SYSTEM CONTROL PANELS

A. The treatment system controls shall consist of one PROPOSED UPGRADED AND REFURBISHED Master Control Panel (MCP), working in conjunction with one NEW Unit Control Panel (UCP) for the Trident® HSR unit.

B. An Owner-selected vendor (GC subcontractor) will determine the details of the MCP upgrades and refurbishment in consultation with the Owner.

C. The UCP shall be supplied in a NEMA 4/12 steel enclosure suitable for indoor use. The front panel of the cabinet shall contain all push buttons, as detailed within this specification. The internal portion of the cabinet shall contain all rail-mounted PLC equipment, power supply, processor, and interface cards. Relays and terminals shall also be contained within the cabinet. The PLC subsystem shall be as manufactured by Allen Bradley. Terminal strips for all field wiring shall be furnished within the panel.

D. Fuses and duplex outlet shall be provided within the UCP panel.

E. All digital outputs shall be provided with relay contacts within the UCP panel.

2.05 PLC BASED CONTROL PANEL I/O FIELD INTERFACE SIGNALS

Within the PLC based control panels all PLC ladder logic shall reside performing all necessary process monitoring and control for the Trident® HSR Package Treatment System. All necessary I/O cards shall be supplied to monitor and control the field signals. All PLC and I/O rails shall be supplied with 10 percent spare I/O point to accommodate future expansion.

1. NEW Unit Control Panel (UCP) shall be comprised of the following:
    a. NEMA 4/12 Wall Mounted Control Panel
    b. Interface Module
    c. PLC I/O Cards and module mounting rail
    d. Operator Interface Terminal – Allan-Bradley PanelView Plus 6 Series 10” color/touch
    e. Power Supplies
    f. Pilot Lights and Pushbutton
    g. Fuses
    h. Terminal Strips
    i. Misc. Wire and Conduit

2.06 DEVICES FOR OPERATOR INTERFACE

A. External face mounted devices for operator interface shall be as follows:
    1. Pushbuttons: Pushbuttons shall be as manufactured by Allen Bradley. Panel Mounted Pushbuttons shall be provided for on the UCP for the Trident® HSR unit Emergency Stop purposes.

B. Operator Interface Terminal
    1. An Operator Interface Terminal to the PLC shall be included and mounted on the front of the UCP enclosure. The Interface shall allow the operator to view and

modify system variables within the PLC. The display shall be a touch screen. The color display shall be TFT type, 800 x 600 SGVA pixels (10 inches) with 50,000 hour backlight. The unit shall include a real-time clock, built-in alarm functionality, Ethernet communications port and RS-232 Printer port. The display shall support the standard ASCII character set. Terminal configuration shall be via Microsoft Windows based software. The unit shall be manufactured by Allen Bradley PanelView Plus 7 series 1000, or approved equivalent.

2.07 MCP PROCESS CONTROL SYSTEM FUNCTIONS

A. The UPGRADED AND REFURBISHED MCP shall automatically control the Trident® Adsorption Clarifier/Filter Package treatment process as it currently does. Additional components and functionality (i.e., SCADA) shall be determined by the Owner in consultation with its selected vendor (GC subcontractor).

B. The Owner-selected vendor (GC subcontractor) shall integrate operations of the proposed Trident® HSR System into the upgraded and refurbished MCP (refer to Section 2.08.A below).

2.08 UCP PROCESS CONTROL SYSTEM FUNCTIONS

A. The UCP shall automatically control the Trident® HSR Tube Settler Clarifier treatment process. The MCP shall provide control I/O for the following process and field equipment:
   1. Coagulation Pump
   2. Polymer Pumps
   3. Sludge Recirculation Pumps
   4. Sludge Collector Drive
   5. Clarifier Transfer Pumps
   6. Trident HSR Process Valves

B. The UCP shall control the following process functions:
   1. Tube Clarifier Level Control
   2. Influent Flow Control
   3. Emergency Shutdown via pushbutton
   4. Automatic Start/Stop Polymer Feed Control
   5. Timed Based Flush Initiation
   6. Loss of Head Flush Initiation

C. The UCP Interface shall provide operator adjustable set points for the following parameters:
   1. Influent Flow Rate Setpoint
   2. Recirculation Flow
   3. Blowdown Frequency and Duration

D. The UCP Interface shall provide running and alarm indication for the following devices:
   1. Sludge Recirculation Pump
   2. Clarifier Transfer Pump

3. Sludge Collector Drive

E. The following manual control switches/pushbuttons shall be part of the Operator Interface which is mounted on the door of the UCP.
   1. Sequence Start
   2. Sequence Stop
   3. Alarm Acknowledgement
   4. Fault Acknowledgement
   5. Clarifier Transfer Pump Start/Stop
   6. Sludge Recirculation Pump Start/Stop
   7. Sludge Collector Drive Start/Stop
   8. Process Valve Open/Close Control

F. A Power On indicator light shall be mounted on the doors of the panels noted.

G. The following alarm conditions shall be monitored by UCP. All alarms shall be visible via the Operator Interface Terminal.
   1. Sludge Recirculation Pump Fault
   2. Sludge Collector Drive Fault
   3. Sludge Recirculation Low Flow Alarm
   4. Transfer Pump Fault
   5. Trident HSR High Turbidity Alarm
   6. Trident HSR High High Turbidity Alarm

2.09 FIELD INSTRUMENTS

A. Low Range Turbidity Monitoring (effluent)
   1. The turbidity monitoring system shall include one turbidimeter per tank (tube clarifier effluent) and necessary interface units for turbidimeter communication. The system shall be capable of functioning as a single or dual sensor system and shall have two 4-20 mA outputs and three setpoint alarms, each equipped with an SPDT relay with unpowered contacts.
   2. The turbidimeters shall be a microprocessor-based, continuous-reading, on-line nephelometric instrument meeting all design and performance criteria specified by USEPA method 180.1. Light shall be directed through the surface of the sample and the detector shall be immersed in the sample, eliminating glass windows and flow cells. The turbidimeter body shall be constructed of corrosion-resistant polystyrene, and shall include an internal bubble trap to vent entrained air from the sample stream. The turbidimeter shall offer the choice of formazin-based (20 or 1 NTU) or instrument comparison-based calibration methods. Accuracy shall be ± 2 percent of reading from 0 to 40 NTU.
   3. The interface unit shall allow operators to control sensor and network functions with user-friendly, menu-driven software, and shall provide data logging of measurement data from one or two turbidimeters for 15 minute, 1 hour, 24 hours, 30 days, or 180 days, and the optional capability to transfer data to a computer or printer via direct MODBUS communications or directly into a Personal Digital Assistant (PDA) via a wireless IR port. The interface unit and internal DC power supply shall be housed in NEMA-4X (indoor) industrial metal/plastic enclosure

and the power supply shall automatically accept input in the range of 100 to 230 Vac, 50/60 Hz. All system components shall be ETL listed to UL 61010A-1, certified to CSA C22.2 No. 1010.1 and CE certified by manufacturer to EN61010-1. All system components shall be CE certified to EN 61326 (industrial levels) for immunity and emissions, Class A. All system components shall be meet FCC Part 15 for North America and Canadian Interference-Causing Equipment Regulation ICES-003 and CISPR 11 Class A levels for the rest of the world. The turbidimeters shall be Hach TU5300 sc low range turbidimeter with SC-200 controller or equal.

2.10 CHEMICAL MIXING AND FEED SYSTEMS

A. One chemical feed system as shown on the plans and as specified below shall be provided with the packaged water treatment system.
   1. A liquid emulsion polymer (anionic polymer) feed system for flocculation aid shall be provided. This system shall be an inline system and shall consist of:
      a. A direct-coupled, motor driven high energy mixing chamber.
      b. Two (2) mechanically actuated diaphragm-type polymer metering pumps with high viscosity liquid handling unit (one installed and one backup).
      c. Water solenoid valve.
      d. Electronic flow sensor for primary and dilution water.
      e. 304 stainless steel open chassis design, and system controls.
      f. One unit shall be required for each treatment tank. The polymer feed system shall be sized to deliver an average feed rate of 1.0 ppm with a maximum feed rate of 3.5 ppm.

2.11 FINISH

A. The interior and exterior of the tanks shall be thoroughly cleaned of loose mill scale and grease. The exterior of the tanks and piping shall be sandblasted to SSPC-SP6 and prime painted with one shop coat of Tnemec N140-1255 primer, or equivalent. The interior of the treatment units shall be sandblasted to SSPC-SP10 and prime painted with one shop coat of Tnemec N140-1255 primer, or equivalent. Finish painting for the interior shall include one coat of Tnemec N140-15BL finish paint, or equivalent. The tank bottom shall be bare for field placement onto a coal tar or mastic base pad coating to be provided and installed by the contractor.

PART 3 - EXECUTION

3.01 INSTALLATION INSPECTION, START-UP AND OPERATOR TRAINING

A. The Package Water Treatment System shall be installed as shown on the Contract Drawings and specified herein.

B. The Manufacturer shall inspect the installation of all equipment in this section prior to start-up in order to verify that the equipment has been properly installed and operates properly as a system and individually.

C. After the equipment has been properly installed the Manufacturer shall calibrate the equipment with the Owner's operator present.

D. The Manufacturer's representative shall be present for 20 days, 5 trips of installation assistance described above.

E. After start-up, the Manufacturer shall furnish the service of a competent technical service representative one month after Contractor's start-up to instruct the Owner's personnel in the operation and maintenance of the equipment for a three day period during one trip.

F. Effluent quality laboratory analysis shall be provided by the Owner.

G. Refer to Section 3.04 below for "PROOF OF PERFORMANCE" requirements.

3.02 WARRANTY

A. A warranty shall be provided covering all materials and workmanship for twelve months from the initial startup or eighteen months from delivery, whichever occurs first.

B. It shall be the Supplier's responsibility to provide the necessary service engineers to repair and/or replace any defective components during this warranty period including any and all travel expenses incurred for same.

3.03 PROOF OF PERFORMANCE

A. Based on assurances made by the representatives and/or manufacturer of the proposed Trident® HSR Package Treatment System, the Village of Saugerties and involved regulatory agencies agree to allow the equipment to be installed without a pre-installation pilot study. In doing so, and after the equipment is installed, the Contractor, with technical assistance provided by the HSR manufacturer, shall conduct a "Full-Scale Demonstration Project" (as described below):

Full-Scale Demonstration Project:

a. Contractor shall coordinate plant operations with Owner/Operator while conducting the Full-Scale Demonstration Project. For purposes of this Section, it is assumed that the plant will continue to run normally, but instead using the effluent from the proposed HSR unit as the influent to the existing Trident filter(s). Effluent from the existing Trident filter(s) will then supply the clear-well and distribution system as usual. It shall be the Owner/Operator's responsibility to continue to monitor effluent turbidity from the existing Trident filter(s) for compliance with regulatory limits. If deemed necessary by Contractor, it shall be assumed that the plant can be shut-down for a maximum of eight consecutive (8) hours, every other day (i.e., not on consecutive days).

b. Contractor shall conduct a minimum of five (5) test runs, with each run representing raw water turbidities between 80-120 NTU's (at 10 NTU

increments). For each of the five (5) turbidity values and test runs, the dosage of the liquid emulsion polymer shall be manually adjusted between 0.5 – 1.3 mg/l (at 0.2 mg/l increments). Raw water and HSR effluent turbidity values to be monitored and recorded every five (5) minutes. The total duration of each individual test run may vary, with each run considered satisfactory and complete only after a stable treatment performance (i.e., HSR effluent turbidity values approximately the same) has been reached and sustained for at least 20 minutes. The resulting effluent turbidity values shall be evaluated to determine the optimum dose at the various raw water turbidities. Should it be necessary to conduct additional testing beyond the dosage range noted above, the Contractor will be additionally compensated at a negotiated rate.

c. During the above dosage optimization testing, Contractor shall clearly demonstrate that the proposed HSR is capable of reducing raw water turbidity by no less than 70% when the raw water turbidity is 100 NTU's or greater (minimum performance standard). As noted above, the duration of this run shall be as needed to achieve and maintain a stable treatment performance for at least 20 minutes. Failure to demonstrate this minimum treatment performance will result in rejection of the work, with remedies as set forth in other Sections of these Contract Documents.

d. The raw water quality to the Trident® HSR Package Treatment System shall be manually altered (spiked) to achieve the range of raw water turbidities noted above. The spiked influent shall be prepared using native material that was previously dredged, stockpiled, and regraded adjacent to reservoir (Owner to designate acceptable location and access point to secure material). The method of introducing the spiked material into the raw water shall be determined by Contractor and approved by Engineer and Ulster County Department of Health (via Engineer), and any required components (i.e., solution tank, mixer, feed pump, etc.), shall be provided by Contractor.

e. Should it be necessary to remove accumulated solids from the HSR during the Demonstration Project, the Contractor will be allowed to discharge the solids via a blow-down cycle into the existing waste sump (as per proposed piping plan). At the end of all demonstration testing, the Contractor shall completely flush and clean the HSR.

f. All services, treatment chemicals, sampling, and sample testing shall be responsibility of the Contractor, with technical assistance provided by the HSR manufacturer.

B. Results of the aforementioned Full-Scale Demonstration Project shall be summarized in a report prepared by the Contractor and/or his representative and/or manufacturer, which will subsequently be submitted to the Ulster County Department of Health by Owner's Engineer for formal acceptance. The report shall be made available to the Owner and Owner's Engineer within 30 days after system calibration noted in Section 3.01.C above.

END OF SECTION 11100