TOWN OF PORTUGAL COVE – ST. PHILIPS, NL

REQUEST FOR QUOTATION

FOR

NON CONTACT ULTRAVIOLET DISINFECTION EQUIPMENT SUPPLY FOR UV UPGRADE – ST. PHILIPS WASTEWATER TREATMENT PLANT

REQUEST FOR QUOTATIONS NO.: PCSP-PW-2020-09A

ISSUED: APRIL 21, 2021

SUBMISSION DEADLINE: MAY 11, 2021 @ 2:30 PM LOCAL TIME

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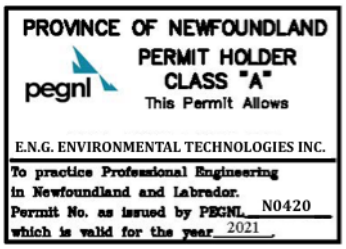
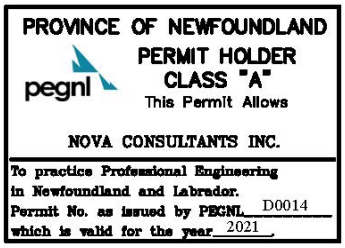
E.N.G. Environmental Technologies Inc.



Nova Consultants Inc.



PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

1.1 Invitation to Respondents

1.1.1 Invitation

This Request for Quotations (the "RFQ") is an invitation by the Town of Portugal Cove-St. Philips to prospective respondents to submit quotations for the supply, delivery, set up, commissioning and training of Non Contact Ultraviolet Disinfection Equipment at the St. Philips Wastewater Treatment Plant as further described in Section A of the RFQ Particulars (Appendix B) (the "Deliverables").

1.1.2 Respondent must be Single Entity

The Respondent must be a single legal entity that, if selected, intends to enter into the contract with the Town. If the quotation is being submitted jointly by two (2) or more separate entities, the quotation must identify only one of those entities as the "respondent". The respondent will be responsible for the performance of the Deliverables.

1.2 General Instructions to Respondents

The Town of Portugal Cove-St. Philip's reserves the right to cancel this solicitation at any time.

The lowest, or highest ranking, or any bid may not necessarily be accepted.

The evaluation is based on the ability to meet terms, conditions and specifications.

Due to COVID-19 the Town has changed some of the operating practices to ensure safety of staff and public. During this time electronic submissions only will be accepted for this process, as well as a digital opening. Upon awarding of the contract, the proponent will have to ensure that the public health guidelines on COVID-19 are met for work completion.

Quotations are to be submitted **electronically only via email to the address stated in Article 1.7 - Submission Instructions.**

Procurement is subject to the Canadian Free Trade Agreement and any local preference provision in effect in the Province of Newfoundland and Labrador.

The following applies in relation to the disclosure of information:

- The financial value of a contract resulting from this procurement process will be publicly released as part of the award notification process.
- This procurement process is subject to the Access to Information and Protection of Privacy Act, 2015.
- The bidder agrees that any specific information in its bid that may qualify for an exemption from disclosure under subsection 39(1) of the Access to Information and Protection of Privacy act, 2015 has been identified. If no specific information has been identified it is assumed that, in the opinion of the bidder, there is no specific information that qualifies for an exemption under subsection 39(1) of the Access to Information and Protection of Privacy Act, 2015.

1.3 RFQ Contact

To contact the Town in relation to this RFQ, respondents must initiate the communication **electronically via email** at the contact information listed below.

For the purposes of this procurement process, the "RFQ Contact" will be:

Charlie Hamlyn, Director of Public Works
Email: Charlie.Hamlyn@pcsp.ca
Ph.: 709-895-8000

Direct all inquiries on or before the Deadline for Questions stated in the RFQ Timeline in an email to Charlie.Hamlyn@pcsp.ca with subject line *"Question RFQ PCSP-PW-2020-09A, Non Contact Ultraviolet Disinfection Equipment Supply"*. Inquiries will be reviewed and where additional information is required, the Town will issue an addendum which will become part of the RFQ document.

Respondents should only contact the RFQ Contact where specifically instructed to in the RFQ.

Respondents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials, or other representatives of the Town, other than the RFQ Contact, concerning matters regarding this RFQ. Failure to adhere to this rule may result in the disqualification of the respondent and the rejection of the respondent's quotation.

1.4 Contract for Deliverables

1.4.1 Type of Contract

The selected respondent will be requested to enter into a contract for the provision of the Deliverables on the terms and conditions set out in the Form of Agreement (Appendix A) (the "Agreement"). It is the Town's intention to enter into a contract with only one (1) legal entity.

1.4.2 Term of Contract

The term of the Agreement will be in effect until the completion of the Deliverables.

1.5 RFQ Timetable

1.5.1 Key Dates

Issue Date of RFQ	April 21, 2021
Deadline for Questions	April 30, 2021
Deadline for Issuing Addenda	May 5, 2021
Submission Deadline	May 11, 2021

The RFQ timetable is tentative only and may be changed by the Town at any time.

1.6 Public Opening

Opening of submissions will take place via the Zoom meeting ID number as stated in the RFQ advertisement and on the Town's web site at www.pcsp.ca/local-government/bids-and-tenders at 2:30 p.m., Tuesday, May 11, 2021 or such later date as determined by the Town and indicated to respondents

by way of addendum. Respondents and the public are welcome to join virtually.

1.7 Submission Instructions

In order to be accepted, submissions shall be submitted on the RFQ Documents provided by the Town. form part of the RFQ Documents and shall not be removed.

The submission shall include Appendix C – Submission Form, Appendix B – RFQ Particulars, and Appendix D – Pricing Form. All pages of the Appendices form part of the RFQ Documents and shall not be removed.

The submission must be emailed to procurement@pcsp.ca. Oral, regular mail, telephoned, faxed, and hard copy submissions will be rejected unless otherwise indicated in an addendum.

RFQ will close at 2:30 p.m., Tuesday, May 11, 2021 ("RFQ Closing Time"). Submissions received after that time will be rejected.

The official time for closings shall be Newfoundland Standard Time as recorded by Town staff receiving the document by email timestamp. It is the bidder's responsibility to ensure that its submission meets the Town's official time deadlines as specified in the RFQ.

1.7.1 Quotations to be Submitted in Prescribed Format

The Respondent shall fill in all applicable spaces in the RFQ Documents and shall have the submission forms executed by properly designated signing officers of its company or firm.

All submissions must be typed or legibly drafted and submitted on the submission Documents provided only. All pages of Appendices B, C and D form part of the RFQ Documents and shall not be removed.

Any quotation is an irrevocable offer and shall be valid and may not be withdrawn for a period of ninety (90) days following the RFQ Closing Time.

The Town does not bind itself to accept the lowest or any tender. The Town reserves the right to accept or reject any or all bids or to accept any bid or portion thereof at its sole discretion.

The Town may seek clarification from and verify any or all information provided by a Bidder in its quotation.

1.7.2 Amendment of Quotations

Properly documented amendments to RFQ submissions by respondents will be permitted up to the RFQ Closing Time. Amendments must be submitted by email to procurement@pcsp.ca. It is the responsibility of the Respondent to confirm receipt of the amendment.

1.7.3 Withdrawal of Quotations

Submittals may be withdrawn without penalty if request is received prior to the RFQ Closing Time. Requests for withdrawal must be submitted by email to procurement@pcsp.ca. It is the responsibility of the Respondent to confirm receipt of the withdrawal request.

The Town reserves the right to cancel the RFQ at any stage of the process, including prior to the RFQ Closing Date or after the RFQ Opening. The Town shall not be responsible, in any manner, for expenses incurred by the bidder for preparing a submission.

[End of Part 1]

PART 2 –EVALUATION AND AWARD

2.1 Stages of Evaluation

The Town will conduct the evaluation of quotations in the following stages:

2.2 Stage 1 – Mandatory Submission Requirements

Stage I will consist of a review to determine which proposals comply with all of the mandatory submission requirements. Quotations that fail to satisfy the mandatory submission requirements will be rejected. The mandatory submission requirements are set out in Section C of the RFQ Particulars (Appendix B).

2.3 Stage II – Mandatory Technical Requirements

The Town will review the quotations to determine whether the mandatory technical requirements as set out in Section D of the RFQ Particulars (Appendix B) have been met. Questions or queries on the part of the Town as to whether a quotation has met the mandatory technical requirements will be subject to the verification and clarification process set out in Part 3.

2.4 Stage III - Pricing

Stage III will consist of an evaluation of the submitted pricing of each qualified quotation in accordance with the price evaluation method set out in Pricing (Appendix D). The evaluation of price will be undertaken after the evaluation of mandatory requirements has been completed.

2.5 Selection of Top-Ranked Respondent

After the completion of Stage III, compliant respondents will be ranked based on the price evaluation. Subject to the process rules contained in the Terms and Conditions of the RFQ Process (Part 3), the top-ranked respondent will be invited to enter into the Agreement in accordance with Part 3. In the event of a tie, the selected respondent will be determined by way of coin toss. The selected respondent will be notified in writing and will be expected to satisfy any applicable conditions of this RFQ, including the pre-conditions of award listed in Section E of the RFQ Particulars (Appendix B), and enter into the agreement within the timeframe specified in the selection notice. Failure to do so may result in the disqualification of the respondent and the selection of another respondent or the cancellation of the RFQ.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE RFQ PROCESS

3.1 General Information and Instructions

3.1.1 Respondents to Follow Instructions

Respondents should structure their quotations in accordance with the instructions in the RFQ. Where information is requested in this RFQ, any response made in a quotation should reference the applicable section numbers of this RFQ.

A respondent who submits conditions, options, variations, or contingent statements either as part of its quotation or after receiving notice of selection, may be disqualified.

3.1.2 Quotations in English

All quotations are to be in English only.

3.1.3 No Incorporation by Reference

The entire content of the respondent's quotation should be submitted in a fixed format, and the content of websites or other external documents referred to in the respondent's quotation but not attached will not be considered to form part of its quotation.

3.1.4 Past Performance

In the evaluation process, the Town may consider the respondent's past performance or conduct on previous contracts with the Town or other institutions.

3.1.5 Information in RFQ Only an Estimate

The Town and its advisers make no representation, warranty, or guarantee as to the accuracy of the information contained in this RFQ or issued by way of addenda. Any quantities shown or data contained in this RFQ or provided by way of addenda are estimates only, and are for the sole purpose of indicating to respondents the general scale and scope of the Deliverables. It is the respondent's responsibility to obtain all the information necessary to prepare a quotation in response to this RFQ.

3.1.6 Respondents to Bear Their Own Costs

The respondent will bear all costs associated with or incurred in the preparation and presentation of its quotation, including, if applicable, costs incurred for interviews or demonstrations.

3.1.7 Quotation to be Retained by the Town

The Town will not return the quotation or any accompanying documentation submitted by a respondent.

3.2 Communication after Issuance of RFQ

3.2.1 Respondents to Review RFQ

Respondents should promptly examine all of the documents comprising this RFQ and may direct questions or seek additional information by way of an email to the RFQ Contact on or before the Deadline for Questions. No such communications are to be sent or initiated through any other means. The Town is under no obligation to provide additional information, and the Town is not responsible for any information provided by or obtained from any source other than the RFQ Contact or the bidding system. It is the responsibility of the respondent to seek clarification on any matter it considers to be unclear. The Town is not responsible for any misunderstanding on the part of the respondent concerning this RFQ or its process.

3.2.2 All New Information to Respondents by Way of Addenda

This RFQ may be amended only by addendum in accordance with this section. If the Town, for any reason, determines that it is necessary to provide additional information relating to this RFQ, such information will be communicated to all respondents by addendum which will be issued by email. Each addendum forms an integral part of this RFQ and may contain important information, including significant changes to this RFQ. Respondents are responsible to ensure all relevant and correct contact information is registered with the Town and for obtaining all addenda issued by the Town.

3.2.3 Post-Deadline Addenda and Extension of Submission Deadline

If the Town determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, the Town may extend the Submission Deadline for a reasonable period of time.

3.2.4 Verify, Clarify, and Supplement

When evaluating quotations, the Town may request further information from the respondent or third parties in order to verify, clarify or supplement the information provided in the respondent's quotation. The Town may revisit, re-evaluate, and rescore the respondent's response or ranking on the basis of any such information.

3.3 Notification and Debriefing

3.3.1 Notification to Other Respondents

In accordance with section 30 of the Public Procurement Regulations, once the Agreement is awarded by the Owner, the outcome of the RFQ will be publicly released by the Town.

3.3.2 Debriefing

Proponents may request a debriefing within ten (10) business days after the award has been posted. All requests must be in writing to the RFQ Contact. The RFQ Contact will contact the respondent's representative to schedule the debriefing. Debriefings will occur by way of conference call or other remote meeting format as prescribed by the Town.

The intent of the debriefing information session is to aid the proponent in presenting a better proposal in subsequent procurement opportunities. The debriefing process is not for the purpose of providing an opportunity to challenge the procurement process or its outcome.

3.3.3 Supplier Complaint Process

Any respondent with concerns about the RFQ process is required to attend a debriefing prior to proceeding with a protest.

If, after attending a debriefing, the respondent wishes to register a complaint regarding the RFQ process, it must provide the complaint to the RFQ Contact within fifteen (15) business days of the debriefing. The complaint must be in writing and must contain the following information:

(a) the supplier's name and business contact information;

(b) reference information respecting the RFQ; and

(c) a description of the complaint.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

For the purposes of this RFQ the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where:

(a) in relation to the RFQ process, the respondent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to confidential information of the Town in the preparation of its quotation that is not available to other respondents, (ii) communicating with any person with a view to influencing preferred treatment in the RFQ process(including but not limited to the lobbying of decision makers involved in the RFQ process), (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive RFQ process or render that process non-competitive or unfair; or

(b) in relation to the performance of its contractual obligations under a contract for the Deliverables, the respondent's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgment, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

3.4.2 Disqualification for Conflict of Interest

The Town may disqualify a respondent for any conduct, situation, or circumstances, determined by the Town in its sole and absolute discretion, to constitute a Conflict of Interest as defined above.

3.4.3 Disqualification for Prohibited Conduct

The Town may disqualify a respondent, rescind a notice of selection, or terminate a contract subsequently entered into if the Town determines that the respondent has engaged in any conduct prohibited by this RFQ.

3.4.4 Prohibited Respondent Communications

Respondents must not engage in any communications that could constitute a Conflict of Interest and should take note of the Conflict of Interest declaration set out in the Submission Form (Appendix C).

3.4.5 Respondent Not to Communicate with Media

Respondents must not at any time directly or indirectly communicate with the media in relation to this RFQ or any agreement entered into pursuant to this RFQ without first obtaining the written permission of the RFQ Contact.

3.4.6 No Lobbying

Respondents must not, in relation to this RFQ or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful respondent(s).

3.4.7 Illegal or Unethical Conduct

Respondents must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion, or collusion. Respondents must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any employees, officers, agents, elected or appointed officials, or other representatives of the Town; deceitfulness; submitting quotations containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFQ.

3.4.8 Supplier Suspension

The Town may suspend a supplier from participating in its procurement processes for prescribed time periods based on past performance or based on inappropriate conduct, including but not limited to the following:

(a) illegal or unethical conduct as described above;

(b) the refusal of the supplier to honour its submitted pricing or other commitments;

(c) engaging in litigious conduct, bringing or vexatious claims in connection with the Client's procurement processes or contracts, or engaging in conduct obstructive to a fair competitive process; or

(d) any conduct, situation, or circumstance determined by the Town, in its sole and absolute discretion, to have constituted an undisclosed Conflict of Interest.

In advance of a decision to suspend a supplier, the Town will notify the supplier of the grounds for the suspension and the supplier will have an opportunity to respond within a timeframe stated in the notice. Any response received from the supplier within that timeframe will be considered by the Town in making its final decision.

3.5 Confidential Information

3.5.1 Confidential Information of the Town

All information provided by or obtained from the Town in any form in connection with this RFQ either before or after the issuance of this RFQ

(a) is the sole property of the Town and must be treated as confidential;

(b) is not to be used for any purpose other than replying to this RFQ and the performance of any subsequent contract for the Deliverables;

(c) must not be disclosed without prior written authorization from the Town; and

(d) must be returned by the respondent to the Town immediately upon the request of the Town.

3.5.2 Confidential Information of Respondent

Respondents should note that this procurement process is subject to the Access to Information and Protection of Privacy Act, 2015. The respondent agrees that any specific information in its quotation that may qualify for an exception from disclosure under subsection 39(1) of the Access to Information and Protection of Privacy Act, 2015 has been identified. If no specific information has been identified it is assumed under subsection 39(1) of the access to Information and Protection of Privacy Act, 2015. The confidentiality of such information will be maintained by the Town except as otherwise required by law or by order of a court or tribunal. Respondents are advised that their quotations will, as necessary, be disclosed, on a confidential basis, to advisers retained by the Town to advise or assist with the RFQ process, including the evaluation of quotations. If a respondent has any questions about the collection and use of personal information pursuant to this RFQ, questions are to be submitted to the RFQ Contact.

3.6 Procurement Process Non-Binding

3.6.1 No Contract A and No Claims

This procurement process is not intended to create and will not create a formal, legally binding bidding process and will instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitations:

(a) this RFQ will not give rise to any Contract A-based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and

(b) neither the respondent nor the Town will have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the award of a contract, failure to award a contract or failure to honour a quotation submitted in response to this RFQ.

3.6.2 No Contract until Execution of Written Agreement

This RFQ process is intended to solicit non-binding quotations for consideration by the Town and may result in an invitation by the Town to a respondent to enter into the Agreement. No legal relationship or obligation regarding the procurement of any good or service will be created between the respondent and the Town by this RFQ process until the execution of a written agreement for the acquisition of such goods and/or services.

3.6.3 Non-Binding Price Estimates

While the pricing information provided in quotations will be non-binding prior to the execution of a written agreement, such information will be assessed during the evaluation of the quotations and the ranking of the respondents. Any inaccurate, misleading, or incomplete information, including withdrawn or altered pricing, could adversely impact any such evaluation or ranking or the decision of the Town to enter into an agreement for the Deliverables.

3.6.4 Cancellation

The Town may cancel or amend the RFQ process without liability at any time.

3.7 Governing Law and Interpretation

(a) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);

(b) are non-exhaustive and will not be construed as intending to limit the pre-existing rights of the parties to engage in pre-contractual discussions in accordance with the common law governing direct commercial negotiations;

(c) are to be governed by and construed in accordance with the laws of the province of Newfoundland and Labrador and the federal laws of Canada applicable therein; and

(d) the "Atlantic Provinces Standard Terms and Conditions" apply to this RFQ and may be obtained from the Public Procurement Agency, or by way of the internet at: www.ppa.gov.nl.ca.

3.8 Provincial Supplier Allowance

In the evaluation of submissions, the Town must apply a ten percent (10%) reduction to the bid price of a provincial supplier prior to the evaluation based on the thresholds for the Canadian Free Trade Agreement (CFTA). The 10% reduction only needs to be applied when the evaluation includes suppliers that are not provincial suppliers.

The submission with the lowest price, following the application of the provincial supplier reduction allowance if required, and that meets all the requirements will ultimately be determined to be the preferred supplier and be awarded a contract if an award is made.

[End of Part 3]

APPENDIX A – FORM OF AGREEMENT

A Quotation Letter of Acceptance and a Purchase Order will be issued to the preferred supplier as the name appears on the bid submission. Under no circumstances shall the purchase order be issued in the name of an individual, partnership or corporation whose name does not appear on the bid submission. The Quotation Letter of Acceptance and Purchase Order together with the Submission Documents shall constitute a contract binding on both parties.

Invoicing

Where a purchase order is issued as a result of this Request for Quotation, invoice(s) showing purchase order number shall be forwarded to the invoice address as indicated on the purchase order. Invoices shall be submitted in accordance with the Pricing Breakdown provided in the Bid Form in Appendix C – Submittal Form and following the delivery of goods and/or services for which the invoice is being submitted. Such delivery shall be confirmed in writing by an authorized representative of the Town.

Payment will be made within 90 days of the date the invoice is received by the Town.

Termination of contract

The Town may immediately terminate the Contract upon giving notice to the Supplier where (a) the Supplier is adjudged bankrupt, makes a general assignment for the benefit of its creditors or a receiver is appointed on account of the Supplier's insolvency; (b) the Supplier breaches any provision respecting Confidentiality, (c) the Supplier breaches the Conflict of Interest conditions; (d) the Supplier, prior to or after entering into the Contract, makes a material misrepresentation or omission or provides materially inaccurate information to the Town, (e) the Supplier undergoes a change in control which adversely affects the Supplier's ability to satisfy some or all of its obligations under the Contract; (f) the Supplier subcontracts for the provision of part or all of the Deliverables or assigns the Contract without first obtaining the written approval of the Town; or (g) the Supplier's acts or omissions constitute a substantial failure of performance and the above rights of termination are in addition to all other rights of termination available at law, or events of termination by operation of law.

APPENDIX B – RFQ PARTICULARS

A. THE DELIVERABLES

Non-Contact Ultraviolet Disinfection Equipment

Supply and deliver one (1) new Non-Contact Ultraviolet Disinfection Unit.

Equipment to be delivered to the Broad Cove Waste Water Treatment Plant in the Town of Portugal Cove-St. Philips, NL, Canada

Delivery Date Schedule: Shop Drawing Submittal shall be within 4 weeks from Award. Equipment Delivery to destination stated above shall be within 24 weeks from Shop Drawing Approval.

All Warranty related issues will be dealt with by the successful bidder, regardless of the component.

Manufacturer's Representative shall collaborate with third party CONTRACTOR to complete the installation of the UV lamps, direct start up activities, commission the equipment and provide operator training as described in the Technical Specification.

Operator training is required for Town employees in Portugal Cove-St. Philips following unit installation by third party Contractor. Sessions required covering proper operation and daily maintenance. Training shall be as specified by factory authorized personnel for operators.

The Town will be the sole decider if this process will take place in person or virtually. If in person the proponent will be expected to follow Town of Portugal Cove-St. Philips COVID-19 procedures.

Any equipment supplied against this tender is subject to inspection upon receipt and could be rejected and returned if specifications are not met completely.

Warranty

Warranties on parts and labour, both the entire unit and specific components must be supplied in accordance with the Technical Specification.

Successful bidder must have a local authorized facility to complete warranty work.

Terms and Conditions

Delivery – Time is of the essence and the successful bidder shall deliver the goods and services contemplated by the Bid document in strict accordance with the delivery date, quantity and the requirements as specified in the Bid document/Bid Documents, standing offers and any attached specifications.

Where a delivery date is stated, delivery by such date is regarded as of the essence of the Contract. Failure on the part of the successful bidder to complete by the stated delivery date for reasons other than those beyond its control will entitle the Town to any one or combination of the following remedies:

- cancel the order without incurring or being liable of any costs, fees, charges or surcharges of any kind whatsoever;

- reassign the contract and charge the original successful bidder with all incremental costs involved; or
- other remedy as specified in the Bid document.

B MATERIAL DISCLOSURES

Terms and Conditions

Approved Equal

Where the Specifications include the "or approved equal" clause, substitutions may be proposed provided that:

1. The request for a substitution is made by the Request for Approved Equal date and time listed in Section 1.4.1 – Key dates;
2. The request shall clearly define and describe the product for which the substitution is requested;
3. The substituted article is equivalent to the specified article with regards to design, function, appearance, durability, operation and quality

Approval of the substitution by the Town shall be in the form of an Addendum to the Specifications, issued by the Deadline for Issuing Addenda listed in Section 1.1.4 – Key Dates, to all of those vendors listed as having received a copy of the bid documents.

In order for a bid to be compliant for this section, bidders must meet specification(s) and bid all items within this table.

C MANDATORY SUBMISSION REQUIREMENTS

1. Submission Form (Appendix C)

Each quotation must include a Submission Form (Appendix C) completed and signed by an authorized representative of the bidder.

2. Technical Requirements (Appendix B)

Each quotation must include APPENDIX B, with Part E of Appendix B executed to indicate verification of compliance with the technical requirements contained in PART D of Appendix B.

3. Pricing (Appendix D)

Each quotation must include pricing information that complies with the instructions contained in Pricing Form (Appendix D).

D MANDATORY TECHNICAL REQUIREMENTS AND SPECIFICATIONS FOR NON-CONTACT ULTRAVIOLET DISINFECTION EQUIPMENT

GENERAL INFORMATION

1.1 INTRODUCTION & BACKGROUND

In the fall of 2002 the Town of Portugal Cove – St. Philip's (PCSP) implemented their mandate to protect the pristine waters of Broad Cove. A fully automated Sequential Batch Reactor (ISAM™ SBR) Treatment Plant was selected using the latest available advanced technology to provide wastewater treatment effluent that would meet and exceed all Provincial Guidelines and Federal Regulations. The St. Philip's treatment plant accepted the first flow in December 2003 and final commissioning was conducted in May 2004.

The St. Philip's Wastewater Treatment Process Design includes a Grinder/Lift Station, ISAM™ SBR with two process treatment trains with a third train available for future capacity expansion, and a Ultra-Violet (UV) Disinfection System, which provides effective disinfection of the SBR decanted effluent from the two operating SBR process tanks. The plant process operations only allows for one SBR to decant at a time and the maximum decant flow rate feeding the UV System is 27.76 l/s (440 USgpm). The existing UV system is a SUNTEC environmental model LXP2600P which is a pre-packaged system comprising of lamp racks, 304 SS channel, power distribution center and interconnecting lamp rack cable. The existing UV system is presently fully operational, however new replacement parts are no longer available for this aging equipment and is not capable to be integrated into the existing SCADA system.

It is the intention of the Town of PCSP to replace the existing St. Philip's WWTP UV System with a new UV Disinfection System and associated ancillary support equipment and instrumentation necessary for a fully functioning package.

1.2 DISINFECTION DESIGN CONSIDERATIONS & REQUIREMENTS

The COVID-19 viral pandemic has severely impacted public health and the economy worldwide. The virus, technically named SARS-CoVs-2, is a newly identified virus strain, but it is the seventh coronavirus known to infect humans. Converging evidence from the current pandemic, previous outbreaks and controlled experiments indicates that SARS-CoVs-2 is present in wastewater for several days, leading to potential health risks via waterborne and aerosolized wastewater pathways. *("The Water Professional's Guide to COVID-19", WEF Disinfection & Public Health Committee's (DPHC) Waterborne Infectious Disease Outbreak Control (WIDOC) Working Group, April 2020).*

Progressive design considerations and requirements for the UV Disinfection Upgrades shall include provisions for mitigating plant operator contact and exposure from the treated wastewater effluent. Preference shall be given to "Non-Contact" enclosed UV Disinfection Systems reducing operator exposure and contact that is typically required for routine operations, maintenance and cleaning of the UV equipment (i.e. submerged lamp racks, quartz tubes, lamp seals, UV sensors etc.).

The existing ISAM™ SBR treatment plant presently is operating in a dual process train configuration so that the decanting effluent sequences are independent, and only one SBR tank can decant at one time. The wastewater plant has the capability of being expanded so that it can operate in a three (3) train SBR process providing treatment capacity expansion. The future

wastewater plant expansion and upgrades will include out fitting and activating the third SBR process treatment train, hence it could be possible that two SBR tanks could decant at the same time during high influent flow events. The new UV system shall be designed and sized for the future effluent flow capacity as presented in Table 1 below.

The UV system shall be designed in accordance with the project specified technical requirements as well as the design standard document Guidelines for the Design, Construction and Operation of Water and Sewerage Systems (NL Department of Environment and Conservation, Water Resources Management Division, 2005).

1.3 SCOPE OF SUPPLY

A. Manufacturer shall furnish a complete enclosed, in-pipe flanged, gravity flow, low pressure high intensity (LPHO) Ultraviolet (UV) Non-Contact Disinfection System to provide the required disinfection of the SBR Secondary Treated decanted effluent waters prior to ocean discharge.

B. The UV system shall be designed taking into consideration the requirements for 100% disinfection redundancy, reliability, minimum dose and performance, UV Transmittance (UVT), and potential Lamp End of Lamp Life (EOLL) and Fouling Factor.

C. A minimum of one (1) UV treatment system is required to provide redundancy to meet peak flows disinfection requirements with a minimum of two (2) UV Banks in series with one (1) bank out of service for maintenance and/or repair.

D. The equipment shall be automatic in operation, with no automated cleaning apparatus. Separate cleaning systems, integrated wiper mechanisms, quartz sleeves, O-rings, and UV lifting devices shall not be required as per the design of non-contact UV disinfection systems.

E. The packaged system shall be complete with power supply transformer(s), power enclosures, power distribution and system controls for a fully operational UV disinfection system. The control system shall be capable of SCADA communications via Ethernet with the SBR Treatment Plant PLC and computer system.

F. Ancillary Support Equipment Exclusions:

1. Appurtenances to prevent the decant effluent flow syphoning through the UV reactor (i.e. air/vacuum release valves etc.) shall be supplied by others.

2. The new Mag flow meter for monitoring the decanted effluent shall be supplied by others. Provisions will be made to allow and provide an analogue flow signal to the UV monitoring controls.

G. The Ultraviolet Disinfection (UV) system shall consist of the following components:

1. UV Reactor

a.	Type:	In-Pipe Non-Contact Enclosed
b.	Reactor Configuration:	L – In Line Single Pass
c.	Number of Reactors (min):	One (1)
d.	Number of UV Banks (min):	Two (2)
e.	UV Intensity Monitor:	One (1) for each UV Bank
f.	Activated Fluoro-Polymer (AFP) Tubes:	Quantity to be determined by Design Criteria
g.	Radar Level Sensor:	One (1) for each UV reactor

h. Bypass UV Transmittance Sensor: One (1) for each UV reactor

2. The UV system shall include the following controls/monitoring equipment:

a. Local Control Panel (LCD) One (1) for each UV Bank

b. Electronic Data Center (EDC) One (1)

c. Control Panel (HMI): One (1)

d. Power Transformers: One (1) for each UV Bank

e. Power Disconnect Panels: One (1) for each UV Bank

f. Heat Exchangers (HE): Two (2) for each UV Bank

3. Spare parts consisting of the following:

a. UV Lamp Rack c/w UV Lamps 1

b. UV Lamps 8

c. UV ballasts 8

d. Operator Safety Kits: 2 (including face shield and gloves)

e. UV Cleaning Kit: 2

1.4 DESIGN INFORMATION & QUALITY ASSURANCE:

A. UV Design Criteria

1. The equipment to be supplied shall effectively disinfect treated wastewater with influent characteristics to the UV reactor as listed in the Table 1 below:

Table 1:

*Design Average Decant Flow Rate (Only one (1) SBR treatment train decanting) (2) (3)	15.6 / 247	LPS / USGPM
*Peak Decant Flow Rate (Only one (1) SBR treatment train decanting) (2) (3)	16.8 / 266	LPS / USGPM (Present Peak Disinfection flow rate)
*Design Average Decant Flow Rate (Two (2) SBR treatment train decanting) (2) (4)	31.2 / 495	LPS / USGPM
*Peak Decant Flow Rate (Two (2) SBR treatment trains decanting) (2) (4)	33.6 / 533	LPS / USGPM (Future Peak Disinfection flow rate)
In-Pipe Enclosed	Inlet/Outlet Pipe connected with CL 150 Flanges (304SS)	
Minimum UV Transmittance	60.0	% UVT (Minimum)
Total Suspended Solids	< 15.0	mg/l (30-day average)
$CBOD_5$	< 10.0	mg/l (30-day average)
Target Indicator Organism	Fecal Coliform	

Effluent Permit Criteria	200	CFU /100 ml (Fecal Coliform) Monthly GEOMEAN
Minimum UV Dose (Manufacturer Calculated)	30.0	mJ/cm^2 Minimum UV Dose after application of Fouling Factor (.89) and End of Lamp Life (.87)
*Mean Particle Size [(1)]	< 10	Microns
*Total Iron [(1)]	< 0.3	mg/L
*Turbidity [(1)]	< 5.0	NTU
Annual Effluent Temp. Range	1 – 30 / 34 - 86	Celsius / Fahrenheit
Equipment Redundancy	100% Redundancy. One reactor with two banks in series, each rated to disinfect 100% of the **one (1) SBR train peak decant treated effluent flow**. No Redundancy. One reactor with two banks in series, each rated to disinfect 100% of the **two (2) SBR train peak decant treated effluent flow**.	

*Notes:

1. Industry standard values used for UV reactor sizing.
2. Design Decant Time: 45 minutes
3. Present Flow Design Criteria (Two SBR Process Trains Operating, single decant occurrence)
4. Future Flow Design Criteria (Three SBR Process Trains Operating, double decant occurrence)

B. UV Dose and Effluent Standards to be Achieved

1. Each UV reactor shall be designed to deliver a minimum Reduction Equivalent Dose (RED) of $30mJ/cm^2$ at 60% UVT at peak flow calculated per independent third party bioassay and shall produce an effluent as follows:

   a) Effluent Fecal Coliform: The geometric mean number of the Fecal Coliform must not exceed 200.0 Most Probable Number (MPN) per 100 milliliters (mL) during any 30-day period.

   b) Effluent standards based on influent characteristics in accordance with Section 1.4.A.1 (Table 1)

   c) Effluent fecal coliform quantities based on a two single day grab samples and as a 30 Geometric Mean. Grab samples will be taken in accordance with the Microbiology Sampling Techniques found in Standard Methods for the Examination of Water and Wastewater, 19th edition.

C. Operating Conditions:

1. Head loss thru the reactor at Peak Disinfection Flow (Future Design Criteria) shall be less than 218 mm/8.6 inches (flange to flange through the UV Reactor).
2. The UV system shall be designed to operate at a maximum pressure of less than 20 psi.

1.5 WARRANTY

A. The equipment furnished under this section and referenced sections (excluding lamps, ballasts) shall be warranted to be free of defects in material and workmanship, including damages that may be incurred during shipping for the lessor of a period of twelve (12) months from substantial completion of the installed UV system or eighteen (18) months from receipt of all equipment supplied and received in good condition by the owner.

B. UV lamps shall be warranted for a minimum of 12,000 hours operating time under the conditions specified herein prorated after 9,000 hours. In the event of premature UV lamp failure, the UV system supplier shall offer the following:
   1. Lamp failure before 9,000 hours – send a replacement lamp free of charge.
   2. Lamp failure after 9,000 hours – issue a “pro-rated” credit proportional to the hours not used.

C. Electronic ballasts shall be fully warranted for three (3) years, extended to five years with first purchase of (1:1) replacement lamps within three years of installation. In case of premature ballast failure before a five (5) year period, the UV system manufacturer shall provide a replacement free of charge.

D. Activated Fluoro-Polymer (AFP) Tubes shall be warranted for twenty (20) years. Any failure shall result in a replacement tube(s) and service to install and/or repair.

1.6 PERFORMANCE/DISINFECTION GUARANTEE:

A. The manufacturer shall guarantee that the proposed UV disinfection system shall produce an effluent that meets or exceeds the requirements of this specification, listed in Section 1.4.B.1. The effluent quality exiting the UV system must be equal to or better than the specification requirements, as long as the wastewater flow and quality remains in the range(s) specified in the Design Criteria in Section 1.4.A.1 (Table 1), and the UV Disinfection Equipment is operated and maintained in accordance with the manufacturers Operating and Maintenance (O&M) Manual.

1.7 SUBMITTALS

A. The Manufacturer shall furnish electronic submittals consisting of the following information:

   1. Mechanical/Electrical assembly drawings.
   2. Power/Control wiring single line diagrams.
   3. Manufacturer's catalog information consisting of descriptive literature, specifications Bill of Materials (BOM) including part numbers and materials of construction for all components.

B. Manufacturer shall furnish the OWNER with two (2) hard copies and electronic copies of maintenance data on all electrical and mechanical equipment furnished for the treatment system. The manuals shall include the following:

   1. UV Reactor Dimensional Drawings
   2. Equipment operating and maintenance instructions
   3. Mechanical and Electrical Parts lists
   4. Assembly and disassembly instructions

5. Equipment specifications and data sheets
6. Guaranteed performance data
7. Recommendations for preventive maintenance
8. Step-by-step operating and start-up procedures
9. Lists of spare parts, tools, and supplies
10. Wiring diagrams of all control circuits
11. Software programming as updated after final acceptance
12. Troubleshooting instructions
13. Detailed Warranty Certificate
14. Bioassay Validation Certificate

1.8 QUALIFICATIONS OF MANUFACTURERS

A. The equipment manufacturer shall be regularly involved in the manufacture and supply of Municipal Wastewater UV Disinfection Systems for a minimum period of ten (10) years, and with a history of at least one hundred successful wastewater installations of non-contact UV systems.

B. UV equipment manufacturers must have the capability to be able to provide local technical support, parts and service by a certified and technically trained manufacturers representative with an established physical office having a fixed address located in Newfoundland & Labrador.

C. The standard of acceptance of manufacturers for non-contact UV disinfection system is Enaqua (A Grundfos Company) or approved equal. Alternative UV disinfection manufacturers must meet all performance, warranty, controls and experience criteria equal to the Basis of Design.

1. Alternate equipment for the Basis of Design may be accepted for consideration if supplier of equipment can adequately demonstrate to the Engineer, at Engineers sole discretion, that:

    a) The proposed alternate equipment shall be equal to the Basis of Design equipment and shall meet the design and performance criteria described herein, have equal warranty, shall maintain compliance of wastewater treatment plant discharge permit(s), rules, and regulations, and not result in any adverse impacts including, but not limited to, additional capital or operational costs.

    b) Suppler shall indemnify buyer from any and all patent infringement claims that may arise from the purchase of seller’s equipment.

    c) Suppler shall provide documentation showing compliance with all sections of this specification at time of bid.

2 - PRODUCTS

2.1 DESIGN, CONSTRUCTION AND MATERIALS

A. General

1. All module welded metal components in contact with effluent shall be Type 304 stainless steel.
2. All wetted metal components shall be Type 304 stainless steel.
3. Non-wetted metal components such as the Lamp Rack Assembly shall be constructed of aluminum and be capable of sustaining intermittent pedestrian traffic on the lamp racks.
4. All wiring exposed to UV light within the UV reactor, or electrical ballast enclosure shall be Teflon™ coated.
5. The effluent water shall be conveyed through the UV reactor via AFP tubes and there shall be no contact with effluent and quartz sleeves at any time during normal operation.
6. All wetted components in the UV reactor shall be: AFP_{840}™, 304SS, PVC, ABS or other non-reactive, non-corrosive material.
7. The UV system (ballasts, lamps, and controls) shall be capable of 24 on/off cycles per 24-hour day for the complete specified warranty life of the lamps and ballasts.

B. Lamp Array Configuration:

1. The UV reactor shall contain the necessary quantity of lamps and arranged to provide a minimum specified RED dose at all points within the reactor when decanted effluent is passing thought the UV system.
2. The Non-Contact UV Reactor shall be designed to avoid any immersion of UV lamps in the decant effluent.

C. Inlet/Outlet Flow Distribution:

1. Each UV Reactor shall have an inlet and outlet transition tank. The SBR Plant effluent PVC pipework shall connect to each of the transition tanks to convey effluent through the UV Reactor.
2. Connections to the inlet and outlet UV Reactor transition tanks shall be 8.00” (203 mm) Diameter (ASME/ANSI B16.5, CL 150 Flange).
3. Each UV Reactor shall have a means for flow distribution so as to distribute wastewater efficiently through the UV process.
4. The transition tanks and inlet flow distribution shall be made of 304SS material. All materials in contact with the wastewater shall be a non-corrosive.

D. AFP Tube Ultraviolet Reactor:

1. Within the ultraviolet reactor, AFP UV transmitting tubes are arranged in a horizontal and vertical array. These AFP tubes are in a parallel mode and are attached at one end to the inlet flow distributor sheet and to the outlet flow distributor sheet with appropriate leak proof fittings. The AFP tubes shall be adequately supported.
2. Within the AFP UV Reactor, all UV sensitive materials shall be protected from the UV light.
3. The flow path through the AFP tubes shall achieve optimized plug flow regime. The flow of

wastewater should be in sufficient turbulent mode; therefore, the Reynolds number in each UV reactor would be greater than 50,000 at peak flow. A turbulent flow shall be in such a way that it scours the inner walls of the AFP tube to help prevent scaling or fouling.

4. The UV reactor shall be covered from five sides with either coated aluminum or stainless panels. The sixth side (top) will have access door(s). The lamp racks will be accessible through these doors.
5. A temperature sensor shall be fitted to the chamber for protection against heat build-up under no or low flow conditions. UV system shall alarm in event of heat buildup in the chamber.
6. The air temperature inside the UV reactor shall be maintained between 32 - 49 Deg C by a heat exchange system. The control of the air temperature shall ensure optimum UV light emissions from the UV lamp.

E. The UV reactor shall use germicidal UV lamps. These lamps will be located on the lamp rack assemblies. The ultraviolet disinfection lamps will have the following characteristics:

1. A low pressure, high output (LPHO) non-amalgam mercury vapor lamp of the hot cathode type.
2. The filament shall be of the clamped design, significantly rugged to withstand shock and vibration.
3. Each lamp will produce at least 90% emissions at the germicidal frequency of 253.7 (254nm) nanometers.
4. The power consumption will be a maximum of 138 input watts per lamp; total including ballasts losses shall not exceed 145 watts including ballast losses.
5. The rated UV output at 253.7 nanometers will be a nominal 57 UV_{254} Watts at 100 hours of operation.
6. The lamp shall have a minimum UV intensity of >400 microwatts/cm^2 at 1 meter.
7. Each lamp shall have a rated life of 12,000 hours.
8. Each lamp shall be single ended. Each lamp will have a nominal arc length of 1400 millimeters.
9. Each lamp has a minimum length of 1554 mm.
10. Each lamp shall produce no measurable amount of ozone.
11. Each lamp envelope is made of quartz and is capable of transmitting at 90% of UV light at 254 nm.
12. Each UV lamp shall have a smart lamp Module (an integral unique lamp identification chip) embedded in the lamp pin connector that enables the lamp position in the UV reactor to be altered independent of a lamp holder. The smart lamp module shall be capable of measuring and storing at a minimum the following data for each UV lamp in a reactor:
    a. Part and Serial number (unique identification) of each individual UV lamp
    b. Total accrued run time hours
    c. Lamp ON/OFF cycles

F. UV Lamp Racks

1. The lamp racks shall typically slide in and out within a track that shall be attached to the main frame of the UV reactor.
2. The use of cranes, hoists or other mechanical lifting devices shall not be acceptable.
3. Quick power disconnects shall allow quick disconnect of the lamp rack assembly to the main power at the UV reactor chassis.
4. Lamp Racks shall be removable for service during UV operation without impacting Hydraulic flow and still maintaining plug flow regime in the reactor.
5. Each lamp shall be controlled by individual ballast. UV Systems that have only one ballast controlling multiple lamps shall not be considered.
6. There shall be no quartz sleeves, O rings, seals, glands or retainers required to be around the lamps when installed in the lamp racks.
7. Each lamp rack shall be equipped with its own on/off switch and fuse.

G. Electronic Ballasts:

1. The ballast used to energize the UV lamps will be high frequency electronic ballast.
2. The electronic ballasts will be rated at 120-277 V + 10% without discernible change of characteristics.
3. The electronics ballast will have the following features:
    a. Power factor greater than or equal to 0.95.
    b. Electrical conversion efficiency greater than or equal to 90%.
    c. Ballast will have high frequency phase returns from the UV lamps.
    d. The ballast operating frequency will be between 40 and 150 K Hz.
    e. The ballast will have a thermal overload protector to protect against overheating when ballast skin temperature reaches 75 deg. C.

H. Electrical:

1. The UV reactor shall be powered from its own incoming power supply (to be supplied by others).
2. Transformers: UV system supplier shall furnish one (1) three phase transformer for each UV bank providing the required voltage (480 V, 3 Θ, 4 W) to the UV power distribution centers. Each transformer shall be sized to match the UV bank input power requirements at 100%. Transformer shall meet the following technical specifications.
    a. Type: Dry
    b. 3-phase, kVA as required, 600V input, 277/480V output, 60Hz.
    c. Voltage taps: 2.5% - 2FCAN, 2FCBN (95%, 97.5%, 100%, 102.5%, 105%).
    d. Insulation: Class H, 150°C temperature rise.
    e. Basic Impulse Level (BIL): standard.

f. HI pot: standard.

g. Average sound level: standard.

h. Impedance at 170°C: standard.

i. Enclosure: NEMA 3R, ventilated removable metal front panel and hood, drip proof.

j. Mounting: floor.

k. Winding configuration: Delta primary grounded Y secondary. All windings copper.

l. Options: vibration isolators; Dual rated spade type transformer lug for ground/bonding of transformers.

m. Acceptable Manufacturers: ACME electric or approved equal.

3. Electrical power required shall consist of the following:

a. Main power to reactor(s): 575 VAC, 3 phase (Y), 5 Wire (3 Ph + N + G)

b. Control power to reactor(s): 120VAC, 1 phase, 2 wire plus ground

c. Control power to HMI: 120VAC, 1 phase, 2 wire plus ground

4. Power distribution and communication within the UV reactor shall be by the Manufacturer.

5. All cabling, conduit runs and wiring from the plant power supply to the UV reactor shall be as shown on the construction drawings.

I. Power Panel:

1. The power panel(s) for the UV system shall consist of a UL 508-A NEMA 4X rated 304SS electrical enclosure. The power panel shall house the following:

a. All contactors, disconnects, terminations and fuses required to power the appropriate bank.

b. Electrical safety lockout.

3 – CONTROLS

3.1 DESIGN, OPERATIONS AND FEATURES

A. Port Input Output Modules (PIO)

1. One (1) PIO module shall be supplied in the UV control panel in each phase. PIO modules provide for one Analog Input (4-20 mA) and Switch Inputs and Relay Outputs. Switch Inputs may be remote start signals from a PLC or HOA (Hand-Off-Auto) switch. Relay Outputs can be programmed to provide an Alarm signal, System Operating and/or Cooling Control.

2. Features of PIO modules:

a. 2 RJ 45 Ethernet ports for network integration with EDC module

b. Daisy Change up to 2 PIO's

c. One Simple Analog Inputs: 4-20mA

d. 4 Switch Inputs: Dry Contact

e. 4 Relay Outputs: Switch 120VAC @ 6A

f. 2 Temperature Probe Inputs

B. Local Control and Monitor (ADRX)

1. Each reactor bank shall be equipped with an Active Data Router Extended (ADRX) to control and monitor each bank of the reactor. The display for each bank shall be equipped with the following:

   a. 20 Character, 4 row LCD display

   b. Keypad

   c. 2 Switch Inputs

   d. 2 Output Relays:

      I. Status of unit ON/OFF

      II. General alarm (Low UV or Lamp out via powered relay)

   e. Displays for:

      i. Individual lamp on indication

      ii. Individual lamp hours

      iii. UV Intensity level

2. The UV reactor shall be equipped with three-way lamp control consisting of HAND, OFF and AUTO.

   a. In HAND: Shall provide local lamp control.

   b. In OFF: Shall power off the lamps in the reactor.

   c. In AUTO: Shall provide automatic lamp control from remote signal.

C. HMI Panel

1. The control panel for the UV system shall consist of a UL 508-A NEMA 4X rated enclosure to provide graphic interface for monitoring and control.

2. The HMI Panel shall be DFI-US Series with Ethernet switch, and will show all system operational data, system operational history and shall allow access via remote Internet connection for troubleshooting and system upgrades.

3. The HMI enclosure shall house the following:

   a. 19-inch color panel PC.

   b. Electronic Data Center (EDC).

   c. Digital I/O's

   d. There shall be a three way HOA control for allowing OFF, HAND, or AUTO (automatic) operation of the reactor providing control for the following:

      HAND: Shall provide local lamp control.
      OFF: Shall power off the lamps in the reactor.
      AUTO: Shall provide automatic lamp control from remote signal.

D. Electronic Data Center (EDC)

1. The UV reactor shall be equipped with an Electronic Data Center (EDC). This system shall collect all the data from individual UV lamps, UV and other sensors in the system and display it via a local display and remotely to the plant operation console. The Local display panel shall show the following data:

    e. UV Bank in Duty/Stand-By

    f. On/Off status of lamps.

    g. Error Status of lamps and sensors.

    h. Lamp Hours

    i. An advanced signal for lamp service or replacement.

    j. UV intensity per Bank.

    k. The type and location of the alarm.

2. Communication between the each bank of the rector and the EDC shall be via CAT5 Ethernet cable.

3. Communication between the reactor and HMI shall be via CAT6 Ethernet cable.

4. Integration of alarms between the UV Control Panel and the EDC and the plant's SCADA system PLC shall be via Modbus TCP. Communication between the UV Control Panel and the plant PLC shall be via CAT5 Ethernet cable. All registers of the EDC shall be available to the plant's SCADA system PLC.

E. UV Intensity Monitor

1. The UV reactor shall have a minimum of one UV intensity sensor per bank, which responds to the germicidal portion of light generated. The sensor shall not degrade after prolonged exposure to the UV light or effluent.

2. The sensor shall measure only the germicidal portion of the light emitted by the UV lamps as measured at 254 nm. It shall have sensitivity at 254 nm of greater than 95%. Sensors whose sensitivity to other wavelengths amounts to more than 5% of the total sensitivity shall not be acceptable.

F. Level Sensor

1. The inlet tank of each UV reactor shall include a radar level sensor and transmitter provided by Manufacturer of the non-contact UV disinfection equipment, which will monitor the water level in the inlet box and transmit a signal to the EDC for activation and de-activation of UV lamps based on the level in the influent tanks.

2. The radar level sensor/transmitters Standard of Acceptance shall be Flowline EchoWave® LG10-11 Guided Wave Radar Level Transmitter or approved equal.

3. The radar level sensor/transmitter shall be mounted such that it is easily accessible and on a stilling tube suitably sized and designed to prevent false or no readings caused by water turbulence in the inlet tank.

G. On Line UV Transmittance (UVT) Organic Analyzer

1. An On Line UVT analyzer shall be supplied with the UV reactors and the analyzer output shall be integrated with the UV control panel and the real time UVT displayed on the HMI. The UVT sensor shall have an UVT measurement range of 10% - 100% for UVC wavelength/Pathlength of 254nm@ 1cm. The UVT Analyzer shall have an accuracy of +/- 1 % and a resolution of .1% and have an operating temperature range of 0 - 50 Deg C (32 – 122 Deg F).
2. The UVT analyzer shall include an automatic chemical cleaning system.
3. Standard of Acceptance: REALTECH REAL UV Model M3000, and REAL Clean System 1.

H. Remote Monitoring and Control

1. The Run command for the UV reactor shall be via hard wired connections from the Main Plant's SCADA/PLC to Enaqua PIO (port input output) module located inside the UV reactor. The UV reactor can be turned on or off as required by the Main Plant's SCADA/PLC system by opening or closing dry contacts.
    a. With the switches for each bank in the AUTO position, the reactor shall be controlled remotely by the external run command.
    b. Local control (on reactor): The switches shall override the control from HMI panel.
    c. Remote Start: Both banks of the UV reactor are designed to be ON always, one remote start is required as a dry contact.
2. The UV reactor shall have the capability of providing basic remote monitoring/control via the plants main console (or other designated computer). The plant shall provide either an Internet IP address specific to the UV system, or allow access through its network and via secure website.
3. Connection/integration to the main console (or customer SCADA system) shall be through Ethernet TCP/IP protocol. A MODBUS TCP/IP to Ethernet IP gateway and software required to integrate with the SCADA system shall be supplied and installed by manufacturer, and integrated with plants SCADA system by others. Enaqua shall provide a Modbus Map to the system integrator.

I. Alarming and Controls:

1. Minor alarms shall be provided by the EDC's PIO module (Discrete I/O Module) via dry contact, or via MODBUS TCP to the Main Plant's SCADA/PLC that maintenance attention is required. Alarms shall include:
    a. Low Warning UV Intensity shall be pre-set at the factory for 70% of the intensity after 100 hours. Alarm set point shall be field adjustable.
    b. Single Lamp Out.
2. Major alarms shall be provided by the EDC's PIO module (Discrete I/O Module) via dry contact, or via MODBUS TCP to the Main Plant's SCADA/PLC to indicate an extreme alarm condition in which the disinfection performance may be jeopardized. Alarms shall include:
    a. Low UV Intensity Alarm. This alarm shall be pre-set at the factory for 25% of the intensity after 100 hours' burn-in of the lamps. The alarm set point shall be field adjustable. A low intensity alarm shall not cause any bank to turn off.

b. Multiple Lamp Failure.

J. Control Strategy

1. At any given time, one UV bank will be designated as DUTY and the other as STAND-BY.
2. **Flow Pacing:** The reactors shall be set up for flow pacing based on the flow ranges listed in Section 1.2-A.1. Flow pacing shall be accomplished by integrating 4-20 mA flow signals from the plant effluent MAG flow meter to the EDC.
3. Level Pacing **(UV Dose Pacing):** The UV system shall employ a level pacing technique in which the lamps that are not required for maintaining the proper dosage are turned completely off in accordance with the level of the UV inlet channel, while ensuring minimum UV dose delivery at all times. Depending on the water level in the inlet channel, the turndown range (ratio of lamps in lamp rack to lamps used based on liquid level) shall be from as low as 25.0 % to 100.00 %. Determining water level shall be provided via an integral level sensor using a 4-20 mA signal terminated at the HMI panel.
4. Alternation of banks as DUTY and STAND-BY shall be performed by the EDC to ensure equalized operating hours of the UV banks.

4 – INSTALLATION, START UP AND TRAINING

4.1 INSTALLATION

A. The UV Equipment shall be installed by a CONTRACTOR in accordance with the manufacturer's recommendations, drawings and specifications to provide a complete installation.

B. Selection and CONTRACTOR award shall be provided at a later date in a separate tendering process for installation after the UV system has been pre-selected and equipment procurement completed.

C. Startup Responsibilities of the CONTRACTOR

1. Provide Manufacturer with a two (2) week notice prior to any changes in the start-up date previously agreed upon.
2. Availability of all required utilities.
3. Availability of typical feed water quality and quantity.

D. Joint Responsibility of Manufacturer and CONTRACTOR

1. Final assembly of and loading of the UV lamps supplied by Manufacturer.

E. Startup Responsibilities of Manufacturer

1. Manufacturer’s local representative for the equipment specified herein shall be present at the jobsite for a minimum amount of workdays for services listed below. Excluded from these time requirements shall be travel time spent, time spent during shipping of equipment, time spent at the jobsite correcting any fabrication or manufacturing errors, and time spent preparing and operating the equipment to meet performance requirements including all performance testing. The Bid shall include all associated expenses incurred by the technical representative during the jobsite visits. The following services will be provided:

a. Two (2) workdays (8 hours each) for start-up, commissioning, and operator training. This session shall include equipment maintenance, classroom and on-site equipment operation instructions, troubleshooting, and other post-startup services.

2. After successful startup, commissioning & training the Manufacturer or Manufacturer's Local Representative shall provide written certification and check list confirming that the ultraviolet disinfection system has been successfully commissioned and that there are no deficiencies, operator training successfully completed and that the UV system is ready for full service.

E STATEMENT OF COMPLIANCE

In order for a bid to be compliant for this section, bidders must meet the Technical Specifications(s) contained in Section D of Appendix B and verify same by completing the table below.

Line Item	Specification Reference	Verification	Compliant Yes/No
1	1.3	Scope of Supply as Specified	☐Yes ☐No
2	1.4	Design Information and Quality Assurance as Specified	☐Yes ☐No
3	1.5	Warranties as Specified	☐Yes ☐No
4	1.6	Performance/Disinfection Guarantee as Specified	☐Yes ☐No
5	1.7	Submittals as Specified	☐Yes ☐No
6	1.8	Qualifications of Manufacturer as Specified	☐Yes ☐No
7	2.1	Design, Construction and Materials as Specified	☐Yes ☐No
8	3.1	Design, Operations and Features as Specified	☐Yes ☐No
9	4.1	Installation as Specified	☐Yes ☐No

Bidder: _____

Name of Bidder Representative: _____

Date: _____

In completing this page the bidder acknowledges full compliance with the technical specifications.

APPENDIX C – SUBMISSION FORM

Bidders should refer to the instructions attached to the solicitation for the Appendix C – Submission Form requirements and provide all required information in accordance with the instruction provided in the bidding system.

1. Bidders Information

Please fill out the following form, naming one person to be the respondent's contact for the RFQ process and for any clarifications or communication that might be necessary.	
Full Legal Name of Respondent:	
Any Other Relevant Name under which Respondent Carries on Business:	
Street Address:	
City, Province/State:	
Postal Code:	
Phone Number:	
Company Website (if any):	
Respondent Contact Name and Title:	
Respondent Contact Phone:	
Respondent Contact Email:	

2. Acknowledgment of Non-Binding Procurement Process

The bidder acknowledges that the RFQ process will be governed by the terms and conditions of the RFQ, and that, among other things, such terms and conditions confirm that this procurement process does not constitute a formal, legally binding bidding process (and for greater certainty, does not give rise to a Contract A bidding process contract), and that no legal relationship or obligation regarding the procurement of any good or service will be created between the Town and the bidder unless and until the Town and the bidder execute a written agreement for the Deliverables.

3. Ability to Provide Deliverables

The bidder has carefully examined the RFQ documents and has a clear and comprehensive knowledge of the Deliverables required. The bidder represents and warrants its ability to provide the Deliverables in accordance with the requirements of the RFQ for the rates set out in its quotation.

4. Non-Binding Pricing

The bidder has submitted its pricing in accordance with the instructions in the RFQ. The bidder confirms that the pricing information provided is accurate. The bidder acknowledges that any inaccurate, misleading, or incomplete information, including withdrawn or altered pricing, could adversely impact the acceptance of its quotation or its eligibility for future work.

5. Bid Irrevocable

The bidder agrees that its tender shall be irrevocable for a period of 60 days following the Submission Deadline.

6. Offer

The bidder has carefully examined the Request for Quote documents and has a clear and comprehensive knowledge of the Deliverables required under the Request for Quote. By submitting a bid, the bidder agrees and consents to the terms, conditions and provisions of Request for Quote, including the Form of Agreement, and offers to provide the Deliverables in accordance therewith at the rates set out.

7. Rates

The bidder has submitted its rates in accordance with the instructions in the Request for Quote. The bidder confirms that it has factored all of the provision of Appendix A, including insurance and indemnity requirements, into its pricing assumptions and calculations.

8. Addenda

The bidder is deemed to have read and accepted all addenda issued by the Owner. The onus is on bidders to make any necessary amendments to their bids based on the addenda. The bidder is required to confirm that it has received all addenda by listing the addenda numbers, or if no addenda were issued by writing the word **"Non"**, on the following line:
_____. Bidders who fail to complete this section will be deemed to have not received all posted addends and shall be deemed **non-compliant.**

9. No Prohibited Conduct

The bidder declares that it has not engaged in any conduct prohibited by this Request for Quote.

10. Disclosure of Information

The bidder hereby agrees that any information provided in this bid, even if it is identified as being supplied in confidence, may be disclosed where required by law or by order of a court or tribunal. The bidder hereby consents to the disclosure, on a confidential basis, of this bid by the Owner to the advisers retained by the Owner to advise or assist with the Request for Quote process, including with respect to the evaluation of this bid.

11. Execution of Agreement

The bidder agrees that in the event its bid is selected by the Owner, it will finalize and execute the Agreement in the form set out in Appendix A (or in a form mutually acceptable to the parties) to this Request for Quote in accordance with the terms of this Request for Quote. Failure to submit this signature section will render the proposal NON-COMPLIANT and the proposal will be disqualified.

_____
Name of Bidder Representative

_____
Title of Bidder Representative

_____
Date

APPENDIX D – PRICING FORM

1.0 Schedule of Prices

The Bidder hereby Bids and offer to enter into the Contract referred to and to supply and do all or any part of the Work which is set out or called for in this Bid, at the unit price, and/or lump sums, hereinafter stated. Rates must be provided in Canadian funds, inclusive of all applicable dues and taxes, which shall be itemized separately.

Rates quoted by the Bidder must be all-inclusive and must include all labour and material costs, all travel and courier costs, all insurance costs, all costs of delivery to the Owner, including pre-delivery inspection charges, all costs for UV lamp installation, spare parts and tools, start up, commissioning and training, and all other overhead, including any fees or other charges required by law.

2.0 Pricing Table

This bid will be awarded in whole to the lowest bidder that meets specifications.

In order for a bid to be compliant, vendors must quote all items in pricing table.

Pricing is to remain firm for the duration of the contract.

In case of mathematical error in the extension/calculation of prices, the unit price will govern.

Line Item	Description	UOM	Quantity	Unit Price	Amount
1	Supply, deliver, startup and warranty new Non-Contact Ultra Violet Disinfection Equipment as specified in Appendix B	**Each**	**1**		
				Subtotal Contract Amount	
				HST @ 15%	
				Total Contract Amount	

3.0 Summary Table

Bid Form		Amount
Supply and Deliver Non Contact Ultraviolet Disinfection Equipment	**Max 90% of Sub-total**	
Final assembly of UV lamps, startup, commissioning, training, and O&M documentation for UV Disinfection Equipment	**Min 10% of Sub-total**	
	Sub-total Contract Amount	
	HST (15%)	
	Total Contract Amount	

4.0 Non Contact UV Disinfection Equipment

Line Item	Description	Manufacturer	Model
1	Bidder shall include the following information for the UV Disinfection Equipment		

5.0 Warranty

Line Item	Description	Response:
1	Bidder shall include the following information : The vendor and the location providing parts, service and warranty repairs for entire unit	

Name of Bidder Representative

Title of Bidder Representative

Date

I have the authority to bind the bidder -

IN COMPLETING THIS PAGE AND SUBMITTING YOUR PROPOSAL, THE BIDDER ACKNOWLEDGES HAVING READ, UNDERSTOOD AND AGREED TO THE TERMS AND CONDITIONS OF THIS DOCUMENT