

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**  
**11 Laurier St. / 11, rue Laurier**  
**Place du Portage, Phase III**  
**Core 0A1 / Noyau 0A1**  
**Gatineau, Québec K1A 0S5**  
**Bid Fax: (819) 997-9776**

**REQUEST FOR PROPOSAL**  
**DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> WASTE WATER TREATMENT SYSTEM	
<b>Solicitation No. - N° de l'invitation</b> K8A60-140005/A	<b>Date</b> 2014-09-26
<b>Client Reference No. - N° de référence du client</b> K8A60-140005	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HL-420-65789	
<b>File No. - N° de dossier</b> hl420.K8A60-140005	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-11-10</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Dumm, Jennifer	<b>Buyer Id - Id de l'acheteur</b> hl420
<b>Telephone No. - N° de téléphone</b> (819) 956-9675 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF THE ENVIRONMENT EMERGENCY SCIENCE & TECHN. 335 RIVER RD ATTN: KONSTANTIN VOLCHEK OTTAWA Ontario K1A0H3 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Fuel & Construction Products Division  
11 Laurier St./11, rue Laurier  
7A2, Place du Portage, Phase III  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Unit Price/Prix unitaire		Del. Offered Liv. offerte
						Destination	FOB/FAM Plant/Usine	
1	DECONTAMINATON WASTE WATER TREATMENT SYSTEM AND DELIVERABLES TO BE SUPPLIED IN ACCORDANCE WITH THE PURCHASE DESCRIPTION ATTACHED AT ANNEX "A " .	K8A60	K8A60	1	Each	\$	XXXXXXXXXXXX	See Herein

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**TITLE: WASTE WATER TREATMENT SYSTEM****PART 1 - GENERAL INFORMATION****1. Requirement - Bid**

The requirement is detailed under Article 2 of the resulting contract clauses.

**2. Debriefings**

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

**4. Trade Agreements**

The requirement is subject to the provisions of the North American Free Trade Agreement (NAFTA) and the Agreement on Internal Trade (AIT).

## PART 2 - BIDDER INSTRUCTIONS

### 1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2014-09-25) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days

Insert: ninety (90) days

#### 1.1 SACC Manual Clauses

The following terms and conditions are incorporated herein

SACC Reference	Section	Date
B1000T	Condition of Material - Bid	2014-06-26

### 2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

### 3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

### 4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

Solicitation No. - N° de l'invitation

K8A60-140005/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

hl420

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No/ N° VME

K8A60-140005

hl420K8A60-140005

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**5. Best Delivery Date - Bid**

While delivery is requested by **30 April 2015**, the best delivery that could be offered is

\_\_\_\_\_.

## PART 3 - BID PREPARATION INSTRUCTIONS

### 1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (two (2) hard copies) and one (1) soft copies on CD.

Section II: Financial Bid (one (1) hard copies)

Section III: Certifications (one (1) hard copies)

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the line item detail only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

#### Section I: Technical Bid

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient.

#### Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment and the Mandatory Financial Criteria. The total amount of Applicable Taxes must be shown separately.

#### 1.3 SACC Manual Clauses

The following terms and conditions are incorporated herein

SACC Reference	Section	Date
C3011T	Exchange Rate Fluctuation	2013-11-06

#### 1.4 Progress Payments

Progress Payments will not be considered unless specifically offered by PWGSC in this document.

#### Section III: Certifications

Bidders must submit the certifications required under Part 5.

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## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 1. Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

#### 1.1 Technical Evaluation

All bids must be completed in full and provide all of the information requested in the bid solicitation to enable full and complete evaluation.

##### 1.1.1 Mandatory Technical Criteria

- a) The Bidder must provide documentation with their bid showing how they meet the technical requirements detailed in Annex "A".

#### 1.2 Financial Evaluation

##### 1.2.1 Mandatory Financial Criteria

- a) The Bidder must bid a firm price in Canadian funds, Applicable Taxes excluded, DDP Delivered Duty Paid to destination(s) Incoterms 2000, Customs Duties included for each item offered; and
- b) The Bidders' financial bid must be in accordance with the Basis of Payment.

### 2. Basis of Selection - Mandatory Technical Criteria

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

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## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and associated information to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, if any certification made by the Bidder is found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

### 1. Certifications Required Precedent to Contract Award

#### 1.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

#### 1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from Employment and Social Development Canada (ESDC) - Labour's website ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/index.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/index.shtml)).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement applicable to this Contract.

### 2. Requirement - Contract

The Contractor must provide one (1) waste water treatment system and deliverables in accordance with the Purchase Description at Annex "A" and "B".

### 3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

#### 3.1 General Conditions

2010A (2014-09-25), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

### 4. Term of Contract

#### 4.1 Complete Delivery

The Contractor must make the complete delivery within \_\_\_\_\_ calendar days from the effective date of the Contract.

#### 4.2 Adherence to Delivery Schedule

The contractor will promptly give notice to the Department of Public Works and Government Services of its inability to meet the contract delivery schedule and will request therein an extension of time stating its proposed revised delivery schedule and offering consideration for such revisions. Until such notice is received and the revised delivery schedule agreed to by the Department of Public Works and Government Services, the Minister may, pursuant to the General Conditions, on the business day following the due date of delivery of any outstanding materials, **terminate the whole or part of the contract for default.**

### 5. Authorities

#### 5.1 Contracting Authority

The Contracting Authority for the Contract is:

Jennifer Dumm, Supply Specialist  
Public Works and Government Services Canada  
Acquisitions Branch, Commercial Acquisition & Supply Management Sector  
Logistics, Electrical, Fuel & Transportation Directorate  
Fuel & Construction Products Division (HL)  
11 Laurier Street, 7A2, Place du Portage, Phase III  
Gatineau, QC K1A 0S5  
Telephone: 819-956-9675 Facsimile: 819-956-5227  
E-mail address: Jennifer.Dumm@tpsgc-pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

#### 5.2 Technical Authority

The Technical Authority for the Contract is:

Name: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Organization: Environment Canada  
 Address: \_\_\_\_\_  
 Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_  
 Facsimile: \_\_\_\_-\_\_\_\_-\_\_\_\_  
 E-mail: \_\_\_\_\_

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

### 5.3 Contractor's Representative

Name and telephone number of the person responsible for :

	<b>General Enquiries</b>	<b>Delivery Follow-up</b>
Name:	_____	_____
Telephone No.:	_____	_____
Facsimile No.:	_____	_____
E-mail address:	_____	_____

## 6. Payment

### 6.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price, as specified in the contract for a cost of \$ \_\_\_\_\_ CAD . Customs duties are included and Applicable Taxes are extra.

### 6.2 Limitation of Price

SACC Manual clause C6000C (2011-05-16) Limitation of Price

### 6.3 Terms of Payment

SACC Manual clause H1000C (2008-05-12) Single Payment

## 7. Invoicing Instructions

The Contractor must submit invoices in accordance with the information required in Section 10 of 2010A, General Conditions - Goods (Medium Complexity). One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

## 8. Certifications

### 8.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing associated information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the associated information, or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

**9. Applicable Laws**

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in \_\_\_\_\_.

**10. Priority of Documents**

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 2010A (2014-09-25) General Conditions - Goods (Medium Complexity);
- (c) Annex A, Purchase Description;
- (d) Basis of Payment;
- (e) the Contractor's bid dated \_\_\_\_\_, as clarified on \_\_\_\_\_ or, as amended on \_\_\_\_\_"

**11. SACC Manual Clauses**

The following terms and conditions are incorporated herein

<b>SACC Reference</b>	<b>Section</b>	<b>Date</b>
D2025C	Wood Packaging Materials	2013-11-06
G1005C	Insurance	2008-05-12

**12. Shipping Instructions - Delivery at Destination**

1. Goods must be consigned to the destination specified in the Contract and delivered DDP Delivered Duty Paid to destination specified herein Incoterms 2000 for shipments from commercial contractor.
2. The Contractor is responsible for all delivery charges, administration, costs and risk of transport and customs clearance, including the payment of customs duties and applicable taxes.

**PURCHASE DESCRIPTION**  
**FOR**  
**DECONTAMINATION WASTE TREATMENT UNIT**  
**(ADSORPTION WATER TREATMENT SYSTEM)**

Environment Canada  
May 27, 2014

## 1 SCOPE

This document describes the requirements for a water treatment system. The system will be used to treat contaminated water from a variety of pollutants by means of adsorption and/or ion exchange. The system shall include a pre-treatment unit, a main process unit, and a regeneration unit. It shall be transportable to enable its operation at different sites.

## 2 REQUIREMENTS

### 2.1 General Specifications

The following is a summary of specifications for the water treatment system to be manufactured. The system shall be robust to allow the operator to select a number of different modes of operation to produce the desired results (i.e., parallel, series and or recirculation modes). The system shall be built to allow the operator to use different types of ion exchange resins and/ or adsorbent media to determine the optimal treatment process parameters. The equipment shall be extremely adaptable to a variety of feed water contaminants.

This specification is for a skid mounted equipment package ready for transportation to the customer's facility. The plant shall be delivered complete requiring minimal on-site assembly. The system shall have a capacity in the range of 1 to 25 litre per minute. The minimum system specifications are provided in Table 1 for reference purposes.

System's schematic diagram is depicted in Fig. 1.

**Table 1. Adsorption System Design Parameters**

Performance Data	Minimum Specifications
Feed Flow:	1-25 L/m (0.06-1.5 m <sup>3</sup> /hr)
Pre-Treatment Tank Capacity:	180-250 L
Feed Tank Capacity:	180-250 L
Product Tank Capacity:	180-250 L
Regeneration Tank Capacity:	180-250 L
Media Module Resin Capacity (Per Module)	15-30 L
Max Operating Temp:	80°C
Operating Temperature:	5 to 80°C
System Operating Pressure	2 bar (30 PSI) Min- 3.5 bar (50 PSI) Max
Feed Water pH Range:	2-13
Feed Tank Heater:	3 Kw
Bag Filter:	10 Micron Nom
Filter Cartridges:	5 Micron Nom
Control System:	HMI with PLC Control
Noise level(Approximate):	55 dBA @ 1 m

The pilot system shall provide the operator the maximum flexibility to vary the process parameters. The resin tanks (adsorption modules) shall allow the operator to change resins quickly and easily.

Component design and manufacture shall be in accordance with ASTM or CAS specifications where applicable (as indicated).

System components shall be corrosion resistant and shall comply with Canadian and international standards. All piping system components shall be manufactured from SS316 or a higher grade stainless steel. The pumps and media modules shall be manufactured from Duplex 2205. All systems components shall be factory tested and CSA certified prior to delivery to Environment Canada.

## **2.2 System Operation Summary**

The Water Treatment System shall be an efficient, trouble-free and robust pilot system that is easy to operate. System's desired parameters are listed in Table 1. The system shall consist of the following units: Pre-treatment, Adsorption (Main Process), and Regeneration. Each unit shall be manufactured on a separate skid:

Pre-treatment Unit. The pre-treatment unit shall remove any suspended solids from the feed water and allow the operator to add and mix chemicals into the feed water if required. The major components in the pre-treatment system are:

- Pre-treatment Mixing Tank
- Pre-treatment Tank Mixer
- pH Sensor and Temperature Indicator
- Pre-Treatment Tank Transfer Pump
- Duplex Bag filter Assembly
- Duplex Cartridge Filtration System. (5-micron cartridge filters).
- Recirculation/mixing loop

Adsorption (Main Process) Unit. The main treatment skid shall allow the operator to vary the process. The system shall allow the media modules to be operated in parallel, or in series. The final product can also be recirculated back to the feed tank to be treated again. The electrical control panel, flow meters, pressure, temperature indicators and product storage tank shall be located on the main process skid. The major components on the main process skid are:

- Feed Tank
- pH Sensor and Temperature Indicator
- Level Float Indicator
- Tank Heater
- Feed Pump
- Feed Flow Control Valve
- Cartridge Filtration System. (5-micron cartridge filters).
- Feed Flow Meter and Transmitter
- Feed Conductivity Indicator
- Product Water Conductivity Indicator
- Valves
- Resin Tanks (Adsorption Modules) (Qty 3)
- Product Water Recirculation loop
- Product Water Storage Tank
- Product Water pH and Temperature Indicator

Media Regeneration Unit. The media regeneration skid shall allow the operator to regenerate the absorption resins if required. The system shall allow to regenerate all of the module at once or

one module at a time depending on the operators' requirements. The regeneration system consists of a chemical mixing tank, a pump, and an array of valves. The major components in the regeneration system are:

- Regeneration Chemical Mixing Tank
- pH Sensor
- Regeneration Feed Pump
- Regeneration Feed Flow Meter Flow Control Valve
- Regeneration Feed Flow Meter
- Valve Array

### 3 RECOMMENDED SYSTEM COMPONENT SPECIFICATIONS

The following component specifications are provided for reference purposes only. The contractor may propose alternative specifications believed to improve the system performance

#### Pre-treatment/Mix Tank:

Quantity: One  
Description: Conical bottom Tank with 1" outlet connection at bottom  
Connections for pH sensor and Temperature indicator  
Material of Construction: 316SS  
Volume: 210 Litre

#### Feed Tank:

Quantity: One  
Description: Conical bottom Tank with 1" outlet connection at bottom  
Connections for pH sensor and Temperature indicator  
1" Connection for float Switch  
Mounting bracket for emersion heater  
Material of Construction: 316SS  
Volume: 210 Litre

#### Product Water Tank:

Quantity: One  
Description: Conical bottom Tank with 1" outlet connection at bottom  
Connections for pH sensor and Temperature indicator  
Material of Construction: 316SS  
Volume: 210 Litre

#### Regeneration Tank:

Quantity: One  
Description: Conical bottom Tank with 1" outlet connection at bottom  
Connections for pH sensor and Temperature indicator  
Material of Construction: 316SS  
Volume: 210 Litre

#### Pretreatment Tank Transfer Pump:

Quantity: One (100% capacity)  
Description: Close Coupled Centrifugal pump  
Silicon Carbide Seal c/w Viton Elastomers

Material of Construction: Duplex 2205.  
1-1/5" FNPT suction, 1-1/4" FNPT discharge  
2 Hp TEFC motor suitable for damp locations with Nema 4  
Connection box, 3600 RPM – 100JM Frame  
Impeller Dia: 4-5/8"

Feed Pump:

Quantity: One (100% capacity)  
Description: Close Coupled Centrifugal pump  
Silicon Carbide Seal c/w Viton Elastomers  
Material of Construction: Duplex 2205.  
1-1/5" FNPT suction, 1-1/4" FNPT discharge  
2 Hp TEFC motor suitable for damp locations with Nema 4  
Connection box, 3600 RPM – 100JM Frame  
Impeller Dia: 4-5/8"

Regeneration System Pump:

Quantity: One (100% capacity)  
Description: Close Coupled Centrifugal pump  
Silicon Carbide Seal c/w Viton Elastomers  
Material of Construction: Duplex 2205.  
1-1/5" FNPT suction, 1-1/4" FNPT discharge  
2 Hp TEFC motor suitable for damp locations with Nema 4  
Connection box, 3600 RPM – 100JM Frame  
Impeller Dia: 4-5/8"

Duplex Bag Filter :

Quantity: Two (100% capacity)  
Description: 101 mm x 304 mm Type 316SS Stainless Steel filter housings.  
Complete with isolation valves.

Pretreatment Tank Mixer:

Quantity: One  
Description: PG1-3504D - Tank Mount Mixer  
½ Hp – 120Vlt  
316SS Shaft and Mixing blade

Feed Tank Heater:

Quantity: One  
Description: 3 KW over the side Tank heater  
3 phase, with integral thermostat

Feed Tank Level Switch:

Quantity: One  
Description: Level Switch - 2 wire  
½ Npt Connection  
316SS

Duplex 5μ Cartridge Filter :

Quantity: Two (100% capacity)  
Description: 316SS cartridge housing rated at 125 psig, complete with 5μ nominal polypropylene depth cartridge 2.5" Dia. x 20" long. System is supplied complete with isolation valves.  
¾" NPT Inlet & Outlet

Resin Tank (Adsorption Modules):

Quantity: Three  
Description: Media Module – 8" dia x 42" Lg  
Media Capacity: 0.75 Ft³ Media  
Flange ends with Victaulic Inlet Outlet Connections  
¾" inlet port, ¾" outlet port, ¾" regeneration port  
Inlet flow diffuser.  
Outlet Resin Trap  
Regeneration fluid diffuser  
Material of Construction: Duplex 2205

Pre-treatment/Mixing Skid Flow Control Valve Control Valve

Quantity: One  
Description: 1" globe valve – 316SS

Feed Flow Control Valve Control Valve (FCV-02):

Quantity: One  
Description: 1" globe valve – 316SS

Regeneration Flow Control Valve Control Valve (FCV-03):

Quantity: One  
Description: 1" globe valve – 316SS      Model SS7

Ball Valves – Directional Control Valve:

Quantity: One  
Description: ¾" 3 Piece Ball Valve – 316SS

Ball Valves – Directional Control Valve:

Quantity: One  
Description: 1" 3 Piece Ball Valve – 316SS

ABSORPTION SYSTEM SKIDS:

Quantity: Three  
Description: Standard mild steel, epoxy coated, corrosion resistant skid to mount all components required to assemble the Absorption system. All skids shall come with castors to enable the operator to move the system easily.

Pre-treatment Unit Skid: 48"Lg x 30" Wide:  
Approx Height: 55"

Adsorption Unit Skid: 120"Lg x 30" Wide:  
Approx Height: 55"

Regeneration Unit Skid: 48"Lg x 30" Wide:  
Approx Height: 55"

#### 4 INSTRUMENTATION

**All instruments** used in the system shall be CSA Certified for installation in Canada. The following instrument specifications are provided for reference purposes only. The contractor may propose alternative specifications believed to improve the system performance

Feed Conductivity Transmitter:

Description: Two-wire transmitter, Contacting conductivity, Digital display, Automatic T.C. range 5 - 85 C, 4-20, mA output, NEMA 4  
Location: Prior to absorption module # 1

Product Conductivity Transmitter:

Description: Two-wire transmitter, Contacting conductivity, Digital display, Automatic T.C. range 5 - 85 C, 4-20 mA output, NEMA 4  
Location: Prior to absorption module # 1

Pre-treat/Mixing Tank Transfer Flow Meter:

Description: Two-wire Transmitter, Digital display, NEMA 4  
Location: Outlet of FCV-02

Feed Flow Meter:

Description: Two-wire Transmitter, Digital display, NEMA 4  
Location: Outlet of Cartridge Filters

Regeneration Feed Flow Meter:

Description: Two-wire Transmitter, Digital display, NEMA 4  
Location: Outlet of Regeneration Pump

Pre-Treat Tank pH Transmitter:

Description: Two-wire transmitter, Digital display, 4-20 mA output, NEMA 4  
Location: Pre-treat/Mix Tank

Feed Tank pH Transmitter:

Description: Two-wire transmitter, Digital display, 4-20 mA output, NEMA 4  
Location: Feed Tank

Product Tank pH Transmitter:

Description: Two-wire transmitter, Digital display, 4-20 mA output, NEMA 4  
Location: Product Tank

Regeneration Tank pH Transmitter:

Description: Two-wire transmitter, Digital display, 4-20 mA output, NEMA 4  
Location: Regeneration Tank

#### Temperature Transmitters:

Description: Two-wire transmitter, Digital display, 4-20 mA output, NEMA 4  
Location: Pretreat-Mix Tank/Feed Tank/Product Tank

#### Pressure Gauges:

Description: Pressure gauge, 2.5" Dial size, 0-100Psi, Dual scale, 314 SS wetted parts, 304SS case, 1/4"MNPT Bottom connection, Glycerin-filled.

## 5 ELECTRICAL AND CONTROL

**All electrical parts** of the system shall be CSA approved for use in Canada. The following part specifications are provided for reference purposes only. The contractor may propose alternative specifications believed to improve the system performance

#### Control Panel:

Operator Interface:	LCD Screen w/ Switches and Indicator lights
Enclosure Rating:	NEMA 4 Painted Steel
Control Circuit:	120 VAC, 1 ph, 60 Hz
Power supply:	575 VAC, 3 ph, 60 Hz
Power Requirement:	20 Amps 575V 3ph 60
Disconnect:	Main Panel fused disconnect switch

## 6 ALARMS

Alarms shall provide fail-free operation of the system. The following isolated alarms shall be included with the system:

Low Feed Tank-Level: When the level float in the feed tank triggers a low level condition, the system will stop and the heater will be shut off. This will protect the feed pump and the tank heater.

High-Temperature: When the feed temperature exceeds the set point the system will shut down and trigger the alarm.

High and Low pH alarms: The pH alarms for each pH sensor can be enabled or disabled manually depending on the importance to the process. If the Hi or Lo alarm is enabled the system will trigger a warning alarm if the set point is exceeded.

High-Product Water Conductivity: When the product water alarm can be enabled or disabled manually. If the product water conductivity exceeds the set point a warning alarm is triggered to warn the operator to reduce flow or start a regeneration procedure.

Pump Motor Overload: When a motor overload protection device trips the system will stop and alarm.

## **7 MATERIALS OF CONSTRUCTION**

The following material specifications are provided for reference purposes only. The contractor may propose alternative specifications believed to improve the system performance.

System Piping	316 stainless steel, schedule 10
Skid/ Base plate:	Carbon steel coated with zinc based primer and high build epoxy
Isolation Valves (Hi Press):	1000 PSIG WOG, 316SS body, TFE seat
Cleaning valves:	PVC, socket ends, with hand lever
Ball Valves- Low pressure:	PVC body and ball/Buna-N seats
Sample Valves- Low pressure:	PVC body and ball/Teflon seats
Actuators:	Spring Return air actuator
Globe Valve:	304 SS , Threaded ends,
Pressure Relief Valve:	316 stainless steel body, Viton seal, per ASME Section VIII
Pressure Regulating Valve:	304 SS Globe Valve, Threaded ends
Vacuum Breaker:	Glass filled polypropylene (GPP) body, Viton seal
Tubing:	HDPE 1/4" with push connect fittings
Elastomers:	EPDM

## **8 UTILITY REQUIREMENTS (STANDARD)**

Rinse Water Inlet:	3/4" Hose Barb Connector
Potable Water Outlet:	1" ANSI PVC 150# flange
Tank Drain(s):	1" Hose barb Connector
Power Supply:	575VAC, 3-phase, 60 Hz
Power Consumption:	7.5 KW

## **9 DIMENSIONS AND WEIGHTS**

The system shall not exceed the following:

Dimensions:	Adsorption Unit Skid 120"L x 30"W x 55" H
Dry Weight:	470 Kg

Pre-treatment Unit Skid: 48"L x 30"W x 55"H  
Dry Weight: 150 Kg

Regeneration Unit Skid: 48"L x 30"W x 55"H  
Dry Weight: 150 Kg

## **10 SYSTEM OPERATION**

The Water Treatment system shall be manufactured to operate at a supply water pressure of approximately between 2 bar (30 Psig) and 3.5 bar (50 Psig) and produce between 0.06 m<sup>3</sup>/h and 1.5 m<sup>3</sup>/h of product water. The absorption system shall allow the operator to fill each media module with different media. This shall enable the operator to test several different media configurations to treat the feed water.

The pilot absorption system plant shall be able to operate in several different modes of operation. for example, the system can be operated using only one absorption module, two absorption modules, or all three modules. The operator shall be able to select which modules he/she wishes to put on line by opening and/or closing the appropriate valves.

When multiple modules are being used, the modules can be fed in series or in parallel. This again can be determined by the operator by opening and/or closing the appropriate valves. The media modules are designed to allow the operator to easily change the media in each module.

The pre-treatment tank skid allows the operator to pretreat the incoming feed. Chemical flocculants and/or pH adjustments can be made in this tank prior to processing the fluid through the absorption media. Coarse feed water filtration is provided by bag filters on the pre-treatment skid and the final filtration is provided by duplexed 5 micron depth cartridges located on the main treatment skid.

The system shall be manufactured to operate manually. The operator must monitor water levels, flow rates, pH levels and temperature.

The regeneration skid shall allow the operator to regenerate one or more modules, while continuing to operate the system. Chemicals used to regenerate the resins are generally recommended by the media manufacturers.

## **11 INSTALLATION, START-UP, TRAINING AND RELATED SUPPORT**

Installation, Start-up and Commissioning services shall be included in the Contractor's proposal. Environment Canada estimates that approximately 35 hrs of installation, start-up and commissioning services will be required.

Contractor's personnel shall ensure that the installation is completed as required. Contractor's personnel shall start-up and commission the system to ensure that the system is operating correctly and functioning as designed. Upon completion of the commissioning, a commissioning check list shall be completed and submitted to Environment Canada.

A formal operator training course shall be provided by the Contractor to Environment Canada personnel to ensure the system operators are familiar with the system controls and operating logic. All operator training material shall be provided by the Contractor. Operator training courses shall cover system operation and maintenance. Environment Canada estimates that up to 6 hours of training will be required.

Contractor shall supply one hard copy and one electronic version of the system operation and trouble-shooting manual in bilingual format.

## **12 CHEMICALS AND CONSUMABLES**

The Contractor must provide the following consumables which shall be provided with the equipment for the first year of operation:

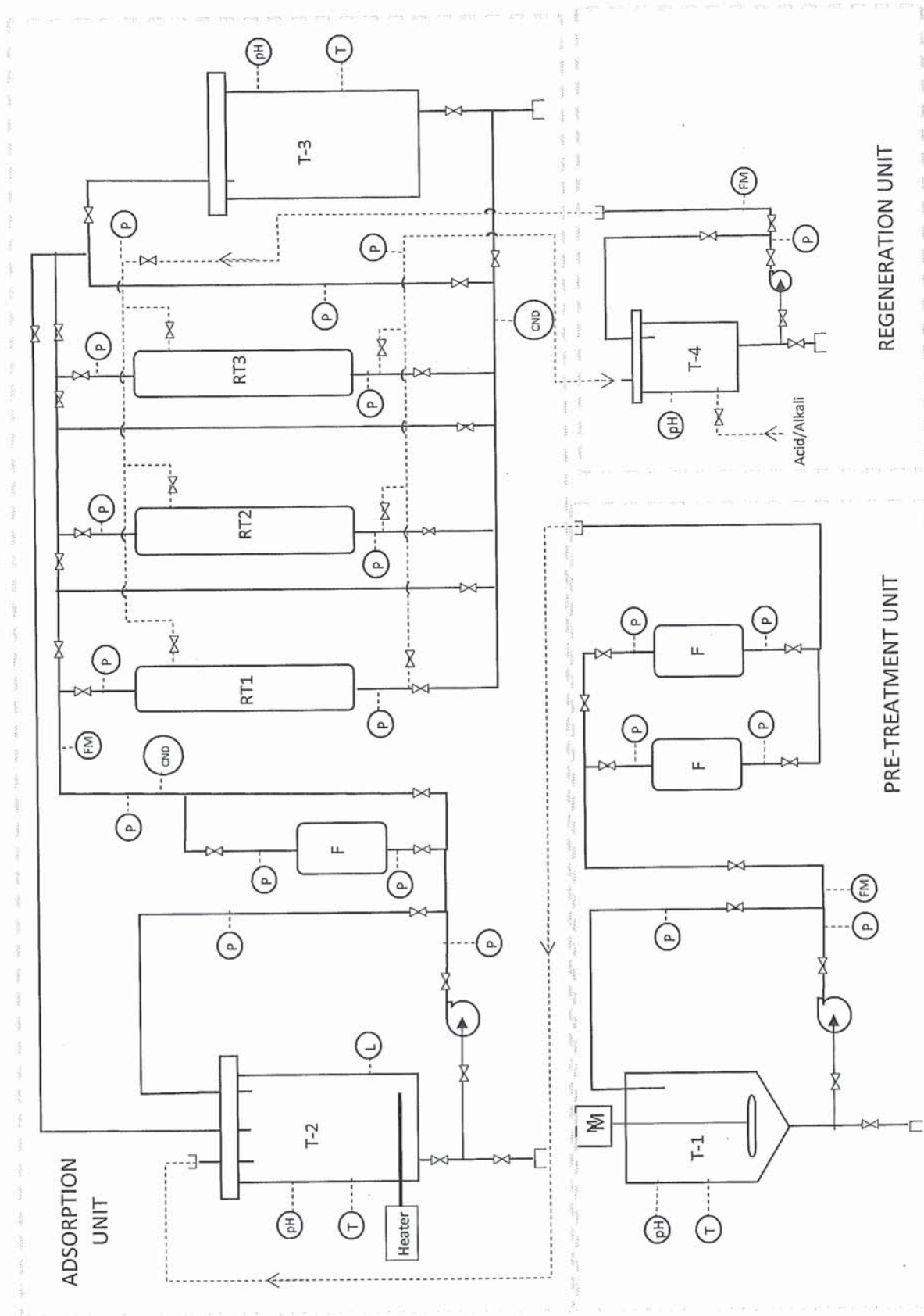
- Bag Filters
- Cartridge Filters

## **13 MECHANICAL WARRANTY**

The contractor shall undertake a minimum of **12 month** warranty for the system supplied, beginning after the completion of startup and commissioning.

## **14 PROJECT DELIVERY SCHEDULE**

- Approval design and drawings (General Arrangement Drawings) are issued within four (4) weeks of the signed contract.
- Finalized design and drawings are issued within two (2) weeks after Environment Canada's comments on the General Arrangement Drawings.
- System manufacturing and delivery completed within sixteen (16) weeks of Environment Canada's approval of the finalized design and drawings.
- System setup and personnel training completed within three (3) weeks of system delivery.



T-1: mix tank; T-2: feed tank; T-3: product tank; T-4: regeneration tank; RT1, RT2, RT3: resin tanks; M: mixer; F: filter  
 (P) - pressure gage; (FM) - flow meter; (T) - temperature gage; (pH) - pH sensor; (CND) - conductivity sensor; (L) - level indicator