

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Réception des soumissions - TPSGC / Bid
Receiving - PWGSC
601-1550, Avenue d'Estimauville
Québec
Québec
G1J 0C7

INVITATION TO TENDER
APPEL D'OFFRES

**Tender 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.

**Soumission 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 et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address
**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution
TPSGC-PWGSC
601-1550, Avenue d'Estimauville
Québec
Québec
G1J 0C7

Title - Sujet DRAGAGE Montréal - St-Antoine	
Solicitation No. - N° de l'invitation EE517-133088/A	Date 2013-02-21
Client Reference No. - N° de référence du client EE517-133088	GETS Ref. No. - N° de réf. de SEAG PW-\$QCM-008-15243
File No. - N° de dossier QCM-2-35615 (008)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-03-20	
Time Zone Fuseau horaire Heure Normale du l'Est HNE	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Rochette, Jean	Buyer Id - Id de l'acheteur qcm008
Telephone No. - N° de téléphone (418) 649-2834 ()	FAX No. - N° de FAX (418) 648-2209
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: TRAVAUX PUBLICS ET SERVICES GOUVERNEMENTAUX CANADA ESC 1 - MPO / TRANSPORT 1550 AVENUE ESTIMAUVILLE QUEBEC Québec G1J 0C7 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

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

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INVITATION TO TENDER

TITLE : MAINTENANCE DREDGING MONTREAL - ST-ANTOINE 2013

IMPORTANT NOTICE TO BIDDERS

CLAUSES REFERRED TO BY NUMBER (I.E. R2710T) CAN BE FOUND AT THE FOLLOWING WEB SITE

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

INSURANCE TERMS

The Insurance Terms for this solicitation are amended. Refer to the Supplementary Conditions.

DREDGES AND OTHER FLOATING EQUIPMENT

The Floating Plant Clause (FPC) and the General Instructions to Bidders GI07 Registry and Pre-qualification of Floating Plant are mandatory conditions with which bids for federal government dredging projects must comply. Canada is bound by these obligations.

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GENERAL INSTRUCTIONS TO BIDDERS (GI) - R2710T (2013-01-28)

The following GI's are included by reference and are available at the following Web Site

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R>

GI01	Code of Conduct and Certification - Bid
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SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the bid documents:
 - a. Invitation to Tender - Page 1;
 - b. Special Instructions to Bidders;
 - c. General Instructions to Bidders R2710T (2013-01-28);
 - d. Clauses & Conditions identified in "Contract Documents";
 - e. Drawings and Specifications;
 - f. Bid and Acceptance Form and related Appendice(s); and
 - g. Any amendment issued prior to solicitation closing.

Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

2. General Instructions to Bidders is incorporated by reference and is set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to jean.rochette@tpsgc-pwgsc.gc.ca, the Contracting Officer named on the Invitation to Tender - Page 1 as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI16 of R2710T "General Instructions to Bidders", enquiries should be received no later than five (5) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.
2. To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
3. All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the Invitation to Tender - Page 1. Failure to comply with this requirement may result in the bid being declared non-responsive.

SI03 SITE VISIT

Not applicable

SI04 REVISION OF BID

A bid may be revised by letter or facsimile in accordance with GI11 of R2710T "General Instructions to Bidders". The facsimile number for receipt of revisions is (418) 648-2209.

SI05 BID RESULTS

1. A public bid opening will be held in the office designated on the Front Page "Invitation to Tender" for the receipt of bids shortly after the time set for solicitation closing.
2. Following solicitation closing, bid results may be obtained by calling at (418) 649-2888.

SI06 INSUFFICIENT FUNDING

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

- a. cancel the solicitation; or
- b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or
- c. negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

SI07 BID VALIDITY PERIOD

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.
2. If the extension referred to in paragraph 1. of SI07 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.
3. If the extension referred to in paragraph 1. of SI07 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either
 - a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
 - b. cancel the invitation to tender.
4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI12 of R2710T "General Instructions to Bidders".

SI08 CONSTRUCTION DOCUMENTS

Not applicable

SI09 SECURITY CLEARANCE

Not applicable

SI10 TRANSMISSION OF THE BID BY FACSIMILE OR EMAIL

Bids transmitted by facsimile or email are not accepted.

SI11 BID MANDATORY REQUIREMENTS

Bids shall comply with all of the mandatory requirements in the invitation to tender documents in order to be declared responsive, including the mandatory requirements set out in other sections of the invitation to tender documents.

If Canada requests that the bidder submit information or documents within a time period specified in this clause or in a written request made to the bidder, failure to provide these documents or this information at Canada's request within the specified time period will result in the bid being deemed non-responsive.

The lowest compliant bid shall be recommended for a contract award.

<i>Mandatory requirements at bid closing Mandatory documents to be supplied with the bid</i>	
	<i>Reference</i>
<i>If any of the following documents relative to criteria 1.1 to 1.5 is missing at bid closing, the bid will be deemed non-responsive.</i>	
1.1 Bidders shall complete the <u>Combined Price Table</u> .	Appendix 1 herein
1.2 Bid security, in accordance with GI09 BID SECURITY REQUIREMENTS of the General Instructions to Bidders (R2710T).	<ul style="list-style-type: none"> • Clause GI09 of General Instructions to Bidders, R2710T • Clauses BA04 and BA07 of the Bid and Acceptance Form • See the bid bond form at the following Internet link: http://www.pwgsc.gc.ca/acquisitions/text/forms/pdf/504.pdf
1.3 In order to comply with clause GI07, Registry and Pre-qualification of Floating Plant, of the General Instructions to bidders no R2710T:	

<p>1.3.1 Submit a bid on the basis that the dredges or other floating plant to be used for the work are registered in Canada.</p> <p>Bidders shall identify the dredge(s) and other floating plant, (scows, tug(s) and supply vessel(s) and support equipment), that will be used by filling out Appendix 3 and shall provide it with the bid.</p> <p>If necessary, bidders shall be able to demonstrate, within 48 hours of receipt of Canada's written request, that the dredges or floating plant are registered in Canada.</p>	<ul style="list-style-type: none"> • Clause GI07 of General Instructions to Bidders, R2710T • Appendix 3 herein
<p>1.3.2 <u>Append to its bid a copy of the certificate of qualification issued by Industry Canada if the dredge(s) or other floating plant to be used for the work IS NOT (ARE NOT) MANUFACTURED IN CANADA.</u></p> <p>If at bid closing this certificate is not appended to the bid for any of the dredges or equipment not manufactured in Canada indicated in Appendix 3, the bid will be deemed <u>non-responsive</u>.</p> <p>See Industry Canada certificate application in Annex 1.</p>	<ul style="list-style-type: none"> • Clause GI0 of General Instructions to Bidders, R2710T • Annex 1 herein
<p>1.4 <u>Mandatory Specifications of the equipment</u> Bidder shall take note that the dredging shall be executed with equipment stated in Article 2.1 from section 35 20 23 of the specifications.</p> <p>Bidder shall provide a description of the dredge(s) and dump scows to be used to do the work, which will allow Canada to verify if the proposed floating plants are compliant with specifications requirements. Include in Appendix 3 the information on the dredge(s) and dump scows used.</p> <p>Failure to identify the dredge(s) and dump scows or to attach Appendix 3 to the bid shall make the bid <u>non-responsive</u>.</p>	<ul style="list-style-type: none"> • Article 2.1 from section 35 20 23 of the specifications • Appendix 3 herein
<p>1.5 <u>Experience of the Superintendent</u></p> <p>The proposed Superintendent shall have accumulated a minimum of twelve (12) months of experience in dredging work as Superintendent performed on floating equipment since January 2006 in commercial waterways and/or commercial ports.</p> <p>In order to demonstrate that this requirement is met, the Bidder shall fill out and submit with its bid Appendix 4. Clients identified as references may be contacted. If the Bidder does not submit the requested information within the prescribed time frame, or does not meet the minimum requirements, the bid will be <u>non-responsive</u>.</p>	<ul style="list-style-type: none"> • Appendix 4 to this Invitation to Tender
<p>1.6 <u>Positioning system</u> The bidder shall describe the positioning system that be used to performed the work.</p>	<ul style="list-style-type: none"> • Appendix 5 to this Invitation to Tender

SI12 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies

<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494§ion=text#appl>

Contracts Canada (Buy and Sell) <https://www.achatsetventes-buyandsell.gc.ca/eng/welcome>

Canadian economic sanctions <http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf>

Bid Bond (form PWGSC-TPSGC 504) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf>

Performance Bond (form PWGSC-TPSGC 505)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505.pdf>

Labour and Material Payment Bond (form PWGSC-TPSGC 506)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf>

Certificate of Insurance (form PWGSC-TPSGC 357)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/357.pdf>

Standard Acquisition Clauses and Conditions (SACC) Manual

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

Schedules of Wage Rates for Federal Construction Contracts

http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml

PWGSC, Industrial Security Services [Http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html](http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html)

PWGSC, Code of Conduct and Certifications

<Http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/index-eng.html>

PWGSC Consent to a Criminal Record Verification (PWGSC-TPSGC 229)

<Http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/229.pdf>

SUPPLEMENTARY CONDITIONS (SC)

SC01 INSURANCE TERMS

SC01.1 Insurance requirements

The Contractor must comply with the insurance requirements specified in SC01 - Insurance terms. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. Coverage must be placed with an Insurer licensed to carry out business in Canada. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

SC01.2 Marine liability insurance

1. The Contractor must obtain Protection & Indemnity (P&I) insurance that must include excess collision liability and pollution liability. The insurance must be placed with a member of the International Group of Protection & Indemnity Associations or with a fixed market in an amount of \$ 50,000,000.00. Coverage must include crew liability, if it is not covered by Worker's Compensation as detailed in paragraph 2 below.
2. The Contractor must obtain Worker's Compensation insurance covering all employees engaged in the Work in accordance with the statutory requirements of the Territory or Province or state of nationality, domicile, employment, having jurisdiction over such employees. If the Contractor is assessed any additional levy, extra assessment or super-assessment by a Worker's Compensation Board, as a result of an accident causing injury or death to an employee of the Contractor or subcontractor, or due to unsafe working conditions, then such levy or assessment must be paid by the Contractor at its sole cost.
3. The Protection and Indemnity insurance policy must include the following:
 - (a) Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - (b) Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Transport Canada and Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.
 - (c) Notice of Cancellation : The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.

- (d) Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

SC01.3 Commercial General Liability Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - (a) Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - (b) Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - (c) Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
 - (d) Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - (e) Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - (f) Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
 - (g) Employees and, if applicable, Volunteers must be included as Additional Insured.
 - (h) Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
 - (i) Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
 - (j) Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.
 - (k) If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

SC02 CHANGES TO CONTRACT DOCUMENTS

Amendments to clause GC6.4.3 :

Clause GC6.4.3 of the conditions GC6 - Delays and Changes in the Work (R2860D) shall apply as follows for the items that are subject to a unit price agreement :

Item	GC6.4.3, paragraphs 2) and 3)	GC6.4.3, paragraphs 4) and 5)
1 and 2	Not applicable	Not applicable
3 and 5	Not applicable	Applicable
4	Applicable	Applicable
5.1	Applies to the total basic quantity and the optional quantity (e.g. Item 5 + 5.1)	Not applicable

SC03 APPLICABILITY OF OPTION (UNFUNDED OPTION)

- 1) The Contractor acknowledges that Canada has an irrevocable option that may be exercised, in whole or in part, to obtain the optional services described in the unit price table (Tender and Amendments subsequently issued), and to ask the Contractor to perform the said work in accordance with the conditions contained or mentioned in the said document, at the unit price specified in the unit price table (basis of payment);
- 2) Option is applicable at all times over the term of the contract;
- 3) NOTICE given to the Contractor for the applicability of option:

A) For the option no 5.1 :

If Canada decides to exercise the option above indicated, the Departmental Representative shall give the Contractor a verbal notice within 24 hours of the start of the optional work, which notice will be followed within two (2) weeks by a amendment to the contract.

CONTRACT DOCUMENTS (CD)

1. The following are the contract documents:
 - a. Contract Page when signed by Canada;
 - b. Duly completed Bid and Acceptance Form and any Appendices attached thereto;
 - c. Drawings and Specifications;
 - d. General Conditions and clauses

GC1 General Provisions	R2810D	(2012-11-19)
GC2 Administration of the Contract	R2820D	(2012-07-16);
GC3 Execution and Control of the Work	R2830D	(2010-01-11);
GC4 Protective Measures	R2840D	(2008-05-12);
GC5 Terms of Payment	R2850D	(2010-01-11);
GC6 Delays and Changes in the Work	R2860D	(2012-07-16);
GC7 Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8 Dispute Resolution	R2880D	(2012-07-16);
GC9 Contract Security	R2890D	(2012-07-16);
GC10 Insurance	R2900D	(2008-05-12);
Supplementary Conditions		
Insurance Terms	R2910D	(2008-12-12);
Fair Wages and Hours of Labour - Labour Conditions	R2940D	(2012-07-16);
Allowable Costs for Contract Changes Under GC6.4.1	R2950D	(2007-05-25);
 - e. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
 - f. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
 - g. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.
2. The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>
3. Schedules of Wage Rates for Federal Construction Contracts is included by reference and may be accessed from the Web site:
http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml.
4. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

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BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION

Maintenance dredging of the St.Lawrence seaway between Montréal et St-Antoine (Quebec) for the year 2013.

Invitation to tender no : EE517-133088/A

Project no : R.062140.001

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____ Fax: _____ PBN: _____

Email address: _____

BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the **TOTAL BID AMOUNT INDICATED IN APPENDIX 1**.

BA04 BID VALIDITY PERIOD

The bid shall not be withdrawn for a period of 30 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

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BA06 CONSTRUCTION TIME

The work period is from June 10, 2013 to November, 2013 in accordance with the following table :

Area to be dredged	Period of work	Beginning of work
Montréal to St-Antoine (Hourly Work)	First Period - the Work shall be performed between June 10, 2013 and July 26, 2013.	Shall begin between June 10 and 12, 2013.
Lac St-Pierre (m ³ Work)	Second Period - the Work shall be performed between October 7, 2013 and November 7, 2013.	Within the period.

BA07 BID SECURITY

The Bidder is enclosing bid security with its bid in accordance with GI09 - Bid Security Requirements of R2710T - General Instructions to Bidders.

BA08 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (Type or print)

Signature

Date

APPENDIX 1 - COMBINED PRICE FORM

- 1) The prices per unit shall govern in establishing the Total Extended Amount. Any arithmetical errors in this Appendix will be corrected by Canada.
- 2) Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

UNIT PRICE TABLE

The Unit Price Table designates Work to which a Unit Price Arrangement applies.

- (a) Work included in each item is as described in the referenced specification section.
- (b) The Price per Unit shall not include any amounts for Work that is not included in that unit price Item.
- (c) The Price per Unit shall not include any amounts for Work that is not included in the Unit Price Table.
- (d) All the items in the following table for which the unit of measurement is "lot" and the estimated quantity is "1" are lump-sum items and are subject to the terms and conditions that apply to a lump-sum agreement in the general conditions. These items shall not be considered unit-price items.

1. BASE WORK

Item	Area	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit GST/QST extra (PU)	Extended amount (EQ x PU) GST/QST extra
1	Montréal to St-Antoine	Main mobilization and demobilization (Hourly Work)	lot	1	_____ \$	_____ \$
2	Lac St-Pierre	Main mobilization and demobilization (m ³ Work)	lot	1	_____ \$	_____ \$
3	Lac St-Pierre	Dredging of grouped sedimentary shoals	m ³	5 000	_____ \$	_____ \$
4	Montréal to St-Antoine	Dredging of scattered shoals	hour	210	_____ \$	_____ \$
5	Montréal to St-Antoine	Cumulative linear distance between dredging site of scattered shoals	km	100	_____ \$	_____ \$
TOTAL EXTENDED AMOUNT (TEA) Excluding GST / QST						_____ \$

Solicitation No. - N° de l'invitation

EE517-133088/A

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

EE517-133088

Amd. No. - N° de la modif.

File No. - N° du dossier

QCM-2-35615

Buyer ID - Id de l'acheteur

qcm008

CCC No./N° CCC - FMS No/ N° VME

2. TRAVAUX EN OPTION

Item	Area	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit GST/QST extra (PU)	Extended amount (EQ x PU) GST/QST extra
5.1	Montréal to St-Antoine	Additional kilometer between dredging site of scattered shoals (in addition to item 5)	km	50	_____ \$	_____ \$
TOTAL OPTIONAL AMOUNT (TOA) Excluding GST / QST						_____ \$

TOTAL BID AMOUNT

TOTAL BID AMOUNT (TEA+TOA) Excluding GST / QST	_____ \$
--	----------

APPENDIX 3 - FLOATING PLANT DESCRIPTION

Dredges and Other Floating Equipments

The Bidder declares, by the fact of filling in the following tables, that the named equipments are entirely at his disposal, and that he is able to meet performances and capacities as stated below considering the materials and conditions related to this project. The Bidder must understand that a contract award from Public Works & Government Services Canada does not imply an acceptance of the claimed performances or capacities but only confirms that the equipments meet the requirements of the floating plant clauses.

DREDGE (S)

	<i>Main dredge</i>	<i>Secondary dredge (if required)</i>
<i>Dredge name</i>		
<i>Registration number</i>		
<i>Type of dredge</i>		
<i>If trailing suction hopper dredge: Hopper Capacity (m³)</i>		
<i>Draft (m)</i>		
<i>Dredging depth (m)</i>		
<i>Dredging capacity (m³/h)</i>		
<i>Manufacturing place *</i>		

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 File No. - N° du dossier
 QCM-1-34774

Buyer ID - Id de l'acheteur
 qcm008
 CCC No./N° CCC - FMS No./N° VME

Appendix 3 (continued)

SCOW (S) / SELF-PROPELLING SCOW (S)

Name	Registration number	Capacity (m ³)	Draft (m)	Manufacturing Place *

TUG (S)

Name	Registration number	Engine (HP)	Draft (m)	Manufacturing Place *

SUPPLY VESSELS AND OTHERS FLOATING EQUIPMENT

Name	Registration number	Purpose	Draft (m)	Manufacturing Place *

* If manufacturing place is not Canada, append to your bid the certificate issued by Industry Canada.

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Appendix 3 (continued)

CERTIFICATE OF QUALIFICATION

Each floating equipment to be used in the course of the works **must be of Canadian manufacture and Canadian registry**. The Bidder must obtain a certificate of qualification from Industry Canada for any floating equipment which is not of Canadian manufacture. **A certified copy of the certificate must accompany the bid.** Requests related to the certification must be sent to :

Defence and Marine Director
Aerospace, Defence and Marine Branch
INDUSTRY CANADA
C.D. Howe Building – room 733C
235 Queen Street
Ottawa, ON
K1A 0H5

Attention : Mr. Émile Rochon
Phone : (613) 954-3468
Fax : (613) 998-6703
E-mail : rochon.emile@ic.gc.ca

The Director must have received any request at least fourteen (14) days before the closing bid date. The Industry Canada evaluated and recognized floating equipments may be accepted to work out a dredging project. Requests for certificates of qualification may be submitted by completing the Annex 1 here after.

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 QCM-1-34774

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 qcm008
 CCC No./N° CCC - FMS No./N° VME

APPENDIX 4 - EXPERIENCE OF THE SUPERINTENDENT

Reference Item 1.6, Requirements concerning experience of Superintendent of S110, MANDATORY BID REQUIREMENTS, of this document. If there is not enough space, the bidder should use photocopies to include all the information.

Superintendent			
Name of proposed Superintendent:			
	Experience No. 1	Experience No. 2	Experience No. 3
Dredging contract title and location			
Contract period (month/year to month/year) (See Note 1.)			
Name of client			
Role of Superintendent in the contract			

Note 1: The total length of the period, not counting overlapping of contracts, shall not be less than 12 months

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qcm008

CCC No./N° CCC - FMS No./N° VME

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

EE517-12-2515

APPENDIX 5 - POSITIONNING SYSTEM DESCRIPTION

Describe the positioning system that will be used to performed the Work. Specify trade-mark, model, precision, etc.

ANNEX 1

REQUEST FOR CERTIFICATE OF QUALIFICATION OF FLOATING PLANT

(The Bidder will use a separate sheet for each unit of floating plant.)

1. Name and address of owner:

2. Name and address of operator:

3. Name of unit:

4. Canadian registry no.:

5. Type of unit (dredge, tug, scow, pontoon, etc.):

6. Date of Canadian registry:

7. Date unit originally built:

8. Shipyard where unit originally built:

9. Record of work done to unit in Canada. For each major job, show:
Date:
Shipyard:
Type of work:
Cost:
Country of origin of equipment installed:

10. If unit has changed ownership, show name and current address of previous owner(s) for each modification referred to in item 9 on a separate page.

Signature

Date

Corporate Seal

<u>DIVISIONS</u>	<u>SECTIONS</u>	<u>NUMBER OF PAGES</u>
<u>DIVISION 01</u>	General requirements	
	01 11 11 Work description summary	2
	01 33 00 Submittal Procedures	2
	01 35 30(D) Health and Safety Requirements - Dredging	5
	01 35 43 Environmental Procedures	2
	01 52 00 Construction Facilities	1
<u>DIVISION 35</u>	Waterway and Marine Construction	
	35 20 23 Dredging	13
<u>APPENDICES</u>		
Appendix 1	Table of distribution and approximate quantities of sediments to be dredged during the dredging period.	1
Appendix 2	Approximate locations of sediments to be dredged for a unit rate per m ³ , at Lac St-Pierre.	4
Appendix 3	Locations and descriptions of dumping sites M-02, M-27, S-17, T-02, T-06, T-11, T-16 and X-04.	8
Appendix 4	Description of the ASCII format (x, y, z) that will be used for data transfer.	1
Appendix 5	Environmental Impact Assessment (EIA) (2013-2015), Chapter 7- Mitigation measures, Article 7.1 Preventives Actions..	3
Appendix 6	Information about the various horizontal and vertical reference systems.	8

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Work covered by contract documents.
- .2 Contractor use of premises.

1.2 PRECEDENCE

- .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 RELATED SECTIONS

- .1 Section 35-20-23 - Dredging

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The work involves the maintenance dredging of the St. Lawrence Seaway between Montreal and St-Antoine at various locations and according to the instructions specified herein. The work will be executed in two different working periods as indicated in the Bid and Acceptance form (BA).
- .2 The types and locations of dredging activities (ref. : art. 1.3.1 section 35 20 23) and quantities to be dredged are listed in the appendix 1 and consist as follow :
 - .1 Dredging at a cubic metre (m³) unit rate:
 - .1 Lac St-Pierre area (appendix 2, 4 pages). The approximate volume of sediment to be dredged is 5 000 m³.
 - .2 Dredging at an hourly (h) unit rate:
 - 1. Between Montreal (buoy M195) and St-Antoine (3 km downstream of the buoy Q16). The approximate amount is 210 hours of dredging. Included in this amount of hours, 40 hours will be required to execute in Deschaillons and 50 hours in St-Antoine. The work shall be executed according to the requirements mentioned in the article 1.5.9 of the section 35 20 23.
 - .3 The above-mentioned work shall consist of dredging, usually from upstream to downstream and to the satisfaction of the Departmental representative, all Class B sediments located above the prescribed dredging levels;

Concerning the work at cubic meter unit rate, these materials form unstable shoals which moves during a period of time (ref. : article 1.11.7 section 35 20 23). For your guidance only, the localization of sediments to be dredged is shown in Appendix 2 for the cubic meter dredging.

For the hourly rate dredging, the shoals will be located just before the beginning of the work.

- .4 The sediments dredged under cubic meter rate, shall be dumped in the disposal areas S-17 or T-11. The sediments dredged in hourly based shall be dumped in either dumping sites described in the specification . But , the Contractor shall use the T-06 dumping site only for the deposit of stones with a diameter of 30 cm and higher. For information only, the disposal areas are shown in appendix 3.
- .5 Grade depths, approximate dredging areas and volume of material to be dredged and also the dredging hours and location of the scattered shoals to be dredged are listed at appendix 1.
- .6 The quantity of material to be dredged and the location of the sediments will be directly related to the scope of the annual sedimentation and according to the safety hazards.
- .7 The Departmental representative reserves the right to add dredging surfaces between Montreal to St-Antoine, in non-listed (or represented) sectors. Methods of execution and remuneration shall be determined in advance by the Contractor and the Departmental representative.

1.5 CONTRACTOR USE OF PREMISES

- .1 Take all necessary action and safety precautions to protect persons and property from accident or damage in the course of the work.
- .2 Carry out the work in such a way as not to interfere with normal use of the activities on or compromise the safety of users and the accessibility of St. Lawrence Waterway. Contractor will have to do everything that he can do, to make sure that every crossing in the seaway will be safe with commercial boats. He will have to communicate properly and all the times with the Canadian Coast Guard (CCG) Maritime Traffic Controller (MCTS) and the ship pilots. The Contractor shall leave at least half the width of the channel available for the navigation purpose.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Public Works Government Services Canada (PWGSC)
 - .1 PWGSC Standard Acquisition Clauses and Conditions (SACC) (See tenderer document).

1.2 ADMINISTRATIVE

- .1 Submit to Departmental representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present drawings and product data in SI Metric units.
- .4 Contractor shall be responsible of submittals and shall review them prior to submission to Departmental representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify the Departmental representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Contractor's responsibility for errors and omissions in submission and for deviations from requirements is not relieved by Departmental representative's review of submittals.
- .7 Keep one reviewed copy of each submission on site.
- .8 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each document.
 - .5 Other pertinent data.

1.3 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit to the Departmental representative the document required by the public agency having jurisdiction over workers protection in case of work-related accident.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 The Contractor shall manage his operations so that safety and security of the public and of construction site/work place workers always take precedence over cost and scheduling considerations.

1.2 REFERENCES

According to the context, the most recent of the following codes shall be used.

- .1 Canadian Labour Code - Part II, Canadian Occupational Safety and Health Regulations.
- .2 Canadian Standards Association (CSA)
- .3 Act Respecting Occupational Health and Safety, R.S.Q. Chapter S-2.1 (2001).
- .4 Construction Safety Code, S-2.1, r.6 (2002).
- .5 Any other Health and Safety act or regulation that could be apply under the company status or the work execution context.

1.3 SUBMITTALS

- .1 Submit required documents according to the section 01-33-00.
- .2 Submit to Departmental representative, the construction site/work place-specific safety program, as outlined in 1.8 - Safety and Health Management at least 10 days prior to start of work. The Contractor must review his program during the course of the project if any change occurs in work methods or construction site/work place conditions. The Departmental representative may, after receiving the program or at any time during the project, ask the Contractor to update or modify the program in order to better reflect the reality of the construction site/work place and activities. The Contractor must make the required changes before work begins.
- .3 Submit to Departmental representative the construction site/work place inspection sheet, duly completed, at the intervals indicated in 1.12. Inspection of Construction site/work place and Correction of Hazardous Situations
- .4 Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by federal or provincial inspectors.
- .5 Submit to Departmental representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- .6 Submit to Departmental representative all safety data sheets for hazardous material to be used at the construction site/work place at least three (3) days before they are to be used.
- .7 Submit to Departmental representative copies of all training certificates required for application of the safety program, in particular:
 - .1 First aid in the workplace and cardio-pulmonary resuscitation;
 - .2 Work in confined spaces;
 - .3 Lockout procedures;

- .4 Wearing and fitting of individual protective gear;
- .5 Any other requirement of Regulations or the safety program.
- .8 Medical examinations: wherever legislation, regulations, directives or a safety program require medical examinations, the Contractor shall:
 - .1 Prior to start-up, submit to Departmental representative certificates of medical examination for all supervisory staff and employees whom will be on duty when the construction site/work place opens.
 - .2 There after submit without delay certificates of medical examination for any newly hired personnel as and when they start work at the construction site/work place.
- .9 Emergency plan: The emergency plan, as defined in 1.8.3 - Safety and Health Management, shall be submitted to Departmental representative at the same time as the construction site/work place-specific safety program.
- .10 Permits: Obtain all required municipal, provincial and federal permits according to contractual clauses. Send a copy of each permit to Departmental representative without delay.
- .11 Plans and certificates of compliance: Submit to Departmental representative a copy signed and sealed by Departmental representative of working methods, of all plans and certificates of compliance in the following case:
 - .1 Any modification to an equipment or to a part of a machine construction unauthorized by the builder. Maintain copies of these documents at the construction site/work place for the duration of the project.

1.4 SAFETY ASSESSMENT

- .1 The Contractor shall identify all hazards inherent in each task to be carried out at the construction site/work place.
- .2 The Contractor shall plan and organize work so as to eliminate hazards at source or to promote mutual protection so that reliance on individual protective gear can be kept to a minimum. Where individual protection against falling is required, workers shall use safety harness that meets standard CAN-CSA-Z259.10-M90. Safety belts shall not be used as protection against falling.
- .3 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .4 All mechanical equipment shall be inspected before delivery to the construction site/work place. Before using any mechanical equipment, submit to Departmental representative a certificate of compliance signed by a qualified mechanic. Whenever he suspects a defect or accident risk, Departmental representative may at any time order the immediate shut-down of equipment and require a new inspection by a specialist of his own choosing.

1.5 MEETINGS

- .1 The Contractor decisional representative must attend any meeting at which construction site/work place safety and health issues are to be discussed.

- .2 The Contractor shall set up a Health and Safety Committee, and convene meetings every two weeks. At least one contractor decision-making representative and one representative for each trade or group of workers shall attend those meetings. The purpose of the Health and Safety Committee is to monitor the application of the contractor's safety program and make sure that appropriate safety actions are taken to correct any situation that could result in an accident or compromise the health of the workers.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the construction site/work place and its related activities.

1.7 PROJECT/SITE CONDITIONS

- .1 At the construction site/work place, take account of the following specific conditions:
 - .1 Risks related to trans-shipment, movements and boarding of floating equipments, and manual labour around an excavator or a dragline in the course of dredging operations.
 - .2 Risks related to an accidental over-board spill of petroleum and the cleaning operations.

1.8 SAFETY AND HEALTH MANAGEMENT

- .1 The Contractor shall acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor and to the employer under the terms of Acts and regulations on Occupational Health and Safety that could be applied to the Contractor.
- .2 The Contractor shall develop a construction site/work place-specific safety program based on the hazards identified and apply it from the start of project work until close-out is completed. The safety program must take account of all information appearing in 1.7 – Project/Site Conditions, and must be submitted to all parties concerned, in accordance with the provisions set forth in 1.3 - Submittals. At a minimum, the construction site/work place-specific safety program must include:
 - .1 Company safety and health policy;
 - .2 A description of the work, total costs, schedule and projected workforce curve;
 - .3 Flow chart of safety and health responsibility;
 - .4 The physical and material layout of the construction site/work place;
 - .5 First-aid and first-line treatment standards;
 - .6 Identification of construction site/work place-specific hazards;
 - .7 Risk assessment for the tasks to be carried out, including preventive measures and the procedures for applying them;
 - .8 Training requirements;
 - .9 Procedures in case of accident or injury;
 - .10 Written commitment from all parties to comply with the prevention program.
 - .11 A construction site/work place inspection schedule based on the preventive measures in the said program.
- .3 The Contractor shall draw up an effective emergency plan based on the characteristics and constraints of the construction site/work place and its surroundings. Submit the emergency

plan to all parties concerned, pursuant to the provisions of 1.3 - Submittals. The emergency plan must include:

- .1 Evacuation procedure;
- .2 Identification of resources (police firefighters, ambulance services, etc.);
- .3 Identification of persons in charge at the construction site/work place;
- .4 Identification of those with first-aid training;
- .5 Training required for those responsible for applying the plan;
- .6 Any other information needed, in the light of the construction site/work place characteristics.

1.9 RESPONSIBILITY

- .1 No matter the size of the construction site/work place or how many workers are on the site, the Contractor shall designate a competent person to supervise and take responsibility for health and safety. Take all necessary measures to ensure health and safety of persons and property at or in the immediate vicinity of the construction site/work place and likely to be affected by any of the work.
- .2 Take all necessary measures to ensure application of and compliance with the safety and health requirements of the contract documents, contractor's applicable federal and provincial regulations and standards as well as the construction site/work place-specific safety program, complying without delay with any order or correction notice issued by an inspector.
- .3 Take all necessary measures to keep the construction site/work place clean and in good order throughout the course of the work.

1.10 COMMUNICATIONS AND POSTING

- .1 Make all necessary arrangements to ensure effective communication of safety and health information at the construction site/work place. As they arrive on construction site/work place, all workers must be informed of their rights and obligations pertaining to the construction site/work place-safety program. The Contractor must insist on their right to refuse to perform work which they feel may threaten their own health, safety or physical integrity or that of other persons at the construction site/work place. The Contractor must keep and update a written record of all information transmitted with signatures of all affected workers.
- .2 The following information and documents must be posted in a location readily accessible to all workers:
 - .1 Identification of employer and/or the principal Contractor;
 - .2 Company OSH policy;
 - .3 Construction site/work place-specific safety program;
 - .4 Emergency plan;
 - .5 Data sheets for all hazardous material used at the construction site/work place;
 - .6 Minutes of construction site/work place committee meetings;
 - .7 Names of Construction site/work place committee representatives;
 - .8 Names of those with first-aid training;
 - .9 Action reports and correction notices issued by inspectors.

1.11 UNFORSEEN CIRCUMSTANCES

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site/work place inspection arises as a result of or in the course of the work, immediately suspend work, take appropriate temporary measures to protect the workers and the public and notify Departmental representative, both verbally and in writing. Then the Contractor must notify or update the construction site/work place-specific safety program in order to resume work in safe conditions.

1.12 INSPECTION OF CONSTRUCTION SITE/WORK PLACE AND CORRECTION OF HAZARDOUS SITUATIONS

- .1 Inspect the work construction site/work place and complete the construction site/work place inspection sheet at least once a week.
- .2 Immediately take all necessary measures to correct any lapses from legislative or regulatory requirements and any hazards identified by a government inspector, by the Departmental representative, by the construction site/work place safety and health co-ordinator of PWGSC or during routine inspections.
- .3 Submit to Departmental representative written confirmation of all measures taken to correct lapses and hazardous situations.
- .4 Work Interruption: Give to the person assigned by the Contractor to safety and health responsibilities, full authority to order interruption and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site/work place workers and environmental protection take precedence over cost and scheduling considerations. Without limiting the scope of section "Safety and Health Management" and section "Responsibilities", Departmental representative or any other person designated by him to manage or supervise the project may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site/work place personnel or the public or to the environment.

1.13 BLASTING

- .1 Blasting and other use of explosives are forbidden unless authorized in writing by Departmental representative.

Part 2 Execution

2.1 NOT USED

END OF SECTION

Part 1 General

1.1 PRECEDENCE

- .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 REFERENCES

- .1 The Contractor shall comply with the requirements of the most recent Environmental Impact Assessment report (EIA) included in Appendix 5, with respect to use of the Contractor's dredging equipment and related floating equipment, as appropriate. The Contractor shall ensure that its equipment and work methods comply with the requirements and mitigation measures specified therein at clause 7.1 of this report.
- .2 The Contractor shall comply with the acts and regulations governing environmental protection, fisheries management and fish habitat protection.

1.3 FIRES

- .1 Fires and burning of rubbish on site/work place not permitted.

1.4 DISPOSAL OF WASTES

- .1 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers. These materials shall be disposed of according to the acts and regulations.

1.5 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to applicable laws and regulations.
- .2 Prevent fine material and other extraneous materials from contaminating air beyond and at the application area.
- .3 Maintain absorbents at all times on the site to be able to process quickly with a spill of hazardous material.
- .4 In case of accidental oil spill, the Contractor shall report the spill immediately to the Canadian Coast Guard emergency office 1-800-363-4735 and take all requested actions to correct the situation and to limit the impact on the environment.

.5 The Contractor shall also have on the dredge a spill kit. This spill kit should include at least the following components:

- .1 1 75 Gallons plastic overpack;
- .2 100 Sorbent pads of 15" X 19" X 12 oz or more;
- .3 15 Sorbent socks 3" X 48" or more;
- .4 4 Sorbent booms 5" x 10' or more;
- .5 20 lb Granular sorbent minimum;
- .6 1 Drain cover;
- .7 1 Shovel;
- .8 Disposal bags;
- .9 Epoxy sticks.

The Contractor should use the spill kit in the case of a hydrocarbon spill and apply the above article 1.5.4.

.6 With respect to the transportation, handling and storage of dangerous goods on vessels or floating plant, the Contractor shall comply with the Canada Shipping Act (CSA) and all regulations made under the CSA.

1.6 NOISE POLLUTION

.1 Considering the proximity of the channel in the Chanplain region, the Contractor shall limit and reduce, as much as possible the noise and disturbance caused by its equipment, such as: tugs movements, presence of floating vessel for stay of employees, emissions of light towards the shore, usage of the generator on the shore side.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Office.

1.2 PRECEDENCE

- .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 OFFICES

- .1 If required by the Departmental representative, the Contractor shall provide to the Departmental representative a reasonable working space on the dredge with all pertinent facilities (electricity and an internet connection to download MSOffice and pictures files, whose size could get up to 20 megabytes).

1.4 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force/employee accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 11 11 – Work description summary
- .2 Section 01 35 43 – Environmental procedures

1.2 MEASUREMENT PROCEDURES

- .1 Dredging at cubic metre unit rate (m³) :
 - .1 Only volume of material dredged above grade planes and within side slopes indicated or specified will be measured.
 - .2 In addition to the volume identified below, the Contractor will receive an additional payment for a complementary volume of material corresponding to the surface of the dredging areas (m²) where the Contractor is able to dredge down to the required grades multiplied by 0.2m.
 - .3 The dredging areas, the quantity and locations of material to be dredged will be determined from bathymetric surveys.
 - .4 The Departmental Representative will use commercial software to calculate the volume of dredged sediments for which payment is due based on the difference between bathymetric surveys conducted before and after dredging where the bathymetric soundings will be brought back on a squaring of a space resolution of 50 centimeters.
- .2 Dredging at hourly unit rate (h) :
 - .1 The payable hours will be determined in accordance with a daily log book compiled by the Departmental representative and the Contractor.
 - .2 Payable dredging hours are the properly so called dredging hours consecrated for the dredging of scattered shoals at each dredging sites, precisely determined during work take place. The reasonable time to set up the dredge on a shoal will be considered as dredging hours.
 - .3 Payable hours of dredging will include up to three (3) work stoppages of under thirty (30) minutes each every 24 hours for unexpected or isolated minor repairs to enable the actual dredging work to continue. However, the Contractor must provide full descriptions and justifications of these work stoppages for the Departmental Representative..
 - .4 Dredge displacement between two shoals located on the same dredging site will be considered as payable hours.
 - .5 Non-payable hours is the time taken by the Contractor for :
 - .1 Preparing the dredge to quit a dredging site during a day of work or at the end of each working day.
 - .2 Moving the dredge between the dredging sites and the location where the dredge will be park over night.

- .3 Allowing the Departmental representative to do a bathymetric sounding for verifying the dredging, and to permit a secure crossing of a commercial ship. Period less than 15 minutes for those 2 reasons will be paid.
 - .4 Also all stoppage greater than fifteen (15) minutes caused by any other event (including the slippage of the spuds) will not be payable.
- .3 Movement at a per kilometre (km) unit rate:
- .1 Certain specific movement of dredging equipment of over 10 kilometres during hourly rate dredging operations within the three sectors described below shall be considered and paid on a per kilometre basis; approximately 100 kilometres should be payable in this manner. Optionally, an additional distance of between 0 and 50 km may be added to the 100 km depending on the site of the scattered shoals to be dredged hourly in these three sectors.
 - .1 Sector 1: Section of the seaway between Montreal (buoy M195) and Sorel (buoy TRACY). Marine charts No. 1310 and 1311.
 - .2 Sector 2: Section of the seaway between Sorel (TRACY buoy) and Trois-Rivieres (buoy C63). Marine chart No. 1312.
 - .3 Sector 3: Section of the seaway between Trois-Rivières (buoy C63) and Batiscan (buoy D56). Marine charts No. 1313 and 1314.
 - .4 Sector 4 : Section of the seaway between Batiscan (buoy D56) and Deschailons (buoy D18). Marine chart No. 1313 and 1314.
 - .5 Sector 5 : Section of the seaway between Deschailons (buoy D18) and St-Antoine (3 km downstream of buoy Q16). Marine chart No. 1314 and 1315.
 - .4 Depths (soundings) will be adjusted to chart datum using GPS-OTF technology (ref. article 1.3.11 of this section). Contractor will be responsible for obtaining, by his own means and at his own expense, all relevant water level data requested to do the work and also the horizontal and vertical positions of his own dredging equipment.
 - .5 Mobilization and demobilization costs shall be paid on a fixed price basis as follow:

For each individual working periods, when the Contractor's plant has been fully mobilized and five days' dredging has been completed at the work site, the Department will remit to the Contractor sixty per cent (60%) of the principal mobilization and demobilization costs submitted at the first or second items of the unit price table.

However, this initial payment shall not exceed ten per cent (10%) of the total amount of the contract. The remaining amount of the principal mob/demob costs, shall be included in the last monthly payment.
 - .6 Payment for the work will be issued on a monthly basis in accordance with quantities produced during the month and with the assessment of the Department representative.
 - .7 Obstructions.

- .1 If the Contractor is required to dredge or recover material constituting a non-natural obstruction like debris, it shall recover and dispose of the said material as directed by the Departmental representative and in accordance with the Navigable Waters Protection Act (NWPA) at an hourly rate agreed to in advance by the Departmental representative and the Contractor as indicated below.
 - .1 The hourly rate submitted at the item 4 of the price table, will be used to pay for the hours taken to remove and dispose the obstructions). Payment for individual periods of less that one-half hour will not be considered.
- .2 The Contractor shall notify the Departmental representative or his representative and shall obtain written authorization from the Departmental representative or his representative before removing and disposing any non-natural obstruction.
- .8 Unexpected dredging work :
 - .1 In the event that the Contractor identify or would have to perform dredging work not already included in the specifications, it shall obtain the written permission of the Departmental representative before executing the work. The Departmental representative and the Contractor shall agree on the additional cost before doing any work.
- .9 All operations in connection with the placement of spoil in the dumping areas are included in the cubic meter and hourly rates. No separate payment will be done for the spoil placement.
- .10 All the stoppage and downtime will be under the sole responsibility of the contractor, except those that could be ask by the Departmental representative in some cases.
- .11 The Department will not pay for materials that the Contractor has dredged beyond 0.2m below the grades required, and materials dredged outside the dredging areas.
- .12 The Departmental representative shall not in any way be held liable for any waste of time and expenses incurred by the Contractor and/or its subcontractors relating to (1) towing the equipment or (2) for any losses or damages caused by storms, fire, collision or otherwise, either in transit to or from locations where dredging is to be performed or to or from disposal areas, or during the period the plant is employed under this contract, (3) nor for any delays, damages or accidents which may be due to (a) debris of any kind and other works being carried on concurrently in the same area, either for the Departmental representative or other Departments, Corporations, individuals or shipping.

1.3 DEFINITIONS

- .1 Dredging: the removal of sediment (or material) from the bottom of a water body, including its transport and disposal at the prescribes locations. In these specifications, two (2) types of dredging are considered: dredging payable per cubic metre (m³) rate, which applies to relatively large volumes measured on site prior to the work, and dredging payable per hour (h) rate, which applies to scattered shoals, the volume of which is small.
- .2 Class A sediments: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes 4.0m³ or more.

- .3 Class B sediments: relatively unstable sediments, loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 4.0m^3 .
- .4 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
- .5 Grade: plane above which all sediments is to be dredged.
- .6 Dredging area: surface covered by sediments to be dredged at grade depth.
- .7 Complementary volume : Volume (m^3) obtained by multiplying the dredging area by 0.2m.
- .8 Side limit: vertical plane perpendicular to the grade and parallel to the 305 metres width channel.
- .9 Side slope: inclined surface or plane from grade at side limit of dredging area to intersect original ground line outside of side limit and expressed as the ratio 1:1 (45°).
- .10 Trailing suction hopper dredge : self-propelled ship designed to (1) suction-dredge marine shoals while moving, (2) store spoil on board (hopper), and (3) transport and dump spoil at designate dump sites in open water. The dredge shall be equipped with doors in the hull or could have a split hull to unload the spoils. May be fitted with either one or two trailing dragarms.
- .11 GPS-OTF Technology: leading-edge, real-time kinetic positioning techniques that provide centimetric precision for real-time compensation of water level variations.(reference appendix 6).
- .12 Channel volume (V_{ch}): volume of spoil to be dredged, calculated by the Departmental representative from bathymetric data, to a designated depth (see article 1.2.1.1 of this section).
- .13 Company volume (V_{Cie}): volume of spoil dredged as estimated and reported by the Contractor at the time of the dredging work (see article 3.1.21).
- .14 Deepening dredging : Dredging of stable material in place since many years. This type of dredging is generally given at cubic metre unit rate.
- .15 Maintenance dredging : Dredging of non-stable material (or recent sedimentation). Dredging awarded at a per-cubic-metre (m^3) and/or hourly (h) unit rate: work measurement units determined in the dredging contracts..
- .16 Additional dredging: dredging of any authorized quantities above the basic quantity stipulated in the specifications, or over and above optional quantities.
- .17 Mobilization and demobilization of a dredging equipment: All actions and works carried out by the Contractor related mainly to its dredging equipment, that are needed by the Contractor, to bring its equipment to the work site and keep it operational until the dredging work is completed to the satisfaction of the Departmental Representative and ensure its safe return (next destination) upon work completion.

- .18 Estimated volume: dredging hours and/or volume of sediments to be dredged (reference: Art. 1.2.1 and 1.2.2 of this section and Appendices 1 and 4) including the complementary volume.
- .19 Chart datum (CD): reference level set by the Canadian Hydrographic Service that is sufficiently low that the tide level (or water level in non-tidal areas) rarely falls below it.
- .20 Undesirable or problematic shoal: any shoal located that, in the Departmental representative's opinion, obstructs or could possibly obstruct the waterway, or that could impede commercial navigation.
- .21 Maintained sections: maintained sections of seaway are shown on Nautical chart by different dashed straight lines (mostly parallel) between whose there is no depth, excepted the maintained depth.
- .22 A dredging site is a surface grouping shoals, the distance between two consecutive shoals is ten (10) kilometres or less. Isolated shoal with a distance greater than ten (10) kilometres from an other shoal or shoals will be considered as a dredging site.
- .23 Dredging (or working) period: number of days/weeks includes between two dates foresaw at the schedule to execute the dredging work established by the Departmental representative.
- .24 Partial dumping area: small area located inside a large dumping area.

1.4 REGULATORY REQUIREMENTS

- .1 The Contractor shall, and shall ensure that all its employees, both actual and de facto, including its subcontractors, honour all third-party rights and privileges and comply with all federal, provincial and municipal laws, regulations and orders.
- .2 Mark floating equipment with lights in accordance with Regulations for the Prevention of Collisions and Rules of the Road for the Great Lakes.

1.5 SCHEDULING

- .1 Within five (5) days after the reception of the notification of acceptance of the offer, the Contractor shall submit to the Departmental representative his work schedule for approval.
- .2 The schedule of work shall include for the basic dredging rate part, the quantities ($m^3(V\text{-ch})$ and h) that they plan to achieve inside the dredging period between Montreal to Cap Sante described at appendices 1 and 2. The said schedule of work must absolutely coincide with the requirements indicated in the Bid and Acceptance form (BA) , and must be realistic.
- .3 In his schedule, the Contractor shall indicate the date of arrival of their plant at the work site and the starting date of the dredging operations per se for each dredging periods.
- .4 To ensure the good execution of the work, any requested change subsequent to the approval of the said schedules of work, must be submitted in writing to the Departmental representative for approval.

- .5 Cubic metre dredging rate (m³):. In any time the dredging will have to be done from upstream to downstream or according to the Departmental representative instructions. Moreover, if undesirable shoals form before the end of the dredging period in surface areas that have already been dredged, the Departmental Representative can ask the Contractor to dredge them. In such cases the work will be paid in accordance with the rate previously stipulated in the contract..
- .6 Hourly dredging rate: this work shall be executed from the upperstream limit to the downstream limit or as directed by the Departmental representative. Included in the total hours, 40 hours will be required to execute in Deschaillons(sector 4) and 50 hours in St-Antoine (sector 5).
- .7 Adhere to schedule and take immediate action to correct any slippage by effectively altering existing dredging operations. If during the work the equipment is deemed ineffective or inappropriate, the Departmental representative shall ask the Contractor to replace this equipment by a more appropriate equipment.
- .8 The hourly rate work will be executed from Monday to Friday inclusively and the working hours will be 10 to 12 hours per day according to the decision of the Departmental representative. This number of hours could be less if the weather or other conditions do not permit it.
- .9 In the event that the Contractor should wish to leave the work site temporarily during a working period, the Contractor must obtain written approval from the Departmental representative. In order to obtain this approval, the Contractor must submit written notice to the Departmental representative, along with a revised schedule, 14 days prior to the planned temporary absence, so that the Departmental representative can approve the schedule and draw up a list of specific work that the Contractor must complete before temporarily leaving the work site. The purpose of this work will be to ensure that the waterway is safe and fully accessible. Even if the Contractor obtains authorization from the Departmental Representative to leave the work site temporarily, the Contractor must agree to assume any additional costs incurred by the Departmental representative for various unforeseen work and additional bathymetric surveys that may be required (according to the article 1.12.9 of the present section), including, if applicable, and without limiting the generality of the foregoing, all activities required to draw up the above-mentioned list of work, and any other necessary work and/or damages that may occur during the Contractor's temporary absence. Furthermore, the temporary absence shall not relieve the Contractor of the obligation to complete the work within the period specified in the contract.

1.6 LOCATION

- .1 Lac St-Pierre area, the shoals dredging at m³, are preliminary shown at appendix 2, pages 1 to 4. The scatter shoals to be dredged at hourly rate, between Montreal to St-Antoine (marine charts 1310 to 1315), will be progressively located by the Departmental representative, according to the Contractor work progression.
- .2 The dumping areas M-02, M-27, S-17, T-02, T-06, T-11, T-16 and X-04 are located and described at appendix 3. Before the beginning of work, the Departmental representative will indicate to the Contractor the location of partial dumping areas to be used.

1.7 INTERFERENCE TO NAVIGATION

- .1 Be familiar with vessel movements and seasonal activities in area affected by dredging operations. Plan and execute work in manner that will not interfere with seaway users.
- .2 The Contractor will be solely responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in dredging site or due to other Contractor's operations.
- .3 As soon as possible, the Contractor shall advise the Departmental representative of any special relocation of dredging equipment (for refuelling, repair, etc) that could have an impact on the approved schedule.
- .4 The Contractor shall continuously and accurately report all dredging equipment movements to Marine Communications and Traffic Services at Québec (MCTS).
- .5 Should any equipment belonging to the Contractor cause interference with navigation for any reason. The Contractor shall immediately:
 - .1 advise immediately the Marine Communications and Traffic Services (MCTS) of Canadian Coast Guard (CCG) and Departmental representative;
 - .2 comply with articles 3.1.17 and 3.1.18 of the present section;
 - .3 remove the plant immediately at its own expense.
- .6 Should the Contractor fail to comply with the above requirement, removal will be undertaken by the Departmental representative and all costs related thereto shall be charged to the Contractor.

1.8 DEPTHS AND GRADES

- .1 Depths and grades used in this specification and contract drawings are in metres (International system of units SI) and referred to Chart datum.

1.9 FLOATING PLANT

- .1 The Contractor shall supply and maintain all dredging equipment with sufficient capacity (reference : Article 2.1.1) to excavate, load, transport and dispose of all materials mentioned in the specification, taking into account settling of materials and excess dredged materials as applicable (reference: Art. 1.2.11).
- .2 All equipment required to perform the dredging contract shall be in good working order at all times and shall be used in accordance with the requirements of the most recent Environmental Impact Assessment (EIA) (Ref.: Appendix 5), and to the Departmental representative's satisfaction.

1.10 INSPECTION OF SITE

- .1 Before submitting its bid, The Contractor shall obtain all necessary information regarding the extent and nature of work and conditions affecting work before tendering, rather the knowledge of the St. Lawrence Seaway and its particularities.

- .2 By submitting its tender, the Contractor acknowledges that it is aware of the following: the nature and location of the project, general and local conditions, particularly weather or climatic conditions, the degree of agitation of the water surface, the tide levels, and physical conditions associated with the location of the project, the nature of the underwater soil and riverbed, the nature of the materials to be dredged, the sedimentary processes prevailing in the St Lawrence and all other circumstances that could affect the conditions of execution of the contract and on the value of the work (in this case the instability of shoals (sediment) to be dredged).

1.11 SITE INFORMATION

- .1 Take necessary steps to become fully familiar with constraints inclement by some weather and sea conditions in this area.
- .2 For your guidance only and based on our previous experiences, the materials to be dredged should consist mainly of coarse sand; small volumes of gravel, hard and soft clay and rocks (Class B materials) could also be found.
- .3 Between Montreal and Lac St-Pierre there is no tide. The water level can slightly vary between -0.5m to +2.5m above chart datum during the working period. Between Trois-Rivières and Cap-Santé the tide range is 5,4 m and the water level can be between -0,6 to 5,4 m(CD). In the Cap-Sante Traverse the tide range is 4.9 m and the water level can be between 0.6 m to 5.4 m. In St-Antoine area, the tide range is 4.6 m and the water level can be between -0.6 m to 5.4 m.
- .4 The current speed could reach 4 knots in the Montreal region, 3 knots at Trois-Rivières, 4 knots in Deschaillons region, 3 knots in the Cap-Sante Traverse and 4 knots in St-Antoine region..
- .5 The approximate location of the sediment to be dredged by cubic meter rate (m³) and the various dredging levels are indicated in Appendices 1 and 2 (based on the bathymetric surveys of 2009 to 2011); the disposal areas are described in Appendix 3. Bidders wishing to obtain additional explanations prior to submitting their bids must contact the contracting authority.
- .6 Scattered shoals to be dredged at hourly base rate will be located in the maintained part of the St-Lawrence seaway (reference: Nautical chart 1310 to 1315) between Montreal (buoy M195) and St-Antoine (3 km downstream of buoy Q16).
- .7 The Contractor must assess the impact of the movement of the shoals in his planning and work estimation for the cubic meter work (ref. article 3.1.4 of this section).

1.12 SURVEYS AND ACCEPTANCE OF WORK

- .1 In this project, the bathymetric sonar surveys will be done by the Canadian Hydrographic Services on behalf of the Departmental representative.
- .2 These surveys will be carried out based on the availability of Canadian Coast Guard (Department of Fisheries and Oceans Canada [DFO]) survey units and on weather conditions. These survey units are operational during work hours every week from Monday

to Friday. In exceptional circumstances, one of the units may be available on Saturdays at the end of a dredging period.

- .3 Few days before the beginning of dredging, the surfaces and quantity to be dredged will be precisely localised by bathymetric sounding to confirm the location of materials to be dredged, as accurately as possible and to determine the quantity. The Departmental representative reserves the right to modify at any time the grade and the dredging limits described in this specification.
- .4 The Departmental representative will provide the Contractor, in ASCII digital format (see Appendix 4), with the basic data required by the work (bathymetric surveys before and after dredging performed according to the timing of the work); these digital files will be available to the Contractor at the FTP site of the Department of Fisheries and Oceans Canada. The FTP address (and password) will be provided to the Contractor at the start of the work. The Contractor shall have the means of communication required to connect to this FTP site and to retrieve the necessary files from the site. Such data retrieval shall be made at the Contractor's expense, by its own means and during the working hours (08:00 AM to 04:00 PM) of the Waterways Management unit.
- .5 Acceptance of work done on a cubic metre basis shall be progressive, based on subdivisions (or combinations) of the area to be dredged as determined by the Departmental representative.
- .6 For the cubic meter dredging work, the Contractor shall advise the Departmental representative by email at least 24 hours in advance of the date and time of completion of each subdivision.
- .7 The Departmental Representative will accept work done at an hourly rate on site upon completion of the dredging of one or more scattered shoals.
- .8 After dredging surveys will be done as soon as possible after dredging. These surveys will be used to ensure that dredging has been executed according to the specifications. The Contractor shall re-dredge to remove, to the satisfaction of the Departmental representative, all material found to be above grade within dredge subdivisions (or combination) based on post-dredge surveys.
- .9 For the cubic metre dredging, the Department shall make up to two (2) post-dredge surveys, if necessary and at its expense, of the same subdivision or combination. If additional surveys are required owing to unsatisfactory performance or in the event that the Contractor leaves the work site temporarily, the Contractor shall pay a part of the costs related to the said work at a nominal rate of one thousand two hundred dollars per hour (\$1,200.00/hour). The hours charged shall include the time for both the survey work per se and the transport of the survey equipment. For each survey, a minimum of one thousand two hundred dollars (\$1,200.00) shall be debited from the Contractor. All such amounts shall be deducted from the last monthly payment of the current year.

1.13 SYSTEM OF UNITS

- .1 Relevant data such as bathymetric surveys, water levels, distances, areas and volumes, etc. mentioned in this specification and during the execution of work will be in the International System of Units (SI).

1.14 EMPLOYEES

- .1 See the tender call documents

Part 2 Equipments

2.1 DREDGING EQUIPMENT

- .1 The hourly based dredging shall be executed with a clam shell dredge. The cubic metre based dredging shall be executed with a clam shell dredge and/or a trailing suction hopper dredge (reference: Art. 1.3.10).

All scattered shoals to be dredged in sectors 4 and 5, must be dredged with a clam shell dredge held in place by spuds and not by cables and anchors.

- .2 The dredge(s) must be suitable for the work in terms of size, characteristics and draught. The hopper of the Trailing suction hopper dredge, should have at least a capacity of 750 m³.
- .3 Equipments to be used to unload the spoils to the dumping sites : see article 3.3.3 of the present section.
- .4 The Contractor shall give to the Departmental representative the description of the positioning system(s) to be used to position its dredge (see tender call documents).

Part 3 Execution

3.1 GENERAL

- .1 Before commencing work, the Contractor must obtain written approval from the Departmental representative for the work schedule.
- .2 The work shall be executed from the upstream limit to the downstream limit as directed by the Departmental representative.
- .3 Dredging at a unit rate per m³: The Contractor must dredge the shoals shown for information purposes in Appendix 2 .

Dredging at cubic meter rate : Preliminary the grade depths are indicated in appendix 1. Preliminarily, the dredging levels in the different sectors are as follows

<u>Dredging sectors</u>	<u>Grade depths (CD)</u>
D05 to D16(Lac St-Pierre)	11,00 to 12,50

Dredging at hourly rate: The Contractor will have to dredge scatter shoals that will be located earlier in spring in the sectors described in this specifications

- .4 During the dredging, the Contractor must consider the instability of the shoals to dredge and adjust his work method, in order to take into consideration the impact of the delay—between the date of the survey prior to dredging and the date of commencement of

work—in relation to the movement (most often in a downstream direction) of the shoals to be dredged during the project.

- .5 Material in the side slopes (1:1 or 45°) on either side of the channel shall be dredged.
- .6 The maintained channel width is 230 metre, especially in the straight sectors of the waterway. The side limits are represented by vertical plans, perpendicular to the grade depth and parallel to the channel. The Contractor could have to dredge materials in the side corridors, usually 7.5 metres width, and located on the each side of the 230 metre. These corridors will be dredged at a shallower depth. The outside limits of these corridors will be represented by side slopes having 45° (1:1), the material in these slopes will have to be dredge.
- .7 The Contractor shall comply with the dredging levels specified by the Departmental representative in order to dredge as little material as possible below these levels.
- .8 When dredging, the Contractor must use a Geographic Base Information System that provides accurate real-time information about the dredge's position and bathymetric data relevant to the work (location and depth of the shoals to be dredged).
- .9 The horizontal limits of the sectors to be dredged will be provided by the Departmental representative.
- .10 The Contractor is responsible to provide on his own the horizontal and vertical positioning of his dredge.
- .11 The Departmental representative, at his discretion, can check the accuracy of any positioning systems used by the Contractor.
- .12 The Contractor shall be solely responsible for all primary, intermediate or secondary points (X, Y), (X, Y, Z) and (Lat, Long) used by it, whether determined by it or provided by the Departmental representative or any other party..
- .13 The dredge and the additional equipment shall be kept in good repair and maintained in proper working order while used on the contract.
- .14 Annual demobilization: The Department representative will authorize the Contractor to demobilize its dredging equipment following final acceptance of all of the work
- .15 Buoys necessary for the contract : The Contractor shall supply, place in position moor, and maintain at its own expense, all buoys/markers required to properly execute the work. In the event that any of these buoys/markers by chance or by accident, sink or go adrift. They shall be re-floated and/or recovered by the Contractor at its own expense to the satisfaction of the Departmental representative. The Contractor shall assume responsibility for all accidents of any kind whatsoever due to the buoys/markers being improperly placed or insufficiently visible during the day or improperly lighted during the night or for any other reason.
- .16 Navigation buoys : The Contractor shall not at any time remove or relocate any main navigation buoys. Relocation of the said buoys, where warranted, will be done by the Canadian Coast Guard (CCG); requests for such service must be made to the Departmental

representative at least ten (10) business days in advance. The Departmental representative reserves the right to determine whether such requests by the Contractor are warranted.

- .17 Keep all signals and lights required to be installed on all dredging equipment required for the work in accordance with the Collision Regulations and the Navigation Safety Regulations on the Great-Lakes basin. All equipments required for the work shall be properly identified and/or visible at all times.
- .18 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .19 Casting over shall not be permitted other than within the designated disposal areas.
- .20 The Contractor must perform the hours of dredging and dredge the sediment down to the dredging levels indicated at the article 3.1.3, the quantities of which are indicated in Appendix 1 and the approximate location of which is shown in Appendix 2 (see articles 1.11.5 and 1.11.6 above).
- .21 The Contractor shall report to the Departmental representative in a file provided to the Contractor for that purpose: (1) start and end times of all dredging periods; (2) start and end times of all periods when sediment is transported to dredged material disposal areas; (3) volumes (company volume [V_Cy]) of transported and deposited sediment; (4) number of hours spent depositing sediment in dredged material disposal areas; (5) number of hours of and reasons for all dredging equipment stoppage periods; and (6) number of hours taken up by any other event, activity, etc. Each day will have to be identified from 0:00 to 24:00
- .22 Work at the hourly rate must be performed using only one dredge.

3.2 CLASS 'A' REMOVAL

- .1 No Class A material is expected to be found in the areas to be dredged. Should any be encountered, the Departmental representative may require the overlying material to be removed.
- .2 When Class A materials are dredged in this manner, the Departmental representative will evaluate such additional work; at the Departmental representative's request, the Contractor shall provide the necessary and appropriate equipment for dredging, loading, transporting and disposing of such Class A materials to the Departmental representative's satisfaction. The cost of such additional work (dredging of Class A materials) shall be determined in advance by the Contractor and the Departmental representative. As appropriate, this cost shall be included in an amendment to the contract.

3.3 DISPOSAL OF DREDGED MATERIAL

- .1 All dredged materials (with the exception of some forms of debris) shall be systematically dumped in the dumping sites indicated and described in Appendix 3 and in accordance with the Departmental Representative's instructions.
- .2 Any material dumped outside the limits of the designated disposal areas shall be re-dredged by the Contractor and/or its subcontractors at its expense and dumped in the designated

disposal areas; disposal of material in the disposal areas shall be under the control of the Departmental representative at all times.

.3 All equipments used to dump the dredged material shall be equipped with doors in the hull or could have a split hull to unload the spoils.

.4 The minimum depths of water (Chart Datum) to be maintained over some disposal areas shall be as follows: C.D.

Yamachiche Nord (S-17)	2.4m
St-Pierre-les-Becquets (T-11)	3.5m
Donnacona (X-04)	7.5m

3.4 RECURRENT SHOALS

.1 During or immediately after a dredging period, the Departmental representative may ask the Contractor to dredge undesirable shoals located in an already dredged area. This dredging volumes will be added to payable volumes.

3.5 CO-OPERATION AND ASSISTANCE TO DEPARTMENTAL REPRESENTATIVE

.1 Cooperate with Departmental representative on inspection of Work and provide assistance requested.

.2 The Contractor shall supply necessary and satisfactory marine transportation to the Departmental representative from a local wharf to the dredge for site inspections or for such other reasons as the Departmental representative considers appropriate.

.3 The Contractor shall commit also to supply wharf facilities and to obtain at its expense the required safe places (on land and water, as applicable) for its plant during the period of the work.

END OF SECTION

**Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program**

Année / Year 2013

Montréal à/to St-Antoine

Projet / Project N° R.062140.001

Quantités estimatives et répartition approximative des sédiments qui seront à draguer, pour les 2 périodes de dragage, au taux unitaire ... / Estimated quantities and approximate distribution of sediments to be dredged, for the 2 periods of dredging, at unit rate ...																
Tronçons / Sectors	Niveaux de dragage / Dredging depth (m) (Zéro des cartes / Chart Datum)	Poste / Item #	... à l'heure / hourly		Hauts-fonds épars / Scattered shoals (quantité approximative / approximate amount)		Surfaces dragage / Dredging areas (m ²)		Au-dessus des niveaux de dragage / Above dredging depth		Au-dessous des niveaux de dragage / Below dredging depth (Volumen complémentaires; 0,2m) / (Complementary volumes; 0,2m)		Total			
			Période / Period N°		Période / Period N°		Période / Period N°		Période / Period N°		Période / Period N°		Période / Period N°			
			1	2	1	2	1	2	1	2	1	2	1	2		
Lac St-Pierre	D-05 à/to D-13	3														
	D-14 à/to D-16av															
1-Montréal (bouée / buoy M195) à/to Sorel (bouée / buoy TRACY)		4 & 5	55 h (30) ¹	0												
2-Sorel (bouée / buoy TRACY) à/to Trois-Rivières (bouée / buoy C63)			15 h (10) ¹	0												
3-Trois-Rivières (bouée / buoy C63) à/to Batiscan (bouée / buoy D56)			50 h (25) ¹	0												
4-Batiscan (bouée / buoy D56) à/to Deschailions (bouée / buoy D18)			40 h (30) ²	0												
5-Cap-Santé (bouée / buoy Q50) à/to St-Antoine (Q16+3km aval/downstream)			50 h (25) ²	0												
Total			210 h (120)	0												

¹ Les heures de dragage et les nombres de hauts-fonds, sont approximatifs, et pourraient varier d'un tronçon à l'autre selon les dangers pour la sécurité de la voie navigable, que représenteront les hauts-fonds à draguer; The dredging hours and the number of shoals, are approximate, and could be changed from a sector to other sector according to waterway menace, that will represent the shoals to dredge;

² Ces heures de dragage devront obligatoirement être réalisées à l'endroit indiqué avec une drague à benne preneuse qui est retenue en place avec des poteaux; These hours of dredging must necessarily be made where indicated with a clamshell dredge, which is held in place with poles;

Pêches et Océans Canada
Garde côtière
Région du Centre et de l'Arctique
Services maritimes
Gestion des voies navigables

Annexe 1 / Annex 1

Fisheries and Oceans Canada
Coast Guard
Central and Arctic Region
Marine Services
Waterways Management

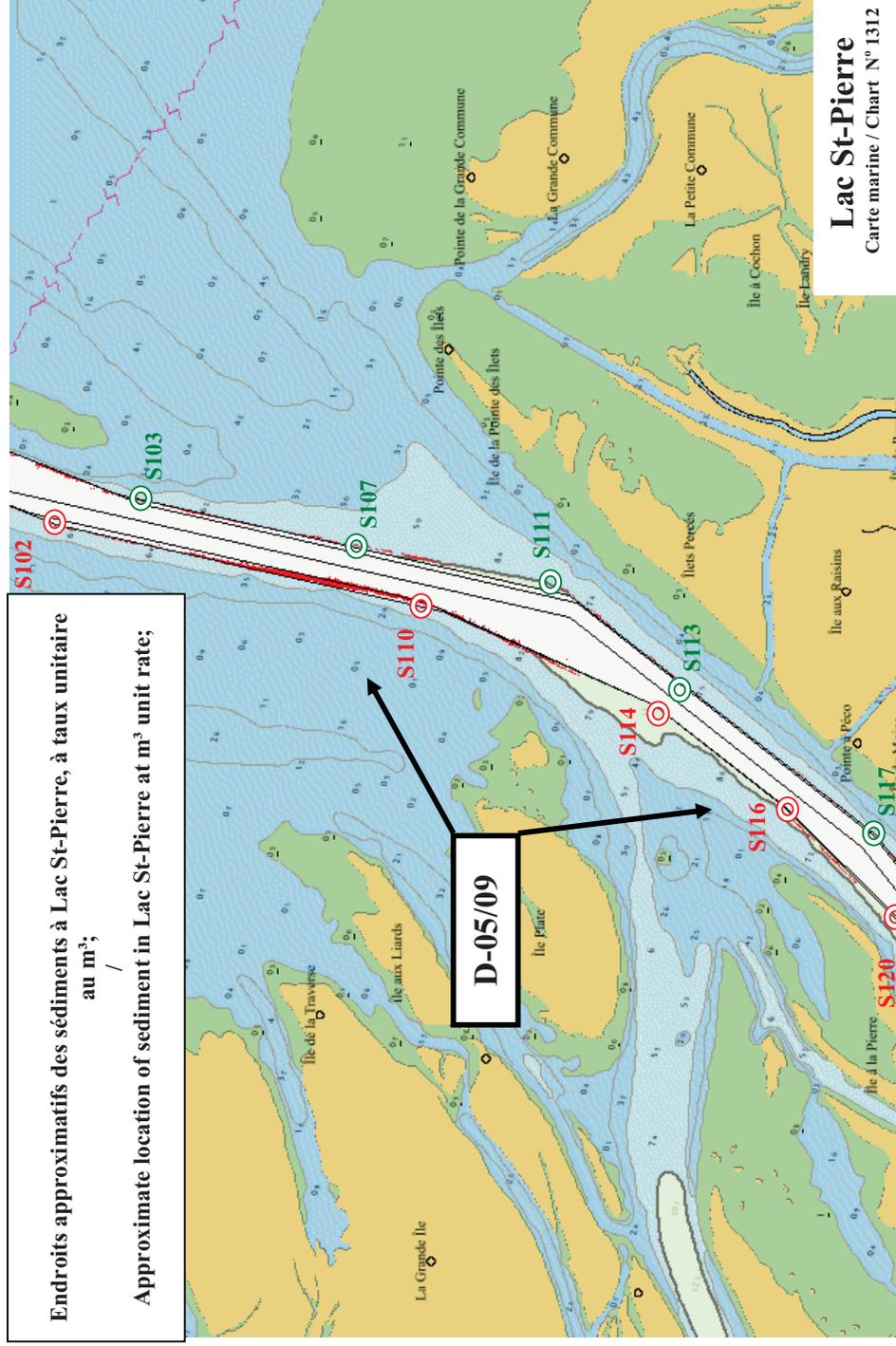
**Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program**

Année / Year 2013

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Projet / Project N° R.062140.001

Secteurs de dragage D-05 à D-09 / Dredging Sectors D-05 to D-09



Pêches et Océans Canada
Garde côtière
Région du Centre et de l'Arctique
Services maritimes
Gestion des voies navigables

Fisheries and Oceans Canada
Coast Guard
Central and Arctic Region
Marine Services
Waterways Management

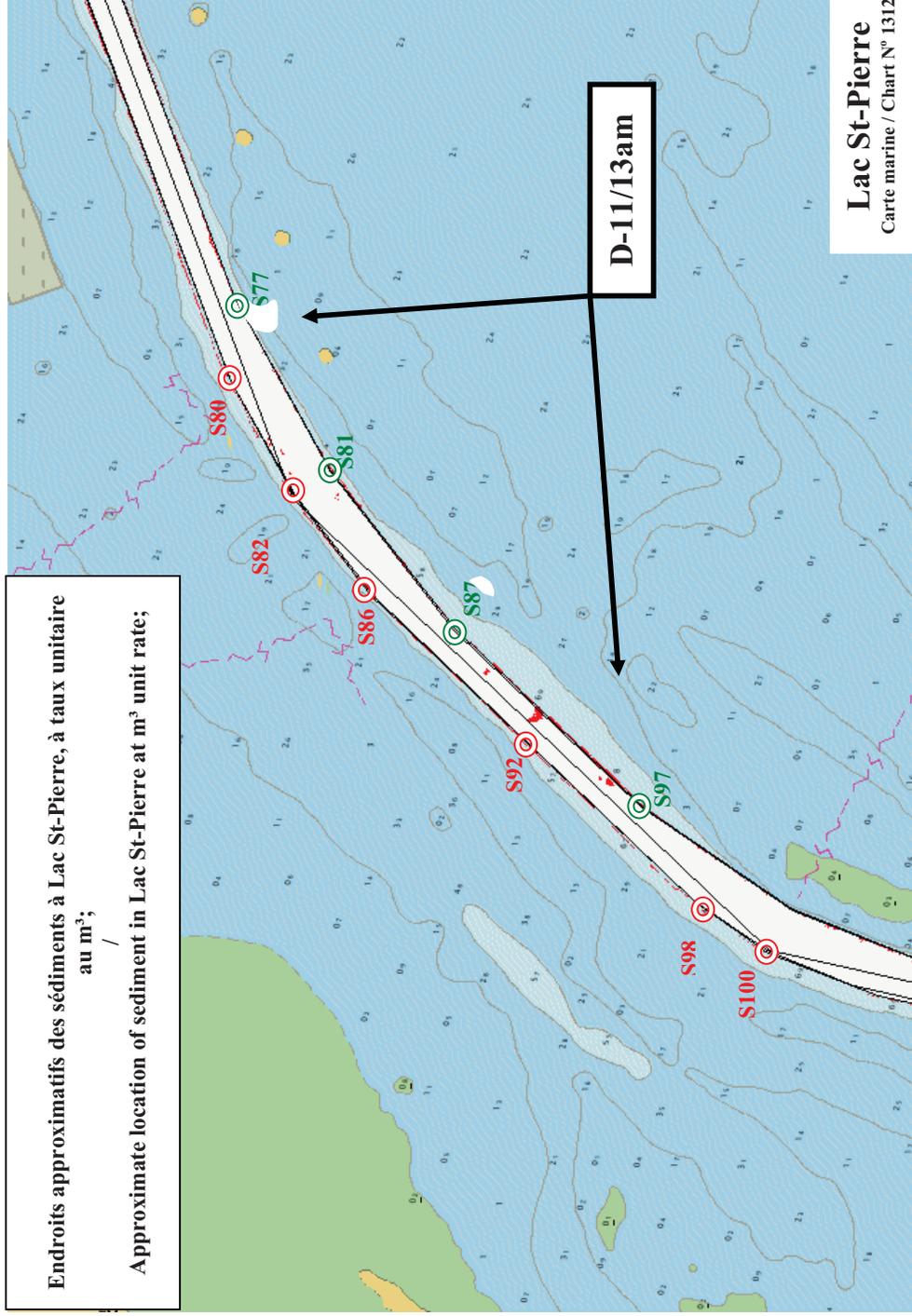
**Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program**

Année / Year 2013

Montréal à/to St-Antoine

Projet / Project N° R.062140.001

Secteurs de dragage D-11 à D-13am / Dredging Sectors D-11 to D-13am



Lac St-Pierre
Carte marine / Chart N° 1312

Pêches et Océans Canada
Garde côtière
Région du Centre et de l'Arctique
Services maritimes
Gestion des voies navigables

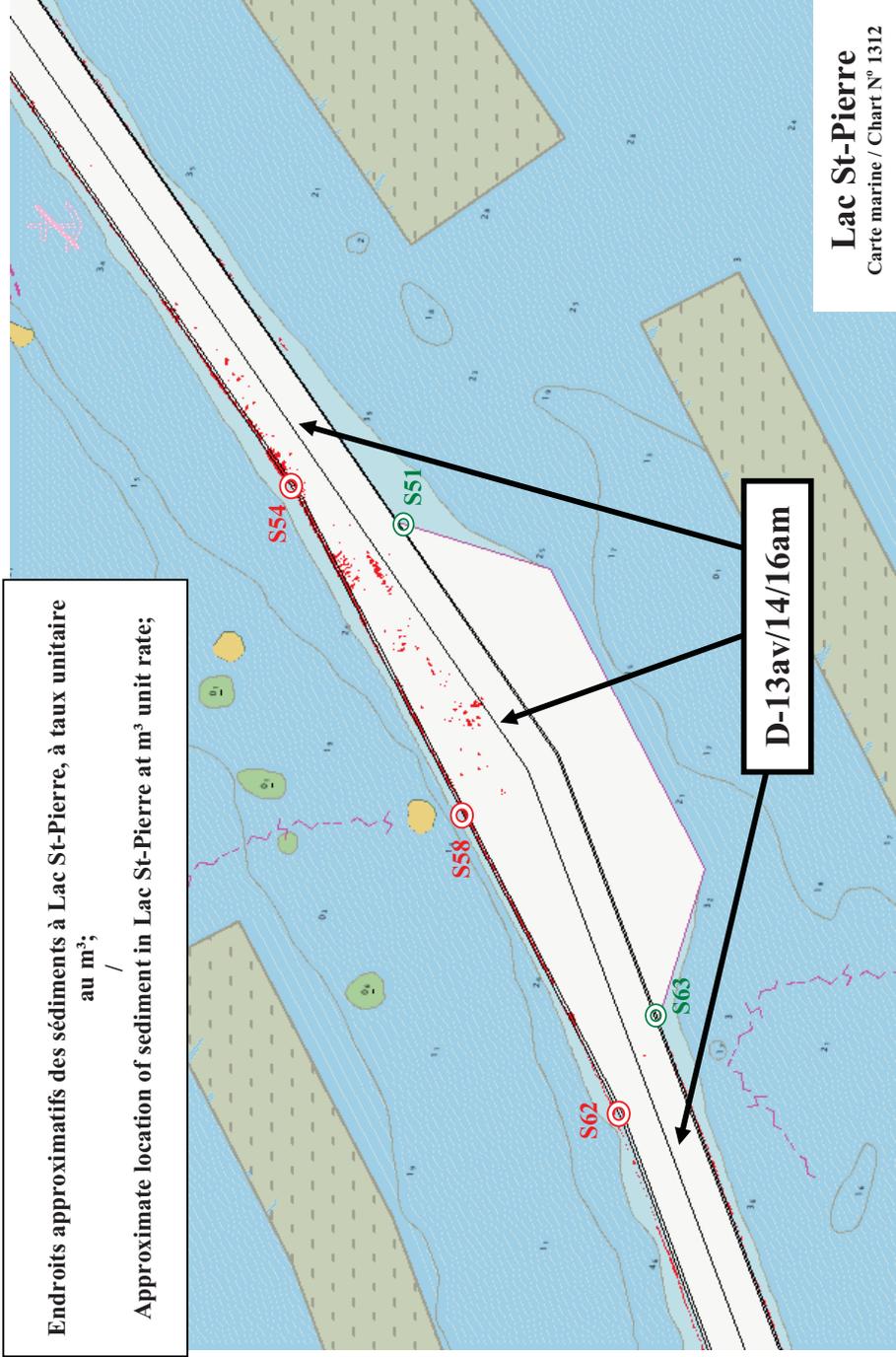
Fisheries and Oceans Canada
Coast Guard
Central and Arctic Region
Marine Services
Waterways Management

**Voie navigable du St-Laurent / St-Laurent Waterway
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Secteurs de dragage D-11 à D-13am / Dredging Sectors D-11 to D-13am

**Endroits approximatifs des sédiments à Lac St-Pierre, à taux unitaire au m³;
/ Approximate location of sediment in Lac St-Pierre at m³ unit rate;**



Pêches et Océans Canada
Garde côtière
Région du Centre et de l'Arctique
Services maritimes
Gestion des voies navigables

Lac St-Pierre
Carte marine / Chart N° 1312

Fisheries and Oceans Canada
Coast Guard
Central and Arctic Region
Marine Services
Waterways Management

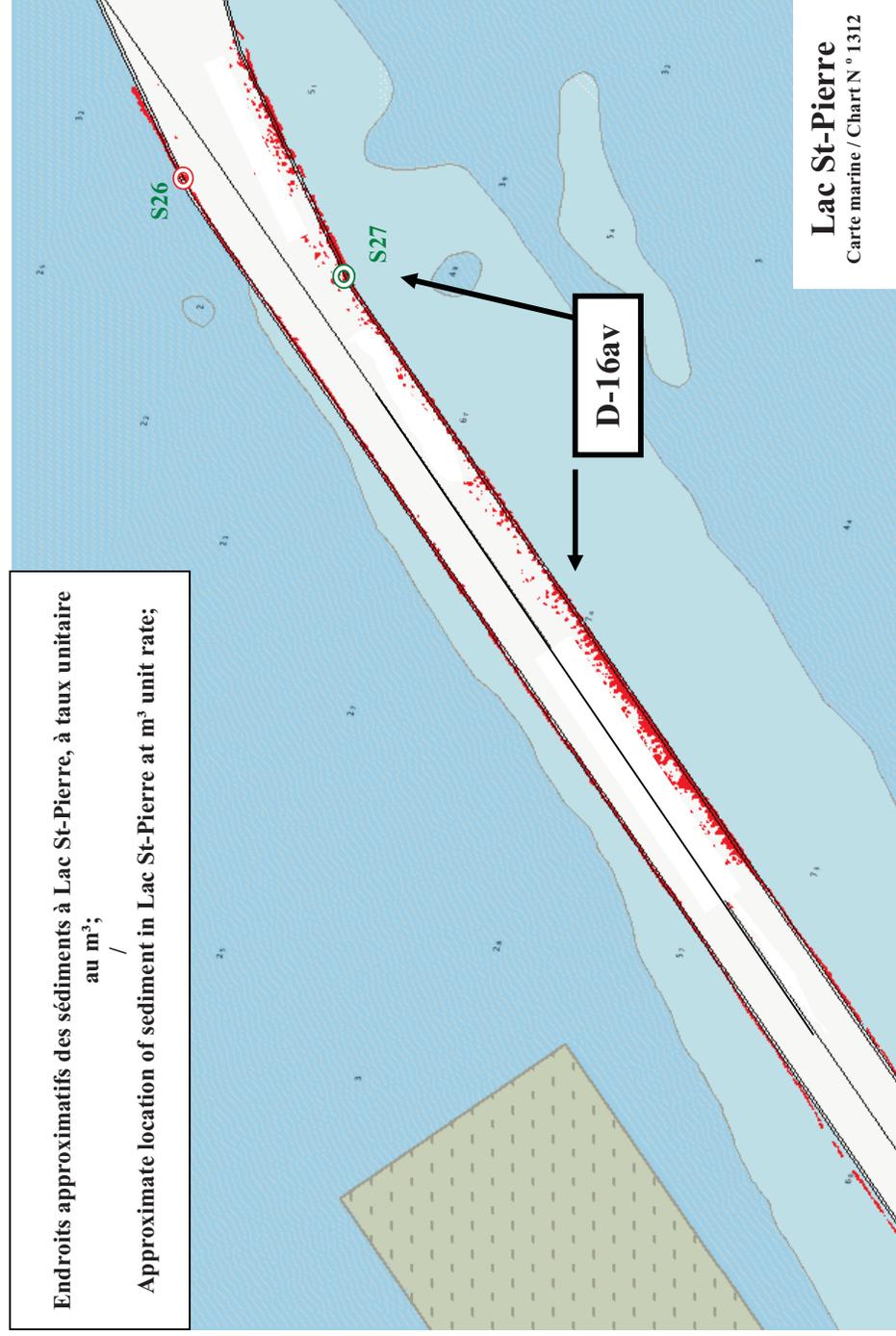
**Voie navigable du St-Laurent / St-Laurent Waterway
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Secteur de dragage D-16av / Dredging Sector D-16av



Pêches et Océans Canada
Garde côtière
Région du Centre et de l'Arctique
Services maritimes
Gestion des voies navigables

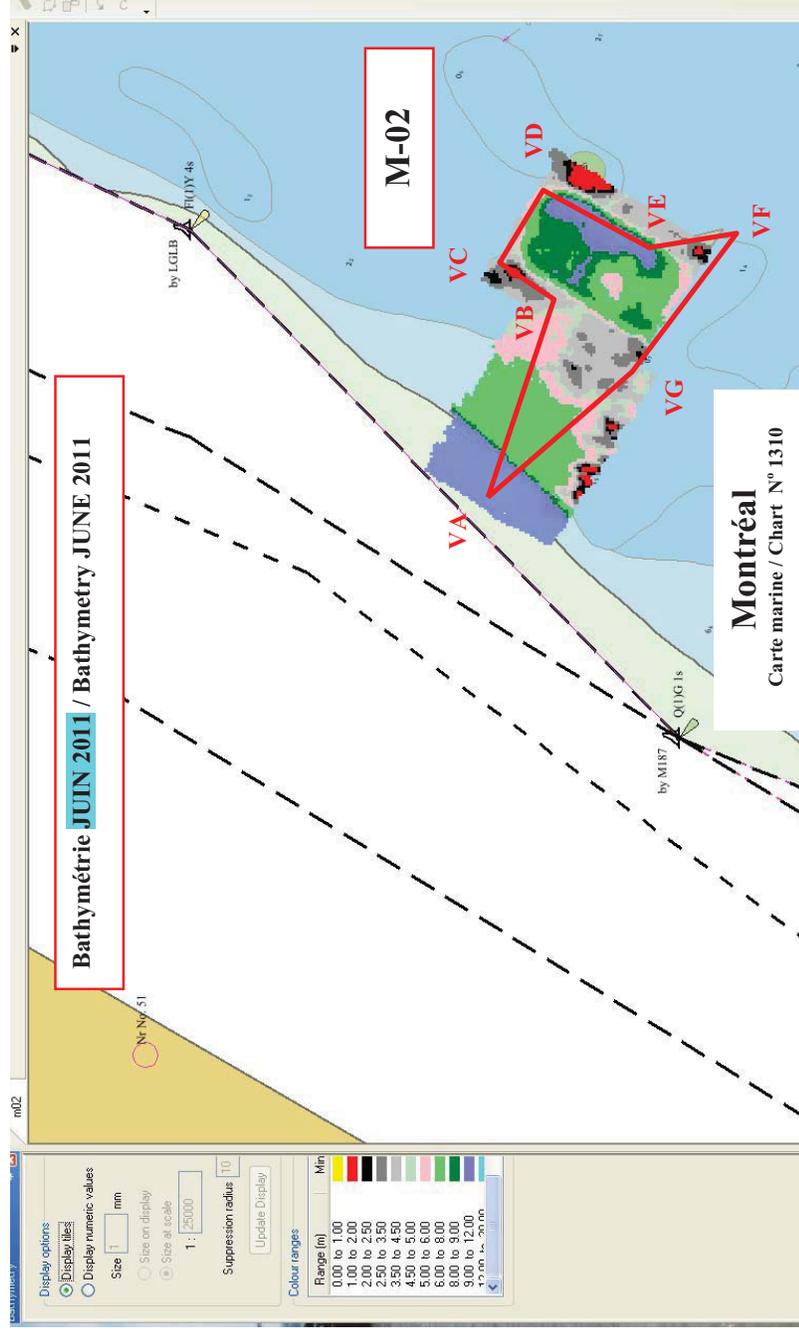
Annexe 2 / Annex 2 (page 4 de 4)

Fisheries and Oceans Canada
Coast Guard
Central and Arctic Region
Marine Services
Waterways Management

**Voie navigable du St-Laurent / St-Laurent Waterway
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Localisation aire de mise en dépôt / Disposal area localisation : M-02 (Vickers)

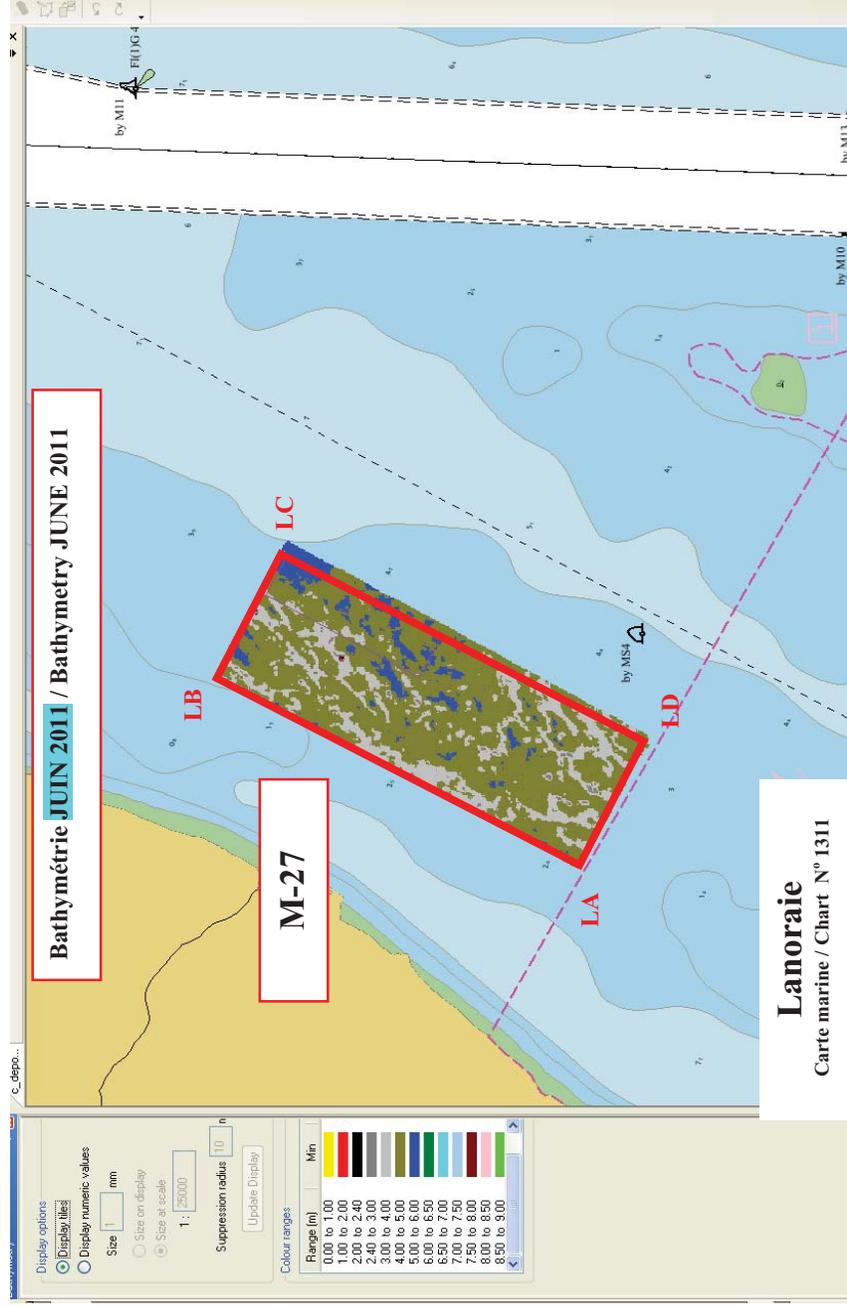


POINTS		COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 8)		REMARQUES / REMARKS
N°	X	Y		
VA	303 423	5 045 482		Superficie totale / Global area: 0,02 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,01 km ² (50%)
VB	303 587	5 045 425		
VC	303 618	5 045 474		
VD	303 677	5 045 438		
VE	303 626	5 045 354		
VF	303 645	5 045 280		
VG	303 537	5 045 355		

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Localisation aire de mise en dépôt / Disposal area localisation : M-27 (Lanoraie)

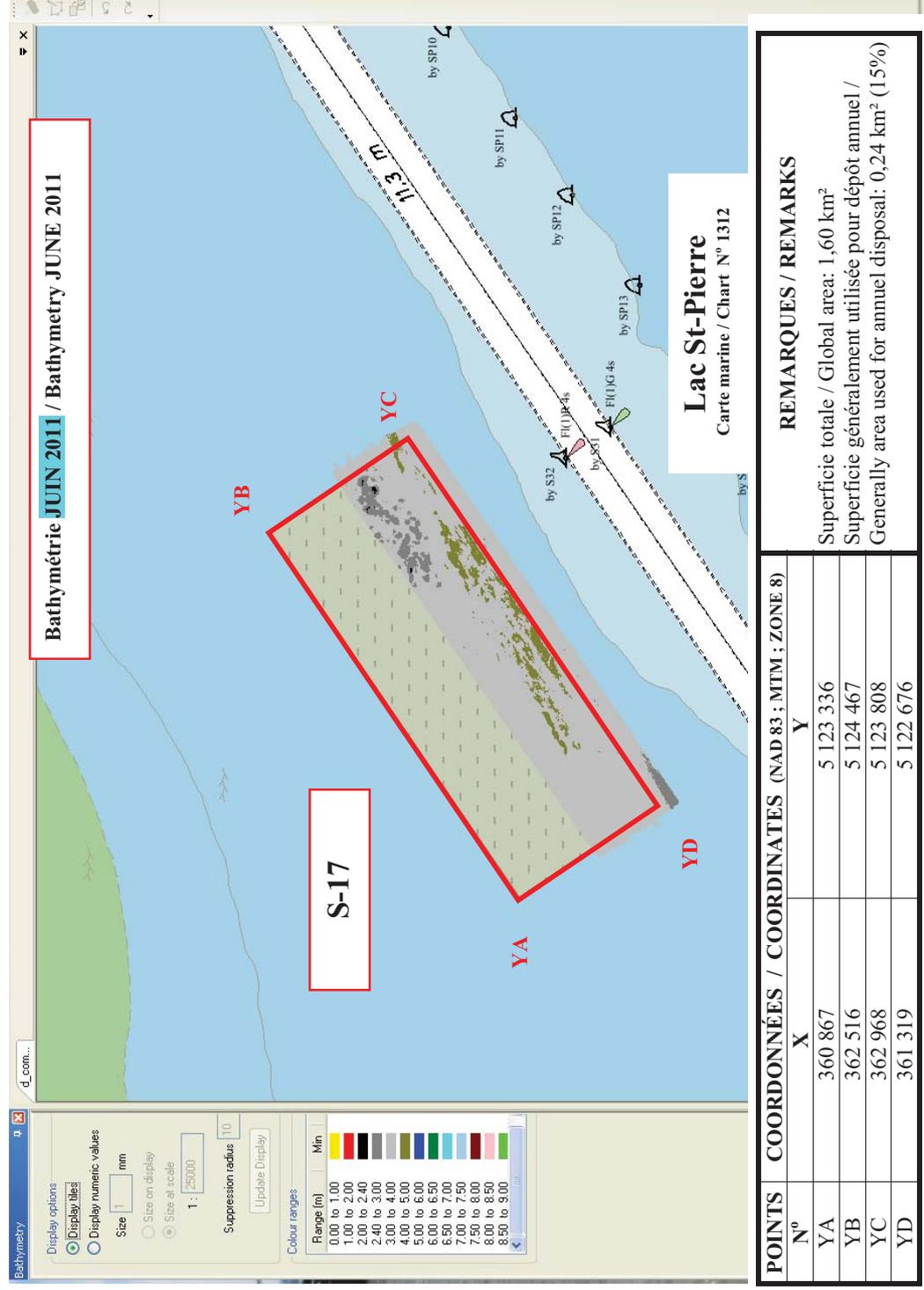


POINTS N°	COORDONNÉES / COORDINATES (NAD 83; MTM; ZONE 8)		REMARQUES / REMARKS
	X	Y	
LA	325 659	5 088 335	Superficie totale / Global area: 0,20 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,03 km ² (16%)
LB	326 040	5 089 039	
LC	326 260	5 088 920	
LD	325 879	5 088 216	

**Voie navigable du St-Laurent / St-Laurent Waterway
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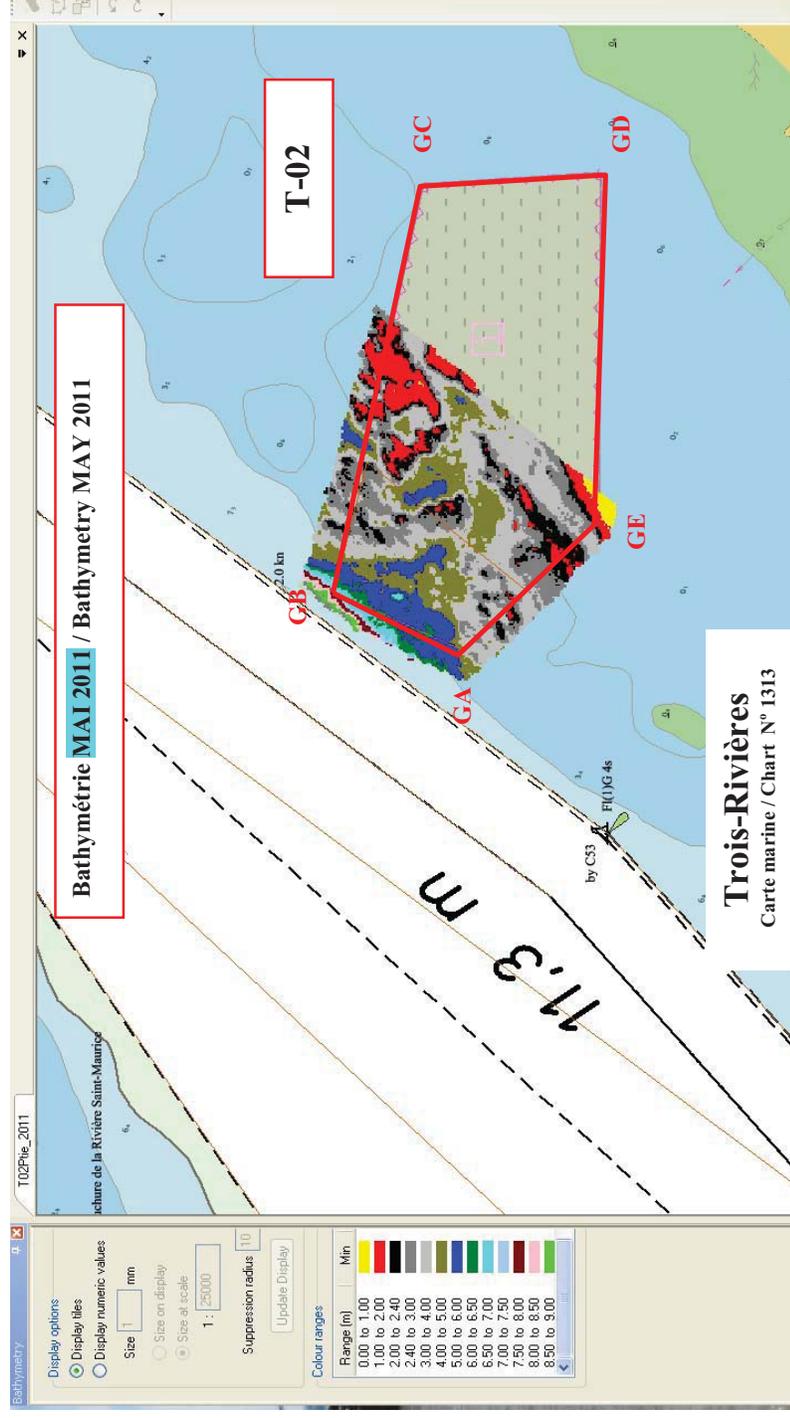
Localisation aire de mise en dépôt / Disposal area localisation : S-17 (Yamachiche nord)



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Localisation aire de mise en dépôt / Disposal area localisation : T-02 (Ste-Angèle)



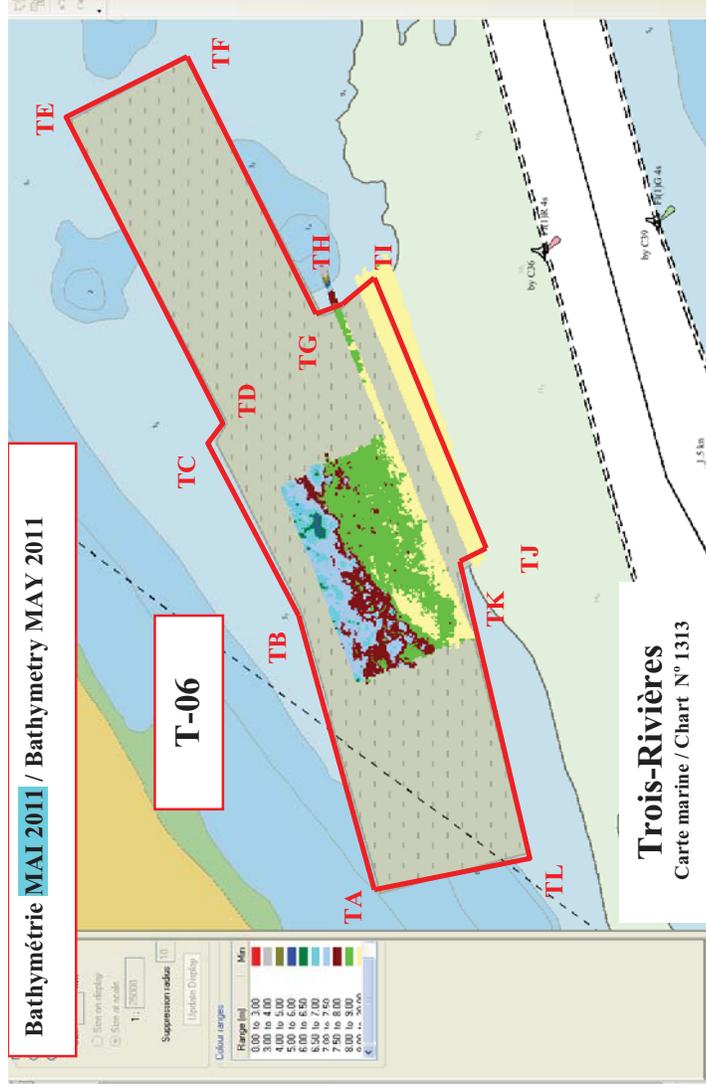
POINTS N°	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 8)		REMARQUES / REMARKS
	X	Y	
GA	380 661	5 134 210	Superficie totale / Global area: 0,19 km ²
GB	380 746	5 134 394	Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,09 km ² (47%)
GC	381 332	5 134 265	
GD	381 348	5 134 010	
GE	380 847	5 134 012	

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Localisation aire de mise en dépôt / Disposal area localisation : T-06 (Cap-de-la-Madeleine)

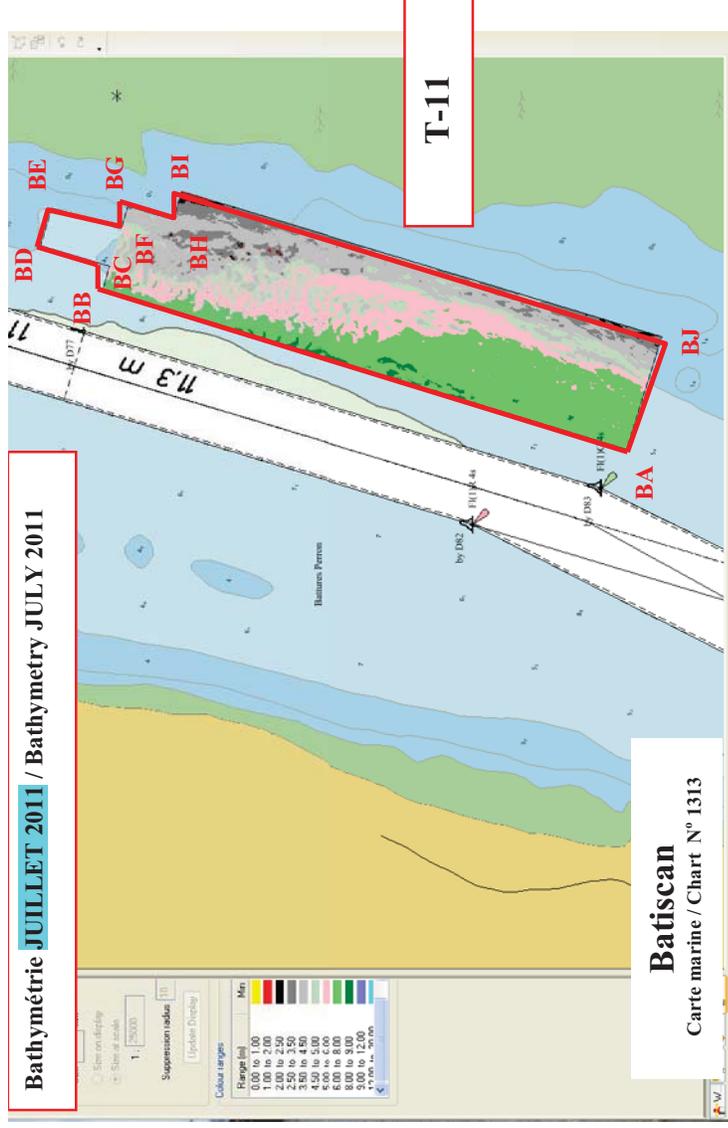


POINTS N°	X	Y	REMARQUES / REMARKS
TA	383 376	5 138 528	Superficie totale / Global area: 0,62 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,1 km ² (17%) NOTE: Site utilisé pour dépôt de roches de plus de 30 cm de diamètre / Site used to deposit rocks of more than 30 cm diameter
TB	383 958	5 138 696	
TC	384 315	5 138 873	
TD	384 354	5 138 850	
TE	384 982	5 139 182	
TF	385 112	5 138 935	
TG	384 577	5 138 654	
TH	384 587	5 138 614	
TI	384 692	5 138 513	
TJ	384 077	5 138 314	
TK	384 041	5 138 369	
TL	383 460	5 138 223	

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Localisation aire de mise en dépôt / Disposal area localisation : T-11 (St-Pierre Les Becquets)

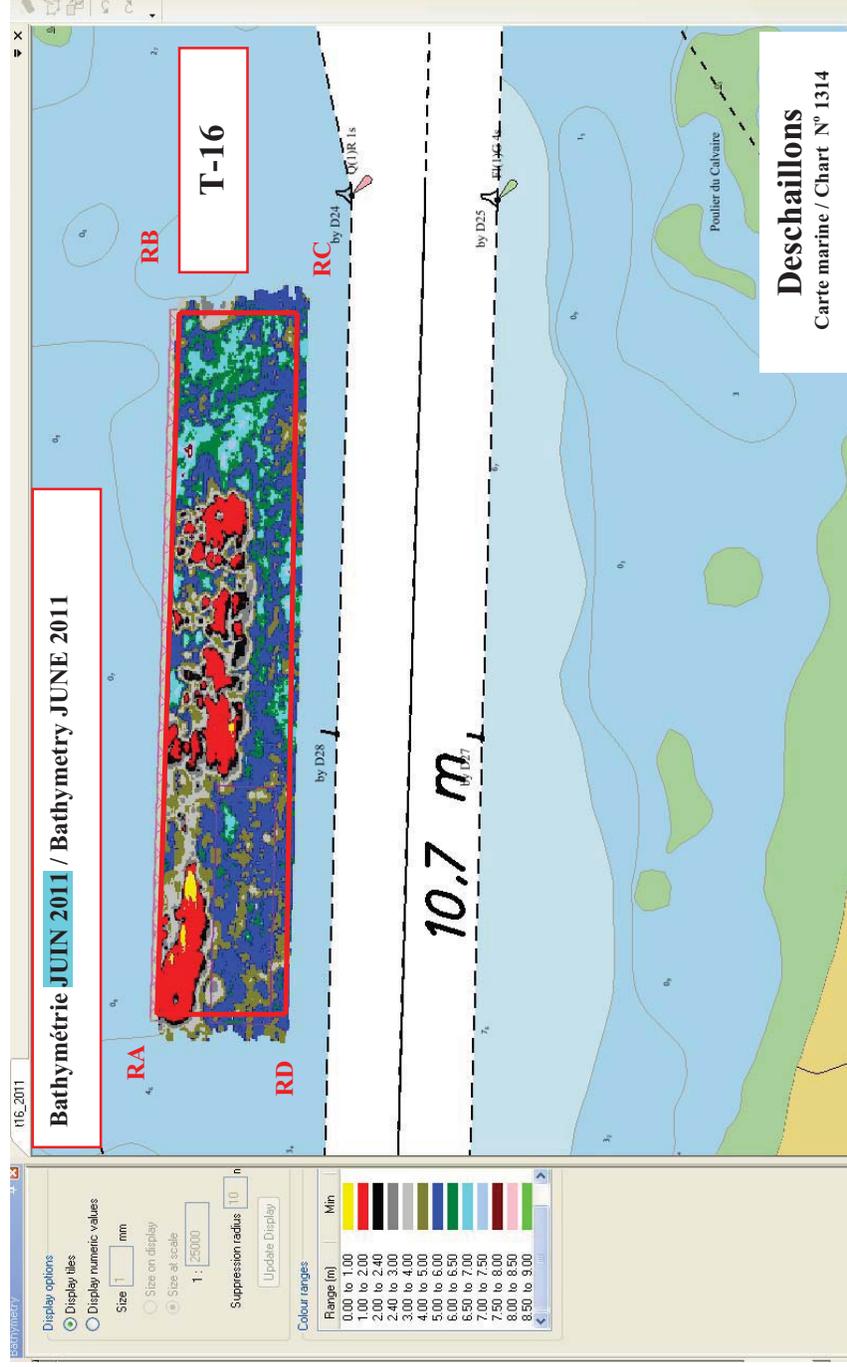


POINTS N°	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 8)		REMARQUES / REMARKS
	X	Y	
BA	401 431	5 148 345	Superficie totale / Global area: 0,76 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,15 km ² (20%)
BB	401 970	5 150 125	
BC	402 054	5 150 101	
BD	402 124	5 150 335	
BE	402 250	5 150 299	
BF	402 182	5 150 061	
BG	402 257	5 150 038	
BH	402 211	5 149 885	
BI	402 306	5 149 856	
BJ	401 814	5 148 229	

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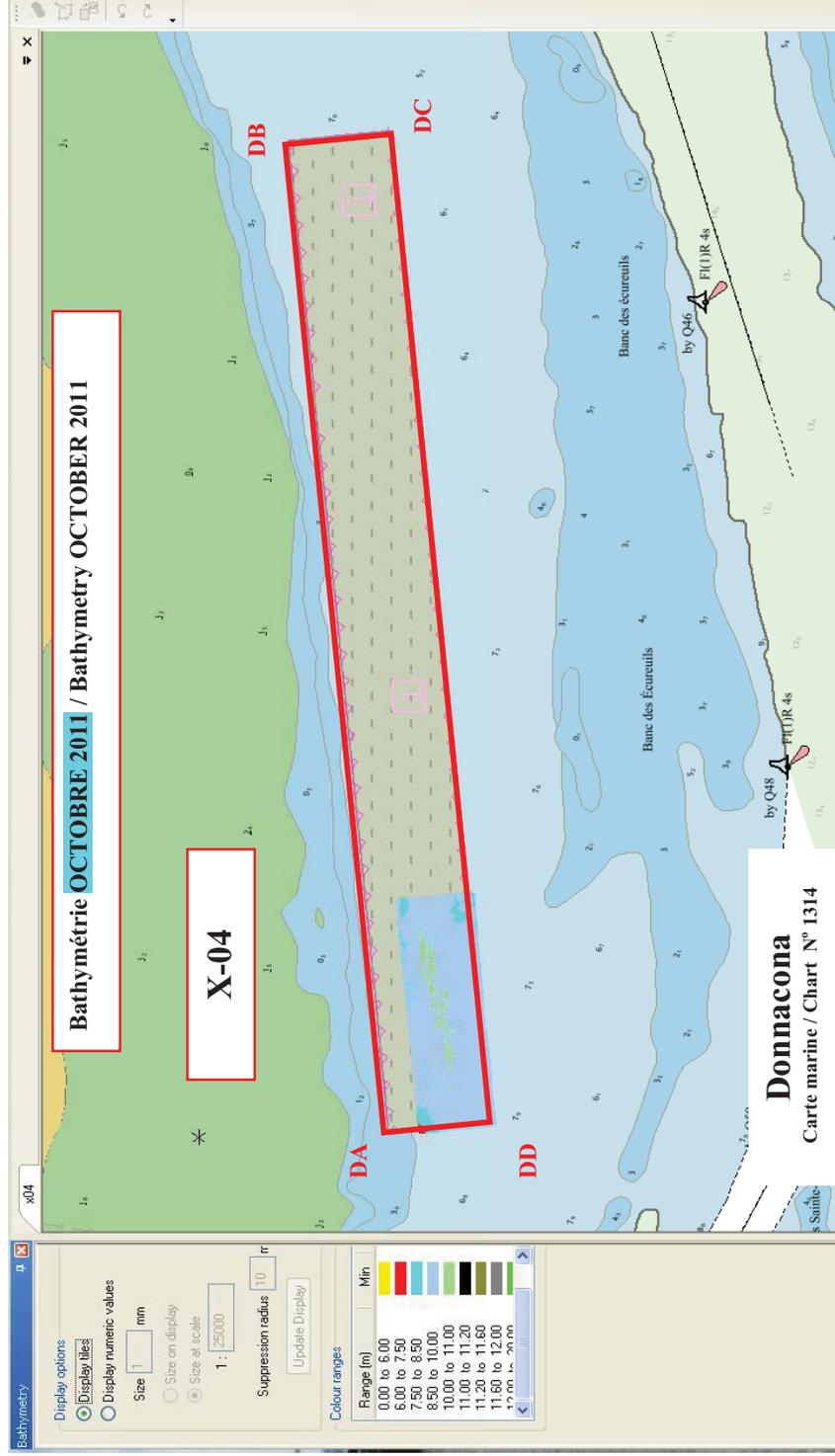
Localisation aire de mise en dépôt / Disposal area localisation : T-16 (Deschailions)



POINTS N°	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 8)		REMARQUES / REMARKS
	X	Y	
RA	412 321	5 159 760	Superficie totale / Global area: 0,24 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,04 km ² (17%)
RB	413 521	5 159 726	
RC	413 515	5 159 526	
RD	412 316	5 159 560	

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Localisation aire de mise en dépôt / Disposal area localisation : X-04 (Donnacona)**



POINTS N°	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 7)		REMARQUES / REMARKS
	X	Y	
DA	210 286	5 169 242	Superficie totale / Global area: 1,98 km ² Superficie généralement utilisée pour dépôt annuel / Generally area used for annual disposal: 0,30 km ² (15%)
DB	214 665	5 169 676	
DC	214 709	5 169 228	
DD	210 330	5 168 794	

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Shéma des données numériques / Digital data schema

Format ASCII / ASCII Format

301658.00,5043136.25,11.52
301659.07,5043243.25,11.55
301664.56,5043245.27,11.56

Profondeurs (m) / Depths (m)

Coordonnées (m) / Coordinates (m)
(NAD 83; MTM; zone 7 ou/or zone 8)

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(English version follows: page 3)

**Référence : Chapitre 7 Mesures d'atténuation; Article 7.1 Actions préventives
Évaluation des effets environnementaux (EEE) (2013 à 2015):**

NB : L'extrait de l'article 7.1 ci-dessous n'exempt pas l'Entrepreneur, avant de soumissionner, de prendre connaissance au complet de l'Évaluation des effets environnementaux (2013 à 2015) et des trois suivis 2012 des secteurs de dragage, qui sont disponibles auprès de l'autorité contractante.

Pages titre de l'EEE 2013 à 2015 Dragage d'entretien de la voie navigable du St-Laurent et Suivi 2012 d'un secteur de dragage (3 suivis existants) :
/ Title pages of EIA 2013-2015 Dredging St-Laurent channel and Follow-up 2012 for one dredged sector (3 existing) :



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7.1 ACTIONS PRÉVENTIVES

Les actions préventives suivantes seront toutefois mises en oeuvre pour éviter tout impact potentiel.

- ▶ Les travaux seront réalisés en dehors des périodes jugées sensibles pour la faune.
- ▶ Un système de positionnement précis de type DGPS ou DGPS-OTF sera exigé à l'entrepreneur de façon à s'assurer que les surfaces draguées se limiteront à celles prévues au devis et que les sédiments seront déposés dans les sites prévus à cet effet.
- ▶ Des avis à la navigation seront émis pour informer les navigateurs de la présence de dragues dans la voie navigable.
- ▶ Les services de communications et de trafic maritime de la GCC assureront la coordination et la gestion du trafic maritime relativement aux périodes de dragage.
- ▶ Les entrepreneurs veilleront à ce que les équipements de dragage utilisés soient en bon état de fonctionnement afin de minimiser les fuites et risques potentiels de bris pouvant occasionner des déversements.
- ▶ Concernant les préoccupations de certains propriétaires riverains de Champlain au sujet du dérangement associé au mouillage temporaire possible, à proximité de la rive, d'équipement connexe servant entre autres au logement du personnel (cette problématique peut s'appliquer parfois quand les travaux sont réalisés avec une drague à benne preneuse), la GCC poursuivra ses efforts de sensibilisation auprès des entrepreneurs à cette problématique lors d'une rencontre précédant le début des travaux. S'il y a lieu, ces derniers devront limiter et diminuer le plus possible les bruits et les dérangements occasionnés par les équipements connexes (déplacements des remorqueurs, présence des bâtiments flottants servant au séjour des employés, émissions de lumière en direction de la rive, utilisation de génératrices du côté rive des bâtiments) tel que recommandé dans l'étude commandée par la GCC et dont le rapport final a été déposé par la firme CJB Environnement en 2007. De plus, sur demande, la GCC informera les citoyens de l'évolution des travaux et des moyens qui auront été mis en place pour améliorer les conditions.
- ▶ Les données du Registre de planification des activités de dragage (<http://planstlaurent.qc.ca/dragage>) seront mises à jour régulièrement, ceci dans le but de permettre au public de prendre connaissance à l'avance des projets à venir et de faire connaître les préoccupations directement aux promoteurs et aux organismes réglementaires tôt dans le processus de planification. Ce registre constitue une source d'information de premier plan pour les groupes d'intérêt et pour le public en général.

(Fin de l'extrait)

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**Reference : Chapter 7 Mitigation measures; Article 7.1 Preventive Actions
Environmental impact assessment (EIA) (2013-2015)**

Note: This article 7.1 part below does not exempt the Contractor, before bidding, to read and understand all report Environmental impact assessment (2013-2015) and tree follow-up 2012 for dredged sectors, which are available from Contracting Authority.

7.1 PREVENTIVES ACTIONS

However, the following preventive action nevertheless be taken to avoid any potential risk.

- The work will be executed outside periods deemed sensitive for wildlife.
- The Contractor will be required to use a specific positioning system (DGPS-OTF type) to ensure that dredged areas are limited to those set out in the specifications and that dredged sediment are discharged at the location indicated in the specifications.
- Notices to shipping will be issued to inform navigators of the presence of the dredger in the seaway.
- The CCG Marine Communications and Traffic Services will coordinate and manage marine traffic throughout the period of the work.
- The machinery used shall be kept in proper operating condition to minimize leakage and the potential risk of failures that could cause spills.
- Regarding the concerns of some owners of Champlain residents about the inconvenience associated with temporary anchorage near the shore or equipment used for housing staff (this problem only applies when the work is done with a dredge Type "clamshell"), the GCC will continue its efforts to sensitize Contractors to this issue at a meeting preceding the start of work. These will limit and reduce the possible noise and disturbance caused by the related equipment (tugs displacement, presence of floating vessel used to stay employed, light emissions toward shore, using generators on resident shore side) as recommended in the study commissioned by the GCC, whose final report was filed by the firm CJB Environnement inc. in January 2007. In addition, upon request, the GCC will inform citizens of the evolution of work and means that have been established to improve conditions.
- Registry data planning of dredging activities (<http://planstlaurent.qc.ca/dragage>) will be updated regularly, this in order to allow the public to advance knowledge of upcoming projects and to express concerns directly to developers and regulatory agencies early in the planning process. This register is a source information leading to interest groups and the general public.

(End of extract)

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Information relative to the different horizontal or vertical spatial reference systems that will allow the contractor to get access, at his own expense and risk, to a geospatial positioning and water levels for dredging operations

Objectives

Teach about necessary tools in regards to vertical and horizontal, and thereby, to the chart datum (ZC), used for bathymetric surveys or dredging activities in the St. Lawrence Waterway, between Bécancour and l'Isle-aux-Coudres.

Geospatial Positioning

The geospatial positioning is established according to two geodetic datums, one to define the projected (XY) or geographic (longitude/latitude) horizontal position, also called the *reference ellipsoid*, and another one to define the vertical position (orthometric height), also called the *chart datum* (ZC).

1 – Horizontal positioning

S.Co.P.Q. NAD83 (SCRS) MTM Zones 7 and 8 Coordinate Systems

All bathymetric surveys are processed and delivered planimetrically in the “Système de coordonnées planes du Québec” (S.Co.P.Q.) NAD83 (CSRS). The system zone (MTM 7 or 8) is determined depending on the 72°W meridian. Therefore, the zone 8 corresponds to the downstream part of Grondines, while the zone 7 corresponds to the upstream part of Grondines, including the Traverse du Nord and l'Isle-aux-Coudres.

However, all numeric vector data (surfaces to be dredged, dredging templates, etc.) are produced, either in XYZ or DXF format, in geographic coordinates (NAD83 CSRS).

All parameters relative to the S.Co.P.Q. coordinate system, based on the Modified Transverse (M.T.M.) projection, including those relative to its corresponding datum (NAD83 (SCRS)), are listed in the following tables :

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NAD83 (CSRS) / MTM Zone 7	
Parameter	Value
Spatial Coverage	Canada - Québec - 72°W to 69°W
Datum	NAD83 (CSRS)
Reference ellipsoid	GRS80
Projection	Transverse Mercator
False Northing	0 m
False Easting	304800 m
Scale factor	0.9999
Latitude of origine	0°
Central meridian	70.5°W
Source	http://spatialreference.org/ref/epsg/2949/

NAD83 (SCRS) / MTM Zone 8	
Parameter	Value
Spatial Coverage	Canada - Québec - 75°W to 72°W
Datum	NAD83 (SCRS)
Reference ellipsoid	GRS80
Projection	Transverse Mercator
False Northing	0 m
False Easting	304800 m
Scale factor	0.9999
Latitude of origine	0°
Central meridian	73.5°W
Source	http://spatialreference.org/ref/epsg/2950/

NAD83 (CSRS) Reference System

The North American Datum of 1983 (NAD83), version CSRS (Canadian Spatial Reference System), is the adopted reference coordinate system in Canada (<http://www.geod.nrcan.gc.ca/>). It is a 3-dimensional representation of the NAD83 horizontal datum adopted in 1986. The NAD83 (CSRS) version do not stand as a brand new geodetic reference system, but more as an update of the coordinates for all geodetic points that the official NAD83 reference system, adopted in 1990, is based on. That said, this new version does not affect the cartographic grid, since the NAD83 reference ellipsoid is kept unchanged physically (<http://www.mrnf.gouv.qc.ca/territoire/outils/outils-nad.jsp>).

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NAD83 (CSRS)	
Parameter	Value
Reference ellipsoid	<i>GRS80</i>
Semi-major axis (a)	<i>378137.000 m</i>
Semi-minor axis (b)	<i>6356752.314 m</i>
x0	<i>00.00 m</i>
y0	<i>00.00 m</i>
z0	<i>00.00 m</i>
Rx	<i>0.00 sec</i>
Ry	<i>0.00 sec</i>
Rz	<i>0.00 sec</i>
scale factor	<i>1.0000</i>

2 – Vertical positioning to determine the water level

Chart datum

In Canada, the level of reference to which the charted depths are reduced, normally known as the chart datum, usually matches the Lower Low Water, Large Tide (LLWLT).

Observations relative to the height of tides or the water level to determine depths are either obtained by the use of the GPS-OTF technique or by a water level interpolated at the surveying vessel position.

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Canadian Coast Guard (CCG) GPS-OTF Network

The CCG GPS-OTF network consists of eight (8) fixed GPS reference stations, distributed as shown in the figure just bellow.



In the Traverse du Nord area, the GPS reference station is the one located at Saint-François de l'Île-d'Orléans **▲1** (46°59'47.5854"N 70°48'29.4599"W).

Between Bécancour and Cap-Santé, reference stations are listed bellow:

- Neuville **▲2** (46°41'47.4179"N 71°34'22.4817"W);
- Grondines **▲3** (46°35'14.7542"N 72°02'26.5826"W);
- Ste-Marthe **▲4** (46°23'48.9683"N 72°27'11.3858"W).

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Table of geoid heights

Heights obtained from a GPS receiver are in fact geodetic heights or *Ellipsoidal Height*, which means that the GPS receiver measure is relative to the reference ellipsoid. To reduce these ellipsoidal heights to the chart datum, a table of geoid heights is required. For your information, this table is maintained and distributed by the Canadian Hydrographic Service (CHS) — Quebec Region (see coordinates at the end of this document).

CHS SINECO tidal gauges network

The SINECO network is an observation and forecast operating system of water levels covering the whole St. Lawrence Waterway, from Montreal to Sept-Iles. The network is operated and maintained by the Canadian Hydrographic Service (CHS) — Quebec Region. It consists of approximately twenty measurement systems (tidal gauges) distributed at strategic locations along the St. Lawrence River where water levels are measured. All stations are also equipped with sensors for measuring water depth, atmospheric pressure, water temperature, and - only downstream of l'île d'Orléans - water salinity. Notice that the latter two are used in order to validate the water level.

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Characteristics of SINECO network stations		
Name	Number	Position (lat,long)
Saint-Joseph-de-la-Rive	03057	47° 26' 55"N
		70° 21' 55"W
Rocher Neptune (saisonnier)	03071	47° 09' 42"N
		70° 36' 27"W
Banc Brûlé	03075	47° 05' 22"N
		70° 42' 38"W
Saint-François (Île d'Orléans)	03100	46° 59' 47"N
		70° 48' 29"W
Saint-Jean (Île d'Orléans)	03105	46° 54' 54"N
		70° 53' 46"W
Lauzon	03250	46° 49' 56"N
		71° 09' 27"W
Port de Québec	03246	46° 49' 27"N
		71° 11' 54"W
Neuville	03280	46° 41' 54"N
		71° 34' 48"W
Portneuf	03300	46° 40' 54"N
		71° 52' 42"W
Deschaillons (Cap-à-la-Roche)	03335	46° 33' 42"N
		72° 06' 24"W
Batiscan	03345	46° 30' 00"N
		72° 14' 54"W
Bécancour	03353	46° 23' 59"N
		72° 22' 44"W
Trois-Rivières	03360	46° 20' 26"N
		72° 32' 23"W

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Equipments to get access to the water level data

GPS-OTF receivers

The official OTF positioning system adopted by the Canadian Coast Guard – Quebec Region is the Long Range Kinematic (LRK) approach (<http://en.wikipedia.org/wiki/LRK>) developed by Thales Navigation (formerly Ashtech) (<http://www.ashtech.com/en/solutions/marine/>). This is far and away the most efficient GPS-OTF method, mainly because of the vector length this method is able to reach.

Rough data is transmitted through a UHF link, in a proprietary format called *TOPAZ*.

In order to use the CCG LRK network, the required GPS receiver is an Ashtech GPS receiver, equipped with the LRK option and a UHF receiver centered on the 431.1 MHz frequency (radio frequency of the St-François de l'île-d'Orléans GPS reference station).

The Ashtech GPS receiver actually used by our surveying vessels is the Aquarius-02.

However, notice that the Ashtech Aquarius-02 is discontinued and is now replaced by the Ashtech ProFlex 500.

Also, the table for geoid heights, required to reduce GPS antenna heights to the chart datum, can be provided by the CHS (see contact information at the end of this document).

Web Data Service (WDS)

The CHS Web Data Service (WDS) is a Web service that allows getting access to observations of water level, verified to the tidal stations themselves, at a frequency of 3 minutes, through the Internet aboard vessel.

However, this capability requires the development of an application capable of communicating with this Web service and extracting the number linked to the tidal station, the timestamp of the observed water level, and finally the water level itself.

Moreover, the access to the WDS Web service requires the creation of an account, provided by the CHS (see contact information at the end of this document).

Notice that this same data is freely available throughout the Automatic Identification System (AIS) network developed and maintained by the Canadian Coast Guard – Quebec Region. However, once again, the development of an application capable of parsing AIS messages specific to water levels is also required.

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Océanus

Océanus is a software developed and distributed by the CHS (see contact information just below) allowing the visualization of observed data, forecasts and predictions of water levels.

Water level observations are validated and updated at a frequency of 15 minutes.

This software can be installed and operated on a computer with and Internet access aboard vessel (a subscription fee for this service is needed).

**Contact information for the Canadian Hydrographic Service (CHS),
Quebec Region**

For all questions regarding the network access to the water level:

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Maurice-Lamontagne Institute
Fisheries and Oceans Canada
850, route de la Mer
C.P. 1000
Mont-Joli, Québec
G5H 3Z4
Telephone: (418) 775-0502 Fax: (418) 775-0654
email: shcinfo@dfo-mpo.gc.ca

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Gemini Positioning Systems Ltd. is the exclusive representative and distributor of Ashtech products in Canada.

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