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END OF SECTION

Part 1 General

1.1 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from the Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.2 RELATED SECTIONS

- .1 Section 35 20 24 - Dredging

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 For each year of the contract, the work will consist in maintaining, by dredging at a unit rate per m³, at various locations and as directed by the Canadian Coast Guard (CCG) Technical Authority, the St. Lawrence River shipping channel, between Bécancour and Cap Gribane (North Traverse).
- .2 The work will be executed in two different periods: the first period will be between May 28 and June 29, and the second period between August 20 and November 7.
- .3 The sectors of maintenance dredging activities and the volume of sediment to be dredged each year of the contract, are as follows:
 - .1 Bécancour and Batiscan, between buoys C33 and D68
 - .1 First dredging period: 12,000 m³ (V_ch) of Class B sediment to be dredged; the beginning of work shall be between May 28th and June 1st.
 - .2 Second dredging period: 9,000 m³ (V_ch) of Class B sediment to be dredged; this work shall be done immediately after the one at North Traverse.
 - .3 This work could be executed with a trailing suction hopper dredge and/or a clam shell dredge.
 - .2 Cap-Santé Traverse, buoy Q54
 - .1 First dredging period: 1,400 m³ (V_ch) of Class B sediment to be dredged; this work shall be done immediately after the one between Bécancour and Batiscan.
 - .2 This work could be executed with a trailing suction hopper dredge and/or a clam shell dredge.

- .3 North Traverse, between buoys K136 and K91
 - .1 First dredging period: 10,000 m³ (V_ch) of Class B sediment to be dredged; the work shall be done immediately after the one at Cap-Santé Traverse.
 - .2 Second dredging period: 50,000 m³ (V_ch) of Class B sediment to be dredged; the work shall be done between August 20th and October 12th.
 - .3 This work shall strictly be executed with a trailing suction hopper dredge.
- .4 St. Pierre Lake, between buoys S146 and S27
 - .1 Second dredging period for years 2020, 2022, 2024 only: 5,000 m³ (V_ch) of class B sediment to be dredged; the work shall be done immediately after the one at Bécancour.
 - .2 This work could be executed with a trailing suction hopper dredge and/or a clam shell dredge.
- .4 The above-mentioned work thus consists in dredging, usually from upstream limit to downstream limit, class B sediments located above the dredging depths specified to the satisfaction of the CCG Technical Authority. The sediments form relatively unstable shoals. The Contractor shall take this into consideration in his bid as well as during execution of work.
- .5 The preliminary and approximate location of the material to be dredged in each year of the contract is shown in appendices 1, 2, 3 and 4.
- .6 The dredged materials, subject of being dumped into open water, will be dumped in areas M-27, T-11, X-04 sections, X-02 and X-03 (Appendix 5). The exact locations to be used for dumping will be indicated annually to the Contractor before the start of work.
- .7 Should the Contractor consider on-land sediment management, he shall first submit a proposal accompanied by all the required permissions to the approval of the Departmental Representative.
- .8 Dredged sediments may, however, be valued on land. The Contractor shall take charge of all the steps at his expenses, risks and danger, to carry out the sediment management activities and hold safe and harmless the Federal Crown from and against any claim resulting from the piling at that site or the recovery and subsequent use of these sediments.
- .9 At first sight and according to the latest bathymetry, the values for the dredging areas and the volumes of material to be dredged for each year of the contract are provided in Appendix 7 (by dredging depth and sector). The actual sediment surfaces and volumes to be dredged for each year of the contract, as well as the charts and digital files (in ASCII format, reference: Appendix 8), shall be determined by the CCG Technical Authority based on sonar bathymetric surveys conducted by Fisheries and Oceans Canada. The surveys shall be completed before the work begins for each dredging area (or part thereof) as the work progresses.
- .10 The total quantity of material to be dredged will be directly related to the scope of the annual sedimentation.
- .11 Preventive action on the environment must be observed (Appendix 9) following the latest report on the environmental assessment of the annual maintenance dredging of the

St. Lawrence seaway (*Évaluation des effets environnementaux du dragage d'entretien annuel de la voie navigable du Saint-Laurent*). Further environmental reviews will take place in the future and the Contractor shall comply with the new preventive measures.

1.4 CONTRACTOR USE OF PREMISES

- .1 The Contractor shall limit his use of site for work and for access, and allow use of the site by the public and mariners.
- .2 All necessary action and safety precautions shall be taken to protect persons and property from accident or damage in the course of the work.
- .3 The work shall be executed to not hamper normal operations and not compromise the safety of users of St. Lawrence Seaway. The Contractor shall take all safety measures necessary to ensure that all types of meetings in the seaway will be safe for commercial vessels. The Contractor shall communicate appropriately all the times with the Marine Communications and Traffic Services (MCTS) and the ship pilots.

1.5 REQUIRED DOCUMENTS

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review, for each year of the contract, 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 shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Contractor to be responsible for documents submitted each year. Review submittals 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 Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work are co-ordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .9 Keep one reviewed copy of each submission on site.
- .10 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 documents required by the public agency having jurisdiction over workers OHS in case of work-related accident.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Partie 1 General

RELATED REQUIREMENTS

- .1 Section 35 20 24 - Dredging.

1.2 REFERENCES

- .1 Province of Québec
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative and the CNESST, if required, the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of work.
- .3 Departmental Representative will review Contractor’s site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within 5 days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental Representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental Representative once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

The investigation report shall contain at least the following:

- .1 Date, time and place of accident;
- .2 Name of sub-contractor involved in the accident;
- .3 Number of persons involved and condition of wounded;
- .4 Witness identification;
- .5 Detailed description of tasks performed at the time of the accident;

- .6 Equipment being used to accomplish the tasks performed at the time of the accident;
- .7 Corrective measures taken immediately after the accident;
- .8 Causes of the accident;
- .9 Preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental Representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
- .10 Submit to Departmental Representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.
- .11 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
 - .1 First aid in the workplace and cardiopulmonary resuscitation
 - .2 Work likely to release asbestos dust (mandatory for all work where asbestos is present)
 - .3 Work in confined spaces (mandatory for all work in confined spaces)
 - .4 Lockout-tagout procedures (mandatory for all work requiring lockout)
 - .5 Safely operating forklift trucks (mandatory for all forklift usage)
 - .6 Safely operating elevating work platforms (mandatory for the use of all elevating platforms)
 - .7 Any other requirement of Regulations or the safety program
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental Representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNEST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNEST before work begins. A copy of such notice and acknowledgment of receipt from the CNEST shall be submitted to Departmental Representative.
- .2 At the completion of all the work, a notice of construction site closing shall be submitted to the CNEST, with a copy to Departmental Representative.

- .3 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .4 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.5 HAZARD ASSESSMENT

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental Representative no later than 5 days after the committee meeting.

1.7 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .2 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .3 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code*.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental Representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental Representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.11 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 Company safety and health policy;
- .2 Description of the stages of the work;
- .3 Total costs, schedule and projected workforce curves;
- .4 Flow chart of safety and health responsibilities;
- .5 Physical and material layout of the construction site;
- .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them;

- .7 Identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";
- .8 Identification of preventive measures for health and safety of employees and / or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 Training requirements;
- .10 Procedures in case of accident/injury;
- .11 Written commitment from all parties to comply with the safety program;
- .12 Construction site inspection checklist based on the preventive measures;
- .13 Emergency response plan which shall contain at least the following:
 - .1 Construction site evacuation procedures;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge of the construction site;
 - .4 Identification of the first-aid attendants;
 - .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative);
 - .6 Training required for those responsible for applying the plan;
 - .7 Any other information needed, in the light of the construction site's characteristics.
- .14 If available the Departmental Representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental Representative.
- .2 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .3 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .4 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.
- .5 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site.
- .6 Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental Representative on demand.

- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.
- .8 The Departmental Representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed.

At the worksite there is in particular the presence of the following:

 - .1 Confined spaces
 - .2 Body of water close by
- .2 The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

1.13 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.14 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
 - .1 Have a safety officer certificate issued by the CNESST;
 - .2 Have site-related working experience specific to the activities associated with the present project;
 - .3 Have working knowledge of occupational health and safety regulations in the workplace;
 - .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;

- .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
 - .6 Be on construction site at all times during execution of work;
 - .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
 - .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.
- .2 The safety officer's certificate shall be submitted to the Departmental Representative before the start of the work.
- .3 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental Representative before the start of work.

1.15 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
- .1 Notice of construction site opening;
 - .2 Identification of Principal Contractor;
 - .3 Company OSH policy;
 - .4 Site-specific prevention program;
 - .5 Emergency plan;
 - .6 Minutes of worksite committee meetings;
 - .7 Names of worksite committee representatives;
 - .8 Names of the first-aid attendants;
 - .9 Action reports and correction notices issued by the CNESST.

1.16 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental Representative or his agent.

- .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation 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 workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.17 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental Representative.

1.18 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.19 FALL PROTECTION

- .1 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10-M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.

- .6 Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.20 WORK NEAR BODIES OF WATER

- .1 For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those in article 2.10.13 du *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).
- .2 The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of these measures should be favoured over the wearing of a life jacket.
- .3 Submit the following documents to the Departmental Representative before the beginning of the work. Each of the document must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
 - a. Description of the body of water;
 - b. Description of the work done next to this body of water;
 - c. Plan of transportation on water adapted to the work and to the characteristics of the body of water;
 - d. Rescue plan adapted to the work and to the characteristics of the body of water.
- .4 If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.
- .5 The Contractor must submit to the Departmental Representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:
 - a. The person assigned to prepare the documents required in the preceding paragraph; and
 - b. Each person responsible for the transport or rescue operations
- .6 If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental Representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.
- .7 The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
- .8 Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.

- .9 Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least two (2) rungs below the surface of the water shall be installed on the front of the structure every 60 m.

1.21 HEALTH AND SAFETY SUBORDINATION AGREEMENT

See next page for the Health and Safety Subordination Agreement; a completed and signed copy shall be submitted to Departmental Representative.

HEALTH AND SAFETY SUBORDINATION AGREEMENT	
Project: _____ Address: _____	
EXTERNAL CONTRACTOR I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to: <ul style="list-style-type: none"> Inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times; Apply the prevention program that is specific to the activities that we carry out under this project; Inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and Follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor. 	
Name of Representative:	Name of business:
Description of work to be done on the construction site:	
Approximate dates of work (start-end) Start:	End:
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> _____ Signature </div> <div style="width: 45%;"> _____ Date </div> </div>	
PRINCIPAL CONTRACTOR I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental Representative of this and to provide documentary evidence of my actions or dealings with the Contractor.	
Name of Representative:	Name of the Principal Contractor's business:
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> _____ Signature </div> <div style="width: 45%;"> _____ Date </div> </div>	
Submit a completed and signed copy to Departmental Representative.	

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 For each year of the contract, the Contractor shall comply with the requirements of the environmental assessment of 2016 compared to 2018 (Appendix 9) or the latest in the use of his dredging equipment, and his related plant as the case may be. Contractor should, among others, ensure that his equipment and work methods comply with the requirements therein specified.
- .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 WASTE DISPOSAL

- .1 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers. Such materials should be managed in accordance with local authority requirements.

1.5 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to local authorities' emission requirements.
- .2 Prevent fine material and other extraneous materials from contaminating air beyond application area.
- .3 Maintain absorbents at all times on the site to be able to process quickly any 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 One (1) or several salvage drums with minimum storage capacity of 285 litres (75 US gallons)
 - .2 One hundred (100) absorbent pads of 15" x 19" x 12 oz.
 - .3 Fifteen (15) absorbent socks 3" x 48"
 - .4 Four (4) absorbent booms 5" x 10'
 - .5 Twenty (20) lb granular absorbent

- .6 One (1) drain cover
 - .7 One (1) shovel
 - .8 Disposal bags
 - .9 Epoxy sticks
 - .10 The Contractor should use the spill kit in the case of a hydrocarbon spill and in application of article 1.5.4 above.
- .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.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 MITIGATION MEASURES

- .1 Throughout the work, the Contractor shall implement rigorously all the requirements listed in this section.

3.2 DREDGING, RELEASE AND TRANSPORT OF SEDIMENTS

- .1 When barges are in use, avoid overfilling the barges to prevent liquid overflow and sediment spillage during transport to the offshore disposal site.
- .2 Avoid dredging, transporting and releasing sediment during unfavorable weather conditions (strong winds, storms, etc.) in order to prevent overflow and minimize sediment dispersion.
- .3 Where various debris are dredged, dispose of such materials on land at an authorized site.
- .4 Ascertain that the bottom of the barge is leak-proof during the transport of sediments.
- .5 Do not fill barges to capacity during inclement weather in order to prevent sediment overflow during transportation.
- .6 The Contractor must be able to demonstrate that his equipment was inspected and is free of invasive species.
- .7 The Contractor shall implement an Environmental Emergency Plan (EEP) to deal with spills involving oil products or other hazardous material. The EEP shall be available on site and be communicated to all employees.
- .8 Proceed to a preliminary inspection of equipment and regular check-up thereafter in order to ensure that the machinery is in good working order, clean and leak proof. In case of failure, replace the equipment or repair in appropriate locations identified in the Contractor's EEP.

- .9 Prefer floating equipment running on biodegradable oil specially designed for this type of equipment.
- .10 Have on hand and permanently a spill emergency kit both near the dredge and in the refueling areas. The kit shall include all the necessary material in sufficient quantity to recover all contaminants.
- .11 Do not dispose of volatile materials or other hazardous material by releasing such products into the aquatic environment.
- .12 Should a spill occur, respond immediately to contain the leak and confine the hazardous materials. The area affected by the spill should be cleaned and the contaminated material removed and disposed of at an authorised site.
- .13 Manage used oils and other contaminated waste in accordance with applicable regulations. This includes on-site storage, transportation and disposal.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Construction facilities.

1.2 PRECEDENCE

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

1.3 OFFICES

- .1 On demand, the Contractor shall provide to the CCG Technical Authority a reasonable space on the dredge to be used as the Engineer's office and all pertinent facilities must be available including electrical power and an Internet connection for the transfer of MS Office documents and photographs as large as 20 megabytes.

1.4 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force/employees in 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

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 11 11 – Description of Work
- .2 Section 01 35 43 – Environmental procedures

1.2 MEASUREMENT AND PAYMENT

- .1 Only material excavated above grade plane and within side slopes indicated or specified shall be measured.
- .2 In addition to the volume described above, the Contractor shall also receive a payment for the volume of material that corresponds to the surface (m²) of the dredging areas where the Contractor is able to dredge down to the required grades multiplied by 0.2 m.
- .3 The dredging areas, the quantity and the location of material to be dredged shall be determined from sonar bathymetric surveys executed by the CCG Technical Authority.
- .4 The volume of dredged material payable shall be calculated by the CCG Technical Authority based on volume differentials from bathymetric surveys taken before and after dredging operations and the computation method explained in the specifications (reference: Appendix 8).
- .5 The quantities indicated in the unit price table are estimative quantities and cannot be increased without the written authorization of the Departmental Representative.
- .6 The Contractor will receive monthly payments based on the volume of the material dredged during the month, in accordance with the evaluation of the CCG Technical Authority.
- .7 Depths shall be adjusted to chart datum using DGPS-OTF technology. The Contractor shall be responsible for obtaining, by his own means and at his own expense, all relevant data needed for execution of the work, including the positions (horizontal and vertical) of his dredging equipment and the water levels.
- .8 The cost of the annual mobilization and demobilization (in reference to the items Lump sum of the Combined price Form from Appendix 1 of the tender documents) shall be paid according to the following conditions:
 - .1 When the Contractor has fully mobilized his dredging equipment to the work site and dredged for three (3) consecutive days, the Department shall pay sixty percent (60%) of the mobilization and demobilization costs submitted in item Lump sum from Appendix 1 to the Combined Price Form, and acceptance form of the call for tender documents. This first payment shall not exceed twenty percent (20%) of the annual cost of the basic work. If so, the balance would be included in the last payment of the year.

.9 Obstructions

- .1 If the Contractor operates a clam shell dredge, and if it is required to dredge or recover material constituting a non-natural obstruction, such as debris, he shall recover and dispose of the said material as directed by the CCG Technical Authority and, if applicable, in accordance with the *Navigable Waters Protection Act* (NWPA), Transport Canada Department; this work will be paid at an hourly rate agreed to in advance by the Departmental Representative and the Contractor as indicated below.
 - .1 The hourly rate shall be determined by dividing the amount paid for the dredging executed during the month (excluding mobilization and demobilization costs) in which this specific situation was encountered, by the number of dredge operational hours (excluding stops to make repairs, bad weather conditions, etc.) during the above period. Payment for individual periods of less than one-half hour shall not be considered.
- .2 If applicable, the Contractor shall obtain written authorization from the Departmental Representative before removing and disposing any non- natural obstruction.
- .10 All the payments relative to the dredging works themselves will include disposal/piling.
- .11 There shall be no additional payment for downtime and for delays caused by Contractor, vessel traffic or any other person or organisation.
- .12 The Department shall not pay for materials that the Contractor has dredged beyond 0.2 m below the grades required, or materials dredged below grade and outside the dredging areas.
- .13 The Contractor shall be held liable for any expense incurred by himself and/or his subcontractors relating to:
 - .1 towing the equipment to and from the dredging area;
 - .2 or for any loss or damage caused by storms, fire, collision or otherwise, either in transit to or from locations where dredging is to be performed or to or from the disposal areas, or during the period the plant is employed by the Department Representative;
 - .3 or for any delays or accidents which may be due to debris encountered or other works being carried out concurrently in the same area, either by the Departmental Representative or other Departments, Corporations, individuals or fleets, etc.
 - .4 or for the delays, damage or accidents which could arise during land management activities.

1.3 DEFINITIONS

- .1 Dredging: excavating, transporting and disposing of underwater materials.
- .2 Class A material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes 4.0m³ or more.
- .3 Class B material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay, sand, gumbo, boulders, hardpan and debris of individual volumes less than 4.0m³.

- .4 Debris: pieces of wood, wire rope, scrap steel, pieces of concrete and other waste materials.
- .5 Grade: plane above which all material is to be dredged.
- .6 Dredging area: surface (m^2) covered by material to be dredged at grade depth.
- .7 Complementary volume: Volume (m^3) obtained by multiplying the area by 0.2 m.
- .8 Channel side limit: vertical plane longitudinally perpendicular to the grade.
- .9 Channel 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 1:1 ratio (45°).
- .10 Dredging day: a 24-hour period during which the Contractor executes quantitatively and correctly dredging work in accordance with his schedule.
- .11 Trailing Suction Hopper-Dredge (TSHD): single-hull self-propelled ship designed to suction marine shoals while moving and store that material in its hopper. The TSHD shall be equipped with doors in the hull or could have a split hull to unload the spoils. It may be fitted with either one or two trailing drag arms. The volume of hull should be of a minimum of 750 m^3 (V_{Cy}).
- .12 GPS-OTF Technology: leading-edge, real-time kinetic positioning techniques that provide centimetric precision for real-time compensation of water level variations (ref. appendix 6).
- .13 Channel volume (V_{ch}): volume of material to be dredged as calculated by the CCG Technical Authority from bathymetric data, to a specified depth.
- .14 Company volume (V_{Cy}): volume of dredged material as estimated and reported by the dredging company at the time of the dredging work (reference: item 3.1.20, this section).
- .15 Deepening dredging: Dredging of stable material in place for many years. This type of dredging is generally executed at a unit rate per m^3 .
- .16 Maintenance dredging: Dredging of non-stable material (or recent sedimentation). This type of dredging is almost always given at a cubic meter unit rate.
- .17 Dredging awarded at a per-cubic-metre (m^3) and/or hourly (h) unit rate: work measurement units determined in the dredging contracts.
- .18 Mobilization and demobilization of dredging equipment: All actions and works carried out by the Contractor related mainly to his dredging equipment, that are needed by the Contractor, to bring his equipment to the work site and keep it operational until the dredging work is completed to the satisfaction of the CCG Technical Authority and ensure its safe return (next destination) upon work completion.
- .19 Estimated quantity (evaluation): volume of material to be dredged, including the complementary volume.
- .20 Maintained sections: the maintained sections of the shipping channel are shown on the nautical charts by various straight dotted lines (very often parallel) between which no depth is indicated, with the exception of the indication of the depth maintained by actual dredging of the area.
- .21 Partial dumping areas: Small dumping area located inside a bigger dumping area.

- .22 Chart datum: A reference plane settled by the Canadian Hydrographic Services sufficiently low that the tide (or water level in non-tidal area) shall seldom fall below it.
- .23 Undesirable shoal: All located shoals that, according to CCG Technical Authority, restrict the commercial navigation on the Seaway, or which hamper or could hamper commercial navigation.
- .24 CCG Technical Authority: The monitoring and maintenance services of the seaway are provided by the Canadian Coast Guard (CCG) within the Waterways Management program. The division of the Waterways Management Program Service (WMPS) is part of the Canadian Coast Guard Programs and acts as the Technical Authority in the wake of this contract.
- .25 Departmental Representative: the Departmental Representative acts as the Technical authority. He is appointed at the time of the contract award. He performs the following tasks: is responsible for any matter concerning the technical aspects of the work under contract, is authorized to issue notices, instructions and changes within the scope of work relevant to the contract, he accepts on behalf of Canada any notice, order or other communication from the Contractor related to the work within a reasonable time, he reviews and responds to Contractor's submissions in accordance with the contract requirements. He has no authority to authorize changes to the Contract terms and conditions.

1.4 REGULATORY REQUIREMENTS

- .1 The Contractor shall ensure that all his employees, both actual and de facto, including his subcontractors, honour all third-party rights and privileges and comply with all federal, provincial and municipal laws, regulations and orders.
- .2 The Contractor shall mark floating equipment with lights in accordance with the *Collision Regulations and Navigation Safety Regulations on the Great Lakes Basin*.

1.5 SCHEDULING

- .1 Each year and for each dredging period, the Contractor shall submit to the CCG Technical Authority, and within six (6) weeks before the beginning of dredging work, his schedule for approval.
- .2 Each year, for each of the dredging periods and at least two (2) weeks before the start of the work, the Contractor shall confirm in writing to the CCG Technical Authority for approval his detailed work plan by sector.
- .3 The work schedules shall include the average daily quantities (m^3 ; V_ch) that the Contractor expects to dredge, for each year, based on the sections and grouping sectors, and the quantities set out in appendices 1 to 4 and 7. They shall also indicate the date of arrival of the plant at the worksite, the duration of work and the start and end dates of dredging operations.
- .4 These schedules shall follow the annual work periods indicated in the contract and be realistic.
- .5 To ensure a good work progression, any requested change subsequent to the approval of said schedules of work shall be submitted in writing to the Departmental Representative for approval.

- .6 Changes to the work schedule has an impact on bathymetric surveys. It is possible that the Contractor performs the work with less recent surveys if the CCG Technical Authority has no time to carry out new pre-dredging surveys; this is likely to have an impact on the assessment of sediment movement, the shoals being relatively unstable (ref. Art. 1.11.5).
- .7 The work shall be completed within the timeframes set out in the contract documents.
- .8 The Contractor shall adhere to the work schedule that will be approved, and take immediate action to correct any delays that might occur. If in the course of the work the dredging equipment used or part thereof is deemed to be ineffective or inadequate, the Departmental Representative may require that the Contractor supply other more appropriate dredging equipment or part thereof to continue the work.

1.6 TEMPORARY ABSENCE FROM WORKSITE

- .1 See Contracting Documents (CS07)

1.7 LOCATION OF WORK

- .1 Approximate location of material to be dredged, for each year, is shown in Appendices 1 and 4. The exact locations and volumes of material to be dredged in each previously indicated dredging sector (subdivision) shall be annually provided by the CCG Technical Authority according to work progression.
- .2 Locations of open-water disposal areas M-27, T-11, X-04 Part, X-02 and X-03 are shown in Appendix 5. Before beginning the work, the Contractor will be notified of the exact disposal locations.

1.8 INTERFERENCE TO NAVIGATION

- .1 The Contractor shall obtain on an annual basis all information regarding vessel movements and seasonal activities in area affected by dredging operations during both dredging periods and in areas indicated in the Specification. Plan and execute work in manner that shall not interfere with the users of the channel.
- .2 The Contractor shall be fully responsible for loss of time that may be result from river navigation for whatever reason. The Contractor shall also be responsible for any loss of equipment, material or any other cost incurred during and following the work that the Contractor could do himself or have done.
- .3 As soon as possible the Contractor shall notify the CCG Technical Authority of any special relocation of dredging equipment (for refueling, repair, etc.) that could affect the work schedule.
- .4 The Contractor shall continuously and accurately report all dredge movements to Marine Communications and Traffic Services in Quebec City (MCTS Québec City).
- .5 Should any equipment belonging to the Contractor cause interference with navigation for any reason, the Contractor shall?
 - .1 Notify the Marine Communications and Traffic Services (MCTS) and the CCG Technical Authority.

- .2 Immediately remove the equipment at his own expense.
- .6 Should the Contractor fail to comply with the above requirement, removal of the obstacle would be undertaken by the CCG Technical Authority, at the Contractor's expense.

1.9 CHART DATUM AND DREDGE GRADES

- .1 Depths and grades used in this specification and contract drawings are in metres referred to Chart datum.

1.10 FLOATING EQUIPMENT

- .1 The Contractor shall provide and adequately maintain all of his dredging equipment (reference: item 2.1 below) ready to dredge, load, transport and dispose of all of the material set out in the Specification, taking into account any swell and excess material that may be dredged.
- .2 All equipment required to perform the dredging contract shall be in good working condition at all times and be used in accordance with the requirements of the most recent environmental screening (Ref.: Appendix 9) as well as to the CCG Technical Authority's satisfaction.

1.11 INSPECTION AND KNOWLEDGE OF SITE

- .1 Before submitting his bid, the Contractor shall obtain all necessary information regarding the extent and nature of work and conditions affecting the execution of this work, rather the knowledge of the St. Lawrence Seaway and its particularities.
- .2 By submitting his tender, the Contractor acknowledges having assessed the impacts on the work related to the very nature and location of the work itself, the geographic location, weather or climatic conditions in particular, of water agitation, of tide levels, of the proper conditions associated to the location of work, of the nature of underwater soil and riverbed, of the nature of the material to be dredged, of the sedimentary phenomena prevailing in the St-Lawrence River, and of all other circumstances that could affect the execution of the contract and the value of the work.

1.12 SITE INFORMATION

- .1 The Contractor shall ensure that it is fully familiar with potential inclement weather and sea conditions in the working areas.
- .2 For guidance only and based on previous experience, the material to be dredged should consist mainly of sand; small volumes of gravel, clay and rocks (class B material) could also be found.
- .3 Between Trois-Rivières and Batiscan, the semi-diurnal tide range can reach 2.8 m and the water level can be between 0.0 to 4.1 m (CD) during both work periods. In the Cap-Santé Traverse, the semi-diurnal tide range can reach 4.9 m and the water level can be between 0.6 and 5.4 m. In the North Traverse sector, the semi-diurnal tide range can vary from 2.6 m to 6.5 m, and the tides can rise as much as 6.5 m. Then the water level can range from 0.0 to 6.5 m, and the current can reach 4 knots.

- .4 For each year, the approximate location of material to be dredged and the grade depths are indicated on Appendices 1 to 4 and 7 (according to the latest bathymetry). Previously to bid submissions, Tenderers requiring additional explanations should contact the Contracting Authority.
- .5 The shoals to be dredged are relatively unstable. When doing the work, the shoals to be dredged could move (usually downstream); the longer the delay between the bathymetric survey and the beginning of the work, the larger could be the displacement. The Contractor shall consider this impact.

1.13 SURVEYS AND ACCEPTANCE OF WORK

- .1 The Sonar Bathymetric surveys will be done by the Canadian Hydrographic Service of Fisheries and Oceans Canada, on behalf of the CCG Technical Authority.
- .2 The bathymetric surveys will be done as soon as the CCG (DFO) sounding units are available and weather is favorable. These sounding units are operational during working hours from Monday to Friday each week. Exceptionally, at the end of each dredging period, one of these units may be available on Saturday.
- .3 The areas to be dredged and the volume will be annually determined according to the pre-dredging survey. The CCG Technical Authority reserves the right to modify at any time the dredging limits described in this Specifications.
- .4 The CCG Technical Authority will supply Contractor with the basic data required for the work in ASCII digital file format (ref. Appendix 8) (pre- and post-dredging bathymetric surveys, to be completed according to the schedule of work); the said computer files will be available for the Contractor at the Fisheries and Oceans Canada FTP site. The FTP address (with password) will be provided to the Contractor at the beginning of work. The Contractor shall have the appropriate means of communication to connect to this FTP site and retrieve data. This data collection will be done at the Contractor's expense, by his own means and during the working hours of the Canadian Coast Guard Seaway Management Unit (from 8:00 to 16:00).
- .5 For each year, acceptance of work shall be progressive and based on the subdivision of the area or dredging sector consolidation to be dredged as determined by the CCG Technical Authority.
- .6 The Contractor shall provide the CCG Technical Authority by phone or e-mail, at least three (3) days in advance, with the date and time of completion of each subdivision or dredging sector consolidation.
- .7 The post-dredge survey of each subdivision or dredging sector consolidation will be performed as soon as possible after the Contractor has notified the end of the work. This survey will be used to check whether the dredging works were executed according to specifications, and to accept or not the work.
- .8 The Contractor shall re-dredge to remove, to the satisfaction of the CCG Technical Authority, all material found to be above grade within dredge subdivisions or consolidation of dredged areas based on post-dredge surveys.

- .9 For each year, if necessary and at own expense, the CCG Technical Authority will do up to two (2) post-dredging surveys of a given subdivision or consolidation of dredged areas. If additional surveys are required owing to non-compliance, the Contractor shall pay part of the costs related to said work at a nominal rate of \$1,300.00/hour. The hours charged will include the time for both the survey work per se and the transport of the survey equipment. For each survey, a minimum of \$1,300.00 will be debited from the Contractor. These amounts will be deducted from the last monthly payment of the current year.

1.14 SYSTEM OF UNITS

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

1.15 STAFF

- .1 See requirements in the Tender documents.

Part 2 Equipment

2.1 DREDGING EQUIPMENT AND POSITIONING

- .1 In the North Traverse, between buoys K136 and K91, the dredging shall be executed with a trailing suction hopper dredge (see definition at item 1.3.11). Dredging between Bécancour and Batiscan, the one at Lac St. Pierre and in Cap-Santé Traverse may be executed with a trailing suction hopper dredge or a clam shell dredge.
- .2 The dredging equipment (consisting of one or more dredges) shall, by its size, its characteristics and its draft, be adequate to perform the work. Among others, the hold of the trailing suction hopper dredge shall have a minimum storage capacity of 750 m³ (V_Cie) sediments.
- .3 All dredging equipment should have an Automatic Identification System (AIS).
- .4 During the execution of his contract, the Contractor shall provide and update the list of the positioning systems (horizontal and vertical) that he intends to use for his dredge positioning.

Part 3 Execution

3.1 GENERAL

- .1 Before starting work, the Contractor must obtain written approval from the CCG Technical Authority for the work schedules.
- .2 The Contractor shall execute the work from the upstream limit to the downstream limit as directed by the CCG Technical Authority.
- .3 By way of indication, all subdivisions and dredging sector groupings represent shoals spread over an area of approximately 150,000 m². The height of these shoals could

represent heights approximately 2.50 m for the North Traverse sector and 1.50 m for other sectors. At the outset, the dredging levels in the different sectors are as follows:

<u>Dredging Sectors</u>	<u>Grade depths (CD)</u>
D-02 to D-16	11.00 m to 12.50 m
E-06 av to E-12	10.90 m to 12.50 m
F-27	11.00 m to 11.60 m
G-04 to G-15	12.80 m to 14.80 m

- .4 The side limits of the channel are depicted as vertical planes perpendicular to the dredge level and parallel to the channel. The outer side limits of these corridors are depicted as 45° (or 1:1) side slopes into which the material is to be dredged.
- .5 The Contractor shall adhere to dredging levels stipulated by the CCG Technical Authority so as to minimize excavation of material in excess of such levels.
- .6 While dredging, the Contractor shall navigate using a computerized system capable of accurately displaying on a monitor the position of the dredge and the relevant bathymetric data (material to be dredged).
- .7 The horizontal limits of the sectors to be dredged will be provided by the CCG Technical Authority.
- .8 The Contractor is responsible to provide, by own means and at own expense, the horizontal and vertical positioning of his dredge. By way of indication, bidders will find, in Appendix 6, the information on the different horizontal and vertical reference systems, allowing them to obtain, at their expense and risk the positioning of their dredging equipment.
- .9 The CCG Technical Authority, at their convenience, may check the accuracy of any positioning system used by the Contractor.
- .10 The Contractor shall be solely responsible for all primary, intermediate or secondary points (X, Y), (X, Y, Z) and (Lat, Long) he uses, whether determined by his own means or provided by the CCG Technical Authority or any other party and at own risk.
- .11 The dredge and the additional equipment shall be kept in good repair and maintained in proper working order while used on the contract.
- .12 For each year and period, the Contractor shall not be allowed to proceed to the demobilization only when authorized by the CCG Technical Authority; permission will be given after final acceptance of work for each period of each year.
- .13 Buoys: The Contractor shall supply, place in position (moor), and maintain at 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 his own expense to the satisfaction of the CCG Technical Authority. 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.

- .14 Navigation buoys: Requests to relocate or remove one or several main buoys must be made to the CCG Technical Authority at least five (5) business days in advance. The CCG Technical Authority reserves the right to determine whether such requests by the Contractor are warranted.
- .15 The Contractor shall comply with the *Collision Regulations* and the *Navigation Safety Regulations on the Great Lakes Basin*. All equipment required for the work shall be properly identified and/or visible at all times.
- .16 Dredge material down to the grade depths indicated in item 3.1.3, for which the volumes are indicated in Appendix 7, and the approximate location are shown on Appendices 1 to 4.
- .17 Any and all dredging by the Contractor beyond these limits shall be the Contractor's responsibility and at his expense. Thus, any material dredged above the prescribed dredge grades will not be taken into account and/or paid.
- .18 Open-water disposal will only be allowed in partial disposal areas designated by the CCG Technical Authority.
- .19 The Contractor shall mark floating equipment with lights in accordance with International Rules of Road, and maintain radio watch on board.
- .20 The Contractor shall report digitally to CCG Technical Authority, in a form provided for that purpose, the following:
 - .1 The start and end times of all dredging periods;
 - .2 The start and end times of all transport periods of dredged material to disposal areas;
 - .3 The volumes (V_Cie) of material transported and disposed of;
 - .4 The times when material is disposed of;
 - .5 The times and reasons for all dredge equipment shutdown periods, and
 - .6 The time of any other event, etc.

3.2 CLASS A MATERIAL

- .1 The CCG Technical Authority expects that no class A material will be found in the areas to be dredged as part of the work described in the Specification. Should any be encountered, the Contractor would have to remove the overlying material (class B).
- .2 If any class A material is encountered, the CCG Technical Authority shall assess the additional work, and on CCG Technical Authority's request, the Contractor shall supply the necessary and appropriate dredging equipment to dredge, load, transport and dispose of the said class A material to the satisfaction of the CCG Technical Authority. The cost of the supplementary work (dredging class A material) shall be determined in advance by the Contractor and the Departmental Representative, and, if applicable, will be the subject to contract amendment.

3.3 OPEN-WATER DISPOSAL OF DREDGED MATERIAL

- .1 All material dredged (except some debris, if any) on this project shall be dumped in the open-water disposal areas indicated and described in Appendix 5. Each year, the CCG Technical Authority will indicate to the Contractor the exact location where the material shall be disposed of. The Contractor shall provide to the CCG Technical Authority his annual disposal schedule, including the coordinate details of all anticipated loads. Deposits will cover all patchy surfaces defined.
- .2 Notwithstanding the above article, terrestrial sediment management could be considered subject to the approval of the CCG Technical Authority and the Departmental Representative. Please refer to clause 3.4 in this section.
- .3 The disposal of material in the open-water disposal areas will be monitored by the CCG Technical Authority. Any material dumped outside the limits shall be re-dredged by the Contractor and/or his subcontractors at his own expense and dumped in the right disposal areas.
- .4 The Contractor shall ensure the accessibility of his facilities to all open-water disposal areas.
- .5 Open-water disposal must be mass deposited to limit sediment resuspension.
- .6 The minimum depths of water (Chart Datum) to be maintained over the disposal areas shall be as follows:

<u>Location</u>	<u>Depths (CD)</u>
North Yamachiche (S-17)	2.4 m
St. Pierre les Becquets (T-11)	3.5 m
Donnacona (X-04)	7.5 m
Brûlé (X-02)	3.9 m
Sault au Cochon (X-03)	4.6 m

- .7 The Contractor may dump a maximum annual volume of 10 000 m³ (V_Cie) in the open-water disposal area X-02. This disposal mound is accessible only at high tide.
- .8 The Contractor may dump in mound M-27 only the sediment of sector D-02 from the Lake St-Pierre reach.
- .9 Sediments of Lac St-Pierre may be transported in the T-11 dump site if a suction dredge is used because the depth of the S-17 deposit is below 3.0 m.
- .10 With the exception of S-17, a minimum of sediment shall be placed in the open-water disposal area to preserve environmental rights. To do so, the minimum will be 10% of the total volume (m³) per area per dredging period planned in appendix 7.

3.4 LAND MANAGEMENT OF DREDGED SEDIMENT

- .1 If the Contractor wishes, including but not limited to, to manage sediments on land for a specific sector, he will have to bear all the steps to carry out his sediment management activities on land and reclaim them; this includes technical studies, preliminary feasibility work and design, property acquisition and agreements, and obtaining at his own expense

all permits and certificates of approval required to receive and manage such materials, at the federal, provincial and municipal levels of government.

- .2 The Contractor does not guarantee the quality of material to be dredged. The Contractor shall proceed with his own verifications about that quality, and shall control activities during the dredging process, transportation and disposal to ensure that the quality of material is not altered during transportation or during manipulation until definitive destination.
- .3 The Contractor shall control his dredging operations to respect the required dredging levels and not produce unduly over-dredging.
- .4 The Contractor shall submit a sediment valuation proposal, including any supporting studies, permits and environmental authorisations required, at least three (3) months before the start of dredging.
- .5 See item 3.3.9.
- .6 The CCG Technical Authority reserves the right to reject any proposal that does not meet the environmental and legal requirements governing the valuation of dredged sediment, and any proposal that may be deemed to have a negative impact on project costs or the dredging operations (duration of the work, resources, etc.).
- .7 The Contractor shall provide a document duly signed by his representative, also by the operator of the sediment recovery site and the owner of that site, indemnifying and saving the Contractor harmless against any claims, demands, losses, costs, damages, actions, suits that may result from deposit on this site, from the valuation as well as the subsequent use of these sediments.

3.5 RE-DREDGING

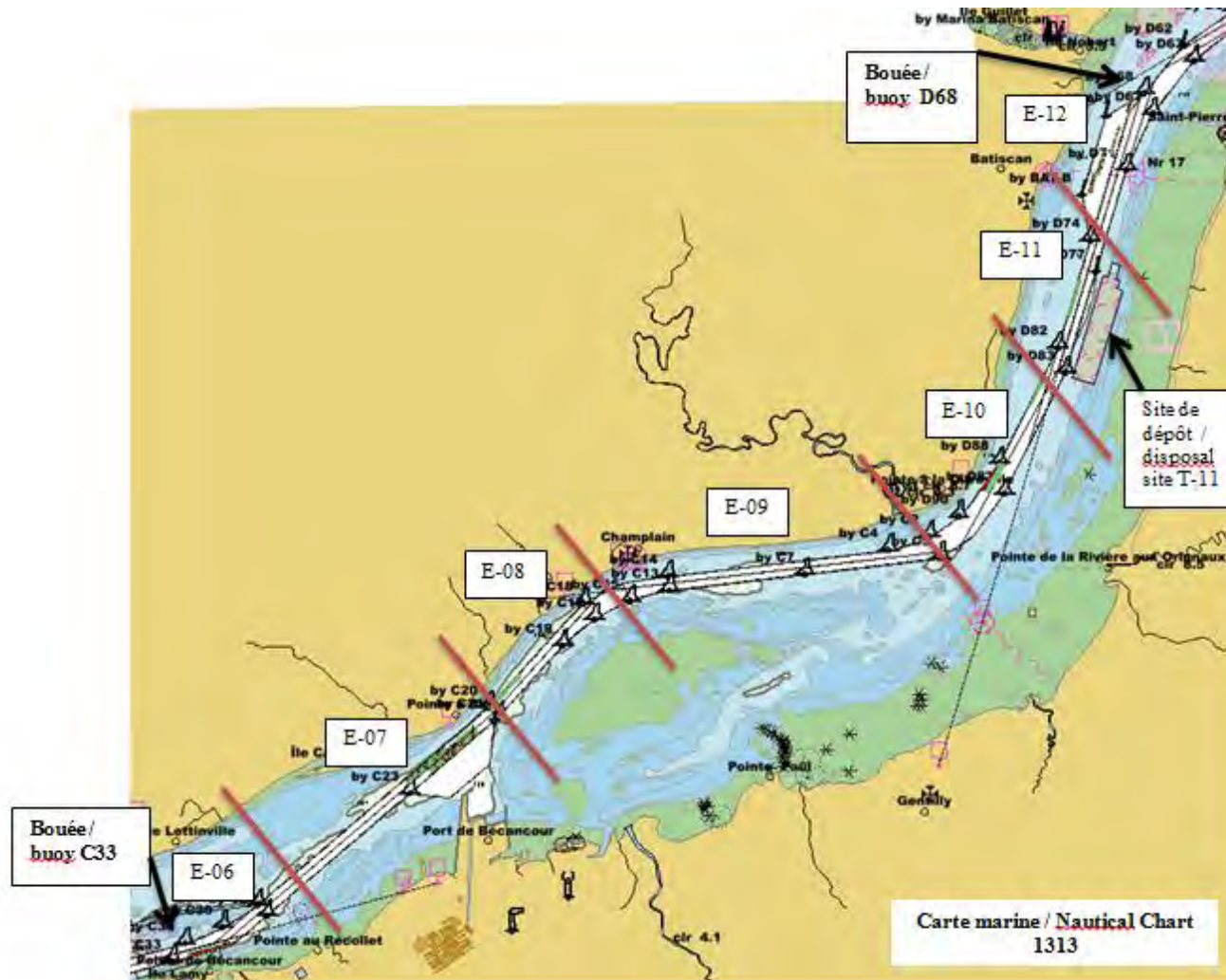
- .1 During or immediately after a dredging period, the CCG Technical Authority may ask the Contractor to dredge undesirable shoals located in an already dredged area. The volume of that material that may thus be dredged shall be added to the payable quantities.

3.6 CO-OPERATION WITH AND ASSISTANCE TO CCG TECHNICAL AUTHORITY

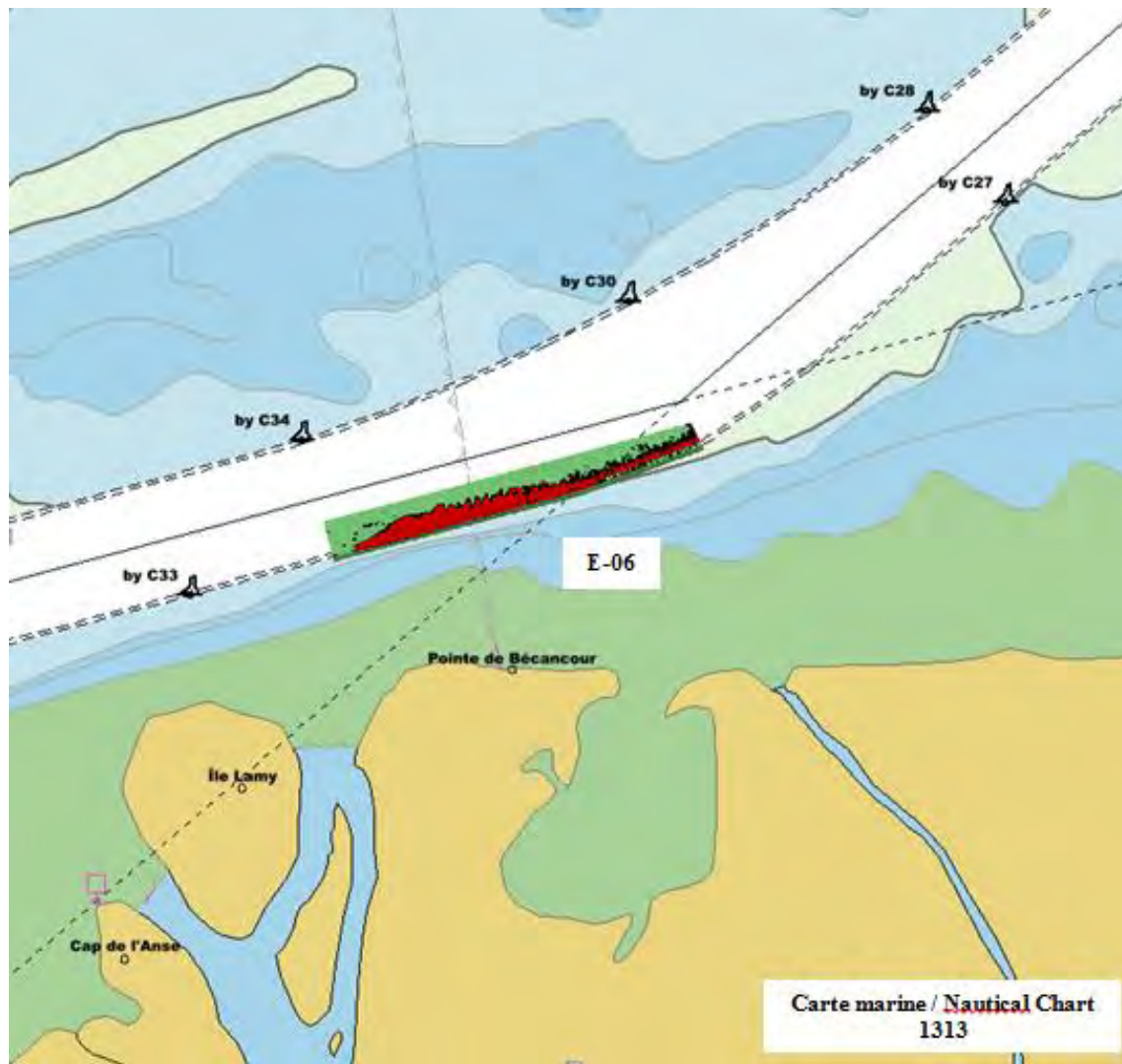
- .1 The Contractor shall cooperate with the CCG Technical Authority on inspection of work and provide assistance as requested.
- .2 The Contractor shall supply necessary and satisfactory marine transportation to the CCG Technical Authority from a local wharf to the dredge for site inspections or for such other reasons the CCG Technical Authority may consider appropriate.
- .3 The Contractor shall commit also to supply wharf facilities and to obtain the required safe haven (on land and water, as applicable) for his plant during the period of the work at his own expense.

END OF SECTION

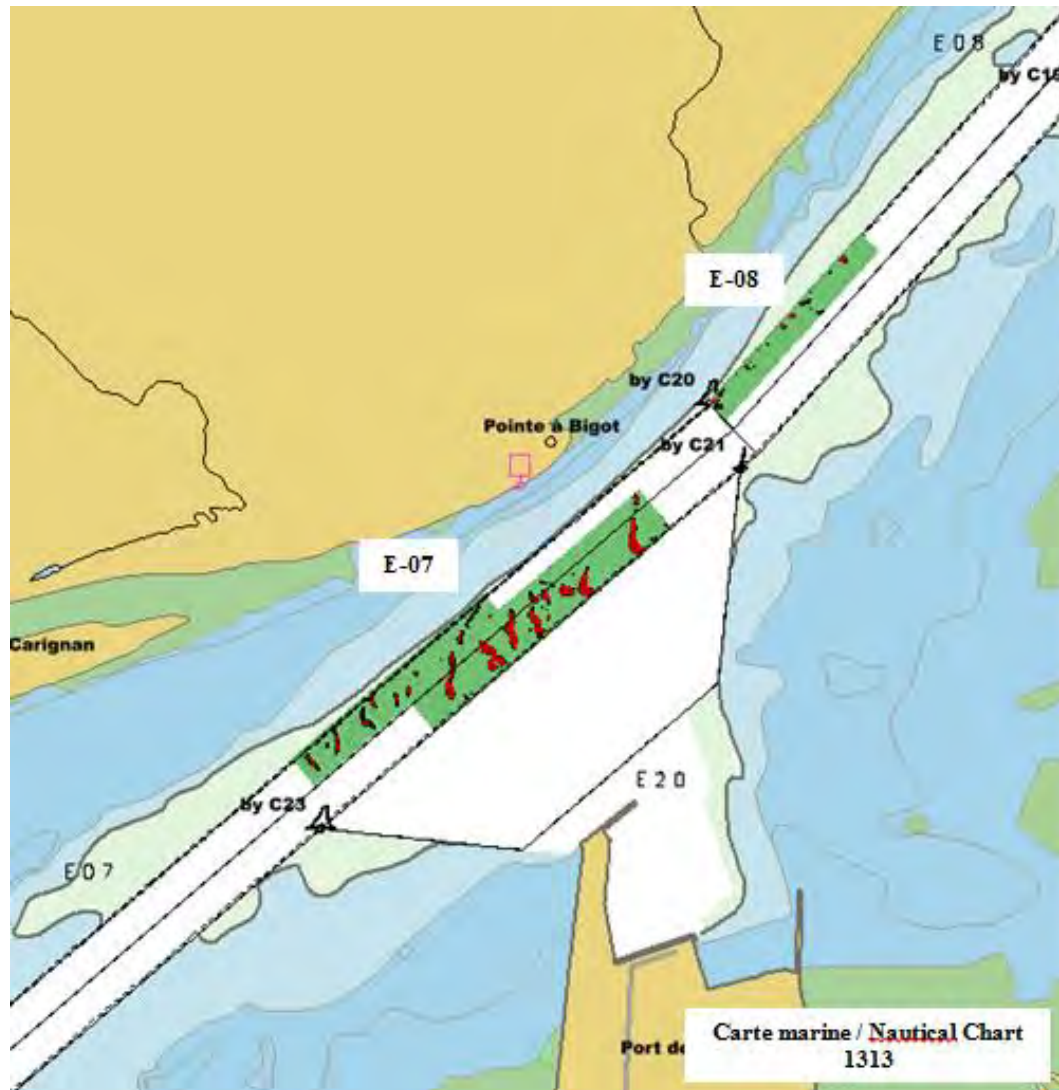
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Bécancour à / to Batiscan
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



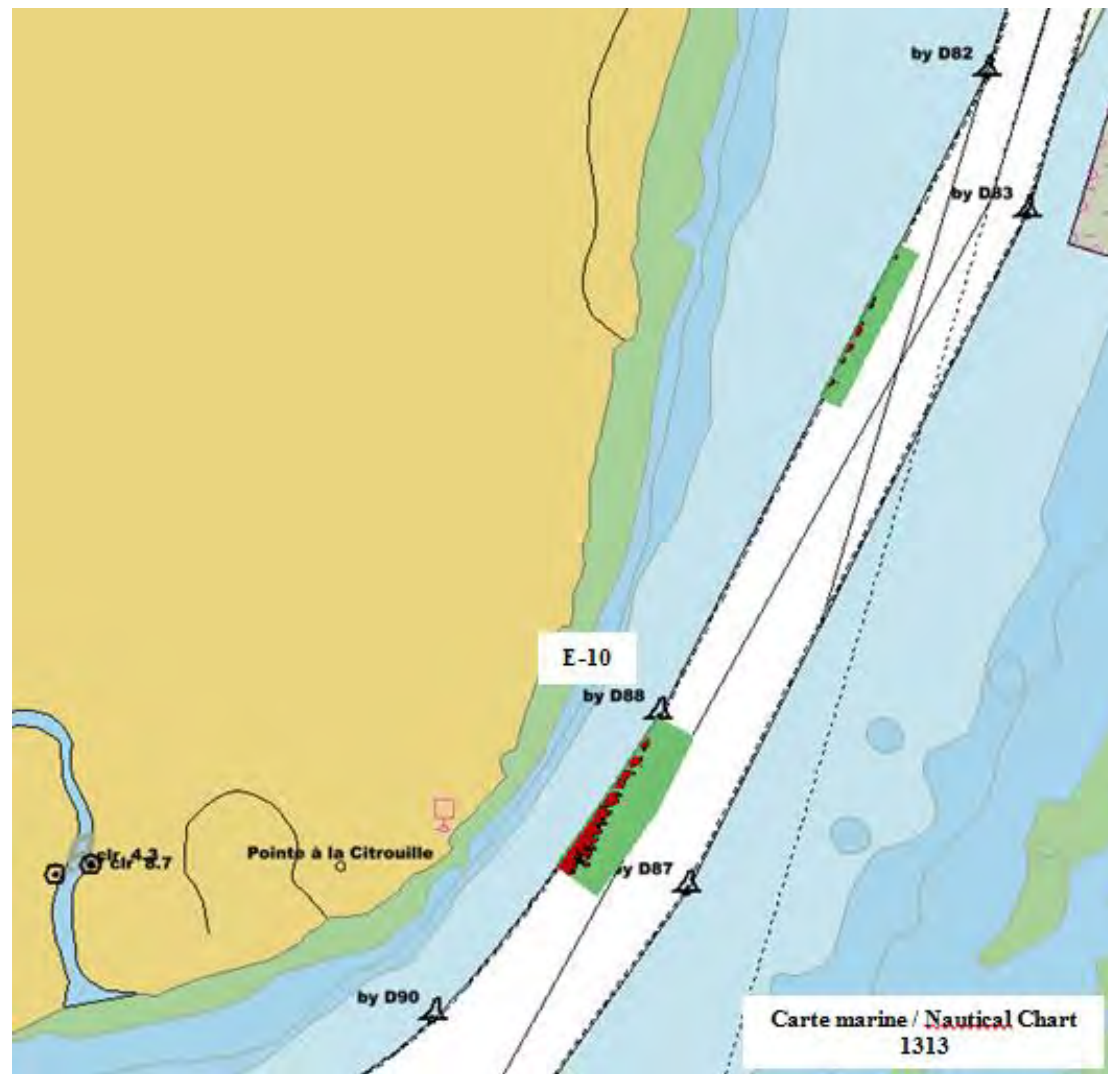
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Bécancour à / to Batiscan
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



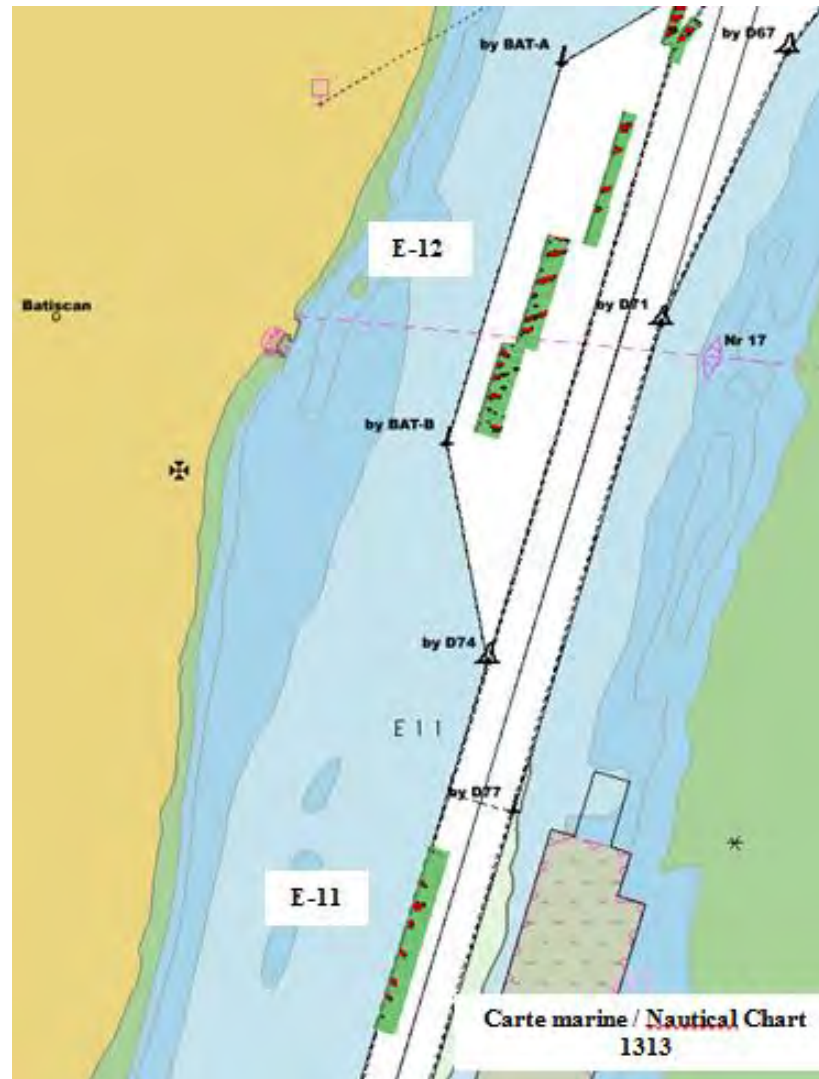
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Bécancour à / to Batiscan
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



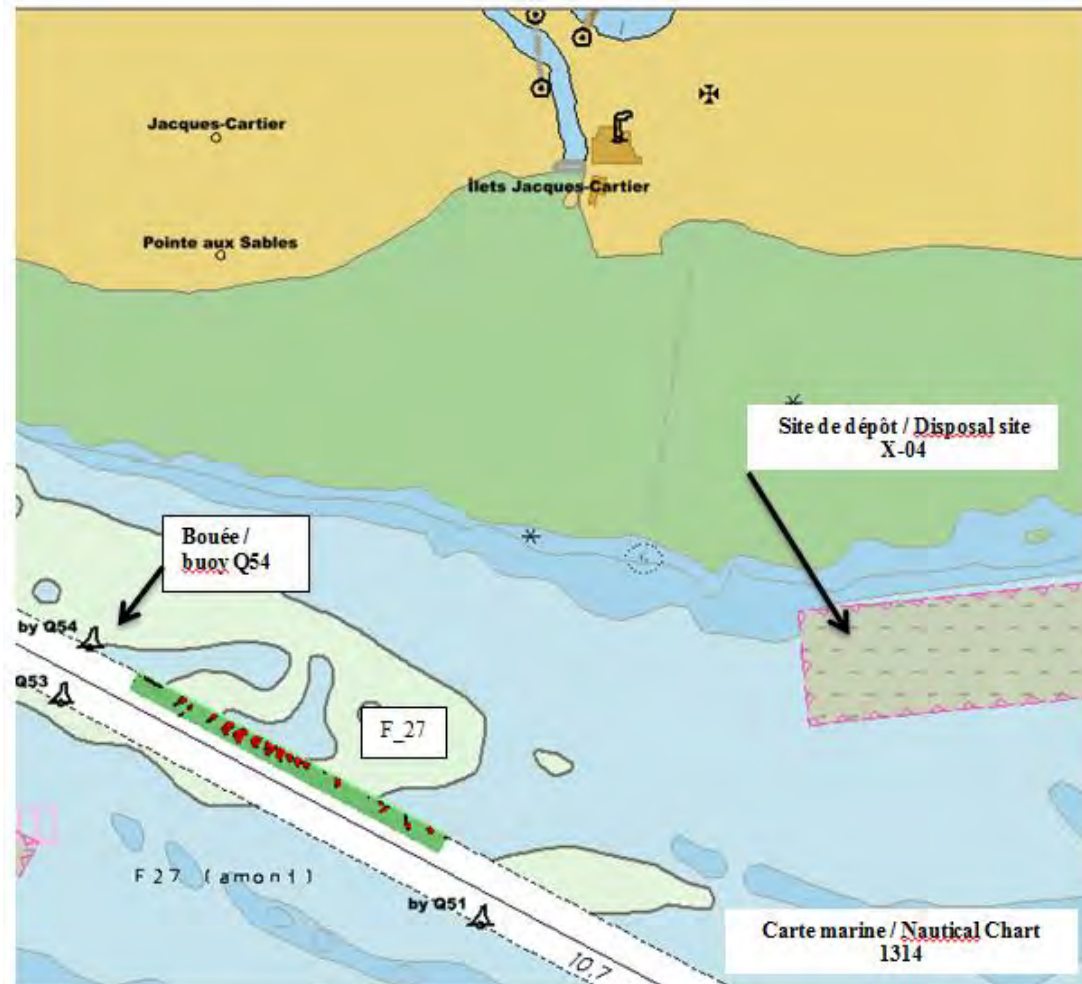
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Bécancour à / to Batiscan
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



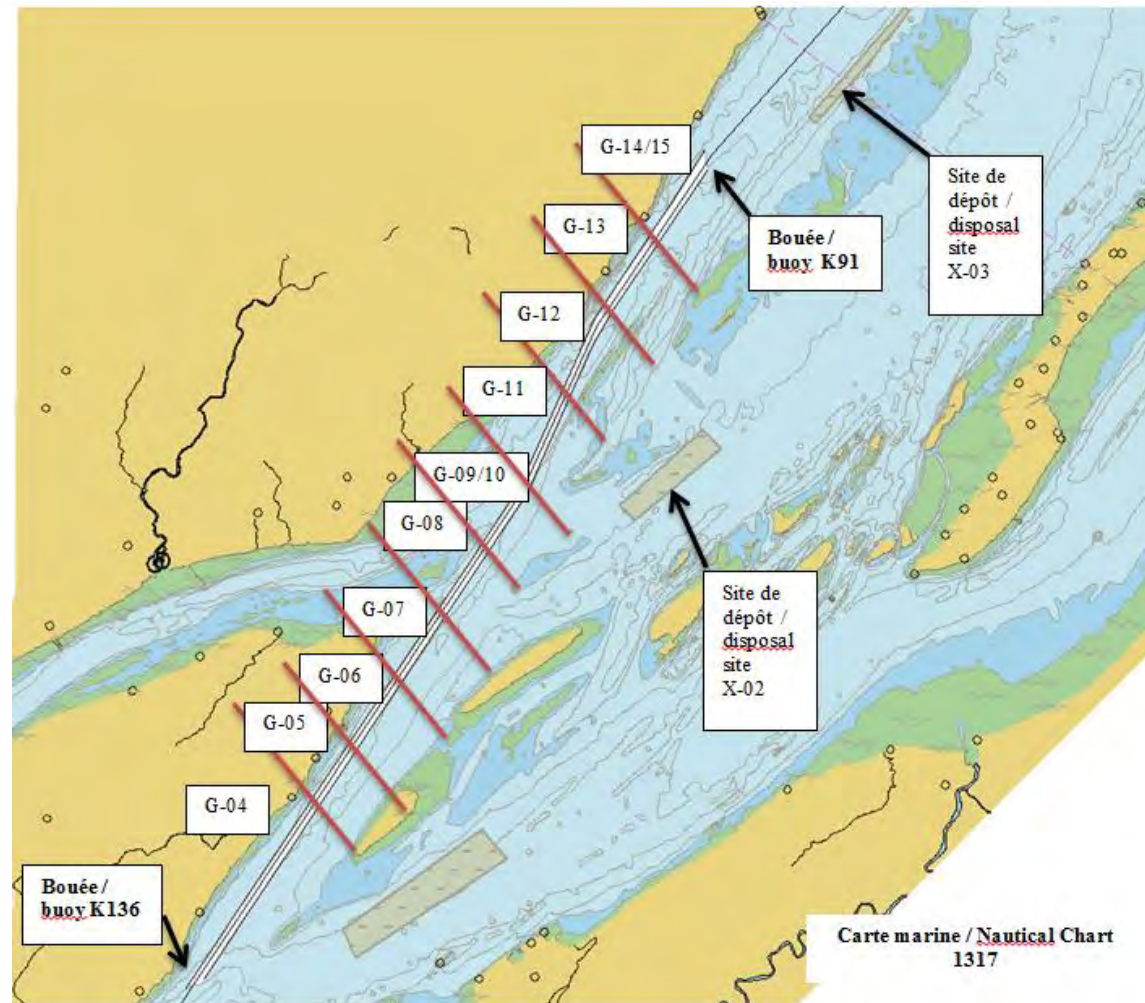
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Bécancour à / to Batiscan
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse Cap-Santé / Cap-Santé Traverse
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



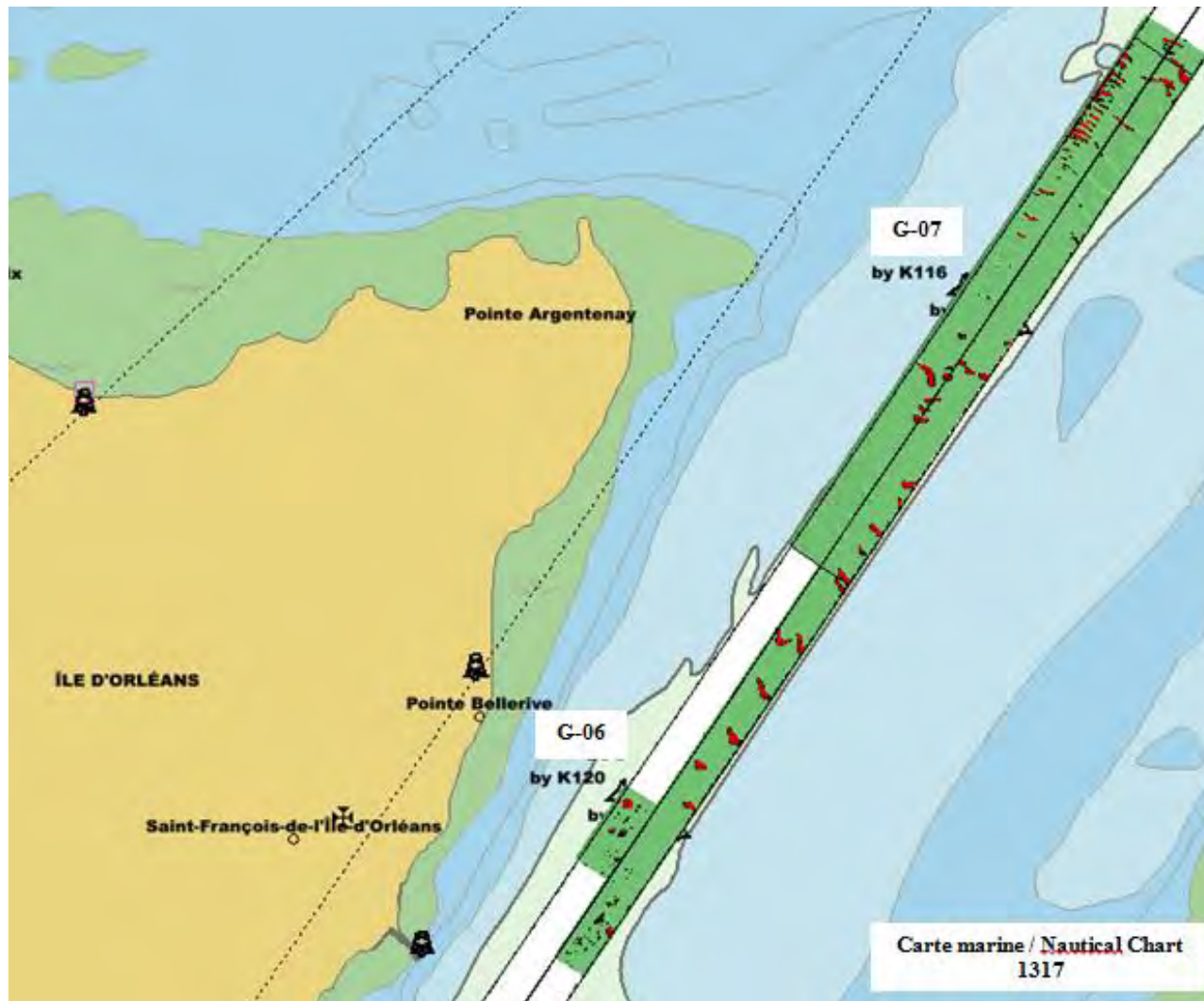
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



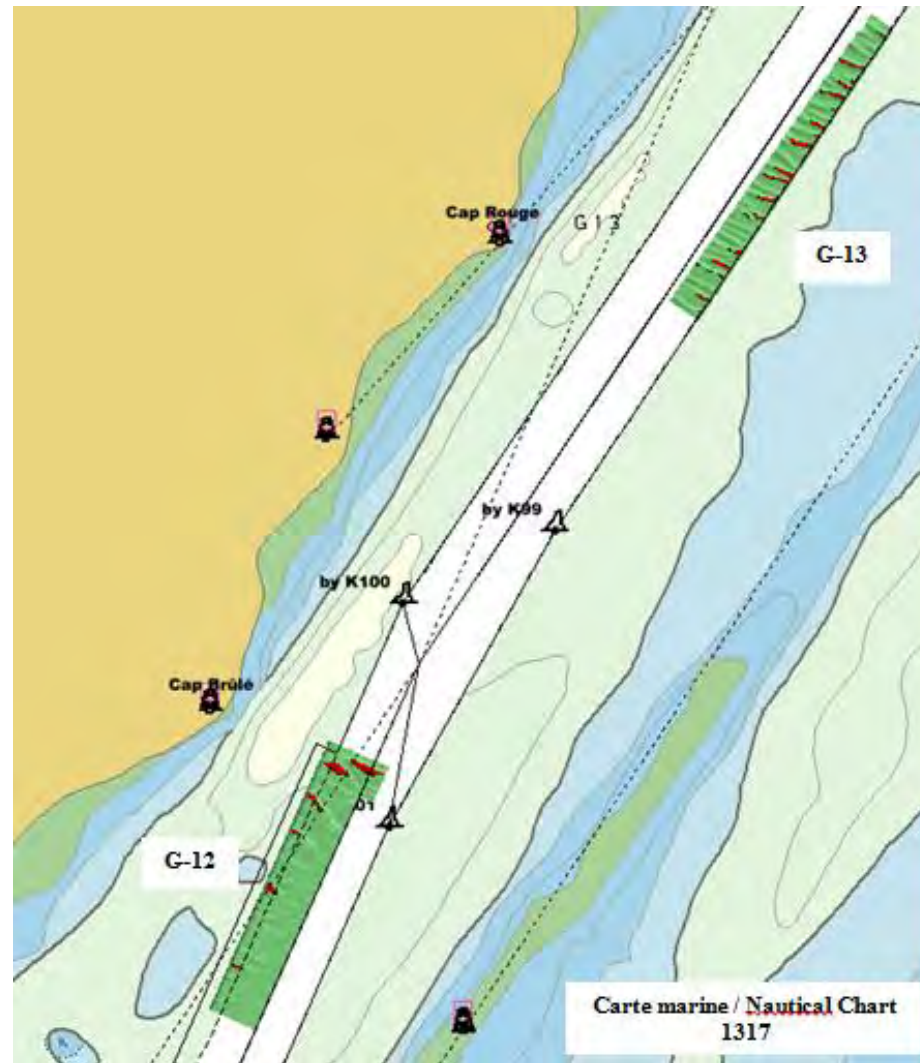
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



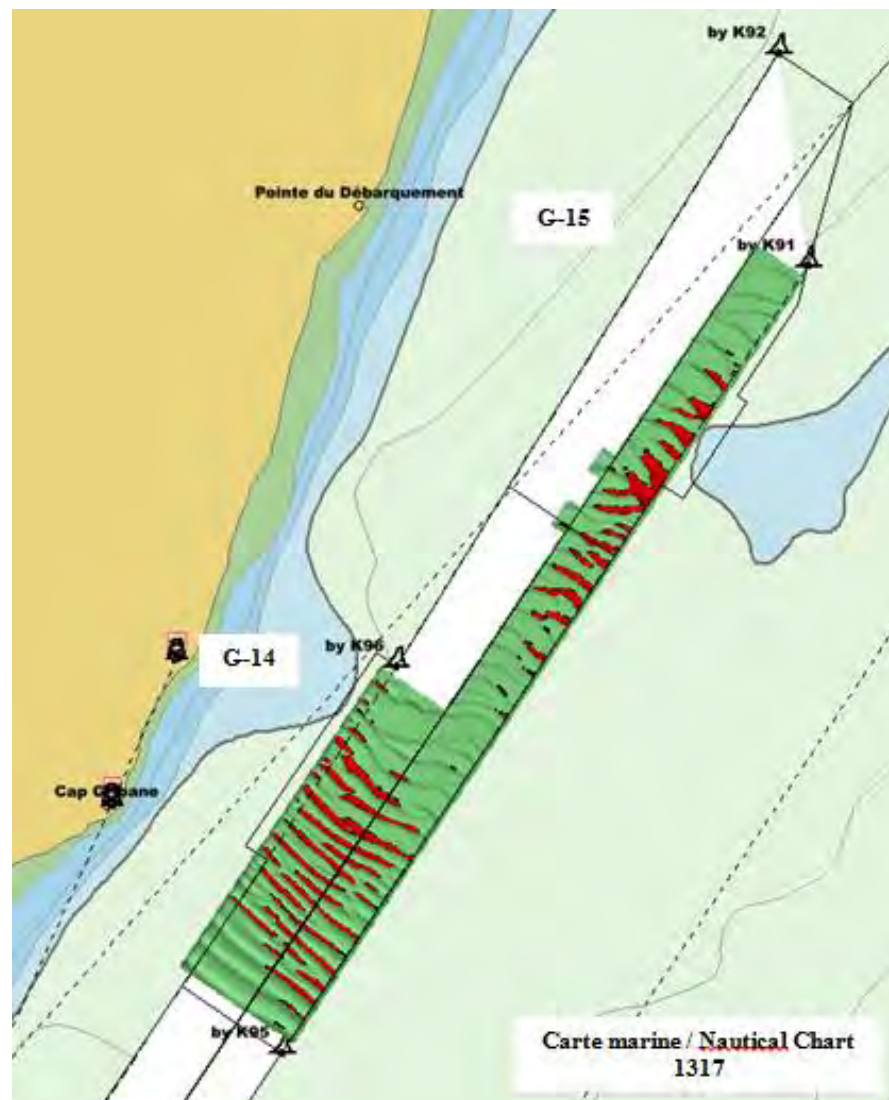
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



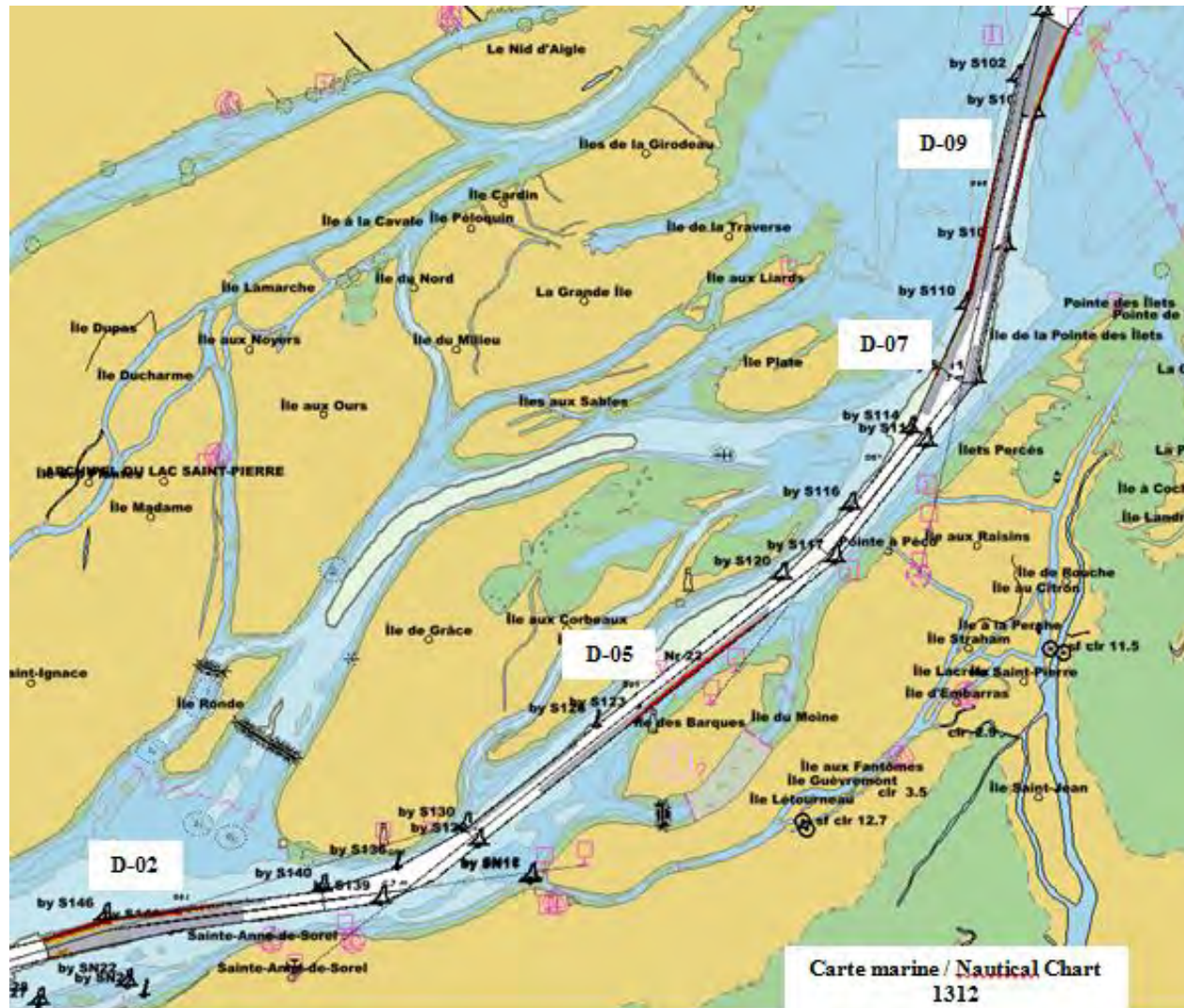
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



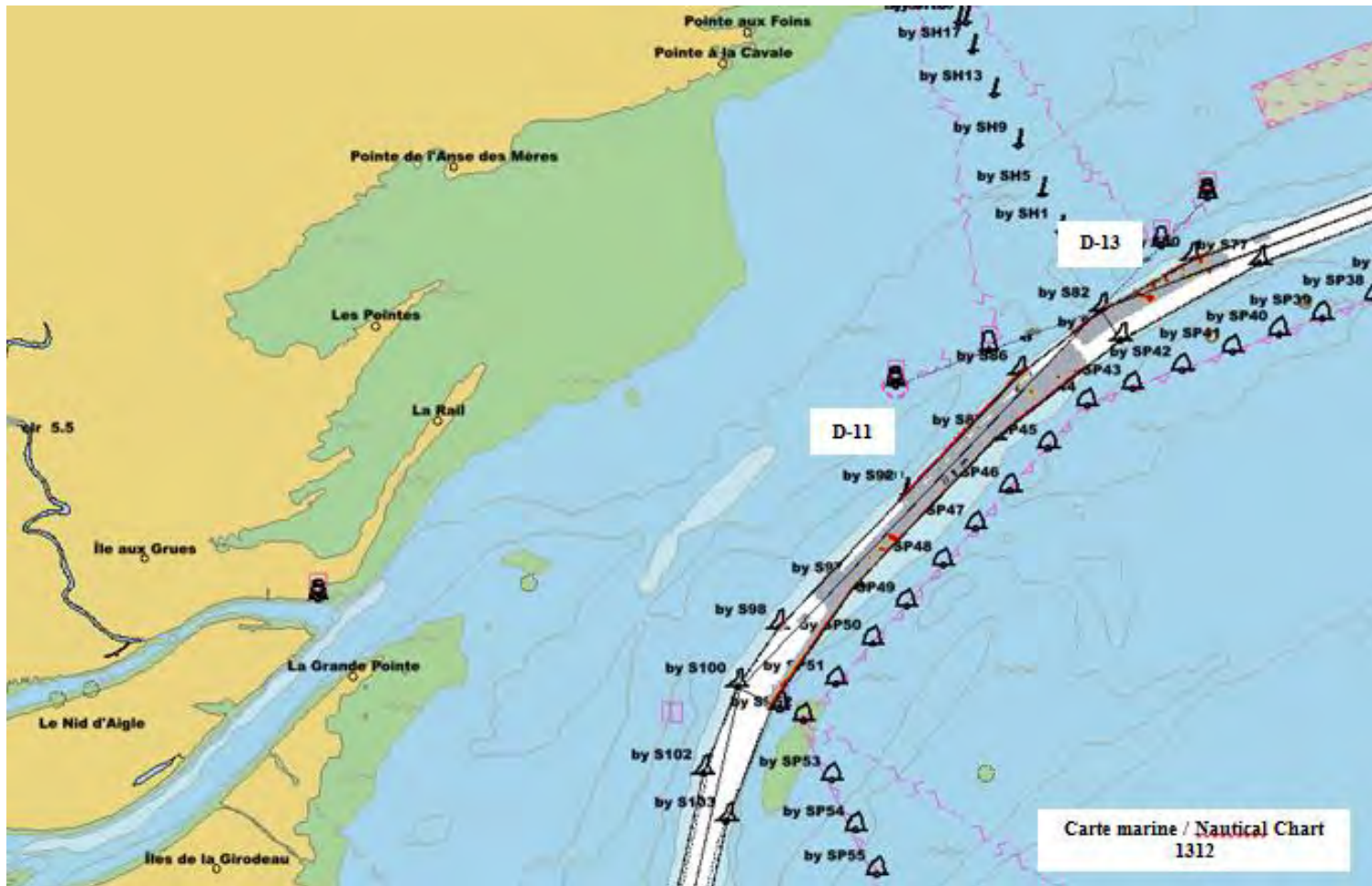
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Traverse du Nord / North Traverse
Localisation des secteurs et sites de dépôt / Sectors and Disposal Sites Location



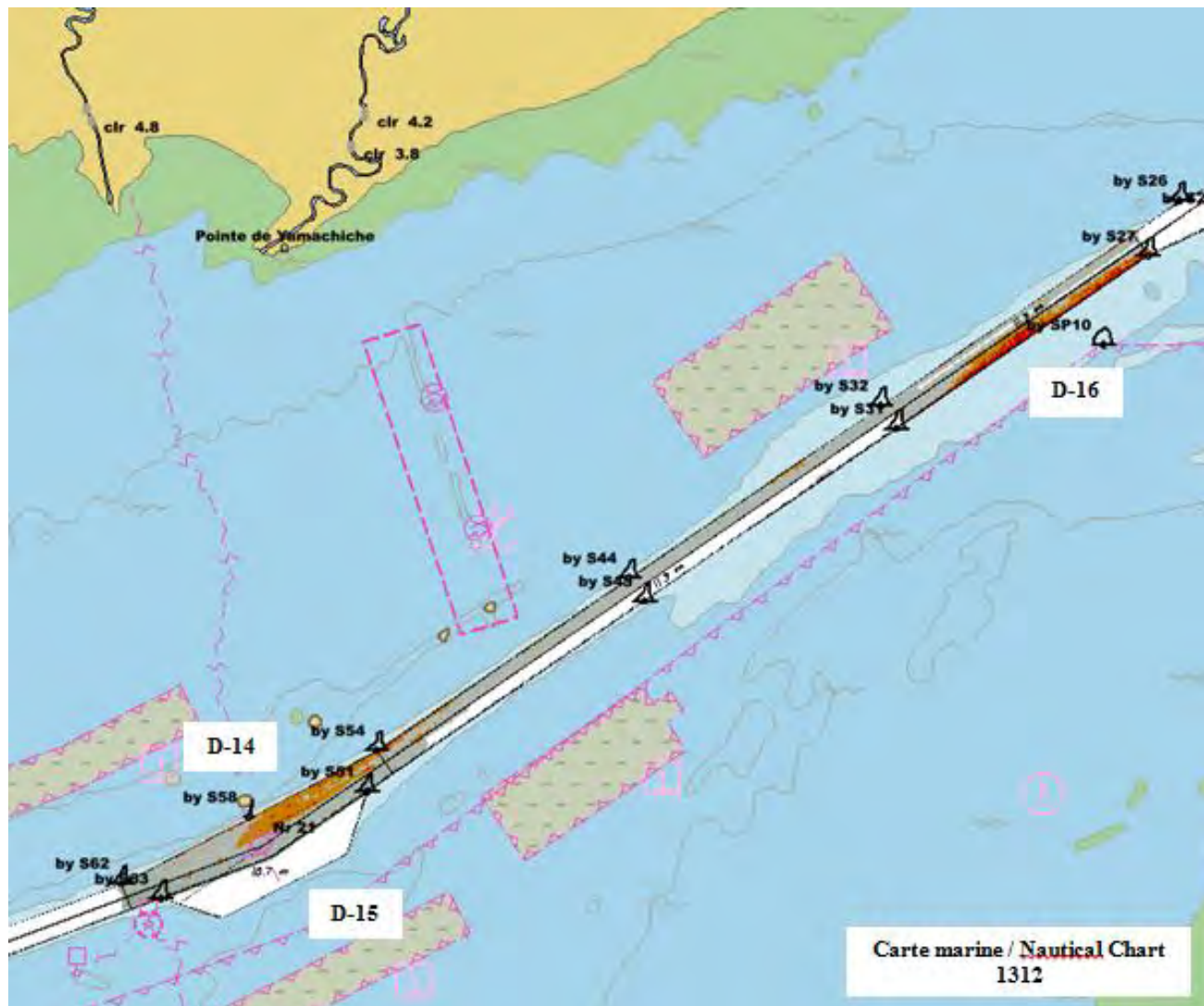
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Lac Saint-Pierre / St. Pierre Lake
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Lac Saint-Pierre / St. Pierre Lake
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location

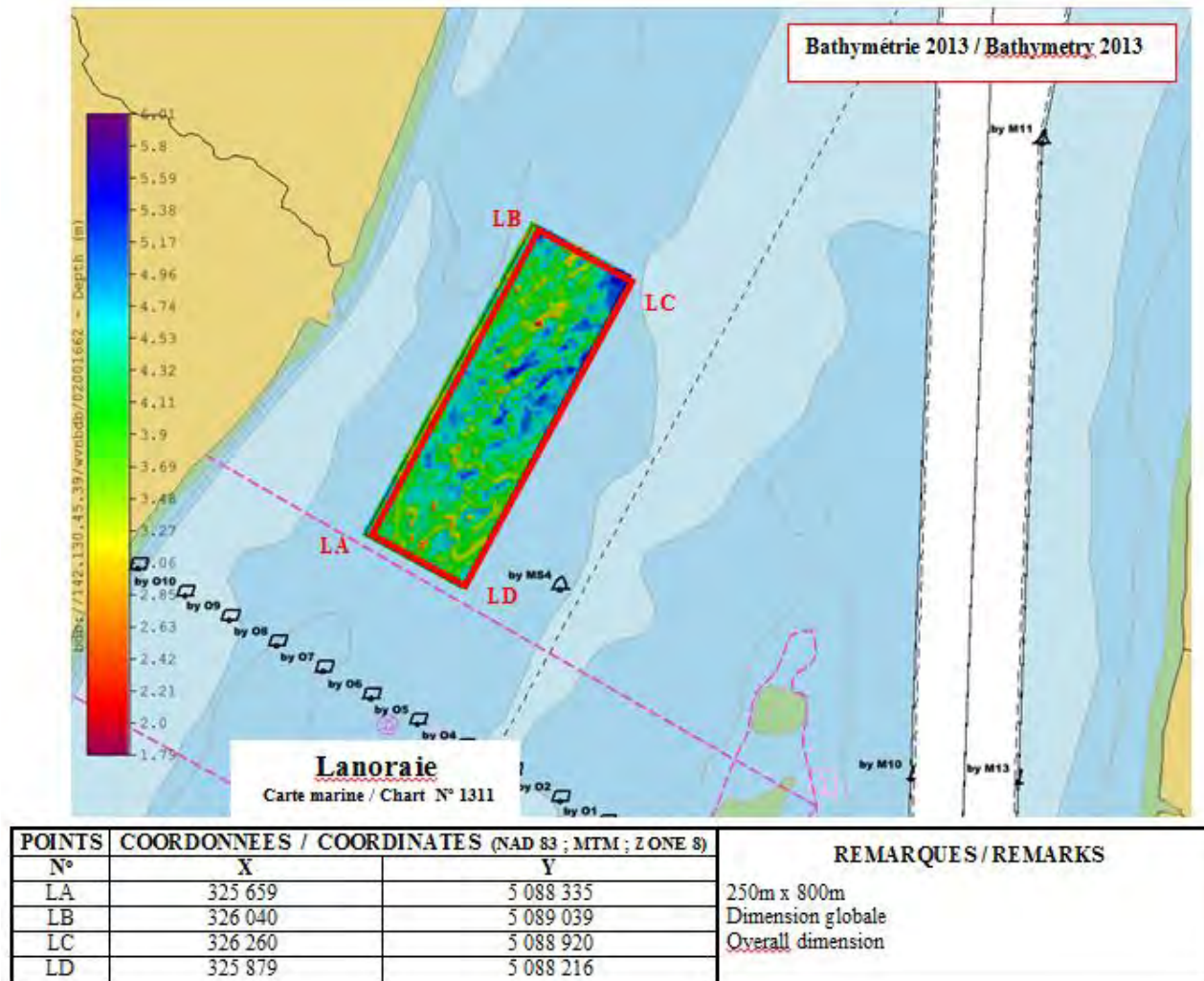


Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Lac Saint-Pierre / St. Pierre Lake
Localisation des secteurs et site de dépôt / Sectors and Disposal Site Location



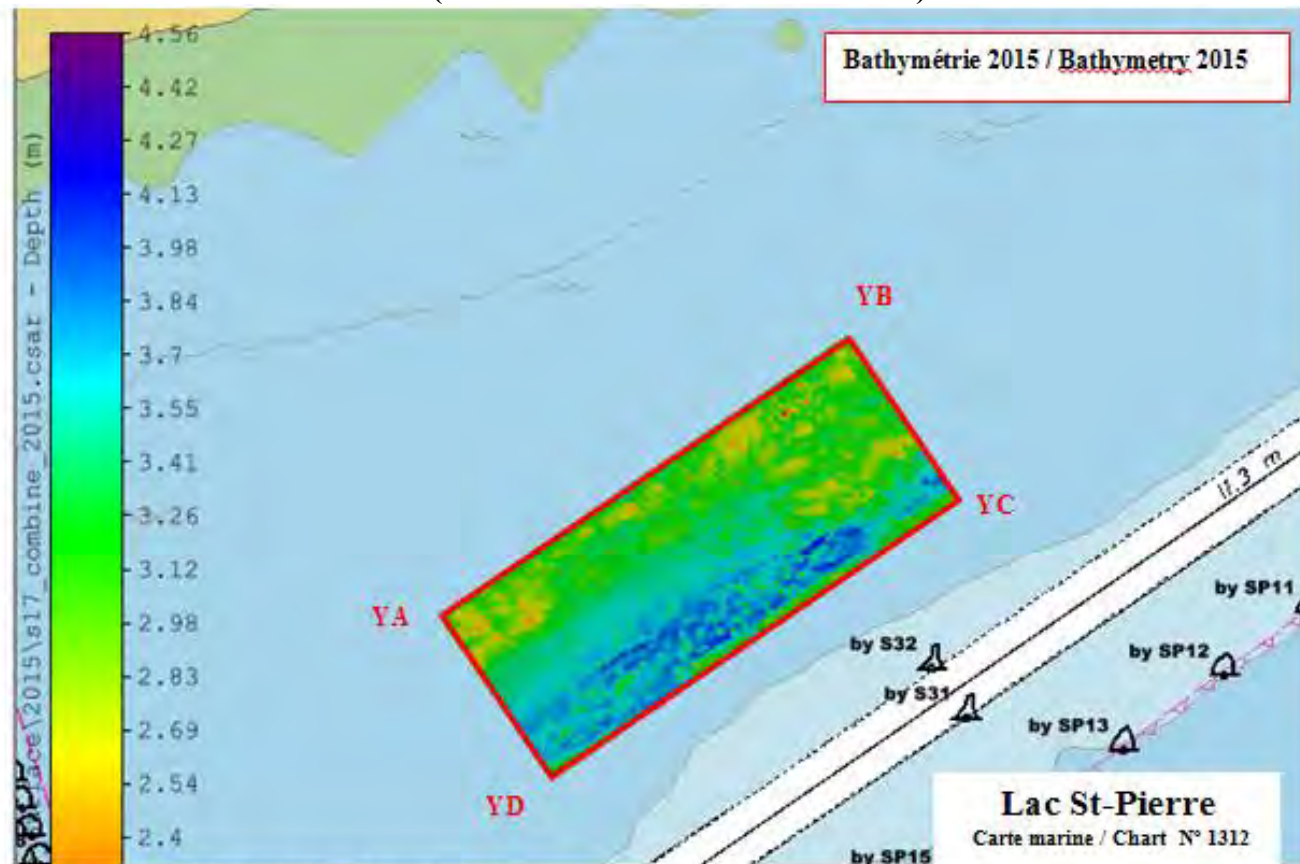
Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

M-27 (LANORAIE)



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

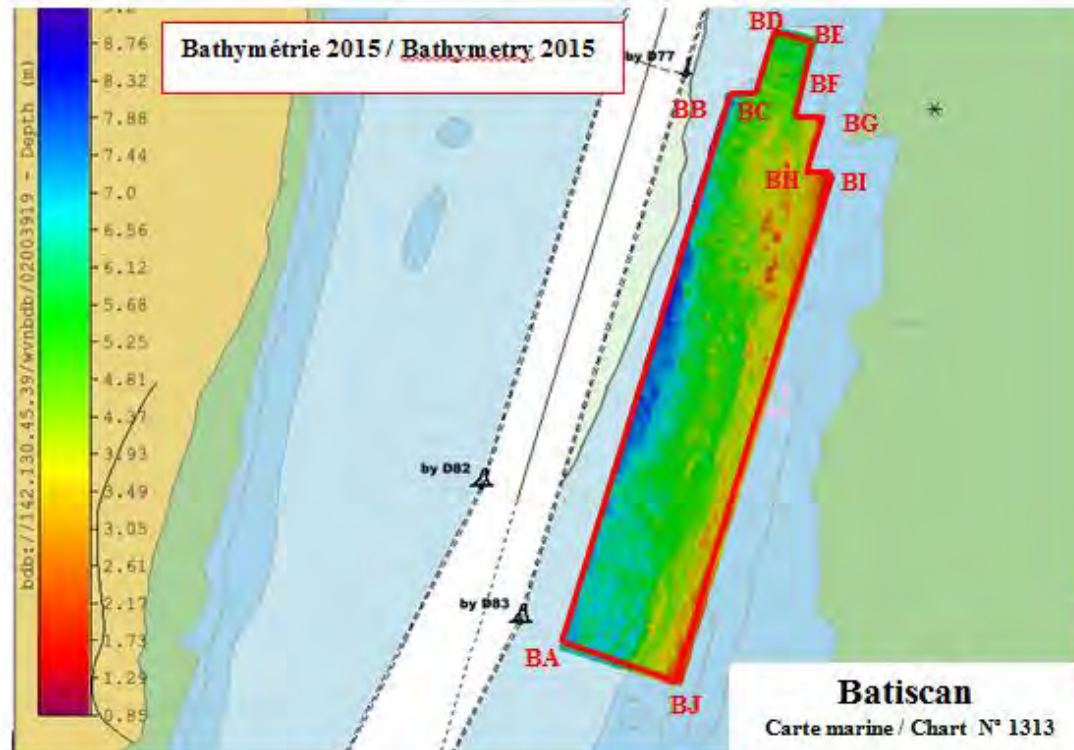
S-17 (YAMACHICHE NORD / NORTH)



POINTS	COORDONNEES / COORDINATES (NAD 83 ; MTM ; Z ONE 8)		REMARQUES / REMARKS
N°	X	Y	
YA	360 867	5 123 336	800m x 2000m Dimension globale Overall dimension
YB	362 516	5 124 467	
YC	362 968	5 123 808	
YD	361 319	5 122 676	

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

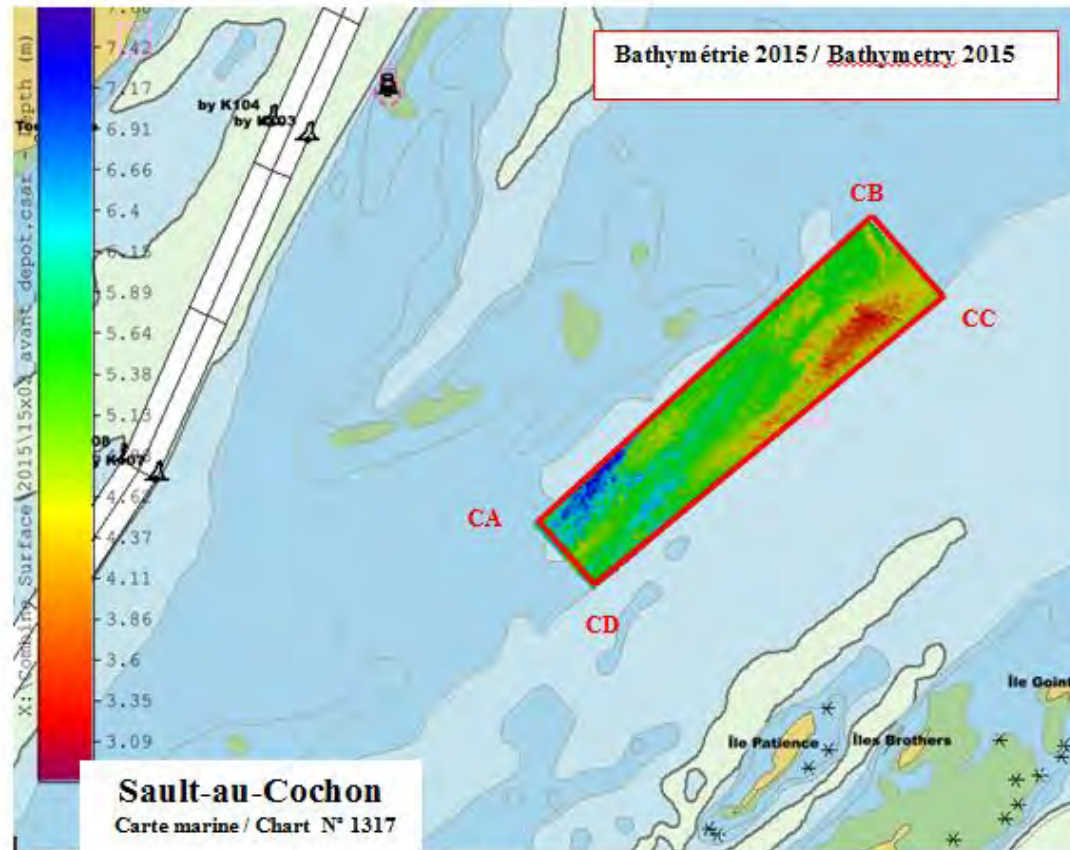
T-11 (ST-PIERRE LES BECQUETS)



POINTS	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 8)		REMARQUES / REMARKS
N°	X	Y	
BA	401 431	5 148 345	400m x 1860m Dimension globale approximative Approximate overall dimension
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	

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

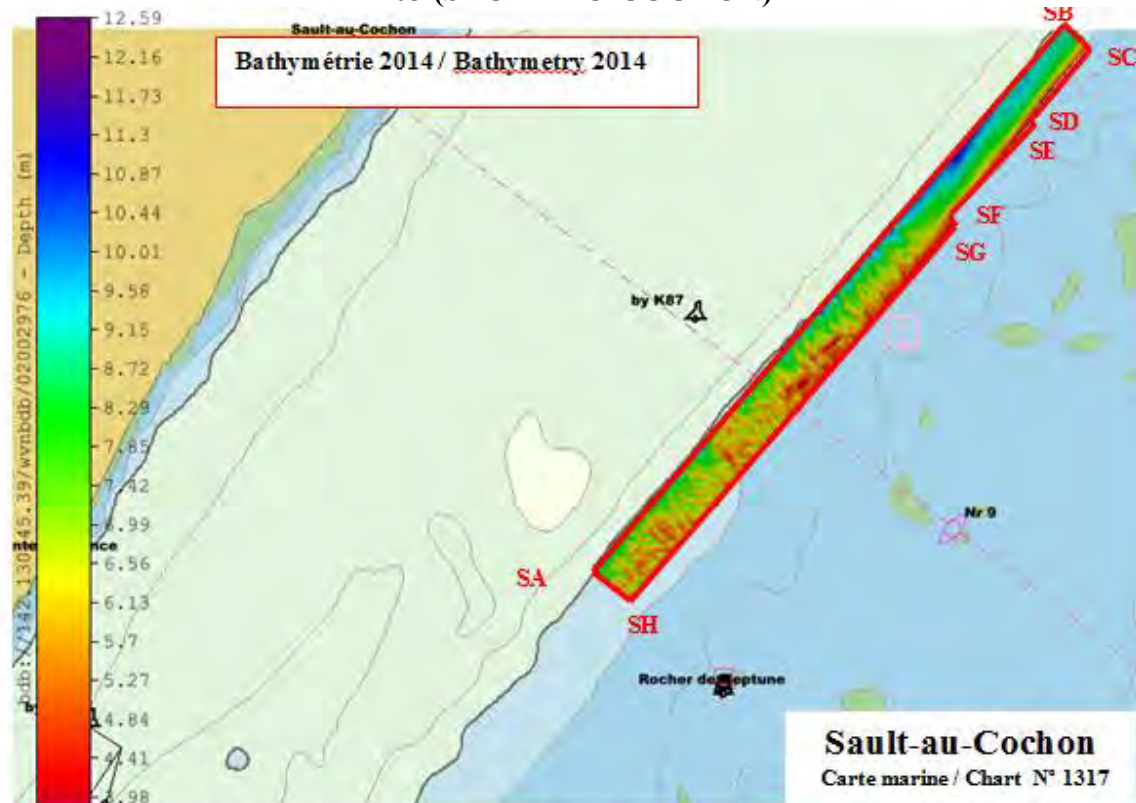
X-02 (BRULÉ)



POINTS	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 7)		REMARQUES / REMARKS
N°	X	Y	
CA	289 918	5 213 388	750m x 3460m Dimension globale approximative <u>Approximate overall dimension</u>
CB	292 495	5215 730	
CC	293 064	5 215 143	
CD	290 382	5 212 893	

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

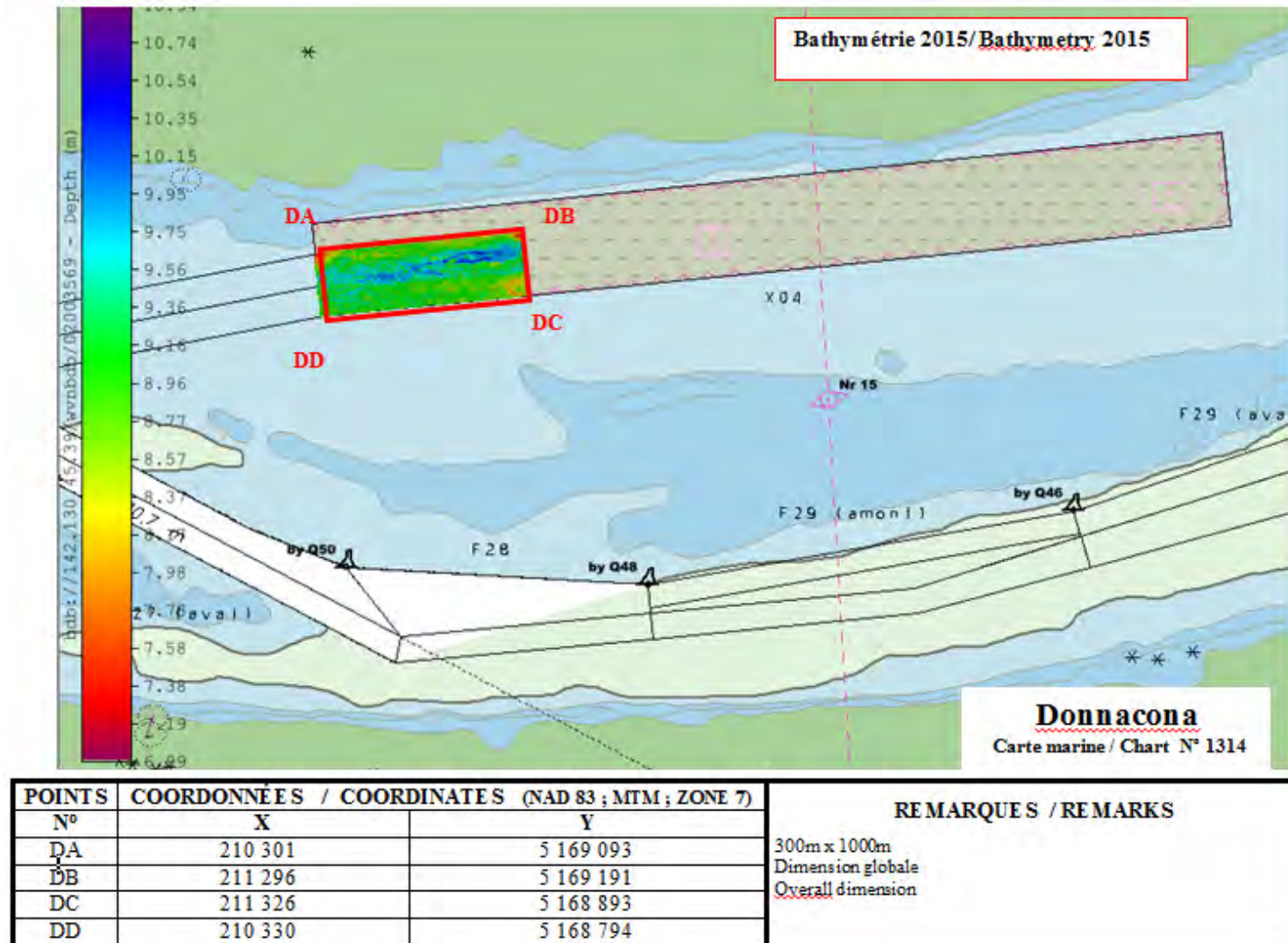
X-03 (SAULT-AU-COCHON)



POINTS	COORDONNÉES / COORDINATES (NAD 83 ; MTM ; ZONE 7)		REMARQUES / REMARKS
N°	X	Y	
SA	295 822	5 225 541	300m x 4560m Dimension globale approximative Approximate overall dimension
SB	298 807	5 228 987	
SC	298 958	5 228 856	
SD	298 617	5 228 443	
SE	298 640	5 228 423	
SF	298 042	5 227 732	
SG	298 088	5 227 691	
SH	296 053	5 225 341	

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Aires de mise en dépôt / Disposal Areas

X-04 (DONNACONA)



Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

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 on the available tools to determine the vertical positioning with regard to chart datum (ZC) used for bathymetric surveys or dredging activities in the St. Lawrence Waterway, between Bécancour and l'Isle-aux-Coudres. Other information is also available to specify geospatial data format.

Note

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).

1 To get access to the water level data from GPS

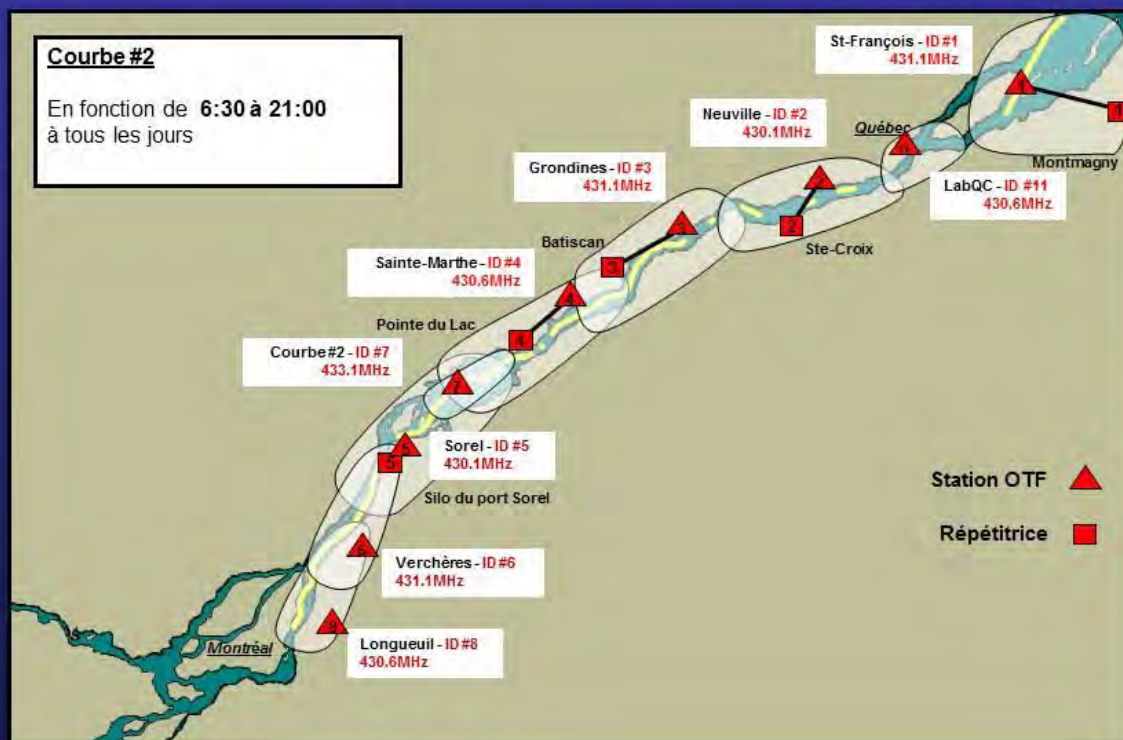
1.1 Canadian Coast Guard (CCG) GPS-OTF Network

In the St. Lawrence waterway, a OTF positioning system was set up to obtain precisely water level interpolated to ship position from GPS observations combined with other data relative to the movement of the ship and to undulation established table (supplied by CHS), to give a real depth.

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

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

Réseau OTF – Saison 2013.0



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 below:

- 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).

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

1.2 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>) today integrated into algorithms RTK. This approach allows to obtain very precise fixed solutions on vectors of more than 40 kilometers.

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

In order to use the CCG LRK network, the required GPS receiver is an Ashtech GPS Proflex receiver (PF500, PF800, etc.), equipped with the LRK option and a UHF receiver, and U-Link model (transparent mode) or ADL (U-Link mode).

The Ashtech GPS receiver actually used by our surveying vessels is ProFlex 800.

1.3 Table of geoid heights from CHS

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).

2 Other ways to get access to the water level data

2.1 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. The network is operated and maintained by 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.

For a reduction in Datum GNSS positioning (Global Navigation Satellite System), a partition table NAD83CSRS (1997) - Datum is available under license, by an email request to SINECO.XLAU@dfo-mpo.gc.ca. Allow several weeks of delay. Advocate this method because it is the one used by CHS to the survey of the channel.

SINECO network of water level observations are available for the last 24 hours on the website <http://marees.gc.ca/fra/trouver/region/4>

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

Station name	Station No	Latitude	Longitude
Saint-Joseph-de-la-Rive	3057	47° 26' 55.6"	70° 21' 56.0"
Rocher Neptune	3071	47° 09' 42.3"	70° 36' 27.7"
Cap du Banc Brûlé	3075	47° 05' 22.4"	70° 42' 39.0"
Saint-François I.O.	3100	46° 59' 47.5"	70° 48' 29.3"
Saint-Laurent I.O.	3110	46° 51' 29"	71° 00' 61"
Vieux-Québec	3248	46° 48' 40.2"	71° 12' 06.7"
Neuville	3280	46° 41' 47.4"	71° 34' 22.3"
Portneuf	3300	46° 40' 52.2"	71° 52' 37.9"
Deschaillons	3335	46° 33' 39.4"	72° 06' 21.0"
Batiscan	3345	46° 30' 01.3"	72° 14' 45.1"
Bécancour	3353	46° 24' 00.9"	72° 22' 46.2"
Trois-Rivières	3360	46° 20' 25.7"	72° 32' 21.2"
Port-St-François	3365	46° 16' 21.2"	72° 37' 09.5"
Lac Saint-Pierre	15975	46° 11' 41.5"	72° 53' 43.9"
Sorel	15930	46° 02' 49.7"	73° 06' 56.5"
Contrecoeur IOC	15780	45° 49' 57.7"	73° 16' 59.5"
Varenes	15660	45° 41' 03.6"	73° 26' 37.3"
Montréal, rue Frontenac	15540	45° 31' 43.2"	73° 32' 32.8"
Montréal, Jetée no 1	15520	45° 30' 12.6"	73° 33' 09.0"

2.2 Web Data Service (WDS)

This web service provides access to observations of water levels from tidal stations from the Internet on the ship. For WDS, the specifications are at <http://marees.gc.ca/fra/info/Terms#s3>. Contrary to what is written on the website, you don't need to get a user or account password to access the data.

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.

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

3 – Planimetric coordinate system for numeric data transfers

3.1 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 (SCRS). 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 :

NAD83 (SCRS) / MTM Zone 7	
Parameter	Value
Spatial Coverage	Canada - Québec - 72°W à 69°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	70.5°W
Source	http://spatialreference.org/ref/epsg/2949/

NAD83 (SCRS) / MTM Zone 8	
Parameter	Value
Spatial Coverage	Canada - Québec - 75°W à 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/

3.2 NAD83 (SCRS) 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 (SCRS) 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>).

Voie navigable du St-Laurent / St-Laurent Waterway
Programme d'entretien annuel / Annual Maintenance Program
Montréal à/to St-Antoine
Horizontal and Vertical Positioning Systems

NAD83 (CSRS)	
Parameter	Value
Reference ellipsoid	GRS80
Semi-major axis (a)	378137.000 m
Semi-minor axis (b)	6356752.314 m
x0	00.00 m
y0	00.00 m
z0	00.00 m
rx	0.00 sec
ry	0.00 sec
rz	0.00 sec
scale factor	1.0000

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

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

Canadian Hydrographic Service
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

Canadian representative of Ashtech company

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

Gemini Positioning Systems Ltd.
Head Office/Technical Centre
611-71st Avenue SE, Calgary (Alberta)
T2H 0S7
Telephone: 1-800-361-0978
Fax: (403) 252-5392
email: gempops@gps1.com

Voie navigable du St-Laurent / St-Laurent Waterway
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Tronçons / Sectors	Niveaux de dragage / Dredging depth (m) (Zéro des cartes / Chart Datum)		Répartition et quantités approximatives des sédiments qui seront à draguer, pour les 2 périodes de dragage, au taux unitaire au m³ / Distribution and approximate quantities of sediments to be dredged, for the 2 dredging periods, at unit rate in m³											
			Pour chacune des années 2019 à 2025 / For each year from 2019 to 2025											
			Poste / Item #	Surfaces dragage / Dredging areas (m²)		Volumes (m³)								
						Au-dessus des niveaux de dragage / Above dredging depth		Au-dessous des niveaux dragage / Below dredging depth (Volumes complémentaires; 0,20m) / (Complementary volumes; 0.20m)		S. Total / Subtotal		Total		
						Période de dragage n° ____ / Period of dredging n° ____								
1	2	1	2	1	2	1	2	1	2					
Bécancour (C33) à / to Batiscan (D68)	E-06 av E-07av / 08	Entre / Between 10,9 et 12,50	1.2 à 7.2	De base / Basic	18 500	13 000	6 800	3 900	3 700	2 600	10 500	6 500	12 000	9 000
	E-10 / 11 / 12		1.5 à 7.5		3 500	6 000	800	1 300	700	1 200	1 500	2 500		
Lac St-Pierre (S146 à /to S27)	D-02 à/to D16	Entre / Between 11,00 et 12,50	2.7, 4.7 et 6.7	De base / Basic	N/A	12 000	N/A	2 600	N/A	2 400	N/A	5 000	N/A	5 000 années 2020, 2022, 2024
Traverse du Nord (K136 à/to K91)	G-04	Entre / Between 12,80 et 14,80	1.6, 2.6, 3.6, 4.6, 5.6, 6.6, et 7.6	De base / Basic	N/A	10 000	N/A	2 300	N/A	2 000	N/A	4 300	N/A	50 000
	G-06 à/to G-09					18 000		4 400		3 600		8 000		
	G-10 à/to G-12					24 000		8 700		4 800		13 500		
	G-13 à/to G-15					35 000		17 200		7 000		24 200		
	G-04 à/to G-13	1.3, 2.3, 3.3, 4.3, 5.3, 6.3 et 7.3	De base / Basic	5 000	N/A	2 000	N/A	1 000	N/A	3 000	N/A	10 000	N/A	
	G-14 à/to G-15			10 000		5 000		2 000		7 000				
Traverse Cap-Santé (Q54)	F-27	Entre / Between 11,00 et 11,60	1.4, 2.4, 3.4, 4.4, 5.4, 6.4 et 7.4	De base / Basic	3 500	N/A	700	N/A	700	N/A	1 400	N/A	1 400	N/A
Annexe 7 / Appendix 7										Sous-total par période / Sub-total per period		23 400	59 000 ou 64 000	
										Total annuel / Annual Total		82 400 ou 87 400		

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Pour tous les secteurs / For all sectors

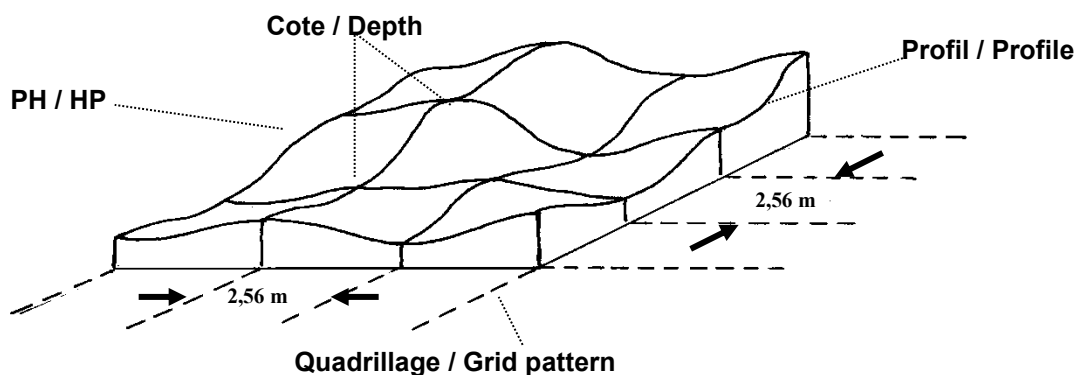
Le calcul de volume se fera à l'aide de l'une ou l'autre des deux méthodes décrites ci-dessous selon le système de levés bathymétriques utilisés. Ces systèmes pourront être des échosondeurs multifaisceaux ou multitransducteurs. Toutefois, le même système sera utilisé pour les levés avant et après dragage.

Calculation of volume will be made by one or other one of both methods described below according to the system bathymetric survey used. These systems can be echosounder multibeam or multitransducers. However, the same system will be used for survey before and after dredging.

Calcul de volume 1 / Volume calculation 1

Le tracé des lignes de contour et le calcul des volumes des sédiments à draguer (V_{ch}) sont effectués de façon rigoureuse. La représentation numérique du fond marin, selon la méthode du Paraboloïde Hyperbolique (PH) utilisant quatre cotes contigües prises deux à deux successivement sur des profils voisins, assure une solution unique et optimale.

The volumes of sediments to dredge (V_{ch}) and the contour lines are calculated and determined rigorously. The digital representation of the bottom, using the Hyperbolic Parabola (horse saddle) method, gives a unique and optimum solution. This method builds polygons using four contiguous depths taken two by two successively along two adjoining profiles.



La valeur moyenne des cotes est retenue dans un processus de quadrillage (2,56 m x 2,56 m).

The average depth is determined through a process grid (2.56 m x 2.56 m).

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Calcul de volume 2 / Volume calculation 2

Le calcul se fera à partir de la différence entre les levés bathymétriques effectués avant et après dragage où les sondes bathymétriques seront ramenées sur un quadrillage d'une résolution spatiale de 50 centimètres; le tout à l'aide d'un logiciel commercial.

Calculation will be made from the difference between bathymetric survey before and after dredging where every sounding line will be reduced on a spatial grid of 50 centimeters resolution; all with commercial software.

Format ASCII / ASCII Format

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

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

Profondeurs (m) / Depths (m)

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**Reference: Chapter 7 Mitigation measures; Article 7.1 Preventive Actions
Environmental impact assessment (EIA) (2016-2018)**

Note: This article 7.1 part below does not exempt the Contractor, before bidding, to read and understand all report Environmental impact assessment (2016-2018) and tree follow-up 2015 for dredged sectors, which are available from Contracting Authority. See title page above.

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.
- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
- Toxic substances will be handled with care, carefully stored and disposed of appropriately to prevent spills in water.
- The contractor will identify all risks of spills of toxic substances that are used or stored for the duration of the work. It will provide preventive and safety measures to be taken, as well as the emergency plan to be adopted in case of spill. An emergency kit must be present on board throughout the work.
- 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.

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- Considering the commencement of commercial sturgeon fishing in Saint-Pierre-les-Becquets, about June 14 of each year, the portion of the work in the area between Bécancour and Batiscan should ideally be completed before that date or be interrupted for the first days of fishing. At the Lake St. Pierre, dredging should not interfere with the fall fishing for sturgeon, which begins about September 14 because dredging is normally after this period.
- St-Lawrence Dredging Activities Planning Registry (http://planstlaurent.qc.ca/en/uses/dredging_activities.html) will be updated regularly 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 leading source information to interest groups and general public.