



THE CITY OF WINNIPEG

REQUEST FOR PROPOSAL

RFP NO. 33-2021

**PROFESSIONAL CONSULTING SERVICES FOR WATER SYSTEM REGULATORY
RE-ASSESSMENT**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 PROFESSIONAL CONSULTING SERVICES FOR WATER SYSTEM REGULATORY RE-ASSESSMENT

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 3, 2021.

B2.2 The Project Manager or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Project Manager identified in D2.

B3.2 If the Proponent finds errors, discrepancies, or omissions in the Request for Proposal, or is unsure of the meaning or intent of any provision therein, the Proponent shall promptly notify the Project Manager of the error, discrepancy, or omission at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Project Manager, require a correction to or a clarification of the Request for Proposal (RFP) will be provided by the Project Manager to all Proponents by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Project Manager, do not require a correction to or a clarification of the Request for Proposal will be provided by the Project Manager only to the Proponent who made the enquiry.

B3.5 All correspondence or contact by Proponents with the City in respect of this RFP must be directly and only with the City's Project Manager. Failure to restrict correspondence and contact to the Project Manager may result in the rejection of the Proponents Proposal Submission.

B3.6 The Proponent shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Project Manager in writing.

B3.7 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B4. CONFIDENTIALITY

B4.1 Information provided to a Proponent by the City or acquired by a Proponent by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Project Manager. The use and disclosure of the Confidential Information shall not apply to information which:

- (a) was known to the Proponent before receipt hereof; or
- (b) becomes publicly known other than through the Proponent; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B4.2 The Proponent shall not make any statement of fact or opinion regarding any aspect of the RFP to the media or any member of the public without the prior written authorization of the Project Manager.

B5. ADDENDA

- B5.1 The Project Manager may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies, or omissions in the RFP, or clarifying the meaning or intent of any provision therein.
- B5.2 The Project Manager will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.3 Addenda will be available on the MERX website at www.merx.com.
- B5.4 The Proponent is responsible for ensuring that he/she has received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.5 The Proponent shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Proposal non-responsive.
- B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Project Manager indicated in D2.

B6. PROPOSAL SUBMISSION

- B6.1 The Proposal shall consist of the following components:
- (a) Form A: Bid/Proposal (Section A) in accordance with B7;
 - (b) Fees (Section B) in accordance with B8.
- B6.2 The Proposal should also consist of the following components:
- (a) Experience of Proponent and Subconsultants (Section C) in accordance with B9;
 - (b) Experience of Key Personnel Assigned to the Project (Section D), in accordance with B10;
 - (c) Project Understanding and Methodology (Section E) in accordance with B11; and
 - (d) Project Schedule (Section F) in accordance with B12.
- B6.3 Further to B6.1 all components of the Proposal shall be fully completed or provided in the order indicated, and submitted by the Proponent no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Proposal.
- B6.4 Further to B6.2, all components of the Proposal should be fully completed or provided in the order indicated, and submitted by the Proponent no later than the Submission Deadline, with all required entries made clearly and completely.
- B6.5 Proposal format, including number of pages, size of pages and, font, etc., will not be regulated, except that the Proposal should contain a table of contents, page numbering and should be in the Sections identified above. Proponents are encouraged to use their creativity to submit a Proposal which provides the requested information for evaluation and other information which illustrates the strength of their proposed solution.
- B6.6 The Proposal shall be submitted electronically through MERX at www.merx.com.
- B6.6.1 Proposals will **only** be accepted electronically through MERX.
- B6.7 Proponents are advised that inclusion of terms and conditions inconsistent with the RFP, will be evaluated in accordance with B21.1(a).
- B6.8 Any cost or expense incurred by the Proponent that is associated with the preparation of the Proposal shall be borne solely by the Proponent.

B7. PROPOSAL (SECTION A)

- B7.1 The Proponent shall complete Form A: Bid/Proposal, making all required entries.
- B7.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Proponent is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Proponent is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Proponent is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Proponent is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B7.2.1 If a Proposal is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 In Paragraph 3 of Form A: Bid/Proposal, the Proponent shall identify a contact person who is authorized to represent the Proponent for purposes of the Proposal.
- B7.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Proponent is a sole proprietor carrying on business in his/her own name, it shall be signed by the Proponent;
 - (b) if the Proponent is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Proponent is a corporation, it shall be signed by its duly authorized officer or officers;
 - (d) if the Proponent is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B7.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.
- B7.5 If a Proposal is submitted jointly by two or more persons, the word "Proponent" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Proponents in the Proposal and the Contract, when awarded, shall be both joint and several.

B8. FEES (SECTION B)

- B8.1 The Proposal shall include a Fixed Fee for all disciplines and/or phases identified in D7 Scope of Services.
- B8.2 Adjustments to Fees will only be considered based on increases to the Scope of Services.
- B8.2.1 The City will not consider an adjustment to the Fees based on changes in the Project budget or the Final Total Construction Cost.
- B8.3 Notwithstanding C1.1(b), Fees shall include costs for out of town travel, related meals and accommodations for the duration of the Project and shall not be considered an Allowable Disbursement.
- B8.4 The Fee Proposal shall also include an allowance for Allowable Disbursements as defined in C1.1(b), but shall exclude the costs of any materials testing, soils and hazardous materials investigation during construction.
- B8.5 Notwithstanding C11.1, Fees submitted shall not include the Goods and Services Tax (GST) or Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

B8.6 Payments to Non-Resident Consultants are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9. EXPERIENCE OF PROPONENT AND SUBCONSULTANTS (SECTION C)

B9.1 Proposals should include:

- (a) details demonstrating the history and experience of the Proponent and Subconsultants in providing programming; design, management of the project and contract administration services on two (2) projects of similar complexity, scope and value.
 - (i) If more than two (2) projects are submitted, only the first two (2) referenced will be evaluated.

B9.2 For each project listed in B9.1(a), the Proponent should submit:

- (a) description of the project;
- (b) role of the consultant;
- (c) the project's original contracted consulting cost and final consulting cost;
 - (i) where the original contracted consulting cost and final cost differ, the Proponent should submit an explanation;
- (d) anticipated project schedule and actual project delivery schedule;
 - (i) where the anticipated project schedule and the actual project delivery schedule differ, the Proponent should submit an explanation;
- (e) project owner; and
- (f) reference information (two current names with telephone numbers per project).
 - (i) References should have worked directly on the projects described, such as the Project Manager or Contract Administrator.
 - (ii) References may be utilized to verify the information provided in the Proposal.

B9.2.1 Where applicable, information should be separated into Proponent and Subconsultant project listings.

B9.3 The Proposal should include general firm profile information, including years in business, average volume of work, number of employees and other pertinent information for the Proponent and all Subconsultants.

B10. EXPERIENCE OF KEY PERSONNEL ASSIGNED TO THE PROJECT (SECTION D)

B10.1 Describe your approach to overall team formation and coordination of team members.

B10.1.1 Include an organizational chart for the Project.

- (a) Clearly identify Subconsultants to be engaged by the Proponent on the organizational chart.

B10.2 The Proponent should identify the following Key Personnel assigned to the project:

- (a) the project manager;
- (b) lead assessor(s); and
- (c) any other individuals with over 5% of the project hours.

B10.2.1 Include the following for each of the Key Personnel:

- (a) educational background and degrees;
- (b) professional recognition;
- (c) job title;
- (d) years of experience in current position;

- (e) years of experience in design; and
- (f) years of experience with existing employer.

B10.2.2 Roles of each of the Key Personnel in the Project should be identified in the organizational chart referred to in B10.1.1.

B10.3 For each of the Key Personnel identified, list two comparable projects in which they have played a primary role similar to that proposed for this Project. If a project selected for a Key Personnel is included in B9, provide only the project name and the role of the Key Personnel. For other projects provide the following:

- (a) A description of the project;
- (b) The role of the Key Personnel;
- (c) The project Owner; and
- (d) reference information (two current names with telephone numbers per project).
 - (i) References should have worked directly on the projects described, such as the Project Manager or Contract Administrator.
 - (ii) References may be utilized to verify the information provided in the Proposal.

B10.4 If a Key Personnel is assigned to multiple roles (as identified in the organizational chart referred to in B10.1.1), **two** comparable projects as detailed in B10.3 are required for **each role** of the Key Personnel.

B11. PROJECT UNDERSTANDING AND METHODOLOGY (SECTION E)

B11.1 Describe your firm's project management approach and team organization during the performance of Services, so that the evaluation committee has a clear understanding of the methods the Proponent will use in the delivery of this Project. The methods should include:

- (a) activities to be performed either by the Proponent's employees or by Subconsultants at an office located outside of the Province of Manitoba. Identify proposed arrangements (i.e. conference calls, webinars, travel, communication protocol, etc.) involving out-of-town employees to participate in coordination and review functions; and
- (b) the collaborative process/method to be used by the Key Personnel of the team in the various phases of the Project.

B11.2 Methodology should be presented in accordance with the Scope of Services identified in D7.

B11.3 Proposals should include:

- (a) the methodology that the Proponent intends to use to carry out the Scope of Services;
 - (i) the methodology should be presented in accordance with the Scope of Services identified in D7 – Scope of Services.
- (b) The Proponent's team's understanding of the broad functional and technical requirements;
- (c) the work activities related to the Scope of Services;
- (d) the deliverables associated with the Scope of Services;
- (e) all significant assumptions and interpretations related to the Scope of Services; and
- (f) any other insight, proposed usage of innovation, or identification of risks related to the Scope of Services that demonstrates the Proponent's suitability to the Project.

B11.4 The Proposal should include Form P: Person Hours for all disciplines and or phases identified in D7 Scope of Services.

B11.4.1 The total Fees on Form P: Person Hours should match Fees submitted in response to B8.

B11.4.2 For each Key Personnel identified in B10.2 list the percent of the person's time to be dedicated to the Project in accordance with the Scope of Services identified in D7.

B11.5 Proponents may use Form P: Person Hours or a table of their own design provided it includes all information requested in accordance with B11.4.

B11.6 A sample of Form P: Person Hours can be found at <https://winnipeg.ca/matmgt/templates/information.stm>

B12. PROJECT SCHEDULE (SECTION F)

B12.1 Proponents should present a carefully considered critical path method schedule using Microsoft Project or similar project management software, complete with resource assignments (Key Personnel), durations (weekly timescale), and milestone dates or events. The schedule should address each requirement of the Scope of Services identified in D7.

B12.2 Provide narrative that will describe how slippage in the proposed schedule will be managed and how the schedule will be re-evaluated to determine the impacts to the critical paths.

B12.3 Further to B12.1, the Proponent's schedule should reflect:

- (a) the critical stages listed in D17;
- (b) the hours and resources indicated on Form P: Person Hours;
- (c) City review requirements;
- (d) Project meetings frequencies; and
- (e) submission dates for required Deliverables.

B13. DISCLOSURE

B13.1 The Persons are:

- (a) AECOM Canada Ltd;
- (b) CH2M Hill Canada Ltd; and
- (c) Dillon Consulting Ltd.

B13.2 The following reports were prepared by the organizations identified in B13.1 and are also listed in D5:

- (a) Water System Infrastructure and Water Supply Sources Regulatory Assessment, AECOM, 2011; and
- (b) Regulatory Re-Assessment of the Water System Infrastructure and Water Supply Sources, CH2M/Dillon, 2017.

B14. CONFLICT OF INTEREST AND GOOD FAITH

B14.1 Proponents, by responding to this RFP, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B14.2 Conflict of Interest means any situation or circumstance where a Proponent or Key Personnel proposed for the Services has:

- (a) other commitments;
- (b) relationships;
- (c) financial interests; or
- (d) involvement in ongoing litigation;

that could or would be seen to:

- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Proposals or award of the Contract; or

- (ii) compromise, impair, or be incompatible with the effective performance of a Proponent's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the RFP process or the Project;
or
- (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the RFP process) of strategic and/or material relevance to the RFP process or to the Project that is not available to other Proponents and that could or would be seen to give that Proponent an unfair competitive advantage.

B14.3 In connection with its Proposal, each entity identified in B14.2 shall:

- (a) avoid any perceived, potential, or actual Conflict of Interest in relation to the procurement process and the Project;
- (b) upon discovering any perceived, potential, or actual Conflict of Interest at any time during the RFP process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Project Manager; and
- (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential, or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential, or actual Conflict of Interest.

B14.4 Without limiting B14.3, the City may, in its sole discretion, waive any and all perceived, potential, or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Proponent to put into place such policies, procedures, measures, and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B14.5 Without limiting B14.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:

- (a) disqualify a Proponent that fails to disclose a perceived, potential, or actual Conflict of Interest of the Proponent or any of its Key Personnel;
- (b) require the removal or replacement of any Key Personnel proposed for the Services that has a perceived, actual, or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
- (c) disqualify a Proponent or Key Personnel proposed for the Services that fails to comply with any requirements prescribed by the City pursuant to B14.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Proponent if the Proponent, or one of its Key Personnel proposed for the Project, has a perceived, potential, or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

B14.6 The final determination of whether a perceived, potential, or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

B15. QUALIFICATION

B15.1 The Proponent shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Proponent does not carry on business in Manitoba, in the jurisdiction where the Proponent does carry on business; and
- (b) be financially capable of carrying out the terms of the Contract;

- (c) have all the necessary experience, capital, organization, and equipment to perform the Services in strict accordance with the terms and provisions of the Contract.
- B15.2 The Proponent and any proposed Subconsultant (for the portion of the Services proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://winnipeg.ca/finance/findata/matmgt/listing/debar.pdf>
- B15.3 The Proponent and/or any proposed Subconsultant (for the portion of the Services proposed to be subcontracted to them) shall:
- (a) have successfully carried out services for the programming; design, management of construction and contract administration for architectural and/or engineering projects of similar complexity, scope and value; and to those required for this Project; and
- (b) be fully capable of performing the Services required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba); and
- (d) have the knowledge and resources to administer the requirements of The Workplace Safety and Health Act (Manitoba) during the construction works associated with this Contract; and
- (e) undertake to meet all licensing and regulatory requirements of the appropriate governing authorities and associations in the Province of Manitoba; and
- (f) upon request of the Project Manager, provide the Security Clearances as identified in PART E - Security Clearance.
- B15.4 The Proponent shall submit, within three (3) Business Days of a request by the Project Manager, further proof satisfactory to the Project Manager of the qualifications of the Proponent and of any proposed Subconsultant.
- B15.5 The Proponent shall provide, on the request of the Project Manager, full access to any of the Proponent's equipment and facilities to confirm, to the Project Manager's satisfaction, that the Proponent's equipment and facilities are adequate to perform the Services.
- B16. OPENING OF PROPOSALS AND RELEASE OF INFORMATION**
- B16.1 Proposals will not be opened publicly.
- B16.2 After award of Contract, the Contract amount and the name of the successful Proponent and their address will be available on the MERX website at www.merx.com.
- B16.3 The Proponent is advised any information contained in any Proposal Submission may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).
- B16.3.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Proposal Submission identified by the Proponent as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.
- B16.4 Following the award of Contract, a Proponent will be provided with information related to the evaluation of his/her submission upon written request to the Project Manager.

B17. IRREVOCABLE OFFER

- B17.1 The Proposal(s) submitted by the Proponent shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B17.2 The acceptance by the City of any Proposal shall not release the Proposals of the other responsive Proponents and these Proponents shall be bound by their offers on such Services for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B18. WITHDRAWAL OF OFFERS

- B18.1 A Proponent may withdraw his/her Proposal without penalty prior to the Submission Deadline.

B19. INTERVIEWS

- B19.1 The Project Manager may, in his/her sole discretion, interview Proponents during the evaluation process.

B20. NEGOTIATIONS

- B20.1 The City reserves the right to negotiate details of the Contract with any Proponent. Proponents are advised to present their best offer, not a starting point for negotiations in their Proposal Submission.
- B20.2 The City may negotiate with the Proponents submitting, in the City's opinion, the most advantageous Proposals. The City may enter into negotiations with one or more Proponents without being obligated to offer the same opportunity to any other Proponents. Negotiations may be concurrent and will involve each Proponent individually. The City shall incur no liability to any Proponent as a result of such negotiations.
- B20.3 If, in the course of negotiations pursuant to B20.2, the Proponent amends or modifies a Proposal after the Submission Deadline, the City may consider the amended Proposal as an alternative to the Proposal already submitted without releasing the Proponent from the Proposal as originally submitted.

B21. EVALUATION OF PROPOSALS

- B21.1 Award of the Contract shall be based on the following evaluation criteria:
- | | |
|---|-------------|
| (a) compliance by the Proponent with the requirements of RFP or acceptable deviation therefrom: | (pass/fail) |
| (b) qualifications of the Proponent and the Subconsultants, if any, pursuant to B15: | (pass/fail) |
| (c) Fees; (Section B) | 40% |
| (d) Experience of Proponent and Subconsultant; (Section C) | 10% |
| (e) Experience of Key Personnel Assigned to the Project; (Section D) | 20% |
| (f) Project Understanding and Methodology (Section E) | 25% |
| (g) Project Schedule. (Section F) | 5% |
- B21.2 Further to B21.1(a), the Award Authority may reject a Proposal as being non-responsive if the Proposal Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Proposal, or waive technical requirements or minor informalities or irregularities if the interests of the City so require.

- B21.3 Further to B21.1(b), the Award Authority shall reject any Proposal submitted by a Proponent who does not demonstrate, in its Proposal or in other information required to be submitted, that it is qualified.
- B21.4 If, in the sole opinion of the City, a Proposal does not achieve a pass rating for B21.1(a) and B21.1(b), the Proposal will be determined to be non-responsive and will not be further evaluated.
- B21.5 Further to B21.1(c), Fees will be evaluated based on Fees submitted in accordance with B8.
- B21.6 Further to B21.1(d), Experience of Proponent and Subconsultants will be evaluated considering the information provided in response to B9, including but not limited to the following criteria:
- (a) similarity of the Proponent's past projects to this Project; and
 - (b) performance of the Proponent on past referenced projects and any City of Winnipeg projects considering but not limited to:
 - (i) adherence to project budget;
 - (ii) adherence to project schedule;
 - (iii) quality of work; and
 - (iv) overall satisfaction with the Proponent.
- B21.6.1 Proposals that receive less than half the available evaluation points for Experience of Proponent and Subconsultants will be rejected in accordance with B21.3.
- B21.7 Further to B21.1(e), Experience of Key Personnel Assigned to the Project will be evaluated considering the information provided in response to B10, including but not limited to the following criteria:
- (a) availability of Key Personnel
 - (b) appropriateness of related years of experience of the Key Personnel;
 - (c) relevancy of experience of the Key Personnel; and
 - (d) appropriateness of approach to overall team formation and coordination of team members.
- B21.7.1 Proposals that receive less than half the available evaluation points for Experience of Key Personnel will be rejected in accordance with B21.3.
- B21.8 Further to B21.1(f), Project Understanding and Methodology will be evaluated considering the information provided in response to B11, including but not limited to the following criteria:
- (a) appropriateness of the project management approach;
 - (b) consistency and completeness of the methodology;
 - (c) appropriateness of hours and personnel assigned to individual tasks;
 - (d) Proponent's understanding of the Project, including its deliverables, risks, and constraints; and
 - (e) demonstration of insight beyond the information presented in the RFP.
- B21.8.1 Proposals that receive less than half the available evaluation points for Project Understanding and Methodology will be rejected in accordance with B21.3.
- B21.9 Further to B21.1(g), Project Schedule will be evaluated considering the information provided in response to B12, including but not limited to the following:
- (a) The completeness of the Project schedule;
 - (b) The appropriateness of the timelines provided;
 - (c) logic and sequencing of the tasks, and
 - (d) appropriateness of the methodology to deal with slippage.

- B21.10 Notwithstanding B21.1(d) to B21.1(g), where Proponents fail to provide a response to B6.2(a) to B6.2(d), the score of zero may be assigned to the incomplete part of the response.
- B21.11 Proposals will be evaluated considering the information in the Proposal Submission and any interviews held in accordance with B19.
- B21.12 Where references are requested, the reference checks to confirm information provided may not be restricted to only those submitted by the Proponent, and may include organizations representing Persons known to have done business with the Proponent.

B22. AWARD OF CONTRACT

- B22.1 The City will give notice of the award of the Contract, or will give notice that no award will be made.
- B22.2 The City will have no obligation to award a Contract to a Proponent, even though one or all of the Proponents are determined to be qualified, and the Proposals are determined to be responsive.
- B22.2.1 Without limiting the generality of B22.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Services;
 - (b) the prices are materially in excess of the prices received for similar services in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Services, or a significant portion thereof, with its own forces;
 - (d) only one Proposal is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B22.3 Where an award of Contract is made by the City, the award shall be made to the qualified Proponent submitting the most advantageous offer.
- B22.4 The City may, at its discretion, award the Contract in phases.
- B22.5 Further to B22.4 the City reserves the right to negotiate and award future phases to the successful Proponent.
- B22.6 Further to Paragraph 7 of Form A: Bid/Proposal and C4, the City may issue an award letter to the successful Proponent in lieu of execution of Contract Documents
- B22.6.1 The Contract documents as defined in C1.1(o)(ii) in their entirety shall be deemed to be incorporated in and to form a part of the award letter notwithstanding that they are not necessarily attached to or accompany said award letter.
- B22.7 The form of Contract with the City of Winnipeg will be based on the Contract as defined in C1.1(o).
- B22.8 Following the award of Contract, a Proponent will be provided with information related to the evaluation of its Proposal upon written request to the Project Manager.
- B22.9 If, after the award of Contract, the Project is cancelled, the City reserves the right to terminate the Contract. The Proponent will be paid for all Services rendered up to time of termination.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Consultant Services* (Revision 2017-03-24) are applicable to the Services of the Contract.
- C0.1.1 The *General Conditions for Consultant Services* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm.
- C0.2 A reference in the Request for Proposal to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Consultant Services*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for Consultant Services*, these Supplemental Conditions are applicable to the Services of the Contract.

D2. PROJECT MANAGER

D2.1 The Project Manager is:

Rob Carroll, P.Eng

Telephone No. 204 986-8409

Email Address: rcarroll@winnipeg.ca

D2.2 At the pre-commencement meeting, the Project Manager will identify additional personnel representing the Project Manager and their respective roles and responsibilities for the Services.

D3. BACKGROUND

D3.1 Under the terms of the City of Winnipeg's Operating Licence for a Public Water System, the City is required to have a re-assessment of the water system infrastructure and water supply sources completed by an independent qualified professional engineer every five years. The next re-assessment report must be submitted to the Office of Drinking Water (ODW) by March 1, 2022.

D3.2 The objective of the re-assessment is to review existing information on the water supply system with onsite evaluation as required to identify, analyze, and mitigate any potential adverse health risks and environmental impacts associated with the water system in a 'source to tap' methodology. The intent is also to determine whether the water system's source, facilities, equipment, and operations are effective in producing safe drinking water, and meet the regulations in force under the Public Health Act and the Drinking Water Safety Act. The Re-Assessment process is designed to identify water system deficiencies and limitations.

D4. DEFINITIONS

D4.1 When used in this Request for Proposal:

- (a) "**Addendum**" means a written addendum to the RFP issued by the City as set out in B5;
- (b) "**CT**" means Contact Time;
- (c) "**DBPS**" means the Deacon Booster Pumping Station;
- (d) "**DWO**" means the regional Drinking Water Officer with regulatory responsibility for the Public Water System;
- (e) "**GCDWQ**" means the Guidelines for Canadian Drinking Water Quality;
- (f) "**GIS**" means Geographic Information System;
- (g) "**Key Personnel**" means an individual designated in a Proponent's Proposal Submission to perform a lead role in one or more of the proposed key organizational positions indicated in this RFP for the Proponent or its team members;
- (h) "**ODW**" means the Office of Drinking Water
- (i) "**PDF**" means Portable Document Format;
- (j) "**PLC**" means Programmable Logic Controller;

- (k) “**PWS**” means Public Water System;
- (l) “**SCADA**” means Supervisory Control and Data Acquisition;
- (m) “**Scope of Services**” means all Services executed under the Contract;
- (n) “**SLA**” means the Shoal Lake Aqueduct;
- (o) “**SOP**” means Standard Operating Procedure;
- (p) “**UV**” means ultraviolet;
- (q) “**WBS**” means Work Breakdown Structure; and
- (r) “**WTP**” means the Winnipeg Drinking Water Treatment Plant.

D5. RELEVANT DOCUMENTS

- D5.1 Relevant documents and drawings listed below are available by request to the City’s Project Manager after completion of a Non-Disclosure Agreement. These documents and drawings will be released at the sole discretion of the City.
- (a) Water System Infrastructure and Water Supply Sources Regulatory Assessment, AECOM, 2011;
 - (b) Regulatory Re-Assessment of the Water System Infrastructure and Water Supply Sources, CH2M, 2017;
 - (c) ODW Response Letter Dated June 12, 2018; and
 - (d) City Response Letter Dated September 6, 2018.

D6. GENERAL REQUIREMENTS

D6.1 General Requirements of the Consultant

- D6.1.1 The Consultant shall ensure that the Scope of Services is performed under direct supervision of a Professional Engineer.
- (a) All drawings, reports, recommendations, and other documents involving the practice of professional engineering shall bear the stamp or seal and signature of a qualified engineer as required by the Engineering and Geoscientific Professions Act of the Province of Manitoba and By-laws of the Engineers Geoscientists Manitoba.
 - (b) Final design documents irrespective of the level of design shall have an engineer’s seal.
 - (c) Other reports and documents not involving the practice of professional engineering, such as letters of information and minutes of meetings, may be originated and signed by other personnel engaged by the Consultant and accepted by the City.
- D6.1.2 Progress estimates, completion certificates, and other reports related to the technical aspects of this Project shall be endorsed by the Consultant’s Representative in a manner acceptable to the City.
- D6.1.3 The Consultant shall, at a minimum, utilize the most current industry standard sustainable practices and conform to the latest codes, standards, regulations, and legislative requirements in effect. The Consultant shall liaise with the City on the application of codes and standards.
- D6.1.4 The Consultant shall not substitute or replace Key Personnel throughout the duration of the Project without the written approval of the Project Manager. Experience and qualification as specified in B10 shall be submitted for all requested substitute(s) and replacement(s).
- D6.1.5 The Consultant shall coordinate and obtain approval/permit(s) where required, including but not limited to: Manitoba Hydro, MTS, and City Departments.
- D6.2 General Requirements for Project Deliverables

- D6.2.1 Project Deliverables include but are not limited to:
- (a) Re-Assessment of a Public Water System Report as described in D12.
- D6.2.2 All Project Deliverables are to be delivered with a document lifecycle approach.
- D6.2.3 Where possible, all documents provided as PDF shall be searchable.
- D6.2.4 Unless otherwise indicated, the review period for Project Deliverables shall be a minimum of two (2) weeks and correspond to the number of pages and complexity of the document. The Consultant shall indicate these review periods on the critical path method schedule as outlined in B12.1.
- D6.2.5 All Deliverables shall have incorporated the Consultant's internal quality procedures before being submitted to the City.
- (a) All Deliverables shall be reviewed by a representative of the Consultant who is proficient in technical writing prior to being submitted to the City.
 - (b) Any Deliverables deemed by the City to be of poor quality shall be rejected and will be required to be revised and resubmitted at no additional cost to the City or additional time to the Project schedule.
- D6.2.6 The Deliverables shall be submitted in a substantially completed draft format for review prior to submittal as a final document.
- (a) Draft versions of written documents shall be submitted in Microsoft Word 2010 (.docx) native format.
 - (b) All Deliverables shall be submitted to the Project Manager.
- D6.3 General Requirements for Photographs
- D6.3.1 All photographs submitted to the City as part of the Project shall include captions with the following information:
- (a) date photograph was taken;
 - (b) location and orientation where the photograph was taken; and
 - (c) a brief description of what is depicted by the photograph.
- D6.4 General Requirements for Meetings
- D6.4.1 Schedule and chair Project meetings.
- (a) Provide an agenda a minimum of two (2) Business Days before the Project meeting date.
 - (b) Provide meeting minutes within three (3) Business Days after the Project meeting date.

D7. SCOPE OF SERVICES

- D7.1 The Scope of Work of this RFP generally consists of consulting engineering services to facilitate the re-assessment of the City's Public Water System as defined by the ODW Terms of Reference for an Engineering Assessment of a Public Water System (Appendix B) and further detailed in D7.2,
- D7.2 The Services required under this Contract shall consist of the following phases as outlined in D8 to D12:
- (a) Project Management in accordance with D8;
 - (b) Records and Historical Document Review in accordance with D9;
 - (c) Regulator and Owner Interviews in accordance with D10;.
 - (d) Site Inspections in accordance with D11; and

- (e) Preparation and Submission of the Re-Assessment of the City of Winnipeg Public Water System Report in accordance with D12.

D7.3 Unless otherwise stated, Appendix A – Definition of Professional Consultant Services (Consulting Engineering Services) shall be applicable to the provision of Professional Engineering services for this Project. These services are specific to Advisory Services.

D7.4 The Services required in the Contract shall be in accordance with the City's Project Management Manual <http://winnipeg.ca/infrastructure/asset-management-program/templates-manuals.stm#2> and templates <http://winnipeg.ca/infrastructure/asset-management-program/templates-manuals.stm#4> . Notwithstanding the foregoing, the Consultant is being engaged by the City for its professional expertise; the Consultant shall bring to the Project Manager's attention any aspect of the City's Project Management Manual or templates which the Consultant is of the opinion is not consistent with good industry practice.

D8. PROJECT MANAGEMENT

D8.1 Plan, organize, secure, and manage resources to complete the phases outlined in D9 to D12:

D8.2 The City Project Manager has prepared a project management plan. Review and update the project management plan no later than fifteen (15) Business Days after Project award. The project management plan shall include:

(a) Scope and Schedule

- (i) Include the schedule information required in B12.
- (ii) Provide a Deliverable based Work Breakdown Structure (WBS) that identifies major elements relative to how the assignment will be managed and in terms of tangible and verifiable results (including milestones, critical triggers, Deliverables, etc.).
- (iii) Provide a Project schedule, listing all Project activities and milestones. Identify responsibilities, timelines, and dependencies for all activities and milestones.
- (iv) The approved schedule will be used as the Project baseline schedule throughout the Project.
- (v) The City's Project Manager may request updates to the Project baseline schedule due to delays in receiving Deliverables.

(b) Budget

- (i) Include the information required in B8.
- (ii) Include a description of the processes used to carry out earned value analysis such that the Project's performance can be measured against scope, schedule, and cost baselines.

(c) Quality Management

- (i) Describe quality management methods used to address quality planning, quality assurance, and quality control for the following:
 - (i) field surveying procedures and controls;
 - (ii) data review, verification, and validation;
 - (iii) City reviews;
 - (iv) corrective action process; and
 - (v) quality assurance and control of Deliverables.

(d) Human Resources

- (i) Describe the team organizational and management approach.
- (ii) Include an organizational chart.

(e) Communication

- (i) Describe communication interfaces (organizational, technical, and interpersonal) and the roles and responsibilities of each stakeholder.

- (ii) Identify the processes that will be used to liaise with the City throughout the provision of the Services and to provide ample opportunity for input and review by the City's Project team.
 - (f) Change Management Plan
 - (i) Identify the schedule, quality, and budget impacts of any proposed changes.
 - (g) Quality Assurance and Control plan
 - (i) Establish appropriate levels of review and approvals for all Project Deliverables.
 - (h) Risk Management Plan
 - (i) Update the risk management plan which identifies risk event causes, risk event outcomes, degree of certainty, effects on Project objectives, severity of risk, response/action(s) to be undertaken, contingency plan and associated costs to manage risks.
 - (ii) The risk management plan shall be documented using the City's spreadsheet template located on the City's Asset Management Program website located at: <https://www.winnipeg.ca/infrastructure/asset-management-program/templates-manuals.stm#5>. A draft risk management plan has been prepared by the City and will be provided to the Consultant.
 - (iii) Outline process for updating the risk management plan in various phases of the Project.
- D8.3 Issue Consultant Progress Reports every sixty (60) Calendar Days after the pre-commencement meeting up to the Total Performance of the construction tender.
- D8.3.1 The Consultant Progress Reports template is available on the City of Winnipeg Documents for City Asset Management Program website (<https://www.winnipeg.ca/infrastructure/asset-management-program/templates-manuals.stm>).
- D8.3.2 If critical stages outlined in D17 are not achieved, submit Consultant Progress Reports every thirty (30) Calendar Days until the deliverables indicated in D6.2 are approved by the City. No additional fees will be contemplated for additional Consultant Progress Reports.
- D8.4 Coordinate regular Project meetings every sixty (60) Calendar Days and provide minutes. The meetings shall be used to update the Project Manager on the status of the Project and to discuss other project management issues.
 - D8.4.1 Schedule all of the regular bi-monthly project meetings within five (5) days of the pre-commencement meeting.
 - D8.4.2 If critical dates outlined in D17 are not achieved, regular Project meeting frequency shall increase to every thirty (30) Calendar Days until the Project is complete. No additional fees will be contemplated for additional meetings.
 - D8.4.3 The frequency of meetings may vary based upon the level of Project activity.
- D8.5 In addition to the regular Project meetings detailed in D8.4, schedule and chair the following meetings:
 - (a) pre-commencement meeting – to be scheduled immediately upon award of the Project;
 - (b) interview with the regulator as (as described in D10);
 - (c) interview with the owner as (as described in D10);
 - (d) meeting to review the draft City of Winnipeg Public Water System Re-Assessment Report (as described in D12); and
 - (e) Project closeout meeting.
- D8.5.1 Additional meetings may be required in the event that issues arise during the course of the Project.
- D8.5.2 Meetings can be combined if appropriate.

D8.6 Provide adequate notice (at least one (1) week) prior to any Site visit or work that will require assistance from City personnel.

D8.7 Carry out other project management activities as required.

D9. WATER SYSTEM RECORDS AND HISTORICAL DOCUMENT REVIEW

D9.1 General

D9.1.1 Review of records shall focus on the identification of infrastructure, process, treatment, or any equipment related deficiencies. The review of records to be limited to records generated since the last Regulatory Re-Assessment.

D9.2 Water System Records and Historical Documents

D9.2.1 The City shall provide the following water system records and historical documents within two (2) weeks of the pre-commencement meeting:

- (a) the City's current Operating Licence;
- (b) the Regulatory Re-Assessment of the Water System Infrastructure (2017 CH2MHill/Dillon) including the ODW response and City response;
- (c) the Annual Audits and inspection letters issued by the ODW for the last three years;
- (d) the most recent PWS Annual Report;
- (e) the following design reports and studies completed since the last Regulatory Re-Assessment;
 - (i) Overview of New Water By-Law, City of Winnipeg, 2015;
 - (ii) Preliminary Design of Dike and Access Road Rehabilitation at Deacon Reservoir, Trek, 2016;
 - (iii) High Risk River Crossings Condition Assessment Report – Water Crossings, AECOM, 2016;
 - (iv) Mussel Control at the Shoal Lake Intake Facility, AECOM, 2016;
 - (v) Preliminary Design of Mussel Control at the Shoal Lake Intake Facility, AECOM, 2017;
 - (vi) Preliminary Design for the Taché Booster Pumping Station and Surge Tower Upgrades, AECOM, 2017;
 - (vii) Water Demand Projection Model, C3 Water, 2018;
 - (viii) Regional Water Distribution System SCADA System Upgrade, PLC Replacement and Power Reliability Upgrades Preliminary Design Report, Dillon, 2018;
 - (ix) The In-town Pumping Stations Preliminary Design of Disinfection Upgrades Phase 1 Preliminary Engineering – System Assessment, Dillon, 2018;
 - (x) Pilot Testing an Alternative Coagulant for the Winnipeg Water Treatment Plant, WSP, 2018;
 - (xi) City of Winnipeg Water Treatment Plant Zeta Potential Testing Technical Memorandums, Stantec, 2018;
 - (xii) Pipe Loading Assessment of the Branch I Aqueduct at the Lafarge Precast Concrete Plant, AECOM 2019;
 - (xiii) SLA Asset Preservation – Mile 93.69 Manhole Replacement, AECOM, 2019;
 - (xiv) Evaluation of Water Conservation Programs, Including Current and Future Water Conservation Needs, C3 Water, 2019;
 - (xv) The In-town Pumping Stations Preliminary Design of Disinfection Upgrades Phase 2 Preliminary Engineering – Design and Construction Management, Dillon, 2020;
 - (xvi) Water Treatment Plant Concrete Assessment, Hatch, 2020;

- (xvii) McPhillips Regional Pumping Station Power Quality Assessment and Preliminary Design Project Basis Development Memo, Cengys, 2020;
 - (xviii) Hurst Regional Pumping Station Alternate Power Conceptual Design Project Basis Development Memo, Cengys, 2020;
 - (xix) McPhillips Pumping Station Roof Inspection Site Visit Reports, Morrison Hershfield, 2020;
 - (xx) Maclean Pumping Station Roof Inspection Site Visit Report, Morrison Hershfield, 2020;
 - (xxi) Feeder Main Risk Assessment, AECOM, 2020;
 - (xxii) High Risk River Crossings Phase 2 – Condition Assessment Report, AECOM, 2020;
 - (xxiii) DBPS Power Quality Assessment and Metering Improvement Phase 1 Report, Cengys, 2020
 - (xxiv) Evaluation of Leak Detection Programs, C3 Water, 2020;
 - (xxv) Production Meter Review and Recommendation, C3 Water, 2020;
 - (xxvi) Branch I Aqueduct Underdrains Cleaning and Inspection Report, AECOM 2021 (Currently in draft);
 - (xxvii) Proposed Operating Changes to the UV Disinfection System, Dillon 2021; (Currently in Draft); and
 - (xxviii) Replacement of Treated Water Production Meters Preliminary Design Report, C3 Water, 2021 (Currently in Draft).
- (f) the laboratory chemical water quality analysis reports for the last five years;
 - (g) the bacterial summaries from the last 3 years;
 - (h) the water use records for the last three years including average day demand, maximum day demand, peak hour demand, and per capita water use;
 - (i) a current list of SOPs;
 - (j) a current list of new drawings produced since the last Regulatory Re-Assessment; and
 - (k) an updated water distribution system map.

D9.2.2 Within four (4) weeks of the pre-commencement meeting, provide the City Project Manager with a written request of all data and records in addition to the items listed in D9.2.1 required to complete the Regulatory Re-Assessment.

- (a) Allow four (4) weeks for the City to collect all data and records required for the Re-Assessment.

D10. REGULATOR AND OWNER INTERVIEWS

D10.1 General

D10.1.1 In accordance with 'Terms of Reference for Assessment of a Public Water System (October 2018)' document, the Re-Assessment Engineer must interview the Owner of the System and the Regulator.

D10.1.2 The Records and Historical Document Review shall be completed prior to conducting any interviews.

- (a) Prepare interview questions based on any concerns identified in the Records and Historical Document Review.

D10.1.3 The interviews shall be scheduled through the City Project Manager at least three (3) weeks in advance.

- (a) Provide a draft agenda to the City Project Manager at least one (1) week prior to the interviews.

D10.2 Interview with the Regulator

D10.2.1 Allow for at least two (2) hours to complete the interview with the Regulator.

D10.2.2 Interview should, at a minimum:

- (a) address any major incidents or emergencies that have occurred in the system since the last Regulatory Re-Assessment;
- (b) address concerns raised in the Annual Audits and Inspections; and
- (c) identify existing or new items which constitute potential risks to the safety and reliability of the system.

D10.3 Interview with the Owner

D10.3.1 Allow for at least three and a half (3.5) hours to complete the interview with the Owner.

D10.3.2 Interview should, at a minimum:

- (a) address any major incidents or emergencies that have occurred in the system since the last Regulatory Re-Assessment;
- (b) address concerns raised in the Annual Audits and Inspections;
- (c) identify existing or new items which constitute potential risks to the safety and reliability of the system.

(d) identify any major changes, upgrades, or expansions completed since the previous Regulatory Re-Assessment. The City will provide information on these changes including the following:

- (i) SLA Intake – Fuel System Upgrades;
- (ii) SLA Intake – Rotating Screens Inspections and Repairs;
- (iii) SLA Asset Preservation – Stoplog Replacement;
- (iv) WTP Protected Water Supply Connections;
- (v) Construction of Water Treatment Research and Process Optimization Facility;
- (vi) WTP Coagulant switchover;
- (vii) Branch I Aqueduct Seine River Crossing Bank Stabilisation;
- (viii) Tache Booster Pumping Station Roof Replacement;
- (ix) Wilkes Reservoir Roof Rehabilitation;
- (x) Wilkes Reservoir Valve Pit B Rehabilitation;
- (xi) Installation of Protective Bollards at Maclean Pumping Station; and
- (xii) Public Water Service Outlets Rehabilitation.

(e) identify any significant planned or ongoing maintenance programs. The City will provide information on these programs including the following:

- (i) reservoir cleaning and inspection;
- (ii) SLA internal inspections;
- (iii) valve exercising program; and
- (iv) water main cleaning program.

(f) identify any significant ongoing capital projects and studies. The City will provide information on these capital projects and studies including the following:

- (i) SLA Intake Upgrades Program – Fuel System Upgrades;
- (ii) Detailed Design of a Mussel Control System at the Shoal Lake Aqueduct Intake Facility;
- (iii) SLA Asset Preservation Program – Boathouse Rehabilitation;
- (iv) SLA Asset Preservation Program – Splitting of Deacon Suction Header;
- (v) Water Treatment Plant Site Flood Protection;
- (vi) Water Treatment Plant Concrete Rehabilitation;

- (vii) Water Treatment Plant Roof Rehabilitation;
 - (viii) Deacon Booster Pumping Station Ultraviolet Disinfection System Upgrades;
 - (ix) Regional Water Distribution System SCADA System Upgrade, PLC Replacement and Power Reliability Upgrades;
 - (x) Electrical & HVAC Upgrades at McPhillips & Tache Pumping Stations;
 - (xi) Hurst Pumping Station Structural Repairs and Drainage Building Upgrades; and
 - (xii) Condition Assessment of High Risk Sewer & Water River Crossings Phase Three.
- (g) identify any significant planned upgrades and studies for the next five (5) years. The City will provide information on these planned capital projects and studies including the following:
- (i) Branch 2 Aqueduct Condition Assessment;
 - (ii) WTP PLC Replacements;
 - (iii) Deacon Reservoir Access Road Monitoring;
 - (iv) Regional Reservoir Condition Assessments;
 - (v) Regional Pumping Station Production Meter Upgrades;
 - (vi) Regional Pumping Station Chlorine Upgrades;
 - (vii) Regional Pumping Station Process Cooling Upgrades;
 - (viii) SLA Intake Upgrades Program;
 - (ix) SLA Asset Preservation Program;
 - (x) Study for Natural Gas Powered Pumps at the Hurst Pumping Station;
 - (xi) Tache Booster Pumping Station and Surge Tower Structural Upgrades; and
 - (xii) Water Meter Renewal Study.
- (h) confirm the content of the previous Regulatory Re-Assessment report; and
- (i) confirm the status of the deficiencies identified in the previous Regulatory Re-Assessment report.

D11. SITE INSPECTIONS

D11.1 General

D11.1.1 In accordance with 'Terms of Reference for Assessment of a Public Water System (October 2018)' document, site inspections are to be conducted at the discretion of the Consultant in consultation with the City and considering the following:

- (a) The size and complexity of the system;
- (b) The ability to understand the system solely from available reports and information with sufficient confidence to seal and sign the final report; and
- (c) The extent of infrastructure changes or deterioration which may have taken place since the last assessment and the degree to which those changes may have affected the ability of the system to produce or distribute safe water.

D11.1.2 Provide a minimum of three (3) weeks notice prior to any site inspection.

D11.2 Sites to be Inspected

D11.2.1 For bidding purposes, assume the following Sites will be inspected as part of the Regulatory Re-Assessment:

- (a) SLA intake facility;
- (b) the Winnipeg Drinking Water Treatment Plant (WTP);
- (c) Deacon Booster Pumping Station and Chemical Feed Facility (DBPS);
- (d) Tache Booster Pumping Station;

- (e) Hurst Regional Pumping Station and Wilkes Reservoir;
- (f) McPhillips Regional Pumping Station and Reservoir;
- (g) Maclean Regional Pumping Station and Reservoir; and
- (h) the public water service outlets located at:
 - (i) 1539 Waverley Street; and
 - (ii) Portage Avenue at the Perimeter Highway.

D11.2.2 Note that the reservoirs will not be drained for the Site inspections.

D12. PREPARATION OF THE CITY OF WINNIPEG PUBLIC WATER SYSTEM RE-ASSESSMENT REPORT

D12.1 General

D12.1.1 The 'Terms of Reference for Re-Assessment of a Public Water System' document in Appendix B provides a sample table of contents which identifies the expected format and discussion topics for the Re-Assessment Report.

- (a) The required discussion topics for the City of Winnipeg Public Water System Re-Assessment are outlined in Sections D12.2 to D12.11.

D12.1.2 As noted in the 'Terms of Reference for Re-Assessment of a Public Water System' document, the following items **do not** have to be included in the Re-Assessment:

- (a) detailed review of bacterial laboratory analysis records, monthly disinfection and turbidity monitoring reports, and other routine operational records (reviews are completed by the DWO for the Annual Audits);
- (b) review of emergency response plans;
- (c) review of facility classification and operator certification requirements; and
- (d) review of Water Rights, Environmental Act, or other licenses.

D12.1.3 An opinion of probable cost **will not** be included in the City of Winnipeg Public Water System Re-Assessment.

D12.1.4 The Regulatory Re-Assessment of the Water System Infrastructure (2017 CH2MHill/Dillon) can be used as a guide for the preparation of the new City of Winnipeg Public Water System Re-Assessment. System description and background information can be reused where applicable.

D12.1.5 Prepare and submit the City of Winnipeg Public Water System Re-Assessment Report.

- (a) Draft Re-Assessment Report Submission
 - (i) Submit one (1) electronic copy of the draft Re-Assessment Report in Microsoft Word Format.
 - (ii) Allow a minimum three (3) weeks for City review of the Draft Re-Assessment Report.
 - (iii) Subsequent reviews of the draft Re-Assessment Report may be required depending on the extent of City comments.
- (b) Final Re-Assessment Report Submission
 - (i) Within two (2) weeks of receipt of the City review comments on the draft Re-Assessment Report, prepare and submit the final Re-Assessment Report.
 - (ii) Submit to the Department six (6) hard copies and one (1) electronic PDF copy of the Final Re-Assessment Report.
 - (iii) Complete the "Engineer" section of the Submission Form (contained on the last page of the 'Terms of Reference for Re-Assessment of a Public Water System' document).

D12.2 Water System Description

D12.2.1 General System Characteristics

- (a) Summarize basic water system characteristics including:
 - (i) year the system began operating;
 - (ii) type and name of source water;
 - (iii) operating season;
 - (iv) population served;
 - (v) number of service connections and types of connections; and
 - (vi) current average day demand, maximum day demand, peak hour demand, and per capita water use.

D12.2.2 Water Source

- (a) Summarize any major changes, upgrades, or expansions since the last Regulatory Re-Assessment.

D12.2.3 Water Treatment System

- (a) Summarize any major changes, upgrades, or expansions since the last Regulatory Re-Assessment.

D12.2.4 Treated Water Storage

- (a) Summarize any major changes, upgrades, or expansions since the last Regulatory Re-Assessment.

D12.2.5 Distribution

- (a) Summarize any major changes, upgrades, or expansions to water distribution pumping components since the last Regulatory Re-Assessment.
- (b) Summarize the normal pressure ranges within the water distribution system.
- (c) The City will provide the following water distribution system data and records which are to be reviewed and reported on as part of the Regulatory Re-Assessment:
 - (i) water consumption records including volume of non-revenue water;
 - (ii) design criteria (i.e. standard construction specifications, hydrant and valve spacing);
 - (iii) Water Main Cleaning Program statistics (valve exercising);
 - (iv) description of all public water service outlets;
 - (v) summary of the City's Cross Connection Control and Backflow Prevention Program;
 - (vi) description of permanent distribution pressure monitoring locations;
 - (vii) average, maximum, and minimum distribution pressure records from the permanent pressure monitoring stations for the last five (5) years;
 - (viii) summary of leak detection activities since the last Regulatory Re-Assessment;
 - (ix) summary of the water main inventory (from GIS database records) including pipe sizes, materials types, river crossings, and railway yard crossings; and
 - (x) summary of the City's Frozen Services Management Program.

D12.2.6 Operation and Control

- (a) Describe the control system including:
 - (i) sequencing of water supply, treatment, and distribution operations;
 - (ii) methods of process and pump control;
 - (iii) level of automation; and
 - (iv) major alarms and their annunciation method.
- (b) Identify the number of operators and an estimate of the number of hours per day required for operation and maintenance.

- (c) Discuss whether up-to-date water system drawings, records, and operation and maintenance manuals are maintained.
- (d) Briefly summarize existing operation and maintenance programs including cross connection control, leak detection, and water main cleaning.
- (e) Provide a listing of established standard operating procedures including water main renewal, water main repair, and instrument calibration.
- (f) Summarize all standby power generation equipment and any associated fuel containment systems.
- (g) Describe any bypass that would allow raw or partially treated water to enter the distribution system.
- (h) Identify any piping cross connections within the water treatment plant and the method of backflow prevention.
- (i) Briefly describe how annual operation and maintenance costs and capital upgrades are funded.

D12.3 Review of Water System Records

D12.3.1 General

- (a) Review of records shall focus on the identification of infrastructure, process, treatment, or any equipment related deficiencies. The review of records should be generally limited to records generated since the last Regulatory Re-Assessment.

D12.3.2 Operating License Conditions

- (a) Summarize in tabular format the Operating License Conditions including:
 - (i) water quality and treatment standards;
 - (ii) on-line monitoring conditions; and
 - (iii) any additional terms or conditions with implications to infrastructure, process, treatment, or equipment requirements.

D12.3.3 Previous Assessment and Follow-up Actions

- (a) General
 - (i) The City will provide all documentation associated with the Water System Infrastructure and Water Supply Sources Regulatory Assessment action items.
- (b) Summarize the previous Regulatory Re-Assessment and follow-up actions including:
 - (i) major findings and recommendations;
 - (ii) feedback received from the ODW;
 - (iii) the action items from the previous Regulatory Re-Assessment and the status of actions taken to address the recommendations.

D12.3.4 Annual Audits and Inspections

- (a) Summarize comments from the Annual Audits and Inspection letters issued by the ODW where an outstanding deficiency or compliance concern was identified.

D12.3.5 Other Studies or Reports

- (a) Summarize in tabular format the relevant findings and recommendations from the studies listed in D9.2.1(e) completed since the last Regulatory Re-Assessment which will be provided by the City. Identify the status of completion for each recommendation.

D12.3.6 Water Quality Data

- (a) Summarize in tabular format physical and chemical characteristics (maximum, minimum, and average) for the raw and treated water for the period of 2016 to 2020 including the following:
 - (i) general water chemistry;

- (ii) metals; and
- (iii) disinfection by-products.
- (b) Summarize the raw and filtered water turbidity ranges and seasonal trends.
- (c) Note any exceedances of provincial standards and from the GCDWQ (including Maximum Allowable Concentrations and Aesthetic Objectives).
- (d) Discuss any significant changes or trends in water quality since the last Regulatory Re-Assessment that are affecting, or could affect, treatment processes, process control, or regulatory compliance.
- (e) Identify any other water quality parameters that may affect treatment processes or compliance where a standard or guideline has not been established.
- (f) Evaluate and summarize the ability of the treatment system to address water quality issues and the ability of the system to meet design objectives and goals.
- (g) Water quality sampling and analysis **will not** be included as part of the Regulatory Re-Assessment.

D12.4 Owner and ODW Concerns

D12.4.1 The Re-Assessment Report shall include the following:

- (a) summary of any concerns identified during interviews with the Owner and the ODW.
- (b) description of any major changes, upgrades, or expansions completed or started since the last assessment, and planned for the system over the next five (5) years.
- (c) brief description of any major incidents or emergencies since the last assessment including boil water advisories.

D12.5 Site Inspection Findings

- D12.5.1 List all water system buildings inspected and provide a rating of their general condition in tabular format.
- D12.5.2 Provide comments on any significant building environment concerns.
- D12.5.3 Summarize visual observations of the general condition of all equipment.
- D12.5.4 Identify deficiencies which could compromise water safety or quality.

D12.6 Ability to Meet Regulatory Requirements

- D12.6.1 Provide updated contact time (CT) calculations for disinfection requirements. Use CT calculation procedures and tables from the ODW Filtration and Disinfection Log Reduction Credits Guideline and the Chlorine and Alternative Disinfectants Manual. Include justification for peak hour flow, effective volume, and baffling factor assumptions.
- D12.6.2 Identify any deficiencies in process design or operation that compromise the ability to provide the calculated CT.
- D12.6.3 Complete CT calculations to determine log inactivation for viruses.
- D12.6.4 Determine filtration credits and complete CT calculations or UV dosage comparisons to determine log removal and log inactivation credits for Cryptosporidium and Giardia.
- D12.6.5 Identify any deficiencies in process design or operation that compromise the system's ability to claim full log reduction credits.
- D12.6.6 Identify and discuss any changes since the last Regulatory Re-Assessment, including distribution system expansion, which may lead to CT concerns.
- D12.6.7 Discuss any compliance issues related to meeting turbidity standards identified in the Operating License. Identify any deficiencies in filtration design or operation that compromise the ability to meet the standards on a continuous basis.

- D12.6.8 Discuss any compliance issues related to meeting chemical water quality standards identified in the Operating License or from water quality data review. Identify whether adequate treatment barriers are in place. Where treatment barriers are in place, identify any deficiencies in design or operation that compromise the ability to meet these standards.
- D12.6.9 Discuss compliance with standards for disinfection by-products.
- D12.6.10 Discuss the capabilities of the treatment process to remove algae and their toxins.
- D12.6.11 Summarize and discuss corrosion control measures in place.
- D12.7 Ability to Meet Industry Best Practices
- D12.7.1 Identify and discuss any significant deviations from Ten State Standards. Focus on major deviations which may lead to detrimental effects on the treatment process or treated water quality.
- D12.7.2 Identify and discuss the adequacy of cross connection control within the water supply, treatment, and distribution system; including backflow prevention and the potential for unprotected connections at high risk facilities in the distribution system.
- D12.7.3 Discuss the ability of the treatment system to meet aesthetic water quality guidelines.
- D12.7.4 Identify water system design provisions or operational procedures that vary from industry best practice.
- D12.8 Ability to Meet Demands
- D12.8.1 Capacity
- (a) Water Demand Projections have been updated since the last Regulatory Re-Assessment with completion of the 'City of Winnipeg Water Projection Model' (C3 Water, 2018).
- (b) Based on the updated demand projections:
- (i) evaluate the ability of the water supply, treatment system, storage systems, pumping and distribution components to meet the current demands;
 - ◆ include a comparison of component capacities relative to maximum day demands.
 - (ii) identify any major physical or capacity limitation that may affect the anticipated growth or expansion of the system over the next five years; and
 - (iii) discuss the amount of system growth that can be accommodated given the existing available capacity to supply, treat, and distribute water.
- D12.8.2 Reliability
- (a) Evaluate the ability of the water supply, treatment, storage, pumping, and distribution components to reliably produce safe drinking water from review of the following:
- (i) physical condition of equipment;
 - (ii) system redundancy;
 - (iii) back-up equipment;
 - (iv) control and alarm limitations; and
 - (v) power supplies;
- D12.9 Recommended Upgrades and Actions
- D12.9.1 Provide prioritized lists/tables of all infrastructure, processes, treatment, and equipment related deficiencies.
- D12.9.2 For each identified deficiency provide the recommended action(s) to remedy the deficiency.

- D12.9.3 For deficiencies where process optimization is recommended, provide detailed advice on optimization strategies.
- D12.9.4 Lists/tables shall be separated into separate sections to address water supply, treatment, storage, and distribution components.
- D12.10 Opinion of Probable Cost
- D12.10.1 This section will not be included in the Regulatory Re-Assessment.
- D12.11 Appendices
- D12.11.1 In accordance with the 'Terms of Reference for Re-Assessment of a Public Water System' document, include the following Appendices:
- (a) Process Schematic;
 - (b) Inspection Photos;
 - (c) Copy of Operating License;
 - (d) Copy of Action Plan; and
 - (e) Most recent Annual Audit and inspection letter issued by the DWO.

SUBMISSIONS

D13. AUTHORITY TO CARRY ON BUSINESS

- D13.1 The Consultant shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Consultant does not carry on business in Manitoba, in the jurisdiction where the Consultant does carry on business, throughout the term of the Contract, and shall provide the Project Manager with evidence thereof upon request.

D14. SAFE WORK PLAN

- D14.1 The Consultant shall provide the Project Manager with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D14.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>

D15. INSURANCE

- D15.1 The Consultant shall procure and maintain, at its own expense and cost, insurance policies with limits no less than those shown below.
- D15.2 As a minimum, the Consultant shall, without limiting its obligations or liabilities under any other contract with the City, procure and maintain, at its own expense and cost, the following insurance policies:
- (a) Comprehensive or Commercial General Liability Insurance including:
 - (i) an inclusive limit of not less than \$2,000,000 for each occurrence or accident with a minimum \$2,000,000 Products and Completed Operations aggregate and \$5,000,000 general aggregate;
 - (ii) all sums which the Consultant shall become legally obligated to pay for damages because of bodily injury (including death at any time resulting therefrom) sustained by any person or persons or because of damage to or destruction of property

- caused by an occurrence or accident arising out of or related to the Services or any operations carried on in connection with this Contract;
- (iii) coverage for Products/Completed Operations, Blanket Contractual, Consultant's Protective, Personal Injury, Contingent Employer's Liability, Broad Form Property Damage, Employees as Additional Insureds, and Non-Owned Automobile Liability;
 - (iv) a Cross Liability clause and/or Severability of Interest clause providing that the inclusion of more than one Insured shall not in any way affect the rights of any other Insured hereunder in respect to any claim, demand, suit or judgment made against any other Insured.
- (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Consultant directly or indirectly in the performance of the Service. The limit of liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
 - (c) Professional Errors and Omissions Liability Insurance including:
 - (i) an amount not less than \$500,000 per claim and \$1,000,000 in the aggregate.
- D15.2.1 The Consultant's Professional Errors and Omissions Liability Insurance shall remain in force for the duration of the Project and for twelve (12) months after Total Performance.
- D15.3 The policies required in D15.2(a) shall provide that the City is named as an Additional Insured thereunder and that said policies are primary without any right of contribution from any insurance otherwise maintained by the City.
- D15.4 The Consultant shall require any Consultants hired to perform geo technical drilling and sample collecting or closed-circuit television to procure and maintain, at its own expense and cost, comparable insurance to that set forth under D15.2(a) and D15.2(b).
- D15.5 The Consultant shall require each of its Subconsultants hired for design, architectural or engineering services as outlined in the Scope of Services to provide comparable insurance to that set forth under D15.2(a) and D15.2(c).
- D15.6 The Consultant shall provide the Project Manager with a certificate(s) of insurance in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Services, but in no event later than the date specified in C4.1 for the return of the executed Contract. Such certificates shall state the exact description of the Services and provide for written notice in accordance with D15.9.
- D15.7 The Consultant may take out such additional insurance as it may consider necessary and desirable. All such additional insurance shall be at no expense to the City.
- D15.8 All insurance, which the Consultant is required to obtain with respect to this Contract, shall be with insurance companies registered in and licensed to underwrite such insurance in the Province of Manitoba.
- D15.9 The Consultant shall not cancel, materially alter, or cause any policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the City.

SCHEDULE OF SERVICES

D16. COMMENCEMENT

- D16.1 The Consultant shall not commence any Services until it is in receipt of a notice of award from the City authorizing the commencement of the Services.
- D16.2 The Consultant shall not commence any Services until:
 - (a) the Project Manager has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D13;

- (ii) evidence of the insurance specified in D15.
- (b) the Consultant has attended a meeting with the Project Manager, or the Project Manager has waived the requirement for a meeting.

D16.3 The City intends to award this Contract by April 19, 2021.

D17. CRITICAL STAGES

D17.1 The Consultant shall achieve critical stages of the Services for this Contract in accordance with the following requirements:

- (a) The interviews described in D10 shall occur no later than September 1, 2021;
- (b) The draft regulatory re-assessment report shall be submitted to the City no later than December 1, 2021; and
- (c) The final regulatory re-assessment report shall be submitted to the City no later than February 28, 2022.

PART E - SECURITY CLEARANCE

E1. SECURITY CLEARANCE

E1.1 Each individual proposed to perform Services under this Contract within facilities associated with the water supply, treatment, and distribution system including but not limited to the sites listed in D11.2 shall be required to obtain a Public Safety Verification Check and a Police Information Check as detailed below.

E1.1.1 The Public Safety Verification Check must be obtained through Sterling BackCheck.

- (a) A Sterling BackCheck account must be setup seventy-two (72) hours prior to individual security clearances to allow sufficient time for activation of the contracting company's account. If the contracting company has an existing City of Winnipeg Sterling Backcheck vendor account, they may skip to (d) below.
- (b) An authorized individual of the contracting company must complete the Sterling Backcheck Setup Form. Click on the link below, complete the form, and hit submit. ******(This form is to be completed by the company, not by the employee requiring the security clearances). <https://forms.sterlingbackcheck.com/partners/platform2-en.php?&partner=winnipegcity>
- (c) Within forty-eight (48) hours of completing the Sterling Backcheck Setup Form, the authorized individual of the contracting company will receive a username and password for Sterling Backcheck. It will appear in their inbox as a "Welcome to Sterling Backcheck" e-mail. Upon receipt, the authorized individual of the contracting company will be asked to login to the Sterling Backcheck website to set their security questions and password. Once completed, individual security clearance requests can be submitted.
- (d) In order to run a Public Safety Verification Check and/or a Police Information Check, follow the steps below:
 - (i) click on the sub-tab labelled "Order eConsent";
 - (ii) fill out the required information about the employee proposed to perform Services under this Contract within City facilities (the person that requires the security clearances);
 - (iii) select your location under the "Order Information" section and enter the organization's phone number, if required;
 - (iv) select the required individual service(s) in the dropdown menu under the "Select Services" section. If both the Public Safety Verification Check and the Police Information Check are required, select the Sterling Backcheck Package One (with electronic identity verification). Once selected, both the Public Safety Verification Check and the Police Information Check should have a grey check mark beside them;
 - (v) Scroll down to the bottom and click the blue "Submit" button. The employee proposed to perform Services under this Contract within City facilities will be invited to complete their security clearance;
 - (vi) The employee will receive the invitation and must click on the link and complete their Public Safety Verification Check and/or Police Information Check;
 - (vii) The results of the Public Safety Verification Check and/or Police Information Check will go directly to the City of Winnipeg and to the authorized individual of the contracting company within twenty-four (24) hours; and
 - (viii) contact Ron Risley at 204-986-3758 if you have any questions regarding the Public Safety Verification Check.
- (e) Any questions related to the Sterling BackCheck process can be directed to Linda Ferens at 204-999-0912 or by email at: linda.ferens@sterlingcheck.com OR managedsupport@sterlingcheck.com

E1.1.2 The Police Information Check must be obtained from one of the following:

- (a) Sterling BackCheck;

- (i) see E1.1.1(a) thru (e) for instructions on how to set up an account and submit individuals for security checks; or
 - (b) a police service having jurisdiction at his/her place of residence;
 - (i) the original Police Information Check (Form P-612) will be provided by the Winnipeg Police Service to the individual applicant. The original has a validation sticker from the Winnipeg Police Service in the top right hand corner;
 - (ii) the applicant shall provide the original Police Information Check (Form P-612) to the Contract Administrator; or
 - (c) Commissionaires (Manitoba Division);
 - (i) forms to be completed can be found on the website at: <https://www.commissionaires.ca/en/manitoba/home>
 - (ii) the applicant shall provide the original Police Information Check to the Contract Administrator; or
 - (d) FASTCHECK Criminal Record & Fingerprint Specialists;
 - (i) forms to be completed can be found on the website at: <https://myfastcheck.com>
 - (ii) the applicant shall provide the original Police Information Check to the Contract Administrator.
- E1.2 Any individual for whom a Public Safety Verification Check and/or a Police Information Check is not provided will not be permitted to perform any Services.
- E1.3 Individuals for whom a Public Safety Verification Check indicates “CLEAR” and a Police Information Check demonstrates no previous convictions or pending charges will be permitted to perform Services as specified in E1.1.
- E1.4 Individuals for whom a Public Safety Verification Check does not indicate “CLEAR” and/or a Police Information Check demonstrates previous convictions or pending charges may not be permitted to perform any Services as specified in E1.1.
 - (a) Previous convictions or pending charges may be investigated and a determination will be made by the City as to whether the individual will be permitted to perform any Services.
 - (b) Convictions or pending charges that may preclude an individual from performing any Services include but are not limited to:
 - (i) convictions or pending charges related to property offences; and/or
 - (ii) convictions or pending charges related to crimes against another person.
 - (c) Where additional investigation related to a Public Safety Verification Check or a Police Information Check is required by the City, no extension to critical stages, Substantial Performance, or Total Performance, as applicable, will be provided.
 - (d) Additional investigation by the City may take upwards of six (6) weeks.
- E1.5 Prior to the award of Contract, and during the term of the Contract, if additional or replacement individuals are proposed to perform Services within City facilities, the Contractor shall supply the Contract Administrator with a Public Safety Verification Check and a Police Information Check satisfactory to the City obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform the Services.
- E1.6 Any Public Safety Verification Check and Police Information Check determined to be satisfactory to the City will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- E1.7 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated Public Safety Verification Check and/or a Police Information Check. Any individual who fails to provide a Public Safety Verification Check and/or a Police Information Check satisfactory to the City as a result of a repeated records search will not be permitted to continue to perform any Services as specified in E1.1.

APPENDIX A – DEFINITION OF PROFESSIONAL CONSULTANT SERVICES

DEFINITION OF PROFESSIONAL CONSULTANT SERVICES (CONSULTING ENGINEERING SERVICES)

1 INTRODUCTION

- 1.1 It is the intent of the City of Winnipeg, in defining Professional Consultant Services (Consulting Engineering Services), to clarify the role required of consulting Engineers; to more fully identify the services to be rendered by consulting Engineers to the City and to other parties on behalf of the City; and to provide a more clearly determined basis of obligation in respect thereof by consulting Engineers to the City and to third parties in the provision of such services
- 1.2 The services shall be performed in the City of Winnipeg, unless otherwise authorized by the City, under direct supervision of a professional Engineer. All drawings, reports, recommendations and other documents, originating therefrom involving the practice of professional engineering, shall bear the stamp or seal and signature of a qualified Engineer as required by the Engineering and Geoscientific Professions Act of the Province of Manitoba and By-laws of the Association of Professional Engineers and Geoscientists of the Province of Manitoba. Other reports and documents not involving the "practice of professional engineering", such as letters of information, minutes of meetings, construction progress reports, may be originated and signed by other responsible personnel engaged by the consulting Engineer and accepted by the City. Progress estimates, completion certificates and other reports related to the technical aspects of a Project, must be endorsed by the Engineer in a manner acceptable to the City.

2 ADVISORY SERVICES

- 2.1 Advisory services are normally not associated with or followed by preliminary design and/or design services, and include, but are not limited to:
- (a) Expert Testimony;
 - (b) Appraisals;
 - (c) Valuations;
 - (d) Rate structure and tariff studies;
 - (e) Management services other than construction management;
 - (f) Feasibility studies;
 - (g) Planning studies;
 - (h) Surveying and mapping;
 - (i) Soil mechanics and foundation engineering;
 - (j) Inspection, testing, research, studies, or reports concerning the collection, analysis, evaluation; and
 - (k) Interpretation of data and information leading to conclusions and recommendations based upon specialized engineering experience and knowledge.

3 PRELIMINARY DESIGN

- 3.1 Preliminary design services are normally a prelude to the detailed design of a Project and include, but are not limited to:
- (a) Preliminary engineering studies;
 - (b) Engineering investigation;
 - (c) Surface and subsurface site explorations, measurements, investigations, and surveys;
 - (d) Operations studies including drainage studies, traffic studies, etc.;
 - (e) Functional planning;
 - (f) Physical, economical (capital and operating) and environmental studies including evaluation, comparison, and recommendation regarding alternative preliminary designs;

- (g) Preparation and submission of a report and appropriate drawings to the City, fully documenting data gathered, explaining adequately the assessment made, stating with clarity the resulting conclusions, and containing all recommendations which are relevant to this stage of Project implementation;
- (h) Special applications to public agencies for necessary authorizations, preparation and submission of reports and drawings thereto and appearance before same in support of the application.

4 DETAILED DESIGN

4.1 Detailed design services normally involve preparation of detailed designs, tender specifications and drawings, and analysis of bids and recommendations for contract award, and include, but are not limited to:

- (a) Addressing alternative methods of accommodating; relocating; avoiding, and/or avoiding injury to Utilities and railways; proposing alternative methods of solution, reviewing same with the appropriate Regulatory approval agencies and stakeholders;
- (b) Application to public agencies for necessary authorizations, preparation and submission of reports and drawings thereto, and appearance before same in support of the application;
- (c) Preparation and submission of detailed engineering calculations, drawings, and criteria employed in the design(s), securing review of and an acceptance by the City;
- (d) Preparation of detailed engineering drawings, specifications and tender documents consistent with the standards and guidelines of the City, securing review of acceptance by the City;
- (e) Preparation and provision to the City in written form, a fully detailed formal construction contract estimate;
- (f) Provision of appropriate response to bidders and advice to the City during the bid period and, subject to acceptance by the City, issuing addenda to the tender documents;
- (g) Submission of a review, analysis, comparison, tabulation, calculation, and evaluation of the bids received, to the City;
- (h) Preparation of a report including revised contract estimate, identifying and explaining variations from the earlier formal estimate, and containing recommendation regarding contract award identifying the reasons therefore.

5 CONTRACT ADMINISTRATION SERVICES

5.1 Contract administration services are associated with the construction of a Project and include the office and field services required to ensure the conduct of the Project in accordance with the intent of the City and in conformance with the particulars of the drawings and specifications; and include but are not limited to:

NON-RESIDENT SERVICES

- (a) Consultation with and advice to the City during the course of construction;
- (b) Review and acceptance of shop drawings supplied by the contractor or supplier to ensure that the drawings are in conformance with the drawings and specifications, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (c) Review and report to the City upon laboratory, shop and other tests conducted upon materials and/or equipment placed or installed by the contractor to ensure to the City conformance with the drawings and specifications, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (d) Acceptance of alternate materials and methods, subject to prior acceptance by the City, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (e) Provision to the City of a complete current report on the Project status on a monthly basis;

- (f) Provision to the City a current update of revised contract-end cost estimate on a monthly basis, or more frequently if found necessary, with explanation and justification of any significant variation from the preceding contract-end cost estimate;
- (g) Definition and justification of and estimate of cost for additions to or deletions from the contract for authorization by the City;
- (h) Furnishing the City with a copy of all significant correspondence relating directly or indirectly to the Project, originating from or distributed to, parties external to the consulting Engineer, immediately following receipt or dispatch of same by the consulting Engineer;
- (i) Provision of adequate and timely direction of field personnel by senior officers of the Consultant;
- (j) Establishment prior to construction and submission to the City of written and photographic records of, and assessment of the physical condition of adjacent buildings, facilities, and structures sufficient to equip the consulting Engineer to provide valid evidence and relevant testimony in settlement of any claim involving the City by any court of law, or by any other party for damages thereto arising from the Project;
- (k) Arranging and attending pre-construction meetings and on-site or off-site review meetings, which meetings shall include representatives of the contractor and the City;
- (l) The preparation and submission of:
 - i. a detailed design notes package including items such as structural geotechnical, hydraulic and heating, air-conditioning and ventilation design calculations; mechanical and electrical design calculations related to process equipment and building services; process design calculations; and instrumentation and process control design calculations;
 - ii. approved related shop drawings and equipment process manuals all within one (1) month of completion of each separate installation contract required to complete the Works.

RESIDENT SERVICES

- (a) Provision of qualified resident personnel acceptable to the City present at the Project site to carry out the services as specified immediately below, without relieving the contractor of his contractual and other legal obligations in respect thereof:
 - i. inspection of all pipe prior to installation;
 - ii. inspection and acceptance of excavation for, and full time inspection at the time of bedding placement, pipe laying and backfilling in respect of installation of watermains, LDSs, and wastewater sewers;
 - iii. inspection of installation of all connections to watermains, sewers, manholes, valves, hydrants or house services, and excavation and/or exposing of all underground services, structures, or facilities;
 - iv. "full time inspection" and/or testing of watermains and sewers;
 - v. inspection of all excavations to determine soil adequacy prior to installation of base and subbase courses for sidewalks, public back lanes, and street pavements. It is to be understood that "full time inspection" will require assignment of a qualified Person to each specific location when the referenced work is being undertaken by the contractor.
- (b) Without relieving the contractor of his contractual and other legal obligations in respect thereof, conduct detailed inspection of construction sufficient to ensure that the construction carried out by the contractor is in conformance with the drawings and specifications;
- (c) Co-ordination and staging of all other works on the Project site including traffic signal installations, hydro, telephone, and gas utility work, railway work forces and City or developer work;
- (d) In conjunction with the City, provision of notice to adjacent residents and businesses of those stages of construction of the Project that will interrupt public services or access thereto, sufficiently in advance of same to permit preparation therefore;

- (e) Enforcement of contractor conformance with the City of Winnipeg Manual of Temporary Traffic Control in Work Areas on City Streets and with reasonable standards of safety for motorists and pedestrians, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (f) Provision of reference line and elevation to the contractor and checking upon the contractor's adherence thereto, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (g) Responsible, sensitive, and prompt reaction to the reasonable requests and complaints of citizens regarding the conduct of the Project, acting in the interest of the City;
- (h) Arranging for and carrying out of testing of materials utilized by the contractor to ensure conformance with the drawings and specifications, without relieving the contractor of his contractual and other legal obligations in respect thereof;
- (i) Preparation, certification, and prompt submission of progress estimates to the City for payment to the contractor for construction performed in accordance with the drawings and specifications;
- (j) Arrange, attend and prepare and distribute records of and minutes for, regularly held on-site or offsite Project review meetings including representatives of the contractor and the City;
- (k) Promptly reporting to the City upon any significant and unusual circumstances;
- (l) Promptly arranging for and taking part in a detailed final inspection of the Project with the contractor and the City prior to commencement of the period of contractor maintenance guarantee specified in the contract for the Project and providing to the City in written form an appropriate recommendation of acceptance of the constructed or partially constructed Project;
- (m) Act as Payment Certifier and administer all contracts as required under the Builder's Liens Act of Manitoba;
- (n) Prepare a Certificate of Substantial Performance;
- (o) Preparation and submission to the City of "as-constructed" drawings for the Project within 1 month of Project completion;
- (p) Prepare a Certificate of Total Performance;
- (q) Provision of inspection services during the maintenance guarantee period of the contract;
- (r) Undertake a detailed inspection of the Project with the contractor and the City prior to the end of the period of contractor maintenance guarantee specified in the contract for the Project;
- (s) Keep a continuous record of working days and days lost due to inclement weather during the course of contract works;
- (t) Prepare a Certificate of Acceptance.

6 ADDITIONAL SERVICES

6.1 Additional services are in addition to those specified in other Types of Services and may or may not be associated with a construction Project, but are not in place of or in substitution for those services elsewhere specified in the Definition of Standard Consulting Engineering Services in respect of other Types or Categories of Services.

- (a) Revision of completed, or substantially completed, drawings and/or specifications that were in conformance with the original intent of the City or had been accepted by the City;
- (b) Preparation of operating manuals and/or training of operating personnel;
- (c) Startup and/or operation of operating plants;
- (d) Procurement of materials and equipment for the City;
- (e) Preparation for and appearance in litigation on behalf of the City;
- (f) Preparation of environmental studies and reports and presentation thereof in public hearings.

APPENDIX B – TERMS OF REFERENCE FOR AN ENGINEERING ASSESSMENT OF A PUBLIC WATER SYSTEM

TERMS OF REFERENCE

FOR AN

**ENGINEERING ASSESSMENT
OF A PUBLIC WATER SYSTEM
(First Round and Re-Assessments)**

**Prepared by: Office of Drinking Water
Date Revised: 01 October 2018**

**TERMS OF REFERENCE
FOR AN ENGINEERING ASSESSMENT OF A PUBLIC WATER SYSTEM
Date Revised: 01 October 2018**

1.0 DEFINITIONS

The following definitions apply throughout this document:

Assessment – means the process of completing a first round or re-assessment of a Public Water System to fulfil the requirement for an “Assessment of Water System Infrastructure and Water Supply Sources” referenced in Section 9 of The Drinking Water Safety Act.

AWWA – means the “American Water Works Association” and its associated Standards, Manuals, White Papers and Policies.

DWO – means the regional “Drinking Water Officer” with regulatory responsibility for the Public Water System.

The DWSA – means The Drinking Water Safety Act assented to August 9, 2002, and as amended from time-to-time.

Engineer – means a Professional Engineer as defined in The Engineering and Geoscientific Professions Act and who:

(a) is competent by virtue of training, and experience in engineering relating to drinking water supplies, to engage in practices that fulfil the requirements of these Terms of Reference, and

(b) is not an employee of the Owner of the Public Water System being assessed, and

(c) has been engaged by the Owner of the Public Water System to complete an Assessment of a Public Water System in accordance with these Terms of Reference to assess the condition of the System and its ability to meet provincial standards and industry best practices, and to provide recommendations on infrastructure-related upgrades required to improve the safety and reliability of the System.

GCDWQ – means the latest version of the Guidelines for Canadian Drinking Water Quality.

GUDI – means a groundwater supply that due to its location, construction or condition is vulnerable to microbial contamination by surface water or run-off and has been deemed to be “groundwater under the direct influence of surface water” as per Section 2 of the Drinking Water Safety Regulation.

ODW – means the “Office of Drinking Water”.

Owner – means the Owner of the Public Water System and includes Operators.

PWS – means a “Public Water System”.

Report – means the written report submitted to fulfil the requirement for an Assessment and the deliverable product of these Terms of Reference.

Satellite system – means a public water system that receives water from another public water system and that does not have a water treatment plant but does have a reservoir or pumphouse.

System – means the Public Water System for which the Assessment is being conducted.

Ten State Standards – means the latest version of the “Recommended Standards for Water Works” as issued by the ‘Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers’.

2.0 OBJECTIVES

These Terms of Reference have been prepared in support of Section 9, Assessments of Water System Infrastructure and Water Supply Sources, of The DWSA for first round assessments and re-assessments of PWSs. As required by Section 37 of the Drinking Water Safety Regulation, the first assessment of a PWS, with the exception of very small systems with distribution piping only, must be completed by a Professional Engineer authorized to practice in the Province of Manitoba. As required by Section 37 of the Drinking Water Safety Regulation or through Subsection 9(2) of The DWSA, a re-assessment of a large or higher risk PWS must also be completed by a Professional Engineer authorized to practice in the Province of Manitoba. The DWSA established a PWS assessment frequency of five years.

The Assessment involves a source-to-tap review of the safety and reliability of a PWS to determine whether its source, facilities and equipment are effective in producing safe drinking water and in meeting the regulations in force under The DWSA. The assessment process is designed to identify water system deficiencies and limitations, and provide Owners with recommendations on addressing these deficiencies and limitations.

The Owner has been notified of their assessment deadline. If unexpected or uncontrollable delays will result in the Report being submitted more than three months late, an extension can be requested from the ODW Approvals Unit. The request must include the reason(s) an extension is required and the anticipated date the Report will be submitted. Where major upgrading is planned, the Owner should contact the Approvals Unit to discuss scheduling the Assessment. Options include having the Assessment completed as part of pre-design work, or after six months to a year of operation to allow evaluation of the new works.

For regional water systems where a central system provides treated water to several satellite or distribution systems with different Owners, the ODW strongly encourages Owners to collaborate on the Assessment and the production of a single, combined Report. Similarly, if an Owner has several licensed PWSs relying on the same water source with similar treatment systems, a single Report can be prepared. For combined Assessments and Reports, the Owners and Engineer must ensure that the condition and capabilities of each licensed system are assessed as per these Terms of Reference. Assessment deadlines will likely vary for the individual systems and should be considered in planning Assessment activities.

3.0 GENERAL REQUIREMENTS

The Assessment and the Report must be completed under the supervision of an Engineer. Assessment work may, at the discretion of the Engineer, be performed by subordinate staff with sufficient training and experience; however, the Engineer must review and seal the Report. (Note: in subsequent Sections, reference to the “Engineer” shall mean the Professional Engineer in overall charge of the Report or delegated staff as discussed above and appropriate to the context of the reference.)

In performing the Assessment, the Engineer should try, as much as possible, to obtain water system records and information from the Owner. Owners are required under their Operating Licence to maintain copies of key water system records. The Owner can contact the DWO for assistance in collecting certain water system records where required (i.e. bacterial summaries).

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The level of effort for the Assessment and level of detail of the Report should reflect water system size, complexity and potential risks. The focus of the Assessment should be on the design, condition and capabilities of the key water system components. A detailed review of operation and maintenance practices is not required except where these practices are having a direct and significant bearing on treated water quality or compliance (i.e. turbidity issues due to inadequate backwashing). The DWO conducts regular reviews of system operation.

Relevant Terms of Reference topics must be addressed given a water system's infrastructure. For example, if the System receives treated water and simply rechlorinates and redistributes, only regulatory requirements and industry best practices applicable to secondary disinfection and distribution systems, and only the components under their responsibility need to be assessed. ***For re-assessments, much of the System description and background information should be available from the last assessment report.*** If information is not available for a required topic, the Engineer must note this. The Owner or Engineer can contact the ODW Approvals Unit at any time for advice or clarification.

The Engineer is expected to conduct the following steps as part of the Assessment and summarize the results of these efforts in the Report. The Engineer should state the findings as briefly and succinctly as possible. Extensive explanation of process theory is not required. Point form notes and tables should be used whenever possible. Data should be in metric (SI) units.

3.1 Records Review

The Owner is expected to provide the Engineer with key water system records including:

- Current Operating Licence.
- Annual Audits issued by the DWO for the last three years.
- Inspection letters issued by the DWO over the last three years.
- Bacterial summaries for the last three years (available from the DWO by Owner request).
- Laboratory chemical water quality analysis reports over the last five years.
- Compliance Plan and ODW response, if applicable.
- Most recent assessment report, ODW response and Action Plan, if available.
- Most recent PWS Annual Report for systems serving 1000 or more persons.
- Applicable water system design reports or studies.
- Current water system drawings, treatment schematics and distribution system maps.
- Well construction reports (well logs) for water supply wells.
- Operation and Maintenance (O&M) manuals for key water system components.
- Water use records for the last three years.

3.2 Interview with the Owner

The Engineer must interview the Owner. The Engineer should focus on clarifying any uncertainties about water system design and operation, clarifying compliance issues, and identifying Owner concerns with the condition, design and operation of the System. The Engineer should ask about any plans for major changes, upgrades or expansion that need to be considered in assessing the safety, capacity and reliability of the System.

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For re-assessments, the Engineer should also focus on gathering information to assist in determining the requirements for a site inspection; including whether any major changes, upgrades or expansions have occurred since the last assessment, whether there have been significant source water or treated water quality changes, and whether any significant deterioration in the physical condition, reliability or ability to meet demands has taken place.

3.3 Interview with the DWO

The Engineer must interview the DWO. The Engineer should discuss concerns raised in the Annual Audits and inspections, and on identifying outstanding action items which constitute potential risks to the safety and reliability of the System.

3.4 Site Inspection

For the first assessment, an on-site inspection is typically required. The exception may be a distribution-only system where minimal infrastructure is available for visual inspection. (i.e. hydrants, flush-outs, valves.) For re-assessments, an on-site inspection is optional. In deciding whether to perform an on-site inspection, the Engineer should consider:

- The size and complexity of the System.
- The completeness of the information available for the System.
- The ability to understand the System, its condition and deficiencies from available information with sufficient confidence to seal and sign the Report.
- The extent of infrastructure changes or deterioration which may have taken place since the last assessment and the degree to which those changes may have affected the ability of the System to produce or distribute safe water.

During an inspection, digital photographs should be taken of key components and included in the Report to supplement discussions of system operation and deficiencies. Preparing an inspection checklist may be helpful. Resources include: Office of Drinking Water assessment checklists, the CCME “From Source-to-Tap” technical guidance manual, and US EPA Sanitary Survey and Total Coliform Rule Assessment guidance manuals.

4.0 REPORT CONTENTS

In general, the Report must include the following sections:

1. Water System Description
 2. Review of Key Water System Records
 - 1) Operating Licence Standards
 - 2) Previous Assessment and Status of Follow-up Actions (if applicable)
 - 3) Annual Audits and Inspections and Status of Follow-up Actions
 - 4) Other Studies or Reports and Status of Follow-up Actions
 - 5) Water Quality Data
 3. Owner and DWO Concerns
 4. Site Inspection Findings (if applicable)
 5. Ability to Meet Regulatory Requirements
 6. Ability to Meet Industry Best Practices
 7. Ability to Meet Demands
 8. Recommended Upgrades and Actions
 9. Opinion of Probable Cost (optional)
- Appendices

The following items do not have to be included in the Assessment and the Report:

- Detailed review of laboratory bacterial analysis reports, monthly disinfection and turbidity monitoring reports, and other routine operational records (reviews are completed by the DWO for the Annual Audits and Inspections).
- Review of Emergency Response Plans.
- Review of facility classification and operator certification requirements.
- Review of Water Rights, Environment Act, or other regulatory licences.

A sample Table of Contents, along with explanatory notes, is provided to identify the expected format and topics for the Assessment and the Report. The Engineer is asked to follow this sample Table of Contents as closely as possible.

5.0 PREPARATION AND SUBMISSION OF THE REPORT

The Owner is responsible for ensuring that the Assessment is performed and that a copy of the Report is submitted to the ODW. The Engineer should provide a draft version of the Report to the Owner for review as per their instructions. Once the Report has been finalized and accepted by the Owner, the following steps shall be taken by the Owner and the Engineer:

- The Owner and the Engineer each complete their section of the Submission Form (*last page of this document*).
- The Owner submits one (1) paper copy of the Report and the Submission Form, and an electronic copy (Adobe Acrobat pdf) of the Report on a storage device (i.e. USB drive or CD), or by email (if file size allows) to their DWO, or
- Approvals Unit, Office of Drinking Water, 1007 Century Street, Winnipeg MB R3H 0W4
- Kim.Barlishen@gov.mb.ca



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6.0 FOLLOW-UP ACTIONS

The Owner should develop and implement a prioritized plan for addressing the Report recommendations to improve the safety and reliability of their water system. Major alterations require ODW approval (i.e. a Permit). The ODW can be contacted by the Owner or the Engineer to discuss upgrading plans. Submission of a formal Action Plan to the ODW is not required; however, the ODW may require an update from the Owner on actions taken to address recommendations or may assess the status of follow-up actions during inspections.

SAMPLE TABLE OF CONTENTS

1.0 WATER SYSTEM DESCRIPTION

1.1 GENERAL SYSTEM CHARACTERISTICS

Summarize **basic water system characteristics** including:

- Name of water system, location and basic flow diagram/ schematic.
- Year system began operating.
- Type of source (groundwater, potential GUDI, GUDI, surface water), name of source if applicable (i.e. Lake Winnipeg, Winkler Aquifer).
- Operating season.
- Population served, for seasonal systems provide average and peak day populations.
- Total number of service connections and types of connections (i.e. residential, commercial, industrial, institutional, cottage, RV, standpipes, central washroom).
- Current average day demand (ADD), maximum day demand (MDD), peak hourly flow and per capita/ site water use (if meter records are not available, industry water consumption and peaking factors should be applied).
- Whether the system is operating under a long-term advisory and the type of advisory (i.e. Boil Water Advisory or Water Quality Advisory).

1.2 WATER SOURCE

For a **groundwater/ GUDI supply** provide: number and general location of the wells relative to the water treatment plant; a summary of well construction details for each well (diameter, casing depth, soil overburden); whether the source has been deemed to be GUDI or potentially GUDI by the ODW; any obvious sources of contamination within 100m of the wells (i.e. septic fields, agricultural operations).

For a **surface water supply** describe: the intake location and design, general use of the source near the intake, any known sources of contamination within 300m of the intake (i.e. wastewater discharges, agricultural operations).

For **all water sources** describe: how water is transferred to the water treatment plant, raw water pumping capacity, raw water pipeline (length, type, diameter and pressure rating), source water protection measures (i.e. fencing, sealed well cap).

For a **satellite or distribution-only system** provide: the name of the PWS that supplies the treated water, the location and description of the connection.

1.3 WATER TREATMENT SYSTEM

Provide a schematic of water treatment processes showing unit processes, valves, sampling taps, chemical injection points and on-line instruments, and briefly describe process flow. Provide the design capacity as a flow rate and as a percentage of current MDD, and the number of hours per day the treatment system operates.

Describe overall treatment objectives including design-related process guarantees or goals if available (i.e. what was the treatment system designed to address).

For **each major unit process**, provide the purpose/ target parameter(s), level of redundancy, key design and operating parameters:

- Rapid mix: type (i.e. in-line mixer); basin volume and retention time (if applicable).
- Flocculation: number of stages, whether mixing speeds are adjustable; basin volume and retention time.
- Clarification: flow orientation (i.e. upflow); basin volume and retention time; settling enhancements (i.e. plate or tube settlers, sludge blanket).

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- Media filter: type (i.e. pressure, slow sand, rapid multi-media), media types, filtration rate, backwash rate, backwash control and set-points (i.e. manual, timed, pressure, NTU), backwash frequency, source of backwash water, filter-to-waste control and set-points (i.e. manual, timed, NTU).
- GAC adsorption filter: type of GAC, date GAC last replaced, empty bed contact time, backwash control and set-points (i.e. manual, timed, pressure), backwash frequency, source of backwash water.
- Cartridge filter: micron rating (μm nominal or absolute), capacity, set-point/ trigger for change-out, change-out frequency.
- Membrane: type (MF, UF, NF, RO), model, rated capacity, flux rate, removal rate(s) for target parameter(s), rated pathogen log removal (%); recovery rate (%); type, frequency and response for direct integrity testing, if applicable; if blending, blending rate or ratio (i.e. 80% RO, 20% greensand bypass); type and frequency of cleaning including cleaning chemicals and ability to clean separate stages/ modules.
- Air stripper: type (i.e. packed tower), air-to-water ratio, rated capacity, off-gas venting.
- Ion exchange: type of resin (i.e. strong base anion), rated capacity, regenerant, regeneration frequency.
- Chemical feed: name of chemical, target dose in mg/L, pump control (manual, flow-paced, feedback), trigger for changing feed rate, trigger for initiating feed if intermittent, alarm set-points for on-line analyzers.
- Ultraviolet light (UV) disinfection unit: model, configuration, rated capacity, minimum dose and UVT to claim inactivation credit, method of monitoring and set-points (UV intensity, calculated dose), confirmation of NSF 55A or USEPA UVDGM validation.

List other key instruments with their location and use (ex: on-line analyzers, flow meters, level sensors, pressure sensors). List bench-scale or portable water quality test kits (type/model, parameters measured).

Describe process piping (type and pressure rating). Briefly describe the methods of domestic, process and drain wastewater management for water system buildings.

1.4 TREATED WATER STORAGE (including satellite reservoirs)

Describe treated water storage components including: reservoir/ tank material; location; total volume; effective volume (at normal low operating level); level control provisions; flow configuration, if multiple tanks/ cells; degree of baffling; access or inspection provisions (i.e. curbed hatch); appurtenances (i.e. screened vent, screened overflow, drain, intercell piping); provisions to isolate; whether fire protection storage is provided.

Estimate water residence times under ADD and peak hourly flow rates (with and without fire flow, if applicable). Note storage volume as a function of ADD (%).

For underground reservoirs or tanks, indicate whether any non-potable piping passes above or through the reservoir or tanks, and containment provisions.

1.5 DISTRIBUTION

Describe distribution pumping components including: type and location of distribution and standby pumps, total and firm pumping capacities, pump control, and distribution pressure setting. For fuel-driven pumps, note fuel type and spill containment measures if located above a reservoir.

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Indicate normal pressure ranges within the distribution system.

Describe any bulk fill (i.e. truck fill, pail fill) connected to the system. Identify the means of backflow prevention.

Summarize general distribution network characteristics including: water loss (%) if available, general types and sizes of watermains, relative locations of water and sewer mains, general locations of isolation valves and hydrants/ flush-outs, extent of looping versus dead ends, degree of water metering, presence of high hazard connections where backflow should be assessed (i.e. livestock operations, wastewater facilities), and estimated percentage or number of lead service lines.

Identify any other special installations such as underground valve chambers or automatic air/ vacuum release valves noting flood protection and drainage provisions.

If system includes satellite reservoirs or pumping stations, describe these components as noted above for treated water storage and distribution pumping.

1.6 OPERATION AND CONTROL

Describe the control system including: methods of process and equipment control, level of automation, major/critical alarms, and alarm enunciation method.

Note whether up-to-date water system drawings, records and manuals are maintained.

Note any standby power generation equipment along with its location, ability to run all or some of the equipment, and fuel containment if located above a reservoir.

Describe any bypass that could allow untreated or partially treated water to enter the distribution system. Identify any piping cross connections within the water treatment plant and the method of backflow prevention.

Briefly describe how annual O&M costs and capital upgrades are funded.

2.0 REVIEW OF WATER SYSTEM RECORDS

Review of water system records should focus on identifying infrastructure, process, treatment or equipment related deficiencies as opposed to comments on basic operational tasks, such as submitting samples that are addressed in ODW Annual Audits and Inspections.

2.1 OPERATING LICENCE STANDARDS

Summarize water treatment standards and any associated on-line monitoring requirements. Summarize the status of the Compliance Plan, if applicable, with consideration to any feedback received from the ODW.

2.2 PREVIOUS ASSESSMENT AND FOLLOW-UP ACTIONS

Summarize the major findings and recommendations of the last assessment with consideration to any feedback from the ODW, and actions taken, or still required, to address these findings and recommendations.

2.3 ANNUAL AUDITS AND INSPECTIONS

Summarize comments from the Annual Audits and Inspection letters issued by the ODW where an outstanding deficiency or compliance concern was identified along with the status of any required or recommended follow-up actions.

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2.4 OTHER STUDIES OR REPORTS

Summarize findings on infrastructure, process or equipment deficiencies, or upgrading options from other relevant studies or reports such as feasibility studies, pre-design reports, pilot projects, GUDI assessments, bacterial investigations or network analysis studies. Include the status of any required or recommended follow-up actions.

2.5 WATER QUALITY DATA

Provide tables summarizing general chemistry and site-specific analysis reports for the raw water, if applicable, and the treated water. Note any exceedances of provincial standards, exceedances of any other Maximum Acceptable Concentration (MAC) from the GCDWQ, and exceedances of any aesthetic objective (AO) from the GCDWQ. A separate table may be required for trihalomethanes (THMs) or other disinfection by-products, if applicable, due to sampling frequency and locations. (Note: additional water quality sampling and analysis should not be required.)

For **surface water sources**, summarize raw water and filtered water turbidity ranges and seasonal trends.

Note water quality conditions that are affecting, or could affect, treatment processes, process control or compliance (i.e. seasonal turbidity spikes, high organic content, patterns or trends in bacterial positives, elevated ammonia and its impacts on chlorination, corrosivity and its impacts on lead levels).

Evaluate the ability of the treatment system to address water quality issues and to be operated to meet design objectives/ goals.

3.0 OWNER AND DWO CONCERNS

Summarize any concerns identified during the interviews with the Owner and the DWO. Describe any major changes, upgrades or expansions since the last assessment (if applicable) and any planned for the System over the next five years. Describe any major incidents or emergencies over the last five years including boil water advisories.

4.0 SITE INSPECTION FINDINGS

Summarize visual observations of the general condition of key water system buildings and equipment. Identify deficiencies which could compromise water safety or quality. (Note: a structural condition survey and detailed mechanical/ electrical system surveys are not required.) Note any piping cross connections in water supply, treatment, storage and distribution pumping systems where backflow could occur and lead to contamination.

5.0 ABILITY TO MEET REGULATORY REQUIREMENTS

5.1 DISINFECTION REQUIREMENTS

Provide **contact time calculations** where a chemical disinfectant is used for primary disinfection to confirm compliance with contact time requirements for the System. Use calculation procedures and tables from the ODW Filtration and Disinfection Log Reduction Credits guideline. Provide justification for peak hourly flow, effective volume and baffling factor assumptions. Consider the location of inlets and outlets including distribution pump intakes in selecting a baffling factor.

Identify any deficiencies in process design or operation that compromise the ability to provide this contact time at all times (i.e.: raw water bypass present, reservoir cell bypassed during cleaning).

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5.2 LOG REDUCTION CREDITS

For **all water sources** where a chemical disinfectant is used for primary disinfection, complete CT calculations to determine log inactivation for viruses.

For **surface water and GUDI sources**, determine filtration credits and/ or complete CT calculations or UV dosage comparisons to determine log removal and log inactivation credits for Cryptosporidium and Giardia.

Use CT calculation procedures and tables from the ODW Filtration and Disinfection Log Reduction Credits guideline. Note any deficiencies in process design or operation that compromise the ability to claim full credits (i.e. regular unresolved UV alarms, no filter-to-waste, not consistently meeting turbidity standards, not reporting as per continuous monitoring requirements, not conducting and reporting daily direct integrity testing of MF/UF membranes).

5.3 TURBIDITY STANDARDS (if applicable)

Discuss any compliance issues related to meeting turbidity standards identified in the Operating Licence including whether an appropriate filtration system is in place. Identify any deficiencies in filtration design or operation that compromise the ability to meet these standards on a continuous basis (i.e. lack of continuous monitoring or alarm provisions, inadequate control limits for backwashing or filter-to-waste).

5.4 CHEMICAL STANDARDS (if applicable)

Discuss any compliance issues related to meeting chemical water quality standards identified in the Operating Licence or through the water quality data review, and identify whether an adequate treatment barrier is in place. If a treatment barrier is in place, identify any deficiencies in design or operation that compromise the ability to meet these standards (i.e. arsenic not oxidized ahead of membrane). Where a THM or HAA issue is identified, note water quality or system characteristics affecting control (i.e. high organic content, lengthy residence times). Discuss compliance with any other applicable disinfection by-product standards (i.e. chlorite, chlorate, bromate, NDMA). If algal blooms are an issue for the source water, discuss any available microcystin (i.e. cyanobacterial toxin) monitoring results and assess the general capabilities of the treatment process to remove algae and their toxins. Evaluate the effectiveness of any corrosion control measures or lead control programs.

6.0 ABILITY TO MEET INDUSTRY BEST PRACTICES

6.1 DESIGN AND OPERATION

Identify significant deviations in the design and operation of the water supply, treatment, storage, distribution and control systems from accepted industry practice (i.e. Ten State Standards, Ontario Design Guidelines for Drinking-Water Systems). For example: critical treatment process not sized to meet MDD with one unit out of service; reservoir overflow not screened; reservoir hatch not watertight; untreated bypass; filtration rate higher than recommended; drain/ overflow connection to sewer; inadequate water-sewer main separation. Focus on major deviations which could lead to detrimental effects on supply reliability, a treatment process or treated water quality.

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6.2 CROSS CONNECTION CONTROL

Discuss the adequacy of backflow prevention within water supply, treatment, storage and distribution systems focusing on any back-up water supplies, treatment system bypasses, bulk fill stations, water-sourced heat exchange systems, chemical feed and backwash connections at the treatment plant, and the potential for unprotected connections at high hazard connections in the distribution system.

6.3 AESTHETIC OBJECTIVES

Discuss the ability to meet aesthetic water quality guidelines. Note if treatment via point-of-use or point-of-entry devices is common (i.e. softeners).

6.4 OTHER INDUSTRY BEST PRACTICES

Discuss observations of any other design provisions or operational procedures that vary from industry best practice such as lack of 24/7 alarm system, no UVT meter, filter-to-waste timed as opposed to automatic based on turbidity, GAC media not regularly replaced, lack of standard operating procedures, no instrument calibration schedule, backflow prevention assemblies not regularly tested, or no leak detection program.

7.0 ABILITY TO MEET DEMANDS

7.1 CAPACITY

Evaluate the ability of water supply, treatment, storage, pumping and distribution components to meet existing demands. Identify any physical or capacity limitations that may affect anticipated growth or expansion of the system over the next five years.

7.2 RELIABILITY

Evaluate the ability of water supply, treatment, storage, pumping and distribution components to reliably produce and distribute safe drinking water through a discussion of physical condition as well as system redundancy, back-up equipment, control and alarm limitations.

8.0 RECOMMENDED UPGRADES AND ACTIONS

Provide a prioritized list/ table of infrastructure, process, treatment or equipment related deficiencies and specific recommendations or options for addressing each deficiency.

Provide a prioritized list/ table of any other major deficiencies observed during the assessment and recommended actions to address these deficiencies, for example, lack of system drawings, no reserve fund for watermain replacement or inadequate sampling.

Where process optimization is recommended, provide advice on optimization strategies (i.e. increasing coagulant dosages, lowering pH, adjusting backwash rates).

9.0 OPINION OF PROBABLE COST (not required)

If major capital upgrades are recommended, the Owner may ask the Engineer to prepare a preliminary, broad-scope (order-of-magnitude) opinion of the probable cost of the upgrades.

APPENDICES

(as applicable) (copies of originals)

APPENDIX A -

PROCESS SCHEMATIC

APPENDIX B -

INSPECTION PHOTOS

APPENDIX C -

OPERATING LICENCE

APPENDIX D -

ASSESSMENT ACTION PLAN AND RESPONSE

APPENDIX E -

COMPLIANCE PLAN AND RESPONSE

APPENDIX F -

MOST RECENT ANNUAL AUDIT/ DWO INSPECTION LETTER

SUBMISSION FORM FOR AN ENGINEERING ASSESSMENT OF A PUBLIC WATER SYSTEM

TO BE COMPLETED BY THE OWNER:

Name of Water System:		PWS Code:
Water System Owner:		
Water System Address:	Telephone:	Email:

I have read the Report and it is consistent with my understanding of the Water System. The information I provided to the Engineer was accurate and complete to the best of my ability and knowledge:

Name & Title of Owner: _____

Signature of Owner: _____

Date Signed: _____

TO BE COMPLETED BY THE ENGINEER:

Name of Water System:	PWS Code:
Name of Company:	Telephone number of Engineer:
Address:	Email address of Engineer:

I have overseen preparation of the Report in general accordance with the Terms of Reference for an Engineering Assessment of a Public Water System:

Name of Engineer: _____

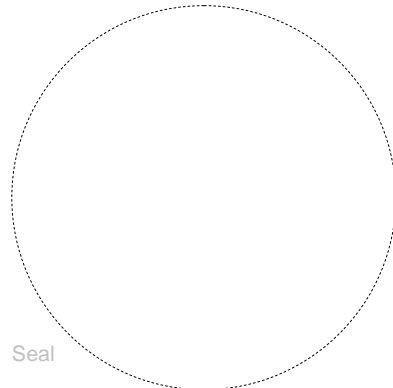
Signature of Engineer: _____

Date Signed: _____

Professional Engineer's seal and Certificate of Authorization to be affixed in the space below.



Certificate of Authorization



Seal