

SCHEDULE G

Form of Project Completion Report

Part 1 - Instructions

REQUIREMENT: You must submit a Project Completion Report as a condition of the Final Loan Disbursement.

PURPOSE: Your Project Completion Report has three purposes:

1. **Project tracking:** This report enables FCM to confirm that your project was completed as described in the Agreement.
2. **Reporting on the impacts and lessons learned during the construction of the project:** This report includes any environmental, social and economic results as well as lessons learned during the *planning, design and construction of the project*. Ensure that you include in the report any processes or techniques that were implemented at these stages to address triple bottom line impacts. This could include dust minimization measures or the onsite use of electric vehicles instead of gas powered. All environmental, social and economic results *from the operation* of the project will be reported under a separate Environmental Results Report in the form set out in one of the schedules to the Agreement.
3. **Knowledge sharing:** FCM shares the lessons and expertise gained through GMF-funded initiatives with other communities across Canada. The findings and lessons learned documented in your Project Completion Report could be valuable for other municipal governments that are seeking to address sustainability issues in their own communities. FCM will post your reports on its website at the approved projects database¹. This is the part of the GMF website which is most frequently visited. Your report will assist FCM in producing other materials related to your project, including a GMF case study. In addition, other municipalities may view your project completion report to improve the success of their project.

COPYRIGHT: You must hold the copyright to the reports that you submit to us and provide FCM with rights to reproduce and distribute it as set out in the Agreement.

CONFIDENTIALITY: If your report contains any confidential information that you would prefer not be made available to the public (e.g. through a case study or other materials produced by FCM that relate to your project), please submit two versions of the report:

1. **Complete report including confidential information:** Please clearly label this report with the word "**Confidential**". FCM will treat it as confidential.
2. **Abridged report excluding confidential information:** This report may be posted on the FCM website and otherwise made available to interested third parties.

CONTENT OUTLINE: Your Project Completion Report should be approximately **9 to 15 pages long**; some reports may be longer or shorter depending on the complexity of the Project. While there are no

¹ <http://www.fcm.ca/home/programs/green-municipal-fund/funded-initiatives.htm>

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maximum word counts for each section, the most pertinent section of the report — Lessons Learned — should be given more weight.

Because your report may be read by non-technical municipal staff and similar readers, please assume a low to moderate level of technical knowledge and a preference for clear, direct and focused writing. Use simple language, and explain any highly technical terms or acronyms that are used.

REPORT FORMAT: Please request an electronic Form of Project Completion Report from the GMF Project Officer and submit your report in either .doc or .pdf (searchable) format. A scanned copy of the Project Completion Report will not be accepted. FCM endeavors to collect the most relevant project information and as such may amend the Form of Project Completion Report from time to time. If so, FCM will provide you with the latest Form of Project Completion Report.

Part 2 – Project Completion Report Form

Project information

GMF number: 15047
Name of funding recipient: Town of Montague
Project title: Montague Sludge Dewatering System
Date of Project Completion Report: Feb. 3, 2017
Project Construction Start Date (MM/DD/YYYY): 05/20/2016
Project Substantial Completion Date (MM/DD/YYYY): 11/15/2016
Total Project Cost (Actual): \$478,888

QUESTIONS:

Project implementation

1. Was the Project implemented as outlined in the contract (or as amended)? Please identify any substantial changes, explaining why they happened (e.g. getting a new system to operate correctly, delays due bad weather, labour availability, etc.) and their impact on the project (e.g. higher overall costs, more staff training required, etc.).

The project was implemented as outlined in the contract. There were no substantial changes and the project went smoothly with completion of installation only about a week off the projected timeline due to the availability of an electrical junction box.

Lessons learned

INSTRUCTIONS:

Lessons learned refer to knowledge gained from the Project that can be applied to other situations. For this report, GMF is interested in the lessons learned from the **design, planning and construction phases** of the project.

Answers in this section may refer to **positive** experiences (i.e. what worked or went well, and could serve as a model for future projects) or **negative** experiences (i.e. what didn't work, or went poorly, and should be avoided in future projects).

Overall, the project went very well. Contrary to what we thought would happen, our engineers did not tender the equipment in the project as a complete package but instead divided it up into parts and tendered them separately. We had been working with a company that supplies a complete dewatering equipment package including pumps, polymer mixing and injection equipment and dewatering membrane bags. We originally thought it would make more sense to get the package as one unit, but the engineers thought we would get a better price by tendering the project with the different elements being able to be supplied by different companies. The specs were drawn such that the equipment was compatible and, in the end, we got a better price than we would have if we tendered as a package as the contractors had the option of going to different suppliers for pricing for each element (sludge pumps for example). It will remain to be seen if this works out to be a better policy in the end, but for now it appears to have gotten us what we want at a better price. One of the only issues we ran into when carrying out the project had to do with excavating the area for the concrete pads. The construction company found the remains of an old buried building which required the removal of more soil than originally calculated. This was more an engineering related matter than a project related matter, but it did increase the cost of construction. There was also some equipment that needed to be special ordered, in particular an explosion proof electrical junction box, that caused some delay in the project completion.

2. Describe what worked well and what did not work well, and why, for the project elements below, include a description of any solutions implemented to address challenges?

a. Design, procurement and contracting:

There were no issues with this element of the project except that the engineers did not take into consideration the existence of the remains of an old building under the soil in the construction site. This required the removal of about 30% more soil than anticipated but did not drastically effect the overall project. Our engineers understood the project and developed the specifications for it and tendered the project. The only other issue, due the relative small and isolated nature of the area, was that we only received two bids for the project.

b. Consultation and community engagement (prior to and during construction):

There were no issues with this aspect of the project. Being that this is part of our wastewater treatment plant which is behind a fence, there didn't appear to be much concern (or even interest) in this project. Those that expressed any interest were mostly interested in any cost savings that may be realized as a result of the project. As the project is new and most cost savings will be realized during the warmer months, actual cost savings have yet to be determined but early indications are promising.

c. Construction of the project

Construction was hampered early on when it was discovered that there was the remains of an old building under the construction area. This required the removal of substantially more soil than originally anticipated, but in the end it only slowed the construction by a few days. Other than this relatively minor glitch (financially

speaking), the construction went smoothly. The only other issue we found was the ordering of a special explosion proof electrical junction box which took a while to have made and sent to us.

- d. Completing the project on time and on budget.

The project was delayed in completion by about 2 weeks, which wasn't really that bad given the scope of the project. Most of the delay was credited to the necessitated removal of extra material from the construction site and having to wait for the arrival of a special piece of equipment (explosion proof electrical junction box). The construction came in slightly above budget due to the extra soil removal and replacement with approved material and other incidental items and changes made during construction.

3. Describe your experience (e.g. trade-offs, surprises) when choosing a particular approach, technology or solution for this project. What would you do differently?

If asked to do it again, I would specify a greenhouse to cover at least one of the dewatering pads to make winter use easier. Our engineers were not convinced that we would need a greenhouse for winter operation, but we have found that it necessary to keep the bag defrosted to allow for dewatering. Although it appears to have worked out tendering out different pieces of the equipment, I would also consider doing a "equipment package" to get everything from one supplier to have a package that was out of the box compatible and functional.

4. Has the business case associated with the project changed since the planning stage (e.g. change in the level of service delivered by the project, expected revenues, capital or operating costs or payback, etc.)? Could anything have been done to better understand the business case at the application stage?

The business case was strong and appears to have been accurate with the exception of not being able to dewater as much during the winter months. The system was operational for a month or so after construction and our sludge was reduced to optimal levels and the dewatering was working well. We are looking at installing a greenhouse for next winter to allow for 12-month operation. This should allow for savings equal to or greater than those projected in the business case.

5. Did you use any approach(es), that are not business as usual over the course of the Project (e.g. decision making approach, consultation methodology, non-typical procurement, full-cost accounting)? Were there any benefits or drawbacks of this approach?

No approaches were used that were not business as usual.

Sustainable Design and Construction:

6. In your GMF application, you noted that the project would have sustainable design and construction measures as set out in column B of the table below.

Please complete the table below by inserting into column C the following information:

- Did the project implement the measures as described?
- Describe the effectiveness of the measures?
- Please provide reasons for any changes to the measures?
- Please include any measures that were taken beyond what you committed to in the application form.

A	B	C
Sustainable Design and Construction Element	As described in your GMF Application	Describe the Implementation of the Measure (one paragraph)
Sustainable Design and procurement		
Environmental considerations integrated at the design stage		
Green procurement		
Site Characteristics		
A remediated brownfield or underutilized site (i.e. is not a green field).		

Existing buildings/ infrastructure / equipment is used	<p>The project will be constructed within the confines of the existing WWTP.</p> <p>Pumps from the plant will be used to divert the waste (through valving) to the dewatering system. The material created will be composted on site in the bags that are used to dewater. Once it has dewatered and composted for about a year, the material will be used as a nutrient additive to sod fields within 1 km of the WWTP. The actual bags used to dewater the sludge can be reused after they have served their purpose for such purposes as landscaping, erosion control, and weed control. We currently land spread the waste but expect that that method of dealing with waste will be discontinued in the near future as there have been complaints about odour and health concerns from those in the area where the land spreading occurs. This treatment method gives us a usable product at the end of the process with the possibility of developing it into a salable product. It significantly improves the performance of our WWTP by controlling our MLSS, thereby increasing the plants capacity without making major capital expenditures or changing the footprint. It also reduces the amount of trucking we will need to do (reducing GHG emissions) and optimizes the WWTP treatment capability.</p>	<p>The project implemented the measures as outlined in the application. Dewatered material is held onsite and will be trucked once the bag has been filled and allowed to sit, dewater and compost for a year. The system appears to be working exactly as anticipated except that we have realized that we need a greenhouse to improve year round operations. The cold winter months can lead to freezing in the bags and either reduce or stop the dewatering abilities of the membrane bags. This is an inconvenience and we are still very pleased with the operation of the system so far. The material going into the bags is sludge and has the appearance of very dirty puddle water. The water leaving the bags looks like brook water.</p>
Avoids, protects or enhances sensitive environmental areas		
Utilize natural systems to provide environmental benefits within the project (e.g. wetlands)		
Does not contribute to urban sprawl		

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Part of the urban transport network and encourages the use of sustainable transportation		
Construction activities:		
Reuse of available construction material on-site		
Use of construction materials with recycled content		
Construction Waste management including diverting construction waste from the landfill through recycling and re-use (off-site)		
Minimize expected impacts of construction activities (e.g. dust minimization, minimise soil erosion)		
Biodiversity and ecosystem protection		
Other (Please specify)		

Environmental, Social and Economic Outcomes:

7. Please describe any additional environmental, social and economic outcomes your Project has achieved during the design, procurement and construction phases.

Now that the project has been completed, it will somewhat help with negotiations to join communities together. Amalgamation talks have been ongoing for some time and this project allows the community to expand the wastewater treatment line to more customers without having to complete major upgrades to the WWTP.

Project Champion:

8. Do you have a Project champion who has been instrumental to the Project to date (design, procurement, construction)? If so, please include his or her name, title and contact information, and describe his or her role in the Project.

Next steps

9. Please describe any steps you have taken or plan to take to ensure that the people, internal groups or other key stakeholders that are important to the operation of the project adopt the necessary behaviours and other practices to ensure successful performance?

The Water & Sewer Corporation is briefed on the operations of the Wastewater Treatment Plant on a regular basis and the plant maintenance staff are developing Standard Operating Procedures (SOPs) for the plant operations which include dewatering. This will ensure consistent and efficient operations of the plant and the dewatering system.

10. Have the systems and technologies been established for measuring and monitoring the performance of the project during operation

Yes. The systems for measuring and monitoring the operations were already established in that the operators have to test many parameters of operation on a regular basis. The composition of the Waste Activated Sludge (WAS) is tested monthly to ensure that it is staying in acceptable operational ranges. With the dewatering system in place, we can now waste sludge on a more efficient basis and get the plant operating at optimal levels, not just acceptable ones. Due to the associated costs of trucking sludge, we used to waste just enough to stay within environmental guidelines. With the dewatering system in place, we will be able to waste on a regular basis and keep the solids in the treatment plant at optimal levels. We have found that keeping the solids at optimal levels also has the side benefit of lowering our energy consumption as the air pumps that feed the plant do not need to run as hard to maintain treatment levels.

Publicity

11. Briefly describe any recognition, media coverage, awards, or public support the Project has received to date.

The system is new and operations are still being tweaked to obtain the best results. Once we are sure of treatment and energy levels, and can verify results, we will broadcast more widely the extent and efficiency of the treatment system.

Photos and materials

FCM includes project photos and links to project materials in GMF case studies, website content, and other communication vehicles.

1. Identify and attach any materials resulting from the Project that would be useful to share with other communities, such as checklists, toolkits, guidelines, bylaws, videos or information brochures. If the material is available on your website, simply include the link to it.

For example, a water conservation project might result in a new municipal water use bylaw, or a series of householder information brochures or online video clips on ways to reduce water use.

2. Attach five high-quality photographs of the Project. Where possible, include photos that feature people in action, illustrate the progress of the project, or feature “before” and “after” perspectives. The photos must be in jpeg or tiff format and at least 300 dpi (up to 10 MB/10,000 KB but no smaller than 1 MB/1,000 KB in file size).

For each photo, please include:

- a) A caption describing what is featured in the photo.
- b) A photo credit that indicates who owns the copyright to the photo and the photographer (e.g. © 2010, City of Ottawa/Madison Brown).
- c) A written release signed by the individuals depicted in the photo granting FCM permission to use the images. **Please request an FCM Photo Consent Form from the GMF Project Officer.**