

# Statement of Work for Miette Hot Springs Potable Water System Sand Filter Replacement

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**Version: 1.0**

Removal and disposal of the existing rapid sand filters and supply and install of replacement rapid sand filters for the Miette Hot Springs potable water treatment system.

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# 1 Scope

## 1.1 Objective

Removal and disposal of the existing rapid sand filters and supply and install of replacement rapid sand filters for the Miette Hot Springs potable water treatment system prior to the end of March 2015.

## 1.2 Background

The potable water supply is for use at the Miette Hot Springs site and is also serves the nearby guest bungalows which are privately owned and operated.

The current process for treatment of the raw water (surface water from local creek) is:

- Flocculation and chlorination prior to filtering.
  - Flocculant in use is ClearPAC Plus (Poly Aluminum Silicate Chloride) dosed at  $1.6969e^{-6}$  litres/minute.
- Filtration through 2 rapid sand filters.
- Further filtering through bag filters
- UV treatment prior to use or storage in reservoir.

The existing potable water rapid sand filters at the Miette Hot Springs have reached the end of their serviceable life.



Image showing existing rapid sand filter system.

The rest of the potable water treatment system is newer than the sand filters and there have been recent upgrades and improvements and so no work is required.

Current production rate is up to 330 litres/minute.

The Miette Hot Springs are open to the public from early May through to mid-October. During the winter closure a maintenance person is on site most days.

### 1.3 Terminology

ANSI - American National Standards Institute

ASME - American Society of Mechanical Engineers

NSF – National Sanitation Foundation

SOP – Standard Operation Procedures

## 2 Reference Documents

The Alberta Environment Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems for rapid sand filtration for potable water systems must be met.

<http://environment.alberta.ca/01249.html>

All installed equipment must comply with the appropriate NSF/ANSI Standard 14, 53, 61.

All procedures and equipment and supplies must comply with the Plumbing Code of Canada 2010.

ASME certification is not required but could be considered relevant.

## 3 Requirements

### 3.1 Scope of Work

The Contractor must remove and dispose of the existing rapid sand filters and source and install replacement rapid sand filters.

The Contractor must specify replacement filters that can deliver a treated water production rate of up to 400 litres/minute taking into account the following parameters.

- Temperature of source water is 4 - 25 degrees Celsius.
- Maximum backwash flow available is 550 litres / minute.
  - The contractor must ensure that this flow will be sufficient to expand the filter bed sufficiently given the supplied filter media.
- Operating pressure of 550 kPa (80 psi, nominal) with a max operating pressure of approx. 660 kPa (95 psi).
- The system does not need to produce treated water during the backwashing process.
- Pressure gauges suitable for determining filter loading must be provided.
- The system must be able to filter 100 litres/minute with one filter offline.
- Each filter must be capable of being isolated from the system without impacting the functional operation of the rest of the system.
- A particle size analysis is provided at Appendix A.

### 3.2 Tasks

The Contractor will be responsible for the following:

#### 3.2.1 Removal of existing filters

The Contractor must disconnect the two existing filters and filter media from the potable water treatment system and remove them from site.

#### 3.2.2 Disposal of existing filters

The contractor must dispose of the two existing filters and filter media in an off-site location in accordance with all relevant legislation.

#### 3.2.3 Sourcing and Design of New Filters

The Contractor must source replacement filters that meet the requirements set out in 3.1.

The new filter system must be designed for safe operator accessibility during operation and maintenance tasks.

The new filters must not impede access to the existing potable water treatment system or pool systems.

#### 3.2.4 Installation of New Filters

The Contractor must install the new filters in the same general area that the existing filters were removed from.

The Contractor must connect the new filters to the existing potable water treatment system.

The Contractor must liaise with on-site personnel regarding location of the filters and routing of new piping. On-site personnel will have final say in routing of pipes to the new filters.

### 3.2.5 Commissioning and Testing

The Contractor must commission and test the replacement filters and demonstrate that they meet the Deliverables and Acceptance Criteria.

## 3.3 Deliverables and Acceptance Criteria

The contractor must provide a SOP manual for filter operations. This must include at a minimum normal filtration process and backwash process instructions.

The contractor must demonstrate to the satisfaction of on-site personnel that the filters can operate at

- An average production rate of 330 litres/minute for a period of 4 hours.
- A peak production rate for a minimum of 30 minutes without any carry through of the filter media.

The contractor must demonstrate to the satisfaction of on-site personnel that sufficient backwash bed expansion can be maintained. This must also confirm no appreciable loss of filter media.

All of the new installation must be leak resistant to 620 kPa (90 psi) for 15 min without any observable leaks or system degradation.

All valves must be demonstrated to have less than 10 ml/min leakage at 620 kPa.

The potable water system must deliver potable water with a turbidity of less than 1.0 NTU.

Equipment must be warranted for a minimum period of 1 year from date of installation.

## 3.4 Constraints

The Contractor should be aware of, and account for, the following constraints that may impact the completion of this project.

### 3.4.1 Road Access

The Miette Hot Springs Site is located at the end of Miette Road. Miette Road is accessed from the Yellow Head highway (Hwy 16) and is 34km from Hinton. The Miette Hot Springs are a further 17km up Miette Road. The road is gated and locked.

The Miette Road is maintained by Parks Canada. In the event of heavy snowfall access to the site may be delayed until road clearing operations can be completed.

### 3.4.2 Travel and Living Requirements

There is no on-site accommodation available for Contractor's staff. The nearest commercial accommodation is at the intersection of the Miette road and Hwy 16 at Pocahontas Bungalows.

### 3.4.3 Building Access

The filters are located in the basement of the building. The Contractor must satisfy themselves that the access is of sufficient size for their proposed removal of the existing filters and install of new filters.

#### 3.4.4 Access to Premises

The Contractor must identify when they require access to the premises so that Parks Canada staff can arrange access.

#### 3.4.5 Work Hours

Site hours are Monday to Friday from 8am to 4pm. The contractor must identify if they require access outside of these times.

### 3.5 Support Provided by Parks Canada

Parks Canada personnel will, on request provide:

- Measurements of the available space and constraining dimensions for access and egress through the building. The minimum contiguous volume available for the filter(s) assembly is approximately 2.9m vertical, 2.9m wide and 1.3m deep. More space may be available if creative placement is considered. The proponent is responsible for verifying any dimensions critical to their design.
- Other production data requested by the bidder.

Requested information will be made available to other bidders.

### 3.6 Timeframe and Delivery Dates

The Contractor must complete the project before 31<sup>st</sup> March 2015. All invoices must be submitted before 7<sup>th</sup> April 2015.

### 3.7 Contractor Qualifications

The Contractor must provide three (3) examples of similar work and client references to demonstrate their capability to complete the requested work.

The contractor must have a valid business license for Jasper National Park.

The contractor must have a valid Alberta plumbing license.



## 4 Appendix A – Particle Size Analysis

See attached PDF lab report.

The sample used for this test is not typical as it was taken at a time of high turbidity.