



# Guidelines for Sewage Works Design

January 2008

EPB 203

**Changes (highlighted) made to the following Sections: 1.1; 4.1; 4.4.7.1; and 4.4.7.2.**

## **1. Information Submissions for Approvals**

### **1.1 Approval Requirements**

An approval to construct, extend or alter any sanitary sewage works must be obtained from Saskatchewan Environment before starting construction of such works. Applications for approval are required to be made on prescribed forms obtained from Environment.

Typical examples of works requiring construction approvals include:

- wastewater treatment facilities including lagoons and effluent discharge or disposal works;
- sewage collection systems and extensions;
- sewage lift and pumping stations; and
- lagoon seepage control works.

Applications for approvals are required to contain information prescribed in section 1.2. Information should be in a concise form and a logical order. Drawings and plans should conform to good engineering practice. Previously submitted information need not be resubmitted unless it is affected by the construction, extension or alteration or updating is appropriate.

Municipalities and other sewage works owners are advised that First Nations and Métis Consultation must take place before any lagoon or mechanical treatment works construction, upgrading or decommissioning activities that could adversely affect Treaty or Aboriginal rights is developed or put in place. Although the need for notification or consultation will depend on the specific circumstances of construction, upgrading or decommissioning, such consultation is to begin at the earliest possible time (conceptual stage) and to some degree could involve the municipalities or other sewage works owners and their consultants. For more information, the Government of Saskatchewan Guidelines for Consultation with First Nations and Métis People: A Guide for Decision Makers (<http://www.fnmr.gov.sk.ca/documents/policy/consultguide.pdf>) is available on the internet. Municipalities and other sewage works owners are also advised that such construction, upgrading or decommissioning activities with a significant areal impact will need to have an initial review called a Heritage Resource Review or HRR which will determine if a broader Heritage Resource Impact Assessment or HRIA is necessary.

### **4.1.7 Colour code for Wastewater Treatment Plant Piping**

It is recommended that piping be adequately identified as to contents and direction of flow. Where a facility does not have a standardized colouring or marking code, one should be adopted. The recommended colour code for the Wastewater Treatment Plant Piping as per the "Ten State Standards" is shown in Table 4.1.

**Table 4.1 Wastewater Treatment Plant Piping – Recommended Colour Code**

Pipes	Colour
Sludge Lines: Raw Sludge Sludge Recirculation or Suction Sludge Draw Off Sludge Recirculation Discharge	Brown with Black Bands Brown with Yellow Bands Brown with Orange Bands Brown
Gas Lines: Sludge Gas Natural Gas	Orange or Red Orange or Red with Black Bands
Water Lines: Non-potable Water Potable Water	Blue with Black bands Blue
Other: Chlorine Sulfur Dioxide Sewage (Wastewater)	Yellow Yellow with Red Bands Gray

**Notes:**

1. The direction of flow and name of contents be noted on all lines
2. The entire length of pipe to painted with recommended colour
3. Bands, if necessary are to be located as follows:
  - (a) at 9 m intervals, and/or
  - (b) where the pipe enters and leaves a room
4. Individual bands are to be 25 mm wide and a 25 mm space is to be left between bands

**4.4.7 Municipal Lagoon Decommissioning**

There are two main methods of decommissioning typical municipal lagoons:

- Desludge and haul
- Landfarm sludge on-site

Industrial or agricultural lagoons may require more advanced decommissioning methods.

**4.4.7.1 Decommission by Desludge and Haul**

For this option, the cells are desludged and the sludge hauled to a nearby landfill or an appropriate landfarm location. The sludge would best be removed in a frozen state for ease of handling and to minimize odours. Once sludge haul is completed the dykes are leveled and the site may be used for agricultural, commercial, industrial or parkland purposes. Reuse of the lagoon site for residential housing is not recommended.

**4.4.7.2 Decommission by On-Site Landfarm**

For this option, the cells are drained and the sludge allowed to dry . Drying may take considerable time depending on climatic conditions. During this time the dykes must be checked frequently for any breaching to prevent the entry of surface runoff into the lagoons. Once conditions are suitable for machinery access, the sludge should be worked to allow further degradation and aeration of the organic rich sludge. There is no defined requirement to landfarm the material for a set period of time, however Saskatchewan Environment would recommend that the landfarming continue for a period of two years. Once landfarming has sufficiently degraded the organic material, the entire site including the dykes can be leveled and used for agricultural, commercial, industrial or parkland purposes. Reuse of the lagoon site for residential housing is not recommended.

Municipalities who plan to use the decommissioned lagoon site for agricultural purposes should follow Land Application of Municipal Sewage Sludge Guidelines, EPB 296 and ensure that the practice is done in a beneficial and environmentally acceptable manner, protecting the environment and human health from adverse effects. If the decommissioned lagoon site is intended for a use other than agricultural use, such as industrial or commercial or parkland land use, the Maximum Acceptable Concentrations (MAC) of metals in soil shall not exceed the criteria specified in Table2 of the Land application of Municipal Sewage Sludge Guidelines, EPB 296. Saskatchewan Environment does not recommend using the decommissioned lagoon site for residential development. If the decommissioned lagoon site is not to be used for any dedicated land use, the site should be properly fenced and signs placed.