

# Municipal Sewage Regulation Policy Intentions Paper for Consultation

## 1. Introduction

Faced with climate change, potential water shortages and seasonal scarcity, facilitating water reuse and supporting new reclaimed water technologies is critical. In B.C., the Municipal Sewage Regulation regulates the use of reclaimed water and was brought into force in 1999.

The Ministry of Environment (the ministry) is in the process of reviewing the Municipal Sewage Regulation (the regulation) of the *Environmental Management Act*.<sup>1</sup> This regulation provides authorization for the treatment, reuse and discharge of domestic sewage, wastewater or municipal liquid waste by setting standards and requirements. The regulation applies to all discharges of domestic sewage except those addressed by the Sewerage System Regulation of the *Health Act* and discharges from individual single-family or duplex dwellings.<sup>2</sup>

The ministry intends to revise the Municipal Sewage Regulation in three stages:

- ◆ The first stage – focuses on **reclaimed water and registration requirements**, as well as additional housekeeping amendments to the regulation. The focus is to consolidate and clarify existing requirements, add standards for reuse options not contemplated in the 1990's and provide flexibility to support new treatment technologies.
- ◆ The second stage (to be discussed in an intentions paper planned for 2010) – will address **discharges to ground and water**, and harmonize the regulation with the **Municipal Waste Water Effluent Strategy** of the Canadian Council of Ministers of the Environment (CCME).
- ◆ The third stage (to be discussed in an intentions paper planned for 2011) – will consider **design, commissioning, management, operations, environmental impact studies and security**. This stage will also address implementation (e.g., use of guidelines and best management practices

documents, communications and training) and compliance (e.g., promotion, verification and enforcement) strategies.

Each stage of the review process consists of five phases:

1. **Scoping** – assessing specific regulatory issues and reviewing approaches in other jurisdictions;
2. **Policy Intentions Paper for Consultation** (intentions paper) – outlining the ministry's proposed revisions for the regulation and any outstanding issues or questions;
3. **Consultation** – engaging affected stakeholders and the general public via an intentions paper and response forms posted on the ministry website and by other means as required;
4. **Drafting** – preparing legal language for consideration by the Minister and Lieutenant Governor-in-Council; and
5. **Implementation** – informing ministry staff and external stakeholders of the approved regulation and developing guidelines and/or best management practices.

The purpose of this intentions paper is to seek responses and comments from stakeholders and the public on the proposed first stage revisions to the Municipal Sewage Regulation.

This intentions paper and accompanying response form are posted on:

[www.env.gov.bc.ca/epd/codes/msr/mun\\_sew\\_reg.htm](http://www.env.gov.bc.ca/epd/codes/msr/mun_sew_reg.htm)

For more information on the Municipal Sewage Regulation visit:

[www.env.gov.bc.ca/epd/epdpa/mpp/msrhome.html](http://www.env.gov.bc.ca/epd/epdpa/mpp/msrhome.html).

## 2. Ministry and Government Goals

The Ministry of Environment provides leadership in environmental management through innovative legislation and programs, compliance activities and shared stewardship initiatives. The ministry's mandate is to protect human health and the environment, as well as maintain and restore the diversity of native species, ecosystems and habitats.

<sup>1</sup> See links to legislation under the ministry's MSR homepage: [www.env.gov.bc.ca/epd/epdpa/mpp/msrhome.html](http://www.env.gov.bc.ca/epd/epdpa/mpp/msrhome.html)

<sup>2</sup> The Sewerage System Regulation generally applies to smaller domestic sewer systems. For more information about this regulation see: [www.hls.gov.bc.ca/protect/lup\\_regulation.html](http://www.hls.gov.bc.ca/protect/lup_regulation.html)

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The development and enactment of the *Environmental Management Act* and its associated regulations are intended to provide clear roles for governments and stakeholders, consistent performance standards, updated fee structures, decreased remedial and legal costs, and a greater focus on those not in compliance with regulatory requirements.

## **3. Background Information**

### **3.1 Review process to date**

- ◆ In April 2007, the Ministry of Environment posted an information paper outlining intentions to revise the Municipal Sewage Regulation. The information paper described ministry goals for the review process and included a response sheet for individuals wishing to be kept informed of the ministry's intentions.
- ◆ In October 2007, the provincial Cabinet approved minor amendments to the regulation including a two-year extension of the time-limited moratorium on discharges to Shuswap Lake. A list of future issues to address was posted in an intentions paper in October along with a response sheet.
- ◆ In 2008, the ministry reviewed issues brought forward and developed a plan to review the regulation.
- ◆ In the spring of 2009, ministry staff held workshops in Kelowna and Vancouver. These workshops, hosted in partnership with the Ministry of Community and Rural Development, sought input on the regulation's reclaimed water requirements. At a follow-up meeting in July, reclaimed water standards and statistics were discussed.

### **3.2 Canada-wide Strategy for the Management of Municipal Wastewater Effluent**

In February 2009, the Canadian Council of Ministers of the Environment (CCME) agreed to a Canada-wide Strategy for the Management of Municipal Wastewater Effluent. The strategy articulates the collective agreement reached by the country's 14 ministers of the environment to ensure that municipalities have a harmonized framework and standards

to manage wastewater effluent that protects human health and the environment.<sup>3</sup>

As this multi-year strategy is implemented, ministry staff will review the Municipal Sewage Regulation to ensure that the provincial discharge requirements meet or are more stringent than the Canada-wide strategy. Discussion of related issues and amendments will be communicated in the stage 2 intentions paper scheduled for 2010.

### **3.3 Integrated Resource Recovery**

Integrated Resource Recovery (IRR) is an integrated, whole-system approach to planning and managing infrastructure to maximize the recovery of value from waste resources. This approach mimics the closed-loop cycles present in all ecosystems, utilizing local sources of energy, water and other resources to reduce demand for external or new sources. For example, reusing wastewater from sewage treatment processes to serve non-potable water needs such as irrigation or water features can reduce the demand for potable water.

## **4. Issues and Ministry Intentions – Plans, Registration and Other Changes**

The following sections (4.1 to 4.6) of the intentions paper outline issues related to registration, qualified professionals and other sections of the Municipal Sewage Regulation. The ministry's intentions to revise the regulation are also included.

### **4.1 Waste Management Plans and the Municipal Sewage Regulation**

Sections 2, 3 and 4 of the Municipal Sewage Regulation (MSR) allow local governments to develop a liquid waste management plan as an alternative to following the provisions set out in the MSR.

In some situations, an approved liquid waste management plan may prohibit treated sewage discharges to specified water bodies. The MSR does not include a provision that would prevent sewage

<sup>3</sup> For more information regarding the strategy see: [www.ccme.ca/ourwork/water.html?category\\_id=81](http://www.ccme.ca/ourwork/water.html?category_id=81).

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facilities from registering a discharge to these water bodies. Thus the ministry is proposing a regulatory amendment to support discharge prohibitions in a local government's approved liquid waste management plan.

## **4.2 Information required for Section 3 – "registration under Section 2 for an exemption"**

Over the ten years that the Municipal Sewage Regulation has been in force, the ministry has received many incomplete registrations. This has led to confusion for all parties involved. Receiving the required documents at registration provides ministry staff with sufficient time to review the package and request additional site specific information before the discharge commences.

The ministry intends to add the following as required information to ensure that all relevant information is submitted at the time of registration:

- ◆ The security and capital replacement fund or approved assurance plan;
- ◆ The environmental impact study;
- ◆ The operating plan that includes:
  - the commissioning plan with specific commissioning/operational procedures and a monitoring plan to demonstrate that no adverse environmental impacts occur as a result of the facility's commissioning, and
  - the contingency plan that outlines emergency procedures, the notification of local health officers, and actions to be taken if effluent cannot be discharged because of its poor quality;
- ◆ A summary page (reference sheet) of the effluent quality requirements, maximum design flow, effluent and receiving environment monitoring, the frequency of monitoring, notification and reporting requirements;<sup>4</sup>

<sup>4</sup> This provision would help confirm that the operator or site owner understand what is required for operation of the facility as the qualified professional designed the system, completed the registration form and provided the required registration information. It would also assist ministry staff and local health officers with compliance and enforcement activities especially in the case of high risk discharges.

- ◆ A copy of design drawings for the sewage treatment and discharge facilities;
- ◆ A site plan showing monitoring sites in the receiving environment relative to the location of the treatment facilities and discharge sites;
- ◆ A signed and sealed statement from the qualified professional(s) that the design of the proposed treatment facility, the discharge and associated documentation meet the MSR's requirements;<sup>5</sup>
- ◆ Proof that the local government has been notified of the registration; and
- ◆ Where required, proof of authorization from a local health officer or local service area bylaw.

## **4.3 Conditions for releasing discharges**

Section 14 of the regulation lists conditions that must be met before discharge is released from a sewage treatment facility. Presently there is no requirement for notification of ministry staff prior to the commencement of discharge.

The ministry intends to amend the regulation so that the director will be notified two weeks prior to the start of the discharge. This provision would allow ministry staff to arrange to either be present for start up or ensure that additional requirements have been met prior to commencement of the discharge.

## **4.4 Definitions of Qualified Professionals and Certified Operators**

### **A. Qualified Professionals**

The definition and role of a "qualified professional" are included in a number of regulations under the *Environmental Management Act*.

The ministry intends to harmonize the Municipal Sewage Regulation's qualified professional definition with the Organic Matter Recycling Regulation's definition. This would clarify that qualified professionals must belong to a professional association and that their area of expertise must relate to the work done so that it complies with the regulation.

<sup>5</sup> The registration form and regulation are not clear that a qualified professional must ensure that the requirements are met. The proposed change is intended to reinforce and clarify this requirement in Section 16(2) of the regulation.

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### **B. Certified Operators**

The regulation requires operators of sewage facilities to be certified by the Environmental Operators Certification Program or have other suitable qualification. Over the years the Environmental Operators Certification Program has become the industry standard for sewage facility operators and an alternative qualification option may no longer be necessary. The ministry is intending to delete the alternative option in the regulation. This approach would also ensure a consistent, equitable training and certification standard for all operators.

#### **4.5 Timing for submitting information**

Section 16 of the regulation requires the development of an operating plan 90 days before any construction commences. Similarly Schedules 1, 8, 9 and 10 require an environmental impact study to be completed 90 days before any construction commences.

As noted above (in section 4.2 of this intentions paper), this information is critical for ministry review and consideration at the time of registration; however, it is often received after registration.

The ministry is seeking comment on whether: 1) this information should be required 90 days before construction commences and at registration; or 2) the regulation should be silent on “before construction”, allowing the developer/builder to decide if construction can proceed without registration and risk having to either reconstruct/redesign or stop construction because of a subsequent non-compliance issue.

#### **4.6 Schedule 7 – Design standards for sewage facilities**

Section 1(2) of Schedule 7 requires the discharger to demonstrate to the satisfaction of the director that proposed alternative measures do not adversely affect the performance of the sewage facility and do not adversely affect the receiving environment. To clarify regulatory intent and provide consistency for stakeholders, the ministry intends to clarify that satisfaction of the director means the written approval of the director.

### **5. Issues and Ministry Intentions Related to Use of Reclaimed Water**

The following sections (5.1 to 5.6) of the intentions paper outline reclaimed water issues and discuss the ministry’s intentions to revise these regulatory requirements.

#### **5.1 Beneficial use of reclaimed water**

The Code of Practice for the Use of Reclaimed Water issued in May 2001 (the regulation’s guidance document)<sup>6</sup> states that reclaimed water should be used for beneficial use and defines beneficial as “advantageous or helpful in enhancing the environment, increasing conservation of natural resources, or improving biological or physical processes without any negative impact on human health and the environment.” However the Municipal Sewage Regulation is not as clear on beneficial use and only defines reclaimed water irrigation as beneficial use for crops or vegetation. The ministry is seeking comment on this inconsistency.

#### **5.2 “Cross connection” and other building/plumbing code issues**

Section 10(5) of the Municipal Sewage Regulation (MSR) requires the prevention of cross connection when conveying reclaimed water in any dual distribution system. The purpose of this requirement is to prevent the contamination of potable water with reclaimed water in dual distribution systems.

Cross connection concerns were brought forward at reclaimed water workshops held in the spring of 2009. Some participants pointed out disconnects between the MSR, other legislation and the provincial building code. For example, participants indicated that although the MSR allows reclaimed water (non-potable water) to be used for toilet flushing, the building code does not allow this. Ministry of Housing and Social Development staff confirmed that under the building code non-potable water can be used for toilet flushing but cannot be discharged to a sink or lavatory (lavatory is another term for sink in the building code).

<sup>6</sup> See: [www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/cop\\_reclaimedwater.pdf](http://www.env.gov.bc.ca/epd/epdpa/mpp/pdfs/cop_reclaimedwater.pdf)

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While reclaimed water distribution systems are within the scope of the MSR, piping into and within buildings is regulated under the provincial building code. Therefore the ministry intends to review the regulation and revise definitions to ensure consistency within legislation and with the provincial building code.

### **5.3 *Irrigating food crops with reclaimed water***

At present, Schedule 2 of the Municipal Sewage Regulation allows irrigation of food crops with reclaimed water. The guidance document on reclaimed water (the Code of Practice for the Use of Reclaimed Water) provides additional direction that root crops likely to be eaten raw should not be irrigated with reclaimed water.

Concerns were expressed at the spring 2009 reclaimed water workshops that food crops irrigated with reclaimed water may absorb such contaminants as hormones, endocrine disruptors, mercury and pharmaceuticals resulting in bioaccumulation and/or human uptake.

Following these workshops, the ministry reviewed related reclaimed water research and standards in other jurisdictions. Both the World Health Organization and the US Environmental Protection Agency report that to date no illnesses have been directly connected to the use of reclaimed water. There is also no evidence of contaminants at environmentally relevant concentrations causing human health effects.<sup>7</sup> There is agreement however, that monitoring is necessary to ensure that reclaimed water is a safe water source and that research is needed to identify which contaminants should be monitored and how best to monitor these contaminants.

The ministry intends to continue to participate in working groups (primarily through the Canadian Council of Ministers of the Environment) to assess emerging contaminants of concern for potential risks to human health and the environment and de-

<sup>7</sup> Guidelines for Water Reuse, U.S. Environmental Protection Agency, EPA/625/R-04/108 September 2004 U.S. Agency for International Development, Washington, DC.  
[www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf](http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf)

termine appropriate treatment and monitoring requirements. The ministry will take action to regulate contaminants identified as risks in discussion with Environment Canada and the Canadian Council of Ministers of the Environment working group. At this time, no amendments to the regulation are seen to be warranted in regards to irrigating food crops.

### **5.4 *Multi-agency review and approval of reclaimed water uses***

Under the Municipal Sewage Regulation, the use of reclaimed water requires approval from the Ministry of Environment, local health officers and sometimes the Ministry of Agriculture and Lands.

Participants at the spring 2009 reclaimed water workshops commented that it is unclear in the regulation when the local health officer's authorization is required. The ministry intends to amend the registration section to confirm that approval is required at registration (see section 4.2 for details). A guide will also be developed to provide additional information on the review and approval process.

It was noted that the regulation references the local health organization and not the position within the organization that approves reclaimed water uses. Therefore the ministry intends to amend the regulation to correctly reference the position (i.e., the health officer) and not the organization (i.e., the local health authority).

Stakeholders also commented that it can take a significant time to obtain authorization from the local health officer. Ministry of Environment staff consulted with health authorities on amending the regulation so that the review of reclaimed water proposals would follow a similar process as biosolids applications authorized by the Organic Matter Recycling Regulation (i.e., if applications are not responded to within 60 days then the application would be considered to be approved). The health authorities agreed to this approach. Thus the ministry intends to amend the regulation to harmonize the review of reclaimed water uses with that for biosolids applications.



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### **5.5 Reorganizing and consolidating regulatory requirements related to reclaimed water**

Many stakeholders have commented that regulatory requirements related to reclaimed water are dispersed throughout the regulation and difficult to find. The ministry intends to consolidate related requirements under a single section of the regulation.<sup>8</sup> The following regulatory requirements under headings A-H will be consolidated, clarified and/or amended.

#### **A. Storage, alternate disposal and system reliability**

References to emergency storage and alternate disposal in the Municipal Sewage Regulation are inter-related and difficult to follow for both internal and external stakeholders.

Many participants at the spring 2009 reclaimed water workshops requested less redundancy in the regulation's storage requirements. Stakeholders have commented that requiring a large capacity of emergency storage and an alternate disposal method is redundant, especially since reclaimed water treatment systems require complete redundancy.

The ministry considered these comments when reviewing other jurisdiction's reclaimed water storage requirements and developed the following proposed intentions. These intentions are meant to clarify when storage is required while providing an appropriate degree of flexibility in storage capacity design and alternate disposal methods.

The ministry intends to:

- ◆ Replace existing storage requirements with a requirement that those providing reclaimed water must have: 1) treatment processes built with multiple units capable of meeting the reclaimed water standard with one unit not in operation; **AND** 2) an alternate method of disposing of reclaimed water that meets the related require-

<sup>8</sup> The ministry intends to consolidate the following sections of the regulation that presently contain requirements related to reclaimed water – Sections 8, 10, 16, 18, 22, 24, 25, 26 and 27, as well as Schedule 2 and portions of Schedule 7.

ments of this regulation or that meets the satisfaction of the director;

- ◆ Provide flexibility for non-residential and non-institutional discharges by enabling the director to waive the alternate disposal requirement for these sectors if:
  - public health is protected,
  - there is high treatment reliability,
  - there is 48 hours emergency storage outside of the treatment system, **AND**
  - the facility has the ability to shutdown the generation of sewage within 24 hours OR has dedicated storage (i.e., can store a minimum of 20 days of design average daily effluent flow at any time, the maximum anticipated volume of surplus reclaimed water, and a five-year precipitation event);<sup>9</sup> and
- ◆ Develop guidance for the director to refer to when considering waiving alternate storage requirements.

#### **B. Requirements for effluent disinfection**

Effluent disinfection requirements are currently in Section 8 of the regulation. Disinfection protects human health when using reclaimed water. Chlorination and other methods are used but if the reclaimed water is discharged to aquatic environments then dechlorination is required to protect aquatic life. The ministry intends to:

- ◆ Clarify that effluent disinfection is required for reclaimed water;
- ◆ Clarify that a person providing reclaimed water must review and assess alternative disinfection methods before selecting the chlorination and dechlorination option;

<sup>9</sup> This would provide flexibility for commercial operations/sectors to either shut down the system or have storage capacity, eliminating the requirement under the regulation for both emergency storage and an alternate disposal method. To avoid situations where evacuation of hospitals or residences would be required because of storage issues, residential and institutional sectors would not qualify for this exemption.

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- ◆ Confirm that a person using chlorine will require the director's written permission<sup>10</sup> and must dechlorinate before discharging to surface water or within 300 meters upgradient of or within the zone of influence of well water; and
- ◆ Clarify that dechlorinated reclaimed water must have below 0.01 mg/L of total residual chlorine before reuse is permitted.

## **C. Environmental impact study requirements**

The Municipal Sewage Regulation requires a qualified professional to conduct and complete an environmental impact study prior to use of reclaimed water. Provisions for an environmental impact study for reclaimed water use are presently in the reclaimed water guideline rather than the regulation. The ministry intends to clarify in the regulation that the study must explain how the use of reclaimed water will be a potential benefit, not be detrimental to the environment **and** not result in unacceptable impacts to the environment or public health as a result of the use, storage or alternate disposal of reclaimed water.

## **D. Operating plan requirements**

Section 16(1) of the regulation requires preparation of an operating plan before construction of a facility commences and specifies plan contents related to reclaimed water uses.

The ministry intends to:

- ◆ Remove commissioning requirements currently set out in Section 17 of the regulation and instead require a commissioning plan as part of the operating plan;<sup>11</sup>

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<sup>10</sup> The intention of this amendment is to encourage providers of reclaimed water to assess alternative disinfection methods and only use chlorine after confirming that there are no other viable options.

<sup>11</sup> A commissioning plan would establish the monitoring required to demonstrate compliance with the reclaimed water quality standards and the actions that would be taken if the standards are not met. In the scoping phase of the review process, the ministry confirmed that no other jurisdictions allow a commissioning period for reclaimed water uses. The ministry has also developed a compliance and enforcement policy that addresses situation assessment and compliance timelines, rendering Section 17 of the regulation redundant.

- ◆ Reword Section 16(1)(c)(ii) to require a certified irrigation plan in the operating plan, detailing appropriate use and timing of applying reclaimed water, its maximum application rate, the crop's growing season, site specific loading limits as well as vegetative nutrient and metal limits;<sup>12</sup> and
- ◆ Move Appendix 3 of Schedule 7, 2(10) to a reclaimed water section to clarify that the operating plan should include a contingency plan with provisions to notify local health officers, actions to be taken if the effluent quality fails and alternative methods of disposal when using reclaimed water is not possible.

As well, the ministry is amending the regulation to ensure that reclaimed water used for irrigation meets the applicable Canadian Water Quality Guidelines. These guidelines contain additional detail such as metal and salt limits that are not defined in the regulation.

## **E. Notification of malfunction**

Section 18 of the regulation lists maintenance requirements. This section also requires the director to be immediately notified of any system malfunctions and any condition which results or may result in a discharge exceeding the standards set out in this regulation. Similarly the *Drinking Water Protection Act* also requires such notification. Thus the ministry intends to require immediate notification of the local health officer of any reclaimed water system malfunctions or other conditions which result or may result in a risk to public health.

## **F. Monitoring requirements**

Monitoring is integral at the start of discharge/reuse to determine if the standards of the regulation are being met and if alternate disposal is required until such time that the effluent meets the regulation's standards. Monitoring requirements for reclaimed water are scattered through the regulation in various sections and schedules of the regulation. Discharges to land and surface water have monitoring requirements that the reclaimed water sections do not have.

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<sup>12</sup> This change would support the guidance in the Code of Practice for the Use of Reclaimed Water that the irrigation system should be designed by a certified irrigation designer (see page 12 of the guide).

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The ministry intends to consolidate and clarify existing reclaimed water monitoring requirements as well as add those monitoring requirements from the discharges to land and surface water that would apply. This will be accomplished by:

- ◆ Consolidating existing reclaimed water monitoring from Sections 24, 25, 26 and 27 of the regulation to a single section;
- ◆ Clarifying monitoring requirements in Tables 1 and 2 (see section 5.6 below for details) and requiring that monitoring start immediately;
- ◆ Clarifying that required sampling, flow measurements and laboratory analysis should be carried out in accordance with the provincially approved standards/procedures<sup>13</sup>;
- ◆ Adding a provision that persons providing reclaimed water must provide or install suitable sampling facilities and maintain suitable flow measuring devices to record volumes of reclaimed water treated and used<sup>14</sup>;
- ◆ Confirming that surplus volumes of reclaimed water discharged to land or surface water must meet Schedule 6 requirements;
- ◆ Clarifying that monitoring of the receiving environment is required for reclaimed water uses; and
- ◆ Adding groundwater and surface water monitoring. This is to ensure that any applicable groundwater or surface water standards are met if reclaimed water is discharging to groundwater or surface water.

<sup>13</sup> Standards approved by the province's Resource Information Standards Committee should be followed and if the standard or procedure is missing then the "British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples" should be followed. The "British Columbia Environmental Laboratory Manual for the Analysis of Waters, Wastewaters, Sediments and Biological Materials" must be followed. See links on the following site for approved standards/procedures: <http://ilmbwww.gov.bc.ca/risc>.

<sup>14</sup> For certain reclaimed water uses (such as stream augmentation) monitoring the volume and flow of the reclaimed water is critical – in some cases volumes of reclaimed water may need to be adjusted according to the level of water in the stream in order to prevent flooding if there is an unexpected high rainfall/storm event.

## **G. Annual reporting requirements**

Section 28 of the regulation requires annual reporting and many other sections of the regulation contain reclaimed water reporting requirements.

The ministry intends to consolidate current reporting requirements for reclaimed water in to a single section of the regulation. Other critical information will be added such as the annual reporting of diversions to alternate disposal methods or storage, and the reporting of the next year's proposed monitoring dates. To support compliance and public health investigations, the annual reports should be submitted to the director and local health officer.

## **H. Appendix 3 of Schedule 7 – Health and Safety Criteria for use of Reclaimed Water**

Appendix 3 of Schedule 7 lists the "Health and Safety Criteria for use of Reclaimed Water." Participants at the spring 2009 workshops requested clarification of these requirements.

The ministry reviewed this appendix and intends to move critical requirements from Appendix 3 of Schedule 7 to a section that specifically deals with reclaimed water. For example, provisions for waiving the 30 meter setback to a water well, notification and annual reporting of reclaimed water use (discussed in section 5.5 G above) would be moved to the reclaimed water section. Remaining requirements would be moved to the regulation's guidance document (the Code of Practice for the Use of Reclaimed Water). The ministry consulted with staff from the Ministry of Healthy Living and Sport and confirmed support for this intention.

When discussing this appendix at the spring 2009 workshops, participants questioned the scientific rationale for the 60 meter setback distance related to food, and noted many examples (e.g., houses surrounding golf courses, restaurants near boulevards) where food is consumed and/or handled near reclaimed water irrigation. After reviewing scientific literature, the ministry found no strong evidence to suggest that population groups residing near wastewater treatment plants or recycled water irrigation sites are subject to increased risk from pathogens resulting from aeration processes or



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sprinkler irrigation. Thus the intent is to remove this food setback provision.<sup>15</sup>

## **I. Schedule 7(6) “Reclaimed Water Application”**

Schedule 7(6) deals with application of reclaimed water. The ministry intends to include critical requirements as explanatory notes to Tables 1 and 2 (see section 5.6.A for details). The following are considered critical requirements – 6(3)(c) related to irrigation, (3)(e) on slope restrictions when irrigating and (4) regarding drain field construction and design flows. The remaining storage requirements will be removed (see section 5.5.A for proposed storage changes).

### **5.6 Types and standards related to use of reclaimed water**

Sub-sections A-F below relate to the ministry’s intention to establish four types of reclaimed water uses.

#### **A. Types of reclaimed water use**

Schedule 2 of the Municipal Sewage Regulation lists permitted uses and standards for reclaimed water under two types of effluent quality based on whether public access is restricted or unrestricted. Stakeholders have commented that these two types are limiting and that they find the statistical references in the Schedule difficult to follow and inconsistent with other sections of the regulation.

The ministry researched several jurisdictions comparing the types, standards and uses of reclaimed water.<sup>16</sup> The ministry is considering the following types of uses and associated standards outlined in Tables 1 and 2. If adopted, the proposed four types in Tables 1 and 2, along with explanatory notes, would be added to the regulation.

The four types are:

- ◆ **Type 1 (highest environment risk)** – uses that could or will directly impact aquatic environ-

ments such as streams, wetlands and other aquatic environments. Some will have unique habitats that may require site-specific standards and toxicity testing for the most sensitive species and at its most sensitive life stage (see Table 1).

- ◆ **Type 2 (high exposure potential)** – uses and standards similar to the unrestricted public access type in Schedule 2 of the existing regulation (see Table 2).
- ◆ **Type 3 (moderate exposure potential)** – uses and standards like those listed in the restricted public access type in Schedule 2 of the regulation (see Table 2).
- ◆ **Type 4 (low exposure potential)** – lower risk reclaimed water uses (see Table 2).

The ministry is considering the standards listed in Table 1 below for uses of reclaimed water with the highest environmental risk. The ministry’s intention is to set minimum standards that the director is able to replace with stricter standards to protect a particular receiving environment where necessary. In addition, an environmental impact study would demonstrate how reclaimed water quality for these environmental uses will meet objectives for that community watershed or other applicable water quality objectives. Other uses and standards are listed in Table 2.

<sup>15</sup> Water Reuse for Irrigation – Agriculture, Landscapes, and Turf Grass, p43, Edited by Valentina Lazarova, Akica Bahri, CRC Press, Boca Raton Florida, 2005.

<sup>16</sup> See, for example:  
[www.epa.gov/nrmrl/pubs/625r04108/625r04108chap4.pdf](http://www.epa.gov/nrmrl/pubs/625r04108/625r04108chap4.pdf).

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**Table 1 – Standards for environmental uses of reclaimed water (replacing Schedule 2)**

Type 1 – Highest Environmental Risk				
Receiving Environment	A. Impoundments and wetlands with limited potential for direct public exposure*	B. Habitat restoration, stream augmentation, aquaculture, impoundments and wetlands with public exposure*	C. Direct groundwater recharge	D. Indirect potable reuse (community watersheds that are intake water or a drinking water source)
BOD	25 mg/L	10 mg/L	5 mg/L	5 mg/L
TSS	25 mg/L	10 mg/L	5 mg/L	5 mg/L
Turbidity			2 NTU average, 5 NTU maximum	0.1 NTU average, 0.5 NTU maximum
Fecal Coliform	2.2 /100 mL average, 23/100 mL maximum	2.2 /100 mL average, 23/100 mL maximum	2.2 /100 mL average, 23/100 mL maximum	1/100 mL average, 5/100 mL maximum
Ammonia	Not to exceed chronic standards for freshwater	Not to exceed chronic standards for freshwater		
Total Phosphorous		Set by the qualified professional		
Total Nitrogen				10 mg/L
TOC				1.0 mg/L

\* Outlets from wetlands/impoundments would also be required to meet applicable standards. Wetlands that create valuable habitat would be considered as habitat restoration (receiving environment B).

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**Table 2 – Proposed Permitted Uses and Standards for Reclaimed Water (replacing Schedule 2)**

Type	2 – Highest exposure potential	3 – Moderate exposure potential	4 – Low exposure potential
Description	Any activities where there is a high likelihood of public contact (treatment requirement is virus removal via coagulation and filtration).	Any activities where there is minimal likelihood of public contact or where there is restricted public access and user education.	Any activities where there is limited access or no likely contact or for emergency situations where contact is unlikely.
Examples of reclaimed water use	<p>Urban irrigation*:</p> <ul style="list-style-type: none"> <li>▪ Parks, golf courses**, playgrounds, cemeteries, road right of way, school grounds, fire hydrants, residential lawns and use (driveway &amp; vehicle washing), greenbelts, landscaping around buildings</li> </ul> <p>Toilet flushing (includes urinals) and washing machines</p> <p>Recreational/aesthetic:</p> <ul style="list-style-type: none"> <li>▪ Outside landscape fountains/water features</li> <li>▪ Snow making for skiing and snowboarding</li> </ul> <p>Agriculture:</p> <ul style="list-style-type: none"> <li>▪ Spray on food crops eaten raw (including frost protection, chemical spraying and crop cooling, orchards and vineyards)</li> <li>▪ Pasture (no lag for animal grazing)</li> <li>▪ Seed crops (grains)</li> </ul>	<p>Commercial, industrial, municipal uses (application when public is not likely to be present)</p> <ul style="list-style-type: none"> <li>▪ Street washing</li> </ul> <p>Agriculture:</p> <ul style="list-style-type: none"> <li>▪ Spray irrigation for non-food crops (including silviculture, nurseries, sod farm (note: lag time), chemical spraying and crop cooling, pasture (lag time), fodder, fibre)</li> <li>▪ Drip irrigation not directly contacting food crop (including orchards, vineyards, greenhouses)</li> <li>▪ Commercial processed food crop not eaten raw (e.g., saki rice)</li> </ul> <p>Recreational/aesthetic:</p> <ul style="list-style-type: none"> <li>▪ snow making not for skiing or landscape impoundments</li> </ul>	<p>Commercial, industrial, municipal, emergency uses:</p> <ul style="list-style-type: none"> <li>▪ Cement mixing</li> <li>▪ Industrial fire protection</li> <li>▪ Forest fire suppression/protection</li> <li>▪ Dust control</li> <li>▪ Soil compaction</li> <li>▪ Cooling towers</li> <li>▪ Process water</li> <li>▪ Stack scrubbing</li> <li>▪ Boiler feed</li> <li>▪ Equipment wash down</li> </ul>
pH (monitoring)	6.5 to 9 (weekly)	6.5 to 9 (weekly)	6.5 to 9 (weekly)
BOD <sub>5</sub> (monitoring)	10 mg/L maximum (weekly)	25 mg/L maximum (weekly)	25 mg/L monthly average no sample to exceed 45 mg/L (weekly)
Turbidity/TSS (monitoring) Note: Turbidity limit must be met prior to disinfection	2 NTU daily average, No values to exceed 5 NTU (continuous), and Maximum 10 mg/L TSS (weekly)	Maximum 25 mg/L (daily)	Monthly average of 25 mg/L, No sample to exceed 45 mg/L (weekly)
Fecal coliform (monitoring)	2.2 CFU/100 mL median, 14 CFU/100 mL maximum (daily)	100 CFU/100 mL median, 400 CFU/100 mL maximum (weekly)	200 CFU/100 mL median, 1000 CFU/100 mL maximum (weekly)
Residual Chlorine (monitoring)	To be determined – see response form	To be determined – see response form	To be determined – see response form
Toxicity (monitoring)			
Flow volume monitoring	Weekly	Weekly	Weekly
Reporting frequency	Monthly	Quarterly	Quarterly

\* Type 3 requirements would apply to other urban spray irrigation uses that occur in a public area when the public access restricted.

\*\* Type 3 requirements would apply to irrigating golf courses that are closed.

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## **B. Toxicity standards by type (see Tables 1 and 2)**

Section 9 of the Municipal Sewage Regulation sets out toxicity testing requirements for discharges to surface waters. Currently, these requirements do not apply to reclaimed water uses. Many stakeholders have commented that reclaimed water uses (such as stream augmentation, wetlands and habitat restoration) directly impact aquatic environments in the same manner as discharges to surface waters, thus toxicity testing should be required in both situations. The ministry intends to require toxicity testing for reclaimed water uses that impact aquatic life such as stream augmentation, wetlands and habitat restoration.

## **C. Standards and requirements for fecal coliform monitoring (see Tables 1 and 2)**

The Municipal Sewage Regulation sets fecal coliform effluent quality requirements for reclaimed water uses. Fecal coliforms are a subset of coliforms and most commonly originate from the intestines of warm blooded animals. *Escherichia coli* (*E. coli*) is one species of the fecal coliform group and lives only in the intestines of warm blooded animals. Because it is impossible to test for all the possible pathogens, indicator organisms such as fecal coliforms and *E. coli* are used. If fecal coliforms and/or *E. coli* have been detected in food or water this indicates there is a good chance that pathogens are also present.

As technology and laboratory techniques have improved, many jurisdictions are using *E. coli* rather than fecal coliform as an indicator of fecal contamination. As well, all potable water testing in the Province under the *Drinking Water Protection Act* and Regulations use *E. coli* for monitoring.

The ministry is considering the addition of *E. coli* monitoring for specific applications such as food crop spray irrigation. The ministry is seeking comment regarding the effectiveness and practicality of adding the monitoring *E. coli* for specific applications.

## **D. Stream Augmentation (see Table 1)**

“Stream” and “stream channel” are not defined in either the Municipal Sewage Regulation or the reclaimed water guideline (Code of Practice for the Use of Reclaimed Water) leaving the interpretation of “stream augmentation” subjective and open to misuse or abuse. The *Water Act* however, defines stream and stream channel.<sup>17</sup> Therefore the ministry intends to add these definitions to the reclaimed water guideline.

## **E. Irrigation and varying treatment reliability (see Table 2)**

The Municipal Sewage Regulation classifies the irrigation of golf courses with reclaimed water in the unrestricted public access group and requires higher standards and increased monitoring. The director has the discretion to consider golf courses in remote areas as restricted public access, thus subject to slightly lower standards and decreased monitoring. During discussions at the reclaimed water workshop in February and March 2009, some participants suggested that irrigating golf courses with reclaimed water should be classified as restricted public access with lower system reliability (category 2).

In consideration of these comments, the ministry has reviewed the regulation and intends to establish effluent quality requirements based on the use of reclaimed water (see Table 2 for details). The ministry also plans to consolidate all irrigation related requirements in a single section dealing with reclaimed water.

## **F. Shallow Sub-surface irrigation (see Table 2)**

Currently, Schedule 2 of the Municipal Sewage Regulation includes references to trickle/drip irrigation but not to shallow sub-surface irrigation. The regulation’s reclaimed water guideline (Code of Practice for the Use of Reclaimed Water) does address sub-surface irrigation. Many stakeholders

<sup>17</sup> See: [www.bclaws.ca/Recon/document/freeside/--%20W%20--/Water%20Act%20%20RSBC%201996%20%20c.%2020483/0096483\\_01.xml#section1](http://www.bclaws.ca/Recon/document/freeside/--%20W%20--/Water%20Act%20%20RSBC%201996%20%20c.%2020483/0096483_01.xml#section1)

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have requested the inclusion of shallow sub-surface irrigation as a reclaimed water use.

There is a debate as to whether there is a substantive difference between ground disposal and sub-surface irrigation. In practice, sub-surface irrigation is used year around in warmer and drier jurisdictions. B.C.'s climate would limit this type of irrigation to the summer months. At the spring 2009 reclaimed water workshops, participants discussed sub-surface irrigation and suggested that requirements be flexible and results based. In addition it was suggested that the environmental impact study confirm that the site has the appropriate hydrology and soil for this application.

The ministry is considering adding sub-surface irrigation as a use of reclaimed water in Table 2 (see section 5.6 above). Alternatively, the ministry could include sub-surface irrigation requirements in Schedule 4 of the regulation that deals with standards for discharges to ground. The ministry is seeking comment on whether this type of irrigation is best suited as a reclaimed water use or as an alternate method of disposal.

### **6. Consultation with First Nations**

Information concerning consultation with First Nations with respect to proposed revisions to the Municipal Sewage Regulation will be developed in accordance with legal requirements, ministry policy and government direction.

### **7. Providing Comment on Proposed Intentions for the Regulation**

The ministry is intending to finalize stage 1 revisions to the Municipal Sewage Regulation early in 2010. Comments regarding the proposed intentions of the ministry are being solicited and will be carefully considered in the review and development process. The ministry welcomes all suggestions with respect to any aspect of the regulation.

Submissions will be compiled and summarized, without specific attribution, by an independent contractor and the summary posted on the ministry website. Following review and consideration of

comments and submissions, the ministry will complete legal drafting of the regulation for legislative review.

This intentions paper and a response form with questions based on proposed intentions for the regulation have been posted on the ministry's web site:

<http://www.env.gov.bc.ca/epd/main/ip-list.htm>

Those interested are invited to submit comments using the instructions and questions provided on the response form. Individuals or organizations may also make written submissions to the ministry as desired without following the format set out in the response form.

All submissions will be reviewed for inclusion in a consultation summary report. Comments received will be treated with confidentiality by ministry staff and contractors when preparing consultation reports. Please note that comments you provide and information that identifies you as the source of those comments may be made publicly available if a Freedom of Information (FOI) request is made under the *Freedom of Information and Protection of Privacy Act*.

**Comments to the ministry should be made on or before January 29, 2010.**

If you have any questions or comments regarding the consultation process, review the information posted on the ministry website, or contact Cindy Bertram of C. Rankin & Associates, who has been contracted to manage consultation comments, at:

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***Thank you for your time and comments!***