

**FRASER VALLEY REGIONAL DISTRICT**

**JOINT ABBOTSFORD MISSION ENVIRONMENTAL  
SYSTEM (J.A.M.E.S.)  
WATER POLLUTION CONTROL CENTRE**

**OPERATING PLAN**  
(IN SUPPORT OF DECEMBER 17, 1999  
REGISTRATION UNDER MSR)

OCTOBER, 2001

**DAYTON & KNIGHT LTD.**  
**Consulting Engineers**

**FRASER VALLEY REGIONAL DISTRICT  
JAMES WATER POLLUTION CONTROL CENTRE  
OPERATING PLAN**

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FIGURE 1 – JAMES WPCC Site Plan

APPENDIX 1 Confirmation that Operating Plan is Adequate for Reliable Operation and Maintenance of Facility

**FRASER VALLEY REGIONAL DISTRICT  
JAMES WATER POLLUTION CONTROL CENTRE  
OPERATING PLAN**

## **1.0 INTRODUCTION**

This document is the Operating Plan for the recently expanded and upgraded sewage treatment facilities at the Joint Abbotsford Mission Environmental System (JAMES) Water Pollution Control Centre (WPCC) located in Abbotsford, B.C. This Operating Plan is based on the Ministry of Water, Land and Air Protection (MWLAP) document entitled *Guidance on the Municipal Sewage Regulation: Recommendations Regarding Developing an Operating Plan* (Draft August 1999), hereafter referred to as the Guideline. The requirements for the Operating Plan are laid out in the Municipal Sewage Regulation (MSR). This Operating Plan is submitted in support of the Fraser Valley Regional District (FVRD) application for registration of the existing discharge (Permit PE 00351) under the MSR. The FVRD proposes to construct a new outfall in the near future (within 5 years) to discharge effluent into the main arm of the Fraser River. It is anticipated this Operating Plan will be updated in the near future in support of the registration of the proposed new discharge under the MSR.

As recommended in the MWLAP document entitled *Recommended Pre-Registration Activities to be Undertaken prior to Registering a Municipal Discharge with BC Environment*, an initial meeting was held on November 21, 2000 with the MELP, Dayton & Knight Ltd. and FVRD staff to confirm the requirements for registering the discharge under the Municipal Sewage Regulation (MSR). One of the requirements is that an Operating Plan be prepared for the treatment facility.

## **2.0 PROCESS DESCRIPTION**

A site plan of the wastewater treatment and disposal facilities is shown on Figure 1. The JAMES WPCC has been expanded and upgraded to provide secondary treatment for a maximum day flow of 70,000 m<sup>3</sup>/d (240,000 population equivalent) using the trickling filter-solids contact process with anaerobic digestion of waste biological solids. Effluent is discharged to the Fraser River. Unit processes include:

- influent pumping
- mechanical screening
- grit removal
- primary sedimentation
- trickling filter – solids contact
- nitrification
- secondary clarification
- mesophilic and thermophilic anaerobic digestion
- belt press dewatering
- odour control
- system automation
- power generation
- standby power
- effluent chlorination and dechlorination (seasonal)

### **3.0 FACILITY CERTIFICATION**

The JAMES WPCC has been classified as WWT IV (Certificate No. 86) by the Environmental Operators Certification Program (EOCP).

The facility classification will be routinely reassessed by the EOCP every five years.

In the event that additional modifications are undertaken at JAMES WPCC, the EOCP will be notified, and descriptions of the modifications will be submitted to the EOCP. The contact information is as follows:

**Environmental Operators Certification Program**  
Suite 101-224 West 8<sup>th</sup> Avenue  
Vancouver, B.C. V5Y 1N5  
Tel: (604) 874-4784      Fax: (604) 874-4794  
Website: [www.eocp.org](http://www.eocp.org)

## **4.0 OPERATOR CERTIFICATION**

The facility is operated by personnel with a certification level appropriate to the facility classification of WWT IV, as classified by the EOCP.

The treatment plant staff include:

- Superintendent – Glen Dunville, WWT III (Cert. No. 78)
- Chief Operator - Howard Boyde, WWT IV (Cert. No. 856)
- Mechanical Maintenance - Ron Berniei, WWT IV (Cert. No. 402)
- Operator - Curtis Burkowsky, WWT PO1 (Cert. No. 3149)
- Operator – Jose Gutierrez, WWT III (Cert. No. 1062)
- Operator – John Hurst, WWT II (Cert. No. 1255)
- Operator – Warren Robinson, WWT III (Cert. No. 1258)
- Operator – Lab – Joe Vurzinger, WWT III (Cert. No. 958)
- Operator Utilities – Gerald Janzen, WWCS (Cert. No. 1209)

Overall responsibility for the treatment plant staff rests with the FVRD, Mr. Ed Regts, P.Eng. Mr. Regts ensures that adequate staffing, properly certified, are hired to provide proper operation and maintenance of the JAMES WPCC.

## **5.0 OPERATION AND MAINTENANCE**

### **5.1 Operation and Maintenance Manual**

A comprehensive operation and maintenance (O&M) manual for the wastewater treatment plant is maintained up to date at the JAMES facility.

The O&M manual comprises several binders dating from initial construction of the WPCCC in 1981 to the present day. The manual includes the following data for each item of equipment installed at the plant:

1. An itemized list of all equipment provided.
2. Name and location of the manufacturer, the manufacturer's local representative, the nearest supplier, and spare parts warehouse.
3. Manufacturer's descriptive literature and drawings.
4. Approved submittal information applicable to operation and maintenance, including all shop drawings.
5. Recommended installation, adjustment, start-up, calibration and troubleshooting procedures including pump operating and system head curves.
6. Recommended lubrication and an estimate of yearly quantity needed.
7. Recommended step-by-step procedures for all modes of operation.
8. Complete wiring and control diagrams and internal and external connection wiring.
9. Recommended preventative maintenance procedures and schedule.
10. Labelling and Identification Schedules.
11. Complete parts lists, by generic title and identification number, with exploded views of each assembly.
12. Recommended spare parts.
13. Disassembly, overhaul and reassembly instructions.

The O&M manual is updated by the Superintendent as new or modified equipment or controls are installed at the plant. When a contract is awarded for major expansion or upgrading, the Engineer provides the O&M manuals for the added equipment.

A preventative maintenance program, that outlines a schedule for routine operation and maintenance, is in place to ensure cost effective upkeep of equipment, structures and landscaping.

## **5.2 Maintenance of Effluent Quality**

Effluent quality is maintained through a series of operational protocols that include daily sampling and testing of effluent quality, daily cleaning of reactors, and continuous monitoring of physical and biological operating parameters to ensure consistent process performance. Sampling and testing is done at the plant laboratory that is certified twice annually. Bioassay testing is done by a commercial laboratory.

System automation allows immediate identification of parameters that vary from specified set points (eg., high level, low DO, low pH, etc.). Operators can then take action to prevent process upset. In particular, influent sewage is monitored continuously for flow rate, and hydrocarbons and periodically for pH and to allow advance warning of higher than normal loading and/or hazardous conditions.

## **5.3 Maintenance of Effluent Quality During Construction**

As part of the design process for new construction, the Engineer will incorporate specifications into the contract documents to require the Contractor who constructs the facility to prevent the discharge of poorly treated wastewater during construction.

The design will acknowledge the need to keep a majority of the existing plant in continuous operation during construction such that effluent quality is maintained within the MSR standards. Temporary pumping, scheduling of shutdowns during low flow conditions, completion and commissioning of new tankage and equipment to allow flow transfer before modifying existing tankage, and an outline for the sequence of construction are some of the design initiatives that will be considered in order to maintain effluent quality during construction.

The specifications will require the Contractor to submit a plan detailing the sequence of construction operations that ensure continuous treatment as required by the specifications.

## **5.4 Trucked Waste**

The only trucked waste accepted at the plant is septage. A card lock system is in place along with a septage receiving station that provides screening, flow equalization and flow measurement. Operators visually monitor the trucked waste that is discharged into the plant to ensure prohibited waste is not accepted. Records are maintained that show quantity of septage, source of waste (name and address) and date.

At present records are submitted monthly to the Ministry. It is recommended these records be filed at the plant for inspection by Ministry staff.

## **5.5 Site Security**

The plant is fenced and includes up to three gates to gain entry to various buildings and treatment works.

All visitors must sign a register. Contractors are directed to work areas and their work activity is overseen by plant staff. Other visitors are escorted by plant staff to view the facilities.

Recently installed is a security system that includes motion detectors and alarms to detect unauthorized entry.

## **5.6 Biosolids Management**

Sludge is treated in a dual digestion system; pre-pastuerization thermophilic digester followed by mesophilic digester to produce Class A biosolids. The biosolids are sampled monthly for compliance with the draft regulation.

Biosolids are beneficially reused; about 90% to Highland Valley for mine reclamation and about 10% to tree farm plantations. Reuse records are filed at the plant.

## 5.7 Odour Management

To mitigate odour nuisance, the FVRD has authorized the construction of odour control facilities. The foul air collection system has been constructed and a biofilter is under construction. To be added in 2002 is an ultra violet system for additional treatment.

The odour control facilities will be operated full time.

Management initiatives include a response plan to deal with odour complaints from the public and odour measurements to assess the performance of the odour control facilities.

## 6.0 EMERGENCY PROCEDURES

Emergency contact telephone numbers (fire, police, medical assistance, etc.) are posted at the JAMES WPCC. Other emergency procedures are discussed in the sub-sections that follow.

### 6.1 Spill Reporting

According to the Waste Management Act Spill Reporting Regulation, the unauthorized release or discharge of 200 kg of a substance that can cause pollution (e.g., 200 L of sewage) would be classified as a spill. In the event of a spill, (i.e, pump station overflow of 200 L or more or the effluent concentration of BOD<sub>5</sub> or TSS exceeds the MSR maximum allowable value of 45 mg/L), the operator will immediately inform the MWLAP and the Provincial Emergency Program (PEP) of the Ministry of the Solicitor General. Contact information is as follows:

**Ministry of Water, Land,  
and Air Protection**  
Municipal Section  
Regional Pollution Prevention Manager  
10470 – 152 Street  
Surrey, B.C. V3R 0Y3

**Provincial Emergency Program**  
1-800-663-3456

Tel: (604) 582-5270 (604-582-5200 – reception)  
Fax: (604) 584-9751

The following information will be reported to the extent practical.

- (a) the reporting person's name and telephone number
- (b) the name and telephone number of the person who caused the spill
- (c) the location and time of the spill
- (d) the type and quantity of the substance spilled
- (e) the cause and effect of the spill
- (f) details of action taken or proposed
- (g) a description of the spill location and of the area surrounding the spill
- (h) the details of further action contemplated or required
- (i) the names of agencies on the scene, and
- (j) the names of other persons or agencies advised concerning the spill

The Spill Reporting Regulation also specifies that, where a spill occurs, the person who immediately before the spill had possession, charge or control of the spilled substance shall take all reasonable and practical action, having due regard for the safety of the public and of himself or herself, to stop, contain and minimize the effects of the spill.

## **6.2 Emergency Technical Assistance**

In the event that the on duty operator receives an alarm or detects a system upset or an impending upset during routine inspections (i.e., deteriorating effluent quality or visual evidence of problems), the operator will immediately contact the on-duty chief operator and will then attempt to determine the cause and take appropriate corrective measures, including referring to the O&M manual and other resource documents. If the operator is unable to identify the cause of the equipment failure, or the process upset or to determine appropriate corrective measures, the operator will contact the equipment supplier and/or the system design engineer to request technical assistance. Contact information for the

design engineer is provided below. Contact information for technical assistance regarding specific equipment is contained in the O&M Manual.

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Tel: (604) 922-3255

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E-mail: [dkeng@dayton-knight.com](mailto:dkeng@dayton-knight.com)

<http://www.dayton-knight.com>

### **6.3 Measures to Mitigate Emergencies and Environmental Impact**

A number of design measures and operational procedures have been provided to help mitigate spills, equipment breakdown and other emergencies from occurring at JAMES WPCC. These measures and procedures include:

- multiple process tanks to allow for spare capacity and to allow removing a tank from service for routine maintenance;
- standby unit (ie. pump) for all key mechanical equipment;
- continuous monitoring through SCADA system to record flows, levels and operating parameters;
- standby power (emergency generator) for power outages;
- alarm system (to detect if operating parameters exceed set points) to central control console and procedures to deal with the alarm;
- regular shift schedules and on-call system for added operator support;
- spill containment around all fuel and chemical storage tanks;
- washdown and fire stations throughout the plant;
- emergency lighting;
- portable spill containment kit on site;
- inventory of valves, fittings, pumps, etc. to effect emergency repairs;
- ongoing operator training to address emergency situations, spill prevention and spill clean-up procedures and evaluation of these training sessions;

- first aid kits throughout plant;
- operators trained in basic first aid.

## **7.0 MONITORING AND REPORTING**

Process monitoring, effluent monitoring and environmental monitoring programs are in place at JAMES WPCC.

### **7.1 Process Monitoring**

Influent sewage is sampled weekly for BOD<sub>5</sub>, TSS, pH and DO.

Process monitoring includes:

- influent wet well levels;
- influent wet well hydrocarbons;
- influent wet well pH (on occasion);
- effluent pH, NH<sub>3</sub> and DO;
- nitrates and nitrites at influent and at discharge from nitrifying tanks.
- BOD<sub>5</sub> and nitrates, nitrites through trickling filters.
- % TSS and % VSS, gas composition, fecal coliform in digesters
- biosolids analysis

Data is stored electronically and is analyzed by the Engineer for plant design and for troubleshooting.

### **7.2 Effluent Monitoring**

The present effluent monitoring program (applicable to flows less than 50,000 m<sup>3</sup>/d) complies with Permit PE 00351. Upon registration of the discharge, it is recommended

the effluent monitoring program comply with the MSR for the greater than 50,000 m<sup>3</sup>/d flow range.

Parameter	Present Permit	Proposed MSR
• Flow	Daily	Daily
• BOD <sub>5</sub>	1 x/week (composite)	2 x/week (composite)
• TSS	1 x/week (composite)	2 x/week (composite)
• NH <sub>4</sub> -N	1 x/week (composite)	2 x/month (composite)
• PO <sub>4</sub> -P	N/A	2 x/month (composite)
• Toxicity	1 x/year (grab)	6 x/year (composite)
• Fecal Coliform	1 x/week (composite)	2 x/month (grab)

The effluent sampling and analysis results are presently reported monthly to the MWLAP. Under the MSR the report frequency will be quarterly, which is recommended.

### 7.3 Environmental Monitoring

The present environmental monitoring program is set out in Permit PE 00351 as follows:

- River Flow – average weekly flow at Mission gauge.
- River Quality – fecal coliform (MPN/100 mL) weekly at surface and 1.2 m water depth at monitoring stations.
- Monitoring Stations – located at 25 m, 50 m, 75 m and 100 m from south shore of Fraser River channel 100 m downstream from outfall.

The data gathering and analysis are reported monthly to the MELP.

It is recommended the present environmental monitoring program continue until the proposed new discharge is registered under the MSR in the next few years. At that time a new monitoring program will be recommended.

## **8.0 STAFF COMPETENCY**

As noted in Section 4.0, all operators at JAMES WPCC are certified under the EOCP.

FVRD policy is to encourage all staff to improve their skills and education. Operators are provided on the job training and are sent to BCW&WA courses to allow them to improve their certification level.

As new treatment processes, equipment and controls are introduced into the plant training sessions are conducted by the Engineer and the equipment suppliers to familiarize the operators with both the new works and the new O&M manuals.

## **9.0 CONFIRMATION THAT THE OPERATING PLAN IS ADEQUATE FOR THE DESIGN OF THE FACILITY**

The designer of the treatment facilities and the author of this Operating Plan is Dayton & Knight Ltd., Consulting Engineers. A signed statement from Dayton & Knight stating that the operating and maintenance information provided in the O&M Manuals and in this Operating Plan are adequate to ensure reliable operation and maintenance of the facility is contained in Appendix 1.

### **Dayton & Knight Ltd.**

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Brian L. Walker, P.Eng.  
Principal-in-Charge

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John Boyle, P.Eng.  
Project Manager