APPENDIX 1

Existing Woodward Avenue WWTP Certificate of Approval No. 7380-6URKDA (October 23, 2006)
City of Hamilton
55 John St N 6th Floor
Hamilton, Ontario
L8R 3M8

Site Location: Woodward Avenue Sewage Treatment Plant
700 Woodward Ave
Hamilton City,
L8H 6P4

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

installation of two (2) 2500 kW diesel standby power generator sets to replace three (3) existing
800 kW diesel standby power generator sets in the existing Standby Power Plant, at the
Woodward Avenue Wastewater Treatment Plant, located on a site on the east side of Woodward
Avenue south of Burlington Street East, in the City of Hamilton;

all in accordance with the submitted supporting documents:

1. Application for Approval of Municipal and Private Sewage Works date stamped received
   September 25, 2006; and

2. Drawings and Attachment A prepared by Conestoga Rovers & Associates,
   Consulting Engineers;

一起 with the following existing sewage works approved under Certificate of Approval No.
0701-6L5PAB dated August 15, 2006, as follows:

modifications to the existing effluent water pumping station and installation of a Return
Activated Sludge (RAS) and effluent water chlorination system at the Woodward Avenue
Wastewater Treatment Plant, located on a site on the east side of Woodward Avenue south of
Burlington Street East, in the City of Hamilton, including the following "works":

New Works

- replacement of the existing four (4) effluent pumps in the existing effluent water pumping station
  with three (3) new constant speed pumps each with a rated capacity of 50 L/s at a TDH of 70.0 m
  and a combined rated capacity of 145 L/s at a TDH of 67.0 m, complete with air/vacuum valves,
pressure relief valves and associated forcemain piping and flowmeter;

- replacement of the existing automatic strainer unit in the existing effluent water pumping station;
- upgrades to the existing effluent water pump station instrumentation and electrical control panels;
- installation of a Return Activated Sludge (RAS) chlorination system for sludge-bulking control with chlorine dosage flow proportional to the RAS flow and utilizing chlorine solution injectors and diffusers installed at the two (2) existing RAS pumping stations together with a plant effluent water chlorination system both using chlorine gas c/w four (4) chlorinators, chlorine gas supply pipes from the water treatment plant Chlorine Building and associated appurtenances and piping; and
- replacement of existing chlorine gas supply piping from the Water Treatment Plant for effluent disinfection;

all in accordance with the submitted report and drawings dated June 29, 2006, prepared by Dillon Consulting Limited, Consulting Engineers and drawing of Chlorine Building prepared by the City of Hamilton;

together with the following existing sewage works approved under Certificate of Approval No. 4685-66EPDV dated November 8, 2004, as follows:

**Existing Works**

Upgrading of the Woodward Avenue Wastewater Treatment Plant for the collection, transmission, treatment and disposal of domestic sewage from the City of Hamilton, located at the above site location, rated at the capacities mentioned below and consisting of the following *Works*:

<table>
<thead>
<tr>
<th>Woodward Avenue Wastewater Treatment Plant</th>
<th>Rated Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Daily Flow</strong></td>
<td>409,000 m³/d</td>
</tr>
<tr>
<td><strong>Peak Flow Rate</strong></td>
<td>614,000 m³/d</td>
</tr>
</tbody>
</table>

**EXISTING WORKS**

The *Existing Works* consist of the following:

**Biosolids Management**

- replacement of the three (3) existing centrifuges, including associated belt conveyors and appurtenances, with four (4) new centrifuges, three duty one standby, each rated at 70 m³/hr;
- replacement of three (3) existing centrifuge feed pumps with four (4) centrifuge feed pumps, three duty one standby, each rated at 80 m³/hr;
replacement of three (3) existing polymer feed pumps with four (4) polymer feed pumps, three duty one standby, each rated at 4.5 m³/hr;

installation of two (2) cake pumps (one duty one standby), each rated at 22.7 m³/hr;

installation of eight (8) dewatered cake screw conveyors, including four (4) distribution conveyors (three duty one standby) each rated at 5.7 m³/hr, two (2) main conveyors (one duty one standby) each rated at 22.7 m³/hr, and two (2) cross conveyors (one duty one standby) each rated at 22.7 m³/hr;

removal of the four (4) existing belt filter presses including associated belt conveyors and appurtenances; and

installation of all associated appurtenances, piping, electrical, instrumentation and control systems necessary to operate the above-mentioned Proposed Works;

all in accordance with the Application for Approval of Municipal and Private Sewage Works signed July 22, 2004 under a transmittal letter of CH2M HILL Canada Ltd. dated July 23, 2004 along with a Preliminary Design report prepared by CH2M HILL Canada Ltd. dated July 2004.

**South Plant Secondary Clarifier**

- installation of new effluent collection troughs and modifications to existing effluent weirs to increase the effluent weir length from the existing 21.4 m length per clarifier to 188.6 m length per clarifier; and,

- construction of all associated structural supports including steel beams, girders and braces and concrete columns to support the above-mentioned proposed effluent collection troughs.

all in accordance with the Application for Approval of Municipal and Private Sewage Works signed August 3, 2004 under a transmittal letter of Dillon Consulting Ltd. dated August 9, 2004 along with a Design Description prepared by Dillon Consulting Ltd. Dated August 2004, herewith amalgamated with Application for Approval of Municipal and Private Sewage Works signed July 22, 2004 under a transmittal letter of CH2M HILL Canada Ltd. dated July 23, 2004 as mentioned in Biosolids Management section above.
EXISTING WORKS

The *Existing Works* consist of the following:

**Pumping Station**

One influent pumping station with a firm capacity of 1,350,000 m$^3$/d, consisting of the following:

- one wet well, 12 m diameter and 23 meter deep receiving flows from the Eastern and Western interceptors;
- five (5) constant speed 220,000 m$^3$/d pumps at approximately 24 m TDH; and
- three (3) variable speed 220,000 m$^3$/d pumps at approximately 24 m TDH.

**Inlet Works**

Inlet works, with a capacity of 900,000 m$^3$/d *Average Daily Flow* and 1,350,000 m$^3$/d *Peak Flow Rate*, and consisting of the following:

- two (2) inlet channels each with influent flow meter for plant’s influent flow measurement;
- four (4) mechanically cleaned screens, each rated at a capacity of 450,000 m$^3$/d;
- six (6) vortex grit separators, each rated at a capacity of 265,000 m$^3$/d;
- grit and screenings collection and compaction system before off-site haulage;
- a bypass upstream of the inlet works to the chlorine contact chamber, with a flow meter, for use during wet weather events;
- building systems to enclose components of the inlet works;
- an odour control system consisting of an in-ground biofilter and a carbon scrubber;
- an effluent channel from the inlet works to the primary clarifiers; and
- a bypass downstream of the inlet works and upstream of the primary clarifiers to the chlorine contact chamber, for use during wet weather events.
Primary Clarification

Primary clarifiers, with a rated capacity of 409,000 m$^3$/d Average Daily Flow and 614,000 m$^3$/d Peak Flow Rate, consisting of the following;

- twelve (12) rectangular tanks each 76.2 m long, 12.5 m wide and 3.4 m deep;
- sludge collection system consisting of chain and flights in each clarifier, six (6) sludge pumps to transfer sludge to primary digesters, and a sludge transfer pump;
- scum system consisting of collection skimmers, pumping, dewatering and disposal to landfill;
- a primary clarification bypass channel to aeration tanks for use during wet weather or maintenance events; and
- a bypass channel after primary clarification to the chlorine contact chamber, for use during wet weather events.

Biological Treatment

Biological treatment consisting of two trains, referred to as North Plant and South Plant, with a combined capacity of 409,000 m$^3$/d Average Daily Flow and 614,000 m$^3$/d Peak Flow Rate, as follows:

North Plant Aeration Tanks

- one (1) inlet channel with a flow meter for plant's influent flow measurement;
- eight (8) rectangular tanks each 109.8 m long, 18.3 m wide and 4.7 m deep and having six (6) cells configured for plug flow or step feed, with the ability to provide an anoxic selector in the first cell;
- total aeration volume of approximately 69,168 m$^3$ providing a capacity of 273,000 m$^3$/d Average Daily Flow; and
- fine bubble diffusers, providing tapered aeration, with air piping and laterals.
South Plant Aeration Tanks

- one (1) inlet channel;
- four (4) square tanks each 33.5 m x 33.5 m and 4.9 m deep configured for a complete mix with center feed, with the ability to provide an anoxic selector in the feed well;
- total aeration volume of 22,000 m³ (each tank 5,500 m³) providing a capacity of 136,000 m³/d *Average Daily Flow*; and
- fine bubble diffusers, providing grid layout, with air piping and laterals.

Blowers

- three (3) 932 kW (1250 hp) centrifugal type blowers, each with a rated capacity of 637 m³/min (22,500 scfm);
- air headers and valves to North and South aeration tanks; and
- building systems to enclose blowers.

Secondary Clarification

Secondary clarification consisting of two trains, referred to as North Plant and South Plant, with a combined capacity of 409,000 m³/d *Average Daily Flow* and 614,000 m³/d *Peak Flow Rate*, as follows:

North Plant

- two (2) inlet channels from the North Aeration Tanks;
- eight (8) square tanks each 36.6 m x 36.6 m and 3 m deep;
- rotating sweep arms mechanism for sludge removal from clarifier;
- total capacity of 273,000 m³/d *Average Daily Flow* and 409,000 m³/d *Peak Flow Rate*; and
- four (4) Archimedes screw Return Activated Sludge (RAS) pumps, each rated at 68,000 m³/d.
South Plant

- two (2) inlet channels from the South Aeration Tanks;
- four (4) rectangular tanks, each 73.2 m long, 16.6 m wide and 3.7 m deep;
- chain and flights for sludge collection to center sludge hopper;
- total capacity of 136,000 m$^3$/d *Average Daily Flow* and 205,000 m$^3$/d *Peak Flow Rate*;
- two (2) Archimedes screw Return Activated Sludge (RAS) pumps, each rated at 68,000 m$^3$/d; and
- scum collection troughs and piping.

Effluent Disinfection

Gaseous chlorination system, operated seasonally from 15 May to 15 October, consisting of the following:

- two (2) chlorinators;
- chlorine gas supplied from the water plant;
- associated piping and appurtenances; and
- two (2) baffled chlorine contact tanks with a total volume of 2,160 m$^3$.

Phosphorus Removal

Pickle liquor (ferrous chloride) dosage system consisting of the following:

- two (2) FRP storage tanks, each having 45.5 m$^3$ capacity, with secondary containment; and
- two (2) chemical dosage pumps.
Outfall Channels

Two outfall channels as follows:

- approximately 634 m long, 2.44 m wide and 1.83 m deep box culvert followed by 378 m long, 3.66 m wide and 2.13 m deep box culvert type primary outfall discharging to the Red Hill Creek; and

- approximately 500 m long, 3 m wide and 3 m deep box culvert type maintenance/emergency outfall discharging to the Red Hill Creek.

Biosolids Management

Waste Activated Sludge (WAS) Thickening

Waste Activated Sludge (WAS) thickening system consisting of the following:

- two (2) WAS holding tanks with overflow to the plant’s sanitary sewer system;

- four (4) WAS pumps with VFD;

- one (1) polymer makeup system to operate on dry polymer or liquid polymer;

- two (2) polymer holding tanks;

- four (4) polymer dosage pumps with VFD;

- three (3) gravity belt thickeners, each rated at 3,715 m$^3$/d;

- four (4) thickened WAS pumps to transfer the sludge to the digesters; and

- a building structure, with heating and ventilation system to house the above.

Sludge Digestion

A digester complex consisting of five (5) primary and three (3) secondary digesters, divided into two groups, North Digesters and South Digesters, as follows:

South Digesters

- two (2) primary digesters, each 32 m in diameter with a volume of 7,705 m$^3$; and

- two (2) secondary digesters, each 32 m in diameter with a volume of 8,363 m$^3$. 
North Digesters

- three (3) primary digesters, each 32 m in diameter with a volume of 7,705 m³; and
- one (1) secondary digesters, each 32 m in diameter with a volume of 8,363 m³.

Gas Handling System

A gas handling and storage system for the gas produced in the digesters as follows:

- two (2) gas flares, each rated at 584 m³/hr;
- three (3) gas compressors, each rated at 74.5 kW; and
- one (1) spherical gas storage tank 24.4 m diameter having a capacity of 7,600 m³.

Sludge Dewatering

Sludge dewatering system consisting of the following:

- two (2) sludge holding tanks, each having a working capacity of 230 m³;
- one (1) automated polymer makeup system to operate on dry polymer or liquid polymer, along with two (2) polymer transfer pumps, two (2) polymer mixing tanks, and two (2) polymer pumps to transfer from mixing tanks to the holding tanks;
- three (3) polymer holding tanks;
- three (3) existing centrifuges, each rated at 518 m³/day, now replaced with four (4) new centrifuges per Proposed Works, including associated belt conveyors and appurtenances;
- three (3) centrifuge feed pumps, now replaced with four (4) new feed pumps per Proposed Works, including associated piping and appurtenances;
- three (3) polymer feed pumps, now replaced with four (4) new feed pumps per Proposed Works, including associated piping and appurtenances;
- four (4) existing belt filter presses, each rated at 654 m³/day, now removed per Proposed Works, including associated belt conveyors and appurtenances; and
- sludge transfer to loading area including holding bins.
Flow Measurement

Following flow meters are included:

- two (2) Plant’s influent flow meter, the sum of which provides the total incoming flow to the plant;

- one (1) bypass flow meter, which measures flow that is bypassed with or without preliminary treatment upstream of the inlet works and the primary clarifiers; and

- one (1) secondary treatment bypass flow meter, which provides flow that is bypassed without secondary treatment.

Miscellaneous

Hauled Sewage Dumping Station

A structure, with carbon filter air scrubber system, to house the Hauled Sewage Dumping Station (HSDS) including three (3) loading bays as follows:

- two (2) bays for receiving septic sewage hauler trucks, with two (2) septic holding tanks each having a capacity of 45.4 m$^3$ together with two (2) automatically controlled sluice gates (one for each tank);

- one (1) Dump Trailer Bay for receiving cleanings from sewer maintenance;

- influent discharge to a sewage pumping system consisting of a wet well equipped with two (2) submersible sewage grinder pumps (one duty, one standby), each having a rated capacity of 31.5 L/s at a TDH of 9.14 m, a liquid level regulator system with alarms, two (2) vents c/w insect screen, piping and valving, force main discharge piping to the inlet sanitary sewer discharging to the Woodward Avenue Wastewater Treatment Plant; and

- an Electrical Room housing electrical and control systems.

Effluent Water Pumping System

Effluent water pumping system to provide dilution and wash water to various processes in the plant, consisting of:

- one (1) strainer;

- four (4) water pumps;

- associated piping and appurtenances; and
• plant wide distribution system with hydrants.

**Plant Sanitary Sewerage System**

A sanitary sewerage system inside the plant for collecting flows, including tank drainage, overflows, filtrate from sludge thickening process, decant from digester complex, centrate from dewatering process, sanitary flows from various washrooms and building, to discharge to eastern interceptor before connection to the plant’s influent wet well.

**Standby Power System**

Two (2) diesel/methane and one (1) diesel power generators, each having 800 kW capacity, providing standby emergency power.

**Odor Neutralizing System**

An odor neutralizing system consisting of odor neutralizing sprayer along the southern boundary of the plant, operated as required.

**Plant SCADA System**

A plant SCADA system consisting of a local area network, network switches, instrumentation, PLC(s) and SCADA HMI terminals.

**Buildings**

Buildings and rooms to provide various services and house treatment processes, including:

• an administration building including offices and main control room;

• a laboratory building;

• an influent pump house building;

• a head works building;

• primary clarifier galleries housing primary sludge pumps and associated appurtenances;

• a scum building housing scum loading system and associated appurtenances;

• North aeration galleries housing return sludge and tank drainage piping and associated appurtenances, electrical switchgears and the effluent water pumping systems;

• a blower building housing blowers and associated appurtenances;
North Plant secondary clarifier galleries housing return sludge collection piping and appurtenances;

North Plant secondary clarifier building housing return sludge screw pumps and appurtenances;

South Plant secondary clarifier galleries housing return sludge collection piping and appurtenances;

South Plant secondary clarifier building housing return sludge screw pumps and appurtenances;

a training/WAS thickening building housing training facilities and offices and WAS thickening system in the basement;

North digester building connecting the various digesters and housing the piping and appurtenances;

South digester building connecting the various digesters and housing the piping and appurtenances;

a compressor building housing compressors and controls for digester gas transfer to the gas sphere;

a dewatering building housing the dewatering system;

an incineration building used for dewatered sludge storage;

a hauled sludge building;

a standby generator building;

a maintenance building housing maintenance facilities, stores and operator rooms; and

miscellaneous rooms and chambers for various processes, including pickle liquor dosage pumps, plant effluent sampling, chlorinators, etc.

**Appurtenances and Controls**

All associated appurtenances, piping, valves, process channels, process flow meters, heating and ventilation, electrical, instrumentation, and control systems necessary to operate the above-mentioned Works.
all in accordance with previous documents, plans and specifications submitted with the previous application(s) for sewage works approval.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

"Act" means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

"BOD₅" means five day biochemical oxygen demand measured in an unfiltered sample;

"By-pass" means any discharge from the Works that does not undergo any treatment or only undergoes partial treatment before it is discharged to the environment;

"CBOD₅" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

"Certificate" means this entire certificate of approval document, issued in accordance with Section 53 of the Act, and includes any schedules;

"COD" means five day chemical oxygen demand measured in an unfiltered sample;

"Daily Concentration" means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the Act;

"District Manager" means the District Manager of the Hamilton District Office of the Ministry;

"E. Coli" refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

"Existing Works" means those portions of the sewage works previously constructed and existing on-site on the date of issuance of this Certificate;

"Geometric Mean Density" is the n\textsuperscript{th} root of the product of multiplication of the results of n number of samples over the period specified;

"Ministry" means the Ontario Ministry of the Environment;
"Monthly Average Concentration" means the arithmetic mean of all Daily Concentrations of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"Monthly Average Daily Flow" means the cumulative total sewage flow to the sewage works during a calendar month divided by the number of days during which sewage was flowing to the sewage works that month;

"Monthly Average Loading" means the value obtained by multiplying the Monthly Average Concentration of a contaminant by the Monthly Average Daily Flow over the same calendar month;

"Owner" means The City of Hamilton and includes its successors and assignees;

"Peak Flow Rate" means the maximum rate of sewage flow for which the plant or process unit was designed;

"Proposed Works" means the sewage works described in the Owner's application, this Certificate and in the supporting documentation referred to herein, to the extent approved by this Certificate;

"Rated Capacity" means the Average Daily Flow for which the Works are approved to handle;

"Substantial Completion" has the same meaning as "substantial performance" in the Construction Lien Act; and

"Works" means the sewage works described in the Owner's application, this Certificate and in the supporting documentation referred to herein, to the extent approved by this Certificate and includes both Existing Works and Proposed Works.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Certificate and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Certificate, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Certificate.
(3) Where there is a conflict between a provision of any submitted document referred to in this Certificate and the Conditions of this Certificate, the Conditions in this Certificate shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this Certificate are severable. If any requirement of this Certificate, or the application of any requirement of this Certificate to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Certificate shall not be affected thereby.

2. **EXPIRY OF APPROVAL**

   The approval issued by this Certificate will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Certificate.

3. **CHANGE OF OWNER**

   (1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within 30 days of the change occurring:

   (a) change of Owner;

   (b) change of address of the Owner;

   (c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager;

   (d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Informations Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager;
(2) In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Certificate, and a copy of such notice shall be forwarded to the District Manager and the Director.

4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

(1) Upon the Substantial Completion of the Proposed Works, the Owner shall prepare a statement, certified by a Professional Engineer, that the works are constructed in accordance with this Certificate, and upon request, shall make the written statement available for inspection by Ministry personnel.

(2) Within one (1) year of the Substantial Completion of the Proposed Works, a set of as-built drawings showing the Works “as constructed” shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the Works for the operational life of the Works.

5. BY-PASSES

(1) Any By-pass of sewage from any portion of the Works is prohibited, except where:

(a) the sewage influent flowrate is in excess of the Peak Flow Rate of 614,000 m³/d;

(b) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage; or

(c) the District Manager agrees that it is necessary for the purpose of carrying out essential maintenance and the District Manager has given prior written acknowledgment of the By-pass.

(2) The Owner shall collect at least one (1) grab sample of the By-pass and have it analyzed for the parameters outlined in Condition 7 using the protocols in Condition 9.

(3) The Owner shall maintain a logbook of all By-pass events which shall include, at a minimum, the time, location, duration, quantity of By-pass, the authority and/or reason for By-pass pursuant to subsection (1), and the reasons for the occurrence.
(4) The Owner shall, in the event of a By-pass event pursuant to subsection (1), disinfect the by-passed effluent during the disinfection period, which is May 15 to October 15 every year, prior to it reaching the receiver such that the receiver is not negatively impacted.

6. **EFFLUENT OBJECTIVES**

(1) The Owner shall use best efforts to design, construct and operate the Works with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

<table>
<thead>
<tr>
<th>Effluent Parameter</th>
<th>Concentration (milligrams per litre)</th>
<th>Loading (kilograms per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
</tr>
<tr>
<td>CBOD&lt;sub&gt;5&lt;/sub&gt;</td>
<td>15.0</td>
<td>6,135</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>15.0</td>
<td>6,135</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>0.8</td>
<td>327</td>
</tr>
<tr>
<td>E-Coli</td>
<td>200 organisms/100 mL* (Monthly Geometric Mean Density)</td>
<td>-</td>
</tr>
</tbody>
</table>

* During the disinfection period, which is May 15 to October 15, every year.

(2) The Owner shall use best efforts to:

(a) maintain the pH of the effluent from the Works within the range of 6.5 to 8.5 inclusive, at all times;

(b) operate the Works within the Rated Capacity and the Peak Flow Rate of the Works;

(c) operate the Works according to the capacity of the plants and the component process units; and

(d) ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

(3) The Owner shall include in all reports submitted in accordance with Condition 10 a summary of the efforts made and results achieved under this Condition.
7. **EFFLUENT LIMITS**

(1) The *Owner* shall operate and maintain the *Works* such that the concentrations and waste loadings of the materials named below as effluent parameters are not exceeded in the effluent from the *Works*.

<table>
<thead>
<tr>
<th>Effluent Parameter</th>
<th>Monthly Average Concentration (milligrams per litre unless otherwise indicated)</th>
<th>Monthly Average Loading (kilograms per day unless otherwise indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBOD₅</td>
<td>25.0</td>
<td>10,225</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>25.0</td>
<td>10,225</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>0.8</td>
<td>327</td>
</tr>
</tbody>
</table>

(2) For the purposes of determining compliance with and enforcing subsection (1):

(a) The *Monthly Average Concentration* of CBOD₅, Total Suspended Solids, and Total Phosphorus as named in Column 1 of Table 2 of subsection (1) shall not exceed the corresponding maximum allowable average concentration set out in Column 2 of Table 2 in subsection (1).

(b) The *Monthly Average Loading* of CBOD₅, Total Suspended Solids, and Total Phosphorus as named in Column 1 of Table 2 of subsection (1) shall not exceed the corresponding maximum allowable average loading set out in Column 3 of Table 2 in subsection (1).

(c) The pH of the effluent shall be maintained within 6.0 to 9.5, at all times.

(3) Paragraphs (a) to (c) of subsection (2) shall apply upon the date of issuance of this *Certificate*.

(4) The effluent limits set out in Table 2 of subsection (1) shall apply upon the date of issuance of this *Certificate*.

(5) Only those monitoring results collected during the corresponding time period shall be used in calculating the *Monthly Average Concentration* and *Monthly Average Loading* for this *Certificate*. 
8. OPERATION AND MAINTENANCE

(1) The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Certificate are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Certificate and the Act and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

(2) The Owner shall prepare and/or update the operations manual(s) within six (6) months of the date of issuance of this Certificate that include, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;

(d) procedures for the inspection and calibration of monitoring equipment;

(e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the District Manager; and

(f) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

(3) The Owner shall maintain the operations manual(s) current and retain a copy at the location of the Works for the operational life of the Works. Upon request, the Owner shall make the manual(s) available to Ministry staff.
(4) The *Owner* shall provide for the overall operation of the *Works* with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

9. **MONITORING AND RECORDING**

The *Owner* shall, upon commencement of operation of the *Works*, carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this *Certificate* are to be taken at a time and a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, weekly means once every week, at a minimum.

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Sample Type</th>
<th>Minimum Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$BOD_5^*$</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>$COD$</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Kjeldahl Nitrogen</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Alkalinity</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>pH</td>
<td>Grab/Probe</td>
<td>Weekly</td>
</tr>
</tbody>
</table>

*This parameter shall apply no later than March 1, 2007. Until that time, $CBOD_5^*$ may be used.*
## Table 4 - Effluent Monitoring
(Samples to be collected at the outlet of the secondary clarifiers and/or at the outlet of the disinfection facilities)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Sample Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBOD,</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Phosphorus</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Dissolved Phosphorus</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total (Ammonia+Ammonium) Nitrogen</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Nitrates</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>E. Coli</td>
<td>Grab</td>
<td>Weekly</td>
</tr>
<tr>
<td>Alkalinity</td>
<td>24-hr composite</td>
<td>Weekly</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>Grab/probe</td>
<td>Weekly</td>
</tr>
<tr>
<td>Total Chlorine Residual</td>
<td>Grab</td>
<td>Weekly</td>
</tr>
<tr>
<td>pH</td>
<td>Grab/Probe</td>
<td>Weekly</td>
</tr>
<tr>
<td>Temperature</td>
<td>Grab/Probe</td>
<td>Weekly</td>
</tr>
</tbody>
</table>

(Note: Definitions for grab and composite samples are included in one or more documents below. 24-hour composite sample means a time-composite sample and constitutes of an integrated sample made up of blending 24 hourly aliquots taken by refrigerated autosampler, which are obtained at an hourly frequency having same sample volume).

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (20th edition), as amended from time to time by more recently published editions.
(5) The temperature and pH of the effluent from the Works shall be determined in the field at the time of sampling for Total Ammonia Nitrogen. The concentration of unionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (unionized). For the purposes of determining concentration of unionized ammonia, single representative values of temperature and pH obtained through a probe shall be considered complementary to the 24-hour composite total ammonia nitrogen sample.

(6) The sampling locations in subsection (3) above may be changed or abandoned and new locations added if, in the opinion of the District Manager, it is necessary to do so to ensure representative samples are being collected.

(7) The Owner shall install and maintain (a) continuous flow measuring device(s), to measure the flowrate through the Works with an accuracy to within plus or minus ten per cent (+/- 10%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate at a daily frequency.

(8) The Owner shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Certificate.

10. REPORTING

(1) Ten (10) days prior to the date of a planned By-pass being conducted pursuant to Condition 5 and as soon as possible for an unplanned By-pass, the Owner shall notify the District Manager (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the By-pass.

(2) Ten (10) days prior to the start up of the operation of the Proposed Works, the Owner shall notify the District Manager in writing of the pending start up date.

(3) The Owner shall report to the District Manager or designate, any exceedance of any parameter specified in Condition 7 orally, as soon as reasonably possible, and in writing within seven (7) days after receiving analytic results of the exceedance.
(4) In addition to the obligations under Part X of the Environmental Protection Act, the Owner shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

(5) The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

(6) The Owner shall prepare, and submit to the District Manager, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;

(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6;

(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
(i) a summary of all By-pass, spill or abnormal discharge events; and
(j) any other information the District Manager requires from time to time.

11. REVOCATION OF EXISTING APPROVALS

(1) The descriptions of the approved works and conditions of approval in this Certificate apply in place of all the existing descriptions and conditions in the Certificates of Approval under the Ontario Water Resources Act for sewage works which are part of the Works approved by this Certificate.

(2) Notwithstanding Condition 11(1) above, the original applications for approval, including design calculations, engineering drawings, and reports prepared in support of the existing Certificate(s) of Approval whose descriptions of the approved works and conditions are now replaced pursuant to Condition 11(1) above, shall form part of this Certificate.

(3) Where an existing Certificate of Approval referred to in Condition 11(1) above applies to Works in addition to the Works approved by this Certificate, it shall continue to apply to those additional Works.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Certificate and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Certificate the existence of this Certificate.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the Works are made aware of the Certificate and continue to operate the Works in compliance with it.

4. Condition 4 is included to ensure that record drawings of the Works “as constructed” are maintained for future references.
5. Condition 5 is included to indicate that by-passes of untreated sewage to Red Hill Creek is prohibited, save in certain limited circumstances where the failure to By-pass could result in greater injury to the public interest than the By-pass itself where a By-pass will not violate the approved effluent requirements, or where the By-pass can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of By-pass events.

6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 7 are exceeded.

7. Condition 7 is imposed to ensure that the effluent discharged from the Works to Red Hill Creek meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving Creek.

8. Condition 8 is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual(s) governing all significant areas of operation, maintenance and repair is(are) prepared, implemented and kept up-to-date by the owner and made available to the Ministry. Such (a) manual(s) is(are) an integral part of the operation of the Works. Its(their) compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual(s) will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Certificate and that the Works does not cause any impairment to the receiving Creek.

10. Condition 10 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Certificate, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

11. Condition 11 is included to stipulate that this Certificate replaces all previous approvals for the Works being the subject of this Certificate, and that the existing approvals remain in force for the purpose of any Works which are not subject to this Certificate.
This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 0701-6L5PAB issued on August 15, 2006, Certificate of Approval No. 4685-66EPDV issued on November 8, 2004 and Certificate of Approval No. 9495-65SHG4 issued on October 18, 2004.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 53, Ontario Water Resources Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal’s requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 23rd day of October, 2006

Mohamed Dhalla, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

JC/  
c:  District Manager, MOE Hamilton - District  
    Clerk, City of Hamilton  
    David Chambers, P. Eng., Conestoga Rovers & Associates  
    MOE Standards Development Branch, Water Standards Section