Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
INDUSTRIAL SEWAGE WORKS
NUMBER 3966-8ALNAK
Issue Date: March 28, 2011

Vale Inco Limited
337 Power St General Engineering Building, Environmental Dept.
Copper Cliff, Ontario
P0M 1N0

Site Location: Totten Mine
6 Totten Mine Road
Lot 2 and 3, Concession 1 and 2
City of Greater Sudbury, District of Sudbury

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

Collection of mine water, mine seepage water and stormwater runoff from the 2,500 tonnes/day capacity Totten Mine Shaft No. 2, located near the Town of Worthington, and treatment of collected wastewater using a High Density Sludge (HDS) treatment process, filtration and effluent polishing, discharging into Victoria Creek and eventually into the Spanish River, consisting of the following:

PROPOSED WORKS:

Totten #2 Mine Shaft Dewatering Wells and Test Wells

- eight (8) Dewatering Wells (DW1 to DW8) and Two (2) Test Wells (TW1 and TW2), each equipped with one (1) 310 L/min capacity pump, directing intercepted water through a 650 m long 150 mm diameter HDPE pipe to a metering chamber equipped with one (1) flow meter and discharging to the West Surge Pond through a 500 m long 200 m diameter HDPE pipe;
- including all controls and associated appurtenances.

Polishing Pond

- addition of a proprietary algae blooms control substance (EC-504 produced by Ecochem) consisting of a balanced blend of selected natural bacteria (Bacillus subtilis, Bacillus Licheniformis, Bacillus megateruim, and Bacillus plymyxa) which controls algae blooms by consuming nutrients which sustain algae blooms, to be added at a maintenance dose of 0.368 g/m^3 of pond volume (1lb/acre-foot) at a biweekly frequency in accordance with the manufacturer's application procedures and safety instructions;
- including all controls and associated appurtenances.

all in accordance with the Application for Approval of Industrial Sewage Works dated August 24, 2010 submitted by Vale Inco Limited, signed by Carolyn Hunt, Environmental Specialist, including supporting documentation and drawings.

SEWAGE WORKS APPROVED ON APRIL 22, 2009:

Sanitary Sewage Treatment System

A 60 m^3/day rated capacity Rotating Biological Contactor (RBC) sanitary sewage treatment system designed to service 150 people consisting of the following:

- one (1) primary clarifier chamber with effective settling volume of 34.1 m^3 and sludge storage volume of 20.67 m^3;
- one (1) biozone chamber with effective volume of 9.0 m^3 partially submerged in the Rotating Biological Contactor unit;

- one (1) Rotating Biological Contactor (RBC) (Biodisk™ Model Big John) with a total area of 1,765 m^2 of biological support media arranged in three (3) separate stages for BOD5 reduction and nitrification of ammonia nitrogen equipped with a recycle from the third stage of RBC to the first stage of RBC;
- one (1) secondary clarifier chamber with an effective secondary settling volume of 17.90 m^3, and sludge storage volume of 2.29 m^3, equipped with two (2) 238.5 L/min capacity effluent pumps discharging to effluent filters described below;
- one (1) chemical feed system to be used for phosphorus control;
- one (1) 18.9 m^3 capacity precast concrete emergency overflow storage tank receiving any excess flow from RBC during emergency and to be emptied by sewage haulage truck after every incident;
- three (3) multimedia effluent filters, each filter unit consisting of 0.76 m (30") diameter by 1.83 m (72") high tank, filled with anthracite, sand, and garnet filtration media, providing a filtration area of 0.455 m^2 (4.9 ft^2), and designed for a peak operating flow rate of 977 L/min.m^2 (20 gpm/ft^2), discharging through a UV disinfection system described below;
- one (1) UV disinfection system consisting of two (2) high intensity UV lamps, designed for 30 mJ/cm^2 at UV transmittance of 60%, discharging by gravity to one of the following locations through a 75 mm diameter HDPE pipe as required: Sludge Disposal System, West Surge Pond, and Polishing Pond; and
- including all controls and associated appurtenances.

Worthington Mine Dewatering

Dewatering of surface runoff water collected in a 'caved zone' depression formed above the stopes of Worthington Mine at a maximum rate of 3,000 m^3/day consisting of the following:

- one (1) 2,325 L/min @ 2.62 m TDH capacity portable diesel powered pump discharging through one (1) 525 m long 150 mm diameter pipe to the West Surge Pond for treatment at the Totten Mine Wastewater Treatment Plant; and
- including all controls and associated appurtenances.

all in accordance with the Application for Approval of Industrial Sewage Works dated January 22, 2009 submitted by Vale Inco Limited and signed by Ed Cocchiarella, Environment Manager, sanitary sewage system engineering drawings prepared by Cook Engineering, Thunder Bay, Ontario, and South Dam drawings prepared by Amec including the following document:

1. Letter from Carolyn Hunt, Vale Inco Limited to Stefanos Habtom, Ministry of the Environment dated March 22, 2011 providing the rationale for inclusion of the Worthington Pit dewatering on a permanent basis for treatment in the approved sewage works.

SEWAGE WORKS APPROVED ON OR BEFORE NOVEMBER 30, 2005:

Mine Water Collection System

- One (1) Mine Water Pump Station located at Totten Shaft No. 2 equipped with one (1) pump rated at 60.8 L/sec (950 USGPM) to transfer up to 4,900 m^3/day of mine water collected from underground sumps through series of 20.3 cm diameter lines via a 300 m long 150 mm diameter pipe into the West Surge Pond.

North Seepage Collection Pond

- One (1) seepage collection pond consisting of a three-sided structure providing an active storage capacity of approximately 1,500 m^3, located north of the West Surge Pond, consisting of a clay embankment of 120 meters long with a maximum dyke height of 2 meters, a crest of 3 meters wide with 3H:1V downstream and upstream slopes. The pond collects stormwater runoff and mine seepage from a 1.1 ha area using a 200 meter long ditch. A pumping station equipped with two (2) pumps each rated at 12.6 L/sec (one standby) transfers collected seepage and stormwater runoff into the West Surge Pond via two (2) 200 meter long 50 mm diameter pipes.

Southwest Seepage Collection Ditch

- One (1) 270 meter long seepage collection ditch collecting mine seepage and stormwater runoff from the southwest portion of the mine site area and routing the collected seepage and stormwater runoff to the West Surge Pond.

West Surge Pond

- One (1) 100,000 m^3 capacity storage pond to collect mine water, mine seepage and stormwater runoff from most of

the Totten Mine service areas. The pond is impounded by the North Dam which is approximately 120 meters long, 6.7 meters high, constructed with silty clay core and bulk fine rock fill and the South Dam which is approximately 37 meters long, 4.3 meters high, constructed as a concrete structure, both dams equipped with emergency spillways.

- One (1) temporary 100 mm diameter pipe discharging grey water from showers on site at an approximate rate of 200 L/min to the West Surge Pond to be used until the approved sanitary sewage works is constructed and put into operation.
- Two (2) submersible pumps with variable frequency controller, each rated at a maximum capacity of 37.0 L/sec @ 23 m TDH (one on standby) pumping wastewater from the West Surge Pond into a reactor tank described below.

Wastewater Treatment Plant

The main components of a 3,000 m^3/day design capacity conventional High Density Sludge (HDS) wastewater treatment plant include:

- One (1) 78 m^3 lime reactor tank (4 meter diameter and 7.3 meter high) , equipped with a fixed speed 30 hp agitator unit and one (1) air blower with an air spurging unit to mix mine wastewater with lime solution overflowing from a lime/sludge mix tank described below;
- One (1) lime/sludge mix tank with a storage capacity of 1.3 m^3, equipped with an agitator, receiving sludge from a clarifier and lime slurry from a lime slurry tank described below;
- One (1) lime slurry tank with a storage capacity of 29.0 m^3, equipped with an agitator and two (2) lime slurry pumps each rated at 2.8 L/sec;
- One (1) ferric sulfate (chloride) solution tank with a storage capacity of 30 m^3, equipped with solution metering system paced proportional to flow;
- One (1) flocculant preparation package rated to make up 12.0 kg/day of dry flocculant, equipped with flocculant metering pumps to add flocculant to both the clarifier and the multimedia filtration system described below;
- One (1) clarifier with dimensions of 12.2 meter diameter with 3 meter side-wall depth and conical bottom part, equipped with a rake arm, one (1) variable speed sludge disposal pump with a rated capacity of 2.8 L/sec, and one (1) variable speed sludge recycle pump with a rated capacity of 2.8 L/sec, an effluent overflow weir discharging into a clarifier overflow tank equipped with two (2) 35.0 L/sec capacity feed pumps discharging into a multimedia filtration system described below;
- One (1) multimedia filtration system with a rated capacity of 3,200 m^3/day, consisting of four (4) 1.98 m diameter x 1.83 m high filtration vessels using anthracite with a bed depth of 0.61 m, sand with a bed depth of 0.30 m, and garnet with a bed depth of 0.15 m as filtration medium, equipped with an air scour blower rated at 100 scfm @ 4 psig, discharging into a treated effluent tank described below;
- One (1) treated effluent tank with a holding capacity of 30.0 m^3, equipped with CO_2 diffusers and CO_2 supply system for pH adjustment, two (2) utility pumps to allow re-use of treated effluent in the plant, discharging to the Polishing Pond described below;

Polishing Pond

- One (1) treated effluent Polishing Pond consisting of an existing pond with containment provided by the South Dam, equipped with an earthen berm extending from the west shores of the Polishing Pond in a south-easterly direction and located south of the effluent discharge pipeline splash pad to control flow and prevent short circuiting, and fine nozzle spraying equipment for ammonia removal to be installed if required;
- One (1) enclosed and heated polishing pond outlet control structure located in the South Dam, designed to control water level and flows from the Polishing Pond, consisting of a cast-in-place concrete chamber equipped with electromagnetic flow meters, one (1) pipe cast into a chamber wall fitted with a 200 mm diameter control valve and a motorized actuator, one (1) pipe cast into a chamber wall fitted with a 350 mm diameter control valve and a motorized actuator, and associated automated controls and appurtenances, providing a flow control range from 500 m^3/day to 8,000 m^3/day;
- One (1) enclosed and heated cast-in-place concrete chamber located beside the flow control chamber in the South Dam equipped with an ultra-sonic detector and associated automated controls and appurtenances to measure the Polishing Pond water level;
- One (1) emergency overflow structure designed to permit an overflow at elevation 239.1 masl;
- One (1) 0.6 meter diameter discharge pipe extending from the South Dam along the east contour of the West Surge Pond to the north of the North Dam, discharging into Victoria Creek;

Sludge Disposal System

- Four (4) parallel sludge disposal cells, each capable of holding 1,000 m^3 of high density sludge, constructed with berms

of permeable materials to allow dewatering of the high density sludge, each cell operated on alternating one year cycle to allow the dewatering and consolidation of the high density sludge, seepage from sludge disposal cells flows through the Southwest Seepage Collection Ditch to the Surge Pond; and

- including all other controls, electrical equipment, instrumentation, monitoring equipment and appurtenances essential for the proper operation of the aforementioned *Works*.

all in accordance with the Application for Approval of Industrial Sewage Works dated October 15, 2001 and signed by Pat Thompson, Superintendent Safety Health and Environment, and the following supporting documents:

1. "Totten Mine -CEAA Environmental Screening and Wastewater Permitting Support Document" September 2001, prepared by AMEC Earth & Environmental Limited, Mississauga, Ontario.

2. Letter to Mr. Geoff Fong, Inco Limited, from Dan Cacciotti, P. Eng., AMEC Americas Limited, dated November 1, 2005 Re: MOE Information Request, Sewage Works Certificate of Approval, Totten Mine. The letter provide conceptual design details for the Polishing Pond outlet control structure.

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;

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

"*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;

"*Daily Flow*" means the cumulative total effluent volume discharged from the *Works* during any single day;

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

"*District Manager*" means the District Manager of the Sudbury District Office of the Ministry;

"*Dry Season*" means the period of June 1st through September 30th and January 1st through the end of February;

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

"*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;

"*Owner*" means CVRD Inco Limited and includes its successors and assignees;

"*Weekly Average Concentration*" means the arithmetic mean of all *Daily Concentrations* of a contaminant in the effluent sampled or measured, or both, during a calendar week;

"*Weekly Average Flow*" means the cumulative total effluent discharged from the *Works* during a calendar week divided by the number of days during which effluent was discharged from the *Works* during that week;

"*Weekly Average Loading*" means the value obtained by multiplying the *Weekly Average Concentration* of a contaminant by the *Weekly Average Flow* over the same calendar week;

"*Wet Season*" means the period of March 1st through May 31st and October 1st through December 31st ;

"*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 *Previous 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

1.0 GENERAL CONDITIONS

1.1 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*, application for approval of the *Works* and the submitted supporting documents and plans and specifications as listed in this *Certificate*.

1.2. 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.

2. OPERATION AND MAINTENANCE

2.1 The *Owner* shall operate and maintain properly the *Works*, related equipment and appurtenances which are installed or used to achieve compliance with this *Certificate*.

2.2 One week prior to the start up of the operation of the *Works,* the *Owner* shall notify the *District Manager* in writing of the pending start up date.

2.3 The *Owner* shall maintain the effluent elevation in the Polishing Pond at or below 238.9 masl.

2.4 Despite Condition 2.3, the *Owner* may exceed the effluent elevation of 238.9 masl in the Polishing Pond only in the event of a major run-off into the Polishing Pond resulting from rainfall and/or snow melt event(s).

2.5 The *Owner* shall prepare an operations manual prior to the commencement of operation of the *Works*, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the W*orks*;

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

(c) scheduled preventative and maintenance programs**;**

(d) complaint procedures for receiving and responding to public complaints.

2.6 The *Owner* shall maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the W*orks*. Upon request, the *Owner* shall make the manual available for inspection and copying by *Ministry* personnel.

2.7 Within one (1) year of the substantial completion of the *Works*, the *Owner* shall prepare a set of record drawings which shall show the *Works* as constructed at that time, and keep the drawings up-to-date, incorporating all modifications made to the *Works* throughout its operational life.

2.8 The *Owner* shall keep a complete set of up-to-date record drawings required to be prepared by Condition 2.7 at the site of the *Works* throughout the operational life of the *Works*, and upon request, shall make the drawings available for inspection by *Ministry* staff.

3. EFFLUENT REQUIREMENTS

3.1 The *Owner* shall operate the *Works* such that the concentrations of contaminants named in Table 1 as effluent parameters are not exceeded in the effluent from the *Works* at the effluent discharge point to Victoria Creek, determined

in accordance with Conditions 3.2 and 3.3.

Table 1 **Effluent Concentration Limits**		
Effluent Parameter	*Weekly Average Concentration* (mg/L)	*Monthly Average Concentration* (mg/L)
Column 1	*Column 2*	*Column 3*
Total Suspended Solids	30.0	15.0
Total Copper	0.20	0.10
Total Lead	0.20	0.10
Total Nickel	0.50	0.25
Total Zinc	0.50	0.25
Total Arsenic	0.50	0.25
Total Phosphorus	1.00	0.50

3.2 For the purposes of determining compliance with and enforcing Condition 3.1, the W*eekly Average Concentration* of a parameter named in Column 1 of Table 1 shall not exceed the corresponding concentration set out in Column 2 of Table 1.

3.3 For the purposes of determining compliance with and enforcing Condition 3.1, the *Monthly Average Concentration* of a parameter named in Column 1 of Table 1 shall not exceed the corresponding concentration set out in Column 3 of Table 1.

3.4 The *Owner* shall operate the *Works* such that the *Weekly Average Loading* of contaminants named in Table 2 as effluent parameters are not exceeded in the effluent from the *Works* at the effluent discharge point to Victoria Creek during the *Dry Season* and *Wet Season* respectively, determined in accordance with Conditions 3.5 and 3.6.

Table 2 **Effluent Loading Limits**		
Effluent Parameters	*Dry Season* *Weekly Average Loading* (kg/day)	*Wet Season* *Weekly Average Loading* (kg/day)
Column 1	*Column 2*	*Column 3*
Total Copper	0.10	0.20
Total Lead	0.10	0.20
Total Nickel	0.25	0.50
Total Zinc	0.25	0.50
Total Arsenic	0.25	0.50
Total Phosphorus	0.50	1.0

3.5 For the purposes of determining compliance with and enforcing Condition 3.4, the *Dry Season Weekly Average Loading* of a parameter named in Column 1 of Table 2 shall not exceed the corresponding loading set out in Column 2 of Table 2.

3.6 For the purposes of determining compliance with and enforcing Condition 3.4, the *Wet Season Weekly Average Loading* of a parameter named in Column 1 of Table 2 shall not exceed the corresponding loading set out in Column 3 of Table 2.

3.7 The pH of the effluent from the *Works* at the effluent discharge point to Victoria Creek shall be monitored continuously and maintained within the range of 6.0 to 9.5 (inclusive) at all times.

3.8 In the event of an effluent overflow from the Polishing Pond due to a major run-off into the Polishing Pond resulting from rainfall and/or snow melt event(s), only Condition 3.2 (Concentration Limits) shall apply while Condition 3.5 (Loading Limits) shall be suspended until effluent overflow from the Polishing Pond has ceased. The *Owner* shall notify the *District Manager* orally within the next business day of the occurrence of an effluent overflow from the Polishing Pond.

3.9 The *Owner* shall prepare and submit a report on every effluent overflow event from the Polishing Pond to the *District Manager* within one (1) month from the termination date of that effluent overflow event. The report shall include an impact assessment of the effluent overflow event including a summary of monitoring results required by Condition 4.3, the flow monitoring results required by Condition 6.1 and Condition 6.6, and the measurements of the effluent elevation in the Polishing Pond required by Condition 6.7. The report shall cover the period starting one (1) month before the occurrence date of the effluent overflow event and ending at the termination date of the effluent overflow event.

3.10 During the pre-operational mine de-watering period, the *Owner* shall submit a written request along with supporting documentation to obtain a written pre-authorization from the *District Manager* for any variance to the Effluent Loading Limits imposed by Condition 3.4.

4. EFFLUENT MONITORING

4.1 The *Owner* shall ensure that samples and measurements taken for the purposes of this *Certificate* are taken at a time and in a location characteristic of the quality and quantity of the effluent stream or receiving water body, as the case may be, over the time period being monitored.

4.2 Effluent from the *Works* shall be sampled at the regulated effluent discharge point to Victoria Creek in accordance with the measurement frequency specified for each parameter named in Table 3 below, unless otherwise required in writing by this *Certificate* or by the *District Manager*.

Table 3
Effluent Monitoring
Sampling Point: Discharge to Victoria Creek

Effluent Parameters	Monitoring Frequency	Sample Type
Total Suspended Solids	Thrice-Weekly	Grab
Total Copper	Thrice-Weekly	Grab
Total Lead	Thrice-Weekly	Grab
Total Nickel	Thrice-Weekly	Grab
Total Zinc	Thrice-Weekly	Grab
Total Arsenic	Thrice-Weekly	Grab
Total Iron	Thrice-Weekly	Grab
Total Phosphorus	Thrice-Weekly	Grab
Total (Ammonia + Ammonium) Nitrogen	Thrice-Weekly	Grab
Temperature	Thrice-Weekly	Grab
pH (for reporting purposes)	Thrice-Weekly	Grab

4.3 Despite Conditions 4.2 and 7.1, in the event of an effluent overflow from the Polishing Pond due to a major run-off into the Polishing Pond resulting from rainfall and/or snow melt event(s), the *Owner* shall take daily grab samples from

the sampling stations established under Conditions 4.2 and 7.1 and analyze for the parameters designated for each sampling location as listed in Table 3 and Table 4 until the overflow has ceased.

4.4 For the purposes of sampling effluents, the methods and protocols for sampling, analysis, and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

5. LETHALITY MEASUREMENTS

Acute Toxicity

5.1 The *Owner* shall perform a rainbow trout acute lethality test and *a Daphnia magna* acute lethality test once a month on effluent collected from the discharge point to Victoria Creek according to procedures published in Environment Canada publications entitled "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout", dated July 1990 and "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna*", dated July 1990.

5.2 The acute lethality tests shall be carried out on a grab sample as a single concentration test using 100 per cent effluent collected from the discharge point to Victoria Creek.

5.3 After the *Owner* obtains 12 consecutive monthly acute lethality test results in which the mortality of the test organisms did not exceed 50 per cent, the *Owner* shall perform the test quarterly.

5.4 Condition 5.3 ceases to apply when the mortality of the test organisms exceeds 50 per cent and the *Owner* shall comply with Condition 5.1 until further 12 consecutive months result in mortality for no more than 50 per cent of the test organisms in 100 percent effluent.

6. FLOW MEASUREMENT

6.1 The *Owner* shall measure and record the daily flow rate of:

(a) effluent from the HDS wastewater treatment plant to the Polishing Pond during plant operation;

(b) effluent recycle from the Polishing Pond to Totten Mine; and

(c) effluent discharge from the Polishing Pond to Victoria Creek.

6.2 The flow measurement devices shall be designed, constructed and operated at accuracy to within plus or minus 15 per cent of the actual flow rate.

6.3 An annual calibration check acceptable to the *District Manager* shall be conducted to ensure the accuracy requirement in Condition 6.2 is met.

6.4 The flow measurement devices shall be maintained according to good operating practices and the recommendations of the manufacturer or designer.

6.5 Records of maintenance and calibration shall be maintained and available for inspection by the Ministry of Environment staff.

6.6 The *Owner* shall measure and record the quantity of daily rainfall at the Totten Mine using a rainfall gauge installed at the site and calculate the volume of stormwater run-off discharging into the Polishing Pond.

6.7 The *Owner* shall measure and record daily the effluent elevation in the Polishing Pond.

7. SURFACE WATER MONITORING

7.1 The *Owner* shall establish a minimum of three (3) sampling stations at locations (upstream of the site, downstream

of the effluent discharge point, and downstream of the tributary known as VC-BT) satisfactory to the *District Manager* and samples shall be collected from each station at the indicated minimum monitoring frequency and analyzed for the parameters listed below, unless otherwise specified in writing by the *District Manager*:

Table 4
Surface Water Monitoring

Effluent Parameters	Monitoring Frequency	Sample Type
Total Suspended Solids	Monthly	Grab
Total Copper	Monthly	Grab
Total Lead	Monthly	Grab
Total Nickel	Monthly	Grab
Total Zinc	Monthly	Grab
Alkalinity	Monthly	Grab
Total Iron	Monthly	Grab
Total Dissolved Solids	Monthly	Grab
Total Phosphorus	Monthly	Grab
Total (Ammonia + Ammonium) Nitrogen	Monthly	Grab
Hardness	Monthly	Grab
pH	Monthly	Grab
Sulphate	Monthly	Grab

8 PERFORMANCE REPORTING

8.1 The *Owner* shall prepare and submit a performance report to the *District Manager* on an annual basis, the submission of which shall be no later than June 1 following the end of the calendar year being reported upon. The report shall contain, but shall not be limited to, the following information in a format acceptable to the *District Manager*:

(a) A summary and interpretation of all monitoring data and analytical data collected relative to the *Works* during the reporting period;

(b) A summary and interpretation of surface water monitoring results;

(c) A summary of any upset condition occurring in the *Works* and corrective actions taken during the period being reported on.

8.2 The *Owner* shall report to the *District Manager* or designate any exceedance of any parameter specified in Conditions 3.1, 3.4 and 3.7 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedance.

9. CONTINGENCY PLANS

9.1 The *Owner* shall prepare and submit to the *District Manager* a contingency plan within one year of the commencement of operations of the W*orks*. The contingency plan is to identify trigger mechanisms that will initiate implementation of the said contingency plan. The trigger mechanism will be based on the concentrations of the critical contaminants from the *Works* that may create an impending risk of adverse water quality impacts in the receiver. The report shall describe the contingency measures to be implemented. The *Owner* shall maintain the contingency plan current.

10. SANITARY SEWAGE EFFLUENT OBJECTIVES

10.1 The Owner shall use best efforts to design, construct and operate the sanitary sewage 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 5 - Effluent Objectives	
Effluent Parameter	**Concentration Objective** (milligrams per litre unless otherwise indicated)
CBOD5	10.0
Total Suspended Solids	10.0
Total Phosphorus	0.3
E. Coli	200 count / 100 mL

10.2 As a further effluent objective, the *Owner* shall use best efforts to maintain the pH of the effluent from the works within the range of 6.5 to 8.5, inclusive, at all times.

10.3 The *Owner* shall include in all reports submitted in accordance with Condition 8 a summary of the efforts made and results achieved under this Condition.

11. SANITARY SEWAGE EFFLUENT MONITORING

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

11.1 All samples and measurements taken for the purposes of this certificate are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

11.2 Samples shall be collected and analyzed at the following sampling point, at the sampling frequencies and using the sample type specified for each parameter listed:

Table 6 - Sanitary Sewage Effluent Monitoring Sample Point: RBC Effluent Discharge Point After UV Disinfection Unit		
Effluent Parameter	**Frequency**	**Sample Type**
CBOD5	Quarterly	Grab
Total Suspended Solids	Quarterly	Grab
Total Phosphorus	Quarterly	Grab
E. Coli	Quarterly	Grab

11.3 The methods and protocols for sampling, analysis, and recording shall conform, in order of precedence, to the methods and protocols specified under Condition 4.4

11.4 The measurement frequencies specified under Condition 11.2 in respect of any parameter are minimum requirements which may, after twenty four (24) months of monitoring in accordance with this Condition, be modified by the *District Manager* in writing from time to time

11.5 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.

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

1. Condition 1.1 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.

2. Condition 1.2 is imposed to emphasize the precedence of Conditions in the *Certificate* and the practice by which the

Approval is based on the most current document, if several conflicting documents are submitted for review.

3. Condition 2.1 through 2.8 are included to ensure that the *Works* will be operated and maintained in a manner enabling compliance with the terms and conditions of this *Certificate*, such that the environment is protected and deterioration, loss, injury or damage to any person or property is minimized and/or prevented.

4. Conditions 3.1 through 3.10 are imposed to establish enforceable effluent quality limits which the *Owner* is obligated to achieve on an ongoing basis. These limits are established to minimize the environmental impact to the receiver and to protect water quality, fish and other aquatic life in the receiving watercourse.

5. Conditions 4 to 9 are related to sampling, monitoring, reporting and contingency plans. They have been imposed to require the *Owner* to demonstrate on a continual basis that, the performance of the approved *Works* is at a level consistent with the design for the achievement of the effluent limits and objectives specified in the *Certificate*, and does not cause any impairment to the receiving watercourse, that sensitive water quality and fish habitats are adequately protected and, that all pertinent information is available for evaluation of the *Works*.

6. Condition 10 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.

7. Condition 11 is included to require the owner to demonstrate on a continual basis that the quality and quantity of the effluent from the approved works is consistent with the design objectives specified in the certificate and that the approved works does not cause any impairment to the receiving watercourse.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 2253-7QFRMQ issued on April 22, 2009

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
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

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 28th day of March, 2011

Ian Parrott, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

SH/
c: District Manager, MOE Sudbury
Wendy Wisniewski, Vale Inco Limited