APPENDIX D

CEMS AND CMS QUALITY ASSURANCE PLANS

CONTINUOUS EMISSIONS MONITORING SYSTEM QUALITY ASSURANCE PLAN

Prepared for:

Veolia ES Technical Solutions, LLC
Sauget, Illinois

Prepared by:

Franklin Engineering Group, Inc.
Franklin, Tennessee

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1.0 INTRODUCTION

Veolia ES Technical Solutions, LLC (Veolia) owns and operates two fixed hearth incinerators (Units 2 and 3) and a transportable rotary kiln incinerator (Unit 4) at its facility located in Sauget, Illinois. These incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWCs), Part 63, Subpart EEE (§§63.1200 to 63.1221). The NESHAP for HWCs specifies emissions standards which reflect emissions performance of maximum achievable control technologies (MACT), and is commonly referred to as the HWC MACT.

For each incinerator, Veolia utilizes a continuous emissions monitoring system (CEMS) for demonstrating on-going compliance with the carbon monoxide (CO) emission standard. These CEMS are subject to the requirements of the Appendix to 40 CFR Part 63, Subpart EEE—*Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors*. This plan has been developed per the CEMS quality assurance (QA)/quality control (QC) requirements. Implementation of this plan will ensure that the CEMS generates, collects, and reports valid data that is precise, accurate, complete, and of a quality that meets the requirement of the HWC MACT Standard and the applicable performance specification.

1.1 Description of CEMS

Each incinerator is equipped with an EcoChem Analytics MC3 CEMS, which consists of the following major components:

- Heated stack sample probe
- Heated traced umbilical
- Heated sample pump
- EcoChem MC3 multicomponent infrared (IR) gas analyzer
- Zirconium oxide-based oxygen analyzer
- System controller and data acquisition system

Hot, wet stack gas is drawn through the heated stack sample probe and heat traced umbilical using a heated sample pump. The sampling location is downstream of the induced draft (ID) fan. The umbilical supplies instrument air to the filter probe to allow for automated periodic blowback. It also supplies calibration gases through the sampling system. The stack gas sample is maintained at approximately 185°C through the sampling equipment and analyzer sample cell to prevent the removal of pollutants from the sample through contact with condensed moisture.

The sample cell consists of multiple mirrors that were adjusted and aligned at the factory to set the path length appropriate for the specific application. The MC3 multicomponent IR photometer uses a Gas Filter Correlation analytical technique to continuously monitor the stack gas concentrations of HCl and CO. The Single Beam Dual Wavelength analytical technique is used to continuously monitor stack gas water vapor (H_2O) concentrations.

A technical description and specification for the CEMS is presented in Section 2.0 of the MC3 *Operations Guide, Section* 2.1.1 documents the lowest range for each component and an accuracy of ±2% of full-scale value. The lower threshold is 1% of the lowest range. These technical specifications document that the CEMS is capable of meeting the requirements of the Appendix to Part 63, Subpart EEE and Performance Specification 4B of 40 CFR Part 60, Appendix B.

The system controller controls the sampling system temperatures, purge/blowback, calibration checks, data handling, messaging, and alarms. The CEMS controller is integrated with the incinerator data acquisition system, automatic waste feed cutoff (AWFCO) system, and the main control system.

All three incinerators are equipped with COSA model ZFN-11YA1-2Z1 O_2 analyzers. These analyzers are zirconium oxide cells and are located downstream of the ID fan.

1.2 Overview of Regulatory Requirements

Cross-references and summaries of the applicable regulatory requirements are presented in Table 1-1. This table indicates the sections, tables, and figures of this document that address each particular requirement.

Table 1-1
Regulatory Requirements for the CEMS QC Program and the CEMS QA Plan

Regulatory Reference: Appendix to Subpart EEE of Part 63	Description	CEMS QA Plan Section
Section 3.1.a.1	Checks for component failures, leaks, and other abnormal conditions	3.0 3.1
Section 3.1.a.2	Calibration of CEMS	2.2
Section 3.1.a.3	Calibration Drift determination and adjustment of CEMS	2.1, 2.2 Appendix A
Section 3.1.a.4	Integration of CEMS with the AWFCO system	4.0
Section 3.1.a.5	Preventive Maintenance of CEMS (including spare parts inventory)	3.0 Appendix A
Section 3.1.a.6	Data recording, calculations, and reporting	4.1 5.0
Section 3.1.a.7	Checks of record keeping	5.0
Section 3.1.a.8	Accuracy audit procedures, including sampling and analysis methods	2.3, 2.5 Appendix A
Section 3.1.a.9	Program of corrective action for malfunctioning CEMS	3.4
Section 3.1.a.10	Operator training and certification	6.0
Section 3.1.b	Reporting of excessive inaccuracies	5.0
Section 3.2.1	QA responsibilities	5.0
Section 3.2.2	Schedules for: (1) daily checks (2) periodic audits (3) preventive maintenance	(1) 3.0, 3.1 (2) 2.0, Table 2-1 (3) 3.0
Section 3.2.3	Check lists and data sheets	Appendix A
Section 3.2.4	Preventive maintenance procedures	3.0

Table 1-1 (Continued)

Regulatory Requirements for the CEMS QC Program and the CEMS QA Plan

Regulatory Reference: Appendix to Subpart EEE of Part 63	**Description**	**CEMS QA Plan Section**
Section 3.2.5	Description of the media, format, and location of all records and reports	5.0
Section 3.2.6	Provisions for review of the CEMS data; revisions or updates of the QA plan based on review	5.0
Section 4.1	Check, record, quantify: (1) Zero Drift (2) Calibration Drift	2.1
Section 4.2	Recording Requirements for: (1) Zero Drift (2) Calibration Drift	2.1 Appendix A
Section 4.3	Daily System Audit	3.1
Section 4.4	Data recording and reporting	5.0
Section 5.1	Relative Accuracy Test Audit (RATA)	2.5
Section 5.2	Absolute Calibration Audit (ACA)	2.3
Section 5.3	Interference Response Test (IRT)	2.4
Section 5.4	Excessive audit inaccuracies	Table 2-1 2.3 2.5

2.0 CEMS CALIBRATIONS AND PERFORMANCE

The CEMS must be operated, calibrated, and maintained to ensure conformance with the Appendix to Part 63, Subpart EEE and the EPA Performance Specification 4B (PS 4B). Calibration drift checks and performance demonstrations are performed periodically on the CEMS based on the following schedule:

- Daily calibration checks for determination of Calibration Drift (CD) and Zero Drift (ZD).
- Quarterly Absolute Calibration Audit (ACA) for determining calibration error (CE) for O_2, CO, and HCl.
- Annual Relative Accuracy Test Audit (RATA) for determining the CEMS relative accuracy (RA) for CO emissions.

The procedures, QC criteria, corrective actions, and recordkeeping associated with these drift checks and audits are described in this section. A summary of the QC criteria and corrective actions is presented in Table 2-1. Blank data sheets are provided in Appendix A.

2.1 Daily Drift Checks

Daily drift checks are automatically initiated by the CEMS controller. During the automated calibration sequence, calibration gases are injected from pressurized cylinders through the sampling system. The sequence starts with the IR analyzer zero gas that is free of any of the constituents analyzed by the IR analyzer. This zero gas may also serve as the span gas for the integrated O_2 analyzer. The zero gas flows through the system with enough time allowed for the analyzer to fully respond to the gas. Then the analyzer response to the zero gas is recorded for one minute and averaged. The next calibration gas in the calibration sequence is the first IR analyzer span gas. This span gas is a calibration standard that has one or more constituent concentrations at the analyzer span value (this gas may also be used as the zero gas for the O_2 analyzer). The first span gas flows through the system to allow the analyzer enough time to fully respond to the gas. Then the analyzer response to the first span gas is recorded for one minute and averaged. This is then repeated for the second span gas and then possibly a third span gas depending upon the composition of the span gases. The total duration of this calibration sequence has been designed to not exceed the 20 minute maximum allowable CEMS downtime while burning hazardous waste.

Table 2-1
Overview of CEMS Performance Requirements

Analyzer Parameter (Span Value)	QC Parameter	Minimum Frequency	QC Limit	Corrective Action
H_2O (60%)	ZD	Daily	±2% of span	Zero Adjustment
O_2 (25%)	ZD and CD	Daily	±0.5% O_2	Zero/Span Adjustment
	CD	Daily	±1.0% O_2	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±1.5% O_2	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [1]	0.5% O_2	Shut off waste, service/calibrate, conduct RATA
	RA	Annually	1.0% O_2	Shut off waste, service/calibrate, repeat RATA
CO (200 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [1]	5%	Shut off waste, service/calibrate, conduct RATA
	RA [2]	Annually	5 ppmdv @ 7% O_2 (See Section 2.5)	Shut off waste, service/calibrate, conduct RATA

[1] The ACAs for determining the O_2 and CO CE are conducted quarterly, except in a quarter when a RATA is conducted instead.

[2] The RA accuracy for CO is based on the units of the CO emission standard (ppmdv @ 7% O_2). CO data collected from the analyzer during the RATA will include low and or high range values per the normal operating requirements.

Table 2-1 (continued)
Overview of CEMS Performance Requirements

Analyzer Parameter (Span Value)	QC Parameter	Minimum Frequency	QC Limit	Corrective Action
CO (3000 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [3]	5%	Shut off waste, service/calibrate, conduct RATA
HCl (1000 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [4]	5%	Shut off waste, service/calibrate, conduct ACA

3 The ACAs for determining the O_2 and CO CE are conducted quarterly, except in a quarter when a RATA is conducted instead.

4 A RATA for HCl may be performed annually in lieu of performing an ACA in that quarter.

The drift for each stack gas constituent is determined as the difference between the known constituent concentration in the calibration gas and the analyzer reading. ZD is the drift determined using zero gas. CD is the drift determined using span gases. ZD and CD are determined daily for O_2, CO, and HCl. ZD for H_2O is also determined daily.

The ZD and CD are recorded by the CEMS datalogger as a percent of full-scale deviation (Dev%). Given that the "span value" is equal to the "full-scale" value, Dev% is calculated as follows:

$$Dev\% = \left| Drift\ \% \right|$$

$$Drift\ \% = \frac{reference\ concetration\ \text{-}\ analyzer\ responce}{span\ value} \cdot 100$$

For CO and O_2, if Dev% for CD exceeds the limits specified in the applicable Performance Specifications in 40 CFR Part 60, Appendix B, the analyzer must be calibrated. If the Dev% for CD is greater than the preset tolerance (Tol%) the instrument technician will notify the incinerator operator and waste feeds will be shut off until corrective measures have been taken. The CD tolerances for both O_2 and CO have been set at the two times the performance specification limits. A calibration failure alarm indicates that the analyzer is out-of-control and must be serviced and recalibrated. An ACA must be conducted to document that the analyzer is within the performance specifications prior to resuming hazardous waste burning.

For CO, if the Dev% for CD is greater than 5% for 6 out of 7 days, then the analyzer is out-of-control and must be serviced and recalibrated. An ACA must be conducted to document that the analyzer is within the performance specifications prior to resuming hazardous waste burning.

Similar requirements for drift limits apply to HCl, except that no performance specifications have been promulgated for CEMS monitoring these parameters. In lieu of limits specified by an EPA Performance Specification, Veolia has developed self-imposed performance specification limits for HCl. These limits are specified in Table 2-1.

2.2 Calibration

Calibration of the analyzer will be conducted periodically to ensure that the results of drift checks, ACAs, or RATAs meet the applicable performance specifications.

Calibration for each IR channel (H_2O, CO, and HCl) may be performed daily during the automated calibration sequence used to determine calibration drift. For each calibration gas used during the automated sequence, the automatic calibration will reset the analyzer response to correspond with the known reference concentrations. Any automated calibration adjustment will be made immediately after the analyzer response to the calibration gas is recorded electronically. The drift determined immediately prior to a calibration adjustment is equal to the magnitude of the adjustment. The oxygen analyzer uses a two-point calibration curve. The first calibration point resets the measured concentration of air to 20.94%. The second calibration point resets the measured concentration of a low concentration calibration gas to its known concentration. This calibration is performed manually. To document the calibration adjustment, the actual measurement at each calibration point prior to adjustment will be recorded.

Following service to the MC3 analyzer that could affect its calibration, each IR channel, and the O_2 analyzer will be calibrated. The CEMS Drift and Calibration Data Sheet in the Appendix to this document will be used to track the cumulative span adjustments (i.e., change in the calibration factor). Section 5.5 of the MC3 CEMS *Operations Guide* and Section 4.4 of the MC3 CEMS *System Guide* should be referred to as needed for additional detail regarding calibration of the CEMS.

If the cumulative calibration adjustment for CD is three times the performance specification limits at any time, hazardous waste burning will be cutoff. The analyzer will be serviced, recalibrated, and an ACA will document that hazardous waste burning can recommence. A calibration factor that has been verified through an ACA will become the new reference point for assessing the cumulative adjustments made to correct for calibration drift.

The incinerator can remain on hazardous waste during CEMS drift checks, calibrations, purges, and corrective actions for CEMS failures provided that the CEMS downtime does not exceed 20 minutes. During these times, the instantaneous values used to determine one-minute averages of dry, oxygen corrected concentrations of CO are discarded. This allowance is provided by Section 6.2 and 6.5.1 of the Appendix to Subpart EEE. The applicable regulatory requirements do not limit the frequency that this allowance can be utilized. Typically, this allowance will only be utilized once per day for the daily drift checks. Since the oxygen analyzer cannot be calibrated during the automatic calibration of the IR channels, calibration of the oxygen analyzer will require additional downtime.

If a there is a CEMS failure, the incinerator may remain on hazardous waste provided that the CEMS can be restored within 20 minutes.

Following downtime, the CEMS must be within the performance specifications described in this document. Otherwise, hazardous waste burning will cease until the appropriate corrective measures can be taken. To ensure that the hourly rolling average (HRA) for CO is representative of current operating conditions, CEMS data validity must be at least 75% (i.e., 60 valid one minute averages per 80 minutes of normal operations).

2.3 Absolute Calibration Audit

An ACA is conducted quarterly for O_2, CO (high and low range), and HCl. For O_2 and CO, an ACA is not conducted in the quarter that the required annual RATA is performed. The ACA is conducted according to the calibration error (CE) test procedure described in the Performance Specifications 4B. During the ACA, the analyzer is challenged over each range with EPA Protocol 1 cylinder gases. The EPA Protocol 1 cylinder gases are NIST traceable calibration standards. For a given parameter, the analyzer response is recorded at three measurement points. This is then repeated twice to give three sets of data. The CE at each measurement point is determined as follows:

$$CE = \left| \frac{d}{FS} \right| \cdot 100\%$$

where d is the mean difference between the CEMS response and the known reference concentration and FS is the span value.

For CO and HCl, the CE determined at each measurement point cannot exceed 5%. For O_2, CE cannot exceed 2%. If an ACA fails to pass the QC criterion (i.e., the audit indicates excessive inaccuracy), then hazardous waste burning cannot resume until corrective measures have been taken and a RATA demonstrates that the CEMS is operating within the performance specifications.

2.4 Interference Response Test

The MC3 analyzer corrects for interferences using additive and multiplicative interference tables. These tables were generated per the manufacturer's procedure at the initial setup of the CEMS system. An Interference Response Test (IRT) is listed in the Appendix to Subpart EEE, however, the Performance Specification 4B does not include requirements or acceptance criteria for an interference response test. Veolia will perform

Interference Response Tests at such time as US EPA specifies the test procedures and acceptable criteria for an Interference Response Test.

2.5 Relative Accuracy Test Audit

The Relative Accuracy Test Audit (RATA) is required annually for O_2 and CO CEMS. The Relative Accuracy (RA) test procedures required by Section 7.2 of PS 4B references incorrect sections of PS 3 (for O_2) and PS 4A (for CO). The applicable sections of the performance specifications are:

- RATA procedures: Sections 8.4.3 through 8.4.5 of PS 2.
- O_2 reference methods: Section 8.2 of PS 3
- CO reference methods: Section 8.2 of PS 4A.
- O_2 RA calculations: Section 12.0 of PS 3
- CO RA calculations: Section 12.0 of PS 2
- O_2 RA criterion: Section 13.2 of PS 3
- CO RA criteria: Section 13.2 of PS 4A

A brief summary of the applicable reference methods are provided below:

US EPA Method 3/3A (Stack Gas Composition and Molecular Weight)

The sampling and analytical procedures outlined in this method will be used to determine the O_2 composition of the stack gas during the RATA. Using this method, a gas sample is extracted from the stack at a constant rate for determination of O_2, CO_2 and molecular weight. The integrated gasbag collection option will be employed. The gasbags will be analyzed using an Orsat analyzer. As an alternative, the Method 3A (instrumental analyzer) method may be used for analysis of the sample.

US EPA Method 4 (Stack Gas Moisture Content)

If necessary, the sampling and analytical procedures outlined in this method will be used to determine the moisture content of the stack gas during the RATA. Using this method, a gas sample is extracted from the stack. The gas passes through a series of impingers that contain reagents. The impingers are connected in series and are contained in an ice bath in order to assure condensation of the moisture in the gas stream. Any moisture that is not condensed in the impingers is captured in the silica gel, ensuring that all moisture can be weighed and entered into moisture calculations.

US EPA Method 10 (Carbon Monoxide CEMS)

A continuous emissions monitor will be used to continuously sample exhaust gas for carbon monoxide analysis as described in EPA Method 10. Using this method, a continuous gas sample is extracted from the exhaust gas, and is analyzed for carbon monoxide (CO) using a Luft-type Non-Dispersive Infrared Analyzer (NDIR), or another equivalent analyzer. This sampling and analysis will occur continuously throughout the duration of each run of the RATA.

During a test run of the RATA, US EPA reference methods are utilized to obtain stack gas data. These data are used to calculate the stack gas dry O_2 concentration and the stack gas CO concentration corrected to seven percent oxygen in units of parts per million, dry volume (i.e., in the units of the emission standard, 100 ppmdv CO @ 7% O_2). The average stack gas O_2 (%, dry) and CO (ppmdv, @ 7% O_2) concentrations—as calculated from the installed CEMS over the duration of the run—are compared to the value obtained using the reference methods. The RATA consists of a minimum of 9 test runs. If more test runs are conducted, at least 9 data sets will be used to determine RA, and no more than three sets of data will be rejected. The O_2 and CO RA calculations and acceptance criteria are presented below.

$$RA_{oxygen} = \left|\overline{d}\right| \leq 1.0\%\, O_2, dry$$

$$RA_{CO} = \begin{cases} \dfrac{\left|\overline{d}\right| + \left|CC\right|}{\overline{RM}} \cdot 100\% \leq 10\% \ldots for\ \overline{RM} \geq 50\, ppmdv\, @\, 7\%\, O_2 \\ \left|\overline{d}\right| + \left|CC\right| \leq 5\, ppmdv\, @\, 7\%\, O_2 \ldots for\ \overline{RM} < 50\, ppmdv\, @\, 7\%\, O_2 \end{cases}$$

where,

$\overline{d}$ = $\frac{1}{n} \cdot \sum_{1}^{n} \left(RM_i - CEMS_i\right)$

n = number of test runs

RM_i = the concentration determined by the reference method for the ith test run

$CEMS_i$ = the concentration determined by the CEMS for the ith test run

CC = the 2.5 percent error confidence coefficient (see Section 12.4 of PS 2)

If a RATA fails to pass the QC criterion (i.e., the audit indicates excessive inaccuracy), then hazardous waste burning cannot resume until corrective measures have been taken and a RATA demonstrates that the CEMS is operating within the performance specifications. If CO emission levels are significantly low, it may be difficult to produce meaningful results using the RA test procedure. Under these circumstances, Veolia will request approval to utilize the Alternative RA Procedure prescribed by Section 7.3 of PS 4B.

3.0 CEMS MAINTENANCE

Veolia has developed a preventative maintenance program for the CEMS. This program includes frequent inspections of the CEMS in order to identify potential component failures, leaks, and data quality issues. The CEMS preventative maintenance program also includes scheduled replacement of critical components and maintenance of spare parts inventory. All scheduled and unscheduled maintenance of the CEMS will be documented in a CEMS logbook maintained for each incinerator. Section 8.0 of the MC3 CEMS *Operations Guide* provides details for daily, weekly, monthly, quarterly, and annual inspection and maintenance activities. Procedures and recordkeeping for the specific inspection and maintenance activities are described below.

3.1 Daily System Audit

The Daily System Audit includes:

- Review of the daily drift check data
- Inspection of the recording system
- Check for controller alarms and error/warning messages
- Check expected calibration values
- Check of current data status
- Check of calibration gas cylinder pressures
- Check calibration gas pressure regulator settings
- Inspection of the instrument air pressure
- Inspection of the stack gas sampling system

The Daily System Audit Checklist will be used to document the findings from the daily system audit. A CEMS Drift and Calibration Data Sheet will be completed during the daily system audit in order to track and evaluate drift and adjustments made to the CEMS.

3.2 Spare Parts Inventory

CEMS spare parts are maintained in sufficient quantities on-site to perform routine maintenance activities. It is anticipated that these spare parts and typical maintenance supplies will be adequate to service the CEMS. Some services and replacement of components must be performed by an EcoChem Analytics Service Engineer to avoid violation of the system certification.

The following consumable parts have been targeted for periodic inspection and replacement for maintaining the CEMS:

- Air conditioner filters for CEMS shelter
- Instrument air coalescing filters
- Sample pump Teflon diaphragm
- Sample pump Teflon flapper valve
- Sample probe internal filter
- Sample probe gaskets
- Probe-tip filter

The following spare parts are not part of routine maintenance and would be replace by an EcoChem Service Engineer:

- Cell front cover gasket
- Cell inlet filter
- Cell windows with o-ring gaskets
- Cell mirrors

The CEMS Calibration Gas and Spare Parts Log is provided in Appendix A and will be used as needed to keep track of inventory.

3.3 Calibration Gas Supply and Certification

A summary of the calibration gases needed to perform the daily drift checks, calibrations, and ACAs is presented in Table 3-1. The number of gas cylinders maintained on-site depends on the specific mixture of gases in each cylinder and the lead time required for placing orders. An inventory of calibration gases will be conducted in conjunction with the spare parts inventory to ensure that the appropriate gases are available for use. Certification from the supplier of calibration gas quality will be kept with the most recent spare parts inventory documentation.

Each calibration sequence depletes approximately 40 psi, and a cylinder with less than 150 psi should be replaced. The daily system audit includes inspection of the calibration gas cylinder pressures and will be used track usage and to predict when to reorder.

Table 3-1
Summary of Concentration Requirements for Calibration Gases

Constituent	QC Parameter	Concentration Requirement	Accuracy
H_2O	ZD	0%	per gas supplier
O_2	ZD	0%	per gas supplier
	CD	25%	per gas supplier
	ACA	0-2%	EPA Protocol 1/NIST Traceable
	ACA	8-10%	EPA Protocol 1/NIST Traceable
	ACA	14-16%	EPA Protocol 1/NIST Traceable
CO (low range)	ZD	0 ppm	per gas supplier
	CD	200 ppm	per gas supplier
	ACA	0-40 ppm	EPA Protocol 1/NIST Traceable
	ACA	60-80 ppm	EPA Protocol 1/NIST Traceable
	ACA	140-160 ppm	EPA Protocol 1/NIST Traceable
CO (high range)	ZD	0 ppm	per gas supplier
	CD	3000 ppm	per gas supplier
	ACA	0-600 ppm	EPA Protocol 1/NIST Traceable
	ACA	900-1200 ppm	EPA Protocol 1/NIST Traceable
	ACA	2100-2400 ppm	EPA Protocol 1/NIST Traceable
HCl	ZD	0 ppm	per gas supplier
	CD	1000 ppm	per gas supplier
	ACA	0-200 ppm	EPA Protocol 1/NIST Traceable
	ACA	300-400 ppm	EPA Protocol 1/NIST Traceable
	ACA	700-800 ppm	EPA Protocol 1/NIST Traceable

3.4 Corrective Action for Malfunctioning CEMS

It is Veolia's policy to minimize the occurrence of malfunctions by taking a proactive approach to facility maintenance. Proactive measures include the preventive maintenance described in this section, and the calibration and performance testing described in Section 2.0. Frequent inspections and availability of spare parts allow for the timely completion of as needed service to the CEMS prior to a major malfunction.

Operating and maintaining the incinerator during a malfunction will be conformance with the *Startup, Shutdown, and Malfunction Plan* (SSMP). Attachment 4 to the SSMP is the *Program of Corrective Action for Malfunctions.* Section 9.2 of the *Program of Corrective Action for Malfunctions* addresses corrective actions for malfunctioning CEMS. Section 9.0 through 9.2 of the MC3 CEMS *Operations Guide* may be referred to as needed for troubleshooting and corrective maintenance of the CEMS.

4.0. INTEGRATION OF THE CEMS WITH THE AWFCO SYSTEM

The CEMS is integrated with the automatic waste feed cutoff (AWFCO) system to assure on-going compliance with CO emission standards. The AWFCO system is designed to immediately and automatically shut of all waste to the incinerator in the event of an exceedance of an emission or operating limit. The CEMS is integrated with AWFCO system through interlocks. These interlocks are conditions which trigger a relay causing the AWFCO system to activate. This section describes the AWFCO interlocks associated with the CEMS.

4.1 Emission Standards

The CEMS raw data for O_2 (% vol), H_2O (% vol), and CO (ppmv) consists of instantaneous values which have not been smoothed or averaged, evaluated once every 15 seconds. These values are used to calculate CO emissions in the units of emission standards. Calculations equivalent to the following procedures are performed to compare the stack gas emissions to the CO emission standard.

First 15-second data in the units of the emission standards are calculated:

$$CO\,@\,7\%\,O_2,ppmdv = \frac{CO,ppmv}{100\% - (H_2O,\%)} \cdot \left(\frac{14\%}{21\% - \dfrac{O_2,\%}{100\% - (H_2O,\%)}} \right)$$

The calculated 15-second data are then used to calculate one-minute averages (OMAs). The current minute OMA is averaged with the previous 59 OMAs to generate an hourly rolling average (HRA). All rounding is avoided for the numbers used to calculate HRAs. The HRA of CO emissions are rounded to two significant figures.

If the HRA CO emission concentration exceeds the CO emission standard of 100 ppmdv @ 7% O_2, an AWFCO will occur.

4.2 Drift Limits

As described in Section 2.1, waste feeds will be manually shut off in case a drift limit is exceeded. For CO and O_2, drift limits are equal to 2 times the performance specifications. Comparable drift limits have been established for excessive H_2O drift.

5.0. RECORDKEEPING AND QUALITY ASSURANCE REVIEWS

Documentation generated from CEMS QA/QC procedures and monitoring will be kept on-site for a period of five years. The data and documentation that is generated and reviewed is kept in various locations at the Veolia facility. Table 6-1 below lists the storage location and format of this documentation.

Maintenance and Instrument Technicians have the primary responsibility for creating and organizing CEMS data sheets, daily system audit checklists, maintenance logbook, and spare part inventory records. The Environmental Engineer/Specialist or designee will check these records quarterly to verify completion and organization. This review will also consider the following requirements:

1. Whenever excessive audit inaccuracies occur for two consecutive quarters, the current written procedures will be revised or the CEMS modified or replaced to correct the deficiency causing the excessive inaccuracies. Previous versions of written procedures will be kept on record and made available for inspection.

2. If the ZD and/or CD exceed(s) two times the limits in the Performance Specifications, or if the cumulative adjustment to the ZD and/or CD exceed(s) three times the limits in the Performance Specifications, the CEMS is considered "out-of-control" (as defined in 40 CFR 63.8(c)(7)), and the event will be reported in the facility's semi-annual "Excess Emissions and CMS Performance Report". Further detail on this report can be found in the facility CMS Quality Assurance Program.

On an annual basis the Environmental Engineer/Specialist or designee will review all CEMS data generated for the previous 12 months and prepare a brief internal report/memo summarizing findings. Based on this review, the Environmental Engineer/Specialist or designee will solicit recommendations for revisions to the CEMS Quality Assurance Plan. The CEMS Quality Assurance Plan will be revised as needed to maintain QA/QC of the CEMS. All versions of this plan for the last five years remain in the operating record.

Table 5-1 CEMS Records and Reports

Record/Report	Storage Location	Media/Format [1]
CEMS QA Plan – Current Version – Previous Version	Incinerator Manager's Office Operating Records Archives	HD and/or P RD
CEMS Readings and HRA – Previous year through year to date – Remaining archives	Data Historian Operating Records Archives	HD and/or RD RD
Drift and Calibration Data: – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Absolute Calibration Audit – Previous year though year to date – Remaining archives	Operating Record Archives	P and/or RD
Relative Accuracy Test Audit – Previous year through year to date – Remaining archives	Operating Record Archives	P and/or RD
Daily System Audit – Previous year through year to date – Remaining archives	Operating Record Archives	P and/or RD
Preventive Maintenance Logbook – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Spare Parts Inventory – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Annual Review of CEMS Data	Operating Records Archives	P and/or HD and/or RD

[1] Media Format:

HD - Computer or network hard drive
RD – Removable drive (floppy, CD, backup tape)
P - Paper documentation

6.0 OPERATOR TRAINING AND CERTIFICATION

Training is provided to Veolia employees on the basis of their job title. Individuals specifically involved in the operation of the incinerator and associated CEMS are the Instrument Technicians, Incinerator Operators, and Environmental Engineer/Specialist. The Veolia operator training and certification program meets the requirements outlined in 40 CFR 63.1206(c)(6). Documentation of employee training and certification is kept with the Training Director, and is available for review upon request.

APPENDIX A

CEMS DATA SHEETS AND CHECKLISTS

NOTE: THE FOLLOWING SHEETS ARE FOR EXAMPLE PURPOSES ONLY. VEOLIA MAY UTILIZE EQUIVALENT DOCUMENTATION FOR ANY OF THE SHEETS INCLUDED.

CEMS DRIFT AND CALIBRATION DATA SHEET

Parameter (Span Value)	Date & Time	Concentration		Drift %	Adjustment %	Cumulative Adjustment %
		Reference	Analyzer			
H_2O (60 %)						
Zero						
O_2 (25%)						
Zero						
Calibration						
CO (200 ppm)						
Zero						
Calibration						
CO (3000 ppm)						
Zero						
Calibration						
HCl (1000 ppm)						
Zero						
Calibration						

$$\text{Drift \%} = \frac{\text{Reference - Analyzer}}{\text{Span Value}} \cdot 100\%$$

$\text{Adjustment \%} = \text{Drift \%}$ (if zero/span was reset during drift check)

$\text{Cumulative Adjustment \%} = (\text{Previous Cumulative Adjustment \%}) + (\text{Current Adjustment \%})$

____

(Name & Title)

____

(Signature)

ABSOLUTE CALIBRATION AUDIT (ACA)
DATA SHEET

Parameter	NIST Traceable Calibration Standards			
	Gas	**Concentration**		
☐ O_2	Low (Zero)		±	
☐ CO-low range	Mid		±	
☐ CO-high range	High		±	
☐ HCl				

RUN NUMBER	Concentration		Difference		
	Reference	**Analyzer**	**Low**	**Mid**	**High**
1 – Low				--	--
2 – Mid					--
3 – High			--	--	
4 – Low				--	--
5 – Mid			--		--
6 – High			--	--	
7 – Low				--	--
8 – Mid			--		--
9 – High			--		
		MEAN DIFFERENCE =			
		CALIBRATION ERROR =	%	%	%

$$\text{Calibration Error} = \frac{\text{Mean Difference}}{\text{Span Value}} * 100$$

______________________________ (Name)

______________________________ (Title)

______________________________ (Signature)

______________________________ (Date)

RELATIVE ACCURACY TEST AUDIT RATA
DATA SHEET

Run	Reference Method			CEMS	Difference	Reference Method			CEMS	Difference
	H_2O, % (if applicable)	O_2, % wet (if applicable)	O_2, % dry	O_2, % dry	O_2, % dry	CO ppmv (if applicable)	CO ppmdv	CO ppmdv @ 7% O_2	CO ppmdv @ 7% O_2	CO ppmdv @ 7% O_2
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

O_2 RA	

Mean Difference	
Standard Deviation	
Confidence Coefficient	
CO RA	

(Name)

(Title)

(Signature)

(Date)

CEMS DAILY SYSTEM AUDIT

	Initials
Verify that the most recent drift checks and calibration adjustments are within limits. Complete Drift and Calibration Data Sheet. Corrective Actions:	
Verify proper operation of CEMS data recording and printing Corrective Actions:	
Check for controller alarms and error/warning messages Corrective Actions:	
Check expected calibration values Corrective Actions:	
Check current emissions data status Corrective Actions:	
Verify calibration gas cylinder pressures (>150 psi) Corrective Actions:	
Verify pressure regulator settings (approximately 25-35 psi) Corrective Actions:	
Verify proper instrument air pressure to CEMS umbilical Corrective Actions:	
Perform visual inspection of the stack gas sampling system Corrective Actions:	

(Name) (Title)

(Signature) (Date)

CEMS CALIBRATION GAS AND SPARE PARTS LOG

CALIBRATION GASES:

(Attach all certification forms)

Zero gas: ________________cylinders Composition:____________________________

Span gas 1: ________________cylinders Composition:____________________________

Span gas 2: ________________cylinders Composition:____________________________

Span gas 3: ________________cylinders Composition:____________________________

ACA Gases: ____

____

____

____

PARTS:

Air conditioner filters for CEMS shelter ______________________________________

Instrument air coalescing filters ____

Sample pump Teflon diaphragm____

Sample pump Teflon flapper valve____

Sample probe internal filter ____

Sample probe gaskets ____

Probe-tip filter____

Cell front cover gasket ____

Cell inlet filter____

Cell windows with o-ring gaskets____

Cell mirrors____

Tubing____

Fittings ____

Solenoid Values ____

Thermocouples ____

Electronic parts ____

____

____

Other spare parts ____

____

____

Inventory taken by: _________________________________ Date: ____________________

CONTINUOUS MONITORING SYSTEM QUALITY CONTROL PROGRAM

Prepared for:

Veolia ES Technical Solutions, LLC
Sauget, Illinois

Prepared by:

Franklin Engineering Group, Inc.
Franklin, Tennessee

October 2008

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1.0 INTRODUCTION AND BACKGROUND

Veolia ES Technical Solutions, LLC (Veolia) owns and operates two fixed hearth incinerators (Units 2 and 3) and a rotary kiln incinerator (Unit 4) at its facility located in Sauget, Illinois. The incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWC), Part 63, Subpart EEE (§ 63.1200 to § 63.1221). The NESHAP specifies emissions standards which reflect emissions performance of Maximum Achievable Control Technologies (MACT), and is commonly referred to as the HWC MACT.

Hazardous waste combustors are required [per § 63.8(d)(2)] to establish and implement a Continuous Monitoring System (CMS) Quality Control (QC) Program. The purpose of the QC Program is to outline procedures used to verify that the CMS are properly installed, calibrated, and collecting accurate data on an ongoing basis. The CMS performance evaluation test plan was submitted as part of the Comprehensive Performance Test Plan.

The QC Program demonstrates Veolia's compliance with the requirements set forth in § 63.8(d)(2), as well as the additional quality assurance (QA) requirements. The QC Program is required to contain descriptions of initial and subsequent CMS calibration, calibration drift, preventive maintenance, data recording, calculations and reporting; and a corrective action plan for malfunctioning CMS. Table 1-1 presents the regulatory references related to the QC program, followed by the section of this plan that addresses each specific requirement. Some references are made to other HWC MACT required facility operating plans.

This QC Program is intended to fulfill the requirements of § 63.8(d)(2), and includes information related to the procedures for each of the following operations:

- Initial and subsequent calibration of the CMS
- Determination and adjustment of the calibration drift of the CMS
- Preventive maintenance of the CMS, including spare parts inventory
- Data recording, calculations, and reporting
- Program of corrective action for malfunctioning CMS.

Table 1-1

Regulatory Checklist for the CMS QA Program

Regulatory Citation	Description	Plan Section
§ 63.8(c)(1)(i)	Operation and maintenance of each CMS	Section 1.2, 2.3 O&M Plan CEMS Plan
§ 63.8(c)(1)(iii)	Startup, shutdown, and malfunction plan for CMS	SSMP Plan
§ 63.8(c)(3)	Verification of operational status	CMS PET Plan
§ 63.8(c)(7)(ii)	Out-of-control CMS data will not be used in averages and calculations.	Section 4.0
§ 63.8(c)(7)(ii)	Corrective actions for an out-of-control CMS	Section 4.0 and SSMP Plan
§ 63.8(c)(8)	Out-of-control CMS information to be submitted	Section 4.0
§ 63.8(d)(2)	Develop and implement QC portion of CMS QA program	Section 1.0
§ 63.8(d)(2)	QA program includes the development and submittal of the performance evaluation test plan	Section 2.1.1
§ 63.8(d)(2)(i)	Develop written procedures for initial and subsequent calibrations	Sections 2.1.1, 2.1.2
§ 63.8(d)(2)(ii)	Develop written procedures for determination and adjustment of calibration drifts	Section 2.2
§ 63.8(d)(2)(iii)	Develop written procedures for preventive maintenance and spare parts inventory	Section 2.3
§ 63.8(d)(2)(iv)	Data recording, calculations, and reporting	Sections 3.1, 3.2
§ 63.8(d)(2)(vi)	Corrective actions for malfunctioning CMS	Section 4.0
§ 63.8(e)(3)	Performance evaluation of CMS	CMS PET Plan
§ 63.8(g)	Reduction of monitoring data	Section 3.2
§ 63.10(b)(1)	Maintaining files	Section 3.1
§ 63.10(b)(2)(ix)	Maintain records of measurements from performance evaluations	Section 3.1
§ 63.10(b)(2)(vi)	Maintain records of each period during which a CMS is malfunctioning, or inoperative and out of control	Section 4.0 and SSMP Plan
§ 63.10(b)(2)(vii)	Maintain records of measurements to demonstrate compliance	Section 3.1
§ 63.10(b)(2)(viii)	Maintain records of results of CMS performance evaluations and opacity and visible emission observations	Section 3.1
§ 63.10(b)(2)(x)	Maintain records of CMS calibration checks	Section 2.1.2

Table 1-1 (continued)
Regulatory Checklist for the CMS QA Program

Regulatory Citation	Description	Plan Section
§ 63.10(b)(2)(xi)	Maintain records of all adjustments and maintenance performed on the CMS	Section 3.1
§ 63.10(c)(1)	Recordkeeping requirements for CMS measurements (including unavoidable breakdowns and out-of-control situations)	Section 3.1
§ 63.10(c)(13)	Maintain records of total process operating time during the reporting period	Section 3.1
§ 63.10(c)(14)	Develop and implement CMS QA program procedures	Section 1.0
§ 63.10(c)(5)	Maintain records of date and time for CMS inoperability (except for zero and high-level checks)	Section 3.1
§ 63.10(c)(6)	Maintain records of date and time for CMS out-of-control periods	Section 3.1
§ 63.10(c)(8)	Maintain records of identification of each time period of exceedances - does not include periods of Startup, Shutdown, Malfunction (SSM)	Section 3.1
§ 63.10(e)(3)(i)	Submittal of semiannual excess emissions and CMS performance report	Section 3.1
§ 63.10(e)(3)(v)	Content and submittal data of excess emissions and CMS performance report	Section 3.2
§ 63.10(e)(3)(vi)	Content of summary report required by (e)(3)(vii) and (e)(3)(viii) to this section	Section 3.2
§ 63.10(e)(3)(vii)	Condition for submitting only the summary report	Section 3.2
§ 63.10(e)(3)(viii)	Condition for submitting both the summary report and excess emissions and CMS performance report	Section 3.2
§ 63.1209(b)(2)(i)	Calibration of thermocouples and pyrometers	Section 2.1
§ 63.1209(b)(3)	Frequency of CMS sampling, evaluation, computing, and recording of regulated parameter	Section 3.1
§ 63.1209(b)(5)	Calculation of rolling averages	Section 3.1
§ 63.1209(f)(1)	§ 63.1211(c) requires that CMS are installed, calibrated, and operational by the compliance date	CMS PET Plan

Notes:

PET Performance Evaluation Test

SSMP Startup, Shutdown, Malfunction Plan

SDP Standard Division Practices

The data collected from CMS instrumentation is used to demonstrate the unit's compliance with the performance requirements promulgated in the Interim HWC Maximum Achievable Control Technology (MACT) standard. The QA Program outlines procedures used to verify that the CMS are properly calibrated and collecting accurate data on an ongoing basis.

Due to the similarity of the three CMS systems (one for each incinerator system), general references to a CMS system or incinerator system in this document will imply all three systems. Information that is only applicable to one or two of the three systems will be clearly identified.

This document is organized as follows:

Section 1.0	Introduction and Background
Section 2.0	CMS Calibration and Preventive Maintenance
Section 3.0	CMS Recordkeeping and Reporting
Section 4.0	CMS Corrective Actions

This plan also assimilates information and procedures found in other documents. As required by § 63.6(e)(3)(vi), other documents containing procedures or information referred to in this plan will be made available for inspection when requested by the Administrator.

The remainder of this section provides an overview of the incineration system followed by a discussion on the CMS instrumentation. Section 2.0 discusses CMS initial and continuing calibration and preventive maintenance requirements. Section 3.0 addresses requirements related to facility documentation and reporting. Section 4.0 defines and discusses nonstandard operations of the CMS and applicable corrective actions.

1.1 Summary of Facility Information

Brief summaries which describe the fixed hearth incinerators and the rotary kiln incinerator are presented in this section.

1.1.1 Fixed Hearth Incinerators

Each of the fixed hearth incinerators includes the following components:

- Feed equipment

- Primary and secondary combustion chambers
- Lime injection system
- Spray dryer absorber (SDA)
- Fabric filter baghouse
- Solids and ash removal systems
- Induced draft (ID) fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes and gaseous feedstreams are thermally treated in the fixed hearth incinerators. Solid waste is fed to the primary (lower) combustion chamber via a feed conveyor system and pneumatic ram. Liquid waste from tanks and tanker trucks are fed to the primary combustion chamber through two atomized liquid injectors. Liquid waste from containers are fed to the primary combustion chamber through a specialty feed injector. A gaseous feedstream is fed to the Unit 2 primary combustion chamber directly from gas cylinders. Off gases from a hooded feed emission control system and from a waste handling glove box are fed directly to the Unit 3 secondary combustion chamber. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the SDA, which provides acid gas removal and cooling of the combustion gas. Combustion gas exits the SDA and is distributed to the fabric filter baghouses, which provide particulate matter removal. The induced draft fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

Hot, wet gas is extracted downstream of the baghouse through a continuous emissions monitoring system. This system features a multi-component infrared gas analyzer that detects hydrogen chloride, carbon monoxide, and water vapor concentrations. An integrated zirconium oxide-based analyzer detects oxygen concentrations.

1.1.2 Rotary Kiln Incinerator

The rotary kiln incinerator includes the following components:

- Waste feed system
- Primary and secondary combustion chambers
- Tempering chamber
- Lime injection system
- Spray dryer absorber

- Carbon injection system
- Fabric filter baghouse
- Solids and ash removal systems
- ID fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes are thermally treated in the rotary kiln incinerator. Solid wastes are fed to a ram feeder via a clamshell, a drum feed conveyor, and an auxiliary feed conveyor. A hydraulic ram pushes the solid waste into the kiln. Liquid waste from tanks and tanker trucks is fed to the primary and secondary combustion chambers through atomized liquid injectors. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the tempering chamber, which provides cooling of the combustion gases. The combustion gas exits the tempering chamber and is distributed between two identical SDAs, which provide acid gas removal and additional gas cooling. A carbon injection system is utilized for controlling dioxin/furan and mercury emissions. The activated carbon is air injected into the combustion gas immediately downstream of the convergence of combustion gases from the SDAs. From the SDAs, combustion gas is distributed to fabric filter baghouses, which provide particulate matter removal. The ID fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

Hot, wet gas is extracted downstream of the ID fan through a continuous emissions monitoring system. This system features a multi-component infrared gas analyzer that detects hydrogen chloride, carbon monoxide, and water vapor concentrations. An integrated zirconium oxide-based analyzer detects oxygen concentrations.

1.2 CMS Instrumentation

This section describes the CMS instruments used monitor regulated process parameters for demonstrating on-going compliance with the Interim HWC MACT emission standards. A summary of specifications for CMS instrumentation is provided in Table 1-2.

The Interim HWC MACT standard requires all CMS's be installed in locations that provide representative measurements of emissions or process parameters. All CMS

Table 1-2
CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 2						
High BTU Liquid Feedrate	Mass Flowmeter	FT-215	Micro Motion	D 40S-SS	0-3,600 lb/hr	Feed Line
High BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Weigh-Tronix	WI-.130	0-60,000 lb	Feed Line
Low BTU Liquid Feedrate	Mass Flowmeter	FT-216	Micro Motion	D 40S-SS	0-3,600 lb/hr	Feed Line
Low BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Weigh-Tronix	WI-.130	0-60,000 lb	Feed Line
Specialty Feed Weight	Weigh Scale	WT-204	Toledo	8140 EXP	0-4,000 lb	# 204 Specialty Feeder
Drummed Solids Feed Weight	Weigh Scale	WT-210	Toledo	A140	0-400 lb	Solid Charge Conveyor
Cylinder Gas Feedrate	dP Cell	FT-217	Yokogawa	YA11F	0-10 in. w.c. (0-60 lb/min)	Cylinder Gas Feed System
PCC Temperature	Type K Thermocouple	TT-200A/B	Modicon	B883-200	0-2500 °F	Primary Chamber
SCC Temperature	Type K Thermocouple	TT-219A/B	Modicon	B883-200	0-2500 °F	Secondary Chamber
PCC Pressure	Pressure Transmitter	PT-200	Rosemont	1151DP	-7.5 to 2.5 in. w.c.	Primary Chamber
ESV Position	Position Switch	ZS-224	Square-D	9007 CG2B2	open/close	Emergency Stack
Baghouse Inlet Temperature	Type K Thermocouple	TT-270	Modicon	833-200	0-2500 °F	SDA Outlet
Combustion Gas Flow Rate	dP Cell	FT-283	Rosemount	1151DR	0-20,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-289	COSA	ZFN-11YA1-2Z1	0-25%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-288E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-288	Fischer & Porter	10D1475	0 – 10 GPM	SDA Penthouse
Lime Slurry Density	Density Transducer	AT-968	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	SDA Penthouse

Table 1-2(continued)

CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 3						
High BTU Liquid Feedrate	Mass Flowmeter	FT-315	Micro Motion	DS-040	0-3,600 lb/hr	Feed Line
High BTU Liquid Direct Injection Feedrate	Scale	WT-315 DI	Weigh-Tronix	WI-130	0-60,000 lb	Feed Line
Low BTU Liquid Feedrate	Mass Flowmeter	FT-316	Micro Motion	DS-040	0-3,600 lb/hr	Feed Line
Low BTU Liquid Direct Injection Feedrate	Scale	WT-315 DI	Weigh-Tronix	WI-130	0-60,000 lb	Feed Line
Specialty Feed Weight	Weigh Scale	WT-304	Toledo	AI40 EXP	0-2,000 lb	#304 Hooded Feeder
Drummed Solids Feed Weight	Weigh Scale	WT-310	Toledo	A140	0-400 lb	Solid Charge Conveyor
PCC Temperature	Type K Thermocouple	TT-300A/B	Modicon	883-200	0-2500 °F	Primary Chamber
SCC Temperature	Type K Thermocouple	TT-319A/B	Modicon	883-200	0-2500 °F	Secondary Chamber
PCC Pressure	Pressure Transmitter	PT-300	Rosemount	1151 dP	-7.5 to 2.5 in. w.c.	Feed Line
TRV Position	Position Switch	ZS-324	Square-D	9007 CG2B2	open/close	Emergency Stack
Baghouse Inlet Temperature	Type K Thermocouple	TT-370	Modicon	833-200	0-2500 °F	SDA Outlet
Combustion Gas Flow Rate	dP Cell	FT-383	Rosemount	1151 DR	0-20,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-389	COSA	ZFN-11YA1-2Z1	0-25%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-388E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-388	Fischer & Porter	10D1475	0 – 10 GPM	SDA Penthouse
Lime Slurry Density	Density Transducer	AT-969	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	SDA Penthouse

Table 1 (continued)
CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 4						
Waste Feedrate to X-10 Nozzle	Mass Flowmeter	FT-129	Micro Motion	DS100S 128	0-7,000 lb/hr	Feed Line
Waste Feedrate to X-11 Nozzle	Mass Flowmeter	FT-138	Micro Motion	D100S-HY	0-6,000 lb/hr	Feed Line
Waste Feedrate to X-12 Nozzle	Mass Flowmeter	FT-145	Micro Motion	DL100S-SS	0-8,000 lb/hr	Feed Line
Waste Feedrate to X-22 Nozzle	Mass Flowmeter	FT-212	Micro Motion	D1D00S-SS	0-7,000 lb/hr	Feed Line
Clam Shell Feed Weight (shredded solids)	Load Cell	WT-001	Toledo	8140	0-2,000 lb	Ram Feed Hopper
Drum Conveyor Solids Weight	Load Cell	WT-014A	Toledo	8140	0-1,000 lb	Drum Conveyor
Auxiliary Conveyor Solids Weight	Load Cell	WT-14B	Toledo	8140	0-200 lb	Auxiliary Conveyor
PCC Temperature	Pyrometer	TT-305A/B	Ircon	Modline4 44-99-F-1-0-1	0-3,000 °F	Kiln Outlet
SCC Temperature	Type R Thermocouple	TT-317A/B	Chessel	3510	0-3,000 °F	SCC Outlet
PCC Pressure	Pressure Transmitter	PT-300	Rosemount	1151DR2F	-9.0 to 1.0 in. w.c.	Kiln Hood
Surge Vent Position	Position Switch	ZSC-026	Square-D	9007 CG2B2	open/close	Kiln Face
TRV Position	Position Switch	ZSC-316	Square-D	9007 CG2B2	open/close	Emergency Stack
Carbon Feedrate	Feeder	C-17	K-Tron	K2T35	0-100	Carbon Inject. System
Carbon Injection Carrier Gas Supply Pressure	Pressure Switch	PSL-438A	Dwyer	3330	Trip Points: ± 5 in. w.c.	Carbon Injection Line
Carbon Feeder Discharge Pressure	Pressure Switch	PSH-438B	Dwyer	3215	Trip Points: < 3 psig > 13 psig	Carbon Injection Line

Table 1 (continued)
CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 4 (continued)						
SDA X-18 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-417A/B	Modicon	B883-200	0-2,500 °F	SDA X-18 Outlet
SDA X-19 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-418A/B	Modicon	B883-200	0-2,500 °F	SDA X-19 Outlet
Combustion Gas Flowrate	Pitot Tube/dP Cell	FT-559A/B	Automation Service	1151DRF2283	0-55,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-560A/B	COSA	ZFN-11YA1-2Z1	0-20%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-556E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-615	Fischer & Porter	10D1475	0 – 80 GPM	SDA Nozzles
Lime Slurry Density	Density Transducer	DIT-609	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	Lime Silo

operating parameter measurement devices at the Veolia facility are installed in compliance with this requirement. A description of the types of CMS instrumentation follows:

Mass/Feedrate Monitors: Liquid waste feedrates from tanks are measured by coriolis mass flowmeters. Direct inject liquid feedrates from tanker truck are calculated using the continuously monitored weight of the tanker. All solid waste charges are weighed using a scale/load cell prior to being feed to the incinerator. These measurements are used to calculate pumpable waste, total waste, and constituent feedrates.

For Unit 4, the output of a calibrated feeder is utilized to calculate the feedrate of powdered activated carbon, which is injected into the plenum upstream of the baghouses.

Pressure/Differential Pressure Monitors: Primary combustion chamber pressure is measured by diaphragm actuated pressure transmitters. The position of the damper immediately upstream of the ID fan is varied to control stack gas flowrate and to maintain kiln combustion chamber negative pressure (draft). The primary combustion chamber pressure is interlocked with waste feeds.

For Unit 2, pressure drop in the cylinder gas feedstream is measured and converted to a feedrate. The feedrate is used to calculate this feedstream's contribution to the chlorine, low volatile metals, and semivolatile metals feedrates to the incinerator.

For Unit 4, pressure switches are utilized to ensure that the carbon feeder discharge pressure, and the carbon injection air blower discharge pressure are within the design limits.

The pressure drop across a pitot tube in the stack is continuously monitored and used to calculate the stack gas flowrate.

Temperature Monitors: For Units 2 and 3, redundant thermocouples are used to measure the temperature in both combustion chambers. A thermocouple is also located at the exit to the SDA and is the primary element for the SDA exit temperature control loop.

Unit 4 is equipped with redundant pyrometers in the primary chamber and redundant thermocouples in the secondary chamber. Each SDA outlet is equipped with redundant thermocouples used for temperature control and monitoring of the baghouse inlet temperature.

Emergency Safety Vent Position Monitors: The position of the emergency safety vent (ESV) is indicated as open or closed by a position transmitter. No waste or fuel can be fed if the ESV position is "open". The Emergency Safety Vent (ESV) Plan provides details on the ESV systems.

Bag Leak Detection System: A triboelectric sensor is located downstream of the ID fan and monitors the relative particulate matter loading of the combustion gas exiting the baghouses. Alarms and interlocks based on this relative measurement are indications of a potential bag leak or failure. Procedures for setup and adjustments to the bag leak detection system are not covered by this QC program. The Operation and Maintenance Plan provides details on the bag leak detection system.

Continuous Emissions Monitoring System: The CEMS continuously samples and analyzes stack gas for the concentrations of carbon monoxide (CO), Hydrogen Chloride (HCl), and moisture using a multicomponent infrared photometer. The oxygen concentration is analyzed simultaneously using a zirconium oxide analyzer. These data are used to calculate the stack gas CO concentration on a dry basis, corrected to 7% O_2. The CEMS QA Plan provides additional details on the CEMS.

2.0 CMS CALIBRATION AND PREVENTIVE MAINTENANCE

This section discusses the calibration and preventive maintenance requirements to meet the requirements of § 63.8(d).

2.1 CMS Calibration

To ensure ongoing compliance with the Interim HWC MACT standard, it is essential that the data collected from the CMS be measured and recorded in an accurate manner. Initial calibrations, subsequent calibration, and CEMS calibrations are described in this section.

2.1.1 Initial CMS Calibration

As part of Veolia's Quality Control Program, the CMS instruments were initially calibrated prior to the Interim HWC MACT compliance date. Calibration prior to the compliance date is required so that all collected data are reliable and accurate. All initial calibration data are part of the operating record. Initial calibrations of new/replacement instruments will be performed per the manufacture's written procedures. In lieu of an initial calibration for new/replacement instruments or instrument components, the facility may use a manufacturer's certification.

2.1.2 Subsequent CMS Calibration

Subsequent calibrations on CMS instrumentation will be performed as needed and in accordance with the manufacture's written procedures. Calibrations will be performed as corrective measures for high calibration drift. Calibrations may be required when restoring CMS instruments after maintenance or repairs. All calibration adjustments will be documented by records of the calibration drift determined before and after the instrument was serviced.

Some instruments such as differential pressure cells must be removed from service and bench calibrated. To minimize downtime these instruments may be replaced with a calibrated spare. The Unit 4 primary combustion chamber pyrometers will be replaced at least annually with a factory calibrated pyrometer. Electronic checks and replacements of thermocouples will be performed per the facility's Thermocouple Calibration, Operation, and Replacement Procedure.

A calibration record form is available for each CMS instrument and will be used to document calibration audits, calibrations, and replacements. The most recently completed calibration record documents that the instrument in service meets the quality control criteria set forth by this program. These calibration records contain "calibration notes" which provide the instrument technician with procedures specific to a given instrument. The calibration record forms for CMS instruments are incorporated in this QC Program by reference.

2.1.3 CEMS Calibration Audits and Calibration

CEMS QA/QC procedures are provided by the *Continuous Emission Monitoring System Quality Assurance Plan*. These procedures are maintained at the facility and describe the requirements for CEMS drift checks, audits, calibrations, preventive maintenance, and recordkeeping.

2.2 CMS Calibration Audits

CMS calibration audits are performed to determine the calibration drift (CD) of CMS instruments. Calibration Drift (CD) is the bias between the CMS instrument reading and a calibration reference. Table 2-1 presents the requirements for CMS calibration audits. Each CMS instrument will be subjected a calibration audit at the frequency indicated in Table 2-1. The calibration audit will be performed at the low-level (zero) and high-level checks indicated. The calibration check will confirm that all process variable indications (e.g., local reading, control room display) at the high-level value agree with the calibration reference within ½ of the required tolerance. Calibration adjustments/corrective actions must be taken if this calibration drift is greater than ½ of the required tolerance. If the calibration drift exceeds the required tolerance, the instrument is considered out-of-control. Section 4.0 describes the corrective actions for out-of-control, inoperative, and malfunctioning CMS.

If the accuracy of a CMS instrument is in question, the CD is determined and documented prior to performing maintenance, repairs, or adjustments. The troubleshooting/calibrations of CMS instruments will be performed in a manner consistent with the manufacturer's written procedures and recommendations. The CD determined after calibrations/corrective actions have been taken will document the effects of the adjustments and demonstrate that the instrument is performing properly.

Calibration records will document CD, which is an indicator of the stability of the CMS calibration over time. The amount of drift and stability is dependant on the type of instrument and the calibration frequency. Veolia may increase or decrease the frequency of particular calibration audits to the extent warranted by an assessment of an instrument's stability. Veolia will maintain regularly scheduled calibration audit intervals for each CMS instrument. Calibrations will be performed to prevent excessive CD and to maintain the validity of the data collected from the monitoring system.

Table 2-1

CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Calibration Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 2						
High BTU Liquid Feedrate	Mass Flowmeter	FT-215	Annually	0-5 lb/min	15-25 lb/min	10%
High BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Quarterly	0 lb	25,000 lb	10%
Low BTU Liquid Feedrate	Mass Flowmeter	FT-216	Annually	0-5 lb/min	15-25 lb/min	10%
Low BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Quarterly	0 lb	25,000 lb	10%
Specialty Feed Weight	Weigh Scale	WT-204	Quarterly	0 lb	~500 lb	10%
Drummed Solids Feed Weight	Weigh Scale	WT-210	Quarterly	0 lb	~50 lb	10%
Cylinder Gas Feedrate	dP Cell	FT-217	Annually	0 in. w.c.	10 in. w.c.	10%
Primary Combustion Chamber Temperature	Type K Thermocouple	TT-200A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Secondary Combustion Chamber Temperature	Type K Thermocouple	TT-219A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-200	Quarterly	-7.5 to -6.5	1.5 to 2.5 in w.c.	10%
ESV Position	Position Switch	ZS-224	Annually	AWFCO interlock energized when open		Pass
Baghouse Inlet Temperature	Type K Thermocouple	TT-270	See Calibration Record Form			
Combustion Gas Flow Rate	dP Cell	FT-283	Annually	0-0.05 in. w.c.	0.45-0.50 in. w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-288	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	AT-968	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-289	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-288E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

Table 2-1 (continued)
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Calibration Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 3						
High BTU Liquid Feedrate	Mass Flowmeter	FT-315	Annually	0-5 lb/min	15-25 lb/min	10%
High BTU Liquid Direct Injection Feedrate	Scale	WT-315DI	Annually	0 lb	25,000 lb	10%
Low BTU Liquid Feedrate	Mass Flowmeter	FT-316	Annually	0-5 lb/hr	15-25 lb/min	10%
Low BTU Liquid Direct Injection Feedrate	Scale	WT-315DI	Annually	0 lb	25,000 lb	10%
Specialty Feed Weight	Weigh Scale	WT-304	Quarterly	0 lb	~200 lb	10%
Drummed Solids Feed Weight	Weigh Scale	WT-310	Quarterly	0 lb	~50 lb	10%
Primary Combustion Chamber Temperature	Type K Thermocouple	TT-300A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Secondary Combustion Chamber Temperature	Type K Thermocouple	TT-319A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-300	Quarterly	-7.5 to -6.5	1.5 to 2.5 in w.c.	10%
ESV Position	Position Switch	ZS-324	Annually	AWFCO interlock energized when open		Pass
Baghouse Inlet Temperature	Type K Thermocouple	TT-370	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Combustion Gas Flow Rate	dP Cell	FT-383	Annually	0-0.05 in. w.c.	0.45-0.50 in. w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-388	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	AT-969	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-389	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-388E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

Table 2-_(continued)

CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Drift Check/Accuracy Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 4						
Waste Feedrate to X-10 Nozzle	Mass Flowmeter	FT-129	Annually	0-5 lb/min	15-25 lb/min	10%
Waste Feedrate to X-11 Nozzle	Mass Flowmeter	FT-138	Annually	0 lb	21,000 lb	10%
Waste Feedrate to X-12 Nozzle	Mass Flowmeter	FT-145	Annually	0-5 lb/min	15-25 lb/min	10%
Waste Feedrate to X-22 Nozzle	Mass Flowmeter	FT-212	Annually	0 lb	21,000 lb	10%
Clam Shell Feed Weight (shredded solids)	Load Cell	WT-001	Quarterly	0 lb	~200 lb	10%
Drum Conveyor Solids Weight	Load Cell	WT-014A	Quarterly	0 lb	~ 100 lb	10%
Auxiliary Conveyor Solids Weight	Load Cell	WT-14B	Quarterly	0 lb	~50 lb	10%
Primary Combustion Chamber Temperature	Pyrometer	TT-305A/B	Replace at least annually with factory calibrated Pyrometer			
Secondary Combustion Chamber Temperature	Type R Thermocouple	TT-317A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-300	Quarterly	-9.0 to -8.0 in. w.c.	0 to 1.0 in. w.c.	10%
Surge Vent Position	Position Switch	ZS-026	Annually	AWFCO interlock energized when open		Pass
ESV Position	Position Switch	ZS-324	Annually	AWFCO interlock energized when open		Pass
Carbon Feedrate	Feeder	WT-438	Quarterly	0 lb/min	6-30 lb/min	10%
Carbon Injection Carrier Gas Low Pressure	Pressure Switch	PSL-438A	Annually	Energize Switch		Pass
Carbon Injection Carrier Gas High Pressure	Pressure Switch	PSH-438B	Annually	Energize Switch		Pass

Table 2-1 (continued)
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Drift Check/Accuracy Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 4 (continued)						
SDA X-18 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-417A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
SDA X-19 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-418A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Combustion Gas Flowrate	Pitot Tube/dP Cell	FT-559A/B	Annually	0 in. w.c.	1.74 in w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-615	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	DIT-609	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-560A/B	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-556E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

2.3 Preventive Maintenance

Veolia takes daily proactive measures to assure that potential problems with the CMS are quickly identified and avoided, if possible. Daily maintenance checks include:

- Verification that process variables are reasonable
- Comparison of readings from redundant instruments
- Cleaning and visual check of monitoring equipment
- Communication between operators and instrument technicians

These checks are documented on a daily logsheet for each incinerator. The preventive maintenance on the CMS also includes the calibration audits previously described. All necessary parts for routine repairs of the affected CMS equipment are made readily available onsite. A spare parts inventory for each component of the CMS is included in the records maintained by the Maintenance Department. Additional details regarding preventive maintenance applicable to the CMS are provided in the facility's Operation and Maintenance Plan and the CEMS QA Plan.

3.0 CMS RECORDKEEPING AND REPORTING

This section discusses recordkeeping and reporting requirements for CMS instrumentation as specified by § 63.1211.

3.1 Recordkeeping

Veolia will follow the recordkeeping requirements as specified in § 63.10(b), including the semiannual excess emissions and CMS performance report. Veolia will maintain these records of CMS data for a minimum of 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data will be retained onsite. Below is a brief summary of these requirements.

Veolia will maintain records on the following:

- The occurrence and duration of each startup, shutdown, or malfunction of operation.
- The occurrence and duration of each malfunction of the air pollution control and monitoring equipment. Maintenance performed on the air pollution control and monitoring equipment
- Actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore the process or air pollution control system to normal operation) when such actions are different the procedures outlined in the SSMP
- All information necessary to demonstrate conformance with the SSMP
- Each period in which a CMS is malfunctioning or inoperative (including out-of-control periods)
- All required measurements needed to demonstrate compliance with a relevant standard.
- All results of performance tests, CMS performance evaluations, and opacity and visible emission observations
- All CMS calibration checks
- All adjustments and maintenance performed on CMS
- All required CMS measurements (including data recorded during unavoidable CMS breakdowns and out-of-control periods)
- The date and time identifying each period during which the CMS was inoperative except for zero (low level) and high level checks

- The date and time identifying each period during which the CMS was out-of-control as defined by § 63.8(c)(7)
- The specific identification (date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard, that occurs during periods other than startup, shutdowns, and malfunctions.
- The nature and cause of any malfunction
- The corrective action taken or preventive measures adopted
- The nature of the repairs or adjustments to the CMS that was inoperative or out-of-control
- The total process operating time during the reporting period
- All procedures that are part of quality control program developed and implemented for CMS under § 63.8(d).

All CMS instrumentation will be operated on a continuous basis. The detector response will be evaluated at least every 15 seconds, and these values will be used to calculate regulated parameters. For parameters interlocked with the AWFCO system on an hourly rolling average basis, raw data will be averaged and recorded at least once per minute. One minute averages will be used to calculate the hourly rolling averages. The pumpable waste, total waste, and constituent feedrate operating parameter limits are bases on rolling totals in lieu of rolling averages.

An integral part of the CMS is the data acquisition and data historian systems, which records all operating data generated by the CMS instruments. The data historian and associated archive files are part of the operating record. CMS instrument calibrations, maintenance activities, and corrective actions are recorded and kept in the operating record. All data collected during CMS PETs are recorded and kept in the operating record.

3.2 Reporting

Veolia will follow the reporting requirements as specified in § 63.10. In addition, Veolia will develop and include in the operating record a Documentation of Compliance (DOC) per § 63.1211(c). The DOC must include a signed and dated certification that the CEMS and CMS are installed, calibrated, and continuously operating in compliance with the requirements of Subpart EEE.

Raw data from the CMS will be collected, reduced as described in § 63.8(g), and included in the CMS PET report. This data will be analyzed to determine compliance with the HWC MACT and the results will be submitted as part of the notification of compliance required by § 63.1207(j).

The content and deadline requirements for the excess emissions and monitoring system performance reports are specified in § 63.10(e)(3)(v). The requirements for the summary report are given in § 63.10(e)(3)(vi).

As noted in § 63.10(e)(3)(vii), Veolia is required to only submit the summary report if the total duration of excess emissions or process or control system parameter exceedances for the reporting period is less than one percent of the total operating time for the reporting period, and CMS downtime for the reporting period is less than five percent of the total operating time for the reporting period. Conversely, additional reporting is required by § 63.10(e)(3)(viii) if the total duration of exceedances, or the total CMS downtime during the reporting period, is greater than the allowable percentage of the reporting period. Table 3-1 provides a list of Veolia's reporting requirements.

Table 3-1 Reporting Requirements

Regulatory Citation	Description	Frequency
§ 63.1211(c)	Record Documentation of Compliance in the operating record	Once
§ 63.10(d)(2)	Before Title V permit has been issued, owner operator must submit results of performance test.	By the 60th day following every performance test
§ 63.10(d)(2)	After Title V permit has been issued, owner operator must submit results of required performance tests.	By the 60th day following required performance test
§ 63.10(d)(4)	Progress reports	As specified in written extension of compliance
§ 63.10(d)(5)(i)	Periodic startup, shutdown, and malfunction reports (during reporting period)	Submitted simultaneous with excess emission report
§ 63.10(d)(5)(ii)	Startup, shutdown, and malfunction reports when actions are taken that are inconsistent with SSMP.	2 working days from commencement of action, followed with a letter explaining extent within 7 working days.
§ 63.10(e)(3)(i)	Submittal of semiannual excess emissions and CMS performance report	Semiannually - by the 30th day following the end of each calendar half performance test

4.0 CMS CORRECTIVE ACTIONS

If a CMS is found to be out-of-control, inoperative, or malfunctioning; corrective actions must be taken to return the CMS to normal operation. Definitions used in determining the type of corrective action required are given below.

Out-of-control: A CMS is out-of-control if:

- The zero (low level), mid-level, or high-level calibration drift exceeds two times the applicable CD specification in the applicable performance specification or procedure; or
- The CMS fails a performance test audit, relative accuracy audit, relative accuracy test audit, or linearity test audit.

The only applicable performance specification to the CMS is Performance Specification (PS) 4B of 40 CFR Part 63, Appendix B. PS 4B applies to the O_2 and CO CEMS. The requirements of PS 4B and additional requirements Veolia imposes on the CEMS are detailed in the CEMS QA Plan. In the absence of promulgated performance specification applicable to non-CEMS CMS instruments, Veolia has self-imposed a high-level CD specification, as described in Section 2.0.

When a CMS is out-of-control, Veolia will take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out-of-control. Corrective actions and retesting will continue until the CMS is returned to normal operation. The beginning of the out-of-control period is the hour that the calibration drift indicates that the CMS has exceeded its performance specifications. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the CMS is within its allowable limits. During the period the CMS is out-of-control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

Veolia will submit all information concerning out-of-control periods, including start and end dates and hours, and descriptions of corrective actions taken, in the excess emissions and continuous monitoring system performance report required by § 63.10(e)(3).

Malfunction: For use in this plan, malfunction is defined as any sudden, infrequent, and not reasonably preventable failure of air pollution control or monitoring equipment.

Malfunction also includes the failure of a process or any process equipment to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The *Program of Corrective Actions for Malfunctions* is Attachment 4 of the SSMP Plan. This program addresses how the incinerator will be operated and maintained during malfunctions. In this program, potential malfunctions are listed for each portion of the incinerator system. The malfunctions are events that are recognized by the operator, or indicated by an alarm, and threaten to cause an exceedance. In the response to the malfunction and/or alarms, the operator will apply discretion and attempt to maintain the incinerator system within regulatory limits. In the program of corrective actions, potential causes of each malfunction are listed. The operator will utilize process knowledge, job experience, and, if needed, assistance from other personnel to identify the cause of the malfunction. For each potential cause, actions to correct the failure are listed. The corrective actions prescribed may require the collaboration of multi-disciplined personnel who are qualified to return the incinerator system to proper working conditions (i.e., maintenance personnel, instrument technicians, engineering)