SUSPENSION

From: Hon. Joseph Lorigo

To: The Erie County Legislature

RE: Supporting Materials Regarding Mount Pleasant Group of Cemeteries, Toronto, Ontario

Article 1 of 5

TORONTO STAR

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> EI CHANGES

Tory job plan

... job creation. Small employers would stay small, they argued, to qualify for the EI premium break.

Oliver, who is anticipating a $6 billion-to-$8 billion surplus next year, could have done much more — and chosen better means — to spur employment growth:

> Finance Minister Joe Oliver could have done much more on the employment front

> He could have made his tax credit contingent on hiring. As it now stands, entrepreneurs can pocket the savings without creating a single job.

> He could have cut EI premiums across the board, injecting broadly based stimulus into Canada's sluggish economy.

> He could have opened the EI program to the 63 per cent of jobless who don't qualify for coverage. That would have spurred consumer spending and induced retailers to hire.

But none of these options fit the government's political agenda. Prime Minister Stephen Harper aims to use the tidy surplus his government has amassed to unveil a series of small, targeted tax breaks similar to last week's credit, saving his big announcement — a $2.5-billion-a-year affirmation that a re-elected Tory government will deliver on 2011 campaign pledge to let couples with children split their income — for the Tory platform.

That rules out all-inclusive EI relief or significant EI reform. It rules out any possibility of help for the long-term jobless, laid-off workers who need retraining and young people seeking an economic foothold. Moreover, it means Ottawa will keep collecting $2 billion a year more in EI premiums than it distributes in benefits.

The Conservative campaign team has a lot riding on this formula. At the moment, Canada is losing almost as many jobs as it creates, economic growth is sub-par, household debt levels are worryingly high and businesses are sitting on piles of unused cash, waiting for the outlook to stabilize. The government has just over a year to turn things around — at minimum to provide credible evidence it is on the right track.

If Oliver's announcement was the prototype, the Tory strategy may need a few adjustments. The owner of the flooring company

GREG PERRY/PERRYINK

'Barbecue' remark offensive to cemetery

Re Mount Pleasant residents fuming over crematorium, Sept. 10

Mount Pleasant Cemetery was deeply disappointed by the headline and content of your story about our new cremation equipment. The story failed to mention that there has not been a single complaint about the new cremation equipment at the cemetery or that we enjoy a strong relationship that goes back centuries with nearly everyone in our neighbouring communities.

The new crematorium at Mount Pleasant Cemetery is the first one in North America equipped with an automated emissions filtration system. Independent tests prove that the concerns about pollutants raised in the article are entirely unfounded.

Our crematorium is regulated by the Ministry of the Environment and the Star was provided with detailed technical data that shows the majority of tested contaminants were less than 1 per cent of the safe limits and many registered as "undetectable" (including mercury and nickel which were highlighted in the article). Odour tests were also conducted and reported more than six times lower than provincial trace standards. Interested readers can find all of the technical data on our website.

Finally, the comment attributed to neighbourhood organizer Margot Boyd referring to our crematorium as the "human barbecue down the street," would seem beneath the Star and is offensive to anyone who has ever had a family member cremated.

More and more families across the GTA are choosing cremation as part of their funeral plans. Mount Pleasant Cemetery is proud to be an industry leader and innovator in voluntarily upgrading our equipment to ensure the highest possible environmental standards are achieved while providing comfortable surroundings where families can pay their last respects at one of the most difficult times in their lives.

Rick Cowan, Mount Pleasant Group of Cemeteries, Toronto

My father was cremated about a year ago. That wound is too fresh to think of my dad in terms of the hideous "human barbecue" metaphor that Ms Boyd used in this article: a metaphor that was so vile that it made me nauseous.

Cremation is a valid and important end-of-life option for many people, for many reasons.

Donna Polgar, Toronto

Other ideas for planetarium

Local news argument flawed

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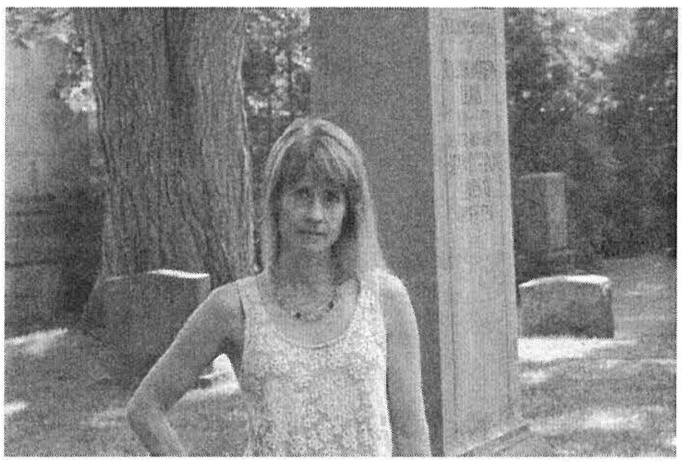
News / GTA

Mount Pleasant neighbours fume over crematorium's plans

Moore Park residents want a bylaw requiring crematoriums to be 300 metres away to apply to the cemetery, where updated equipment will reduce emissions but raise capacity.



ALEX NINO GHECIU / TORONTO STAR Order this photo

Margot Boyd, lives near the Mount Pleasant cemetery, opposes upgrading of the crematorium, citing fears of health problems

By:Alex Nino Gheciu News reporter, Published on Mon Jul 08 2013

It may be summertime, but Margot Boyd never savours the scents wafting through her neighbourhood.

"When I go out and I sniff, I wonder, 'Is this human remains or animal remains?' " said the 52-year-old, who lives a block from Mount Pleasant Cemetery and Crematorium.

Locals in the Moore Park neighbourhood are fuming over plans to upgrade the existing cremators, arguing that a new city bylaw requires at least 300 metres of distance between new crematoriums and homes due to health concerns over their emissions.

Although the Ministry of Environment has approved Mount Pleasant's application for the new cremators, local councillor Kristyn Wong-Tam has launched an appeal of the decision. The ministry, which declined to comment, is expected to respond to the appeal Monday.

Mount Pleasant argues that the crematorium, which was built 16.5 metres from the neighbourhood in 1972, has been "grandfathered" into the area and doesn't need to follow new regulations. The company says the new cremators, while allowing for more frequent burns, will greatly reduce emissions.

"All we're doing is trying to keep pace with the increase in demand that exists as more individuals in the population are choosing cremation," said Mount Pleasant spokesman Rick Cowan.

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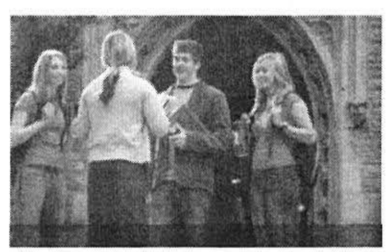

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…ses significant distance between crematoriums and public health.”

… repeatedly known they are very concerned about the health impacts of the emissions and toxins being released into the air,” said Wong-Tam. “Now that (Mount Pleasant) is applying for new expanded facilities, they should follow the new rules.”

Since Mount Pleasant had a pre-existing permit before the new ruling, “their use is allowed to continue,” said city planning spokesman Bruce Hawkins.

Trevor Currie, 43, worries about the effect living near Mount Pleasant has had on his children’s health.

“Both my kids were gestated and born living about 100 metres away from where they burn thousands of bodies and caskets a year,” he said. “Parents don’t realize their kids are living close to these harmful emissions.”

Cowan says the new equipment will reduce the crematorium’s emissions, which can include mercury, nitrogen oxides, dioxins and furans, by over 99 per cent. Carbon monoxide emissions, however, will more than double due to an increase in burner size.

“It’s baffling when you try to do the right thing and people don’t want you to,” said Cowan.

But Wong-Tam argues the more efficient incinerators could pose a “cumulative risk” of exposure to carcinogens.

“They’re saying the emissions are being reduced, but they’ll be able to burn more bodies faster,” she said. “It’s a lucrative business.”

Heather Marshall, of the Toronto Environmental Alliance, says studies show exposure to even small amounts of mercury and nitrogen oxides, found in crematory emissions, could adversely affect fetal development.

“It’s not just the dose that makes the poison,” said Marshall. “Timing is important when you’re talking about development stages of a child … And how close is too close?”

Cowan said Mount Pleasant Cemetery incinerated 1,100 bodies last year and expects the numbers to rise as market demand for cremations grows. Over half of Canadians who die this year will be cremated, compared with fewer than 5 per cent 50 years ago, according to industry statistics.

Boyd fears Mount Pleasant’s grandfathered clause has put her children at risk of developing serious illnesses.

“At some point the grandfather’s got to die,” she said. “But we’re all going to die before the grandfather.”

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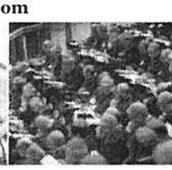
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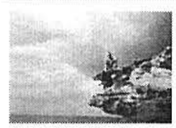
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angela.col

There goes the neighbourhood. Seriously, they are improving the emissions. I would consider this a good thing. There is a funeral home / cremation centre just west of my home, and they have ripped down the fast food place that was right next to it, for an addition and more parking. I imagine they are doing similar things there too, upgrading their existing facilities to "increase capacity" and improve emissions. This. is. good. I like that idea far better than the new cell tower Bell is putting... » more

1 year ago 0 Likes

Left for Life

is it the emissions or just the idea of bodies being incinerated next door that has these upper class twits snivelling? do they not think that they will probably be adding to the air pollution some day when their nearest and dearest opt to burn 'em baby? Give us all a break and stop giving print space to meaningless issues concerning small segments of society who should have better things to do and worry about.

1 year ago 0 Likes

Bob in Lanark County

about throwing the N-word around ? Will some objectors still look like NIMBYs if the projected increase in cremations turns 1,100 cremations per year into 10,000 or more per year with operational noises 24 hours daily ? And suppose the science behind it is sorta dodgy? There is a big difference between living next door to a family farm of 50 hogs, and next to an agribiz operation of 20,000 - all discharging into the same groundwater despite claims of miraculous nutrient treatment and "best... » more

1 year ago 0 Likes

Salal

Isn't the word nimbyism getting a little thread bare. Enough already!

1 year ago 0 Likes

Chris3

you're right. Overused, redundant, etc.
How 'bout snot-nosed adult children who think their excrement don't stink?
Is that better?

1 year ago 0 Likes

Not Rusty

It's not that the word is overused, it's the actions that warrant it.

1 year ago 1 Likes

jabalong

Talk bout Nimbyism! Mount Pleasant Cemetery's crematorium has been there for 40 years and now the people who knowingly chose to live beside a cemetery are complaining. And to top it off, the catalyst here is the cemetery's decision to upgrade to a crematorium with FEWER emissions! Can't blame the cemetery spokesman for being baffled. If the neighbours are so worried, particularly those who are planning pregnancies, then they can move somewhere else - and I'm sure make a nice profit selling a... » more

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s1xp4ck

Don't forget folks. Tuesday is Soylent Green Day.

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http://futurama.wikia.com/wiki/Soylent_Green

1 year ago 0 Likes

MoreNutbars

why do they always have fences around cemeteries? why? cuz people are just dying to get in! :)'

1 year ago 0 Likes

Bob in Lanark County

If the science behind it can credibly show that the 'AFTER ' bottom line emissions are no worse nor in higher concentration than the 'BEFOREs", it will NOT be easy to get rid of "grandfathering" of an essential service. Dislike or jealousy of objectors is not helpful for a community to sort this out either. Maybe the 1972 standards were too lax: anecdotally some hospital incinerators 40 /50 years ago discharged some pretty foul stuff albeit at lower volumes. If the approvals of cleaner ? ... » more

1 year ago 0 Likes

Linda Anne

When moving about in India and passing a roadside fire one has to look close to see if it is a funeral pyre or just someone burning household waste

1 year ago 0 Likes

read this!

I've heard a lot of people are dying to get into that cemetery.

(come on - see what I did there?!?!? I killed it!)

1 year ago 0 Likes

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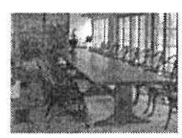

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Mount Pleasant crematorium neighbours still fuming

Despite new and improved equipment, nearby residents still worry about environmental hazards.

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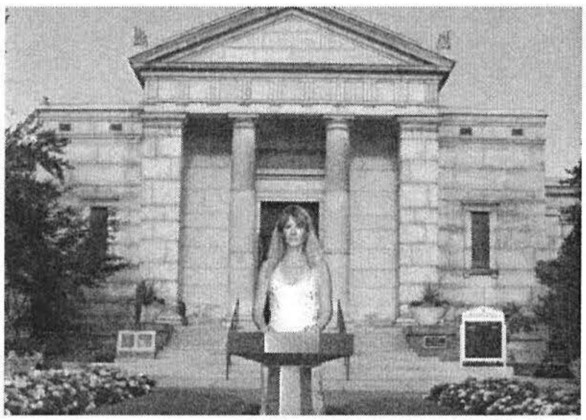

ANDREW FRANCIS WALLACE / TORONTO STAR Order this photo

Margot Boyd stands outside Mount Pleasant Cemetery's mausoleum which houses its upgraded crematorium. She and other Moore Park residents are still upset about potential hazards from the "state-of-the-art" equipment.

By:Antonia ZerbisiasFeature Writer, Published on Tue Sep 09 2014

The Mount Pleasant Group of Cemeteries has replaced its old crematorium in the Moore Park area but it's still a burning issue with local residents.

Open policard for Councillor Kristyn Wong-Tam

"We've been suffering for over 40 years from that human barbecue down the street," protests neighbourhood organizer Margot Boyd of Friends of Toronto Public Cemeteries.

Her group and their city councillor, Kristyn Wong-Tam, say they were "taken aback" to learn that the upgraded facility had been in operation since April, performing nearly 300 cremations since then.

"They didn't even tell us that they fired it up," says Boyd. "Are they going to tell us if there's a toxic spill?"

The battle was sparked two years ago when Mount Pleasant announced the upgrade to its 94-year-old mausoleum.

The first of two old "retorts" — as the furnaces are called — was removed last year after having been in operation since 1972. The second came out last spring. That's when a "state-of-the-art facility" was installed, requiring an overhaul of the lower level of the stately mausoleum.

"We wanted to renovate the building to install the most advanced equipment available globally," says Rick Cowan, Mount Pleasant's assistant vice-president of marketing and communications. "We didn't have to do that. We could have refurbished the existing equipment."

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[illegible]d the crematorium out, referring to a 2013 city bylaw requiring new [illegible]d at least 300 metres from any homes. The facility backs onto [illegible]ewood Dr., only 16.5 metres away from nearby residences.

[illegible] Wong-Tam, residents launched, and lost, an appeal.

"Residents felt it should have been treated like a new crematorium application," says Wong-Tam. "The Mount Pleasant Group of Cemetery folks said no, all they were doing was upgrading equipment.

"But they were speaking from both sides of their mouths because, on the other hand, they were bragging about all this new crematorium equipment and the new facilities they had made."

(Meanwhile, Wong-Tam and the residents' group are involved in another legal action concerning Mount Pleasant's governance, but neither side will discuss the issue as it is ongoing.)

Mount Pleasant says the new crematorium is not a threat, comparing its annual emissions to that of 294 residential fireplaces each burning 10 kilograms of wood during an evening.

Cowan produces emissions test results indicating that pollutants and possible carcinogens have been all but eliminated.

"It's so close to 100 per cent (clean), it's amazing," he says. "Nobody else in North America has this equipment now."

As he leads a tour of the mausoleum, Cowan begins with the chapel, lined with marble and distinguished by art deco fixtures and flourishes. Nothing much has changed here in nearly a century. The old catafalque, where the casket rests during services before being lowered below, still dominates.

The cremation process begins when hydraulic equipment conveys the casket from there to a "witnessing" room on the lower level.

On one side, some armchairs and boxes of tissue. On the other, gleaming steel doors fronted by a platform from where the casket is sent into the retort. Behind the steel doors, 800C degrees of searing heat, which burns faster and more cleanly than the old retorts.

This room is important for members of the Hindu and Sikh faiths, Cowan says, explaining that not only is cremation essential to their funeral services but tradition demands that the oldest son (or other relative) light the flame. Here, that means pushing a green button mounted on the wall.

Demand for cremation in the GTA has been increasing, driven in part by changing demographics, new attitudes about religion and burials, and also for budgetary reasons. The percentage of funerals conducted via cremation is now at 62.1 per cent, up from 47.2 per cent in 1997.

Cowan heads down the basement hall to the back end of the retort. Air conditioners noisily hum overhead. Gleaming steel machines which serve to scrub out emissions fill the room.

At the end of an extended hours-long process, Cowan says, small amounts of toxic waste may result. At most, some four or five 45-gallon drums of toxic waste are produced annually, all safely disposed of by waste removal experts.

"The Ministry of the Environment has imposed the most stringent requirements on us; there's no other crematorium that operates like this," he says, listing all the required certificates of compliance approval.

Still, area residents have repeatedly tried to take their concerns to the province. They say former environment minister Jim Bradley ignored their requests for a meeting with Wong-Tam. They hope the new minister, their own MPP Glen Murray, "might be more open to protecting the interests of his constituents, and will agree to meet with our councillor."

In an email, Murray's office says: "The ministry will continue to monitor the performance of the new cremation equipment, to ensure the equipment is operating in a way that's protective of the environment and surrounding community."

Boyd just shakes her head, saying residents will never really know what's blowing their way.

"I don't know what burning mercury (from dental fillings) smells like — or vapourized nickel (casket handles), two examples of substances that are extremely toxic.

"It is my understanding that although we may associate a bad smell with a contaminant, it is also possible to have contamination without having any smell to it at

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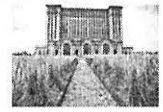
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David David

"They didn't even tell us that they fired it up"

...and you didn't notice.

Case closed.

Phil4444

I think Margot may be on to something...anything "smoke" related is bad...I think the crematorium should embrace the new trend.

Instead of "burning" them, maybe they could start, "vaping" them...I hear it's the latest trend, is "smokeless" and without the toxicity!

matt99

@Phil4444 Resomation is the word you were looking for. That's where they render you, flush you down the drain into the lake so you can go round again and become part of the toast to yourself at your memorial wake:-)

NotBrainwashed

Before these morons go to the media with their complaints they should stop and ask themselves one question. "Was the thing I'm complaining about here before I moved in?" If the answer is yes, then stop and shut up. You chose to live there. Move if you think you made a bad choice.

blork

Wow. 100 comments and not one for this chick and her cause. Move on, woman.

blork

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...me wannabe socialist won't attach themselves to? Here's a ...re for 40, this chick doesn't look near that. Howz about you ...othing to see here except Nimbyism. I'll take the crematorium

Dave Smith

This is curious. They say they have been putting up with the crematorium for 40 years. I would imagine that over 40 years most of those homes would have been sold at least one, meaning that all those years people have been buying homes near it. What is even more curious is that something so offensive to them has been operating since April and no one know. It can't be that much of a problem

christine.stevenson.988

typical n.i.m b.y idiots. it had been there already for years and now they upgrade and it becomes a problem? do they think they are going to catch something? what a bunch of moronic buffoons. what a disgusting way for them to talk about what is to most, a solemn and grief filled time. terms like "human bbq" and "fire it up", very insensitive.

other than the poison b.s. that falls out of these dummies mouths, i'd be more worried if there were a cemetery nearby. when it comes to "toxic spills".. » more

FlyOnTheWall

@christine stevenson 988: You have raised a very real concern, one that I've thought about often. Cremation is by far the cleaner alternative to burial. Mount Pleasant cemetery is massive. It stretches from Yonge St. all the way over to Bayview Ave. and I'm sure, holds hundreds of thousands of bodies. There is an underground creek that runs through the cemetery and all that contaminated water goes straight into Lake Ontario. It's a very disconcerting thought, one that kid of makes me queasy.

whosthatguy

This story is silly and so are the reactions of the neighbours. Full of concerns that are unfounded.

Electionsahead

re:" "They didn't even tell us that they fired it up," says Boyd. "Are they going to tell us if there's a toxic spill?"

This Boyd Bro*d is a real fool. Surprised she is not running for mayor

spikeymom

If you bought a house near a cemetery, you knowingly purchased near ALL the activities that happen in a cemetery. I think you won't find much sympathy here, especially when you use crude and hurtful language, as Margot did. I'm a senior who, in my childhood, passed by Mt. Pleasant on the way to church, every Sunday of my childhood. Never did I hear or read any complaints like Margot's. I think Margot is way out of line

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Prepared for:

Mount Pleasant Group of Cemeteries

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Prepared by:

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Project 147201.0213
September 8, 2014

Report Prepared By:

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Report Reviewed By:

J. Trought

John Trought, P. Eng.
Principal Consultant

EXECUTIVE SUMMARY

Church & Trought (CTI), *A Trinity Consultants Company*, was retained by Mount Pleasant Group of Cemeteries ("MPGC"), located at 375 Mount Pleasant Road in Toronto, Ontario, to conduct Ontario Ministry of the Environment (MOE) compliance source testing as identified as a condition of the Environmental Compliance Approval (ECA) Number 0257-8Y4PKD, issued April 24, 2013.

The Facility contains one cremation unit for human remains, equipped with a primary and secondary chamber. A continuous emission monitoring (CEM) system measures and records the temperature, oxygen and carbon monoxide of the primary and secondary chambers. These measured parameters are indicators of the efficiency of the combustion process. The flue gas from the secondary chamber pass through a cooler before proceeding to the flue gas treatment system consisting of a sodium bicarbonate and powdered activated carbon injection system. The cooled and treated gas subsequently flows to the pulse-jet type baghouse, and finally discharges to the outside through a stack.

The ECA identified the following contaminants to be tested on the gas exhausting the pollution control equipment of the human cremation unit:

- Total Suspended Particulate Matter
- Selected Metals (17 target metals)
- Semi-volatile Organic Compounds (7 dioxins isomers, 10 furans isomers, 12 dioxin-like PCBs, 33 selected Polycyclic Organic Matter (PAHs))
- Volatile Organic Compounds (VOCs), including vinyl chloride (45 target VOCs as listed in the approved Pre-Test Plan)
- Hydrogen Chloride
- Nitrogen Oxides
- Sulphur Dioxide
- Carbon Monoxide
- Carbon Dioxide
- Oxygen
- Total Hydrocarbons Compounds (Total Gaseous Non-Methane Organics)
- Odour

The compliance source test was successfully completed between June 23, 2014 and June 26, 2014 in accordance with the methodology described in the Pre-Test Plan approved by the MOE and subsequent correspondences with the Source Assessment Officer, and according to standards identified in the Ontario Stack Testing Code and US-EPA Reference Methods. The only deviation from the MOE-approved Pre-Test Plan was the methodology for the RA Test due to the presence of stratified flows at the Facility's CEMS port location. This deviation from the Pre-Test Plan for the RA Test, including the new RA Test methodology, was conducted in consultation with Mr. Guillermo Azocar of the MOE Technology Standards Branch.

The modelled results of this program are well below the applicable MOE POI criteria for all tested substances. An emission summary table summarizing the emission rates, the modelled emission concentrations and the comparison to the MOE standard is shown in Table (i).

The maximum modelled odour concentrations at the receptors is 0.16 OU, which is well below the criteria of 1 OU stated in the ECA.

The concentration of oxygen in the undiluted flue gas leaving the secondary chamber ranged from 10.3% to 12.1%, which satisfies the condition specified in the ECA.

The maximum oxygen corrected total hydrocarbons (non-methane) was measured to be 3.0 ppm, well below the 100 ppm specified in the ECA.

The O_2 CEMs channel had a relative accuracy of 0.4% at 9.98% O_2 and 0.3% at 21.11% O_2. This meets the relative accuracy specified in the ECA of less than or equal to 10 percent.

The CO CEMs channel had a relative accuracy of 0.5% at 25.1 ppm CO, and 0.4% at 80.5 ppm CO, as summarized in Table 5-14. This meets the relative accuracy specified in the ECA of ≤10 percent, or ±5% ppm, whichever is greater.

Table (i): Emission Summary Table for Contaminants At or Above Laboratory Detection Limits

(continued on next page)

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria	Limiting Effect	Reference	Percent of POI Limit
		(g/s)	(ug/m³)	(hours)	(ug/m³)			%
Particulate matter	N/A	2.79E-04	3.10E-02	24	120	Visibility	Sch. 3	0.03%
Hydrogen chloride	7647-01-0	1.48E-02	1.64E+00	24	20	Health	Sch. 3	8.19%
Carbon monoxide	630-08-0	1.29E-03	6.44E-01	0.5	6000	Health	Sch. 3	0.01%
Dioxins and Furans*	N/A	1.92E-12	2.13E-10	24	1.00E-07	Health	Sch. 3	0.21%
Nitrogen oxides	10102-44-0	7.11E-02	2.92E+01	1	400	Health	Sch. 3	7.31%
Nitrogen oxides	10102-44-0	7.11E-02	7.89E+00	24	200	Health	Sch. 3	3.95%
Sulphur dioxide	7446-09-5	1.25E-02	1.39E+00	24	275	Health	Sch. 3	0.50%
Antimony	7440-36-0	1.19E-07	1.32E-05	24	25	Health	Sch. 3	0.00%
Arsenic	7440-38-2	1.35E-07	1.50E-05	24	0.3	Health	Guideline	0.00%
Barium	7440-39-3	1.32E-06	1.47E-04	24	10	Health	Guideline	0.00%
Beryllium	7440-41-7	3.00E-08	3.33E-06	24	0.01	Health	Sch. 3	0.03%
Cadmium	7440-43-9	4.80E-08	5.33E-06	24	0.025	Health	Sch. 3	0.02%
Chromium	7440-47-3	1.25E-06	1.39E-04	24	0.5	Health	Guideline	0.03%
Cobalt	7440-48-4	7.30E-08	8.10E-06	24	0.1	Health	Guideline	0.01%
Copper	7440-50-8	1.53E-06	1.70E-04	24	50	Health	Sch. 3	0.00%
Lead	7439-92-1	2.29E-07	2.54E-05	24	0.5	Health	Sch. 3	0.01%
Lead	7439-92-1	2.29E-07	7.81E-06	30-day	0.2	Health	Sch. 3	0.00%
Mercury	7439-97-6	1.96E-06	2.18E-04	24	2	Health	Sch. 3	0.01%
Molybdenum	7439-98-7	5.13E-06	5.69E-04	24	120	Particulate	Guideline	0.00%
Nickel	7440-02-0	2.66E-06	2.95E-04	24	2	Vegetation	Sch. 3	0.01%

Table (i): Emission Summary Table for Contaminants At or Above Laboratory Detection Limits

(continued from previous page)

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria	Limiting Effect	Reference	Percent of POI Limit
		(g/s)	(ug/m³)	(hours)	(ug/m³)			%
Selenium	7782-49-2	2.99E-07	3.32E-05	24	10	Health	Guideline	0.00%
Silver	7440-22-4	6.90E-08	7.66E-06	24	1	Health	Sch. 3	0.00%
Vanadium	7440-62-2	9.00E-08	9.99E-06	24	2	Health	Sch. 3	0.00%
Zinc	7440-66-6	4.79E-06	5.32E-04	24	120	Particulate	Sch. 3	0.00%
Vinyl chloride	75-01-4	1.83E-07	2.03E-05	24	1	Health	Sch. 3	0.00%

** Dioxin and Furan POI concentrations have units of i-TEQ/m³*

Table (ii): Emission Summary Table for Odour

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria
		(OU/s)	(OU)	(hours)	(OU)
Odour	N/A	248	0.16	10-min	1

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Appendices

1.0 INTRODUCTION

1.1 Summary of Test Program

Church & Trought (CTI), *A Trinity Consultants Company*, was retained by Mount Pleasant Group of Cemeteries ("MPGC"), located at 375 Mount Pleasant Road in Toronto, Ontario, to conduct Ontario Ministry of the Environment (MOE) compliance source testing as identified as a condition of the Environmental Compliance Approval (ECA) Number 0257-8Y4PKD, issued April 24, 2013. A copy of the ECA is provided in Appendix A. The correspondence from the MOE granting approval of the Pre-Test Plan is provided in Appendix B.

The Facility contains one cremation unit for human remains, equipped with a primary and secondary chamber. A continuous emission monitoring (CEM) system measures and records the temperature, oxygen and carbon monoxide of the primary and secondary chambers. These measured parameters are indicators of the efficiency of the combustion process. The flue gas from the secondary chamber pass through a cooler before proceeding to the flue gas treatment system consisting of a sodium bicarbonate and powdered activated carbon injection system. The cooled and treated gas subsequently flows to the pulse-jet type baghouse, and finally discharges to the outside through a stack.

Test Contaminants

The ECA identified the following contaminants to be tested:

- Odour
- Halogenated and Aromatic Volatile Organic Compounds
- Total Hydrocarbons Compounds (Total Gaseous Non-Methane Organics)
- Hydrogen Chloride
- Total Suspended Particulate Matter
- Vinyl Chloride
- Nitrogen Oxides
- Sulphur Dioxide
- Metals
    - Antimony
    - Arsenic
    - Barium
    - Beryllium
    - Cadmium
    - Chromium
    - Cobalt
    - Copper
    - Lead
    - Mercury
    - Molybdenum
    - Nickel
    - Selenium
    - Silver
    - Thallium
    - Vanadium
    - Zinc
- Dioxins, Furans and Dioxin-like PCBs
    - 2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]
    - 1,2,3,7,8-Pentachlorodibenzo-p-dioxin [1,2,3,7,8-PeCDD]
    - 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,4,7,8-HxCDD]

- 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,6,7,8-HxCDD]
- 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin [1,2,3,7,8,9-HxCDD]
- 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [1,2,3,4,6,7,8-HpCDD]
- 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin [1,2,3,4,6,7,8,9-OCDD]
- 2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]
- 2,3,4,7,8-Pentachlorodibenzofuran [2,3,4,7,8-PeCDF]
- 1,2,3,7,8-Pentachlorodibenzofuran [1,2,3,7,8-PeCDF]
- 1,2,3,4,7,8-Hexachlorodibenzofuran [1,2,3,4,7,8-HxCDF]
- 1,2,3,6,7,8-Hexachlorodibenzofuran [1,2,3,6,7,8-HxCDF]
- 1,2,3,7,8,9-Hexachlorodibenzofuran [1,2,3,7,8,9-HxCDF]
- 2,3,4,6,7,8-Hexachlorodibenzofuran [2,3,4,6,7,8-HxCDF]
- 1,2,3,4,6,7,8-Heptachlorodibenzofuran [1,2,3,4,6,7,8-HpCDF]
- 1,2,3,4,7,8,9-Heptachlorodibenzofuran [1,2,3,4,7,8,9-HpCDF]
- 1,2,3,4,6,7,8,9-Octachlorodibenzofuran [1,2,3,4,6,7,8,9-OCDF]
- 3,3',4,4'-Tetrachlorobiphenyl [3,3',4,4'-tetraCB (PCB 77)]
- 3,4,4',5- Tetrachlorobiphenyl [3,4,4',5-tetraCB (PCB 81)]
- 3,3',4,4',5- Pentachlorobiphenyl (PCB 126) [3,3',4,4',5-pentaCB (PCB 126)]
- 3,3',4,4',5,5'- Hexachlorobiphenyl [3,3',4,4',5,5'-hexaCB (PCB 169)]
- 2,3,3',4,4'- Pentachlorobiphenyl [2,3,3',4,4'-pentaCB (PCB 105)]
- 2,3,4,4',5- Pentachlorobiphenyl [2,3,4,4',5-pentaCB (PCB 114)]
- 2,3',4,4',5- Pentachlorobiphenyl [2,3',4,4',5-pentaCB (PCB 118)]
- 2',3,4,4',5- Pentachlorobiphenyl [2',3,4,4',5-pentaCB (PCB 123)]
- 2,3,3',4,4',5- Hexachlorobiphenyl [2,3,3',4,4',5-hexaCB (PCB 156)]
- 2,3,3',4,4',5'- Hexachlorobiphenyl [2,3,3',4,4',5'-hexaCB (PCB 157)]
- 2,3',4,4',5,5'- Hexachlorobiphenyl [2,3',4,4',5,5'-hexaCB (PCB 167)]
- 2,3,3',4,4',5,5'- Heptachlorobiphenyl [2,3,3',4,4',5,5'-heptaCB (PCB 189)]

- Polycyclic Organic Matter
  - Acenaphthylene
  - Acenaphthene
  - Anthracene
  - Benzo(a)anthracene
  - Benzo(b)fluoranthene
  - Benzo(k)fluoranthene
  - Benzo(a)fluorene
  - Benzo(b)fluorene
  - Benzo(ghi)perylene
  - Benzo(a)pyrene
  - Benzo(e)pyrene
  - 2-Chloronaphthalene
  - Chrysene
  - Coronene
  - Dibenzo(a,c)anthracene
  - 9,10-Dimethylanthracene
  - 7,12-Dimethylbenzo(a)anthracene
  - Fluoranthene
  - Fluorene
  - Indeno(1,2,3-cd)pyrene
  - 2-Methylanthracene
  - 3-Methylcholanthrene
  - 1-Methylnaphthalene
  - 2-Methylnaphthalene
  - 1-Methylphenanthrene
  - 9-Methylphenanthrene
  - Naphthalene
  - Perylene
  - Phenanthrene
  - Picene
  - Pyrene
  - Tetralin
  - Triphenylene

Sources Tested:

- The ECA required the source test to be conducted in order to determine the emission rates of the test contaminants from the cremation unit (including the associated pollution control equipment). There is one stack that discharges contaminants from the cremation unit and associated pollution control equipment to the environment. Samples were collected from a port located on the exit duct leading to the stack for discharge to the environment.

- Additionally, the test program involved completing the Relative Accuracy (RA) requirements for the Facility's Continuous Emission Monitoring (CEM) system. The RA testing was completed prior to the triplicate tests for the source test contaminants.

Compliance testing occurred from June 23, 2014 through June 26, 2014. The main source testing program followed protocol outlined in the Pre-Test Plan created by CTI and approved by the MOE in a correspondence dated May 15, 2014. The RA testing component of the source testing program deviated from protocol outlined in the Pre-Test Plan due to flow stratification at the location of the Facility's RA ports. The revised RA testing methodology was conducted in consultation with Mr. Guillermo Azocar of the MOE Technology Standards Branch, and is detailed Section 4.1 of this report.

Two (2) isokinetic triplicate tests, two (2) non-isokinetic triplicate tests, a triplicate sampling for odour, and CEMS monitoring were conducted under maximum testable operating conditions for the cremation process. Odour samples were submitted for analysis to an 8-member panel at Pinchin Laboratories located in Mississauga, Ontario. All other samples were submitted for analysis to Maxxam Analytics located in Mississauga, Ontario.

1.2 Key Personnel

The test program was implemented under the direction of John Trought, principal consultant at CTI. Field testing was conducted by Chris Scullion (process monitoring), Mike Prince (sampling technician). The primary facility contact for the test program was Bryan Watson of MPGC. The qualifications of the sampling team is provided in Appendix C.

1.3 Test Program Organization

COMPANY SUBJECT TO SOURCE TEST

1.	Company Name:	Mount Pleasant Group of Cemeteries
	Company Office Address:	65 Overlea Boulevard, Suite 500, Toronto, Ontario M4T 2V8
	Plant Address:	375 Mount Pleasant Road, Toronto, Ontario M4H 1P1
2.	Plant Contact:	Bryan Watson
	Position:	Project Coordinator, Development
	Telephone Number:	416-696-0049 ext. 6572
	Fax:	416-485-1672

SOURCE TESTING COMPANY

3. Source Testing Company:	Church & Trought, *A Trinity Consultants Company*
Address:	885 Don Mills Road, Suite 106, Toronto, ON M1H 2V3
4. Project Manager:	John Trought, P. Eng.
Position:	Principal Consultant
Telephone:	416-391-2527 ext. 23
Fax:	416-391-1931
5. Project Co-ordinator:	Chris Scullion, B.E.Sc.
Telephone:	416-391-2527 ext. 30
Fax:	416-391-1931
6. Sampling Team:	Chris Scullion, Mike Prince

MINISTRY OF ENVIRONMENT – Technology Standards Section, Standards Development Branch

7. Source Assessment Specialist:	Guillermo Azocar
Address:	40 St. Clair Avenue West, 7th Floor
Telephone Number:	416-327-6403
Fax:	416-327-2936

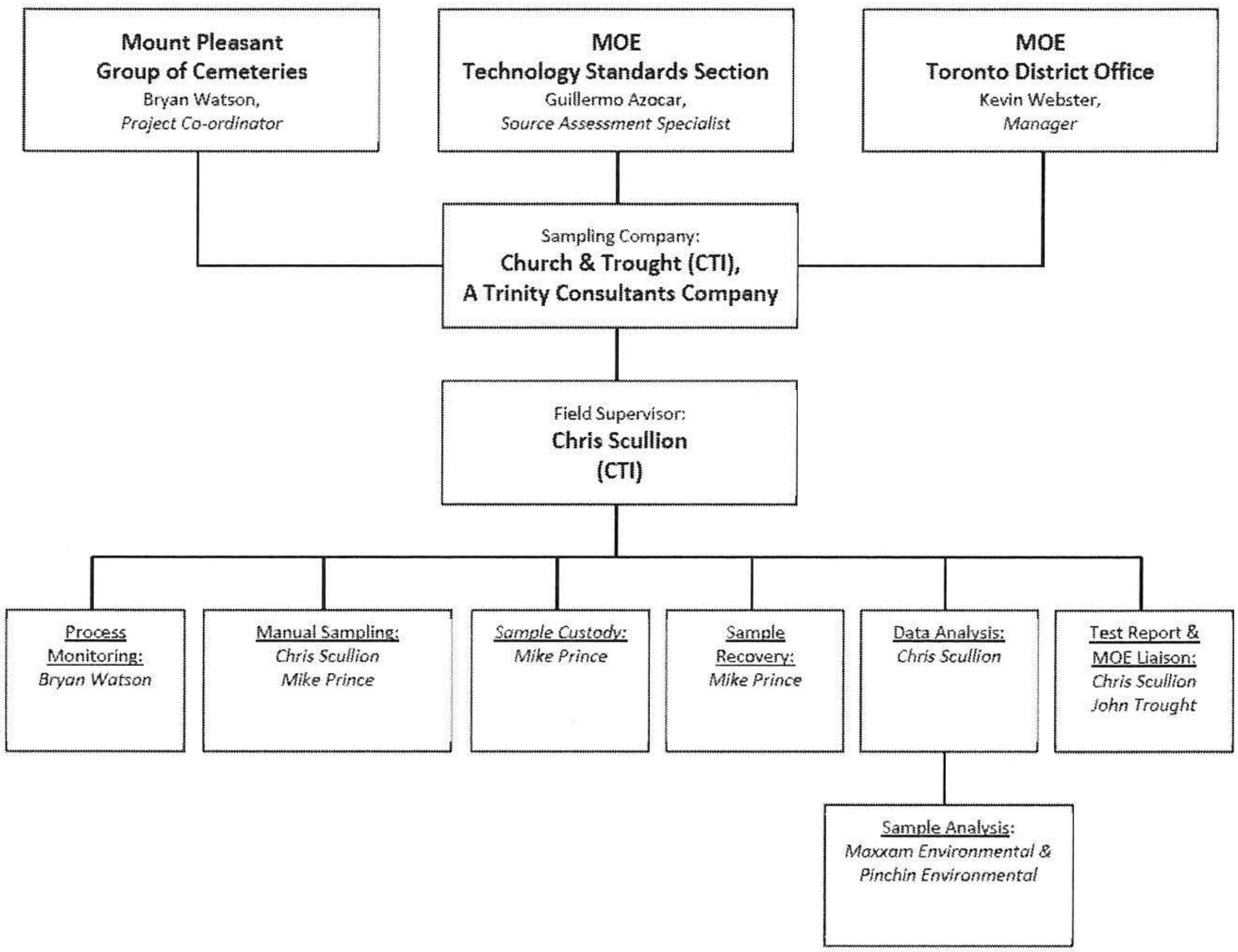
MINISTRY OF ENVIRONMENT – Local District Office

8. District Office:	Toronto District Office
District Manager:	Kevin Webster
Telephone Number:	416-326-5536
Fax:	416-325-6346

ANALYTICAL LABORATORY

9. Analytical Laboratory:	Maxxam Environmental
Analytical Coordinator:	Clayton Johnson
Telephone Number:	905-817-5769
10. Analytical Laboratory:	Pinchin Environmental
Analytical Coordinator:	Spencer Ludwig
Telephone Number:	905-817-5762

Figure 1.3 Test Program Organization



2.0 SOURCE DESCRIPTION

2.1 Process Description

The new cremation unit, *Facultatieve Technologies FT-III Cremator,* was installed in April 2014 and is designed with a primary and a secondary combustion chamber. The primary chamber is equipped with a burner having a maximum heat input of 900,000 BTU/hr or 949,550 KJ/hr. The secondary chamber is equipped with a burner having a maximum heat input of 1,200,000 BTU/hr or 1,266,070 KJ/hr.

The primary chamber burners preheat the primary chamber at the start of the operating day and maintains the primary chamber temperature above the pre-set values (800 °C) during the cremation cycle. The secondary chamber burner preheats the secondary chamber at the start of the working day and maintains the secondary chamber temperature above the minimum temperature (850 °C) during each cremation cycle.

Once both chambers have reached the desired temperatures, the Programmable Logic Controller (PLC) system releases the casket loading door interlock. The casket can then be placed inside the primary cremation chamber.

Human remains are loaded into the primary chamber of the cremation unit. Only one body is in the combustion unit at any given time. The natural gas-fired burner in the primary chamber vaporizes the water content and the organic portion of the human body. Following the cooling period, the remains are removed from the chamber.

Emissions generated from the burning of the body in the primary chamber move to the secondary chamber, where the flue gases make numerous passes within the secondary combustion zone, and particulate matter, unburned carbon and other combustible material not consumed in the primary chamber are incinerated. The secondary chamber acts as a pollution control of odour and contaminants.

The flue gas from the secondary chamber passes through a flue gas cooling system to reduce the temperature of the gases from approximately 850 °C to filter operating temperature range of 120 °C to 150 °C. The heat removed from the flue gases is transferred by a water / ethylene glycol circulation system to a dedicated air blast cooler located externally from the filter equipment.

The cooled flue gas passes through a reagent dosing system where the fresh reagent is added to the flue gases. The flue gases and the reagent are mixed within a reaction volume prior to entering the filter. The addition of the reagent into the flue gases results in a chemical reaction forming solid particles; the reagent neutralizes the acid gases to solid particles, and adsorbs dioxins, furans and vaporous mercury and mercury salts onto solid carbon particles.

The flue gases with reagent pass into the bag filter housing where the solid materials are filtered out of the flue gases. Clean, filtered gases pass from the filter housing through ductwork to a speed controlled exhaust gas fan and then to atmosphere through a chimney stack.

The Facility contains a continuous emissions monitoring (CEM) system consisting of *Siemens Ultramat 23 Analyser* to monitor the CO and O_2 concentrations in the undiluted flue gas exiting the secondary chamber, *PCME Dustalert 60* to measure particulate concentration in the flue gas ductwork between the filter bag outlet and the connection to the chimney and in the secondary chamber and in the outlet of the primary chamber.

2.2 Maximum Operating Condition During Source Testing Program

The Facility contains one cremation unit; therefore, only one casket can be cremated at any given time.

The following operating scenarios were tested:

- One burn at a time, with each burn lasting 90 minutes;
- Four burns per day;
- One source test run comprising of two burns (3 hours long)

The following is a summary of key operating parameters for the Facility:

Table 2-1: Source Test Operating Scenarios

Number of shifts:	1
Shift hours:	9
Normal operating hours for equipment:	70 to 90 minutes per cremation (body); 9 hours per day
Warm-up time for equipment:	Primary Chamber: varies pending usage Secondary Chamber: varies pending usage
Total number of lines:	1
Normal number of lines operating simultaneously:	1
Maximum number of lines operating simultaneously:	1
Indicate if process is Batch/Cyclic/Continuous:	Batch
Components of product:	Inorganic matter
Components of feed:	Organic matter
Type of product:	Ash
Type of feed:	Wooden Casket and Human Remains
Temperature (°C) of process:	Primary Chamber: 800 °C Secondary Chamber: 850 °C
Certificate of Approval maximum feed rate:	40 cremations per week

2.3 Control Equipment Description

All combustion gases from the primary chamber are directed to the secondary chamber to incinerate particulate matter, unburned carbon and other combustible material not consumed in the primary chamber. The operating parameters for the secondary chamber is summarized in Table 2-2.

Table 2-2: Operating Parameters for Secondary Combustion Chamber

Minimum combustion temperature of Secondary Chamber before Primary Chamber is Loaded and throughout each combustion	850 °C
Gas retention time	2 seconds at 850 °C

The gases exiting the secondary chamber pass through a heat exchanger (air to water cooler), also known as a flue gas cooler or a boiler, to reduce the temperature of the gases from approximately 850 °C to 120-150°C. The temperature of the gases is reduced down to the filter operating temperature range to protect the baghouse filters.

The cooled flue gases pass through a Flue Gas Treatment (FGT) system where the gases are dosed with Factivate® reagent, which consists of activated carbon and sodium bicarbonate. The Factivate® reagent is a neutralizing/adsorbing reagent, and neutralizes acid gases to solid particles and adsorbs dioxins, furans and vaporous mercury and mercury salts onto solid carbon particles.

The flue gases and reacting agents pass into the bag filter housing where the solid materials are filtered out of the flue gases. A cake of solid material builds up on the outside of the filter bags and this provides a second reaction site between the neutralizing/adsorbing reagent and the acid gases, dioxins and mercury.

Clean, filtered gases pass from the filter housing through ductwork to a speed controlled exhaust gas fan and then to atmosphere via the chimney. The control equipment description for the baghouse is summarized in Table 2-3.

Table 2-3: Control Equipment Description for Baghouse

	Baghouse
Process	Cooled flue gas from cremation unit
Baghouse Name and Model	Nederman, FD3/2.5/30
Cleaning Mechanism Type	Pulse-jet
Design Airflow	0.69 m^3/s maximum
Filter Type	Cassette-type filter, synthetic fibre
Number of Filters	60 filter cassettes
Filtering Area	55 m^2
Filter Cleaning System	Automatic; Typically filter cleaned at end of operational day

The pressure drop across the bag filter elements is permanently monitored and, when a pre-set pressure differential is reached, the cake on the outside of the filter bags is dislodged by a reverse pulse of compressed air. This is done to each row of bags in sequence until the pressure difference across the filter elements is restored to the normal operating level.

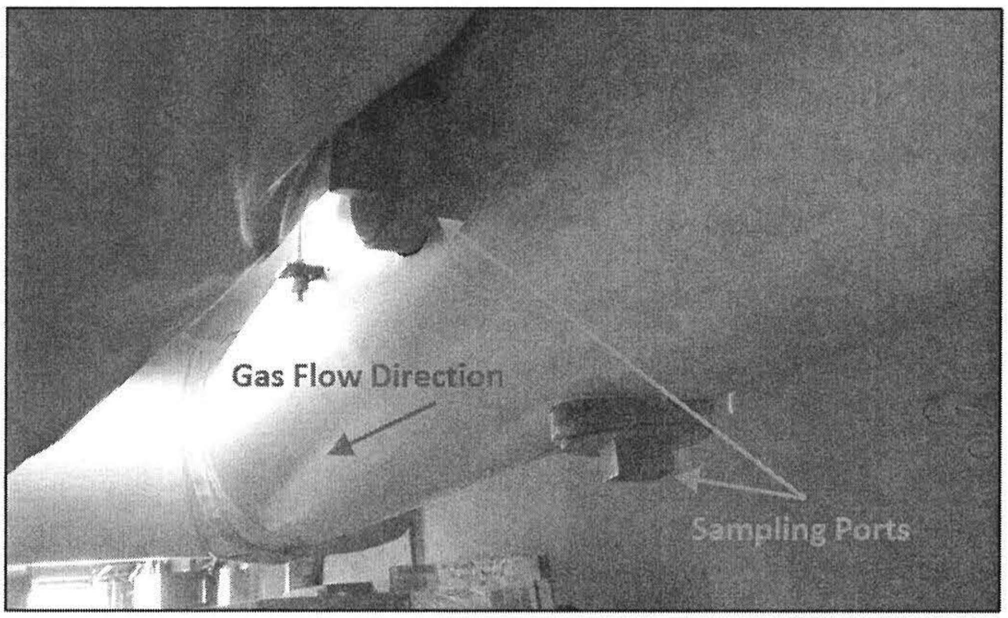
The spent reagent dislodged from the filter bags is collected in the base hopper of the bag filter from which it is removed by a series of screw conveyors into a discharge chute to a collection drum for sealing and offsite disposal.

2.4 Sampling Locations

The cooled and filtered flue gas exiting the baghouse described in Section 2.3 are ducted and exhausted from a chimney located on the roof.

With the exception of Total Hydrocarbon (THC) sampling and RA testing, all other exhaust gas sampling was conducted inside the Facility on the horizontal duct (shown in Figure 2-1) carrying the cooled and filtered flue gas from the baghouse to the chimney.

Figure 2-1: Location of Source Test Sampling Ports (excluding TCH sampling and RA testing)



Total hydrocarbons (THC) and oxygen were collected and measured undiluted along a single port located on a rectangular exit exhausting the furnace stack directly adjacent to the secondary chamber. The exterior of the rectangular exhaust measured 0.53 metres wide (27 inches) by 0.76 metres (30 inches) long. A single port was located in the center of the width of the exhaust. Sample gas was extracted from three points, equidistant along the single traverse in the center of the exhaust width.

The main analyte sampling was completed through two, 4" diameter ports oriented at 90° to one another along the horizontal duct exiting the baghouse prior to the ID fan. One port was positioned along a horizontal traverse while the second port was position vertically, on the bottom of the horizontal exhaust. The ports were placed in an "ideal location" as defined by the reference method. The furnace stack has an inside diameter of 0.25 metres (10 inches). The sampling ports are located 2.0 metres (80 inches) or 8.0 stack diameters downstream, and 1.0 metres (40 inches) or 4.0 stack diameters upstream from the nearest flow disturbance.

3.0 TEST PROGRAM

3.1 Objectives

The source testing program was completed to satisfy the requirements of the MOE as identified in condition 9 of ECA (Air) 0257-8Y4PKD, issued April 24, 2013.

Source testing was required on the gas exhausting the pollution control equipment. The test contaminants for the source testing program were identified in Schedule C of the ECA, and listed in Section 1.1 of this Source Test Report.

3.2 Test Schedule

The test program was completed during the week of June 23 to June 26. The complete test program schedule is summarized as follows:

- June 22: Mobilization
- June 23: Preliminary data acquisition, gas cylinder audit of the Facility's CEMs
- June 24: PM Test No. 1, SVOCs Test No. 1, Odours Tests 1-3
- June 25: PM Test No. 2, SVOCs Test No. 2, HCl Tests 1-3
- June 26: PM Test No. 3, SVOCs Test No. 3, VOCs Tests 1-3

A detailed schedule for the main test program is presented in tabular form in Table 3-1.

Table 3-1: Test Schedule

(continued on next page)

Test Identification	Date	Time
TSP/Metals Test No. 1 – Traverse No. 1	June 24, 2014	08:00-09:30
SVOCs Test No. 1 – Traverse No. 1	June 24, 2014	09:44-11:14
TSP/Metals Test No. 1 – Traverse No. 2	June 24, 2014	12:00-13:30
SVOCs Test No. 1 – Traverse No. 2	June 24, 2014	13:50-15:20
Odours Test No. 1	June 24, 2014	09:52-10:03
Odours Test No. 2	June 24, 2014	10:05-10:16
Odours Test No. 3	June 24, 2014	10:18-10:30
TSP/Metals Test No. 2 – Traverse No. 1	June 25, 2014	08:05-09:35
SVOCs Test No. 2 – Traverse No. 1	June 25, 2014	09:55-11:20
TSP/Metals Test No. 2 – Traverse No. 2	June 25, 2014	12:25-13:55
SVOCs Test No. 2 – Traverse No. 2	June 25, 2014	14:40-16:10
HCl Test No. 1	June 25, 2014	08:05-09:05
HCl Test No. 2	June 25, 2014	12:25-13:25
HCl Test No. 3	June 25, 2014	14:39-15:39

Table 3-1: Test Schedule
(continued from previous page)

Test Identification	Date	Time
TSP/Metals Test No. 3 – Traverse No. 1	June 26, 2014	07:57-09:27
SVOCs Test No. 3 – Traverse No. 1	June 26, 2014	10:10-11:40
TSP/Metals Test No. 3 – Traverse No. 2	June 26, 2014	12:17-13:47
SVOCs Test No. 3 – Traverse No. 2	June 26, 2014	14:23-15:33
VOCs Test No. 1	June 26, 2014	07:57-10:40
VOCs Test No. 2	June 26, 2014	10:45-11:45
VOCs Test No. 3	June 26, 2014	12:17-13:17

Notes:

[1] Test times include sampling time, and any time required for traverse changes and/or process/equipment delays.

[2] VOCs test times include time required between tube pair changes and time required between consecutive cremations.

[3] CEMs were operated continuously throughout the operation of the Method 5 trains based upon analyser performance.

3.3 Test Matrix and Analytical Matrix for Main Source Test Program

The test contaminants were divided into groups defined by the sampling train required for collection of each group as shown in Table 3-2.

Table 3-2: Contaminant Groups

Group	Contaminants
Group A	Total Suspended Particulate (TSP), Metals
Group B	Semi-Volatile Organic Compounds (SVOCs - PCBs, CBs, PAHs,PCDDs/PCDFs)*
Group C	Volatile Organic Compounds (VOCs, includes vinyl chloride)
Group D	Hydrogen Chloride (HCl)
Group E	Odour
Group F	Combustion Gases (O2, CO2, CO, NOx, SO2), Total Hydrocarbons (THC, non-methane)

**includes the 12 "Dioxin-Like" PCBs required in Ontario Reg 419/05*

The sampling methodology for the main source test program is summarized in Table 3-3, and detailed further in Section 4.0. The analytical methodologies are summarized in Table 3-4.

Table 3-3: Test Matrix

Sampling Location	Contaminant	Number of Runs	Sampling Methodology	Sample Time	Sampling Instrumentation/Equipment
Stack #1	Group A • TSP • Metals	3	• U.S. EPA Method 29	• 3 hours	• Method 29 Sampling Train
	Group B • SVOCs	3	• Environment Canada EPS 1/RM/2	• 3 hours	• Method 1/RM/2 Sampling Train
	Group C • VOCs	3	• SW846/ VOST Method 0030	• 2 samples per run; each sample collected at 0.5 LPM for 60 minutes	• VOST Sampling Train
	Group D • HCl	3	• EPA Method 26	• One sample per run; collected at 2 LPM for 60 minutes	• Midget Impinger Sampling Train
	Group E • Odour	3 bags	• OSTC Method ON-6	• 10 minutes per bag	• Evacuated Lung Sampler
	Group F • Combustion Gases • Total Hydrocarbons	3	• O2 EPA Method 3A • CO2 EPA Method 3A • SO2 EPA Method 6C • NOx EPA Method 7E • CO EPA Method 10 • THC EPA Method 25	• Combustion Gases were tested throughout isokinetic test schedule • Total Hydrocarbons: 1 hour	• CAI (paramagnetic) Analyzer • CAI (NDIR) Analyzer • Ametek (NDUV) Analyzer • TECO (chemiluminescent) Analyzer • TECO (GFC) Analyzer • CAI (FID) Analyzer, non-methane GC option

Table 3-4: Analytical Matrix

Test Group	Test Contaminant	Analytical Method	Analytical Instrumentation	Analytical Lab
A	• TSP • Metals	• OSTC Method 5 • EPA Method 6010	• Gravimetric	Maxxam Analytics
B	• SVOCs	• EPS 1/RM/3 • NITEP/Mid-Connecticut	• ICPAS	Maxxam Analytics
C	• VOCs	• EPA Method 5040	• CVAAS	Maxxam Analytics
D	• HCl	• EPA Method 300	• High Resolution Gas Chromatography • High Resolution Mass Spectrometry	Maxxam Analytics
E	• Odour	• OSTC Method ON-6	• Low Resolution Gas Chromatography • Low Resolution Mass Spectrometry	Pinchin Environmental
F	• Combustion Gases • Total Hydrocarbons	• CEM System	• Low Resolution Gas Chromatography • Low Resolution Mass Spectrometry	N/A

**includes the 12 "Dioxin-Like" PCBs required in Ontario Reg 419/05*

3.4 Field Test Changes and Problems

The only deviation from the MOE-approved Pre-Test Plan was the methodology for the RA Test, as described in Section 4.1. This deviation, including the new RA Test methodology, was conducted in consultation with Mr. Guillermo Azocar of the MOE Technology Standards Branch.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Sampling Methodology for RA Program

The sampling methodologies for the RA program undertaken during the source test program is summarized in Table 4-1:

Table 4-1: Sampling Methodologies for RA Test

Parameter	*RA Methodology*	*Sampling Methodology*	*Instrumentation*
O_2	40 CFR 60, Appendix B, PS4	Protocol Gas Cylinder Audit	Protocol Gas
CO	40 CFR 60, Appendix B, PS4	Protocol Gas Cylinder Audit	Protocol Gas

The Facility's CEMs is an extractive type system consisting of a high temperature probe, an external heated filter unit, non-heated Teflon sample line, a moisture removal unit, sample pump, a Siemens Ultramat 23 O_2 and CO analyser, and a custom software control package for displaying and storing all process data. All current instrument calibrations are performed on a manual basis. The analyser ranges are 0-25% for O_2 and 0-800 ppm for CO.

The Facility's CEMs draws its sample from a single point from an exit chamber directly above the secondary chamber. Prior to the start of the alternative RA test, a Relative Accuracy Test following sampling methodologies in Environment Canada Report EPS 1/PG/7, December 2005 "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation" was attempted. The reference CEMs probe was inserted above and below the Facility's probe as well as the rectangular exit exhaust leaving the secondary chamber and all three locations would not yield satisfactory results due to stratification. In consultation with Mr. Guillermo Azocar of the MOE Technology Standards Branch, CTI measured oxygen continuously at the rectangular exit exhaust leaving the secondary chamber (location of undiluted THC measurements). Oxygen was measured at this location from three points equidistant along a single traverse.

The Facility's CEMs system was challenged with Protocol gas in a gas cylinder audit scenario to confirm accuracy at the secondary chamber location. The O_2/CO channels were challenged with EPA Protocol 1 O_2/CO calibration gases at the following concentrations:

- zero nitrogen
- 9.98 % O_2
- 21.11 % O_2
- 25.1 ppm CO
- 80.5 ppm CO

All calibration gases were introduced at a "tee" placed directly after the probe/ heated filter assembly. The gas cylinder audit included all components of the Facility's system after the heated filter.

4.2 Sampling Methodologies for Stack Parameters

The reference sampling methodologies to determine the stack parameters are summarized in Table 4-2.

Table 4-2: Sampling Methodologies for Stack Parameters

Parameter	Sampling Methodology	Instrumentation/Equipment
Location of Sampling Site & Sampling Points	OSTC Method 1	NA
Determination of Stack Gas Velocity & Volumetric Flow Rate	OSTC Method 2	S-Type Pitot/Thermocouple
Determination of Molecular Weight of Dry Stack Gas	OSTC Method 3	O_2 - Paramagnetic Analyzer CO_2 - NDIR Analyzer CO - GFC Analyzer
Determination of Moisture Content of Stack Gases	OSTC Method 4	Modified Method 5 Train

OSTC - Ontario Source Testing Code, (Version #3), PIBS #1310e03, June, 2010

Due to the small inner diameter of the main stack (9 inches), CTI did not operate the isokinetic trains simultaneously. A single isokinetic train was operated for each category (TSP/Metals, SVOCs) consecutively.

4.3 Sampling Methodology for TSP and Metals

TSP and metal samples were collected following sampling methodologies outlined in U.S. EPA *"Method 29 – Metal Emissions from Stationary Sources"*. The sampling methodology involved isokinetically drawing the stack sample from the stack through the sampling train set-up indicated in the aforementioned source, allowing for the collection of TSP and metals in the probe and on the heated filter, and the collection of metals and mercury in the gaseous emissions in the aqueous acidic solutions of hydrogen peroxide. The gas was then passed through impingers containing acidic permanganate for the collection of mercury.

Each test train was collected for the minimum required dry reference sample volume. Triplicate tests were completed with two feed burns constituting a single test (each traverse was a full burn), where each burn was 90 minutes long.

Due to structural interference present at the horizontal port, a heated, flexible Teflon sample line was used between the sample probe and the filter. The flexible heated sample line was maintained at the required temperature of the probe and was subject to the identical recovery procedure of the glass-lined probe.

Samples were recovered in accordance with methodologies outlined in U.S. EPA *"Method 29 – Metal Emissions from Stationary Sources"*, as summarized in the MOE-approved Pre-Test Plan, and submitted to Maxxam for analysis. The analytical methodology is summarized in Table 3-4.

A single blank test train was recovered for TSP and metals during the test program.

4.4 Sampling Methodology for SVOCs

SVOCs were collected following sampling methodologies outlined in Environment Canada report EPS 1/RM/2, titled *"Reference Method for Source Testing: Measurement of Releases of Selected Semi-volatile Organic Compounds from Stationary Sources"*. The sampling methodology involved isokinetically drawing the stack sample from the stack through the sampling train set-up indicated in aforementioned source. SVOCs associated with particulate matter were collected in the front-half components of the sampling train, while SVOCs not collected by the high efficiency glass or quartz fibre filter were adsorbed on a porous, polymeric resin, Amberlite XAD-2.

The PCDDs/PCDFs analyses included the collection and analyses of the 12 "Dioxin-Like" PCBs required by Ontario Regulation 419/05.

The sample train condenser coil and XAD-2 resin trap was not soaked for five minutes as per the reference method since such a procedure was difficult to negotiate without spillage. The components were generously rinsed three times with the required solvents as a substitute procedure.

Each test train was collected for the minimum required dry reference sample volume. Triplicate tests were completed with two feed burns constituting a single test (each traverse was a full burn), where each burn was 90 minutes long.

Due to structural interference present at the horizontal port, a heated, flexible Teflon sample line was used between the sample probe and the filter. The flexible heated sample line was maintained at the required temperature of the probe and was subject to the identical recovery procedure of the glass-lined probe.

The samples were recovered in accordance with procedures outlined in Environment Canada report EPS 1/RM/2, titled *"Reference Method for Source Testing: Measurement of Releases of Selected Semi-volatile Organic Compounds from Stationary Sources"*, as summarized in the MOE-approved Pre-Test Plan. The samples were submitted to Maxxam for analysis. The analytical methodology is summarized in Table 3-4.

A single blank SVOC test train was recovered for the complete test program. The blank train was sealed and placed at the sampling platform for the duration of one of the three tests. A sample volume of ambient air, equivalent to the total leak-check volume of gas drawn through the test train that day, was drawn through the blank train. The blank train was recovered following the identical procedures used to recover the test trains.

4.5 Sampling Methodology for VOCs

VOCs including vinyl chloride were collected following sampling methodologies outlined in U.S. EPA SW-846, Method 0030 "Volatile Organic Sampling Train (VOST)". The sampling methodology involved the non-isokinetic drawing of stack gas effluent from the stack port through the sampling train set-up indicated in aforementioned source, allowing for the collection of VOCs in the VOST tubes.

CTI ran two pairs of tubes for each test. Each pair of tubes was sampled at 0.5 LPM for 60 minutes at the start of each batch feed burn during the operation of one of the daily isokinetic trains. The sampling of two pairs of tubes eliminated the need to change tubes during any single burn and the 60 minute test time coincided with the simultaneous testing for hydrogen chloride.

The samples were recovered in accordance with procedures outlined in U.S. EPA SW-846, Method 0030 "Volatile Organic Sampling Train (VOST)", as summarized in the MOE-approved Pre-Test Plan. The samples were submitted to Maxxam for analysis. The analytical methodology is summarized in Table 3-4.

A single field blank and laboratory blank were also analyzed for the complete test program.

4.6 Sampling Methodology for HCl

HCl in the stack gas effluent was collected following sampling methodology outlined in U.S. EPA "*Method 26 – Determination of Hydrogen Halides and Halogen Emissions from Stationary Sources Non-Isokinetic Method*". The sampling methodology involved non-isokinetically withdrawing a stack gas effluent sample through a pre-purged heated probe and filter into dilute solutions, which separately collected the gaseous hydrogen halides and halogens.

Since halogen was not collected as part of this test, the impingers containing NaOH solutions were not used as part of the sampling train.

Each Method 26 train was sampled at approximately 2 L/min for 60 minutes at the start of a batch feed burn during the operation of one of the daily isokinetic trains.

The VOST and HCl trains were operated simultaneously with the MM5 trains.

The samples were recovered in accordance with U.S. EPA "*Method 26 – Determination of Hydrogen Halides and Halogen Emissions from Stationary Sources Non-Isokinetic Method*", as summarized in the MOE-approved Pre-Test Plan.

4.7 Sampling Methodology for Combustion Gases and Total Hydrocarbons (THC)

CTI operated the CEMs for the duration of the daily isokinetic test schedule, from the start of the M5 trains to the completion of the last isokinetic test. Calibrations were performed at required intervals based on analyser performance. Combustion gases was measured from one of the isokinetic ports.

Total hydrocarbons (non-methane) was measured from a test port near the CEM System probe on the undiluted flue gas leaving the secondary chamber at the start of a feed burn for the duration of 60 minutes per test near the Facility's CEM System port. Three one-hour tests were completed for the main test program.

4.8 Sampling Methodology for Odour

Triplicate odour samples were collected as neat (undiluted) samples during the first hour of a cremation following sampling methodologies outlined in Ontario Ministry of Environment "Ontario Source Testing Code, Version #3, July 2010, Part G: "Method ON-6 – Determination of Odour Emissions from Stationary Sources".

The samples were submitted to Pinchin Environmental to conduct odour evaluations on all samples following procedures outlined the aforementioned Method ON-6. All samples were collected and analysed within a 24-hour period.

4.9 Process Data

The Facility was responsible for supplying all relevant process data as required in the ECA and the Pre-Test Plan Approval for the duration of the test program. Process data collected by the Facility includes:

- Description of the material of construction of the casket, including internal liner and padding material of the casket
- Type and finish on the casket
- Description of any hardware not removed from the casket
- Estimated weight of the body as per information obtained from the funeral home including sex and age
- Start and finish time of each cremation

In addition, the Facility provided the following:

- All records produced by the CEM System
- All records of the cremator settings during the cremation, including: primary and secondary chamber burner gas flow rates

5.0 SUMMARY OF SOURCE TESTING RESULTS

5.1 Summary of Cremation Data Collected by Facility

As described in Section 4.9, the Facility recorded cremation data for the duration of the stack testing program. Table 5-1 summarizes the cremation data provided by the Facility. The complete cremation data is provided in Appendix D.

5.2 Summary of Source Test Results

Scanned copies of all field data sheets are provided in Appendix E. The laboratory results were used to determine the results of the stack test. The complete stack test results are provided in Appendix F, and are summarized in sections 5.2.1 to 5.2.8. The laboratory results are provided in Appendix G.

Analyses reported as less than detection limit (<DL) were reported (entered) as the detection limit with the "less than" (<) symbol preceding the value. The "less than" (<) symbol precedes each subsequent calculation to indicate that the calculated value was a direct result of a "non-detect" value, partial summation or average which includes a "non-detect" value.

5.2.1 Summary of Stack Gas Physical Parameters

Stack gas calculations for each of the tests are provided in Appendix F. A summary of the stack gas physical parameters and stack gas sampling parameters is provided in Table 5-2.

The average isokinetic sampling rate during the PM/Metals sampling program for Test No.1, Test No. 2 and Test No. 3 was 105.2%, 103.3% and 104.8%, respectively. The reference method requires that less than 10% of all readings for each test be outside the required acceptable range of 90%-110%. Each test met this requirement.

The average isokinetic sampling rate during the SVOCs sampling program for Test No.1, Test No. 2 and Test No. 3 was 102.3%, 103.5% and 105.2%, respectively. The reference method requires that less than 10% of all readings for each test be outside the required acceptable range of 90%-110%. Each test met this requirement.

5.2.2 Results for Odour

The results and calculations for the odour tests are provided in Appendix F. A summary of the odour results is provided in Table 5-3.

5.2.3 Results for Total Suspended Particulate (TSP)

The TSP results and complete calculations for each test are provided in Appendix F. A summary of the TSP results is provided in Table 5-4.

Each test train was recovered as per the reference method. The recovery sheets with the impinger weights for each test are provided in Appendix E.

5.2.4 Results for Metals

The results and complete calculations for metals for each test are provided in Appendix F. A summary of the results for metals is provided in Table 5-5.

Each test train was recovered as per the reference method. The recovery sheets with the impinger weights for each test are provided in Appendix E.

5.2.5 Results for SVOCs

The sampled SVOCs are grouped into PCDPs/PCDFs and PAHs. For PCDPs and PCDFs, the complete calculations of International Toxic Equivalent Factor concentrations and emission rates are provided in Appendix F. A summary of the results for PCDPs and PCDFs is provided in Table 5-6.

For PAHs, the complete calculations of concentrations and emission rates are provided in Appendix F. A summary of the results for PAHs is provided in Table 5-7.

5.2.6 Results for VOCs

The results and complete calculations for VOCs for each test are provided in Appendix F. A summary of the results for VOCs is provided in Table 5-8.

5.2.7 Results for HCL

The results and complete calculations for HCl for each test are provided in Appendix F. A summary of the results for HCl is provided in Table 5-9.

5.2.8 Results for Combustion Gases and Total Hydrocarbons

The results and complete calculations for combustion gases and total hydrocarbon from each isokinetic runs are provided in Appendix F. A summary of the results for combustion gases and total hydrocarbon from the TSP/Metals isokinetic run is provided in Table 5-10, and SVOCs isokinetic run in Table 5-11.

The maximum oxygen corrected total hydrocarbons (non-methane) was measured to be 0.8 ppm from the TSP/Metals isokinetic run and 3.0 ppm from the SVOCs isokinetic run.

5.2.9 Results for Oxygen Measurements at Exit of Secondary Chamber

Undiluted oxygen levels measured at the exit of the secondary chamber were above 6%, ranging between 10.3% and 12.1% over the isokinetic tests.

A summary of the oxygen level measurements are provided in Table 5-12. The complete oxygen level measurements are provided in Appendix F, under "Combustion Gas & THC".

5.2.10 Results for Gas Cylinder Audit

The O_2 CEMs channel had a relative accuracy of 0.4% at 9.98% O_2 and 0.3% at 21.11% O_2, as summarized in Table 5-13.

The CO CEMs channel had a relative accuracy of 0.5% at 25.1 ppm CO, and 0.4% at 80.5 ppm CO, as summarized in Table 5-14.

The complete gas cylinder audit results are provided in Appendix F.

Table 5-1: Summary of Cremation Data

Charge Number	Cremation Date	Cremation Reference Number	Start Time	Finish Time	Casket Type	Casket Finish	Casket Liner	Casket Padding	Casket Hardware	Casket Weight	Body Weight	Body Age	Body Sex	Comments	Duration of Test
										lbs	lbs				hour
1	Jun-24-2014	CG039450	8:00	9:30	Blue Cloth	No	Silk	Wood Fibre	Lift Screw	30	120	90	F	Handles removed.	1:30
2	Jun-24-2014	CG039452	9:43	11:13	Pine	No	No	Wood Fibre	No	30	120	50	M	N/A	1:30
3	Jun-24-2014	CG039408	12:00	13:30	Brown Cloth	No	Silk	Wood Fibre	No	40	190	100	M	Hardware removed.	1:30
4	Jun-24-2014	CG039455	13:50	15:20	Pine	No	No	No	No	30	100	87	F	N/A	1:30
5	Jun-25-2014	CG039456	8:05	9:35	Particle Board	No	No	No	Screws	40	110	83	M	N/A	1:30
6	Jun-25-2014	CG039457	9:55	11:25	Particle Board	No	No	No	Screws	40	180	79	F	N/A	1:30
7	Jun-25-2014	CG039460	12:25	13:55	Pine	No	No	No	Screws	30	200	77	M	N/A	1:30
8	Jun-25-2014	CG039419	14:39	16:09	Blue Cloth	No	No	No	Screws	45	120	88	F	N/A	1:30
9	Jun-26-2015	CG039464	7:57	9:27	Particle Board	No	No	No	Screws	40	140	79	M	N/A	1:30
10	Jun-26-2016	CG039466	10:10	11:40	Pine	No	No	No	Screws	40	150	87	F	N/A	1:30
11	Jun-26-2017	CG039459	12:17	13:47	Pine	No	No	No	Screws	40	200	61	M	N/A	1:30
12	Jun-26-2018	CG039467	14:23	15:53	Pine	No	No	No	Screws	40	140	71	M	N/A	1:30

Table 5-2: Summary of Stack Gas Physical and Sampling Parameters

Parameter	Isokinetic Test #1 (PM/Metals)				Isokinetic Test #2 (SVOCs)				Overall Average
	Test No. 1	Test No. 2	Test No. 3	Average	Test No. 1	Test No. 2	Test No. 3	Average	
Stack Gas Physical Parameters									
Stack Gas Temp. (°C)	111	107	113	**110**	114	106	115	**112**	**111**
Moisture Content (% v/v)	8.3	8.5	8.8	**8.5**	6.8	9.2	9.2	**8.4**	**8.5**
Absolute Pressure (kPa)	99.24	99.20	99.35	**99.26**	99.31	99.05	99.60	**99.32**	**99.29**
Wet Gas Molecular Weight (kg/kmol)	28.49	28.51	28.43	**28.48**	28.62	28.43	28.39	**28.48**	**28.48**
Dry Gas Molecular Weight (kg/kmol)	29.43	29.48	29.43	**29.45**	29.40	29.49	29.44	**29.44**	**29.45**
Velocity (m/s)	13.2	12.8	11.4	**12.5**	13.3	11.2	10.7	**11.7**	**12.1**
Actual Vol. Flow Rate (m^3/s)	0.668	0.651	0.580	**0.633**	0.673	0.571	0.542	**0.595**	**0.614**
Wet Reference Vol. Flow Rate (Rm^3/s)	0.508	0.501	0.439	**0.483**	0.509	0.439	0.410	**0.453**	**0.468**
Dry Reference Vol. Flow Rate (Rm^3/s)	0.466	0.458	0.401	**0.442**	0.474	0.399	0.372	**0.415**	**0.428**
Stack Gas Sampling Parameters									
Dry Gas Meter Correction Factor	1.004	1.004	1.004	**1.004**	1.004	1.004	1.004	**1.004**	-
Pitot Tube Coefficient	0.816	0.816	0.816	**0.816**	0.816	0.816	0.816	**0.816**	-
Barometric Pressure (kPa)	100.31	100.34	100.65	**100.43**	100.31	100.34	100.65	**100.43**	-
Nozzle Diameter (mm)	6.38	6.38	6.38	**6.38**	6.43	6.43	6.43	**6.43**	-
Dry Reference Vol. Sampled (m^3)	3.31	3.20	2.84	**3.12**	3.32	2.81	2.68	**2.94**	-
Isokineticity (%)	105.2	103.3	104.8	**104.4**	102.3	103.5	105.2	**103.7**	-

Notes:

- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*

Table 5-3: Odour Results

Optimum Pre-Dilution	Net Detection Threshold (DT_{net}) Test No. 1	Test No. 2	Test No. 3	Geometric Mean	Average Wet Reference Volumetric Flow Rate	Odour Emission Rate
	(unitless) [1]	(unitless) [1]	(unitless) [1]	(unitless) [1]	(Rm^3/s)	(OU/s)
1:1	399	435	672	489	0.508	248

Notes:
- *Although DT values are dimensionless, odour units per unit volume (i.e. OU/m^3) are often used for reporting purposes.*

Table 5-4: Summary of Results for Total Suspended Particulates (TSP)

Test No.	Particulate Collected Filter (mg)	Probe (mg)	Total (mg)	Dry Ref. Sample Volume (Rm^3)	Particulate Concentration Actual (mg/m^3)	Dry Reference (mg/Rm^3)	Oxygen Corrected (mg/Rm^3)	Volumetric Flow Rate Actual (m^3/s)	Dry Reference (Rm^3/s)	Particulate Emission Rate (mg/s)
1	<0.30	1.8	2.10	3.31	0.443	0.634	1.12	0.668	0.466	0.296
2	<0.30	2.7	3.00	3.20	0.660	0.938	1.39	0.651	0.458	0.429
3	<0.30	<0.5	0.80	2.84	0.195	0.282	0.443	0.580	0.401	0.113
Average					**0.432**	**0.618**	**0.983**	**0.633**	**0.442**	**0.279**

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"<" indicates analyte not detected (substitute detection limit)*

Table 5-5: Summary of Results for Metals

Analyte	Test No. 1			Test No. 2			Test No. 3			Averages		
	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Analyte Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Analyte Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Analyte Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Analyte Emission Rate (µg/s)
Antimony	<0.242	<0.427	<0.113	<0.250	<0.369	<0.115	<0.282	<0.443	<0.131	<0.258	<0.413	<0.119
Arsenic	0.344	0.609	0.160	<0.250	<0.369	<0.115	<0.282	<0.443	<0.131	<0.292	<0.474	<0.135
Barium	2.96	5.23	1.38	2.81	4.16	1.29	2.746	4.316	1.280	2.84	4.57	1.32
Beryllium	<0.060	<0.107	<0.028	<0.063	<0.092	<0.029	<0.070	<0.111	<0.033	<0.064	<0.103	<0.030
Cadmium	0.103	0.182	0.048	0.138	0.203	0.063	<0.070	<0.111	<0.033	<0.104	<0.165	<0.048
Chromium	3.32	5.88	1.55	3.02	4.46	1.38	1.743	2.739	0.812	2.69	4.36	1.25
Cobalt	0.290	0.513	0.135	0.113	0.166	0.052	<0.070	<0.111	<0.033	<0.158	<0.263	<0.073
Copper	7.49	13.2	3.49	1.78	2.63	0.816	0.634	0.996	0.295	3.30	5.62	1.53
Lead	0.737	1.30	0.344	0.538	0.794	0.246	0.211	0.332	0.098	0.495	0.810	0.229
Molybdenum	9.94	17.6	4.63	10.8	16.0	4.95	12.430	19.532	5.792	11.1	17.7	5.13
Nickel	6.07	10.7	2.83	6.00	8.9	2.75	5.141	8.078	2.396	5.74	9.23	2.66
Selenium	<0.604	<1.07	<0.282	<0.625	<0.92	<0.286	<0.704	<1.107	<0.328	<0.644	<1.03	<0.299
Silver	<0.121	<0.214	<0.056	0.188	0.277	0.086	<0.141	<0.221	<0.066	<0.150	<0.237	<0.069
Thallium	0.514	0.908	0.239	<0.313	<0.462	<0.143	<0.352	<0.553	<0.164	<0.393	<0.641	<0.182
Vanadium	<0.181	<0.320	<0.084	<0.188	<0.277	<0.086	<0.211	<0.332	<0.098	<0.193	<0.310	<0.090
Zinc	17.8	31.5	8.31	9.69	14.3	4.44	<3.521	<5.533	<1.641	<10.3	<17.1	<4.79
Mercury	<3.97	<7.02	<1.85	<8.70	<12.9	<3.99	<0.090	<0.141	<0.042	<4.25	<6.67	<1.96

Notes:

- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"<" indicates analyte not detected (substitute detection limit)*

Table 5-6: Summary of Results for Polychlorinated Dibenzo p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs)
(continued on next page)

Analyte	Test No. 1			Test No. 2			Test No. 3			Averages		
	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate
	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)
PCDDs												
2,3,7,8-Tetra CDD	< 1.33	< 2.52	< 0.628	< 1.42	< 2.31	< 0.568	< 1.64	< 2.85	< 0.611	**< 1.46**	**< 2.56**	**< 0.602**
1,2,3,7,8-Penta CDD	< 1.27	< 2.41	< 0.600	< 1.46	< 2.37	< 0.582	< 1.60	< 2.79	< 0.597	**< 1.44**	**< 2.52**	**< 0.593**
1,2,3,4,7,8-Hexa CDD	< 0.136	< 0.258	< 0.064	< 0.160	< 0.260	< 0.064	< 0.160	< 0.279	< 0.060	**< 0.152**	**< 0.266**	**< 0.063**
1,2,3,6,7,8-Hexa CDD	< 0.145	< 0.275	< 0.069	< 0.171	< 0.277	< 0.068	< 0.172	< 0.298	< 0.064	**< 0.162**	**< 0.284**	**< 0.067**
1,2,3,7,8,9-Hexa CDD	< 0.117	< 0.224	< 0.056	< 0.139	< 0.225	< 0.055	< 0.142	< 0.246	< 0.053	**< 0.133**	**< 0.232**	**< 0.055**
1,2,3,4,6,7,8-Hepta CDD	< 0.012	< 0.024	< 0.006	0.015	0.024	0.006	< 0.017	< 0.030	< 0.006	**< 0.015**	**< 0.026**	**< 0.006**
1,2,3,4,6,7,8,9-Octa CDD	0.001	0.002	0.001	0.001	0.002	0.001	0.001	0.002	0.000	**0.001**	**0.002**	**0.001**
Dioxin Totals	< 3.00	< 5.71	< 1.42	< 3.37	< 5.47	< 1.34	< 3.74	< 6.49	< 1.39	**< 3.37**	**< 5.89**	**< 1.39**
PCDFs												
2,3,7,8-Tetra CDF	< 0.133	< 0.252	< 0.063	< 0.335	< 0.543	< 0.133	< 0.194	< 0.337	< 0.072	**< 0.220**	**< 0.377**	**< 0.089**
1,2,3,7,8-Penta CDF	< 0.038	< 0.072	< 0.018	0.065	0.106	0.026	< 0.049	< 0.086	< 0.018	**< 0.051**	**< 0.088**	**< 0.021**
2,3,4,7,8-Penta CDF	< 0.370	< 0.705	< 0.176	< 0.416	< 0.676	< 0.166	< 0.481	< 0.836	< 0.179	**< 0.423**	**< 0.739**	**< 0.174**
1,2,3,4,7,8-Hexa CDF	< 0.130	< 0.247	< 0.061	0.189	0.306	0.075	< 0.164	< 0.285	< 0.061	**< 0.161**	**< 0.279**	**< 0.066**
1,2,3,6,7,8-Hexa CDF	< 0.123	< 0.235	< 0.059	< 0.139	< 0.225	< 0.055	< 0.157	< 0.272	< 0.058	**< 0.140**	**< 0.244**	**< 0.057**
2,3,4,6,7,8-Hexa CDF	< 0.123	< 0.235	< 0.059	< 0.139	< 0.225	< 0.055	< 0.157	< 0.272	< 0.058	**< 0.140**	**< 0.244**	**< 0.057**
1,2,3,7,8,9-Hexa CDF	< 0.130	< 0.247	< 0.061	< 0.149	< 0.243	< 0.060	< 0.164	< 0.285	< 0.061	**< 0.148**	**< 0.258**	**< 0.061**
1,2,3,4,6,7,8-Hepta CDF	< 0.012	< 0.022	< 0.006	0.017	0.027	0.007	< 0.014	< 0.025	< 0.005	**< 0.014**	**< 0.025**	**< 0.006**
1,2,3,4,7,8,9-Hepta CDF	< 0.014	< 0.026	< 0.006	< 0.015	< 0.025	< 0.006	< 0.016	< 0.028	< 0.006	**< 0.015**	**< 0.026**	**< 0.006**
1,2,3,4,6,7,8,9-Octa CDF	< 0.004	< 0.007	< 0.002	< 0.005	< 0.007	< 0.002	< 0.005	< 0.008	< 0.002	**< 0.004**	**< 0.008**	**< 0.002**
Furan Totals	< 1.07	< 2.04	< 0.508	< 1.46	< 2.38	< 0.584	< 1.40	< 2.43	< 0.520	**< 1.31**	**< 2.28**	**< 0.537**

Table 5-6: Summary of Results for Polychlorinated Dibenzo p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs)
(continued from previous page)

	Test No. 1			Test No. 2			Test No. 3			Averages		
Analyte	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate	Analyte Conc. Dry Ref.	Analyte Conc. O_2 Corr.	Analyte Emission Rate
	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)	(TEQpg/Rm³)	(TEQpg/Rm³)	(TEQpg/s)
Dioxin/Furan Totals	<4.07	<7.76	<1.93	<4.83	<7.84	<1.93	<5.14	<8.92	<1.91	**<4.68**	**<8.17**	**<1.92**

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"<" indicates analyte not detected (substitute detection limit)*

Table 5-7: Summary of Results for PAHs (continued from previous page)

Analyte	Test No. 1			Test No. 2			Test No. 3			Averages		
	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)
1-Methylnaphthalene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
1-Methylphenanthrene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
2-Chloronaphthalene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
2-Methylanthracene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
2-Methylnaphthalene	0.084	0.161	0.040	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.077	<0.135	<0.032
3-Methylanthracene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
7,12-Dimethylbenzo(a)anthracene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
9,10-Dimethylanthracene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
9-Methylphenanthrene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Acenaphthene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Acenaphthylene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Anthracene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Benzo(a)anthracene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Benzo(a)fluorene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
Benzo(a)pyrene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Benzo(b)fluoranthene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Benzo(b)fluorene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
Benzo€pyrene	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
Benzo(g,h,i)perylene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Benzo(k)fluoranthene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Chrysene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Coronene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
Dibenzo(a,c) anthracene + Picene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Fluoranthene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Fluorene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Indeno(1,2,3-cd)pyrene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028

Table 5-7: Summary of Results for PAHs (continued from previous page)

Analyte	Test No. 1			Test No. 2			Test No. 3			Averages		
	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Reference (µg/Rm³)	Analyte Conc. Oxygen Corrected (µg/Rm³)	Emission Rate (µg/s)
Naphthalene	1.232	2.345	0.584	1.053	1.710	0.420	0.828	1.439	0.308	1.04	1.83	0.437
Perylene	<0.241	<0.459	<0.114	<0.285	<0.462	<0.114	<0.299	<0.518	<0.111	<0.275	<0.480	<0.113
Phenanthrene	0.175	0.333	0.083	0.149	0.243	0.060	0.082	0.143	0.031	0.135	0.239	0.058
Pyrene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028
Tetralin	<0.120	<0.229	<0.057	<0.142	<0.231	<0.057	<0.149	<0.259	<0.056	<0.137	<0.240	<0.056
Triphenylene	<0.060	<0.115	<0.029	<0.071	<0.116	<0.028	<0.075	<0.130	<0.028	<0.069	<0.120	<0.028

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"<" indicates analyte not detected (substitute detection limit)*

Table 5-8: Summary of Results for VOCs (continued from previous page)

Analyte	Test No. 1			Test No. 2			Test No. 3			Averages		
	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)
Dichlorodifluoromethane	0.762	1.20	0.306	1.48	2.44	0.572	1.81	3.14	0.672	1.35	2.26	0.517
Chloromethane	9.40	14.8	3.77	8.40	13.9	3.25	6.24	10.8	2.32	8.01	13.2	3.11
Vinyl Chloride	<0.472	<0.741	<0.189	<0.475	<0.783	<0.183	<0.475	<0.825	<0.177	<0.474	< 0.783	< 0.183
Bromomethane	<0.544	<0.855	<0.218	<0.548	<0.904	<0.212	<0.548	<0.951	<0.204	<0.547	< 0.903	< 0.211
Chloroethane	<0.327	<0.513	<0.131	<0.329	<0.542	<0.127	<0.329	<0.571	<0.122	<0.328	< 0.542	< 0.127
Trichlorofluoromethane	<0.363	<0.570	<0.145	0.530	0.874	0.205	0.603	1.05	0.224	<0.498	< 0.830	< 0.191
Acetone	4.57	7.18	1.83	4.93	8.13	1.91	2.61	4.53	0.971	4.04	6.62	1.57
1,1-Dichloroethylene	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
Iodomethane	<0.544	<0.855	<0.218	<0.548	<0.904	<0.212	<0.548	<0.951	<0.204	<0.547	< 0.903	< 0.211
Carbon Disulphide	<0.943	<1.48	<0.378	<0.949	<1.57	<0.367	<0.949	<1.65	<0.353	<0.947	< 1.57	< 0.366
Methlene Chloride	<0.689	<1.08	<0.276	<0.840	<1.39	<0.325	<0.694	<1.21	<0.258	<0.741	< 1.22	< 0.286
1,1-Dichloroethane	<0.435	<0.684	<0.175	<0.438	<0.723	<0.169	<0.438	<0.761	<0.163	<0.437	< 0.723	< 0.169
trans-1,2-Dichloroethylene	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
cis-1,2-Dichloroethylene	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
Chloroform	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
1,2-Dichloroethane	<0.254	<0.399	<0.102	<0.256	<0.422	<0.099	<0.256	<0.444	<0.095	<0.255	< 0.422	< 0.099
Methyl Ethyl Ketone	<1.31	<2.05	<0.524	<1.31	<2.17	<0.508	<1.31	<2.28	<0.489	<1.31	< 2.17	< 0.507
1,1,1-Trichloroethane	<0.508	<0.798	<0.204	<0.511	<0.844	<0.198	<0.511	<0.888	<0.190	<0.510	< 0.843	< 0.197
Carbon Tetrachloride	<0.580	<0.912	<0.233	<0.584	<0.964	<0.226	<0.584	<1.01	<0.217	<0.583	< 0.964	< 0.225
Benzene	17.0	26.7	6.82	4.20	6.94	1.62	<3.50	<6.08	<1.30	<8.233	< 13.2	< 3.25
1,1,2-Trichloroethane	<0.580	<0.912	<0.233	<0.584	<0.964	<0.226	<0.584	<1.01	<0.217	<0.583	< 0.964	< 0.225
1,2-Dichloropropane	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
Trichloroethylene	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
Dibromomethane	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
Bromodichloromethane	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
cis-1,3-Dichloropropene	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
trans-1,3-Dichloropropene	<0.254	<0.399	<0.102	<0.256	<0.422	<0.099	<0.256	<0.444	<0.095	<0.255	< 0.422	< 0.099
Dibromochloromethane	<0.327	<0.513	<0.131	<0.329	<0.542	<0.127	<0.329	<0.571	<0.122	<0.328	< 0.542	< 0.127

Table 5-8: Summary of Results for VOCs (continued from previous page)

	Test No. 1			Test No. 2			Test No. 3			Averages		
Analyte	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)	Analyte Conc. Dry Ref. (µg/Rm³)	Analyte Conc. O_2 Corr. (µg/Rm³)	Emission Rate (µg/s)
Methyl Isobutyl Ketone	<0.689	<1.08	<0.276	<0.694	<1.14	<0.268	<0.694	<1.21	<0.258	<0.692	< 1.14	< 0.268
Methyl Butyl Ketone	<1.12	<1.77	<0.451	<1.13	<1.87	<0.438	<1.13	<1.97	<0.421	<1.13	< 1.87	< 0.437
Toluene	16.1	25.3	6.45	21.7	35.9	8.40	21.5	37.4	8.01	19.8	32.8	7.62
Ethylene Dibromide	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
Tetrachloroethylene	<0.653	<1.03	<0.262	<0.657	<1.08	<0.254	<0.657	<1.14	<0.245	<0.656	< 1.08	< 0.253
Chlorobenzene	<0.399	<0.627	<0.160	<0.402	<0.663	<0.155	<0.402	<0.698	<0.149	<0.401	< 0.663	< 0.155
1,1,1,2-Tetrachloroethane	<0.363	<0.570	<0.145	<0.365	<0.603	<0.141	<0.365	<0.634	<0.136	<0.364	< 0.602	< 0.141
Ethylbenzene	0.635	0.998	0.255	0.639	1.05	0.247	0.603	1.05	0.224	0.625	1.03	0.242
m/p-Xylene	2.23	3.51	0.895	2.50	4.13	0.967	2.36	4.09	0.876	2.36	3.91	0.913
Styrene	<0.961	<1.51	<0.386	<0.438	<0.723	<0.169	<0.475	<0.825	<0.177	<0.625	< 1.02	< 0.244
o-Xylene	1.02	1.60	0.407	1.26	2.08	0.487	1.21	2.09	0.448	1.16	1.92	0.448
Bromoform	<0.508	<0.798	<0.204	<0.511	<0.844	<0.198	<0.511	<0.888	<0.190	<0.510	< 0.843	< 0.197
1,1,2,2-Tetrachloroethane	<0.508	<0.798	<0.204	<0.511	<0.844	<0.198	<0.511	<0.888	<0.190	<0.510	< 0.843	< 0.197
1,2,3-Trichloropropane	<0.544	<0.855	<0.218	<0.548	<0.904	<0.212	<0.548	<0.951	<0.204	<0.547	< 0.903	< 0.211
1,3-Dichlorobenzene	<0.726	<1.14	<0.291	<0.730	<1.21	<0.282	<0.730	<1.27	<0.272	<0.729	< 1.20	< 0.282
1,4-Dichlorobenzene	<0.726	<1.14	<0.291	<0.730	<1.21	<0.282	<0.730	<1.27	<0.272	<0.729	< 1.20	< 0.282
1,2-Dichlorobenzene	<0.726	<1.14	<0.291	<0.730	<1.21	<0.282	<0.730	<1.27	<0.272	<0.729	< 1.20	< 0.282
Vinyl Acetate	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
Trichlorotrifluoroethane	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
1,3,5-Trimethylbenzene	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
1,2,4-Trimethylbenzene	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
1,2-Dichlorotetrafluoroethane	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
1,2,4-Trichlorobenzene	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352
Hexachlorobutadiene	<0.907	<1.43	<0.364	<0.913	<1.51	<0.353	<0.913	<1.59	<0.340	<0.911	< 1.51	< 0.352

Notes:

- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"<" indicates analyte not detected (substitute detection limit)*

Table 5-9: Summary of Results for HCl

Test No.	Total Chloride Collected	Total HCl Collected	Dry Ref. Sample Volume	HCl Concentration Actual	HCl Concentration Dry Reference	HCl Concentration Oxygen Corrected	Volumetric Flow Rate Actual	Volumetric Flow Rate Dry Reference	HCl Emission Rate
	(µg)	(µg)	(Rm^3)	(µg/m^3)	(µg/Rm^3)	(µg/Rm^3)	(m^3/s)	(Rm^3/s)	(µg/s)
1	NA	690	0.123	3960	5628	8317	0.651	0.458	2578
2	NA	1800	0.123	10230	14640	23760	0.571	0.399	5841
3	NA	11000	0.122	62752	89803	145746	0.571	0.399	35831
	Averages		**0.123**	**25647**	**36690**	**59274**	**0.598**	**0.419**	**14750**

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*

Table 5-10: Summary of Results for Combustion Gases and Total Hydrocarbons from TSP/Metals Isokinetic Run

	Test No. 1			Test No. 2			Test No. 3			Average		
Gas	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)
Carbon Dioxide	79187	139991	36901	89985	132963	41213	262756	412902	105365	**143976**	**228618**	**61160**
Carbon Monoxide	2.98	5.26	1.39	2.52	3.72	1.15	3.32	5.22	1.33	**2.94**	**4.74**	**1.29**
Nitrogen Oxides	106	187	49.3	204	302	93.6	176	276	70.5	**162**	**255**	**71.1**
Oxygen	200205	353934	93296	185811	274557	85102	191045	300214	76609	**192354**	**309568**	**85002**
Sulphur Dioxide	21.2	37.5	9.89	31.7	46.8	14.52	29.3	46.1	11.8	**27.4**	**43.5**	**12.1**
Total Hydrocarbons	1.3 ppm*	2.3 ppm*		0.0 ppm*	0.0 ppm*		0.0 ppm*	0.0 ppm*		**0.4 ppm***	**0.8 ppm***	

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"*" denotes THC – Wet basis as non-methane THC*

Table 5-11: Summary of Results for Combustion Gases and Total Hydrocarbons from SVOCs Isokinetic Run

Gas	Test No. 1			Test No. 2			Test No. 3			Average		
	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)	Gas Conc. Dry Reference (mg/Rm^3)	Gas Conc. Oxygen Corrected (mg/Rm^3)	Gas Emission Rate (mg/s)
Carbon Dioxide	73788	140480	34975	88185	143120	35186	80986	140661	30127	**80986**	**141420**	**33429**
Carbon Monoxide	1.37	2.62	0.652	1.95	3.16	0.777	4.01	6.96	1.49	**2.44**	**4.25**	**0.973**
Nitrogen Oxides	68.5	130	32.5	183	297	73.1	178	310	66.3	**143**	**246**	**57.3**
Oxygen	205439	391125	97378	193662	314305	77271	198897	345452	73990	**199333**	**350294**	**82880**
Sulphur Dioxide	20.7	39.4	9.81	35.1	57.0	14.0	36.4	63.2	13.5	**30.7**	**53.2**	**12.5**
Total Hydrocarbons	4.7 ppm*	8.9 ppm*		0.0 ppm*	0.0 ppm*		0.1 ppm*	0.2 ppm*		**1.6 ppm***	**3.0 ppm***	

Notes:
- *Reference Conditions: 77°F, 29.92 in. Hg (25°C, 101.3 kPa)*
- *Oxygen Correction - Corrected to 11% oxygen*
- *"*" denotes THC – Wet basis as non-methane THC*

Table 5-12: Summary of Undiluted O_2 Levels

Gas	PM Isokinetic Run			SVOC Isokinetic Run		
	Test No. 1	Test No. 2	Test No. 3	Test No. 1	Test No. 2	Test No. 3
	%	%	%	%	%	%
O_2	10.8	10.3	12.1	11.5	10.3	11.0

Table 5-13: Summary of O_2 Gas Audit

Certified Value (ppm)	Cylinder #	INSTRUMENT Measured Values (ppm)				Accuracy (%)
		R1	R2	R3	AVG	
9.98	CC167566	9.94	9.94	9.95	9.94	**0.4**
21.11	CC160492	21.05	21.08	21.04	21.06	**0.3**

Table 5-14: Summary of CO Gas Audit

Certified Value (ppm)	Cylinder #	INSTRUMENT Measured Values (ppm)				Accuracy (%)
		R1	R2	R3	AVG	
25.1	LCCOSA20477	25.21	25.36	25.07	25.21	**0.5**
80.5	CC167566	80.34	80.13	79.99	80.15	**0.4**

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6.0 DISPERSION MODELLING

6.1 Dispersion Modelling Overview

The POI concentrations for the contaminants that were subject to the source testing program were assessed at the property line and beyond using the AERMOD model prepared and provided by AECOM. This AERMOD model was previously submitted by AECOM as part of the ECA Application to the MOE, and an ECA was granted to the Facility by the MOE based on the submitted application. Therefore, no issues are expected by the use of the AERMOD model prepared by AECOM.

The AERMOD model was updated using the average flow rate and temperature measured over the two isokinetic sampling programs.

AECOM conducted dispersion modelling for the chimney using an emission rate of 1 g/s to yield unit emission concentrations, in terms of ug/m^3 per g/s. These unit emission concentrations, summarized in Table 6-1, were used to determine the maximum POI concentrations for the contaminants.

In accordance with the MOE's document *"Procedure for Preparing an Emission Summary and Dispersion Modelling Report"*, Version 3.0, dated March 2009, the unit emission concentration for contaminants (excluding odour) with half-hour time-averaged concentrations were converted from the one-hour unit emission concentration, as follows:

$$C_0 = C_1 \times F$$

Where,

C_0 = the concentration at the averaging period t_0
C_1 = the concentration at the averaging period t_1
F = the factor to convert from the averaging period t_1 to the averaging period t_0

$$F = (t_1/t_0)^n$$

Where,

t_1 = 1-hour averaging period
t_0 = half-hour averaging period
n = average conditions across a range of atmospheric stabilities

Table 6-1: Modelled Unit Emission Concentrations from AERMOD

Source ID	Modelled Emission Rate	Maximum Unit Emission Concentration			
		1-hour	24-hour	30-day	Half-hour
	g/s	(ug/m^3) / (g/s)	(ug/m^3) / (g/s)	(ug/m^3) / (g/s)	(ug/m^3) / (g/s)
EX1	1	411	111	34	499

6.2 Odour Modelling

Odour was modelled in accordance with the MOE Technical Bulletin "Methodology for Modelling Assessments of Contaminants with 10-Minute Average Standards and Guidelines Under O. Reg. 419/05", April 2008, issued by the MOE Standards Development Branch.

To model odour, the following changes were made to the AERMOD model provided by AECOM:

- The mass emission rate was increased by a factor of 1.65 to yield a 10-minute emission concentration from a 1-hour average.
- The AERMOD model was updated with the average of the measured flow rate over the source test program.
- Additional receptor grids were placed in the area within 200 metres of the stack. The additional receptor grids were placed by increasing the spacing intervals from 20 metres to 10 metres for areas within 200 metres of the stack. By increasing the spacing interval of PORs to 10 metres, additional separate discrete receptors were considered to not be necessary at the location human receptors (residences).

6.3 Summary of Modelling Results

The dispersion modelling output files are provided in Appendix H.

For the contaminants subject to the source test, an emission summary table summarizing the emission rates, the modelled emission concentrations and the comparison to the MOE standard is shown in Table 6-2. It should be noted that Table 6-2 only shows the contaminants which were detected at or above the laboratory detection limits; contaminants that were below the detection limits are listed in the table.

The emission rates and the modelled odour concentrations at the receptors are provided in Table 6-3. The maximum modelled odour concentrations at the receptors is 0.16 OU, which is well below the MOE guideline of 1 OU. In addition, it should be noted that for a contaminant with a 10-minute odour-based standard, the MOE considers it acceptable if the modelling shows that a location of a human receptor the standard or guideline is exceeded less than 0.5% of the year, which corresponds to 44 hours per year or less.

Table 6-2: Emission Summary Table for Contaminants At or Above Laboratory Detection Limits

(continued on next page)

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria	Limiting Effect	Reference	Percent of POI Limit
		(g/s)	(ug/m³)	(hours)	(ug/m³)			%
Particulate matter	N/A	2.79E-04	3.10E-02	24	120	Visibility	Sch. 3	0.03%
Hydrogen chloride	7647-01-0	1.48E-02	1.64E+00	24	20	Health	Sch. 3	8.19%
Carbon monoxide	630-08-0	1.29E-03	6.44E-01	0.5	6000	Health	Sch. 3	0.01%
Dioxins and Furans*	N/A	1.92E-12	2.13E-10	24	1.00E-07	Health	Sch. 3	0.21%

Table 6-2: Emission Summary Table for Contaminants At or Above Laboratory Detection Limits
(continued from previous page)

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria	Limiting Effect	Reference	Percent of POI Limit
		(g/s)	(ug/m³)	(hours)	(ug/m³)			%
Nitrogen oxides	10102-44-0	7.11E-02	2.92E+01	1	400	Health	Sch. 3	7.31%
Nitrogen oxides	10102-44-0	7.11E-02	7.89E+00	24	200	Health	Sch. 3	3.95%
Sulphur dioxide	7446-09-5	1.25E-02	1.39E+00	24	275	Health	Sch. 3	0.50%
Antimony	7440-36-0	1.19E-07	1.32E-05	24	25	Health	Sch. 3	0.00%
Arsenic	7440-38-2	1.35E-07	1.50E-05	24	0.3	Health	Guideline	0.00%
Barium	7440-39-3	1.32E-06	1.47E-04	24	10	Health	Guideline	0.00%
Beryllium	7440-41-7	3.00E-08	3.33E-06	24	0.01	Health	Sch. 3	0.03%
Cadmium	7440-43-9	4.80E-08	5.33E-06	24	0.025	Health	Sch. 3	0.02%
Chromium	7440-47-3	1.25E-06	1.39E-04	24	0.5	Health	Guideline	0.03%
Cobalt	7440-48-4	7.30E-08	8.10E-06	24	0.1	Health	Guideline	0.01%
Copper	7440-50-8	1.53E-06	1.70E-04	24	50	Health	Sch. 3	0.00%
Lead	7439-92-1	2.29E-07	2.54E-05	24	0.5	Health	Sch. 3	0.01%
Lead	7439-92-1	2.29E-07	7.81E-06	30-day	0.2	Health	Sch. 3	0.00%
Mercury	7439-97-6	1.96E-06	2.18E-04	24	2	Health	Sch. 3	0.01%
Molybdenum	7439-98-7	5.13E-06	5.69E-04	24	120	Particulate	Guideline	0.00%
Nickel	7440-02-0	2.66E-06	2.95E-04	24	2	Vegetation	Sch. 3	0.01%
Selenium	7782-49-2	2.99E-07	3.32E-05	24	10	Health	Guideline	0.00%
Silver	7440-22-4	6.90E-08	7.66E-06	24	1	Health	Sch. 3	0.00%
Vanadium	7440-62-2	9.00E-08	9.99E-06	24	2	Health	Sch. 3	0.00%
Zinc	7440-66-6	4.79E-06	5.32E-04	24	120	Particulate	Sch. 3	0.00%
Vinyl chloride	75-01-4	1.83E-07	2.03E-05	24	1	Health	Sch. 3	0.00%

** Dioxin and Furan POI concentrations have units of i-TEQ/m³*

Table 6-3: Emission Summary Table for Odour

Contaminant	CAS Number	Tested Emission Rate	Modelled POI Concentration	Averaging Period	MOE POI Criteria
		(OU/s)	(OU)	(hours)	(OU)
Odour	N/A	248	0.16	10-min	1

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7.0 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) ACTIVITIES

7.1 Field QA/QC Activities

Stack sampling was performed according to standards specified in US-EPA and OSTC Methodologies.

All sample containers were clearly labelled to indicate run number, source identification, dilution ratio (for odour samples), and date and time of collection. Field blanks were collected according to testing protocol.

Field equipment was maintained and calibrated by Mike Prince. Field equipment calibration records are provided in Appendix I.

The source was sampled within the required isokinetic tolerances of 90% to 110%.

7.2 Laboratory QA/QC

Maxxam Analytics is a Ministry-acknowledged laboratory for air testing. Sample gas evaluations conducted at the Maxxam Analytics conforms to the extraction and analysis procedures outlined in each of the source testing methods. For each test run analyzed, Maxxam issued a Quality Assurance Report, evaluating the results via duplication, spiked blanks and method blanks. Quality Assurance Reports are provided alongside the analytical results.

A review of Maxxam Analytics' QA/QC procedures indicates that the laboratory results can be considered reliable.

To monitor assessor sensitivity, Pinchin follows the European Standard EN 13725:2003 "Air quality – Determination of odour concentration by dynamic olfactometry", which specifies a sensitivity range much smaller than the normal population to ensure constant results from sample to sample, and from day to day. This is above and beyond the quality control practices required by the Province of Ontario outlined in the Ontario Ministry of the Environment Draft "Source Sampling for Odours," Version #2, February 1989. An AC'SCENT® International triangular forced-choice, ascending concentration, dynamic dilution olfactometer is used with a panel of 8 trained assessors.

8.0 CONCLUSIONS

The compliance source test was successfully completed in accordance with the methodology described in the Pre-Test Plan approved by the MOE and subsequent correspondences with the Source Assessment Officer, and according to standards identified in the Ontario Stack Testing Code and US-EPA Reference Methods.

The modelled results of this program are well below the applicable MOE POI criteria for all tested substances.

The maximum modelled odour concentrations at the receptors is 0.16 OU, which is well below the criteria of 1 OU stated in the ECA.

The concentration of oxygen in the undiluted flue gas leaving the secondary chamber ranged from 10.3% to 12.1%, which satisfies the condition specified in the ECA.

The maximum oxygen corrected total hydrocarbons (non-methane) was measured to be 3.0 ppm, well below the 100 ppm specified in the ECA.

The O_2 CEMs channel had a relative accuracy of 0.4% at 9.98% O_2 and 0.3% at 21.11% O_2. This meets the relative accuracy specified in the ECA of less than or equal to 10 percent.

The CO CEMs channel had a relative accuracy of 0.5% at 25.1 ppm CO, and 0.4% at 80.5 ppm CO, as summarized in Table 5-14. This meets the relative accuracy specified in the ECA of ≤10 percent, or ±5% ppm, whichever is greater.

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The appendices have been removed from this version of the report to decrease the file size for online review.

Article 5 of 5

CONTENT COPY OF ORIGINAL

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 0257-8Y4PKD
Issue Date: April 24, 2013

Mount Pleasant Group of Cemeteries
375 Mount Pleasant Road
Toronto, Ontario
M4T 2V8

Site Location: 375 Mount Pleasant Road, Toronto, Ontario.

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

- replacement of two (2) existing cremation units, previously approved under Approval No. 121/3/598, dated January 3, 1972, with one (1) natural gas fired cremation unit for human remains, equipped with:

. a primary chamber with gas fired burner rated at 949,550 kilojoules per hour;

. a secondary chamber with gas fired burner rated at 1,266,070 kilojoules per hour, preheated and operated at a minimum combustion temperature of 850 degrees Celsius and 2 second retention time;

. continuous monitoring system for opacity, temperature, oxygen and carbon monoxide;

. a flue gas treatment system consisting of a sodium bicarbonate and powdered activated carbon injection system and a pulse jet type baghouse equipped with 55 square metres of aramid fabric filters, bag failure detection device, pre-coated with sodium bicarbonate and powdered activated carbon, having a filtering velocity of 1.2 centimetres per second;

discharging into the air through a stack having an exit diameter of 0.22 metre, extending 1.0 metres above the roof and 13.0 metres above grade;

all in accordance with the supporting documentation in Schedule "A" of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "AERMOD" means the dispersion model developed by the American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) including the PRIME (Plume Rise Model Enhancement) algorithm, used to calculate one-hour average concentrations of a contaminant at the Point of Impingement and at the most impacted Sensitive Receptor.

2. "Approval" means this Environmental Compliance Approval including Schedules "A", "B", "C", "D" and "E", and the application and supporting documentation listed above.

3. "CEM System" means the continuous monitoring and recording systems and associated control systems used to optimize the operation of the Equipment to minimize the emissions from the Equipment, as described in the Company's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval, as specified in the attached Schedule "B".

4. "Company" means Mount Pleasant Group of Cemeteries that is responsible for the construction or operation of the Facility and includes any successors and assigns.

5. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA.

6 "District Manager" means the appropriate local district office of the Ministry, where the Facility is geographically located.

7. "EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended.

8. "Equipment" means the cremation unit, described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval.

9. "Facility" means the entire operation located on the property where the Equipment is located.

10. "Manager" means the Manager, Technology Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Technology Standards Section, Standards Development Branch, as those duties relate to the conditions of this Approval.

11 "Manual" means a document or a set of documents that provide written instructions to staff of the Company.

12. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf.

13. "O. Reg. 419" means the Ontario Regulation 419/05, Air Pollution – Local Air Quality, as amended.

14. "Performance Requirements" means the performance requirements and emission limits specified in the section of this Approval titled "Performance Requirements".

15. "Point of Impingement" has the same meaning as in section 2 of O. Reg. 419.

16. "Pre-Test Plan" means a plan for the Source Testing including the information required in Section 1.1 of the Source Testing Code.

17. "Publication NPC-205" means the Ministry Publication NPC-205, "Sound level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", October, 1995 as amended.

18 "Sensitive Receptor" means any location where routine or normal activities occurring at reasonably expected times would experience adverse effect(s) from odour discharges from the Facility, including one or a combination of:

(a) private residences or public facilities where people sleep (eg: single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.),
(b) institutional facilities (eg: schools, churches, community centres, day care centres, recreational centres, etc.),
(c) outdoor public recreational areas (eg: trailer parks, play grounds, picnic areas, etc.), and
(d) commercial areas where there are continuous public activities (eg: commercial plazas and office buildings).

19. "Source Testing" means sampling and testing to measure emissions resulting from operating the Equipment under conditions which yield the worst case emissions, as practically possible, within the approved operating range of the Equipment and satisfies paragraph 1 of subsection 11(1) of O. Reg. 419, as determined in consultation with the Manager.

20. "Source Testing Code" means the Source Testing Code, Version 2, Report No. ARB-66-80, dated November 1980, prepared by the Ministry, as amended.

21. "Test Contaminants" means the contaminants listed in Schedule "C".

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

TERMS AND CONDITIONS

PERFORMANCE REQUIREMENTS

1. The Company shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-205.

2. The Company shall ensure that the Equipment is designed and operated to comply, at all times, with the following performance requirements:

OPERATING PARAMETERS

(1) the temperature at the outlet of the primary combustion chamber, as recorded by the CEM System, shall be at least 800 degrees Celsius for at least 30 minutes during the last part of each cremation;

(2) the temperature in the secondary combustion chamber, as recorded by the CEM System, shall be at least 850 degrees Celsius before the primary combustion chamber is loaded and thereafter throughout each cremation;

(3) the residence time of the combustion gases in the secondary combustion chamber shall be at a minimum two seconds at a temperature of at least 850 degrees Celsius;

EMISSION CONCENTRATION LIMIT

(4) the concentration of oxygen in the undiluted flue gas leaving the secondary chamber, as recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis, calculated as a 10-minute average;

(5) the half-hour average concentration of carbon monoxide in the undiluted flue gases leaving the secondary combustion chamber, as recorded by the CEM System, shall not exceed 100 parts per million by volume, on a dry basis normalized to 11 percent oxygen at a reference temperature of 25 degrees Celsius and a reference pressure of 101.3 kilopascals;

(6) the 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Equipment, calculated in accordance with the procedures outlined in Schedule "D", shall not exceed 1 odour unit;

(7) the concentration of organic matter having a carbon content, expressed as equivalent methane, being an average of ten measurements taken at approximately one minute intervals, shall not be greater than 100 parts per million by volume, measured on an undiluted basis.

OPERATION AND MAINTENANCE

3. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:

(1) prepare, before commencement of operation of the Equipment, and update, as necessary, an Operational and Maintenance Manual outlining the operating procedures and a maintenance program for the Equipment, including:

(a) the routine and emergency operating and maintenance procedures in accordance with good engineering practice, including annual inspection procedures as recommended by the Equipment and CEM System suppliers;

(b) emergency procedures;

(c) procedures to control all discharges from the Equipment in the event of loss or failure of power source to the Equipment;

(d) procedures for any record keeping activities relating to the operation and maintenance of the Equipment;

(e) procedures for operator training which is to be provided by an individual experienced with the Equipment;

(f) procedures for optimizing the operation of the Equipment to minimize the emissions from the Equipment;

(g) the procedures for recording and responding to complaints regarding the operation of the Equipment;

(2) implement the recommendations of the Operational and Maintenance Manual.

4. The company shall limit the operation of the Equipment to a maximum of 40 cremations per week.

5. The Company shall ensure that the primary combustion chamber is not loaded unless the associated CEM System is fully operational.

6. The Company shall make all reasonable efforts to ensure that all metallic handles are removed from the caskets before they are loaded into the Equipment.

7. The Company shall install and maintain visual and audible alarm systems to alert the Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM System and shall forthwith take all reasonable actions to bring the Equipment into compliance with all Performance Conditions.

COMPLAINTS RESPONSE PROCEDURE

8. If at any time, the Company receives any environmental complaints from the public regarding the operation of the Facility, the Company shall respond to these complaints according to the following procedure:

(1) The District Manager shall be notified forthwith upon receipt of any complaint;

(2) Each complaint shall be recorded and numbered, and shall include the following information, as a minimum:

(a) nature of the complaint;
(b) weather conditions and wind direction at the time of the complaint;
(c) name and address of the complainant (if provided); and
(d) time and date of the complaint;

(3) Appropriate steps shall be taken forthwith to determine all possible causes of the complaint and to eliminate the cause of the complaint. A written reply shall be provided to the complainant, if known and if requested by the complainant, within 3 business days of receipt of the complaint by the Company

SOURCE TESTING

9. The Company shall perform Source Testing in accordance with the procedures outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Equipment. The first Source Testing program shall be conducted no later than three (3) months after the commencement date of operation of the Equipment and a subsequent Source Testing program shall be conducted no later than five (5) years after commencement of operation of the Equipment.

10. The Company shall, after each Source Testing required in condition No. 9 has been completed and immediately after the corresponding Source Testing report has been submitted to the Ministry, make the Emission Summary Table, prepared as described in s.26 (1), paragraph 14 of O. Regulation 419/05 and updated using the results of the Source Testing, available and easily accessible for review by the public on the Company's website.

CONTINUOUS MONITORING

11. The Company shall, prior to the commencement of operation of the Equipment, install and subsequently conduct and maintain a program to continuously monitor:

(1) the temperature at the outlet of the primary chamber of the Equipment;

(2) the temperature at the location in the secondary chamber of the cremator where the minimum retention time of the combustion gases at a minimum temperature of 850 degrees Celsius for at least two seconds is achieved; and

(3) the concentration of carbon monoxide and the concentration of oxygen in the undiluted gases leaving the secondary

chamber of the Equipment.

The CEM System shall be equipped with continuous recording devices and shall comply with the requirements outlined in the attached Schedule "B".

RECORD RETENTION

12. The Company shall maintain and retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the operation of the Equipment, and monitoring and recording activities required by this Approval. These records shall be made available to staff of the Ministry upon request in a timely manner. The Company shall retain:

(1) number of monthly cremations;

(2) records of each load processed by the Equipment including: a description of the material of construction of the casket, type of finish on the casket, description of any hardware not removed from the casket, estimated weight of the body and casket, and start and finish time of the cremation;

(3) all original records produced by the Source Testing and the recording devices associated with the CEM System;

(4) records of all excursions from the applicable Performance Requirements as measured by the CEM System, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions.

(5) all records on maintenance, repair and inspection of the Equipment and the CEM System;

(6) description of any upset conditions associated with the operation of the Equipment and remedial action taken;

(7) all records on operator training, including:

(a) date of training;
(b) name and signature of person who has been trained; and
(c) description of the training provided.

(8) all records on the environmental complaints, including:

(a) a description, time and date of the incident;
(b) wind direction at the time of the incident; and
(c) a description of the measures taken to address the cause of the incident and to prevent a similar occurrence in the future.

REPORTING

13. By March 31st following the end of each operating year, the Company shall prepare and submit to the District Manager an Annual Report summarizing the operation of the Facility covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:

(a) a summary of the monthly number of cremations;

(b) a summary of dates, duration and reasons for any environmental and operational problems, Equipment malfunctions and any other emergency situations that may have negatively impacted the quality of the environment and corrective measures taken to eliminate the environmental impacts of the incidents;

(c) dates of all environmental complaints relating to the Facility together with cause of the complaints and actions taken to prevent future complaints and/or events that could lead to future complaints;

(d) any recommendations to improve the environmental and process performance of the Facility in the future.

14. The Company shall notify the District Manager, in writing, at least fifteen (15) business days prior to commencement of operation of the Equipment.

SCHEDULE "A"

Supporting Information

Application for an Approval and all supporting information dated June 1, 2012, signed by Glen E. Timney of Mount Pleasant Group of Cemeteries.

SCHEDULE "B"

PARAMETER: TEMPERATURE

LOCATION:

The sample point for the Continuous Temperature Monitor shall be located in:
(1) the outlet of the primary chamber; and
(2) the secondary chamber where the minimum retention time of the combustion gases at a minimum temperature of 850 degrees Celsius for at least two seconds is achieved.

PERFORMANCE:

The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters:

	PARAMETERS	SPECIFICATION
1.	Type:	shielded "K" type thermocouple, or equivalent
2.	Accuracy:	± 1.5 percent of the minimum gas temperature

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 1 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 95 percent of the time for each calendar quarter.

PARAMETER: OXYGEN

INSTALLATION:

The Continuous Oxygen Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of oxygen in the undiluted gases leaving the secondary chamber of the Equipment and shall meet the following installation specifications:

	PARAMETERS	SPECIFICATION
1	Range (percentage):	0 - 20 or 0 - 25
2	Calibration Gas Ports:	close to the sample point

PERFORMANCE:

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The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

	PARAMETERS	SPECIFICATION
1	Span Value (percentage):	80 - 100% of full scale
2	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data
3	Calibration Error:	0.5 percent O_2
4	System Bias:	≤ 4 percent of the mean value of the reference method test data
5	Procedure for Zero and Span Calibration check:	all system components checked
6	Zero Calibration Drift (24-hour):	≤ 0.5 percent O_2
7	Span Calibration Drift (24-hour):	≤ 0.5 percent O_2
8	Response Time (90 percent response to a step change):	≤ 180 seconds
9	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

PARAMETER: CARBON MONOXIDE

INSTALLATION:

The Continuous Carbon Monoxide Monitor shall be installed at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the undiluted gases leaving the secondary chamber of the Equipment and shall meet the following installation specifications:

	PARAMETERS	SPECIFICATION
1	Range (parts per million, ppm):	0 to ≥ 100
2	Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters:

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	PARAMETERS	SPECIFICATION
1	Span Value (nearest ppm equivalent):	80 - 100% of full scale
2	Relative Accuracy:	≤ 10 percent of the mean value of the reference method test data or ± 5 ppm whichever is greater
3	Calibration Error:	≤ 2 percent of actual concentration
4	System Bias:	≤ 4 percent of the mean value of the reference method test data
5	Procedure for Zero and Span Calibration Check:	all system components checked
6	Zero Calibration Drift (24-hour):	≤ 5 percent of span value
7	Span Calibration Drift (24-hour):	≤ 5 percent of span value
8	Response Time (90 percent response to a step change):	≤ 180 seconds
9	Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of Report EPS 1/PG/7.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "C"

Odour

Halogenated and Aromatic Volatile Organic Compounds
Total Hydrocarbons Compounds (Total Gaseous Non-Methane Organics)
Hydrogen Chloride
Total Suspended Particulate Matter
Vinyl Chloride
Nitrogen Oxides
Sulphur Dioxide

List of Metals:
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Copper
Lead
Mercury
Molybdenum
Nickel
Selenium
Silver

Thallium
Vanadium
Zinc

List of Dioxins, Furans and Dioxin-like PCBs

2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]
1,2,3,7,8-Pentachlorodibenzo-p-dioxin [1,2,3,7,8-PeCDD]
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,4,7,8-HxCDD]
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,6,7,8-HxCDD]
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin [1,2,3,7,8,9-HxCDD]
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [1,2,3,4,6,7,8-HpCDD]
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin [1,2,3,4,6,7,8,9-OCDD]
2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]
2,3,4,7,8-Pentachlorodibenzofuran [2,3,4,7,8-PeCDF]
1,2,3,7,8-Pentachlorodibenzofuran [1,2,3,7,8-PeCDF]
1,2,3,4,7,8-Hexachlorodibenzofuran [1,2,3,4,7,8-HxCDF]
1,2,3,6,7,8-Hexachlorodibenzofuran [1,2,3,6,7,8-HxCDF]
1,2,3,7,8,9-Hexachlorodibenzofuran [1,2,3,7,8,9-HxCDF]
2,3,4,6,7,8-Hexachlorodibenzofuran [2,3,4,6,7,8-HxCDF]
1,2,3,4,6,7,8-Heptachlorodibenzofuran [1,2,3,4,6,7,8-HpCDF]
1,2,3,4,7,8,9-Heptachlorodibenzofuran [1,2,3,4,7,8,9-HpCDF]
1,2,3,4,6,7,8,9-Octachlorodibenzofuran [1,2,3,4,6,7,8,9-OCDF]

3,3',4,4'-Tetrachlorobiphenyl [3,3',4,4'-tetraCB (PCB 77)]
3,4,4',5- Tetrachlorobiphenyl [3,4,4',5-tetraCB (PCB 81)]
3,3',4,4',5- Pentachlorobiphenyl (PCB 126) [3,3',4,4',5-pentaCB (PCB 126)]
3,3',4,4',5,5'- Hexachlorobiphenyl [3,3',4,4',5,5'-hexaCB (PCB 169)]
2,3,3',4,4'- Pentachlorobiphenyl [2,3,3',4,4'-pentaCB (PCB 105)]
2,3,4,4',5- Pentachlorobiphenyl [2,3,4,4',5-pentaCB (PCB 114)]
2,3',4,4',5- Pentachlorobiphenyl [2,3',4,4',5-pentaCB (PCB 118)]
2',3,4,4',5- Pentachlorobiphenyl [2',3,4,4',5-pentaCB (PCB 123)]
2,3,3',4,4',5- Hexachlorobiphenyl [2,3,3',4,4',5-hexaCB (PCB 156)]
2,3,3',4,4',5'- Hexachlorobiphenyl [2,3,3',4,4',5'-hexaCB (PCB 157)]
2,3',4,4',5,5'- Hexachlorobiphenyl [2,3',4,4',5,5'-hexaCB (PCB 167)]
2,3,3',4,4',5,5'- Heptachlorobiphenyl [2,3,3',4,4',5,5'-heptaCB (PCB 189)]

List of Polycyclic Organic Matter:
Acenaphthylene
Acenaphthene
Anthracene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)fluorene
Benzo(b)fluorene
Benzo(ghi)perylene
Benzo(a)pyrene
Benzo(e)pyrene
2-Chloronaphthalene
Chrysene
Coronene
Dibenzo(a,c)anthracene
9,10-Dimethylanthracene
7,12-Dimethylbenzo(a)anthracene
Fluoranthene
Fluorene

Indeno(1,2,3-cd)pyrene
2-Methylanthracene
3-Methylcholanthrene
1-Methylnaphthalene
2-Methylnaphthalene
1-Methylphenanthrene
9-Methylphenanthrene
Naphthalene
Perylene
Phenanthrene
Picene
Pyrene
Tetralin
Triphenylene

SCHEDULE "D"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

1. Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing the AERMOD atmospheric dispersion model or any other model acceptable to the Director, that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations;

2. Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and

3. Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

(a) Use the following formula to convert and record one-hour average concentrations at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations:

$X_{10min} = X_{60min} * 1.65$

where X_{10min}= 10-minute average concentration
X_{60min}= one-hour average concentration

SCHEDULE "E"

Source Testing Procedures

1. The Company shall submit, to the Manager a test protocol including the Pre-Test Plan required by the Source Testing Code, at least two (2) months prior to the scheduled Source Testing date. The Company shall finalize the Pre-Test Plan in consultation with the Manager.

2. The Company shall not commence the Source Testing required under this Approval until the Manager has approved the Pre-Test Plan.

3. The Company shall complete the first Source Testing no later than three (3) months after commencement of operation of the Equipment and a subsequent Source Testing program no later than five (5) years after commencement of operation of the Equipment.

4. The Company shall notify the Manager and the District Manager in writing of the location, date and time of any impending Source Testing required by this Approval, at least fifteen (15) days prior to the Source Testing.

5. The Company shall submit a report (hardcopy and electronic format) on the Source Testing to the Manager and the District Manager not later than three (3) months after completing the Source Testing. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

(1) an executive summary;

(2) all records of the operating conditions at the time of Source Testing, including but not limited to the following:
- description of the material of construction of the casket
- type of finish on the casket
- description of any hardware not removed from the casket
- estimated weight of the body as per the information obtained from the funeral home
- start and finish time of each cremation

(3) all records produced by the CEM System;

(4) all records of the cremator settings during the cremation, including: primary and secondary chamber burner gas flow rates;

(5) the results of Source Testing, including the emission rate and emission concentration of the Test Contaminants;

(6) the results of dispersion calculations using the results of Source Testing to estimate emissions from the Equipment in accordance with O. Reg. 419 or Schedule "D" (for odour), indicating the maximum concentrations of the Test Contaminants at the Point of Impingement and at the most impacted Sensitive Receptor (for odour);

(7) results of the calculation of the residence time of the combustion gases in the secondary combustion chamber at a minimum temperature of 850 degrees Celsius; and

(8) recommendations for optimizing the operation of the Equipment to minimize the emissions from the Equipment.

6. The Director may not accept the results of the Source Testing if:

(1) the Source Testing Code or the requirements of the Manager were not followed;
(2) the Company did not notify the Manager, the District Manager and the Director of the Source Testing;
(3) the Company failed to provide a complete report on the Source Testing.

7. If the Director does not accept the results of the Source Testing, the Director may require re-testing. If re-testing is required, the Pre-Test Plan strategies need to be revised and submitted to the Manager for approval. The actions taken to minimize the possibility of the Source Testing results not being accepted by the Director must be noted in the revision.

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

1. Conditions Nos. 1 and 2 are included to provide the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility/Equipment.

2. Condition Nos. 3 to 8 are included to emphasize that the Equipment must be operated and maintained according to a procedure that will result in compliance with the EPA, the regulations and this Approval.

3. Conditions Nos. 9, 10 and 11, are included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.

4. Condition Nos. 12 is included to require the Company to keep records and provide information to the Ministry so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can verified.

5. Condition Nos. 13 and 14 are included to require the Company to provide information on the operation of the Facility to the Ministry to assist the Ministry with the review of the Facility's compliance with the EPA, the regulations and this Approval.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 121/3/598 issued on January 3, 1972.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, S.O. 1993, c. 28 (Environmental Bill of Rights), the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance 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.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

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, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Environmental Commissioner 1075 Bay Street, Suite 605 Toronto, Ontario M5S 2B1	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection 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) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

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DATED AT TORONTO this 24th day of April, 2013

Rudolf Wan, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

QN/
c: District Manager, MOE Toronto - District
Matt Lei, AECOM