

Provincial Officer's Report

Name of Person(s) or Company:

Waste Management of Canada Corporation
2301 Carp Road
Ottawa, ON, K0A 1L0

Site Location:

2301 Carp Road
Ottawa, ON, K0A 1L0

Observations:

Refer to enclosed study entitled,

**ODOUR STUDY CONDUCTED BY MINISTRY OF THE ENVIRONMENT
AT WASTE MANAGEMENT OF CANADA CORPORATION'S
OTTAWA WASTE FACILITY, 2301 CARP ROAD, OTTAWA**

2009/12/10
Date (YYYY/MM/DD)

Greg Davis, 725
Officer (print) & Badge #

Signature



ODOUR STUDY CONDUCTED BY MINISTRY OF THE ENVIRONMENT

AT WASTE MANAGEMENT OF CANADA CORPORATION'S

OTTAWA WASTE FACILITY, 2301 CARP ROAD, OTTAWA

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1. INTRODUCTION:

1.1 Purpose:

The Ministry of the Environment recently undertook an odour study from September 21 to October 28, 2009 to determine the effectiveness of remedial measures taken by Waste Management of Canada Corporation ('WMCC' or the 'company') to control off-site odours from their landfill site located at 2301 Carp Road, Ottawa. The study involved Ministry of the Environment Provincial Officers conducting odour surveys to determine if odours being emitted from the WMCC landfill are causing or may cause an adverse effect to the public as defined by the Environmental Protection Act (EPA). The reason for the study being that the public has strongly voiced since February 2006 that they are being adversely impacted by objectionable odours being emitted from the landfill. The public includes residents in Carp, Stittsville and Kanata.

1.2 Background:

1.2.1 Voluntary Abatement Plan (VAP)

Waste Management of Canada Corporation operates a solid non-hazardous waste disposal site under various Ministry of the Environment certificates of approval for air emissions, water taking and waste disposal activities. WMCC is licenced to use and operate a 35 hectare landfill area within a 133.02 hectare site.

Commencing February 2006, the Ministry of the Environment began receiving numerous notifications from the residents in the surrounding communities of Carp, Stittsville and Kanata indicating foul odour emissions from WMCC's landfill site. The residents indicated these odour impacts were causing them discomfort and loss of enjoyment of their property. Since this time, the Ministry of the Environment's Ottawa District Office has been committed to working with the company and the public to reduce the odours being emitted from the site to a level at which the odours are not causing or may not cause an adverse effect.

After a meeting with staff from the Ministry of the Environment's Ottawa District Office in May 2006, WMCC entered into a Voluntary Abatement Plan (refer to Appendix I) in June 2006 to assess and resolve the odour emissions from the site. WMCC provided evidence that the primary source of the odour emissions from the site was from the landfill gas being generated from the waste contained in the landfill mound at the site. Landfill gas (LFG) is created when organic waste decomposes under anaerobic conditions (absence of oxygen). The gas consists of approximately equal parts methane and carbon dioxide, as well as traces of non-methane organic compounds such as sulphides that can be odorous. WMCC stated their capacity to extract landfill gas through their LFG well network and flare system was not sufficient to manage the present and future prediction of landfill gas generated at the site. WMCC had applied in March 2006 to the Ministry of the Environment's Environmental Assessment and Approvals

Branch (EAAB) to amend their air certificate of approval to include a temporary flare as well as a second enclosed flare to increase the volume of LFG destroyed, thereby destroying the odour causing compounds.

Between June and November 2006, WMCC enhanced their landfill gas collection and flaring system by installing approximately 20 additional LFG wells, gas headers, new LFG blowers as well as completing annual capping initiatives, winterizing their odour control system and installing a site specific weather station.

WMCC advised the Ministry on November 2, 2006 that the excess landfill gas that had been generated and banked and was discharging from the landfill mound would require weeks to months after the commencement of the operation of the second enclosed flare to be reduced to the point where the extraction and flaring capacity would match the landfill gas generation rate.

Following the approval and subsequent operation of the second enclosed flare on November 29, 2006 the residents in the community continued to report offensive odour emissions at their residences. Residents indicated adverse effects such as: having to turn off their air exchangers as they were able to detect landfill odour inside their homes, having to close windows to keep the landfill odour out of their homes, children unable to play outdoors, residents indicating that they have become nauseous and have suffered from headaches, and that they feel their property values have suffered a financial loss because of the landfill odours in their community.

To determine the success of the VAP in controlling odour emissions from the landfill site, the ministry initiated the first odour survey assessment that commenced on January 25, 2007 and ended on February 23, 2007. The survey involved Provincial Officers conducting olfactory assessments (sniff tests) in the community and the vicinity of WMCC's landfill site to determine if odours were present and the likely source of the odours. Based on observations conducted by my colleagues and I during this time period, as well as the complaints received from the residents in the community indicating adverse effects, I concluded that despite the activities carried out in the VAP, WMCC was still discharging a contaminant, namely odour, into the natural environment that was causing or may cause an adverse effect, contrary to section 14 of the Environmental Protection Act.

1.2.2 Provincial Officer's Order 5830-6Z2PPW:

Based on the ineffectiveness of the VAP to sufficiently address and resolve the off-site odours from WMCC's site, Provincial Officer's Order 5830-6Z2PPW (Appendix II) was issued to WMCC on May 11, 2007. The order was appealed by WMCC but later confirmed by Director's Order 5830-6Z2PPW-1 (Appendix III) on May 25, 2007.

The Order required additional assessments and enhancements to further reduce the odour discharges from the landfill site. Included in the Order was the requirement for WMCC to prepare and submit a contingency report. This report was to describe and evaluate

potential contingency measures which could be implemented at the WMCC landfill site on or after September 30, 2007 to eliminate the ongoing odour discharges from the site. The subsequent submission detailed and assessed such potential measures as; decreasing vertical gas well spacing, increase landfill gas collection rate, placement of low permeability cover material, synthetic cap along landfill ridge, synthetic cover over entire site, more frequent odour emission surveys and ceasing waste acceptance and placement of final cover material.

To assess if the WMCC landfill site was discharging odour emissions from the site on and after September 30, 2007 that were causing or may cause adverse effects, the ministry initiated a second odour survey assessment similar to that conducted in January 2007 that commenced on September 17, 2007 and ended on October 15, 2007. The survey revealed ministry staff, complemented by complaints from the public, detected objectionable odours from WMCC's landfill that were at or near residential areas that were causing or may cause adverse effects.

1.2.3 Provincial Officer's Order 7160-79THQR

Based on the ineffectiveness of Provincial Officer's Order 5830-6Z2PPW to sufficiently address and resolve the off-site odours from WMCC's site, Provincial Officer's Order 7160-79THQR (Appendix IV) was issued to WMCC on December 19, 2007.

The order required the implementation of the Odour Contingency Plan as well as quarterly reporting and posting on WMCC's website.

The Odour Contingency Plan, dated December 11, 2007, which is attached to the Order in Appendix IV detailed the additional measures WMCC was to take to further ameliorate the odour problem at their landfill site. The Odour Contingency Plan includes the following activities;

- Installation of 18 LFG wells between November 2007 and May 2008 to increase the LFG collection system to 126 vertical wells,
- Slopes that have not yet been capped to be filled to final contours with contaminated soils by end of September 2008,
- Slopes and top of landfill to be capped with minimum 1 m clay to be completed between May 2008 and October 2008,
- Synthetic cap to be designed by March 2008 and completed in three phases between 2009 and 2011,
- Five air emission surveys per year to be conducted in accordance with the US EPA method for operational standards for emissions for landfill sites and actions to be taken with respect to the LFG collection and flaring system as a result of the surveys,
- Leachate seep management to determine if seep to be capped with clay or repaired by drilling vertical well to promote drainage and LFG collection,
- Suspension of processed biosolids use as a vegetative cover, and
- Posting of construction/maintenance activities on WMCC website.

1.2.4 Implementation of Odour Contingency Plan

2008 Work Activities included but not limited to:

- Monitor and balance LFG field
- Maintain the LFG well dewatering pumps
- Maintenance on header pipes
- Installation of LFG wells and collection laterals
- Re-drill old wells on the top of the landfill footprint for increased capacity
- Inspect and locate leachate/LFG seeps with air emission survey
- Repair leachate/LFG seeps on the North & South Slopes.
- Install temporary flare
- Installation of electrical loop around the landfill footprint and dewatering lines

2009 Work Activities included but not limited to:

- Monitor and balance the LFG field
- Maintain the LFG well dewatering pumps
- Repair LFG and Leachate seeps on the North Slope
- Install electrical supply and leachate dewatering lines for LFG well pumps
- Complete the horizontal LFG collector
- Install electrical transformers for the electrical system
- Grading and topsoil placement on the South Slope
- Construction of phase I of beanie cap
- Purge well discharge system upgrade
- Site has 177 vertical extraction wells and horizontal collectors

Throughout 2008 and 2009, as remedial measures progressed, public odour complaints declined in frequency, intensity and distance from the site. The first phase of the beanie cap was completed as of September 2, 2009. The beanie cap is approved as part of the closure plan for the site and is required to be completely installed by September 2011 with the second and third phases being constructed in 2010 and 2011 respectively.

At the request of WMCC on September 16, 2009, a follow-up (third) ministry odour survey was initiated to assess if remedial measures were effective in addressing and controlling the foul off-site odours.

The Ministry of the Environment's Ottawa District Office commenced an odour survey on September 21, 2009 and it was discontinued on October 28, 2009.

2. METHOD

The odour survey involved Provincial Officers (“staff” or “surveyor”) conducting olfactory assessments (sniff tests) in the vicinity of WMCC’s landfill site as well as in the surrounding community to determine what odours were present and the source of those detected odours. The focus was to be odours from the WMCC landfill site. An Odour Survey Form (Appendix V) was used to gather the survey information. Although subjective, a sniff test was used as the human nose is very sensitive to odours and it is what the public has been using to inform the Ministry of the Environment for their odour complaints.

MOE staff were informed to conduct the surveys in as much of a consistent and uniform manner as possible. My colleagues and I primarily started our surveys on Carp Road immediately adjacent to Waste Management of Canada Corporation’s landfill site. Flags are present at WMCC’s entrance and therefore the wind direction could be obtained and documented. MOE staff used a vehicle to conduct the odour surveys due to the large distances traveled that would have made walking impractical. The surveyor was then asked to observe odours, if any, as close to the landfill site in downwind, upwind and crosswind locations. For example, if an odour was detected immediately downwind of the landfill site, the surveyor would travel to locations immediately upwind to determine if the odour was from another source and merely passing over the WMCC landfill site or if the odour was from the WMCC site. If the odour was from the WMCC facility the surveyor was asked to branch out in the downwind direction to determine how far the odour from the landfill site was being discharged. Alternatively, if an odour was observed upwind or at any other location during the odour survey the source of the odour was to be identified as best as possible. Previous odour surveys and odour complaints received from the public identified some residential development areas as locations being impacted by odours from WMCC. Such areas included, Timbermere, Canterbury and Jackson Trails subdivisions as well residences along Richardson Side Road East of Carp Road and residences on Lloydalex Crescent.

MOE staff were asked to make at least 6 observation points ideally at locations where an odour was detected. Staff were asked to record their observations on the odour survey form (Appendix V). Information to be included: temperature, wind direction and strength, time of arrival and departure, was an odour present, duration of the odour at that location, odour intensity and odour type. The odour intensity was from a scale of 0 to 5 and was taken from a Ministry of the Environment publication entitled Industrial Abatement – Air Management, 1982. A value of 0 meant no odour. A value of 1 is a threshold where odour is just detectable. A value of 2 is a distinct and definite odour that is unpleasant. A value of 3 is a strong and objectionable odour strong enough to cause a person to attempt to avoid it. A value of 4 is an odour so powerful as to be offensive and repulsive and bordering on being intolerable. A value of 5 is an overpowering, nauseating, intolerable odour.

MOE staff were asked to contact WMCC staff if at any time during the odour survey they observed off-site landfill odours at any location. This was conducted to keep WMCC staff informed of each off-site odour occurrence and if they felt necessary they could attend the off-site location for self assessment.

The odour survey forms were compiled and on a weekly basis they were electronically emailed to WMCC staff.

3. RESULTS

The Ministry of the Environment conducted 52 odour surveys between September 21, 2009 and October 28, 2009. During these 52 surveys, 265 MOE observation locations were assessed.

3.1 MOE Provincial Officer Observations

3.1.1 MOE Surveys

The odour surveys compiled by MOE staff can be found in Appendix VI. Refer to Table 1 for the compilation of the 265 MOE observations. The first column in this table shows the odour survey name that corresponds to the odour survey form in Appendix VI. The next column states the observation number and location. The next column dictates the time the MOE Provincial Officer was at that location; these are given with the 24 hour clock. Wind direction is such that the detailed wind direction is the cardinal direction from which the wind is blowing, for example a SE wind is a wind from the SE direction and blowing towards the NW. I have also indicated the cardinal direction of the observation location relative to the WMCC site; for example, East of WMCC relates to an observation location that is east of WMCC landfill site. The observed odour is the odour the Provincial Officer described at the given location and the associated odour intensity is provided in the following column. The next column in Table 1 denotes whether the MOE person conducting the survey believed the source of the odour detected was the WMCC landfill site. Lastly, is a column for comments from the Provincial Officer and whether he or she believed the landfill odour detected at the given location was causing or may cause an adverse effect. MOE staff were not asked if the other odour sources identified during the surveys were causing or may cause an adverse effect.

3.1.2 Landfill Site Odours

Of the 265 MOE observations, there were 21 occurrences of landfill odours being detected off-site. At or near the WMCC entrance gate on Carp Road yielded 15 of the 21 off-site landfill site observations, 4 occurrences of off-site landfill site odours were on William Mooney Road which runs parallel to Carp Road on the immediate west side of the landfill site, 1 occurrence each for Richardson Side Road to the North and Willowlea Road to the south. Refer to Appendix VII for a map that shows generally where landfill site odours were detected off-site by MOE staff. The squared-in section with the symbol M denotes the general perimeter of the landfill site. The map is provided with circumference lines approximately denoting 500 meters, 1000 meters, 2000 meters and 4000 meters. All off-site odour observation points were not put on this map but the reader shall note the 2 furthest observations on Richardson Side Road and Willowlea. The remaining majority (15+4=19 of the 21) were found in close proximity to the landfill site on Carp Road and William Mooney Road. For street names you may wish to view the Odour Survey Form (Appendix V).

Table 3 provides the relative distance from the landfill site perimeter the various odours encountered by MOE staff during the surveys; the second column entitled 'Landfill' denotes the distance of landfill site odour from landfill site perimeter. The majority (20 of 21) of off-site landfill site odours detected by MOE staff were from 0 to 500 meters from the landfill site boundary. Only 1 survey was between 500 and 1000 meters from the site. This 1 occurrence was for 'minimal rotting garbage' with reported intensity of 0-1 out of 5 which was detected on Richardson Side Road west of Carp Road and was stated by the Provincial Officer that this odour would not cause an adverse effect; refer to odour survey 13-Jena-September 28 in Appendix VI.

3.1.3 Non-Landfill Site Odours:

Of the 265 MOE observations, there were 76 occurrences of non-landfill site odours being detected at off-site locations. A majority of the non-landfill site odours detected by MOE staff were for asphalt odours (14 of 76), manure or farm odours (18 of 76) and garbage and misting unit perfume odours (14 of 76). There were lesser detected odours by MOE staff such as rotting vegetation, diesel fumes from passing vehicles, wood and wood smoke, gasoline and solvent/paint odours.

Table 3 provides the relative distance, from the landfill site perimeter, the various non-landfill site odours encountered by MOE staff during the surveys. The general location of these non-landfill site odours has been plotted on a map; refer to Appendix VIII. I did not plot the distance from the actual source of these odours; for example an asphalt odour was measured from the WMCC site boundary not from the actual odour source. This was conducted because any and all odours detected in the community were to be assessed equally during this study and not the distance they travel from their source. Of the 76 non-landfill odours the MOE detected, 36 of these were detected within 500 meters of the landfill with the majority being asphalt, solvent/paint and manure/farm odours in similar locations where landfill site odours were detected. Twenty-eight of the 76 non-landfill site odours observed were from 500 to 1000 meters from the landfill site; the majority of these being from manure spreading/farm operation and garbage and misting unit odours from another waste facility located in the area. Greater than 1000 meters from the WMCC landfill site, asphalt odours were still being detected. More natural odours such as wood smoke from residential heating and rotting vegetation/earthy odours were also detected greater than 1000 meters from the landfill site.

3.1.4 Adverse Effect

MOE Provincial Officers believed that on 20 of the 21 occurrences of off-site landfill site odours being detected, the odour detected did not or may not cause an adverse effect. On 1 occurrence the Provincial Officer believed the off-site landfill site odour (garbage odours) detected may cause an adverse effect. This occurrence was for odour survey 52-Lance-October 28 and corresponds to the odour he detected at 427 William Mooney Road and his detailed odour intensity of 1 out of 5.

MOE staff were not asked if they believed the non-landfill site odours detected during their odour surveys caused or may cause an adverse effect.

3.2 Public Odour Complaints

3.2.1 Landfill Site Odours

The odour complaints received from the public during this odour survey can be found in Table 2. From September 21 to October 28, 2009, 11 public complaints for off-site landfill site odours were received either by direct email to the MOE or through the nodump website. Of the 11 public complaints of landfill site odour, 5 were reported as being in residential areas (2 on Huntley Manor Drive and 3 in Jackson Trails), 5 were for the public driving their vehicles on Carp Road, Highway 7 ramp or Highway 417 and 1 complaint was at an office in Kanata. I colour coded the complaints and of the 11 public complaints received there were 5 individuals submitting the complaints. Refer to Appendix IX for a map showing the public complaint areas.

The public complaints were transferred to Table 1 and put in the corresponding chronological order amongst the MOE odour surveys. Refer to Table 4 which tabulates the distance the public landfill complaints are from the landfill site.

3.2.2 Non-Landfill Site Odours

The public did not lodge any complaints with the Ministry of the Environment for non-landfill site odours; that is, no complaints were received for asphalt, solvent/paint, manure, raw garbage/misting unit perfume odours, etc. Refer to Table 4.

4. DISCUSSION

4.1 Not a Public Health or Safety Concern

A contaminant is not necessarily something that is a public health or safety concern. The issue of odour, as a contaminant from the WMCC facility, is not a public health or safety concern.

The Ministry of the Environment has confirmed the emissions from the WMCC landfill site meet the current emission standards through technical review of application documents and issuance of air approvals (Section 9, EPA). The ministry's technical experts at Environmental Assessment and Approvals Branch (the branch of the ministry responsible for issuing certificates of approval for air, water and waste) have determined the emissions from WMCC's landfill site do not exceed emission standards (Point Of Impingement, POI) as defined by Ontario Regulation 419/05 under the EPA. The standards include various health related and aesthetic compounds, including but not limited to volatile organic compounds, metals and particulate matter. The point of impingement is normally taken as the property boundary at which a contaminant can not exceed a defined value. There are some cases where the POI can be on the emitter's property. This is the case where there is a sensitive receiver such as a daycare or health care facility located within the property boundary. Since there are not any sensitive receivers on the WMCC property the POI value to be met is at the landfill site property boundary.

In order to prove compliance with Regulation 419 standards, WMCC was required through their application process to model the emissions from the landfill site using MOE modelling software to provide a worst-case scenario and estimate of the emissions; called an Emission Summary and Dispersion Modelling (ESDM) Report. For example, on November 28, 2006 WMCC was issued air certificate of approval 0741-6S9NPE (refer to Appendix X) for operation of 2 enclosed flares to combust landfill gas collected from the collection system, on-site decontamination of petroleum hydrocarbon contaminated soil (which has not been developed), installation and operation of a landfill gas-to-energy facility, and a gas stripper used to remove methane and other non-methane organic compounds from the wastewater before its discharge to the sanitary sewer system. This application also included fugitive landfill gas emissions from the landfill mound which have been shown to be the main source of odour emissions from the landfill site. To receive approval from the ministry, WMCC completed the ESDM and upon MOE review the emissions from the landfill site were found to be within the point of impingement criteria.

4.2 MOE Odour Surveys and Public Odour Complaints

In the RESULTS section of this report I went through the data in the various tables and appendices to better understand, among such things as, where landfill site odours were being detected by MOE staff and the public, what other non-landfill odours were detected

by MOE staff and if these odours in the community resulted in odour complaints to the MOE.

The results showed that of the 97 (21 + 76) landfill site and non-landfill site odours that were encountered by MOE staff during the September 21 to October 28, 2009 odour survey, there was an overwhelming number (76) of non-landfill site odours detected in the community. Excluding the rotting vegetation/earthy odours (13 occurrences) and raw wood/ wood smoke (6 occurrences), as these could be construed as not occurring because of commercial/industrial activity, there still existed 57 occurrences ($76-13-6=57$) where non-landfill site odours were detected in the community. Of these 57, 14 were asphalt odours extending up to over 2000 meters from the landfill site, 18 manure/farm odours mainly within 500 meters of landfill site but extending up to 2000 meters, 14 garbage and/or misting unit odours from another waste facility located in the area that were detected between 500 and 1000 meters from the landfill site, and 8 occurrences of solvent/paint odours from a kitchen cabinet operation where odours were detected primarily within 500 meters of landfill site but did extend up to 1000 meters from the landfill site. For landfill site odours there were 20 occurrences (out of 21) when landfill odours were detected by MOE staff within 500 meters of the landfill site and 1 occurrence of landfill odour detected between 500 to 1000 meters from the landfill site.

Based on MOE observations it is apparent that not only landfill site odours were being emitted to the natural environment in this community. The non-landfill site commercial/industrial odours were detected more often (57 vs. 21) and migrated further into the surrounding community. It should be noted that MOE staff were informed to focus on the landfill site odours and determine their migration into the surrounding community. The non-landfill site odours were recorded when detected but there was to be no focus on where and how far these odours were reaching; that is, the non-landfill site odours were recorded when detected but not pursued to obtain full emission pattern.

There were 11 complaints received from the public for landfill site odours in the community from 5 individuals during the odour survey period. Of the 11 complaints, 5 complaints were in residential neighbourhoods. One individual stated he detected landfill site odours in his Jackson Trails neighbourhood 3 times during the survey. Jackson Trails is located approximately 2km east of WMCC landfill site. The MOE was not conducting field observations on days for 2 of the complaints (October 12 and 25). The MOE did conduct an odour survey (38-Kyle-Oct 15) on October 15 at the time of one complaint in Jackson Trails. The MOE surveyor did not detect landfill site odours during this survey; asphalt and manure odours were detected on Carp Road and William Mooney Road respectively. The MOE surveyor did not conduct any observations in Jackson Trails on October 15 as the perceived wind direction was from the northeast. The other 2 residential complaints were from one individual in the Huntley Manor Drive area north of the landfill site approximately 1400 meters. The public complaints occurred on days the MOE conducted odour surveys but not at concurrent times. The September 29 public complaint occurred at 8:00am; the MOE conducted a survey (15-Greg-Sept 29) from 9:40 am to 10:35am. Landfill site odours were detected by the MOE at 9:40am on Carp Road north of the WMCC entrance gate. The October 9 public complaint occurred

between 8:15 am and 9:15 am; the MOE conducted a survey (32-Greg-Oct 9) from 14:00 to 14:50 at which time fleeting landfill site odours were detected on Willowlea road south of the landfill site.

Out of the 11 public complaints there was 1 complaint that occurred at a distance greater than 4km from the landfill site at an office located on Silver Seven Road in Kanata which lies east of the landfill site. This complainant also submitted a complaint earlier the same morning on highway 7 at highway 417 (complainant erroneously put highway 401) which is southwest of the landfill site and therefore the odour complaints are not consistent with respect to direction of odour impact/wind direction. The complaint on highway 7 at highway 417 lies within 500 meters from the landfill site and is consistent with the MOE odour surveys whereas the 4 km odour complaint in Kanata is not consistent with the complainant's own (earlier) complaint or with the MOE odour survey results in that landfill site odours were not detected greater than 1000 meters from the site.

Of the 11 public complaints received there were 5 complaints by 4 individuals indicating landfill odours in their vehicles while driving passed the landfill site on Carp Road, Highway 417 and Highway 7. These complaints all occurred at a distance within 500 meters from the landfill site and therefore consistent with the MOE odour surveys in that landfill site odours were detected in the commercial/industrial corridor surrounding the landfill site.

Of the 52 MOE odour surveys that were conducted, it was determined that landfill site odours were primarily observed within 500 meters of the landfill site. On 1 occasion landfill site odours were detected by MOE between 500 and 1000 meters from the landfill site. Five of the 11 public complaints occurred in vehicles within 500 meters from the landfill site. The 5 residential complaints occurred at distances at distances of 1400 meters and 2000 meters from the landfill site which was greater than where the MOE observed landfill site odours. That being said, minor landfill site odours could be present at distances greater than what the MOE observed as voiced by one residential complainant who reported a "faint smell of landfill in the air (2 out of 10 or 1 out of 5)". To what distance these faint landfill site odours migrated from the landfill site was not definitively determined.

Despite the fact that MOE staff encountered numerous non-landfill site odours (asphalt, solvent/paint, manure, raw garbage/misting unit odours) during the 52 odour surveys, no public complaints were received by the MOE for these source facilities during the odour survey.

4.3 Adverse Effect

The Environmental Protection Act prohibits the discharge of a contaminant into the natural environment if the discharge causes or may cause an adverse effect. A contaminant means any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them.

The Environmental Protection Act defines adverse effect as meaning one or more of,

- (a) impairment of the quality of the natural environment for any use that can be made of it,
- (b) injury or damage to property or to plant or animal life,
- (c) harm or material discomfort to any person,
- (d) an adverse effect on the health of any person,
- (e) impairment of the safety of any person,
- (f) rendering any property or plant or animal life unfit for human use,
- (g) loss of enjoyment of normal use of property, and
- (h) interference with the normal conduct of business;

Prior to conducting the current odour survey the public had voiced their concern, through literally thousands of odour complaints since February 2006, of foul odours from the WMCC landfill site that were causing some of the residents in the community to remain indoors, to close their windows, not being able to enjoy a barbeque at their residence, etc; basically, residents were stating their loss of enjoyment of normal use of property. The public, mainly comprised of residents in the surrounding community, also stated their displeasure with having to smell odours from the WMCC as they drove their vehicles past the landfill site on provincial and municipal roads.

When assessing adverse effect the Ministry of the Environment must consider the various clauses found in the definition. Clause g (loss of enjoyment of normal use of property) is the probable definition to use when assessing odour impacts at a residence. One would likely refer to clause c (harm or material discomfort to any person) to assess odour impacts that someone experienced while driving their vehicle past the landfill site. It is reasonable to say the intensity of an odour required to cause loss of enjoyment of normal use of a residential property is likely less than the intensity required to cause material discomfort to any person. The odour from the landfill site has been shown not to be a public health or safety concern and therefore clauses (a), (b), (d), (e) and (f) would not be applicable.

This odour survey report assessed the 52 odour surveys that were conducted by Ministry of the Environment Provincial Officers between September 21 and October 28, 2009 as well as the 11 public complaints that were received during this time period. The results showed that of the 265 MOE observations made during the 52 surveys, there were 20 occurrences of off-site landfill odours within 500 meters of the site and only 1 occurrence of off-site landfill odours between 500 and 1000 meters from the site. The vast majority of the off-site landfill site odours were found along Carp Road and to a lesser extent on William Mooney Road. This area is heavily commercialized and industrialized with activities including, an aggregate pit and asphalt facility, several concrete operations, a kitchen cabinet operation, retail gasoline outlets, a solid non-hazardous waste transfer station and farming operations. The MOE detected odours from the many other commercial/industrial operations on more occasions than detecting landfill site odours at intensities and distances from the landfill site being greater than

those observations for landfill site related odours. While some of the 11 public complaints are inconsistent with respect to distance from the landfill site where odours were detected by the MOE, there still exists support of off-site landfill site odours. Similar to MOE observations the public complaints for landfill site odours were focused on roadways in the commercial/industrial area in the vicinity of the landfill site. These short term odours encountered while driving by one facility in an industrial area should not reasonably give rise to harm or material discomfort to individuals especially when one considers the public did not complain about the non-landfill site odours in the same area. One resident did indicate a faint odour at his residence on Huntley Manor Drive at a distance of about 1400 meters from the landfill site. Although landfill site odour was detected by MOE staff at a maximum distance of approximately 800 meters from the site, I would reason that low intensity faint odours (as observed by the complainant) could migrate beyond this 800 meter distance but it is not reasonable for the Ministry of the Environment to find faint odours at a residential area cause for loss of enjoyment of property.

Of the 21 MOE observations of off-site landfill odours there were 20 occurrences when Provincial Officers said they believed the detected odour was not causing an adverse effect. On one occurrence a Provincial Officer believed the garbage odours (intensity of 1 out of 5) detected at 427 William Mooney Road may cause an adverse effect. Given the close proximity of this location to the landfill site, its land use setting and its low intensity odour I do not believe this occurrence was causing or may cause an adverse effect.

5. CONCLUSION

This odour survey confirmed landfill site odours continue to be discharged from the WMCC site. The issue was not to determine if off-site landfill site odours exist but rather if these odours were impacting the community to such a degree they were causing or may cause an adverse effect. When assessing whether the public has been adversely impacted by a contaminant the Ministry of the Environment needed to consider many factors such as, land use/location of impact, duration of impact, intensity of impact, sensitivity of individuals. There is no mathematical calculation to prove an adverse effect related to odour has taken place or may take place, but rather it must be determined by the Ministry of the Environment with a reasonable and impartial judgment through an understanding of the site, the community, and the complaints.

Given the fact that odours from WMCC's landfill site are primarily found in a commercial/industrial sector where other facilities emit odours at equal or even greater intensities and distances, it is therefore not reasonable that short duration odour detection while driving through this area or faint odours detected at a residence is logical or justifiable to conclude that an adverse effect has or may take place.

This study concludes that between September 21, 2009 and October 28, 2009, WMCC's landfill site located at 2301 Carp Road Ottawa, was determined to be not causing (or may not cause) an adverse effect related to odour emissions from their facility.

Note: This odour survey was focused strictly on the MOE observations and public complaints received during the study period from September 21, 2009 to October 28, 2009 and therefore the conclusion drawn is based solely on the observations and complaints received during this time.

TABLE:1

Odour Surveys Conducted by MOE Provincial Officers

September 21, 2009 to October 28, 2009

Facility: **Waste Management of Canada Corporation**
2301 Carp Road, Ottawa

Odour Survey Name	Observation number, and Location Address	Time At Location	Wind Direction	Site Location Relative to WMCC Site	Observed Odour	Odour Intensity	Was WMCC the Source of Odour	Provincial Officer Comments / Causing or May Cause Adverse Effect
1-Tor-Sept 21	1 - 2300 Carp Road	14:26 to 14:28	SE	East of WMCC	none	0	no	
	2 - 216 Cardevco Road	14:32 to 14:34	SE	North of WMCC	none	0	no	
	3 - 180 Wescar Lane	14:38 to 14:40	SE	North of WMCC	none	0	no	resident burning wood fire at cavanmore and wescar
	4 - 2406 Cavanmore Road	14:42 to 14:44	SE	North of WMCC	none	0	no	
	5 - 97 Lloydalex Crescent	14:51 to 14:53	SE	SW of WMCC	none	0	no	
2-Emily-Sept 22	1 - 327 William Mooney Road	19:47 to 19:50	SW	West of WMCC	none	0	no	upwind of landfill
	2 - 2150 Richardson Side Road	19:54 to 19:58	SW	NE of WMCC	none	0	no	downwind of landfill
	3 - 2301 Carp Road	20:01 to 20:10	SW	East of WMCC	rotten egg	1	yes	odour was for duration of time at site / no adverse effect
	4 - 2397 Carp Road	20:12 to 20:14	SW	NE of WMCC	none	0	no	
	5 - 2301 Carp Road	20:16 to 20:20	SW	East of WMCC	rotten egg	1	yes	odour was for duration of time at site / no adverse effect
3-Greg-Sept 23	1 - 357 William Mooney Road	07:40 to 07:42	SW	West of WMCC	none	0	no	upwind of landfill
	2 - 181 Wilbert Cox	07:46 to 07:50	SW	NW of WMCC	none	0	no	crosswind of WMCC
	3 - 100 Huntley Manor	07:57 to 08:00	SW	NW of WMCC	none	0	no	crosswind of WMCC
	4 - 425 Huntmar	08:15 to 08:20	SW	East of WMCC	asphalt	2	no	asphalt odour from Karson operation on Carp Road
	5 - 80 Sirocco Crescent	08:36 to 08:40	SW	South of WMCC	diesel fumes	2	no	crosswind of WMCC
	6 - 2301 Carp Road	8:51	SW	East of WMCC	landfill odour	2	yes	downwind of WMCC/ no adverse effect
4-Tara-Sept 23	1 - 2300 Carp Road	10:07 to 10:12	W	East of WMCC	landfill gas	1-2	yes	downwind of WMCC / no adverse effect
	2 - 376 William Mooney Road	10:14 to 10:18	W	West of WMCC	none	0	no	upwind of landfill
	3 - 2106 Richardson Side Road	10:22 to 10:24	W	North of WMCC	none	0	no	
	4 - at Laurysen Kitchens	10:26 to 10:29	W	NE of WMCC	solvent/paint	2	no	odour from Laurysen Kitchens
	5 - 16 Wilderness Way	10:34 to 10:36	W	South of WMCC	none	0	no	
5-Bryan-Sept 23	1 - 2535 Carp Road	11:28	SW	NE of WMCC	none	0	no	downwind of landfill
	2 - 2413 Carp Road	11:28	SW	NE of WMCC	none	0	no	downwind of landfill
	3 - 2301 Carp Road	11:30	SW	East of WMCC	none	0	no	
	4 - 2133 Carp Road	11:31	SW	SE of WMCC	none	0	no	
	5 - 2076 Carp Road	11:32	SW	SE of WMCC	none	0	no	
6-Lance-Sept 23	1 - 2301 Carp Road	14:52 to 14:55	N	East of WMCC	none	0	no	
	2 - 209 Westbrook Road	14:57 to 14:58	N	South of WMCC	none	0	no	
	3 - 2079 Carp Road	14:59 to 15:05	N	SE of WMCC	none	0	no	
	4 - 2301 Carp Road	15:07 to 15:09	W	East of WMCC	none	0	no	
	5 - 381 William Mooney Road	15:12 to 15:14	W	West of WMCC	none	0	no	

TABLE 1

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	6 - 2075 Richarson Side Road	15:19 to 15:23	N	NE of WMCC	none	0	no	
7-Emily-Sept 23	1 - 2301 Carp Road	19:02 to 19:06	NW	East of WMCC	none	0	no	
	2 - 505 William Mooney Road	19:08 to 19:12	NW	NW of WMCC	none	0	no	upwind of landfill
	3 - 2150 Richarson Side Road	19:17 to 19:20	NW	North of WMCC	rotting garbage	3	no	Goulbourn Sanitation is source of odour
	4 - 2301 Carp Road	19:22 to 19:24	WNW	East of WMCC	none	0	no	
	5 - 2300 Carp Road	19:25 to 19:27	WNW	East of WMCC	none	0	no	
8-Greg-Sept 24	1 - on Carp Road at 417	14:04	NW	SE of WMCC	rotten egg	1	yes	downwind of WMCC / no adverse effect
	2 - 2125 Carp Road	14:10	NW	SE of WMCC	raw woody odour	1	no	downwind of WMCC, no source identified
	3 - 177 Lloydalex Crescent	14:14	NW	SE of WMCC	vegetation odours	1	no	downwind of WMCC, smell of leaves and grass
	4 - 128 Sirocco Crescent	14:28	NW	South of WMCC	none	0	no	
	5 - 2150 Richardson Side Road	14:41	NW	NE of WMCC	rotting garbage/perfume	2	no	crosswind of landfill, odour from Goulbourn Sanitation
	6 - 569 William Mooney Road	14:45	NW	NW of WMCC	manure and vegetation	2	no	upwind of landfill
9-Tor-Sept 24	1 - 2397 Carp Road	14:19 to 14:21	NE	NE of WMCC	none	0	no	
	2 - 2297 Richardson Side Road	14:23 to 14:25	NE	North of WMCC	none	0	no	
	3 - 427 William Mooney Road	14:28 to 14:30	NE	West of WMCC	none	0	no	
	4 - 2141 Carp Road	14:35 to 14:37	NE	SE of WMCC	none	0	no	
	5 - 6300 Rothbourne Road	14:40 to 14:42	NE	South of WMCC	none	0	no	
10-Greg-Sept 25	1 - 417 downwind of WMCC	8:00	NNE	SW of WMCC	none	0	no	
	2 - 292 Moonstone Road	8:12	NNE	SW of WMCC	none	0	no	
	3 - 120 Willowlea	8:15	NNE	SW of WMCC	asphalt	2	no	odours from Karson asphalt plant
	4 - cheshire cat pub	8:31	NNE	NE of WMCC	raw garbage/perfume	2	no	downwind of Goulbourn sanitation, odours from Goulbourn
	5 - 112 Wilbert Cox	8:50	NNE	NW of WMCC	musty vegetation	1	no	decaying leaf odour
	6 - 357 William Mooney Road	8:55	NNE	West of WMCC	landfill odour	2	yes	downwind of WMCC / no adverse effect
11-Tor-Sept 25	1 - 2297 Richardson Side Road	14:58 to 15:00	NE	North of WMCC	none	0	no	
	2 - 103 Wilbert Cox Drive	15:02 to 15:04	NE	NW of WMCC	slight vegetation odour	ND	no	
	3 - 569 William Mooney Road	15:06 to 15:07	NE	NW of WMCC	none	0	no	
	4 - 2415 Carp Road	15:10 to 15:11	NE	NE of WMCC	none	0	no	
	5 - 6330 Rothbourne Road	15:15 to 15:17	NE	South of WMCC	none	0	no	
September 26	between WMCC and Richardson S.Rd	16:15	SSW	NE of WMCC	leachate smell	3/10		
12-Greg-Sept 28	1 - 2301 Carp Road	10:00	SE	East of WMCC	none	0	no	
	2 - 2283 Richardson Side Road	10:13	SE	North of WMCC	slight musty earthy	1	not determined	downwind of WMCC but not certain of source of odour
	3 - 569 William Mooney Road	10:18	SE	NW of WMCC	none	0	no	downwind of WMCC
	4 - Wilbert Cox Drive	10:28	SE	NW of WMCC	slight wood smoke	1	no	downwind of WMCC
	5 - 112 Huntley Manor	10:31	SE	NW of WMCC	none	0	no	downwind of WMCC
	6 - Cardevco at Richardson S.R.	10:37	SE	NW of WMCC	fleeting solvent odour	1	no	Laurysen Kitchens odour
13-Jena-Sept 28	1 - Richardson S.R. E of Carp rd	11:13 to 11:17	S	NE of WMCC	none	0	no	
	2 - Richardson S.R.W of Carp rd	11:18 to 11:25	S	North of WMCC	minimal rotting garbage	0-1	yes	downwind of WMCC / no adverse effect
	3 - Carp rd	11:25 to 11:28	S	East of WMCC	none	0	no	
14-Paul-Sept 28	1 - 357 William Mooney Road	14:53 to 14:55	SE	West of WMCC	none	0	no	
	2 - William Mooney at Richardson	14:59	SE	NW of WMCC	none	0	no	
	3 - 2297 Richardson Side Road	15:00	SE	North of WMCC	none	0	no	
	4 - Laurysen back parking lot	15:05 to 15:08	SE	NE of WMCC	solvent odour	ND	no	odour from Laurysen Kitchens

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	5 - 2301 Carp Road	15:10 to 15:12	SE	East of WMCC	none	0	no	
	6 - 505 William Mooney Road	15:15	SE	NW of WMCC	none	0	no	
September 29	at residence on Huntley Manor	8:00	no wind	North of WMCC	faint smell of landfill	3/10		
15-Greg-Sept 29	1 - 2383 Carp Road	9:40	S	NE of WMCC	landfill odour	1	yes	downwind at WMCC property / no adverse effect
	2 - 2075 Richardson Side Road	9:48	S	NE of WMCC	none	0	no	downwind of WMCC, no odour
	3 - 569 William Mooney Road	10:14	S	NW of WMCC	pasture odour	1	no	
	4 - 177 Wilbert Cox Drive	10:18	S	NW of WMCC	wet earth odour	1	no	crosswind of WMCC, currently raining
	5 - 125 Willowlea	10:32	S	South of WMCC	wet earth odour	1	no	upwind of landfill
	6 - 292 Moonstone	10:35	S	SW of WMCC	none	0	no	
16-Greg-Sept 29	1 - 2301 Carp Road	13:10	SW	East of WMCC	landfill odour	2	yes	downwind of WMCC on Carp Road / no adverse effect
	2 - 427 William Mooney	13:02	SW	West of WMCC	none	0	no	
	3 - Cheshire Cat pub	12:58	SW	NE of WMCC	none	0	no	
	4 - 467 Huntmar Drive	12:45	SW	East of WMCC	none	0	no	
	5 - 2370 Cavanmore Road	13:06	SW	NW of WMCC	none	0	no	
17-Greg-Sept 30	1 - 2125 Carp Road	8:12	NW	SE of WMCC	gasoline odour	1	no	gasoline odour from ultramar gas station
	2 - 292 Moonstone Road	8:22	NW	SW of WMCC	none	0	no	
	3 - 186 Lloydalex Crescent	8:30	NW	SE of WMCC	wet earth/rotting vegetation	2	no	autumn odours
	4 - Maple Grove at Alon	8:42	NW	SE of WMCC	slight asphalt odour	1	no	asphalt odour from Karson operation on Carp Road
	5 - Richardson S.R. east of Carp rd	9:00	NW	NE of WMCC	slight garbage/perfume	1	no	odours from Goulbourn Sanitation
	6 - 114 Wilbert Cox	9:10	NW	NW of WMCC	vegetation odours	1	no	autumn odours
18-Kyle-Sept 30	1 - 2301 Carp Road	14:49 to 14:55	NE	East of WMCC	none	0	no	
	2 - 219 Westbrook	14:58 to 15:03	ENE	South of WMCC	none	0	no	
	3 - 15 Samara	15:08 to 15:13	ENE	South of WMCC	none	0	no	
	4 - Lloydalex Crescent	15:20 to 15:24	NE	SE of WMCC	none	0	no	
	5 - 376 William Mooney Road	15:50 to 15:55	NE	NW of WMCC	none	0	no	
	6 - Laurysen Kitchens on Carp rd	15:40 to 15:46	NE	NE of WMCC	slight solvent	0	no	solvent odour from Laurysen Kitchens on Carp Road
19-Tor-Oct 1	1 - 2397 Carp Road	9:29 to 9:30	NE	NE of WMCC	none	0	no	
	2 - 619 William Mooney Road	9:33 to 9:35	NE	NW of WMCC	none	0	no	
	3 - 2141 Carp Road	9:40 to 9:41	NE	SE of WMCC	none	0	no	
	4 - 2076 Carp Road	9:45 to 9:48	NE	SE of WMCC	none	0	no	
	5 - 97 Lloydalex Crescent	9:50 to 9:51	NE	SE of WMCC	none	0	no	
	6 - 8 Sundew Court	9:53 to 9:54	NE	South of WMCC	none	0	no	
20-Greg-Oct 1	1 - 2301 Carp Road	13:00	NW	East of WMCC	none	0	no	downwind of WMCC
	2 - at Goulbourn Sanitation	13:02	NW	NE of WMCC	misting/perfume	1	no	odour on Richardson S.R. from Goulbourn Sanitation
	3 - 569 William Mooney Road	13:10	NW	NW of WMCC	none	0	no	upwind of landfill
	4 - 100 Huntley Manor	13:22	NW	North of WMCC	none	0	no	upwind of landfill
	5 - 150 Westbrook	13:32	NW	South of WMCC	none	0	no	downwind of landfill
	6 - 2301 Carp Road	13:26	NW	East of WMCC	solvent odours	1	no	solvent odour from Laurysen Kitchens on Carp Road
21-Emily-Oct 1	1 - 2301 Carp Road	14:30 to 14:35	NW	East of WMCC	paint odour	1	no	paint odour from Laurysen Kitchens
	2 - Laurysen Kitchens	14:36 to 14:39	NW	NE of WMCC	strong paint odours	3	no	strong paint odours near paint storage area at Laurysen
	3 - 2150 Richarson Side Road	14:40 to 14:43	NW	North of WMCC	perfumey odour	2	no	perfume odour from misting unit at Goulbourn Sanitation
	4 - 376 William Mooney	14:45 to 14:50	NW	West of WMCC	none	0	no	

TABLE 1

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	5 - Carp Road driving by WMCC	15:00	NW	SE of WMCC	landfill gas odour	2	yes	WMCC odour on Carp Road / no adverse effect
22-Greg-Oct 2	1 - 2301 Carp Road	10:00	SW	East of WMCC	landfill gas odour	1	yes	WMCC odour on Carp Road / no adverse effect
	2 - 2301 Carp road	10:55	SW	East of WMCC	none	0	no	as opposed to earlier, no WMCC odour detected on Carp rd
	3 - 2075 Richardson Side Road	10:06	SW	NE of WMCC	none	0	no	downwind of WMCC, no odour
	4 - Wilbert Cox Drive	10:44	SW	NW of WMCC	none	0	no	crosswind of WMCC, no odour
	5 - 292 Moonstone	11:05	SW	SW of WMCC	none	0	no	upwind of landfill, no odour
	6 - 357 William Mooney Road	10:50	SW	West of WMCC	woodsmoke odour	1	no	upwind of landfill
23-Tara-Oct 2	1 - 2300 Carp Road	11:30 to 11:35	W	East of WMCC	none	0	no	
	2 - 357 William Mooney Road	11:38 to 11:41	W	West of WMCC	fresh road pavement	1	no	
	3 - 2150 Richardson Side Road	11:44 to 11:46	no wind	North of WMCC	none	0	no	
	4 - 2082 Richardson Side Road	11:47 to 11:49	no wind	NE of WMCC	none	0	no	
	5 - 174 Lloydalex crescent	12:07 to 12:10	S	SE of WMCC	none	0	no	
October 4	driving by landfill on Carp Road	15:30	ND	East of WMCC	putrid smell	6/10		
October 4	drove by 3x and smelled on carp road	17:25 to 19:15	S	East of WMCC	landfill gas	5/10		
24-Greg-Oct 5	1 - Moonstone Road	10:10	W	SW of WMCC	none	0	no	
	2 - 2301 Carp road	10:12	W	East of WMCC	landfill gas odour	1	yes	landfill odour at landfill entrance / no adverse effect
	3 - 2075 Richardson Side Road	10:15	W	NE of WMCC	none	0	no	
	4 - 569 William Mooney Road	10:20	W	NW of WMCC	none	0	no	upwind of landfill
	5 - 611 William Mooney Road	10:25	W	NW of WMCC	burning brush/wood	2	no	house construction site burning wood
25-Kyle-Oct 5	1 - 2301 Carp Road	14:50 to 14:55	NW	East of WMCC	earth/soil odour	1	no	currently raining
	2 - 376 William Mooney Road	15:00 to 15:04	NW	West of WMCC	none	0	no	
	3 - 2150 Richardson Side Road	15:08 to 15:12	NW	North of WMCC	deodorizer odour	2	no	misting unit odour from Goulbourn Sanitation
	4 - 186 Lloydalex Crescent	15:30 to 15:35	NW	SE of WMCC	none	0	no	
26-Paul-Oct 6	1 - 427 William Mooney Road	8:03 to 8:05	SW	West of WMCC	silage odour from farm	1	no	farm odour, site is upwind from WMCC
	2 - William Mooney at Richardson	8:06 to 8:07	SW	NW of WMCC	none	0	no	
	3 - Carp rd at Richardson S.R.	8:08 to 8:10	SW	North of WMCC	wood odour	1	no	wood odour from shed building construction site
	4 - 2300 Carp Road	8:11 to 8:15	SW	East of WMCC	landfill gas and ashphalt	1	yes	light wind / no adverse effect
	5 - 417 at Carp Road	8:40 to 8:41	SW	SE of WMCC	none	0	no	
27-Lance-Oct 6	1 - just south of landfill entrance	14:44 to 14:47	SW	SE of WMCC	asphalt odour	2	no	
	2 - 2415 Carp Road (at Laurysen)	14:48 to 14:50	SW	North of WMCC	none	0	no	
	3 - 2436 Carp Road (at quarry)	14:51 to 14:53	SW	North of WMCC	paint thinner odour	2	no	
	4 - 2075 Richardson Side Road	14:55 to 14:58	SW	NE of WMCC	none	0	no	
	5 - 117 Wescar Lane	15:00 to 15:03	SW	North of WMCC	none	0	no	
	6 - 569 William Mooney Road	15:05 to 15:08	SW	NW of WMCC	none	0	no	
28-Tor-Oct 6	1 - 184 Wilbert Cox	14:57 to 14:58	W	NW of WMCC	none	0	no	
	2 - 427 William Mooney	15:01 to 15:02	W	West of WMCC	strong manure odours	ND	no	
	3 - 2283 Richardson Side Road	15:07 to 15:09	W	North of WMCC	none	0	no	
	4 - 2415 Carp Road	15:11 to 15:12	W	North of WMCC	none	0	no	
	5 - 195 Westbrook Road	15:16 to 15:18	W	South of WMCC	none	0	no	
	6 - 110 Lloydalex crescent	15:20 to 15:21	W	SE of WMCC	none	0	no	
29-Greg-Oct 7	1 - 2301 Carp Road	8:05	W	East of WMCC	rotten egg	2	yes	landfill odour at landfill entrance / no adverse effect
	2 - William Mooney S of Richardson	8:10	W	West of WMCC	strong manure odours	3	no	manure spreading

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TABLE 1

	3 - 115 Wilbert Cox	8:18	W	NW of WMCC	wet earthy odours	1	no	
	4 - 2075 Richardson Side Road	8:27	W	NE of WMCC	none	0	no	
	5 - Huntmar	8:35	W	East of WMCC	asphalt odour	1	no	downwind of landfill, asphalt odours from Karson operation
	6 - 186 Lloydalex crescent	8:55	W	SE of WMCC	wet vegetation odour	1	no	
30-Tara-Oct 7	1 - 2300 Carp Road	12:29 to 12:33	W	East of WMCC	wet soil/not offensive	1	yes	wet soil odour/not offensive / no adverse effect
	2 - 355 William Mooney	12:36 to 12:38	W	West of WMCC	none	0	no	
	3 - 2150 Richardson Side Road	12:41 to 12:43	NW-W	North of WMCC	smoke/air freshener	2	no	misting unit odour from Goulbourn, no source for smoke
	4 - 2050 Richardson Side Road	12:45 to 12:48	NW	NE of WMCC	none	0	no	
	5 - Carp Road at 417 traffic lights	12:50 to 12:52	NW	SE of WMCC	none	0	no	
	6 - 177 Lloydalex crescent	12:54 to 12:56	NW	SE of WMCC	none	0	no	
October 7	driving on 417 off ramp at Carp Road	17:00	ND	SE of WMCC	ND	7/10		
31-Tracy-Oct 7	1 - 2079 Carp Road	18:20 to 18:25	NW	SE of WMCC	none	0	no	
	2 - 2301 Carp road	18:30 to 18:45	NW	East of WMCC	none	0	no	
	3 - 2299 Cavanmore	18:55 to 19:00	NW	North of WMCC	none	0	no	
	4 - 116 Huntley Manor	19:10 to 19:15	NW	North of WMCC	none	0	no	
	5 - at Goulbourn Sanitation	19:25 to 19:30	NW	North of WMCC	air freshener and garbage	2	no	sweet air freshener and garbage from Goulbourn Sanitation
October 9	in Huntley Manor neighbourhood	8:15 to 9:15	NW/none	North of WMCC	smell of landfill	3/10		
32-Greg-Oct 9	1 - 2301 Carp Road	14:00	N	East of WMCC	none	0	no	
	2 - Richardson S.R. at Goulbourn S.	14:05	N	North of WMCC	mild perfumey odour	1	no	odour from Goulbourn Sanitation on Richardson Side Road
	3 - 2075 Richardson Side Road	14:07	N	NE of WMCC	none	0	no	
	4 - William Mooney	14:15	N	West of WMCC	manure odour	2	no	
	5 - Willowlea industrial park	14:25 to 14:50	N	South of WMCC	fleeting landfill odour	1	yes	smelled lanfill odour for 1 minute / no adverse effect
34-Lance-Oct 9	1 - north of carp road entrance	15:09 to 15:11	NW	East of WMCC	none	0	no	
	2 - Carp rd at Richardson Side Road	15:12 to 15:14	NW	North of WMCC	none	0	no	
	3 - 2141 Carp Road	15:16 to 15:18	NW	SE of WMCC	none	0	no	
	4 - 150 Westbrook	15:25 to 15:27	NW	South of WMCC	none	0	no	
	5 - 102 Walgreen Road	15:28 to 15:30	NW	South of WMCC	none	0	no	
	6 - 209 Westbrook	15:31 to 15:33	NW	South of WMCC	none	0	no	
October 12	Jackson Trails subdivision	8:00 / all morning	ND	SE of WMCC	ND	2/10		
33-Kyle-Oct 13	1 - 376 William Mooney	9:30 to 9:34	ENE	West of WMCC	none	0	no	
	2 - 2301 Carp road	9:39 to 9:44	ENE	East of WMCC	none	0	no	
	3 - 2150 Richardson Side Road	9:48 to 9:52	ENE	North of WMCC	none	0	no	
	4 - 254 Westbrook	10:04 to 10:08	ENE	SW of WMCC	none	0	no	
	5 - 11 Samara Place	10:22 to 10:27	ENE	South of WMCC	none	0	no	
35-Paul-Oct 13	1 - 357 William Mooney Road	14:46 to 14:47	NE	West of WMCC	none	0	no	
	2 - William Mooney at Richardson	14:48 to 14:50	NE	NW of WMCC	none	0	no	
	3 - 2383 Carp Road	14:51 to 14:53	NE	NE of WMCC	none	0	no	
	4 - Carp rd to 417	14:55 to 14:59	NE	East of WMCC	none	0	no	
	5 - 417 from carp rd to hwy 7	14:59 to 15:01	NE	SW of WMCC	none	0	no	
36-Emily-Oct 13	1 - 2301 Carp Road	16:36 to 16:40	NW	East of WMCC	none	0	no	
	2 - 219 Westbrook	16:45 to 16:48	NW	South of WMCC	none	0	no	
	3 - 2150 Richardson Side Road	16:53 to 16:56	NW	North of WMCC	none	0	no	

37-Kyle-Oct 14	1 - Carp rd from entrance gate to 417	14:14 to 14:19	NW	SE of WMCC	rotten egg	1-2	yes	landfill odour at along carp road / no adverse effect
	2 - 150 Westbrook Road	14:25 to 14:30	NW	South of WMCC	none	0	no	
	3 - 186 Lloydalex Crescent	14:33 to 14:37	NW	SE of WMCC	none	0	no	
	4 - 2150 Richardson Side Road	14:42 to 14:46	NW	North of WMCC	sweet perfume	1	no	deodorizer from Goulbourn Sanitation
	5 - 376 William Mooney Road	14:50 to 14:54	NW	West of WMCC	manure odour	1	no	farm field had manure applied
	6 - 111 Sirocco Crescent	15:02 to 15:06	NW	South of WMCC	none	0	no	
October 15	residence (Jackson Trails)	6:45 / all morning	ND	SE of WMCC	ND	5/10		
38-Kyle-Oct 15	1 - 376 William Mooney	9:16 to 9:20	NE	West of WMCC	manure	1	no	2 manure spreaders entered farm during survey
	2 - William Mooney @ Cavanmore	9:25 to 9:30	NE	NW of WMCC	none	0	no	
	3 - 2149 Richardson Side Road	9:36 to 9:41	NE	North of WMCC	none	0	no	
	4 - Carp rd down from exit gate	9:42 to 9:47	NE	SE of WMCC	asphalt / earthy odours	1	no	odour from Karson asphalt facility
	5 - 143 Walgreen road	9:52 to 9:57	NE	South of WMCC	none	0	no	
39-Brad-Oct 15	1 - 417 @ Richardson Side Road	13:10 to 13:11	SE	NW of WMCC	none	0	no	downwind, no odour
	2 - 417 @ hwy 7 off ramp	13:14 to 13:15	SE	SW of WMCC	none	0	no	
	3 - WMCC entrance	13:20 to 13:22	SE	East of WMCC	asphalt odour	ND	no	asphalt odour from Karson operation on Carp Road
	4 - 569 William Mooney Road	13:26 to 13:27	SE	NW of WMCC	none	0	no	
	5 - 505 William Mooney Road	13:28 to 13:29	SE	West of WMCC	manure odour	3	no	manure spreading on fields at this time
40-Kyle-Oct 16	1 - 381 William Mooney Road	9:20 to 9:25	ENE	West of WMCC	none	0	no	
	2 - 427 William Mooney Road	9:27 to 9:34	ENE	West of WMCC	rotten egg then manure	1	yes	landfill odour and manure odour / no adverse effect
	3 - Laurysen Kitchens	9:44 to 9:48	ENE	NE of WMCC	none	0	no	
	4 - 2301 Carp Road	9:50	ENE	East of WMCC	brief smell of asphalt	1	no	
41-Paul-Oct 18	1 - 355 William Mooney Road	10:01 to 10:03	SE	West of WMCC	asphalt odour	1	no	
	2 - William Mooney at Richardson	10:05 to 10:06	SE	NW of WMCC	cattle manure	1	no	
	3 - 2283 Richardson Side Road	10:07 to 10:09	SE	North of WMCC	none	0	no	
	4 - Carp Road	10:11 to 10:13	SE	East of WMCC	none	0	no	
42-Greg-Oct 19	1 - Carp rd just north of WM entrance	9:27	SW	NE of WMCC	fleeting landfill odour	1	yes	fleeting landfill gas odour / no adverse effect
	2 - 2297 Richardson Side Road	9:30	SE	North of WMCC	manure odour	2	no	manure spreading on William Mooney Road
	3 - 166 Wilbert Cox	9:40	SW	NW of WMCC	none	0	no	
	4 - 100 Huntley Manor	9:44	SW	North of WMCC	none	0	no	
	5 - cheshire cat restaurant	9:47	SW	North of WMCC	manure odour	2	no	manure spreading on William Mooney Road
	6 - 2060 Richardson Side Road	9:50	SW	NE of WMCC	asphalt odour	1	no	asphalt odour from Karson operation on Carp Road
43-Greg-Oct 20	1 - 2301 Carp Road	13:20	NE	East of WMCC	none	0	no	
	2 - Carp rd at Richardson Side Road	13:23	NE	North of WMCC	rotting garbage	2	no	downwind of Goulbourn sanitation, odours from Goulbourn
	3 - Wilbert Cox	13:32	NE	NW of WMCC	none	0	no	
	4 - William Mooney	13:36	NE	West of WMCC	strong manure odours	3	no	manure odours
	5 - 292 Moonstone Road	13:43	NE	SW of WMCC	none	0	no	
	6 - OZ dome on Westbrook	13:48	NE	South of WMCC	none	0	no	
44-Paul-Oct 20	1 - 355 William Mooney Road	13:58 to 14:01	NW	West of WMCC	manure odour	1	no	
	2 - 505 William Mooney Road	14:03 to 14:05	NW	NW of WMCC	none	0	no	
	3 - Carp rd at 417	14:07 to 14:07	NW	SE of WMCC	diesel fumes	2	no	diesel fumes from passing trucks
	4 - 417	14:10 to 14:12	NW	South of WMCC	none	0	no	
45-Tracy-Oct 20	1 - 195 westbrook	19:09 to 19:11	NE	SE of WMCC	none	0	no	

TABLE 1

	2 - 2301 Carp road	19:13 to 19:15	NE	East of WMCC	none	0	no	
	3 - Cardevco at Richardson side rd	ND	NE	North of WMCC	none	0	no	
46-Greg-Oct 21	1 - 2301 Carp Road	7:46	E	East of WMCC	asphalt odour	2	no	asphalt odour from Karson operation on Carp Road
	2 - 505 William Mooney Road	7:50	E	West of WMCC	manure odour	3	no	manure odours
	3 - 105 Wilbert Cox	8:04	E	NW of WMCC	rotting vegetation	1	no	autumn odours
	4 - cheshire cat pub	8:18	E	North of WMCC	rotting garbage/perfumey	1	no	odours from Goulbourn Sanitation
	5 - David Manchester	8:50	E	West of WMCC	manure odour	2	no	manure odours
47-Paul-Oct 21	1 - 2300 Carp Road	14:17 to 14:19	NE	East of WMCC	asphalt odour	2	no	asphalt odour from Karson operation on Carp Road
	2 - 2283 Richardson Side Road	14:19 to 14:21	NE	North of WMCC	none	0	no	
	3 - 505 William Mooney	14:21	NE	West of WMCC	manure odour	3	no	manure spreading on east side of road
	4 - 427 William Mooney	14:23 to 14:27	NE	West of WMCC	landfill gas odour	2	yes	landfill odour on william mooney / no adverse effect
	5 - 355 William Mooney	14:28	NE	West of WMCC	none	0	no	
48-Tor-Oct 22	1 - 2415 Carp Road	14:51 to 14:52	N	North of WMCC	none	0	no	
	2 - 184 Wilbert Cox	14:56 to 14:57	N	NW of WMCC	none	0	no	
	3 - 427 William Mooney Road	15:00 to 15:01	N	West of WMCC	none	0	no	
	4 - 2141 Carp Road	15:07 to 15:08	N	SE of WMCC	none	0	no	
	5 - 99 Lloydalex crescent	15:10 to 15:11	N	SE of WMCC	none	0	no	
49-Tracy-Oct 22	1 - 2301 Carp Road	16:20 to 16:25	E	East of WMCC	none	0	no	
	2 - 209 Westbrook Road	16:27 to 16:30	E	South of WMCC	none	0	no	
	3 - 2283 Cardevco	17:40 to 17:45	E	North of WMCC	none	0	no	
October 25	Jackson Trails subdivision	7:00 / all morning	ND	SE of WMCC	ND	4/10		
October 26	driving past site on highway 7 at 401	7:45	ND	SW of WMCC	stinks	10/10		I assume complainant meant 417 not 401
October 26	office on Silver Seven Rd, Kanata	10:30 to 12:30	ND	East of WMCC	stinks	8/10		
50-Tor-Oct 27	1 - 2352 Carp Road	14:03 to 14:04	NE	North of WMCC	none	0	no	
	2 - 179 Wilbert Cox	14:09 to 14:14	NE	NW of WMCC	none	0	no	
	3 - 505 William Mooney	14:17 to 14:18	NE	West of WMCC	none	0	no	
	4 - 195 Westbrook Road	14:23 to 14:24	NE	South of WMCC	none	0	no	
	5 - 97 Lloydalex Crescent	14:27 to 14:28	NE	SE of WMCC	none	0	no	
51-Emily-Oct 28	1 - 2301 Carp Road	12:38 to 12:42	E	East of WMCC	none	0	no	
	2 - 2150 Richardson Side Road	12:44 to 12:47	E	North of WMCC	none	0	no	
	3 - 376 William Mooney	12:50 to 12:52	E	West of WMCC	none	0	no	
52-Lance-Oct 28	1 - 2352 Carp Road	13:27 to 13:29	E	North of WMCC	none	0	no	
	2 - 2415 Carp Road	13:32 to 13:34	E	North of WMCC	none	0	no	
	3 - 505 William Mooney	13:44 to 13:46	E	West of WMCC	none	0	no	
	4 - 427 William Mooney	13:47 to 13:54	E	West of WMCC	garbage odours	1	yes	landfill odours may cause an adverse effect

NOTES:

Directions are estimates and may not be exact coordinate

Provincial Officer's were not asked if other sources of odour caused or were likely to cause adverse effect

Times based on 24-hour clock

Coloured font represents public complaints transferred from Table 2

Odour intensity: 0 - 5, whereby 0 is no odour and 5 is intolerable odour

ND = not determined

TABLE:2

Odour Complaints Received from Public during MOE Odour Survey

September 21, 2009 to October 28, 2009

Facility: Waste Management of Canada Corporation
2301 Carp Road, Ottawa

Date	Time	Method of Complaint Receipt	Location of Odour	Wind Direction	Site Location Relative to WMCC Site	Observed Odour	Odour Intensity
September 26	16:15	nodump website	driving between WMCC and Richardson S. Rd	SSW	NE	leachate smell	3 out of 10
September 29	8:00	email to Greg Davis	at residence on Huntley Manor	light to no wind	North of WMCC	faint smell of landfill	2 out of 10
October 4	15:30	nodump website	driving by landfill at Carp at 417	ND	E	putrid smell	6 out of 10
October 4	17:25 to 19:15	nodump website	drove by site 3 times on Carp Road	S	E	landfill gas	5 out of 10
October 7	17:00	nodump website	driving on 417 off ramp at Carp Road	ND	SE	ND	7 out of 10
October 9	8:15 to 9:15	nodump website	in Huntley Manor neighbourhood	NW/no wind	NW	smell of landfill	3 out of 10
October 12	8:00 to all morning	nodump website	Jackson Trails subdivision	ND	S	ND	2 out of 10
October 15	6:45 to all morning	nodump website	at residence on Bryce Place (Jackson Trails)	ND	SE	ND	5 out of 10
October 25	7:00 to all morning	nodump website	Jackson Trails subdivision	ND	SE	ND	4 out of 10
October 26	7:45	nodump website	highway 7 ramp at 401	ND	S	stinks	10 out of 10
October 26	10:30 to 12:30	nodump website	at office on Silver Seven Road, Kanata	ND	E	stinks	8 out of 10

NOTE: Directions are estimates and may not be exact coordinate
Times based on 24-hour clock
Colour codes represent individual complainants
ND = not determined

TABLE: 3

Distance Of Odour from WMCC for MOE Odour Surveys

September 21, 2009 to October 28, 2009

Distance from WMCC landfill site
2301 Carp Road, Ottawa

	Odours Detected by MOE									Total
Distance From Landfill Site meters	Landfill	Asphalt	Manure / Farm	Diesel Fumes	Solvent and/or Paint	Garbage and/or Perfume	Wood Smoke and/or Raw Wood	Gasoline	Vegetation / Earthy	non-landfill Sources
0 to 500	20	11	11	1	7		2	1	3	36
500 to 1000	1		6		1	14	3		4	28
1000 to 2000		1	1	1			1		6	10
2000 +		2								2
Subtotal:	21	14	18	2	8	14	6	1	13	76
Total: Landfill Odours:	21									
Total: Non-Landfill Odours:		76								

Note: Distance from WMCC landfill site taken from approximate landfill boundary

TABLE: 4

Distance of Odour from WMCC for Public Complaints

September 21, 2009 to October 28, 2009

Distance from WMCC landfill site
2301 Carp Road, Ottawa

	Odours Detected by MOE									Total:
Distance From Landfill Site meters	Landfill	Asphalt	Manure / Farm	Diesel Fumes	Solvent and/or Paint	Garbage and/or Perfume	Wood Smoke and/or Raw Wood	Gasoline	Vegetation / Earthy	
0 to 500	5									5
500 to 1000										
1000 to 2000	5									5
4000 +	1									1
Subtotal:	11	0	0	0	0	0	0	0	0	11
Total: Landfill Odours:	11									
Total: Non-Landfill Odours:		0								

Note: Distance from WMCC landfill site taken from approximate landfill boundary

APPENDIX I

VOLUNTARY ABATEMENT PLAN

Ministry of the
Environment

Ottawa District Office

2430 Don Reid Drive
Ottawa ON K1H 1E1

Telephone: (613) 521-3450
Fax: (613) 521-5437

Ministère de
l'Environnement

Bureau de district d'Ottawa

2430, promenade Don Reid
Ottawa ON K1H 1E1

Téléphone: (613) 521-3450
Télécopieur: (613) 521-5437



May 11, 2006

Waste Management of Canada Corporation
2301 Carp Road
Ottawa, Ontario
K0A 1L0

Attention: Mr. Michael Walters

Dear Mr. Walters:

Re: Waste Management of Canada Corporation
Odour Emissions from Ottawa Waste Management Facility

This will confirm our meeting on March 30, 2006 during which we discussed a number of issues surrounding the Ottawa Waste Management Facility (OWMF), including a significant increase in the number of odour complaints the Ottawa District office of the MOE has recently received.

In the past 2 to 3 years the Ottawa District office has received only a few complaints regarding odours suspected of coming from the OWMF. Since the announcement by WM of its proposed expansion of the OWMF, and the release of the draft Terms of Reference for the Environmental Assessment, the Ottawa District office has received a significant number of odour complaints that neighbouring residents are attributing to the OWMF. Some of these complaints have been general in nature ("the landfill has smelled for years" or "the landfill always smells"), while other complaints have been specific in date and time. I am compiling a summary of the complaints our office has received and will be forwarding this shortly to your attention.

At its March 1, 2006 open house to discuss the proposed expansion, WM acknowledged to the public that the existing landfill gas collection and flare system has reached its capacity. WM indicated that there is more landfill gas being generated than being collected and burned by the current collection and flare system, and that the company intends to install a temporary flare to burn this excess gas while a permanent second flare is commissioned.

Mr. Michael Walters
May 11, 2006
Page 2

WM confirmed the current situation of the landfill gas collection and flare system at our March 30, 2006 meeting. On March 20, 2006 WM submitted an application to the ministry for a Certificate of Approval (Air) to include, among other things, a temporary flare and a permanent second flare at the OWMF. We discussed how the application for the temporary flare might be expedited by the ministry's Environmental Assessment and Approvals Branch such that the equipment can be brought on-line in a timely fashion.

During our meeting we discussed WM's ability to fully identify all potential sources of odour at the OWMF, and to implement necessary operational controls and abatement measures, such that the company is able to control odours generated by the landfill operations on a proactive, rather than a re-active basis, as is currently the situation.

As such, this letter will serve as this ministry's request that WM enter into a Voluntary Abatement Program to address and control odours originating from the OWMF on a proactive basis. As part of this Voluntary Abatement Program the Ottawa District office is requesting that you undertake, as a minimum, the following actions:

1. Retain the services of a consultant qualified to undertake this evaluation, and advise the Ottawa District office of this consultant.
2. Complete an evaluation of all potential odour sources at the OWMF, including but not limited to the active working face, the landfill gas collection and flare system, the leachate collection system and the landfill gas air sparging system. The evaluation should identify each potential odour source and assess its potential to cause off-site impacts. The evaluation should include a review of previous odour complaints to the company, and should attempt to identify the circumstances of operation at the OWMF for any specific time period(s) identified by complaints to the company, and for the periods acknowledged by the company that odours were emanating from the site.
3. Evaluate the adequacy of the approved design and operations of the existing landfill gas collection and flare system to control existing landfill gas emissions and expected landfill gas emissions as the site expands to its currently approved capacity. This should include a review of monitoring and maintenance records, and an evaluation of the adequacy of any corrections and repairs for proper system operations. The evaluation should also consider the future operation of the temporary flare and permanent second flare which have been applied for.

Mr. Michael Walters
May 11, 2006
Page 3

4. Conduct an independent inspection of the landfill gas collection and flare system to identify any deficiencies. This should include, as a minimum, checking the collection wells and collection system for leaks, blockages, clogging, adequacy of the interim and final cover material, and identifying "hot spots" of gas generation within the landfill mound.
5. Recommend any design and/or operational improvements to the landfill gas collection and flare system to properly control existing landfill gas emissions and expected landfill gas emissions as the site expands to its currently approved capacity.

Within 30 days of receipt of this letter please provide me with a written response as to Waste Management's agreement to enter into a voluntary abatement program. Your response should include an appropriate schedule for the work WM will be required to undertake.

By participating in this voluntary abatement program WM will be able to demonstrate their intent to remain in compliance with applicable ministry legislation, and are willing to work with this ministry to address this important issue on a cooperative basis.

If you have any questions about the Voluntary Abatement Program please do not hesitate to contact me at 613-521-3450, extension 227.

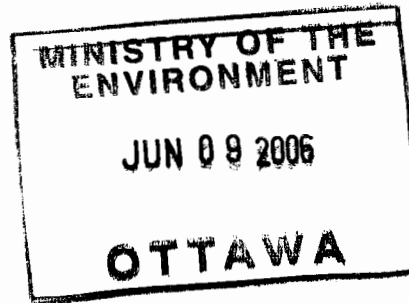
Thank you,



Greg Davis
Sr. Environmental Officer
Ottawa District
Ministry of the Environment

- faxed May 11/06
- mailed May 11/06

GD/cb

**WASTE MANAGEMENT
OF CANADA CORPORATION**

2301 Carp Road
Carp, ON K0A 1L0
(613) 831-1281
(613) 831-8928 Fax

June 8, 2006

Mr. Greg Davis
Ontario Ministry of the Environment
Ottawa District Office
2430 Don Reid Drive
Ottawa, Ontario K1H 1E1

Re: Waste Management – Ottawa Landfill Site – Odour Control Voluntary Abatement Program

Dear Mr. Davis:

Thank you for meeting with us on May 10th, 2006, to discuss activities which Waste Management of Canada Corporation are undertaking at the Ottawa Landfill Site. We have prepared this letter in response to your letter of May 11, 2006, and from discussions during our meeting. Once you review the information that is contained following, we believe you will agree that Waste Management has been proactive in addressing the landfill odour issues and landfill gas management at the Ottawa Landfill site.

We understand the pressure that the Ministry of the Environment has come under subsequent to our announcement of our expansion process of the Ottawa landfill site. Allow me to first describe some of the work that WM has been completing at the landfill.

At the Ottawa landfill site, we have been actively pursuing landfill gas projects in recent years. WM has investigated innovative technologies including micro-turbines to generate electricity and recover heat to use landfill gas in a beneficial manner. Heat recovery from burning the landfill gas could be used to heat greenhouses, or to sell to neighboring manufacturing facilities for use in their processes. WM has recently decided to undertake our own independent gas to energy facility, and supply the energy to the Ontario hydro grid under the Ontario Standard Offer program. WM has presented these opportunities to the public during public open houses and has been received favorably.

Waste Management has modeled the landfill gas generation from the Ottawa landfill site, both through our own modeling software, and through third part consultants to verify results. These models have been verified and calibrated using the landfill gas quantity that is being collected at the existing landfill gas flare. Annually landfill gas wells are added to the existing system, as progressive closeout of the landfill site is completed. Landfill gas well locations are based on the system design, and the expected radius of influence of the gas wells, and wells are also located in areas identified as "hot spots" where landfill gas is escaping from the landfill mound. These hot spot locations are identified during landfill gas emission studies that are completed by a third party consultant. Waste Management has been proactive in installing landfill gas wells, and collecting as much landfill gas as possible with the existing system. The existing system has recently reached capacity, and therefore we are proceeding with the next portion of the landfill gas system design, including installation of a second landfill gas flare, and implementing the gas to energy project.

At the Ottawa landfill, we also operate an odour control system that mists along the Carp road side of the landfill, and is used to control fugitive odours, which can occasionally develop from the landfill operation. To address the increased frequency of odour complaints coinciding with the announcement of our landfill expansion project, WM has increased the system from 2000 feet, to 4,400 feet of system along Carp Road, and enveloping the site to the north and south. We believe that this system is successful in controlling off-site odours.

As we discussed in our meeting, WM's environmental consultant, WESA Ltd., consulted with the MOE Environmental Assessment and Approvals Branch at the time the odour control misting system was to be installed at the Ottawa landfill. Ministry staff informed WESA that approval of the system under Section 9 of the EPA was not required as long as there were no hazardous ingredients in the products being used for odour control. The odour control system at the Ottawa landfill uses products that do not contain any hazardous ingredients, as reported on their MSDS. Documentation supporting this position has been forwarded to you.

From recent discussions, we understand that you are now requesting approval of the odour control system, even though the advice that we received from the Ministry in 2003 clearly indicated that approval was not required. It is WM's intention to continue to work cooperatively with the Ontario Ministry of Environment. In this regard, we intend to submit an application for approval of the odour control system, and expect to submit our application to the MOE by June 30, 2006.

Following the items identified in your letter of May 11, 2006, we offer the following Action Plan to further identify and control odours at the Ottawa landfill. The objective of the Action Plan is to identify all potential sources of odour at the Ottawa landfill, and to ensure the necessary operational control and abatement measures have or will be implemented, such that WM is able to continue to control odours generated by the landfill on a proactive basis. As noted below, several activities have been completed or are in progress; however, this Action Plan serves to formalize these activities to the MOE.

1. Retain Consultant Team to undertake the activities associated with the Action Plan
(Status – Completed)

As there are several independent components of Waste Management's landfill gas management program, a team of consultants has been retained to assist in the implementation of the Action Plan. They are as follows:

Andre Simard and Associates: has completed landfill gas surface emission studies of the Ottawa landfill site. Andre Simard has completed these studies for the past two years, and has assisted WM in identifying odour causing locations. The firm is also completing a peer review of the existing landfill gas system to determine its suitability for the current landfill site configuration and for the final capacity of the landfill.

Rowan Williams Davis & Irwin (RWDI): has completed a landfill gas characterization study of the existing landfill site.

Comcor: is retained to conduct monthly monitoring and inspections of the landfill gas field to verify gas quality.

Henderson Paddon and Associates Limited (HPA): is retained to refine the original landfill gas system design and modify it where necessary to suit the changing field conditions. HPA has been involved in generating the landfill gas curve for the landfill site, establishing where new wells are to be located in the field, and completed the design and permitting of the second landfill gas flare.

The consultant team working under the direction of the Ottawa landfill's engineering and operations team, will oversee the implementation of the Action Plan.

2. Complete an evaluation of all potential odour sources at the Ottawa landfill
(Status – In Progress)

As noted above, Andre Simard and Associates has been retained to conduct ongoing surveys of landfill gas surface emissions from the Ottawa Landfill site. The surveys include the following areas: active working face, interim and final covered areas, landfill gas collection and flare system, leachate collection system, and air sparging system. These studies are used to identify the potential sources of landfill gas odours, and to direct mitigative measures.

The surveys use the US EPA method for operational standards for emissions from landfill sites. The EPA requires that methane concentrations measured at the surface of the landfill be less than 500 ppmv. Although methane is odourless, it is an excellent indicator of the presence of landfill gas, is easily detected using portable instrumentation, and provides instant results. It is common practice in the landfill industry to use methane as an indicator of potential odour-causing landfill gas, and WM intends to continue with this practice. Although not legislated in Ontario, Waste Management uses this guideline to determine where the potential sources of odour are, and where new gas wells should be located, or where the final cap should be recompacted. These surveys are typically completed in May, after the thawing of the soil, and vertical gas migration will be the greatest. We have attached the most recent landfill gas emission survey report for your review in **Appendix A**.

Andre Simard has also completed a second surface emission survey this year to include the air sparging system. The fieldwork for this work has been completed on May 23 & 24, 2006. Once the report on this portion of the work is complete, it will be forwarded to the MOE.

RWDI was retained by Waste Management to complete a landfill gas characterization study. The report on this study dated July 21, 2004, is attached for information purposes. Landfill gas from the site is composed of approximately 54% methane, 39% carbon dioxide, 6% nitrogen, and 1% oxygen. This report is attached as **Appendix B**.

Waste Management has an aggressive odour response protocol, where when a complaint is received, staff is dispatched to the area of the complaint and investigates the potential source of the odour. The dispatched WM crew normally goes to the geographic location of the complaint and note if there is any landfill odours present. Then they work their way back to the landfill site monitoring for odours as they proceed. They also go into the site and note if the landfill gas system is operational as well as note the wind direction. They then will provide a written response to the complainant and outline the findings from their investigation. This protocol has been successful at the Richmond landfill site in determining if complaints are valid, and we will continue to use it at the Ottawa landfill.

3. Evaluate the ~~adequacy of the approved design and operations~~ of the existing landfill gas system, and conduct an independent inspection of the system to identify any deficiencies.
(Status – In Progress)

Waste Management has retained Andre Simard and Associates who are completing an evaluation of the adequacy of the approved landfill gas collection and flaring system to control gas emissions and expected emissions as the site expands to its currently approved capacity. This report will be forwarded to the MOE by July 14, 2006.

Waste Management has retained Comcor for the past year to monthly monitor the landfill gas field, and to verify gas quality on a monthly basis. This includes an evaluation of monitoring and maintenance requirements for the landfill gas collection and flare system, and optimization of the collection efficiency.

The original landfill gas collection system was designed in 1999 by Comcor, and since then Henderson Paddon and Associates Limited has refined the original design and modified it to suit the changing field conditions. HPA has also been involved in generating the landfill gas curve for the landfill site, establishing where new wells are to be located in the field, and completed the design and permitting of the second landfill gas flare. We have included in **Appendix C**, the landfill gas generation curve data using the Scholl Canyon model, where it estimates that the peak landfill gas generation rate will be 2,937 scfm, and will occur in 2008. With a collection efficiency of 80%, the maximum expected landfill gas collected would be 2,350 scfm. This curve has been used to size the new enclosed flare, which we are seeking approval for (total capacity of 2,400 scfm), and to determine the sizing of the landfill gas to energy facility. This new flare coupled with the existing approved flare will bring our total site flare capacity to 3,600 scfm. We have also attached in **Appendix D** the drawing showing the proposed plan for the landfill gas well locations, and the existing well locations.

As mentioned previously, WM has retained Comcor to inspect and monitor the landfill gas well field monthly, to optimize the collection efficiency. WM has also retained Andre Simard and Associates to conduct an independent review and inspection of the landfill gas collection and flaring system. Once complete, this report will be forwarded for your office.

As noted in Activity 2 above, Andre Simard and Associates complete regular assessment of LFG vertical migration at the Ottawa landfill. This report is completed to identify "hot spots" where landfill gas (measured as methane) is escaping from the collection system, and could be causing odour. As an example, the most recent report did identify five (5) areas where remedial work will be completed, and is identified on Figure 3.3 of the report enclosed in **Appendix A**.

For your information, we have also included in **Appendix E** of this letter, a plan showing the areas of final and interim cap at the Ottawa landfill site. Any area that does not have active landfill operations will have final or interim cap placed to prevent water infiltration, and to prevent the escape of landfill gas. These areas of the landfill site are included in the emissions assessment completed by Andre Simard and Associates.

4. Recommend any design and operational improvements to the landfill gas collection and flare system. **(Status – In Progress)**

Based on the results from landfill gas generation modeling completed by Waste Management and its consultants, it has been established that the existing landfill gas collection and flaring system has reached capacity, and cannot accommodate the current landfill gas generation rate. Therefore, Waste Management is in the process of implementing the next phase of the landfill gas collection and flaring system, part of which requires approval from the MOE.

The next phase of the gas management system includes the following:

- Installation of the last portion of the landfill gas header, which will now surround the entire landfill site, which will improve vacuum on the well field. **(expected completion date – ~~June 30, 2006~~)**

- Installation of a minimum of 15 new landfill gas wells located on the eastern portion of the landfill. These wells will be the first in the series of wells located on the east end of the landfill. **(expected completion date – June 30, 2006)**
- Approval and installation of a second enclosed landfill gas flare at the east portion of the landfill. This flare will enable WM to collect and destroy 100% of the landfill gas generated from the landfill mound. **(application submitted to MOE, expected flare delivery July 14, 2006, would be operational July 21st, or upon approval, whichever is later)**
- Approval and temporary installation of a candlestick flare to destroy the excess landfill gas until the construction of the enclosed flare can be completed. **(approval received and flare operational)**
- Installation of three new landfill gas blowers, to provide 100% collection capacity of the well field. **(installation scheduled for week of June 12, 2006)**
- Approval and construction of a landfill gas to energy facility to create a beneficial use for the landfill gas. **(Approval submitted to MOE, and construction expected to start before end of 2006)**
- Expansion of the odour control system to cover more area, and to allow potential operation during winter months, and obtain MOE approval for system. **(submit MOE application by June 30, 2006)**

Waste Management will also review the results of the evaluation completed by Andre Simard and Associates regarding the overall adequacy of the design and operations of the existing landfill gas collection and flare system (described in Activity 3 above). Recommendations from the evaluation will be incorporated into the gas management system at the appropriate time.

A proposed schedule of activities for the Action Plan, including the deadline for deliverables is attached to this letter in **Appendix F**. We are pleased to agree to a voluntary abatement program with the MOE, and feel that you will be better informed of our work that we are completing, and allow you to respond to public inquiries. WM is committed to the continued operation of our facility in compliance with existing legislation, and will provide the MOE with information on the programs being completed.

I trust that this letter, and the information enclosed is helpful in outlining Waste Management proactive steps in controlling landfill gas emissions, and potential odour sources. If you any question please contact me.

Yours truly,



Michael Walters
Senior District Manager, Landfills
Eastern Canada

Cc: S. Burns MOE Ottawa
M. Pullen WM Burlington

Encl.

APPENDIX II

PROVINCIAL OFFICER'S ORDER 5830-6Z2PPW



Ministry of the
Environment

Ministère de
l'Environnement

Ontario

Provincial Officer's Order

Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)
Ontario Water Resources Act, R.S.O. 1990, c. O. 40 (OWRA)
Pesticides Act, R.S.O. 1990, c. P11 (PA)
Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)
Nutrient Management Act, 2002, S.O. 2002, c.4

Order Number
5830-6Z2PPW

Incident Report No.
5485-6MQH8S

To: Waste Management of Canada Corporation
2301 Carp Road, RR 3
Carp, Ontario, K0A 1L0
Canada

Site: 2301 Carp Road
Ottawa

Pursuant to my authority under EPA Section 157.1, EPA Section 196(1) and EPA Section 157, I order you to do the following:

Work Ordered

Item No. 1

Compliance Date

2007/05/18

Summary Actions Report

1. By no later than **June 1, 2007**, prepare and submit to the issuing Provincial Officer a Summary Actions Report which outlines a description of all measures that have been taken since **February 01, 2007**, and the date those measures were taken to address odour discharges from the Waste Management of Canada Corporation Landfill Site located at 2301 Carp Road in Ottawa ("WMCC Landfill Site").

Retain Qualified Person

2. By no later than **May 17, 2007**, retain the services of qualified consultant(s) or contractor(s) with experience and expertise in landfill gas emissions/control measures ("Qualified Person") to carry out the activities described in items 3 to 7 (inclusive) below. Submit written confirmation of the name of the consultant or contractor to the issuing Provincial Officer by no later than **May 21, 2007**.

Odour Sources Survey Report

3. By no later than **June 29, 2007**, submit to the issuing Provincial Officer an Odour Sources Survey Report with respect to the WMCC Landfill Site. The report shall be prepared by the Qualified Person as a result of the Qualified Person evaluating all potential sources of odour at the WMCC Landfill Site that may be discharged to the natural environment and which cause or

are likely to cause adverse effects and shall include but not necessarily be limited to:

- a) a description and ranking of the odour sources;
- b) a description of recommended measures to achieve and maintain compliance with Section 14 of the Environmental Protection Act with respect to each source of odour discharges.

Emissions Survey Report

4. By no later than the last business day of each of June, August, October, and December, 2007 submit to the issuing Provincial Officer an Emissions Survey Report with respect to the WMCC Landfill Site. Each report shall be prepared by the Qualified Person as a result of the Qualified Person having conducted a separate landfill gas emission survey at the WMCC Landfill Site in accordance with the U.S. EPA method for operational standards for emissions from landfill sites. The report shall include but not necessarily be limited to providing the results of the landfill gas emission survey for the previous month and describing any actions taken in the previous month with respect to the landfill gas collection and flaring system as a result of the survey.

Ambient Air Monitoring Report

5. By no later than **August 31, 2007**, submit to the issuing Provincial Officer an Ambient Air Monitoring Report with respect to the WMCC Landfill Site. The report shall be prepared by the Qualified Person as a result of the Qualified Person having conducted the ambient air quality monitoring, testing and reporting set out in the Ambient Air Quality Work Plan as identified in the February 16, 2007 letter prepared by RWDI AIR Inc. and attached to this Order as Appendix I, with the amendment that the monitoring and testing be completed such that the final report outlined in the 2nd paragraph on page 5 of the Plan is issued and submitted to the issuing Provincial Officer by August 31, 2007. Make all efforts to notify the issuing Provincial Officer, or if the officer is not available, Paul Kehoe, the Area Supervisor of the Ottawa District Office of the Ministry of the Environment, at least 24 hours prior to each sampling event.

Continuous Monitoring Report

6. By no later than **August 31, 2007**, submit to the issuing Provincial Officer a Continuous Monitoring Report prepared by the Qualified Person that assesses options and the potential effectiveness of installing continuous ambient air quality monitoring equipment that is capable of monitoring odour and/or odour causing compounds at the point or points of impingement at the WMCC Landfill Site. The assessment shall include, but not necessarily be limited to, identifying the various types of equipment available, the contaminants to be assessed, the proposed method detection limits, and the suitability of using continuous monitoring equipment at the WMCC landfill site.

Landfill Cover Report

7. By no later than **June 29, 2007**, submit to the issuing Provincial Officer a Landfill Cover Report with respect to the WMCC Landfill Site. The report shall be prepared by the Qualified Person as a result of the Qualified Person re-evaluating the adequacy of the current landfill cover and shall include but not necessarily be limited to outlining a summary of the findings of the

evaluation and providing recommendations as to measures that should be taken with respect to landfill cover at the WMCC Landfill Site to achieve and/or maintain compliance with Section 14 of the Environmental Protection Act with respect to odour discharges.

Operations Manual

8. a) By no later than **June 1, 2007**, prepare a Manual which includes plans, specifications and a description of the operations and maintenance procedures for the landfill gas system collection and air injection systems at the WMCC Landfill Site, including but not necessarily limited to:

i) Phasing/timing of system installation, start up and operation - particularly with respect to integration with overall landfill operation and maximizing landfill gas control;

ii) Inspection frequencies and maintenance/replacement procedures for system equipment;

iii) Monitoring of landfill gas flow rates and concentrations;

iv) Contingency provisions in the event of unexpected component failures.

v) List of recommended procedures that are to be taken to minimize the discharge of odour and to address any resulting adverse effects from the discharge of odour during the disposal of gas well water and during the construction, installation, repair, maintenance of any landfill gas system components including but not limited to landfill gas wells, landfill gas well pumps, trenches and headers

b) By no later than **June 1, 2007**, submit written confirmation to the issuing Provincial Officer that you have prepared the manual.

c) Once the manual is prepared, operate and maintain the landfill gas collection system in accordance with procedures set out in the manual.

d) Keep a copy of the manual on the Site and maintain and update the manual as necessary.

Monthly Progress Reports

9. Commencing no later than **June 15, 2007** and on or before the 15th day of each month thereafter until December 31, 2007, prepare and submit to the issuing Provincial Officer a Monthly Progress Report on the status of all measures that have been taken during the preceding month and an identification of those measures which are planned to be undertaken in the next month to address the adverse effects that are being caused or are likely to be caused as a result of the discharge of odours from the WMCC Landfill Site.

Contingency Work Plan

10. By **August 01, 2007**, prepare and submit to the issuing Provincial Officer a Contingency Report which describes and evaluates potential contingency measures which could be implemented at the WMCC Landfill Site on and after September 30, 2007 to eliminate ongoing odour discharges from the Site that cause or are likely to cause adverse effects beyond those measures outlined in any of the reports outlined above. The Contingency Report shall include, but not necessarily be limited to, a description and evaluation of the possibility of ceasing the acceptance of waste at the WMCC Landfill Site and the capping of the Site with final cover in accordance with a revised closure plan.

Posting on WMCC website for Public Viewing

11. By no later than **May 18, 2007** post this Provincial Officer's Order and accompanying Provincial Officer's Report on the WMCC website by providing a link at <http://www.ottawalandfillea.com/>

12. By no later than **June 15, 2007** post the report submitted to the ministry required by Condition 1 of this Order on the WMCC website by providing a link at <http://www.ottawalandfillea.com/>

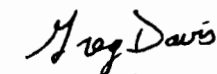
13. By no later than **September 14, 2007** post a summary of the results from the Ambient Air Quality Monitoring program as required by Item 5 of this Order on the WMCC website by providing a link at <http://www.ottawalandfillea.com/>.

14. Within **30 working days** after the end of each quarterly reporting period as identified in Condition 7 of Certificate of Approval 0741-6S9NPE, post the quarterly reports required by this condition on the WMCC website by providing a link at <http://www.ottawalandfillea.com/>

- A. While this Order is in effect, a copy or copies of this order shall be posted in a conspicuous place.
- B. While this Order is in effect, report in writing, to the District or Area office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

This Order is being issued for the reasons set out in the annexed Provincial Officers Report which forms part of this Order.

Issued at Ottawa this 11th day of May, 2007.



Greg Davis
Badge No: 725
Ottawa District Office
Tel: (613) 521-3456 Ext. 227

APPEAL/REVIEW INFORMATION

REQUEST FOR REVIEW

You may request that this order be reviewed by the Director. Your request must be made in writing (or orally with written confirmation) within seven days of service of this order and sent by mail or fax to the Director at the address below. In the written request or written confirmation you must,

- specify the portions of this order that you wish to be reviewed;
- include any submissions to be considered by the Director with respect to issuance of the order to you or any other person and with respect to the contents of the order;
- apply for a stay of this order, if necessary; and provide an address for service by one of the following means:
 1. mail
 2. fax

The Director may confirm, alter or revoke this order. If this order is revoked by the Director, you will be notified in writing. If this order is confirmed or amended by order of the Director, the Director's order will be served upon you. The Director's order will include instructions for requiring a hearing before the Environmental Review Tribunal.

DEEMED CONFIRMATION OF THIS ORDER

If you do not receive oral or written notice of the Director's decision within seven days of receipt of your request, this order is deemed to be confirmed by order of the Director and deemed to be served upon you.

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of the confirming order deemed to have been made by the Director, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary Environmental Review Tribunal P.O. Box 2382 2300 Yonge Street, Suite 1700 Toronto, ON M4P 1E4	and	Director (Provincial Officer Orders) Ministry of the Environment Ottawa District Office 2430 Don Reid Drive Ottawa ON K1H 1E1 Fax: (613)521-5437 Tel: (613)521-3450
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Where service is made by mail, it is deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal by:

Tel: (416) 314-4600

Fax: (416) 314-4506

www.ert.gov.on.ca

FOR YOUR INFORMATION

- Unless stayed by the Director or the Environmental Review Tribunal, this order is effective from the date of service. Non-compliance with the requirements of this order constitutes an offence.
- The requirements of this order are minimum requirements only and do not relieve you from complying with the following:
 - any applicable federal legislation;
 - any applicable provincial requirements that are not addressed in the order; and
 - any applicable municipal law.
- The requirements of this order are severable. If any requirement of this order or the application of any requirement to any circumstance is held invalid, the application of such requirement to other circumstances and the remainder of the order are not affected.
- Further orders may be issued in accordance with the legislation as circumstances require.
- The procedures to request a review by the Director and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference.



Provincial Officer's Report

Order Number
5830-6Z2PPW

Waste Management of Canada Corporation
2301 Carp Road, RR 3
Carp, Ontario, K0A 1L0
Canada

Site
2301 Carp Road
Ottawa

Observations

Waste Management of Canada Corporation (WMCC) operates a solid non-hazardous landfill site at Lots 3 and 4, Concession 3, Geographic Township of West Carleton in the City of Ottawa. The civic address of the landfill site is 2301 Carp Road. WMCC is licensed to use and operate a 35 hectare landfill area within a 133.02 hectare site. WMCC is operating under the authority of certificate of approval for a waste disposal site number A461002 that was issued by the Ministry of the Environment on August 17, 1994 and has undergone subsequent amendments; such as company name change, annual reporting period, and acquisition of contaminant attenuation zone land.

Commencing February 2006, the Ministry of the Environment's Ottawa District Office began receiving numerous notifications from the residents in the surrounding communities of Carp, Stittsville and Kanata indicating foul odour emissions from WMCC's landfill site. The residents indicated these odour impacts were causing them discomfort and loss of enjoyment of their property. The Ministry has since continued to receive complaints on a regular basis until the date of this report. Over 3000 complaints have been submitted during this time.

After meeting with staff from the Ministry's Ottawa District Office in May 2006, WMCC entered into a Voluntary Abatement Plan (VAP) in June 2006 to assess and resolve the odour emissions from the site. WMCC provided evidence that the primary source of the odour emissions from the site was from the landfill gas being generated from the historic waste contained in the landfill mound at the site. WMCC stated their capacity to extract landfill gas through their well network as well as their flaring capacity was not sufficient to manage the landfill gas being generated at the site. WMCC had applied (March 2006) to the Ministry of the Environment's Environmental Assessment and Approvals Branch (EAAB) to amend their air

certificate of approval (8-4076-99-0060) to include a temporary flare, a second enclosed flare, a landfill gas-to-energy facility and a bioremediation facility.

WMCC acknowledged that the capacity of the second enclosed flare is required in order to increase the wellfield vacuum and flaring capacity. WMCC submitted to the Ministry of the Environment's EAAB a revised application for an amendment to its air certificate of approval in July 2006. Certificate of approval 0741-6S9NPE (air) allowing the use and operation of the second enclosed flare was issued by the Ministry of the Environment on November 28, 2006 and revoked and replaced certificate of approval 8-4076-99-0060.

Between June and November 2006, WMCC enhanced their landfill gas (LFG) collection and flaring system by installing approximately 20 additional LFG wells, gas headers on north and east slopes, new LFG blowers as well as completing annual capping on 2 hectares and placement of interim cover on approximately 3 hectares, winterizing their odour control system and installing a site specific weather station.

WMCC advised the Ministry on November 2, 2006 that the excess landfill gas that had been generated ("banked") and was discharging from the landfill mound would require weeks to months after the commencement of the operation of the 2nd flare to be reduced to the point where the extraction and flaring capacity will match the landfill gas generation rate.

Following the approval and subsequent operation of the second enclosed flare on November 29, 2006 the residents in the community continued to report odour emissions at their residences. Residents have indicated adverse effects such as: having to turn off their air exchangers as they were able to detect landfill odour inside their homes, having to close windows to keep the landfill odour out of their homes, children unable to play outdoors, residents indicating that they have become nauseous and have suffered from headaches, and that they feel their property values have suffered a financial loss because of the landfill odours in their community.

To determine the success of the VAP in controlling odour emissions from the landfill site, the ministry initiated an odour survey assessment that commenced on January 25, 2007 and ended on February 23, 2007. The survey involved Provincial Officers conducting olfactory assessments in the community and the vicinity of WMCC's landfill site to determine if odours are present, and the likely source of the odours. Of the 39 odour surveys that were conducted during this time period greater than 50% of the surveys reported off-site odours at or near residential areas that were observed to be generated at the WMCC landfill site by conducting assessments at locations surrounding the landfill site and attempting to identify other potential odour sources. I have continued conducting odour surveys from February 23, 2007 to May 10, 2007 and have observed odours from the WMCC landfill site at or near residential areas that were at times obnoxious enough that I would not want to remain in the odour plume for any substantial amount of time and would not want to live in such an odour plume. I accurately determined the source of the odour as coming from WMCC's landfill site by conducting upwind, downwind and cross wind odour surveys and attempting to identify other potential odour sources. While I did observe and smell other odour sources near the landfill site such as manure, based on the nature and strength of the odours from the other sources, it is my opinion that they were not the source of the odour

smells that I determined were coming from the landfill site that gave rise to the complaints received. I have detected three distinct odours from the landfill site; sulfur/rotten egg odour, rotting garbage odour and a perfume odour.

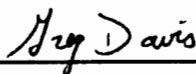
Based on my observations conducting the odour surveys, and based on the observations of my colleagues conducting the odour surveys, as well as the numerous odour complaints I have received from the residents in the community indicating the adverse effects they have been subjected to by the odour discharges from the landfill site, I have reasonable grounds to believe Waste Management of Canada Corporation's landfill site, despite the activities carried out pursuant to the Voluntary Abatement Program, is still discharging a contaminant, namely odour, into the natural environment that is causing or is likely to cause an adverse effect, contrary to section 14 of the Environmental Protection Act. I also reasonably believe, based on the grounds set out above, that the requirements in the Provincial Officer's Order are necessary to prevent or reduce the risk of the discharge and/or prevent, decrease or eliminate the identified adverse effects resulting from the odours from the landfill site operated by WMCC.

Offence(s)**Suspected Violation(s)/Offence(s):****Act - Regulation - Section,****Description****{General Offence}**

1) EPA - 14 (1),

Despite any other provision of this Act or the regulations, no person shall discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect.

{186 (1)}



Greg Davis
Provincial Officer
Badge Number: 725
Date: 2007/05/11
District Office: Ottawa District Office



February 16, 2007

Mr. Mike Walters
Waste Management of Canada Inc.
2301 Carp Rd.
Ottawa, ON K0A 1L0

RWDI AIR Inc.
650 Woodlawn Road West
Guelph, ON
Canada N1K 1B8

RE: Proposed Ambient Air Quality Work Plan
RWDI Reference #W07- 1002P

Dear Mr Walters:

In response to our recent conversation and the letter issued to you from the Ministry of the Environment dated February 5, 2007, RWDI AIR Inc. (RWDI) is pleased to submit this proposed work plan to conduct ambient air quality monitoring for Waste Management of Canada Inc. (WM) at the Carp Road Landfill in Ottawa, Ontario. This document confirms that WM has retained RWDI for this work and outlines the proposed plan to examine a number of air quality parameters at the site.

SCOPE OF WORK

Overview of Proposed Measurement Program

A number of air quality parameters will be examined at regular intervals. Five days of ambient measurements are proposed. The sampling will be conducted during June, July, August and/or September. The survey will include a total of five pairs of concurrent samples (ten in total) for volatile organic compounds (VOCs). In addition, 5 pairs of samples will be taken for reduced sulfur compounds including hydrogen sulphide, mercaptans and Total Reduced Sulphur (TRS). A maximum of two sample days will be allowed for each month. These surveys will include coincident sampling at locations both upwind and downwind from the facility. An on-site meteorological station will measure wind speed, wind direction, rainfall and ambient temperature concurrently with the field measurements.

Short-term (1/2-hour) samples will be taken. In order to best maintain the important upwind and downwind positions, the sampling locations will vary to adjust to current meteorological conditions. The results of this monitoring program will be compared to the applicable MOE Point of Impingement (POI) Limits for 1/2-hour samples. Sampling will be conducted only during periods when the landfill is operating. The samples will not be taken within two days of a significant rainfall (greater than 1 mm).

Reputation Resources Results

Tel: (519) 823-1311 Fax: (519) 823-1316 E-mail: info@rwdi.com Web: www.rwdi.com

CANADA
UNITED KINGDOM
UNITED STATES

Compounds of Interest

Table 1 contains a summary of the proposed target list for VOCs. Table 2 contains the proposed target list for reduced sulfur compounds.

Table 1: Proposed Target List for VOCs

CAS No.	Compound	CAS No.	Compound
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	620-14-4/622-96-8	m/p-Ethyl Toluene
526-73-8	1,2,3-Trimethyl Benzene	108-38-3/106-42-3	m/p-Xylene
95-63-6	1,2,4 Trimethyl Benzene	535-77-3	m-Cymene
108-67-8	1,3,5-Trimethyl Benzene	78-93-3	MEK
591-76-4	2-Methyl Hexane	108-87-2	Methyl Cyclohexane
107-83-5	2-Methyl Pentane	108-10-1	MIBK
78-78-4	2-Methyl Butane	75-45-6	Chlorodifluoromethane
96-14-0	3-Methyl Pentane	123-72-8	n-Butanal
589-34-4	3-Methyl Hexane	91-20-3	Naphthalene
67-64-1	Acetone	111-84-2	Nonane
71-43-2	Benzene	611-14-3	o-Ethyl Toluene
123-86-4	Butyl Acetate	95-47-6	o-Xylene
124-18-5	Decane	109-66-0	Pentane
25915-78-0	Dichlorodifluoromethane	64-17-5	Ethanol
75-09-2	Dichloromethane	103-65-1	Propyl Benzene
100-41-4	Ethyl Benzene	100-42-5	Styrene
142-82-5	Heptane	127-18-4	Tetrachloroethylene
110-54-3	Hexane	108-88-3	Toluene
67-63-0	Isopropyl Alcohol	75-69-4	Trichlorofluoromethane
138-86-3	Limonene	79-01-6	Trichloroethylene
75-01-4	Vinyl Chloride	141-78-6	Ethyl Acetate
56-23-5	Carbon Tetrachloride	71-55-6	1,1,1-Trichloroethane
67-66-3	Chloroform	75-35-4	Vinylidene Chloride
106-93-4	Ethylene Dibromide	540-59-0	1,2-Dichloroethene
107-06-2	Ethylene Dichloride	N/A	Total VOCs

Note: N/A - Not applicable

Reputation Resources Results

Tel: (519) 823-1311 Fax: (519) 823-1316 E-mail: info@rwdi.com Web: www.rwdi.com

CANADA
 UNITED KINGDOM
 UNITED STATES

Table 2: Target Sulfur Compounds

Hydrogen Sulphide
Methyl Mercaptan
Ethyl Mercaptan
Dimethyl sulphide
Dimethyl disulphide

Note: A determination of TRS will be made from the above specific compounds.

SAMPLING PROGRAM

Sampling Methodology

A number of quality assurance measures are proposed to be implemented throughout the program. This section provides details with respect to samplers, media, methods and QA/QC procedures.

VOC Measurements

Ambient air samples will be taken directly downwind and upwind of the facility concurrently. In general, the downwind samples will focus on capturing emissions from the landfill operations. The sampling locations (upwind and downwind) will be pre-selected based on forecasts of wind direction provided by Environment Canada and any directives provided by the MOE.

The sampling methods and analytical techniques are comparable to the Operations Manual for Point Source Air Quality Monitoring developed by the MOE for VOCs. Direction for site selection and duration for non-continuous measurements from the manual will also be implemented.

Sampling for VOCs will be based on the U.S. EPA Ambient Air Method TO-17 using adsorbent tubes. The tubes will be spiked with a deuterated vinyl chloride surrogate to demonstrate vinyl chloride recovery. Air samples will be collected on pre-cleaned adsorbent cartridges containing multiple carbons material by means of a diaphragm pump. The sample flow rate will be approximately 240 ml/minute and will be regulated with rotameters or mass flow controllers. Sample volumes will be approximately 7.2 litres as suggested by the MOE. The VOC stainless steel (SS) adsorbent tube dimensions are 6.3 mm x 140 mm, and the tube is packed with Carbotrap Y, Carbotrap X, Carboxen 569, Carbosieve S-III. Exposed SS field tubes will be returned to the laboratory where they will be processed for analysis.

The analytical methodology is comparable to EPA SW846 Method 8260B, NIOSH Method 2549 and equivalent to EPA Compendium Method TO-17. Calibration will be achieved using individual chemical response factors (TRFs) normalized against Toluene-d8.

Reduced Sulphur Measurements

It is proposed that the collection of reduced sulphur samples will be collected in tedlar bags at locations and times concurrent with the VOC samples. The samples will be collected over a ½ - hour period. The samples will be sent to an accredited laboratory and analysed using gas chromatography / flame photometric detection. The samples will be analysed within 24-hours of collection.

Meteorological Station

Continuous wind speed, wind direction, ambient temperature, and relative humidity measurements will be collected on-site during the sampling program. Five-minute averages for wind speed and wind direction will be collected during the 1/2-hour samples.

Quality Assurance Measures

A number of common quality assurance measures will be implemented during the sampling program to ensure the integrity of the results. These measures will include detailed documentation of all field activities, calibration of all samplers and a number of laboratory-related measures including sample handling procedures, and instrument calibrations.

All of the samplers will be bench-tested and calibrated in RWDI's office prior to field deployment and, in many cases, calibrated again in the field before use. For example, all of the low flow samplers will be calibrated against a certified primary dry cell standard, (i.e., dry cell calibrator) before and after sampling.

Chain of Custody forms will be completed and submitted along with the exposed samples to the laboratory. Where required by the method, exposed samples will be packed in coolers before transport.

RELEVANT AIR QUALITY LIMITS AND GUIDELINES

Measured 1/2-hour VOC concentrations from this proposed AAQM program will be compared to their respective Ontario Regulation 419 POI Limits. Regulation 419 sets forth explicit standards for a source's contribution to the concentration of airborne contaminants at the POI. The term POI is taken to be in the natural environment at the boundaries of the property. Based on the 1/2-hour VOC sample duration, the 1/2-hour POI Limits should be used as a comparison to determine off-site impacts, if any.

REPORTING REQUIREMENTS

Upon completion of each month of sampling, a brief status letter summarizing the measured data from each set will be issued to the WM, outlining measured levels in excess of the air quality limits, if any, and showing the status of the monitoring program. Any exceedances of air quality standards will be reported to WM within 5 business days of receiving the analytical report from the laboratory. It will then be contingent upon WM to report any exceedance to the MOE district office within one week. This reporting is a requirement specified within Regulation 419.

After the completion of the entire AAQM program, a draft report will be issued to the WM for review and comment, outlining the results of the entire program. To help expedite the review process, RWDI will issue both a bound copy and soft copy of the report to the MOE. The soft copy will be issued in PDF and Word format, and any relevant spreadsheets will be in Excel format, unless otherwise advised. The report will be suitable for inclusion in the annual landfill report and will include the following:

- Summary of all measured parameters which will include compound name as well as Chemical Abstract Number (CAS No.);
- Summary of all measured data. The measured data will include the all compounds listed herein;
- Comparison of all measured data to applicable air quality limits and guidelines;
- Comparison of upwind and downwind measured concentrations to determine net impact from the facility;
- Discussion of any exceedances to site specific operations and meteorological conditions during each sampling period;
- Site map illustrating precise sampling locations of upwind and downwind samples, and wind rose illustrating the meteorological conditions during each sample day; and
- Recommendations to help reduce off-site impacts, if applicable.
- If any samples are found to exceed standards RWDI will report the levels to the WM within 1 week of receiving analytical results. Under the new Regulation 419 the WM is then required to report the exceedance to the District MOE Office in a timely manner. There have been no exceedances measured in the past and none are expected this year.

Reputation Resources Results

Tel: (519) 823-1311 Fax: (519) 823-1316 E-mail: info@rwdi.com Web: www.rwdi.com

CANADA
 UNITED KINGDOM
 UNITED STATES

February 16, 2007
Mike Walters
Proposed Ambient Air Quality Monitoring Work Plan

Page 6

CONCLUSION

Thank you for the opportunity to present this proposal. Should you have any questions or require additional information, feel free to give us a call at (519) 823-1311 (John DeYoe extension 2258, Colin Welburn extension 2325). We look forward to working with you on this project.

Yours very truly,

RWDI AIR Inc.



Colin Welburn
Project Manager

CTW/kic

Reputation Resources Results

Tel: (519) 823-1311 Fax: (519) 823-1316 E-mail: info@rwdi.com Web: www.rwdi.com

CANADA
UNITED KINGDOM
UNITED STATES

APPENDIX III

DIRECTOR'S ORDER 5830-6Z2PPW-1



Ministry of
the Environment

Ministère de
l'Environnement

Director's Order

Section 157.3 Environmental Protection Act, R.S.O. 1990
Section 16.4 Ontario Water Resources Act, R.S.O. 1990
Section 26.3 Pesticides Act, R.S.O. 1990
Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)
Section 32 Nutrient Management Act, 2002, S.O. 2002

Order Number
5830-6Z2PPW-1

Incident Report No.
5485-6MQH8S

To: Waste Management of Canada Corporation
2301 Carp Road, RR 3
Carp, Ontario, K0A 1L0
Canada

Site: 2301 Carp Road
Ottawa

Pursuant to my authority under EPA Section 157.3(5), I order you to do the following:

Response to Request **Item No. 1**

I have reviewed Provincial Officer's Order 5830-6Z2PPW as per the request submitted by Michael Walters on behalf of Waste Management of Canada Corporation dated May 17, 2005.

By this Director's Order, I confirm Provincial Officer's Order 5830-6Z2PPW in its entirety.

REQUEST FOR HEARING

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of this order, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary
Environmental Review Tribunal
2300 Yonge Street, Suite 1700
P.O. Box 2382
Toronto ON M4P 1E4

and

Director
Ministry of the Environment
2430 Don Reid Drive
Ottawa ON K1H 1E1
Fax: (613)521-5437

Where service is made by mail, the service shall be deemed to be made, on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

FOR YOUR INFORMATION

The procedures to request a hearing and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference.

Reasons for Response

I have considered the request for review submitted by Michael Walters on behalf of Waste Management of Canada Corporation ("Waste Management") dated May 17, 2005. The request asks that the Provincial Officer's Order 5830-6Z2PPW ("the Order") be reviewed in its entirety.

I do not agree that the activities of the Voluntary Action Plan that have been carried out over the past 10 months have resulted in the elimination of odours that cause or are likely to cause an adverse effect. Based on the Ministry's own odour survey and based on complaints received from local residents, it would appear that while there has perhaps been a reduction in odour discharges from the landfill, odours which are causing or likely to cause an adverse effect continue to be discharged from the landfill.

Waste Management agreed to submit and carry out a Voluntary Abatement Program (VAP) after meeting with staff from the Ministry's Ottawa District Office in May 2006 and in response to the written request from the ministry dated May 11, 2006. Waste Management indicated to the Ministry that the implementation of the VAP would resolve the odour discharge emissions from the landfill. Waste Management indicated in a letter dated January 23, 2007, that all of the measures under VAP had been implemented. However, the odour discharges continued. Waste Management has since proposed undertaking further measures beyond those proposed in the original VAP.

In accordance with the Ministry's compliance policy, where voluntary abatement measures have not resulted in satisfactory progress toward compliance, it is recommended that mandatory abatement be pursued. Waste Management has had 10 months to address the ongoing odour discharges and was given the opportunity to implement the VAP. The VAP was implemented without satisfactory results. Therefore, I see no reason to deviate from the compliance policy recommendation in this instance and I hereby confirm the Order in its entirety.

The request also asks for changes to specific items in the Order. Waste Management requests clarification as to the meaning of "qualified person". It remains the responsibility of Waste Management and the individual consultants and/or contractors to ensure that they are suitably qualified to undertake the ordered work in accordance with applicable regulations governing their respective professions and/or trades. In a letter dated May 22, 2007, Waste Management has already submitted the names of the consultants that have been retained. The ministry has no reason to dispute the qualifications of the consultants/contractors that Waste Management has retained to perform the ordered work and is satisfied that this requirement has been met. I believe this issue is moot and therefore see no need to change item 2 in the Order. I hereby confirm Item 2.

Waste Management requests that the deadlines imposed by items 3 and 5 of the Order be made to coincide so that both are due by August 31, 2007. The basis for this request is that the same information is required by both reports. I do not agree with this assertion. The report required by item 3 of the Order must identify potential sources of odour. The report required by item 5 of the Order requires actual monitoring data for a variety of contaminants to be submitted. These data are not the same. Therefore, I do not agree that the reporting dates for the submission of the reports should be changed to coincide.

Waste Management further suggests that O. Reg. 419/05 under the Environmental Protection Act does not apply to their Ottawa Landfill Site. That is not correct. Under the regulation, it is correct that landfills are not required at this time to use the more advanced dispersion models and are not subject to the effect-based standards in schedules 2 and 3 of the regulation due to the phase in period in O. Reg. 419/05. However, landfills are currently subject to the air discharge standards set out in schedule 1 of the regulation and the dispersion model that was previously used under Regulation 346. Therefore, the obligation in section 28 of the regulation requiring a person to notify a provincial officer when a discharge exceeds a standard set out in schedule 1 applies. The RWDI report referenced in Item 5 of the Order indicates on page 5 that Waste Management will notify the Ministry if the ambient monitoring program detects any discharges of contaminants in excess of the standards set out in schedule 1. Waste Management must comply with this legally binding requirement. I hereby confirm items 3 and 5.

Waste Management requests that item 6, which requires a report to be submitted examining the feasibility of using continuous monitoring equipment to measure odour discharges, be removed from the order. The basis for this request is that the need for specific monitoring will be determined by the ambient monitoring report as required by item 5 in the Order. I do not agree that ambient monitoring report will necessarily determine what type of monitoring will be required. The ambient monitoring report will provide actual concentrations of contaminants as measured at specific times. Therefore, I believe the report required by item 6 in the Order will provide further useful information that may be important to solving the odour discharges from the landfill. I hereby confirm item 6.

Waste Management requests that the last sentence of item 10 be deleted which indicates that the contingency report include "a description and evaluation of the possibility of ceasing the acceptance of waste at the WMCC Landfill Site". The basis for this request is that the odour discharges are arising from the older parts of the Ottawa landfill, not the deposit of fresh waste. However, the concern is not with the deposit of fresh waste, the concern is with the lack of final cover on the landfill. If the odour discharges cannot be abated with any other measures, then the Ministry will have to consider other options including whether to require the landfill to cease operations by a certain date and close the landfill to permit the placement of final cover over the entire waste mound. The report required by item 10 of the Order is needed to assess the feasibility of other options, including those identified in this item. I hereby confirm item 10.

Finally, Waste Management requests that items 11 to 14 be amended to require that information be made available at specified locations, but not via the Internet. A large number of residents have contacted the Ministry about the Ottawa Landfill site and asked for information in relation

to the landfill site. It is expected that much of the information required by this order, including a copy of the order will also be requested. I consider it reasonable and appropriate to request that Waste Management make this information available to the public via the internet which is generally recognized as an efficient and modern means of making information available. I hereby confirm items 11 to 14.

For the reasons set out above, in response to the requests related to these specific items, I confirm items 2, 3, 5, 6, 10, and 11 to 14 as in Provincial Officer's Order 5830-6RZ2PPW.

Attachments

This Notice constitutes part of Order Number 5830-6Z2PPW, issued on 2007/05/11.

Issued at Ottawa this 25th day of May, 2007.



Steve Burns

Ottawa District Office

APPENDIX IV

PROVINCIAL OFFICER'S ORDER 7160-79THQR



Ministry of the
Environment

Certificate of Service

Environmental Protection Act s.175(1)(b)
Ontario Water Resources Act s. 115(1)(b)
Pesticides Act s.51(1)(b)
Safe Drinking Water Act, 2002 s.159(3)
Nutrient Management Act, 2002, S.O. 2002, c.4

I, Greg Davis, a designated Provincial Officer under the Environmental Protection Act, certify that I served a true copy of this Provincial Officer's Order, number 7160-79THQR, on the following person(s) or company ordered in the manner indicated.

SERVICE DECLARATION

Person/Company

Waste Management of Canada
Corporation

Address

Rural Route 3
2301 Carp Rd
Carp Ontario
Canada
K0A 1L0

Left With

Ross Wallace

Position

District Operations Manager

Date of Service

2007/12/19

Method of Service

- ☒ By Hand
☐ Mail
☐ Fax

December 19, 2007

Greg Davis
Provincial Officer
Badge No. 725
Ottawa District Office



Ministry of the
Environment

Ministère de
l'Environnement

Provincial Officer's Order

Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)
Ontario Water Resources Act, R.S.O. 1990, c. O. 40 (OWRA)
Pesticides Act, R.S.O. 1990, c. P11 (PA)
Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)
Nutrient Management Act, 2002, S.O. 2002, c.4

Order Number
7160-79THQR

Incident Report No.
2050-6XZ79W

To: Waste Management of Canada Corporation
Rural Route 3
2301 Carp Rd.
Carp, Ontario, K0A 1L0
Canada

Site: 2301 Carp Rd
Ottawa

Pursuant to my authority under EPA Section 157.1, EPA Section 196(1) and EPA Section 157, I order you to do the following:

Work Ordered

Item No. 1

Compliance Date

2008/01/15

Odour Contingency Plan

1. Ensure that all the activities and deadlines detailed in the Odour Contingency Plan, dated December 11, 2007 attached as Appendix I to this Order, are carried out at the Waste Management of Canada Corporation's Ottawa Waste Management Facility to eliminate the ongoing odour discharges from the Site that are causing or are likely to cause adverse effects.

Reporting

2. Prepare quarterly reports that detail all odour contingency plan activities taking place in that quarter at Waste Management of Canada Corporation's Ottawa Waste Management Facility, including but not necessarily limited to any activity required by this Order.

Submit the first quarterly report to the issuing Provincial Officer no later than **April 15, 2008** for the quarter ending March 31, 2008.

Submit subsequent quarterly reports to the issuing Provincial Officer no later than **15 days** after the end of the reporting period.

Posting on Waste Management of Canada Corporation's Website for Public Viewing

3. By no later than **January 15, 2008** post this Provincial Officer's Order and accompanying Provincial Officer's Report on the Waste Management of Canada Corporation's website by providing a link at <http://www.wastemanagementottawa.ca>, and ensure that they remain posted until the end of 2010.

4. By no later than **15 days** after the end of each quarterly reporting period as identified in Item 2 of this Order post the quarterly report on the Waste Management of Canada Corporation's website by providing a link at <http://www.wastemanagementottawa.ca>, and ensure that they remain posted until the end of 2010.

- A. While this Order is in effect, a copy or copies of this order shall be posted in a conspicuous place.
- B. While this Order is in effect, report in writing, to the District or Area office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

This Order is being issued for the reasons set out in the annexed Provincial Officers Report which forms part of this Order.

Issued at Ottawa this 19th day of December, 2007.

Greg Davis
Badge No: 725
Ottawa District Office
Tel: (613) 521-3456 Ext. 227



APPEAL/REVIEW INFORMATION

REQUEST FOR REVIEW

You may request that this order be reviewed by the Director. Your request must be made in writing (or orally with written confirmation) within seven days of service of this order and sent by mail or fax to the Director at the address below. In the written request or written confirmation you must,

- specify the portions of this order that you wish to be reviewed;
- include any submissions to be considered by the Director with respect to issuance of the order to you or any other person and with respect to the contents of the order;
- apply for a stay of this order, if necessary; and provide an address for service by one of the following means:
 1. mail
 2. fax

The Director may confirm, alter or revoke this order. If this order is revoked by the Director, you will be notified in writing. If this order is confirmed or amended by order of the Director, the Director's order will be served upon you. The Director's order will include instructions for requiring a hearing before the Environmental Review Tribunal.

DEEMED CONFIRMATION OF THIS ORDER

If you do not receive oral or written notice of the Director's decision within seven days of receipt of your request, this order is deemed to be confirmed by order of the Director and deemed to be served upon you.

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of the confirming order deemed to have been made by the Director, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary
Environmental Review Tribunal
P.O. Box 2382
2300 Yonge Street, Suite 1700
Toronto, ON M4P 1E4

and
Director (Provincial Officer Orders)
Ministry of the Environment
Ottawa District Office
2430 Don Reid Drive
Ottawa ON K1H 1E1
Fax: (613)521-5437
Tel: (613)521-3450

Where service is made by mail, it is deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal by:

Tel: (416) 314-4600

Fax: (416) 314-4506

www.ert.gov.on.ca

FOR YOUR INFORMATION

- Unless stayed by the Director or the Environmental Review Tribunal, this order is effective from the date of service. Non-compliance with the requirements of this order constitutes an offence.
- The requirements of this order are minimum requirements only and do not relieve you from complying with the following:
 - any applicable federal legislation;
 - any applicable provincial requirements that are not addressed in the order; and
 - any applicable municipal law.
- The requirements of this order are severable. If any requirement of this order or the application of any requirement to any circumstance is held invalid, the application of such requirement to other circumstances and the remainder of the order are not affected.
- Further orders may be issued in accordance with the legislation as circumstances require.
- The procedures to request a review by the Director and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference.



Provincial Officer's Report

Order Number
7160-79THQR

Waste Management of Canada Corporation
Rural Route 3
2301 Carp Rd
Carp, Ontario, K0A 1L0
Canada

Site
2301 Carp Rd
Ottawa

Observations

Waste Management of Canada Corporation (WMCC) operates a solid non-hazardous landfill site at Lots 3 and 4, Concession 3, Geographic Township of West Carleton in the City of Ottawa. The civic address of the landfill site is 2301 Carp Road. WMCC is licenced to use and operate a 35 hectare landfill site area within a 133.02 hectare site. WMCC is operating under the authority of certificate of approval A461002 for a waste disposal site that was issued by the Ministry of the Environment on August 17, 1994, which has undergone subsequent amendments; such as, company name change, updated development and operations report, and acquisition of a contaminant attenuation zone.

Commencing February 2006, the Ministry of the Environment's Ottawa District Office began receiving numerous notifications from the residents in the surrounding communities of Carp, Stittsville, and Kanata indicating objectionable odours from WMCC's landfill site. The residents indicated these odour impacts were causing them discomfort and loss of enjoyment of their property. The Ministry continues to receive complaints on a regular basis; with over 5,000 complaints having been received to-date.

WMCC entered into a Voluntary Abatement Plan (VAP) in June 2006 to assess and resolve the odour emissions from the site. WMCC provided evidence that the primary source of the odour emissions from the site was from the landfill gas being generated and escaping from the waste contained in the landfill mound at the site. Through this VAP, WMCC enhanced their landfill gas (LFG) collection and flaring system by installing approximately 20 additional LFG wells, gas headers, new LFG blowers, obtaining ministry approval to operate a second enclosed flare,

completing capping and placement of interim cover on areas of the landfill site, winterizing the odour control system as well as installing a site specific weather station.

To determine the success of the VAP in controlling odour emissions from the landfill site, the ministry initiated an odour survey assessment that commenced on January 25, 2007 and ended on February 23, 2007. The survey involved Provincial Officers conducting olfactory assessments in the community and the vicinity of WMCC's landfill site. A majority of the odour surveys conducted during this time revealed that off-site odours from the landfill site were detected at or near residential areas. From the odour surveys that I personally conducted I observed odours from the WMCC landfill site at or near residential areas that were at times objectionable enough that I would not want to remain in the odour plume for any substantial amount of time and would not want to live in such an odour plume. I determined the source of the odour as coming from WMCC's landfill site by conducting upwind, downwind, and crosswind odour observations.

Provincial Officer's Order 5830-6Z2PPW (confirmed by Director's Order 5830-6Z2PPW-1 on May 25, 2007) was issued to WMCC on May 11, 2007. The Order required additional assessments and enhancements to further reduce the odour discharges from the landfill site. Condition 10 of the Order required WMCC to prepare and submit a Contingency Report which described and evaluated potential contingency measures which could be implemented at the WMCC landfill site on and after September 30, 2007 to eliminate ongoing odour discharges from the Site that cause or are likely to cause adverse effects. A contingency report was submitted in accordance with Condition 10 of Provincial Officer's Order 5830-6Z2PPW that detailed and assessed such measures as; decreasing vertical gas well spacing, increase landfill gas collection rate, placement of low permeability cover material, synthetic cap along landfill ridge, synthetic cover over entire site, more frequent odour emission surveys and ceasing waste acceptance and placement of final cover material.

To assess if the WMCC landfill site was discharging odour emissions from the Site on and after September 30, 2007 that were causing or likely to cause adverse effects, the ministry initiated an odour survey assessment similar to that conducted in January 2007 that commenced on September 17, 2007 and ended on October 15, 2007.

The survey revealed that ministry staff, supplemented by complaints from the community, detected objectionable odours from WMCC's landfill that were at or near residential areas that were causing or likely to cause adverse effects.

After consultation with the ministry, WMCC submitted a revised Odour Contingency Plan, dated December 11, 2007 that detailed their intent to take measures to remediate the odour issue at their landfill site. The Odour Contingency Plan is attached to the Order as Appendix I and includes the following activities;

- installation of 18 LFG wells between November 2007 and May 2008 to increase the LFG collection system to 126 vertical wells,
- slopes that have not yet been capped to be filled to final contours with contaminated soils by end of September 2008,
- slopes and top of landfill to be capped with minimum 1 m clay to be completed between May 2008 and October 2008,

- synthetic cap to be designed by March 2008 and completed in three phases between 2009 and 2011,
- five air emission surveys per year to be conducted in accordance with the US EPA method for operational standards for emissions for landfill sites and actions to be taken with respect to the LFG collection and flaring system as a result of the surveys,
- leachate seep management to determine if seep to be capped with clay or repaired by drilling vertical well to promote drainage and LFG collection,
- suspension of processed biosolids use as a vegetative cover, and
- posting of construction/maintenance activities on WMCC website.

Based on my observations conducting the odour surveys and based on the observations of my colleagues conducting the odour surveys, as well as the numerous odour complaints I have received from the residents in the community indicating the adverse effects they have been subjected to by the odour discharges from the landfill site, I have reasonable grounds to believe Waste Management of Canada Corporation's Ottawa Waste Management Facility, despite the activities carried out pursuant to the Voluntary Abatement Plan and Provincial Officer's Order 5830-6Z2PPW (confirmed by Director's Order 5830-6Z2PPW-1) is still discharging a contaminant, namely odour, into the natural environment that is causing or is likely to cause an adverse effect, contrary to Section 14 of the Environmental Protection Act. I also reasonably believe, based on the grounds set out above that the requirements in the current Provincial Officer's Order are necessary to prevent or reduce the risk of the discharge and/or prevent, decrease or eliminate the identified adverse effects resulting from the odours from the landfill site operated by WMCC.

Offence(s)

Suspected Violation(s)/Offence(s):

Act - Regulation - Section,
Description

{General Offence}

1) EPA - 14 (1),

Despite any other provision of this Act or the regulations, no person shall discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect.

{186 (1)}



Greg Davis
Provincial Officer
Badge Number: 725
Date: 2007/12/19
District Office: Ottawa District Office

APPENDIX I



December 11, 2007

Mr. Greg Davis
Ontario Ministry of the Environment
Ottawa District Office
2430 Don Reid Drive
Ottawa, Ontario, K1H 1E1

**WASTE MANAGEMENT
OF CANADA CORPORATION**

2301 Carp Road
Carp, ON K0A 1L0
(613) 831-1281
(613) 831-8928 Fax

Re: WM Ottawa Waste Management Facility – Odour Contingency Plan

Dear Mr. Davis,

As a result of the meeting with MOE on November 20, 2007, WM has clarified the proposed odour contingency plan which was submitted on August 1, 2007.

We have completed a detailed schedule of work that will be completed between 2007 and 2011 to remediate the odour issue at the WM Ottawa Waste Management Facility. The contingency plan has seven main sections which are:

- LFG Collection System,
- Clay Capping on the slopes and top of landfill footprint,
- Synthetic "Beanie" Capping on top of the landfill footprint.
- Air Emission Survey Reports.
- Leachate Seeps Management.
- Processed Biosolids Management.
- Planned Construction/Maintenance Activities Reports.

Listed below is a description of the work included in the contingency plan:

LFG Collection System:

A total of 18 vertical LFG wells will be installed from November 2007 to May 2008. The installation of these wells has already started on the east and northeast slopes. A total of 6 vertical wells will be installed on the slopes where "hotspots" were observed during the past surface scans. We will also install a total of 12 new LFG wells on the top of the landfill. The completed LFG Collection System consisting of 126 vertical wells will help to collect the LFG generated by the decomposing waste and minimize resulting air emissions. Extra LFG wells may be installed as required based on data collected from the air emissions surveys.

Mr. Greg Davis, MOE
December 11, 2007
Page 2

Clay Capping on the slopes and top of the landfill footprint:

The slopes that have not yet been capped with clay will be filled to final contours with contaminated soil and capped with clay. The section that needs to be filled to final contour is located on the North Slope. The filling with contaminated soils will be completed by the end of September 2008.

The capping of the slopes and the top of the landfill with clay will be completed between May 2008 and October 2008.

This will effectively seal the entire 35 Ha landfill footprint. The size of the working face will also be minimized to lower any possible emissions.

Synthetic "Beanie" Capping on top of the landfill footprint:

A synthetic "beanie" cap will be designed by March 2008. An amendment to the site Certificate of Approval will be required from MOE. An application will be submitted to MOE in April 2008. WM expects to receive approval to construct the synthetic "beanie" cap in 2008.

The synthetic "beanie" cap will consist on a clay layer, horizontal LFG collector and a synthetic liner covered with a layer of vegetative cover. This synthetic cap will further reduce the water infiltration in the landfill and air emissions.

The synthetic "beanie" cap will be completed in three phases between 2009 and 2011.

Air Emission Surveys Reports:

A total of five air emissions surveys per year will be conducted for the period of 2008 to 2010 inclusively. The air emission surveys will be completed by the end of the months of April, June, August, October and December. The air emission survey will be conducted by a qualified consultant with experience and expertise in the LFG emissions/control measures and conducted in accordance with the US EPA method for operational standards for emissions from landfill sites.

Each report will provide the results of the LFG emission survey and will describe actions taken in the previous month and actions to be taken with respect to the LFG Collection and Flaring System as a result of the survey.

The frequency of the required surveys will be assessed by MOE district office at the end of each year based on the air emission results received during the year. The number of required surveys may be decreased as the air emission concentrations are reduced.

The air emission reports will be posted on the WMCC website (<http://www.wastemanagementottawa.ca>) as well as submitted to MOE within 30 days after the end of each emission survey period.

Mr. Greg Davis, MOE
December 11, 2007
Page 3

Leachate Seeps Management:

We also wanted to inform MOE that weekly slope inspections are completed by WM personnel. Leachate seeps which may be found during the inspections are repaired by draining leachate into the waste and sealing the cap with fresh clay. WM will also assess if the seep has to be repaired by drilling a vertical well to promote draining and LFG collection. This will minimize any possible leachate odours.

Processed Biosolids Management:

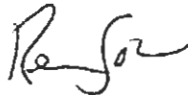
The use of processed biosolids as a vegetative covers on the landfill slopes has also been suspended due to short term odours. A plan will be submitted to MOE if stockpiles of processed biosolids have to be moved or processed in the future.

Planned Construction/Maintenance Activities Reports:

WM will post a planned construction/maintenance activities report on its website (<http://www.wastemanagementottawa.ca>) by the first day of each month for the period of 2008 to 2010. This report will describe the construction and maintenance activities that will take place during the following month.

I trust that this plan will help to minimize any odour impacts that may be caused by the WM Waste Management Facility. We are available to meet with you to discuss any additional questions or concerns you may have.

Yours truly,



Rémi Godin, P.Eng.
Landfill Project Engineer – Eastern Canada

Cc: Paul Kchoe, MOE
Don Wright, Waste Management of Canada Corporation
Ross Wallace, Waste Management of Canada Corporation

Encl.

ID	Task Name	Duration	Start	Finish	Predecessors	20
1	Ottawa Landfill Contingency Plan	974 days	Tue 12/11/07	Fri 9/21/11		Nov
2	LFG Collection System	120 days	Tue 12/11/07	Mon 5/26/08		Dec
3	Install 18 LFG wells on slopes and top of the landfill footprint	120 days	Tue 12/11/07	Mon 5/26/08		
4	Clay Capping on slopes and top of LF	150 days	Mon 4/7/08	Fri 10/31/08		
5	Complete soil fill on the north slope	100 days	Mon 5/5/08	Fri 9/19/08		
6	Tender Capping Project	10 days	Mon 4/7/08	Fri 4/18/08		
7	Cap NE & West slopes	40 days	Mon 5/5/08	Fri 6/27/08		
8	Cap the top of the Landfill Footprint	40 days	Mon 6/30/08	Fri 8/22/08	7	
9	Cap North Slope	30 days	Mon 9/22/08	Fri 10/31/08	5	
10	Beanie Capping on top of LF	974 days	Tue 12/11/07	Fri 9/21/11		
11	Complete Beanie Cap Design	80 days	Tue 12/11/07	Mon 3/31/08		
12	Obtain C of A amendment from MOE	90 days	Tue 4/1/08	Mon 8/4/08	11	
13	Tender Beanie Cap - Phase I	10 days	Mon 5/11/09	Fri 5/22/09		
14	Install Beanie Cap - Phase I	60 days	Mon 6/15/09	Fri 9/4/09		
15	Tender Beanie Cap - Phase II	10 days	Mon 5/10/10	Fri 5/21/10		
16	Install Beanie Cap - Phase II	60 days	Mon 6/14/10	Fri 9/3/10		
17	Tender Beanie Cap - Phase III	10 days	Mon 5/9/11	Fri 5/20/11		
18	Install Beanie Cap - Phase III	60 days	Mon 6/13/11	Fri 9/2/11		
19	Air Emission Surveys Reports	736 days	Tue 4/1/08	Tue 1/25/11		
20	Conduct Survey & submit report - April 2008	20 days	Tue 4/1/08	Mon 4/28/08		
21	Post Report on WMCC website	20 days	Tue 4/29/08	Mon 5/26/08	20	
22	Conduct Survey & submit report - June 2008	20 days	Mon 6/2/08	Fri 6/27/08		
23	Post Report on WMCC website	20 days	Mon 6/30/08	Fri 7/25/08	22	
24	Conduct Survey & submit report - August 2008	20 days	Fri 8/1/08	Thu 8/28/08		
25	Post Report on WMCC website	20 days	Fri 8/29/08	Thu 9/25/08	24	
26	Conduct Survey & submit report - October 2008	20 days	Wed 10/1/08	Tue 10/28/08		
27	Post Report on WMCC website	20 days	Wed 10/29/08	Tue 11/25/08	26	
28	Conduct Survey & submit report - December 2008	20 days	Mon 12/1/08	Fri 12/26/08		
29	Post Report on WMCC website	20 days	Mon 12/29/08	Fri 1/23/09	28	
30	Conduct Survey & submit report - April 2009	20 days	Wed 4/1/09	Tue 4/28/09		
31	Post Report on WMCC website	20 days	Wed 4/29/09	Tue 5/26/09	30	
32	Conduct Survey & submit report - June 2009	20 days	Mon 6/1/09	Fri 6/26/09		
33	Post Report on WMCC website	20 days	Mon 6/29/09	Fri 7/24/09	32	
34	Conduct Survey & submit report - August 2009	20 days	Mon 8/3/09	Fri 8/28/09		
35	Post Report on WMCC website	20 days	Mon 8/31/09	Fri 9/25/09	34	
36	Conduct Survey & submit report - October 2009	20 days	Thu 10/1/09	Wed 10/28/09		
37	Post Report on WMCC website	20 days	Thu 10/29/09	Wed 11/25/09	36	
38	Conduct Survey & submit report - December 2009	20 days	Tue 12/1/09	Mon 12/28/09		
39	Post Report on WMCC website	20 days	Tue 12/29/09	Mon 1/25/10	38	
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Date: Tue 12/11/07		Split				
		Progress				
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		Projected Summary				
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		External Milestone				
		Deadline				
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Task Name		Duration	Start	Finish	Predecessors	Nov	Dec
ID	Task Name	Duration	Start	Finish	Predecessors	Nov	Dec
40	Conduct Survey & submit report - April 2010	20 days	Thu 4/1/10	Wed 4/28/10			
41	Post Report on WMCC website	20 days	Thu 4/29/10	Wed 5/26/10	40		
42	Conduct Survey & submit report - June 2010	20 days	Tue 6/1/10	Mon 6/28/10			
43	Post Report on WMCC website	20 days	Tue 6/29/10	Mon 7/26/10	42		
44	Conduct Survey & submit report - August 2010	20 days	Mon 8/2/10	Fri 8/27/10			
45	Post Report on WMCC website	20 days	Mon 8/30/10	Fri 9/24/10	44		
46	Conduct Survey & submit report - October 2010	20 days	Fri 10/1/10	Thu 10/28/10			
47	Post Report on WMCC website	20 days	Fri 10/29/10	Thu 11/25/10	46		
48	Conduct Survey & submit report - December 2010	20 days	Wed 12/1/10	Tue 12/28/10			
49	Post Report on WMCC website	20 days	Wed 12/29/10	Tue 1/25/11	48		
50	Planned Construction and/or maintenance activities report	762 days	Tue 1/1/08	Wed 12/1/10			
51	Post Report on WMCC website	1 day	Tue 1/1/08	Tue 1/1/08			
52	Post Report on WMCC website	1 day	Fri 2/1/08	Fri 2/1/08			
53	Post Report on WMCC website	1 day	Fri 2/29/08	Fri 2/29/08			
54	Post Report on WMCC website	1 day	Tue 4/1/08	Tue 4/1/08			
55	Post Report on WMCC website	1 day	Thu 5/1/08	Thu 5/1/08			
56	Post Report on WMCC website	1 day	Fri 5/30/08	Fri 5/30/08			
57	Post Report on WMCC website	1 day	Tue 7/1/08	Tue 7/1/08			
58	Post Report on WMCC website	1 day	Fri 8/1/08	Fri 8/1/08			
59	Post Report on WMCC website	1 day	Mon 9/1/08	Mon 9/1/08			
60	Post Report on WMCC website	1 day	Wed 10/1/08	Wed 10/1/08			
61	Post Report on WMCC website	1 day	Fri 10/31/08	Fri 10/31/08			
62	Post Report on WMCC website	1 day	Mon 12/1/08	Mon 12/1/08			
63	Post Report on WMCC website	1 day	Thu 1/1/09	Thu 1/1/09			
64	Post Report on WMCC website	1 day	Fri 1/30/09	Fri 1/30/09			
65	Post Report on WMCC website	1 day	Fri 2/27/09	Fri 2/27/09			
66	Post Report on WMCC website	1 day	Wed 4/1/09	Wed 4/1/09			
67	Post Report on WMCC website	1 day	Fri 5/1/09	Fri 5/1/09			
68	Post Report on WMCC website	1 day	Mon 6/1/09	Mon 6/1/09			
69	Post Report on WMCC website	1 day	Wed 7/1/09	Wed 7/1/09			
70	Post Report on WMCC website	1 day	Fri 7/31/09	Fri 7/31/09			
71	Post Report on WMCC website	1 day	Tue 9/1/09	Tue 9/1/09			
72	Post Report on WMCC website	1 day	Thu 10/1/09	Thu 10/1/09			
73	Post Report on WMCC website	1 day	Fri 10/30/09	Fri 10/30/09			
74	Post Report on WMCC website	1 day	Tue 12/1/09	Tue 12/1/09			
75	Post Report on WMCC website	1 day	Fri 1/1/10	Fri 1/1/10			
76	Post Report on WMCC website	1 day	Mon 2/1/10	Mon 2/1/10			
77	Post Report on WMCC website	1 day	Mon 3/1/10	Mon 3/1/10			
78	Post Report on WMCC website	1 day	Thu 4/1/10	Thu 4/1/10			

Task

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ID	Task Name	Duration	Start	Finish	Predecessors	20
79	Post Report on WMCC website	1 day	Fri 4/30/10	Fri 4/30/10		Nov
80	Post Report on WMCC website	1 day	Tue 6/1/10	Tue 6/1/10		Dec
81	Post Report on WMCC website	1 day	Thu 7/1/10	Thu 7/1/10		
82	Post Report on WMCC website	1 day	Fri 7/30/10	Fri 7/30/10		
83	Post Report on WMCC website	1 day	Wed 9/1/10	Wed 9/1/10		
84	Post Report on WMCC website	1 day	Fri 10/1/10	Fri 10/1/10		
85	Post Report on WMCC website	1 day	Mon 11/1/10	Mon 11/1/10		
86	Post Report on WMCC website	1 day	Wed 12/1/10	Wed 12/1/10		

Task	Milestone	External Tasks
Split	Summary	External Milestone
Progress	Project Summary	Deadline

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