



Commonage Biosolids Facility Operations Plan

Odour Management

Project No. 5184789

November, 2010

COMMUNITIES
TRANSPORTATION
BUILDINGS
INFRASTRUCTURE



STANDARD LIMITATIONS

This report was prepared by MMM Group Limited (MMM) for the account of (the Client). The disclosure of any information contained in this report is the sole responsibility of the City of Kelowna. The material in this report reflects MMM's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. MMM accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report.

COMMONAGE BIOSOLIDS FACILITY

OPERATIONS PLAN

ODOUR MANAGEMENT

TABLE OF CONTENTS

1.0	INTRODUCTION – BACKGROUND.....	1
1.1	General	1
1.2	Potential On-Site Odour Sources	1
2.0	PREVENTATIVE MEASURES.....	3
2.1	Biosolids Delivery	3
2.2	Site Management.....	3
2.3	Standard Composting Requirements and Practices.....	5
2.4	Routine / Daily Activities	6
3.0	ON-SITE ODOUR MONITORING AND AERATION PLAN.....	7
3.1	On-Site Odour Monitoring - Continuous.....	7
3.2	On-Site Odour Monitoring – Monthly Samples	7
3.3	Odour Level Thresholds	11
3.4	Threshold Actions	12
	3.4.1 Stage 1 Exceedance Activities	12
	3.4.2 Stage 2 Exceedance Activities	13
	3.4.3 Stage 3 Exceedance Activities	14
4.0	OFF-SITE ODOUR MONITORING	15
4.1	Neighbourhood Reports	15
4.2	Surrounding Area (Background) Odour Measurement.....	16

5.0	POTENTIAL REPORTS.....	18
5.1	Potential Reports and Communications.....	18
5.2	Biosolids Committee.....	18
5.3	Ministry of Environment	18
5.4	Surrounding Area Residents	18
5.5	Website.....	18

FIGURE OM1 – Compost Area Site Plan

FIGURE OM2 – Odour and Gas Measurement Locations

FIGURE OM3 – Surrounding Area Plan

APPENDIX 1 – Daily Check List and Threshold Exceedance Forms

APPENDIX 2 – Odour Management Forms

1.0 INTRODUCTION – BACKGROUND

MOE as part of their review of the Amendment to the Environmental Impact Assessment for the 2009 upgrade to the Commonage Biosolids Facility has requested the preparation of a Monitoring Plan. This request has this objective; the preparation of a plan to address “what if” scenarios at the site. This document is the odour management component of the Operations Plan for the Commonage Biosolids facility.

1.1 General

This document is the odour management plan component of the Operations Plan for the Commonage Biosolids facility. Other documents that make up the entirety of the Operations Plan are:

- ▶ Biosolids Facility Operations Plan – this describes the entire facility and provides daily, weekly, monthly and annual tasks required to operate the facility.
- ▶ Biosolids Composting Process Plan – this describes in detail the general composting process and the specific operational plans and characteristics of all stages of the composting equipment at the facility.

1.2 Potential On-Site Odour Sources

There are many potential on-site odour sources at the Commonage Biosolids Facility. Some sources are significant due to their size and others are significant due to their intensity.

Following is a partial list of the odour sources, and their relative significance. See Figure OM1 for each referenced location.

Description	Relative Significance	Type of Significance
Biosolid Hauling	Low	Intensity
Fresh tipped biosolids area	Can be high	Intensity
Mixing building	Can be high	Size/Intensity
Primary Composting Zones	Can be high	Size
Building / Breaking down primary composting piles	Low	Intensity
Secondary composting zones	Medium	Size
Building / Breaking down secondary composting piles	Low	Intensity
Biofilter surface	Can be high	Intensity
Aeration system sumps	Can be high	Intensity
Leachate holding tank	Can be high	Intensity
Curing piles	Low	Size
Overs (slightly disturbed)	Can be high	Intensity
Final storage piles	Low	Size
Sedimentation pond (upper)	Can be high	Intensity
Screening operations	Medium	Intensity
Site housekeeping	Low	Size
Biofilter floor cleaning	Low	Intensity
Ozone contact tank cleaning	Low	Intensity

2.0 PREVENTATIVE MEASURES

This section describes the odour management preventative measures that need to occur at the facility.

2.1 Biosolids Delivery

Biosolids can release odours during transport. Trailers used to haul biosolids are covered. Trailers are equipped with seal on the tail gate to prevent leakage. The City of Kelowna and the City of Vernon inject Bioxide in the load during loading at the sewage treatment plant. However, odour has been noted while passing or following the trucks. Procedures are in place to inspect trailers before they leave the treatment plants to make sure that biosolids are fully contained. Procedures and checks are in place to ensure that, prior to hauling, the trailer is checked to make sure that all biosolids are contained inside the trailer and that hatches are closed and the tailgate secured to prevent leakage.

Delivery of biosolids is restricted to times of facility operation. Truck operators are to clean their tailgates before leaving the facility.

2.2 Site Management

Housekeeping activities:

▶ **Biosolids Tipping Area**

- ▶ Once per week, at random, check incoming loads of biosolids from Kelowna, Vernon, Lake Country and NORD. Check for:
 - Tailgate closed and secure – no leakage
 - Hatches closed upon arrival
 - Record on check list
 - Report any problems to your Supervisor
- ▶ Continue discussions with NORD and Lake Country to encourage the use of bioxide and improve their trailers.

- ▶ **Mixing Building – Biosolids Tipping.** The facility is designed to contain odours within the cover-all building. We have had problems with the electronic eyes and build up of organics on the door tracks. This has resulted in the door being left open overnight. Inoperable doors are repaired promptly and are kept closed during non-working hours. Loads are received during working hours. Occasionally a load may be received after hours but this is a rare occurrence. Exhaust fans are installed in the biosolids receiving bays but have been disconnected. A permanent cover is attached as it was noted that the louvers would open with a slight breeze.

- ▶ Daily Check:
 - At the end of the day to make sure the doors are closed. Repair damaged or inoperable doors as soon as the work can be done.
 - Record on check list
 - Report any problems to your Supervisor
- ▶ Weekly Check:
 - Observe tip, make sure biosolids are dropped into bay, not outside
 - Confirm that doors close and truck drivers know how to close them after tipping a load
- ▶ **Mixing Building – Mixing Area.** Mixing nitrogen rich biosolids with amendments high in carbon provides an ideal environment for bacterial action. Getting the right mix is the most important aspect of controlling odours. We adjust the mix as required to create a C/N ration and bulk density that is appropriate for composting.

Mixing is done inside the coverall building with an Enviro-Processor batch mixer. The batch mixer is equipped with load cells that allow for accurate measurement of feedstock and water.

All loads of biosolids are mixed as soon as possible. Loads received during working hours are mixed before the end of the shift. Loads received during working hours that cannot be mixed are covered with wood waste until they can be mixed. Loads received during non-working hours are covered and contained inside the coverall building.

 - ▶ Procedure: mix biosolids and wood waste as soon as possible, using the proper recipe.
- ▶ **Compost Transfer Area** (paved surface)
 - ▶ Scrape and wash the asphalt surface as required to keep the surface clean. This is critical in the summer. Leachate can form and pond at the base of piles and in areas where it cannot drain to the drainage basin. It is a high source of odour. We remove leachate from the site by covering it with wood waste, allowing it to soak up the leachate and then remove it to the initial compost mix.
- ▶ **Aeration Floor Trenches**
 - ▶ Routinely clean each aeration floor trench. This is a scheduled activity.
- ▶ **Aeration / Leachate Collection System Sump**
 - ▶ Routinely pump out the sump with a vacuum truck. This is a scheduled activity.
- ▶ **Leachate Collection Holding Tanks**
 - ▶ As the holding tanks fill with leachate pump them out with a vacuum truck. This is a scheduled activity.
- ▶ **Upper Sedimentation Pond**
 - ▶ As sediment builds up, remove it with an excavator. This is best done on a cool, windy day.

- ▶ Biofilters
 - ▶ Regular monitoring of the biofilter includes moisture, temperature, ph and smell tests. Moisture will be maintained between 50-65%. Temperature is important in the winter and the amount of air may be adjusted to reduce the amount of cold air entering it. The strategy for odour management from the biofilter is to ensure that all operating parameters are continuously monitored and adjusted as needed.
 - ▶ Routinely flush the void space beneath the biofilter sub-flow. This is a scheduled activity.
- ▶ Drainage Pond Circulation
 - ▶ A pump system is used to create circulation in the lower drainage pond.
- ▶ Screening Area
 - ▶ Screened overs are removed from the site as fast as possible.
- ▶ Final Storage Pile Area
 - ▶ Get final product off-site to eliminate this odour potential and to provide room for other composting operations.

2.3 Standard Composting Requirements and Practices

This section provides a broad summary of the composting process requirements. Refer to the Biosolids Composting Process Plan for more details.

The initial compost mix and pile heights are the **key** fundamentals for successfully composting and managing odour.

These operational practices will help mitigate instances of higher odour levels:

- ▶ Ensuring that hog fuel is used for the wood amendment, rather than ground up dimensional lumber or yard debris
- ▶ Weekly C:N ratio and moisture content measurement and recording of the mix
- ▶ Using mix ratios and pile heights consistent with the following capacity table (mix ratios are wood waste by weight divided by biosolids weight):

		Mix Ratio 3.35		Mix Ratio 3.56		Mix Ratio 4.0	
Process Phase	Pile Height (metres)	Retention (Days)	Annual Cap (Tonnes)	Retention (Days)	Annual Cap (Tonnes)	Retention (Days)	Annual Cap (Tonnes)
Primary	2.4	24	39,628	24	37,772	24	34,476
Secondary	3.3	31		31		31	
Primary	2.7	24	44,581	24	42,494	24	38,786
Secondary	3.3	32		32		32	
Primary	3.0	24	47,553	24	45,327	24	41,371
Secondary	3.3	30		30		30	

Operating Modes
Conservative
Mix Sensitive
Not Recommended

Assumptions:

- ▶ Total primary retention days set at 24 days
- ▶ Minimum total secondary retention days set at 30 days
- ▶ 32 out of 36 zones are active (inactive zones: two in primary, two in secondary)
- ▶ Pile height indicated is the depth of the active mix
- ▶ 18 zones in fan Groups 4 & 5 - only primary composting zones

The composting process includes both primary and secondary aerations stages. The aeration system, on both the west and east side, provides both positive and negative aeration systems. The positive aeration system pushes air through the composting piles. The negative aeration system pulls air through the composting piles. Part of the negative aeration system is a biofilter to treat the air that is pulled through the composting piles.

In the summer months, when foul odour conditions are at their most extreme, the odourous air created by negative primary aeration can be difficult for the biofilter to effectively treat. An ozone treatment system is provided on the east side (and a portion of the west side) aeration systems to supplement the biofilter treatment system. Consequently, for the next few years, all primary stage composting should be completed on the east side aeration floors.

The anticipated duration for aeration is 55 days (24 days of primary and 31 days of secondary).

2.4 Routine / Daily Activities

A daily checklist for routine site procedures has been created. See Appendix 1 for a copy of this form.

3.0 ON-SITE ODOUR MONITORING AND AERATION PLAN

3.1 On-Site Odour Monitoring - Continuous

The major triggers for the Monitoring Plan will be based on the continuous measurements of odour (the e-noses) proposed for the facility and a hydrogen sulphide monitor. E-noses are at the middle of the east side aeration area and the north end of the west side aeration area. The hydrogen sulphide monitor is also at the north end of the site. Permanent weather stations are also provided at the northwest and northeast ends of the site.

The OdoWatch® continuous odour measurement and monitoring system uses strategically located electronic noses (eNoses) enabling plant operators to quantify and monitor odour emissions from their facilities. In addition to notifying operators of an odour problem, it characterizes the problem and consequently facilitates its resolution. The ultimate objective of OdoWatch® targets are to simultaneously satisfy the operator, the neighbours and authorities, and to turn the debate around odour issues into an objective discussion.

By integrating meteorological data received from the weather tower, odour data send by eNoses, and additional data inputs, the system computes the atmospheric dispersion of odours. It displays the odour dispersion plume – colour-coded according to the odour concentration (odour units), superimposed on a site aerial map. This enables the operator to visualized at a glance the impact of the site's odours.

These devices will continuously measure odour levels (in odour units) and hydrogen sulphide levels (in ppm). Every 4 minutes for odour levels and every 15 minutes for hydrogen sulphide the levels are recorded. The data can be used to automatically create graphs, tables or charts.

3.2 On-Site Odour Monitoring – Monthly Samples

The data from the continuous monitoring devices will be supplemented by:

- ▶ Odourous gas measurement at several locations on-site monthly

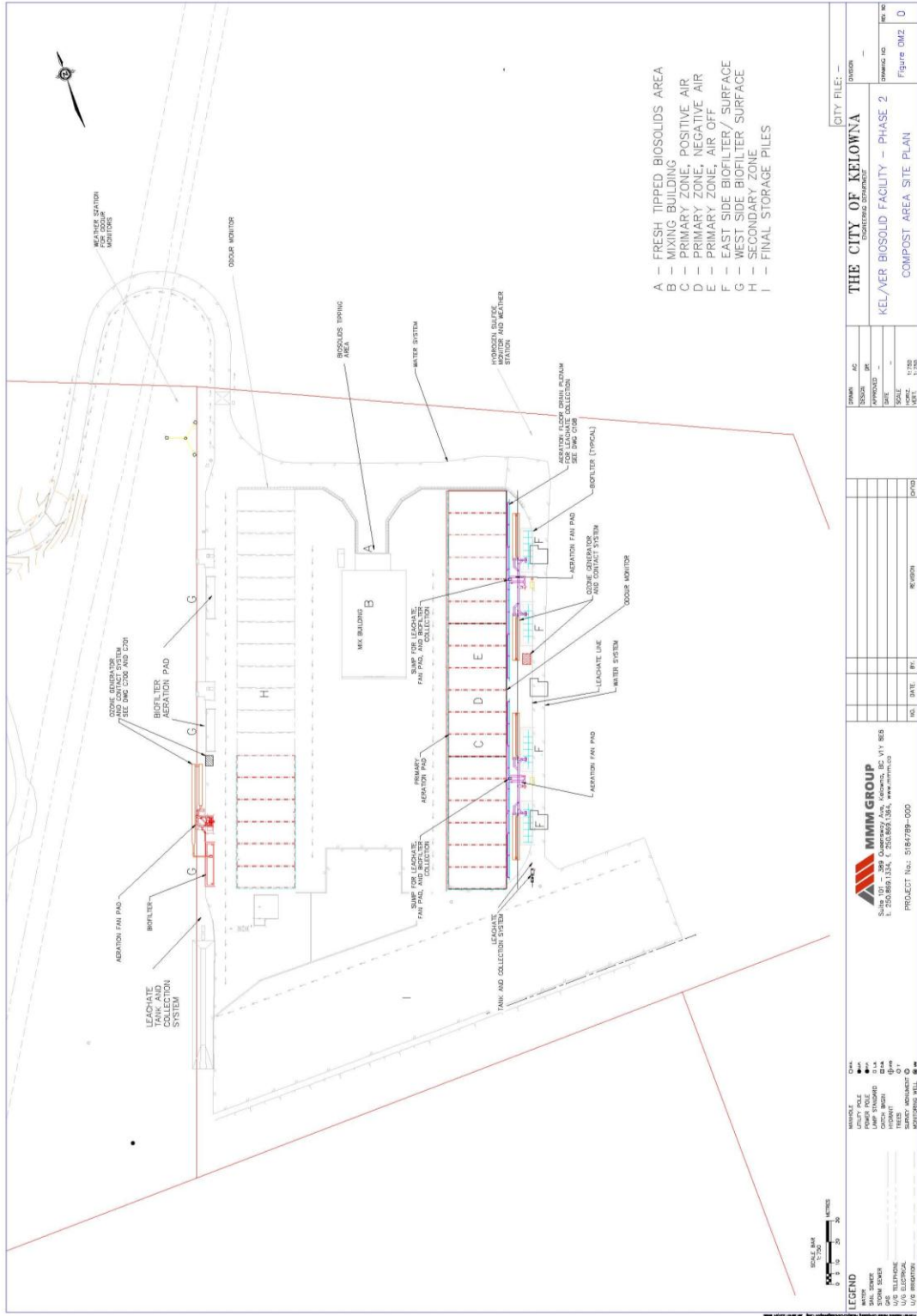
The primary purpose of these measurements is to build up a database of information regarding the typical levels through the site.

Over time, we expect the database of information will be used to identify developing odour issues within the site. In other words, over time, the results should fall within certain boundaries. If there is a dramatic spike (or dip) action should be taken to determine the cause, and appropriate changes made.

The sample locations for the grab sample odour measurement and odourous gas measurements are shown on the plan on the following page and are:

- ▶ Fresh tipped biosolids area (A)
- ▶ Mixing building (B)
- ▶ Primary zone, positive air (C)
- ▶ Primary zone, negative air (D)
- ▶ Primary zone, air off (E)
- ▶ East side biofilter surface (F)
- ▶ West side biofilter surface (G)
- ▶ Secondary zone (H)
- ▶ Final storage piles (I)

Figure OM2:



The general sampling procedure will be:

- ▶ On the morning of the sampling day choose Pad 4 or 5 whichever has the most material loaded on it. Pick 3 mid-age zones and turn one off, one to negative and one to positive. Of the remaining zones turn 3 to negative, 2 off and 1 positive. Change as needed to accommodate empty zones. Leave the settings until the primary composting and biofilter samples have been taken.
- ▶ Reset all zones to automatic when sampling is complete.
- ▶ Gastec Sampling Equipment
 - ▶ NH₂ (amines) requires 1-100 mL sample
 - ▶ NH₃ (ammonia) low range 0 to 30 ppm take 1-50 mL or 1-100 mL sample
 - ▶ NH₃ (ammonia) high range 2.5 to 200 ppm take 1-50 mL or 1-100 mL sample
 - ▶ Note date, time and ambient weather conditions. Update the spreadsheet later with wind speed and direction information from Odowatch.
 - ▶ Take “surface” temperature of sample area by holding the manual thermometer above the area at the same height as the sample will be taken. Avoid direct sunlight.
 - ▶ Sample by walking over the site holding the tubing as close as possible to the surface without pulling in any debris.
- ▶ Jerome H₂S
 - ▶ Plug detector in the day before to ensure it is fully charged. Take 3 samples and record the average. Run a regen cycle on the analyzer at the beginning or end of each day.
- ▶ Sample Sites (See Figure OM2)
 - ▶ Primary positive
 - ▶ Primary negative
 - ▶ Primary off
 - ▶ Biofilter(s)
 - ▶ Secondary aeration
 - ▶ Biosolids immediately after tipping
 - ▶ Mix building ambient air during mixing
 - ▶ Final storage piles

3.3 Odour Level Thresholds

Desirable and maximum levels of measured odour and hydrogen sulphide will be established. For example the desirable and maximum levels could be:

- ▶ Hydrogen sulphide desirable 0.001 ppm; maximum 0.005 ppm. The thresholds will be based on a 2 hour rolling average
- ▶ Projected odour units at the property boundary; desirable 50 OU/m³; maximum 100 OU/m³ based on a 2 hour rolling average.

Threshold levels will be established as trigger points for action. Examples of this include:

- ▶ Exceedance of the desirable levels (50 OU/m³ at the property boundary or 0.001 ppm H₂S) for 2 hours will lead to investigation of the cause and possible action
- ▶ Exceedance of a higher threshold (for example 75 OU/m³ or 0.003 ppm H₂S) for a 2 hour time period results in another set of actions
- ▶ Exceedance of the maximum level (for example 100 OU/m³ or 0.005 ppm H₂S) for 2 hours results in another set of actions

The following plan view shows the property boundary alert point locations.



The threshold levels should be reviewed annually.

3.4 Threshold Actions

Different actions will be triggered depending on the odour level threshold that is exceeded. The threshold actions will be staged as follows:

- ▶ Stage 1 exceedance, triggered by exceeding the desirable levels of 0.001 ppm H₂S (2 hour rolling average) and/or projected odour intensity of 50 OU/m³ at the property boundary, for a 2 hour time period, will result in a **thorough site review**
- ▶ Stage 2 exceedance, triggered by exceeding the threshold of 0.002 ppm H₂S (2 hour rolling average) and/or an odour intensity of 75 OU/m³ at the property boundary for a 2 hour time period, will result in a thorough **composting process review and process adjustment**
- ▶ Stage 3 exceedance, triggered by exceeding the threshold of 0.005 ppm H₂S (2 hour rolling average) and/or projected odour intensity of 100 OU/m³ at the property boundary, for a 2 hour time period, will result in an **odour prevention activity**

3.4.1 Stage 1 Exceedance Activities

The purpose of the **thorough site review** is to make sure that all of the conditions necessary for proper odour management are in place. As well, if a site activity such as biosolids delivery/dumping; hog fuel dumping; or setting pond cleaning has created the exceedance, this will be identified and documented.

The thorough site review will include the following:

- ▶ Check the H₂S and odour monitor calibration;
- ▶ Are the primary and aeration system controls set properly?
- ▶ Are the ozone treatment system controls set properly?
- ▶ Are the aeration zone sprinkler system controls set properly?
- ▶ Are the biosolids delivery protocols being followed?
- ▶ Are the aeration pile heights correct?
- ▶ Are the site management/housekeeping activities (i.e. preventative measures) being conducted properly?

Check lists and forms will be filled out to provide a record of the thorough site review and action (if any) that was required. See Appendix 1 for a Stage 1 Exceedance Form.

3.4.2 Stage 2 Exceedance Activities

The purpose of the **composting process review and process adjustment** is to determine if the compost mix, aeration process or ozone treatment process is within the suggested parameters. The hand held H₂S monitor and draeger tube odour gas measurement devices will likely be used to help pin point the significant odour source.

The compost process review will include:

- ▶ Comparison of hand held device measurements to historical data (in either table or graph format)
- ▶ Are the mix parameters (wood amendment quality; C:N Ratio; moisture content; mix ratio) correct or within required parameters?
- ▶ Are the primary and secondary aeration time periods being achieved?
- ▶ Should there be adjustments to:
 - The aeration system control set points?
 - The ozone treatment system set points?
 - The sprinkler system watering durations?

Forms will be filled out to provide a record of the composting process review and action (if any) that was required. Refer to Appendix 1 for a Stage 2A Exceedance Form.

The **composting process adjustment** stage will be used if the actions conducted in either Stage 1 or composting process review (Stage 2A) are not successful in reducing the measured H₂S or odour levels.

The Stage 2B actions will consist of physical changes such as:

- ▶ Replacing the biofilter media
- ▶ Changing the pile heights
- ▶ Changing the cover thickness
- ▶ Changing the mix parameters

Forms will be filled out to provide a record of the composting process adjustments that were made. Refer to Appendix 1 for a Stage 2B Exceedance Form.

3.4.3 Stage 3 Exceedance Activities

The odour prevention activity stage will be used if the combination of Stage 1, Stage 2A and Stage 2B actions are not successful in reducing the measured H₂S or odour levels.

The Stage 3 actions will be relatively drastic and are restricted to:

- ▶ Using covers and full time negative aeration in as many primary and secondary aeration zones necessary to reduce the odour levels to acceptable levels
- ▶ Diverting biosolids elsewhere

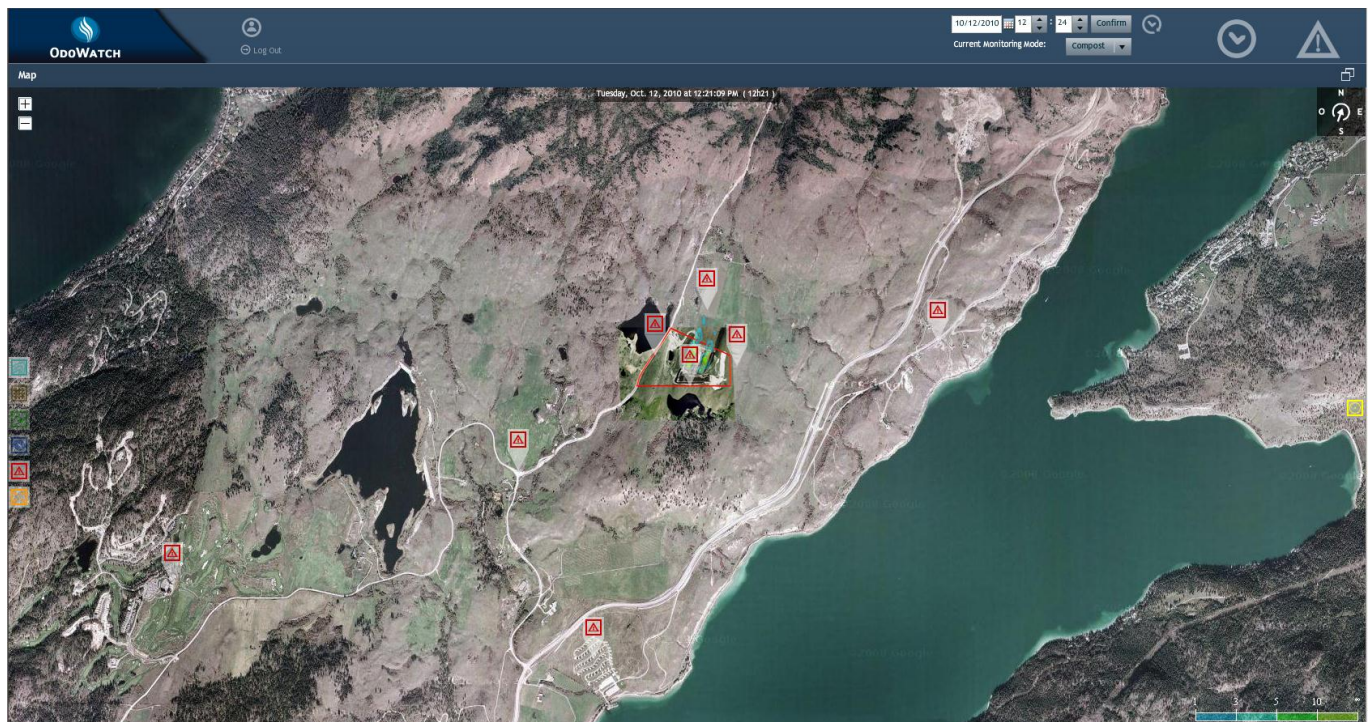
Refer to Appendix 1 for a Stage 3 Exceedance Form.

4.0 OFF-SITE ODOUR MONITORING

4.1 Neighbourhood Reports

When a neighbourhood odour report (or complaint) is made these procedures will be used:

- ▶ A comparison / evaluation of the on-site Odowatch system will be made. This will include:
 - ▶ Time of day
 - ▶ Temperature, wind direction and speed and solar radiation data
 - ▶ Predicted odour levels at each property boundary at the time of the report
- ▶ An evaluation of whether or not an unusual on-site activity that creates higher than usual odour potential was taking place.
- ▶ An evaluation of whether or not a Stage 1, Stage 2 or Stage 3 exceedance was taking place.
- ▶ For information, the projected odour intensity at a nearby neighbourhood alert point will be recorded. The following plan shows the neighbourhood alert point location. PLEASE NOTE THIS PROJECTION ONLY ALLOWS FOR THE IMPACT OF THE BIOSOLIDS FACILITY AND DOES NOT ALLOW FOR ANY OTHER ODOUR SOURCE.



- ▶ A response will be prepared for the creator of the neighbourhood report.
- ▶ A Neighbourhood Report form will be completed (see Appendix 1) and filed.

4.2 Surrounding Area (Background) Odour Measurement

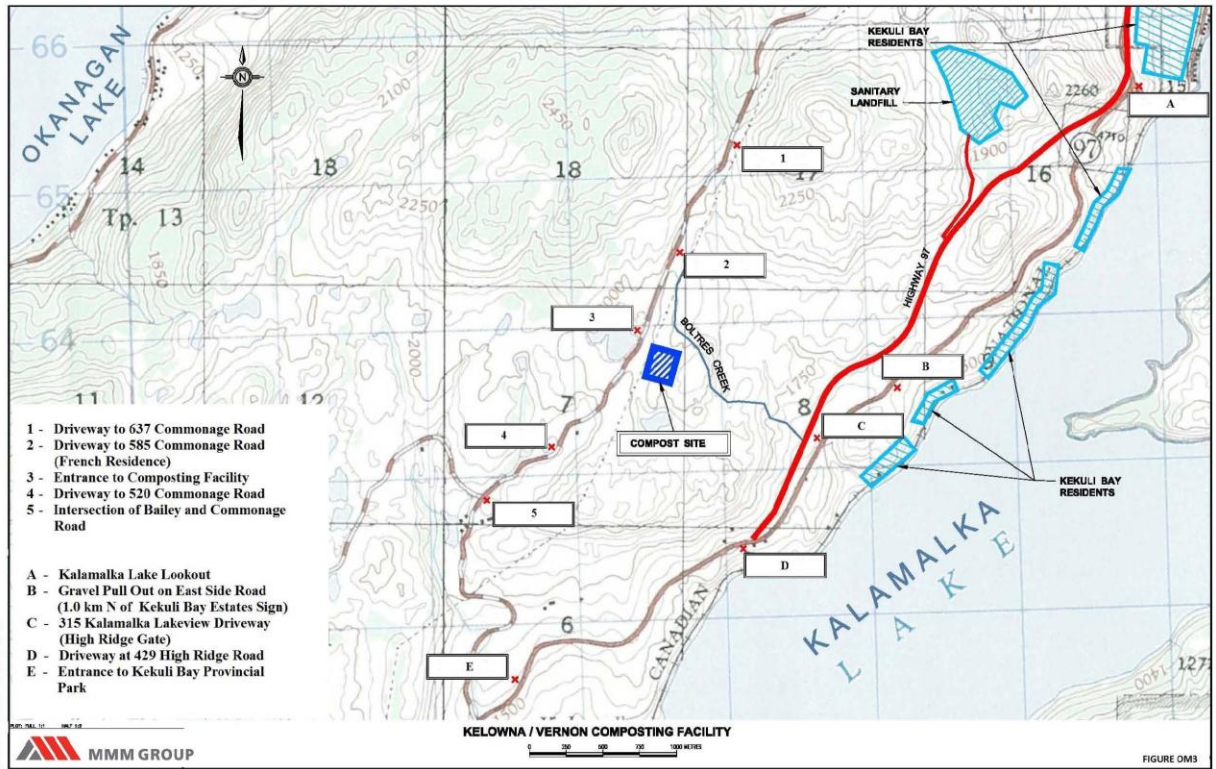
In June, 2009 a sampling location at Kekuli Bay Estates (High Ridge Gate) was established. The purpose of this was to define the level of odour experienced in this area when the compost odour was present.

On September 30, 2009 background odour samples were taken at a number of locations around the site. The purpose of these samples is to establish the background odour levels surrounding the facility. The locations are as follows and are shown on the plan on the following page:

- ▶ Commonage Road
 - ▶ Driveway to 637 Commonage Road (#1)
 - ▶ Driveway to 585 Commonage Road (French residence) (#2)
 - ▶ Entrance to Composting Facility (#3)
 - ▶ Driveway to 520 Commonage Road (#4)
 - ▶ Intersection of Bailey and Commonage Road (#5)
- ▶ Kalamalka Lakeview Drive / High Ridge Road
 - ▶ Kalamalka Lake Lookout (A)
 - ▶ Gravel Pull Out on East Side of Road (1.0 km north of Kekuli Bay Estates sign) (B)
 - ▶ 315 Kalamalka Lakeview Drive driveway (High Ridge Gate) (C)
 - ▶ Driveway at 429 High Ridge Road (D)
 - ▶ Entrance to Kekuli Bay Provincial Park (E)

These background measurements indicated that odour is present at a variety of intensities around the site. As well, the tests indicated that the composting site is not the only odour source in the area. Further analysis is available for the background odour samples.

Figure OM3



5.0 POTENTIAL REPORTS

5.1 Potential Reports and Communications

- ▶ Instantaneous Odowatch and H₂S gas measurement graphs and charts are available to the facility operators.
- ▶ Suggested reports are:
 - ▶ Daily record sheet
 - ▶ Stage # 1 exceedance (analysis and action)
 - ▶ Stage # 2A exceedance (analysis and action)
 - ▶ Stage # 2B exceedance (analysis and action)
 - ▶ Stage # 3 exceedance (analysis and action)
 - ▶ Neighbourhood report
 - ▶ Annual capacity and threshold level analysis

5.2 Biosolids Committee

- ▶ Receive a summary of all reports at each meeting

5.3 Ministry of Environment

- ▶ Receive all Stage #1, #2, and #3 reports within 3 days of the exceedance
- ▶ Receive all bi-annual and annual reports

5.4 Surrounding Area Residents

- ▶ Receive the response when they provide a neighbourhood report

5.5 Website

This will be developed and implemented in 2011.

Civic Operations
Regional Compost Facility
551 Commonage Road
Vernon, BC V1H 1G3
TEL 250 541-0501
FAX 250 862-3330

kelowna.ca



Commonage Biosolids Facility Neighbourhood Report Form

Date: _____

Neighbourhood Report Information

Date odour is noticed: _____

Time of day odour is noticed: _____

Any details provided: _____

Odowatch System Data When Odour Noticed

Date and Time of Day: _____

Wind Direction Range: _____

Wind Speed Range: _____

Solar Radiation Range: _____

Predicted Odour Level Range – At Facility

North Property Boundary: _____ South Property Boundary: _____

West Property Boundary: _____ East Property Boundary: _____

Predicted Odour Level Range – Neighbourhood Alert Point

Nearest Alert Point: _____

Predicted Odour Level Range _____

Biosolids Facility Status

Was Facility in Exceedance?

Stage 1 _____

Stage 2 _____

Stage 3 _____

Any unusual activities or conditions that created a higher than usual odour potential? _____

Details: _____

Response for Creator of Neighbourhood Report

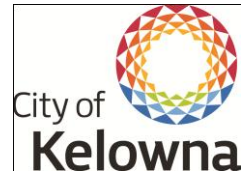
Date response provided to neighbourhood report creator: _____

Ministry of Environment
Environmental Protection Division
102 Industrial Place
Penticton, BC V2A 7C8
FAX: (250) 490-2231
Attention: Mike Reiner

Recorded By

Approved By

Civic Operations
 Regional Compost Facility
 551 Commonage Road
 Vernon, BC V1H 1G3
 TEL 250 541-0501
 FAX 250 862-3330



kelowna.ca

Commonage Biosolids Facility Stage 1 Exceedance Form

Date: _____

If the two hour average reading from the odour monitor exceeds 50 OU/m³ and/or exceeds 2ppb record the following conditions:

H ₂ S/Odour monitor properly calibrated?
Current mix ratios
Recent mix ratios
Feedstock (wood amendment type)
Primary aeration pile heights
Secondary aeration pile heights

Aeration settings *note pressure differential inches H ₂ O for each node	Secondary Node 1
	Secondary Node 2
	Secondary Node 3
	Primary Node 4
	Primary Node 5

Sprinkler system settings	West Side
	East Side

Biofilter media age and condition *note the last time the media was changed and any associated odours	Biofilter 1
	Biofilter 2
	Biofilter 3
	Biofilter 4A
	Biofilter 4B
	Biofilter 5A
	Biofilter 5B

Biosolids delivery protocols being followed? _____

Are housekeeping/site management activities current? _____

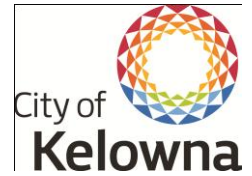
Within 3 business days of the occurrence, fax this form to:

Ministry of Environment
 Environmental Protection Division
 102 Industrial Place
 Penticton, BC V2A 7C8
FAX: (250) 490-2231
Attention: Mike Reiner

 Recorded By

 Approved By

Civic Operations
 Regional Compost Facility
 551 Commonage Road
 Vernon, BC V1H 1G3
 TEL 250 541-0501
 FAX 250 862-3330
 kelowna.ca



Commonage Biosolids Facility Stage 2A Exceedance Form

Date: _____

If the two hour average reading from the odour monitor exceeds 75 OU/m³ and/or the Airzona Instruments H₂S monitor exceeds 3 ppb record the following:

Hand held H ₂ S monitor results and comparison to past (ie. can the significant odour source be identified).	
Are the mix parameters (wood amendment quality, C/N rates, moisture content, mix ratio) within required parameters?	
Are the primary aeration time periods (ie. 24 days) being achieved?	
Are the secondary aeration time periods (ie. 31 days) being achieved?	
Should the aeration system control points be adjusted?	
What are the new set points?	
Should the ozone treatment system be turned on?	
Should the ozone treatment system set points be adjusted?	
What are the new ozone system set points?	
Should the sprinkler system durations be adjusted?	
What are the new durations?	

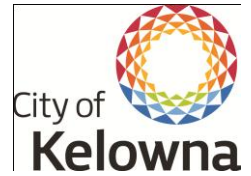
Within 3 business days of the occurrence, fax this form to:

Ministry of Environment
 Environmental Protection Division
 102 Industrial Place
 Penticton, BC V2A 7C8
FAX: (250) 490-2231
Attention: Mike Reiner

 Recorded By

 Approved By

Civic Operations
 Regional Compost Facility
 551 Commonage Road
 Vernon, BC V1H 1G3
 TEL 250 541-0501
 FAX 250 862-3330
 kelowna.ca



**Commonage Biosolids Facility
 Stage 2B Exceedance Form**

Date: _____

If the two hour average reading from the odour monitor exceeds 75 OU/m³ and/or the Airzona Instruments H₂S monitor exceeds 3 ppb record the following:

What physical adjustments have been made to the composting process?

Biofilter Media Replacement	
Primary Aeration Pile Height	
Secondary Aeration Pile Height	
Mix Parameter Changes:	
<ul style="list-style-type: none"> • Amendment Type 	
<ul style="list-style-type: none"> • C/N Ratio 	
<ul style="list-style-type: none"> • Mix Ratio 	
<ul style="list-style-type: none"> • Moisture Constant 	

Within 3 business days of the occurrence, fax this form to:

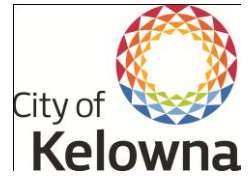
Ministry of Environment
 Environmental Protection Division
 102 Industrial Place
 Penticton, BC V2A 7C8
FAX: (250) 490-2231
Attention: Mike Reiner

 Recorded By

 Approved By

Civic Operations
Regional Compost Facility
551 Commonage Road
Vernon, BC V1H 1G3
TEL 250 541-0501
FAX 250 862-3330

kelowna.ca



Commonage Biosolids Facility Stage 3 Exceedance Form

Date: _____

If the two hour average reading from the odour monitor exceeds 100 OU/m³ and/or the Airzona Instruments H₂S monitor exceeds 5 ppb record the following:

What odour prevention activity will be used?

Covers Used	
Cover Location	
Biosolids Diversion	

Within 3 business days of the occurrence, fax this form to:

Ministry of Environment
Environmental Protection Division
102 Industrial Place
Penticton, BC V2A 7C8
FAX: (250) 490-2231
Attention: Mike Reiner

Recorded By

Approved By

