pscleanair.org
Puget Sound Clean Air Agency

Applicant: Cedar Grove Compost Co	**NOC Number**: 11573
Project Location: 17825 Cedar Grove Rd, Maple Valley, WA 98038	**Registration Number**: 25994
Applicant Name and Phone: Ron Westmoreland (206) 450-6182	**NAICS:** 325314
Engineer: Madeline McFerran	**Inspector**: Corina Frost

I. SUMMARY

Cedar Grove Composting Inc (Cedar Grove) is an existing commercial composting facility located in Maple Valley, WA. Cedar Grove has an existing Order of Approval (OA) 10645 which covers: the primary and secondary phases of aerated static pile (ASP) composting, the biofiltration systems treating the exhaust air from the primary and secondary ASP phases, an enclosed compost pad for yard waste and commercial food waste (Zone 7), and associated biofiltration control, In-Vessel Gore Cover Technology composting system, a tipping building with associated biofiltration control, a grinding building with associated biofiltration control, and water condensate treatment and holding tank. NOC application 11573 requests modifications to OA 10645.

A. Summary of Applicant's Requested Modifications & Equipment Reviewed

This Notice of Construction (NOC) Application 11573 includes 6 specific items for review, which are grouped in three categories:

(A) Changes to requirements for monitoring of the biofilters at the facility
(B) Changes to the method of operation and capture efficiency compliance demonstration for the Tipping Building and Grinding Building
(C) Review of a replacement grinder in the existing Grinding Building

Notice of Construction Application 11573 and proposed Order of Approval 11573 would cancel and supersede Order of Approval 10645. Only those items related to the requested changes from Cedar Grove under WAC 173-400-111(8) and the replacement grinder are open for review. All other conditions of Order of Approval 10645 are transferred to proposed Order of Approval 11573 unchanged.

A summary of the Agency determinations follows. The full analysis for each Agency Determination can be found in Sections III, IV, and V of this worksheet:

1. Requested modification to Condition No. 8 of OA 10645. The applicant has requested removal of any continuous monitoring of biofilter operating parameters, with this request originally submitted in an application required as part of the settlement agreement for Case No. 11-2-27192-7 SEA. This request falls into Category A: Changes to requirements for monitoring of the biofilters at the facility.

   Agency Determination: Continuous monitoring will not be required on the tipping building and grinding building biofilters. Continuous temperature monitoring will be required on the upper and lower primary biofilters and the east and west secondary biofilters, with required corrective action when temperatures fall outside of acceptable, identifiable range. Continuous monitoring of velocity pressure, static pressure, and exhaust flow will not be required on any of the biofilters.

2. Requested modification to Condition No. 9 of OA 10645. The applicant has requested to decrease the frequency of required 3rd party evaluations from quarterly to semiannually and to increase report submittal time from 30 days after the completion of the evaluation to 60 days after the completion of the evaluation. This request falls into Category A: Changes to requirements for monitoring of the biofilters at the facility.

   Agency Determination: Reduction in frequency of biofilter evaluation to semiannually is approved with clarification to acceptable ranges for moisture, free air space, pressure drop, empty bed residence time, oxygen content and pH and required corrective action, as well as required corrective action for visual structural deficiencies. A 60-day submittal time is also approved with the addition of a summary of initiated corrective actions to be included with the report submittal.

3. Requested modification to Condition No. 13 of OA 10645. The applicant has requested to remove the requirement to keep the second bay door of the tipping building closed during grinding, and has proposed installation of an odor neutralizing spray curtain for the bay door. This request falls into Category B: Changes to the method of operation and capture efficiency compliance demonstration for the Tipping Building and Grinding Building.

   Agency Determination: Opening the bay door constitutes a change in the method of operation of the tipping building and triggered a review of Best Available Control Technology (BACT). The request to open the bay door is approved with modification to Condition Nos. 12 and 13 of OA 10645 to require feedstocks remaining in the tipping building and grinding building for longer than 24 hours to be covered with at least 12 inches of biofilter media, and a limit of 5% opacity at the tipping building doorway. The Agency does not find that the odor curtain constitutes BACT for modification to the tipping building operation and its installation is not approved.

4. Requested change in compliance determination of 10645 Condition No. 14 from the observation of no visible emissions during release of test smoke or other method specified in an Agency approved test plan to a modified smoke test procedure of confirming test smoke placed in front of the building fan is passing through the biofilter and measuring airflow to be greater than 4 air changes per hour. This request falls into Category B: Changes to the method of operation and capture efficiency compliance demonstration for the Tipping Building and Grinding Building.

   Agency Determination: The change in the method of operation of the tipping building triggered a review of BACT and associated compliance demonstration for the tipping building and grinding building. In addition to the work practice standards proposed in Condition Nos. 12 and 13, and associated recordkeeping in Condition No. 16 of proposed NOC 11573, the compliance demonstration of Condition No. 14 includes measurement of minimum airflows to show at least 4 air changes per hour (with specified air flows included in the condition). Use of test smoke is not included in the updated compliance determination.

5. Requested change in frequency of smoke tests of 10645 Condition No. 15 from quarterly to semiannual. This request falls into Category B: Changes to the method of operation and capture efficiency compliance demonstration for the Tipping Building and Grinding Building.

Agency Determination: Use of test smoke is not included in the updated compliance demonstration for the new method of operation of the tipping building and grinding building. The flow measurements of Condition No. 14 are required at a semiannual frequency. Proposed OA 11573 removes Condition No. 15.

6. Review of grinder replacement. PSCAA inspection identified a new grinder on-site during the July 12, 2023 inspection and NOC application 11573 was updated to include review of the grinder. This review falls into Category C: Review of a replacement grinder in the existing Grinding Building.

   Agency Determination: The grinder must be operated within the grinding building. The 5% opacity limit at the tipping building door includes any emissions which may occur from the grinder operation.

Based on its review described herein, the Agency has made a preliminary determination that the proposal meets all the requirements of Agency Regulations I, II, and III and draft Order No. 11573 should be approved, subject to the conditions in the draft Order of Approval.

II. BACKGROUND

A. Facility

Figure 1 below shows the composting portion of the Cedar Grove facility. Emission sources and the corresponding biofilter systems are grouped by color.

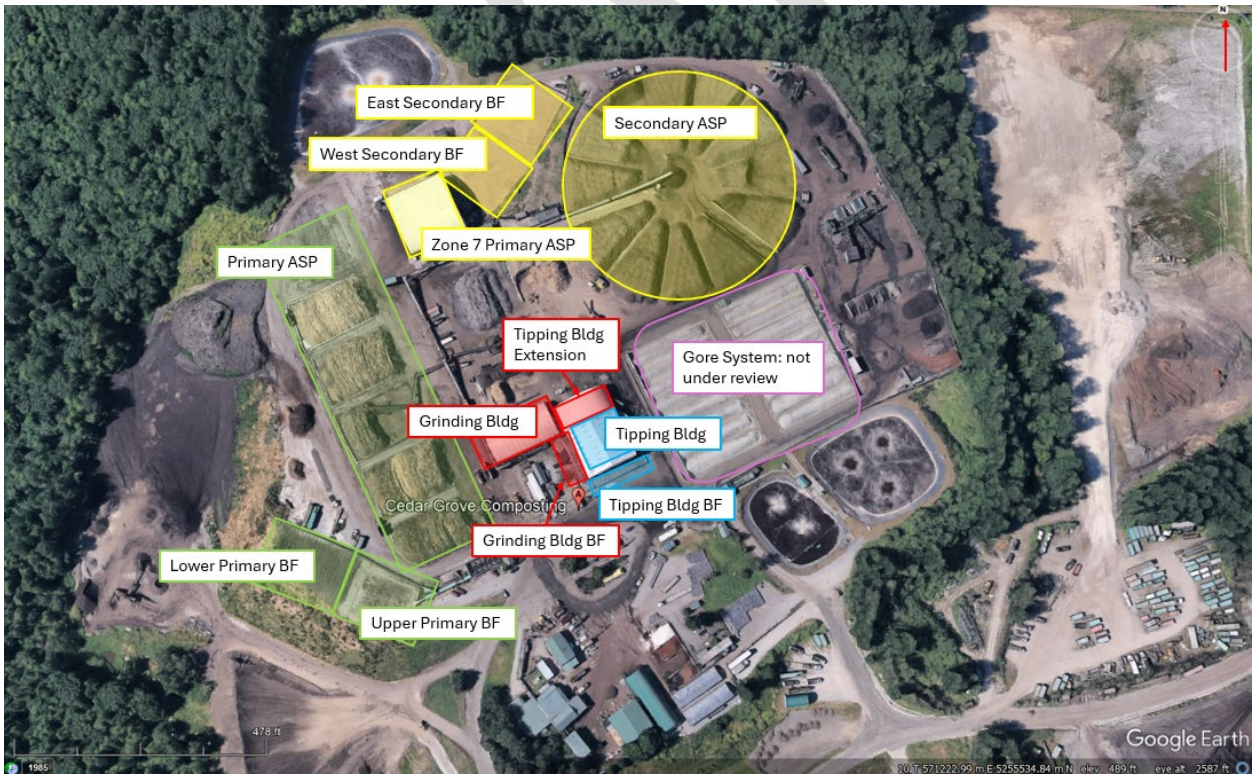


Figure 1: Facility Aerial View

The generalized facility process affected by the proposed modifications is outlined below and discusses Figure 1 in more detail.

1. Feedstock material is received by truck to the tipping building (Tipping Bldg). The tipping building is shown in blue. Tipping building fans direct tipping building air to the Tipping Building biofilter (Tipping Bldg BF), also shown in blue. The tipping building extension is shown in red because exhaust from the tipping building extension is routed to the Grinding Building biofilter, as discussed in item 2. The requested modifications pertaining to biofilter monitoring of the tipping building in Category A affect these emission units. The requested modifications in Category B affect these emission units.
2. The grinding building (Grinding Bldg) and grinding building biofilter (Grinding Bldg BF) is shown in red. Grinding building fans direct air from the grinding building to the Grinding Building Biofilter. Tipping building extension air is also routed to the grinding building biofilter. From the tipping building, material is moved to the grinding building where the feedstocks are mixed and ground to form primary piles. The requested modifications pertaining to biofilter monitoring of the grinding building in Category A affect these emission units. The requested modifications in Category B affect these emission units. The replacement grinder for Category C is located within the grinding building.
3. Depending on the feedstock material, the mix may be directed to the primary Aerated Static Piles (ASPs) shown in green (6 total zones), to Zone 7 (an enclosed ASP) or to portions of the Gore system. Primary refers to the first phase of composting or active composting phase when first mesophilic bacteria (active ~50°F-113°F) break down feedstock starches and sugars and then as the pile heats up thermophilic bacteria (active above 113°F) break down proteins and plant fibers. Emissions from the primary ASPs are routed to the Upper and Lower Primary biofilters (Upper Primary BF and Lower Primary BF, respectively), which are shown in green. Emissions from Zone 7 are routed to the West Secondary biofilter (West Secondary BF), shown in yellow. Material processed in the Gore system is not part of this review. The Gore system is outlined in purple. The requested modifications pertaining to biofilter monitoring of the upper and lower primary biofilters and the West Secondary biofilter in Category A affect these emission units.
4. As the material for thermophiles to consume is used up, pile temperature returns down to the mesophilic zone and enters the curing phase, which occurs in the Secondary piles at the facility. Material from primary ASPs 1-7 is then transferred to the Secondary ASP zones shown in yellow. The Gore system labeled in purple on the aerial view includes both primary and secondary zones and is not part of this review. The requested modifications pertaining to biofilter monitoring of the East Secondary biofilter (East Secondary BF) and West Secondary biofilter are in Category A.

Permit History:

OA 10645 (issued 3/5/2014) is the facility's single active OA. NOC OA No. 10645 reviewed the addition of the tipping building extension, a decrease in the tipping building biofilter design flow, and an increase in the size of the biofilter serving the grinding building and the tipping building extension. OA 10645 cancelled and superseded all previous orders of approval pertaining to the Cedar Grove Maple Valley facility. Underlying OAs pertaining to OA 10645 are listed below in reverse chronological order:

10456 (issued 3/6/2012) removed a condition pertaining to odors at the facility property boundary to satisfy Condition 14 of Case No. 11-2-27192-7 SEA Settlement Agreement. OA 10456 cancelled and superseded OA 10052.

10052 (issued 12/22/2010) was part of a Settlement Agreement for Civil Penalty No. 08-064CP (May 2008) to apply to have the terms of the Settlement Agreement folded into a site-wide NOC Order of Approval. 10052 also included conditions from OA 7638 and 8913.

8913 (issued 3/19/2004) was for the in-vessel gore cover technology composting system (41,000 TPY) which cancelled and superseded OA 8731 (for experimental use of the in-vessel gore system). This order and associated review do not pertain to the requests of NOC application 11573 though conditions originally from 8913 are in OA 10645 and will be pulled into proposed OA 11573.

8213 (issued 8/8/2000) was for the Zone 7 expansion and associated biofilter which required Cedar Grove to develop an O&M plan to address procedures for determining when the Zone 7 biofilter is operating properly and corrective actions to be taken when the biofilter is not operating properly.

7638 (issued 11/2/1999) added Primary Zone 7 to the secondary compost pad biofilter and increased the fan capacity in the tipping building and biofilter. The 12-Zone compost pad and biofilter, the six zone compost pad and biofilter, and the treatment and holding tank for fan condensate as well as the original tipping building biofilter were pulled in from the cancelled and superseded OA 7392 (9/18/1998).

7392 (9/18/1998) was issued to add the biofilter for the tipping building, remove a packed bed scrubber, and remove the experimental status of the facility established in March 1998.

In its July 7, 2021 Findings of Fact, Conclusions of Law and Order, the State of Washington Pollution Control Hearings Board (PCHB) determined that Agency NOC OA 7638 "permitted a 304,150 [tons per year] throughput limit" at Cedar Grove's Maple Valley facility. *See* PCHB Order at Findings of Fact No. 30 and Conclusions of Law Nos. 7 and 9.

B. Biofiltration

As discussed in Section I, Category A of Cedar Grove's requests pertain to the monitoring of the biofilters on-site. This section discusses how biofilters work, the configuration of biofilters at Cedar Grove, and the parameters affecting the efficacy of a biofilter.

Biofilters operate "by the adsorption and absorption of odor causing compounds onto a natural media bed where microorganisms oxidize the compounds. The indigenous bacteria and other microorganisms of the media acclimate to the compounds present and are sufficient to provide the "scrubbing" action; no bacterial inoculation or chemical addition is required. Biofilters commonly are used to treat the air

from all types of composting operations."[1] Figure 2 below illustrates the main components of a biofilter system and the path of contaminated air through the treatment system.

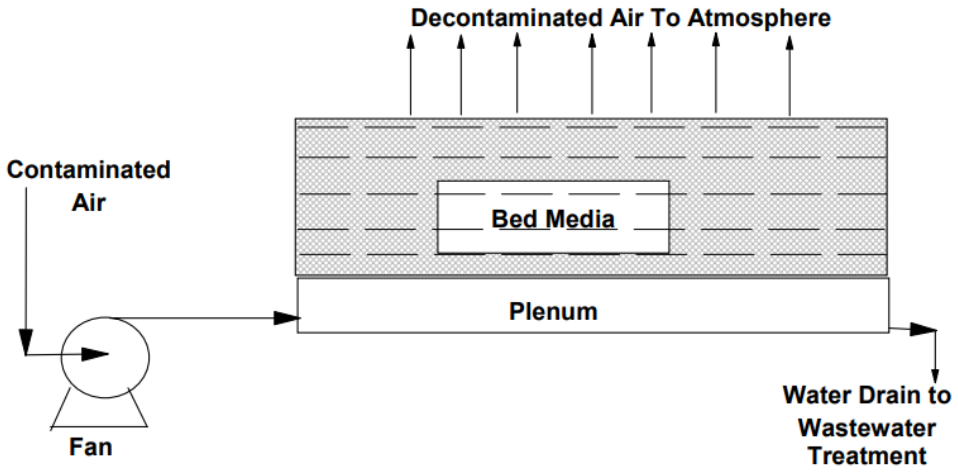


Figure 2 Biofilter General Schematic[2]

Exhaust air from tipping building, grinding building, primary and secondary ASPs are all each routed to biofilters for control of volatile organic compounds (VOC) released during the feedstock handling and composting processes. A subset of VOC are also odorous compounds, and a subset of VOC are classified as toxic air pollutants (TAP) in WAC 173-460-150 and federal hazardous air pollutants (HAP).

The following Figure 3 - Figure 5 are selected site photographs of the biofilters at Cedar Grove taken on September 3, 2024 as part of the third party evaluation of the biofilters (reproduced excerpts of the Third Quarter 2024 Biofilter Inspection Technical Memorandum and Smoke Test Report submitted to the Agency on September 4, 2024.) Note that the Lower Primary Biofilter was in the process of being rebuilt during the evaluation, which shows some of the ducting system typically covered by biofilter media.

[1] Biosolids and Residuals Management Fact Sheet Odor Control in Biosolids Management, US EPA September 2000
[2] *Using Bioreactors to Control Air Pollution*, US EPA September 2003

09/03/24 P:\1224\005\R\Maple Valley\2024 3Q\Attachment 6\MV 3Q2024 Biofilter Inspection att6-1.docx

1. Tipping Building Biofilter.

2. Grinding Building Biofilter.

LANDAU ASSOCIATES	Cedar Grove Composting Facility Maple Valley, Washington	**Selected Site Photographs**	Figure 6-1

Figure 3 Tipping Building (L) & Grinding Building (R) Biofilters 9/3/2024

3. Upper Primary Biofilter and Ventilation System.

4. Lower Primary Biofilter and Ventilation System.

LANDAU ASSOCIATES

Cedar Grove Composting Facility Maple Valley, Washington	Selected Site Photographs	Figure 6-2

Figure 4: Upper Primary (top) & Lower Primary (bottom) 9/3/2024

Figure 5 West Secondary (L) & East Secondary (R) Biofilters 9/3/2024

Physically, the biofilters at Cedar Grove are walled polyhedrons with an open top to the atmosphere, filled with woody biofilter media. Exhaust air from the ASPs is ducted, mostly through ductwork below ground, to the bottom of the biofilter and then the exhaust air moves up through biofilter media and exhausts through the open top.

Proper operation of a biofilter depends on establishing and maintaining an optimal environment for the aerobic (requiring presence of oxygen) mesophilic (active between ~68°F and 113°F) bacteria and on capturing emissions from the source of air pollution and allowing those emissions to have adequate contact time with the bacteria in the biofilm (a layer of water on the surface of the media where the bacteria live and oxidize VOC in the contaminated air stream). Maintaining optimum ranges of the following parameters is important for proper operation of the biofilter:

1. **Temperature**: Very hot temperatures may kill off or inactivate mesophilic bacteria and likewise very cold temperatures may inactivate the mesophilic bacteria. The temperature of the biofilter needs to be within the mesophilic zone for the bacteria to be active. The temperature of the biofilter media is primarily affected by the exhaust gas temperature although for outdoor biofilters the ambient temperature can also play a role in the temperature of the biofilter.
2. **Moisture content**: The biofilter media needs to be moist enough to have a water biofilm within which the mesophilic bacteria live. Biofilter media that becomes waterlogged (too moist) risks displacing air (oxygen) with water and jeopardizing aerobic conditions in the biofilter.

3. **Free Air space/Porosity**: The porosity (or measurement of free air space in the matrix of the media) is another key parameter for operation. Free air space is needed for both the water biofilm, circulation of air for aerobic reactions, and for travel of the exhaust air through the biofilter. The void space and porosity are related to the type of biofilter media and the age of that media. As the media ages it degrades and breaks down into smaller pieces which settle and compact, reducing overall void space. As void space reduces, there are fewer pathways for exhaust air to pass through and the system static pressure increases.
4. **Pressure drop across the biofilter**: The pressure drop across the biofilter is a key indicator of the ability of the biofilter to capture emissions. As the media ages and becomes more compact, pathway through the biofilter requires more energy, which can be observed through increasing static pressure readings in the biofilter.
5. **Empty Bed Residence Time:** Empty bed residence time relates to the exhaust flow through the biofilter and the volume of the biofilter. If residence time is not long enough, the mesophilic bacteria may not have time to oxidize the exhaust air.
6. **Oxygen content:** Related to porosity/free air space, and moisture content, since the mesophilic bacteria are aerobic (completing reactions in the presence of oxygen) adequate oxygen is needed for the biofilter to function.
7. **pH:** The mesophilic bacteria degrading the pollutants in the exhaust air perform best at or near neutral pH. pH too far outside of a neutral range may inhibit or destroy the mesophilic bacteria population.
8. **Media Bed Selection:** The natural media bed provides the surface area needed for the biofilm and supports the free air space for the exhaust to move through and maintain aerobic conditions within the biofilter. For Cedar Grove, and for many commercial composting facilities, primarily coarse shredded wood material is utilized.
9. **Physical Media Maintenance**: This parameter encompasses maintaining uniformity in the biofilter media so that all the exhaust air must pass through the bed without sections or channels that allow for faster and lower pressure travel of exhaust air. Air will move through the path of least resistance (the lowest pressure drop) and so areas of uneven settling, or disruption due to rodent activity or plant growth can cause channeling or short-circuiting of the biofilter and adversely affect operation.

C. Tipping Building and Grinding Building Configuration

The Tipping Building and Grinding Building at Cedar Grove are for feedstock receipt, some feedstock storage, feedstock handling and feedstock preparation to create the mixed material that is then placed into primary composting.

As discussed in Section I, Category B of Cedar Grove's requests pertain to operation of the Tipping Building and the Grinding Building. This section provides additional information about the Tipping Building, Tipping Building Extension, and Grinding Building at Cedar Grove.

As described in the 2017 Cedar Grove Composting Building Ventilation Test Procedures memo:

> *The [tipping] building is square (100 ft by 100 ft) with one open door for truck and wheel loader Access. There is a fully enclosed gable at both ends of the building so the roof section serves as a hood, or capture device. Plastic strips hang from the opening to enhance this capture effect.*

> *There is an additional canopy: the tipping building extension, (100 ft by 50 ft) that extends beyond the opening to insure all unloading of trucks and storage of materials for processing is under cover.*[3]

The tipping building extension was installed in 2008 as part of AOD 4-30-08[4] Section IV A which required installation of "an enclosed extension, at least 50' by 100', attached to the existing tipping building to receive all incoming material as required under Order of Approval No. 7638, Condition 3." Cedar Grove Maple Valley notified the Agency by email June 18, 2008 that the tipping building extension had been constructed and included photos of the installation.

The sorting/grinding building is 130 ft length by 70 ft width and 22 ft height. The sorting/grinding building was constructed in 2008 in conjunction with AOD 4-30-08. Requirements for the sorting/grinding building were included in AOD 4-30-08.

The additional door which Cedar Grove requests to open is located adjacent to the grinding building. There are two 50 ft wide by 26 ft high doors for entry into the tipping building.[5] The tipping building extension width is 100 ft and height is 26 ft. Cedar Grove's current request essentially renders the tipping building and extension a roofed three sided enclosure.

[3] Cedar Grove Composting, Inc. Building Ventilation Test Procedures Memo April 13, 2017
[4] Copy of Settlement Agreement 08-064CP located in project folder
[5] Attachment 1 of the 2018 PSCAA_Response to Questions on Ventilation System_20181109 memo from Jacobs for building dimensions and Attachment 2 of 2018 PSCAA Response to Questions on Ventilation System_20181109 memo for door dimensions

Figure 6 Tipping Building Bay Doors (1/23/2020) Grinding Building Visible on R

Figure 6 Tipping Building Bay Doors (1/23/2020) Grinding Building Visible on R above shows the bay doors on the Tipping Building (the doors are at the end of the Tipping Building Extension). The requested modification is to open the bay door shown on the right in this photo. Also visible in Figure 6 is the connecting Grinding Building. The requested modification doubles the opening area, opening the tipping building nearest the Grinding Building.

D. Regulatory Basis for Review

The Category A Cedar Grove requests for modification of biofilter monitoring conditions is a request for changes in the conditions of an approval order. WAC 173-400-111(8) allows for "the owner or operator to request, at any time, a change in the conditions of an approval order". The criteria for the permitting authority to approve the request is specified in WAC 173-400-111(8)(a)(i) – (v) which requires that:

- The change in conditions will not cause the source to exceed an emissions standard set by regulation or rule;
- No ambient air quality standard will be exceeded as a result of the change;
- The change will not adversely impact the ability of the permitting authority to determine compliance with an emissions standard;
- The revised order will continue to require BACT for each new source approved by the order except where the Federal Clean Air Act requires LAER; and
- The revised order meets the requirements of WAC 173-400-111, 173,400-112, 173-400-113, 173-400-720, 173-400-830, and 173-460-040, as applicable.

The Category B change in method of operation of the Tipping Building meets the WAC 173-400-030(51) definition of modification, as the change is a change in the method of operation of the stationary source that results in emissions of any air contaminant not previously emitted. The opening of the second bay door is an increase in the building openings, reducing capture efficiency of both the Tipping Building and connected Grinding Building resulting in an emissions increase. WAC 173-400-110(1)(c) identifies modifications defined in WAC 173-400-030(51) as new sources subject to New Source Review. The New Source Review requirements of PSCAA Regulation I 6.01 and 6.03 apply to the Category B requests.

The Category C replacement grinder is the establishment of a new source under PSCAA Regulation I 6.03 and subject to New Source Review. The New Source Review requirements of PSCAA Regulation I 6.01 and 6.03 apply to the Category C requests.

III. CATEGORY A: BIOFILTER MONITORING MODIFICATION REVIEW

Cedar Grove's requests pertaining to the biofilter monitoring are two-fold: (1) remove all continuous parameter monitoring on all biofilters and (2) reduce the frequency of biofilter evaluation from quarterly to semiannually. Broadly, ongoing monitoring of the biofilters relates to maintaining a suitable environment for mesophilic bacteria and includes both the biofilter media age, quality and effectiveness as a substrate for the biofilm as well as the characteristics of the exhaust flow treating the biofilter.

Parameters associated with biofilter media age vary on generally longer time scales than would necessitate continuous monitoring. Parameters associated with maintaining a suitable environment for mesophilic bacteria (e.g. temperature) have the potential to vary on shorter time scales and continuous monitoring can allow for modification in method of operation and other corrective actions.

A. Requested removal of requirement for biofilter continuous monitoring

Cedar Grove requested modification of Condition No. 8 of OA 10645 to remove all continuous monitoring systems (CMS) on all biofilters.

PSCAA reviewed the historic continuous monitoring data provided by Cedar Grove, data from quarterly evaluations, and peer-reviewed literature to evaluate for which parameters continuous monitoring provided data affecting biofilter performance and would inform corrective action to properly operate the biofilter. Continuous data was available for the Tipping Building, Upper Primary, and Lower Primary biofilters. Due to operational similarities between the Grinding Building and the Tipping Building, Tipping Building data informed requirements for the Grinding Building biofilter. Due to operational similarities between the Upper and Lower Primary biofilters with the East and West Secondary biofilters, data from the primary biofilters informed requirements for the secondary biofilters.

Table 1 below summarizes these determinations by the Agency. Specific review follows Table 1.

Table 1 Biofilter Continuous Monitoring Review

Parameter	Biofilter	Currently Installed CMS?	Agency Determination re: Continuous Monitoring
Temperature	Tipping Building	Yes	No; Tipping Building biofilter temperature tracks closely with ambient air temperatures. There are not practical corrective actions to address temperature changes. Operating practices in the Tipping and Grinding buildings are needed and discussed under Category B to mitigate reduced biofilter efficiency.
	Grinding Building	No	
	Upper Primary	Yes	Yes; temperature changes occur on short time scales due to changes in the composting process. Maintaining temperature is necessary for mesophilic bacteria function. Corrective actions can be taken to address elevated temperature such as addition of cooling water or addition of ambient air.
	Lower Primary	Yes	
	West Secondary	No	
	East Secondary	No	
Static Pressure	Tipping Building	Yes	No; static pressure changes are gradual and linked to biofilter media age. 3rd party evaluations with required corrective actions will monitor biofilter media age.
	Grinding Building	No	
	Upper Primary	Yes	
	Lower Primary	Yes	
	West Secondary	No	
	East Secondary	No	
Exhaust Flow	Tipping Building	Yes	No; exhaust flow monitoring varies for the primary and secondary biofilters based on which zones of compost are active, and exhaust flow in the Tipping and Grinding buildings relate to the building ventilation design and do not vary on short time scales. Exhaust flow will be calculated as part of determining empty bed residence time during 3rd party evaluations.
	Grinding Building	No	
	Upper Primary	Yes	
	Lower Primary	Yes	
	West Secondary	No	
	East Secondary	No	
Velocity Pressure	Tipping Building	Yes	No; review of continuous monitoring data from facility and peer-reviewed literature indicate monitoring of static pressure and empty bed residence time can provide the information needed for maintaining proper biofilter operation.
	Grinding Building	No	
	Upper Primary	Yes	
	Lower Primary	Yes	
	West Secondary	No	
	East Secondary	No	

The proposal related to modification of biofilter monitoring parameters (OA 10645 Condition No. 8) was originally requested in NOC application 10721 submitted January 10, 2014. Under the Settlement Agreement for Case No. 11-2-27192-7 SEA Paragraph 11, Cedar Grove was required to install a continuous parameter monitoring system (CMS) on the Primary ASP biofilter inlet and the Tipping Building biofilter inlet. Paragraph 12 of the Settlement Agreement specified that Cedar Grove shall submit a Notice of Construction application to PSCAA "no later than 30 days after the fourth quarterly report is submitted to the Agency" to request that Order of Approval 10052 revise Condition No. 8 "consistent with the results of the CMS monitoring". Paragraph 13 specified that "the Agency shall stay

Condition No. 8 as it is currently written in the Order of Approval and not enforce it as written during the time periods described in paragraph 11 and 12."

Condition No. 8 of OA No. 10645 states:

Within 90 days of the date of this Order, Cedar Grove shall install and operate continuous parameter monitoring systems on all biofiltration systems. The monitoring systems shall measure and record velocity pressures, static pressures, and temperatures on a one-hour average basis. A continuous parameter monitoring plan that delineates locations and monitoring methods shall be submitted to the Agency for approval prior to installation of the continuous parameter monitoring system. This plan shall be submitted to the Agency no later than 30 days after the approval date of this Order. In addition, until the continuous parameter monitoring systems are installed, Cedar Grove shall measure and record these parameters manually at least once per operating day. Manual velocity measurements shall use EPA Reference Method 2 (Type S Pitot Tube).

Paragraph 11 of the Settlement Agreement under Superior Court Case No. 11-2-27192-7 SEA states:

Within 90 days of the effective date of this Agreement, Cedar Grove shall install and begin use of a continuous parameter monitoring systems ("CMS") on two of the four biofilters located on the Maple Valley site, consistent with Attachment A ("Instrumentation and Controls Implementation Strategy"). The CMS systems shall be located on the Primary Aerated State Pile Composting biofilter inlet and Tipping Building biofilter inlet. Cedar Grove shall report the results of the CMS monitoring on the two biofilters quarterly to the Agency by e-email. The first quarterly report shall be submitted to the Agency no later than 30 days after the first 90 days of monitoring data is collected from the CMS systems by Cedar Grove.

Paragraph 12 of the Settlement Agreement under Superior Court Case No. 11-2-27192-7 SEA states:

Upon receipt of 360 days of data (through the four quarterly reports described in paragraph 11) from the CMSs installed on the Primary Aerated Static Pile Composting and Tipping Building biofilter inlets and no later than 30 days after the fourth quarterly report is submitted to the Agency, Cedar Grove shall submit a Notice of Construction application to the Agency, including the appropriate filling fee required by Agency Regulation 1, section 6.04, requesting that Order of Approval No. 10052 be amended to revise Condition No. 8 consistent with the results of the CMS monitoring as described in paragraph 11. The Agency shall consider Cedar Grove's application and shall make a decision on the application consistent with all legal requirements. Cedar Grove reserves all rights to appeal the Agency's decisions on the application filed by Cedar Grove pursuant to this paragraph.

Paragraph 13 of the Settlement Agreement under Superior Court Case No. 11-2-27192-7 SEA states:

Pursuant to Cedar Grove taking the actions identified in paragraphs 11 and 12 above, the Agency shall stay Condition No. 8 as it is currently written in the Order of Approval and not enforce it as written during the time periods described in paragraphs 11 and 12. If Cedar Grove does not file an application to amend Condition No. 8 by the date described in paragraph 12 above, the stay

described in this paragraph shall be lifted and Condition No.8, as written in the Order of Approval, will take effect the following day.

Cedar Grove was required to start monitoring static pressures, velocity pressures and temperatures on the tipping building, upper primary biofilter and lower primary biofilter by December 03, 2012.

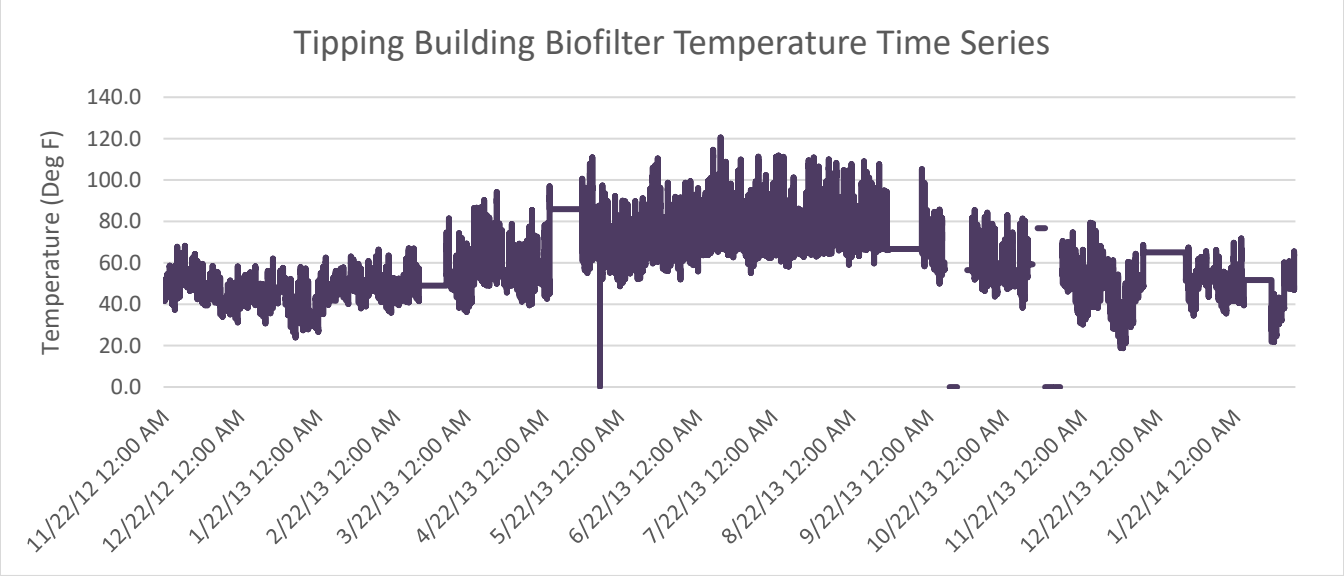
092712 SBE Bartlett letter.pdf

Cedar Grove submitted air flow, velocity pressure, static pressure and inlet air temperature data for the period of November 22, 2012 through February 15, 2014 for the Primary Aerated Static Pile Composting and Tipping Building biofilter inlets. The data was e-mailed to the Agency on June 18, 2014 and is embedded below. The facility also submitted CMS monitoring data for March 2015-November 2015 (offsite report 25994-258 and -240).

BIOFILTERDATA Query 11-22-12 to 2-

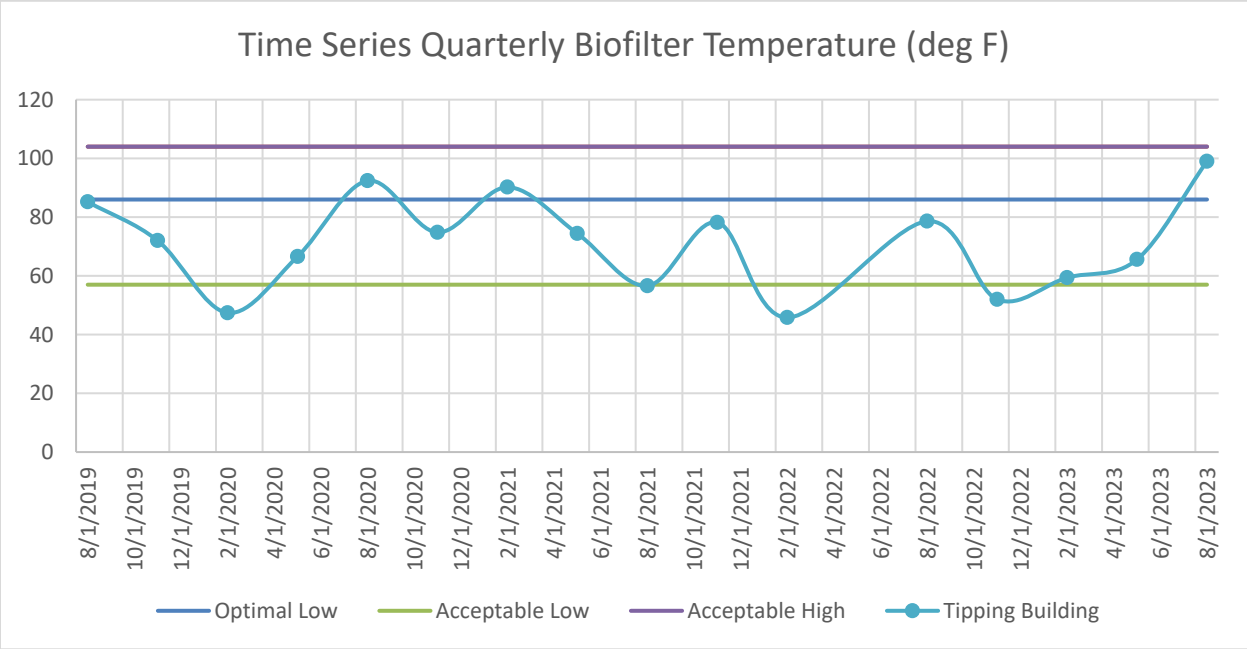
Continuous Monitoring of Tipping Building Inlet Air Temperature to Biofilter

Cedar Grove Maple Valley was required to collect continuous data on the temperature of the tipping building biofilter. The data from November 2012 through January 2014 is plotted below.



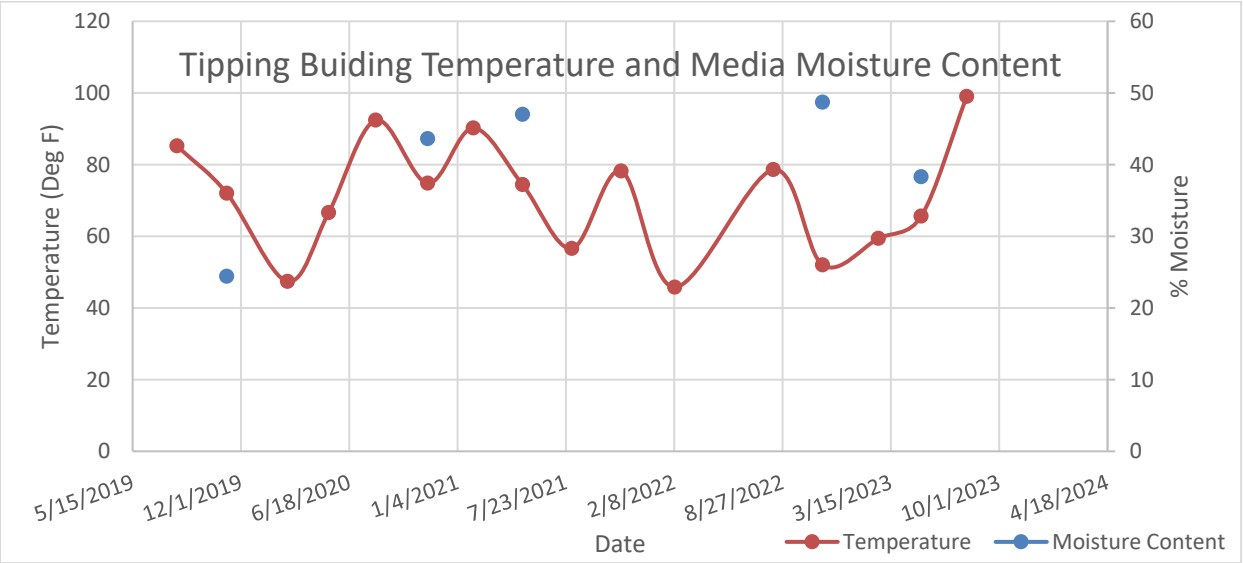
Review of the continuous temperature data for the tipping building shows some seasonal variation in temperature for the biofilter, which is also reflected in the temperatures taken during quarterly 3rd party

evaluation (compilation of results from August 2019 – August 2023 for the tipping building temperature are shown below. The "acceptable low" and "acceptable high" values were identified within the 3rd party evaluation reports.)



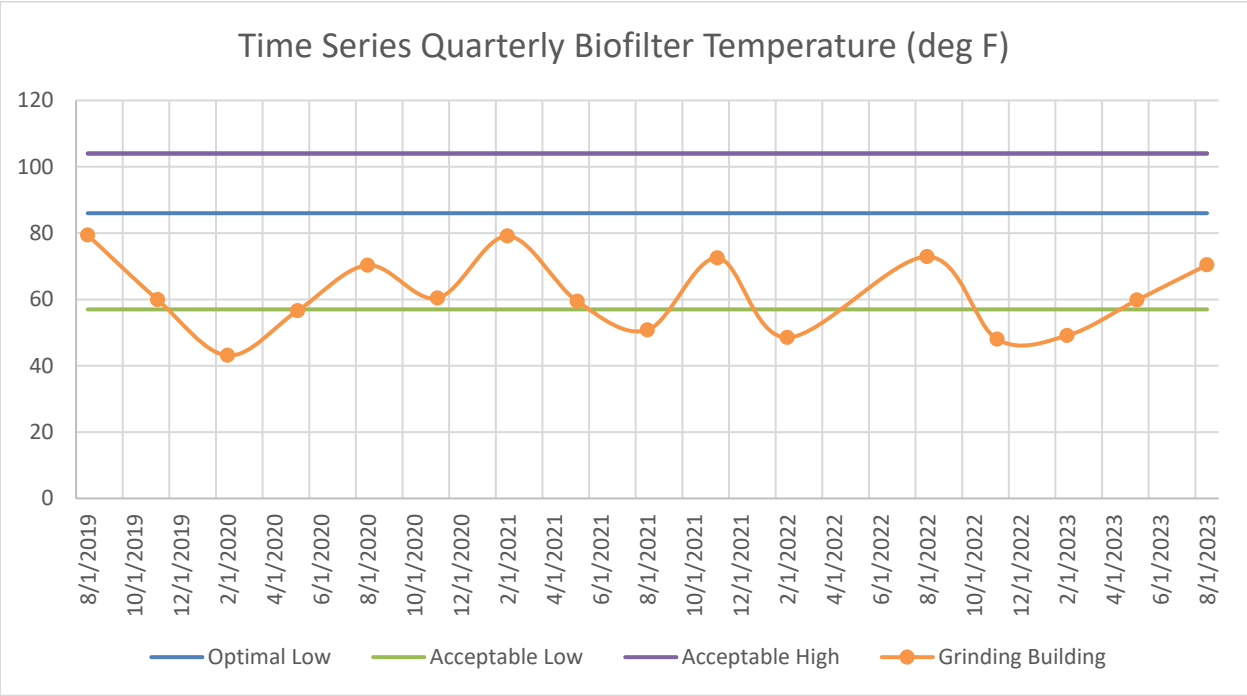
The temperature trend reflects that much of the tipping building biofilter air is ambient air rather than exhaust off active compost, with temperatures dipping below 68 degrees F typically seen during quarterly evaluations in winter months. The mesophilic bacteria necessary for effective control from the biofilter are active between ~68 and 113 degrees F.

A consistently lower temperature biofilter may also have difficulty in maintaining moisture levels in optimal range for mesophilic bacteria, although since the biofilter is open to ambient air and precipitation, heavier precipitation in the winter months sometimes results in a higher moisture content measured in the upper portion of the biofilter even though the exhaust air through the biofilter is not anticipated to contribute very much moisture.



In cases when exhaust air to the biofilter is consistently too cold to maintain media temperature, the biofilter control efficiency may be compromised. The dependence of the exhaust to the biofilter on ambient temperatures seasonally reduces the efficiency of the biofilter serving the tipping building. Continuous monitoring of temperature identifies those situations where the tipping building biofilter falls below the mesophilic zone, however there are limited corrective actions which would address the reduced efficiency of the tipping building seasonally given the configuration of the tipping building. The work practice standards for maximum retention time of stockpiles, or the requirement for biofilter cover on materials remaining stockpiled in the tipping building required for the opening of the bay doors (discussed in Section IV) will supplement odor control during low temperature periods. Based on the results of monitoring and the absence of meaningful corrective action associated with low temperatures, PSCAA has determined that continuous temperature monitoring of the tipping building biofilter is not required moving forward.

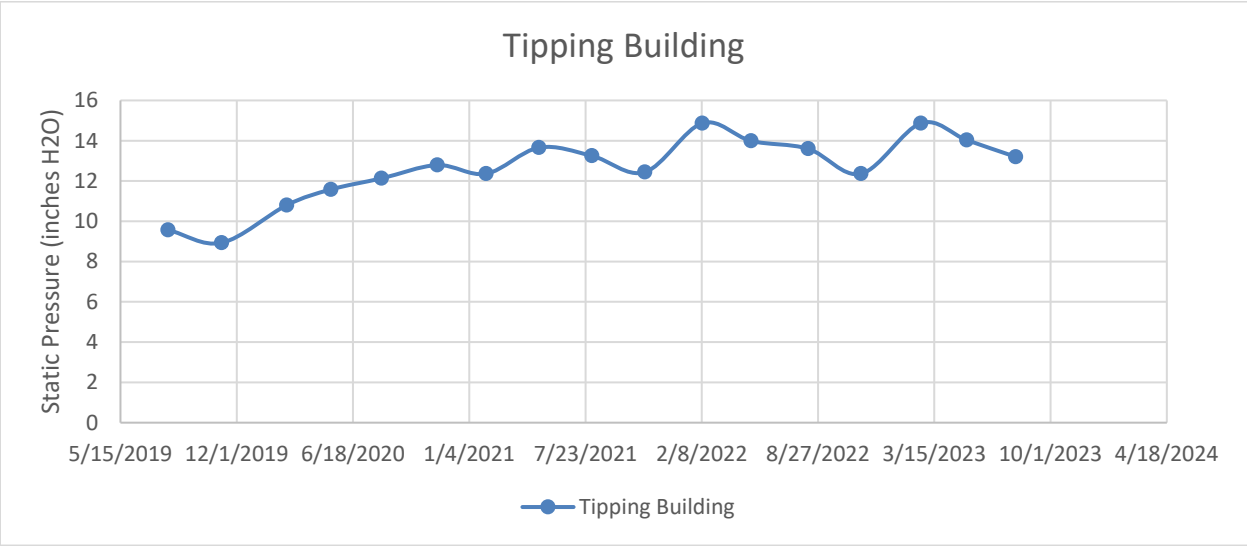
The grinding building is configured similarly to the tipping building and experiences similar drops in temperature seasonally, falling below mesophilic conditions. Quarterly biofilter temperature data for the grinding building biofilter is shown below and is expected to have similar instances of reduced efficiency during cold months. Similar to the tipping building, the configuration of the exhaust air from the grinding building to the biofilter serving the grinding building minimizes potential corrective actions related to low ambient temperatures, and PSCAA has determined that continuous monitoring of the grinding building temperature is not required moving forward.



Continuous Monitoring of Tipping Building Static Pressure

Static pressure monitoring assesses how much resistance exhaust air encounters moving through the ducting system and the biofilter and relates to the age and quality of the biofilter media for supporting the mesophilic bacteria and biofilm for biofiltration. Backpressure increases as the media ages; The Composting Handbook Chapter 12 Table 12.3 specifies guidelines for biofilter operating conditions specifying a maximum pressure drop through aged media as <0.8 inches of water per foot of depth and for new media a pressure drop of <0.2 inches of water per foot of depth, or a maximum difference between the measured media and baseline (newly installed media) measurements of 0.6 inches of water per foot. Measuring the static pressure at the inlet of the biofilter is a proxy for measuring the pressure drop across the biofilter media since the media surface is open to ambient air; however there may be additional flow resistance measured from the duct work and ventilation system and the static pressure monitoring is not a direct measurement of the biofilter bed pressure drop.

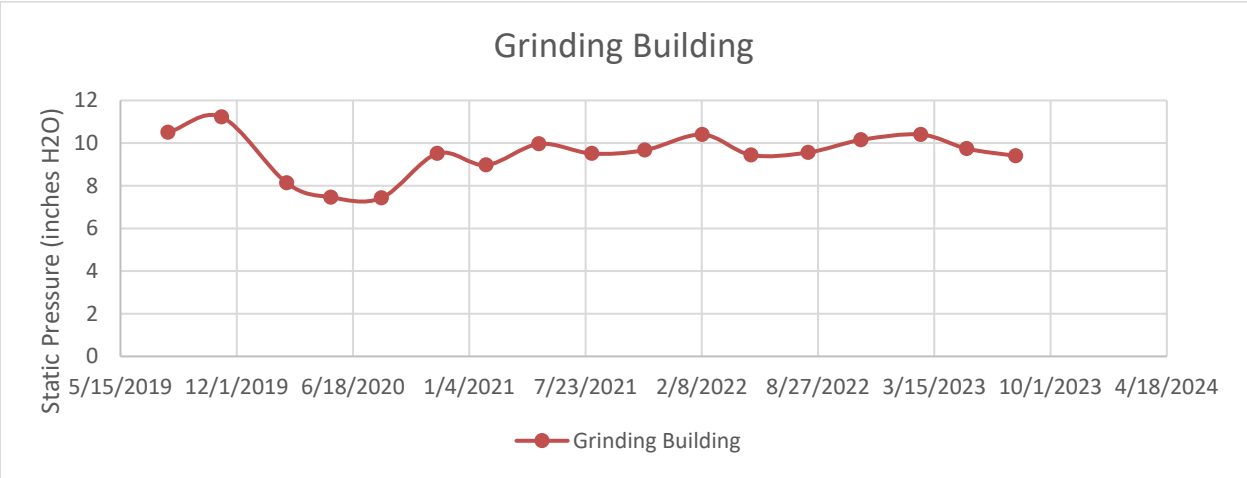
The continuous monitoring of static pressure is not necessary for maintaining the biofilter media; periodic measurements are sufficient for identifying trends in the biofilter media and instigating corrective action (biofilter media replacement). Biofilter static pressure changes associated with media aging occur on time scales captured by less frequent measurement. The static pressure readings from the Tipping Building and Grinding Building during quarterly evaluations from May 2019 through August 2023 are shown below. The time series trend below shows a shift from about 10 inches of water static pressure in 2019Q4 up to about 15 inches of water static pressure in 2022 Q2.



The Tipping Building Corrective Action, Maintenance and Repair History included in the third party evaluation report in June 2014 specified that the tipping building biofilter was redesigned and new media was added. In February 2018 new media was added on top of the existing tipping building biofilter media which, while increasing the bed height and empty bed residence time, can cause an increase in backpressure by further compacting the media below. There is a general upward trend in biofilter static pressure from May 2019 through November 2020. In April 2020, additional media was added to the top of the tipping building biofilter and static pressure varies in quarterly readings although on average continues to increase. Applying the Table 12.3 guidelines for biofilter operating conditions, a ~0.6 inches water per foot of biofilter static pressure change (a change in about 5 inches of water) occurred between 2019Q4 and 2021Q3.

In the case of the tipping building and the grinding building, the static pressure measured in the duct is not solely a measure of the pressure drop across the biofilter. Relative change between readings can be indicative of aging media, particularly when reviewed alongside porosity of media material.

Given the similar configuration of the Grinding Building biofilter, the quarterly evaluation results are also plotted below from May 2019 through August 2023. The Grinding Building biofilter was rebuilt in November 2019 and there is a corresponding drop in static pressure in February 2020 following the replacement.

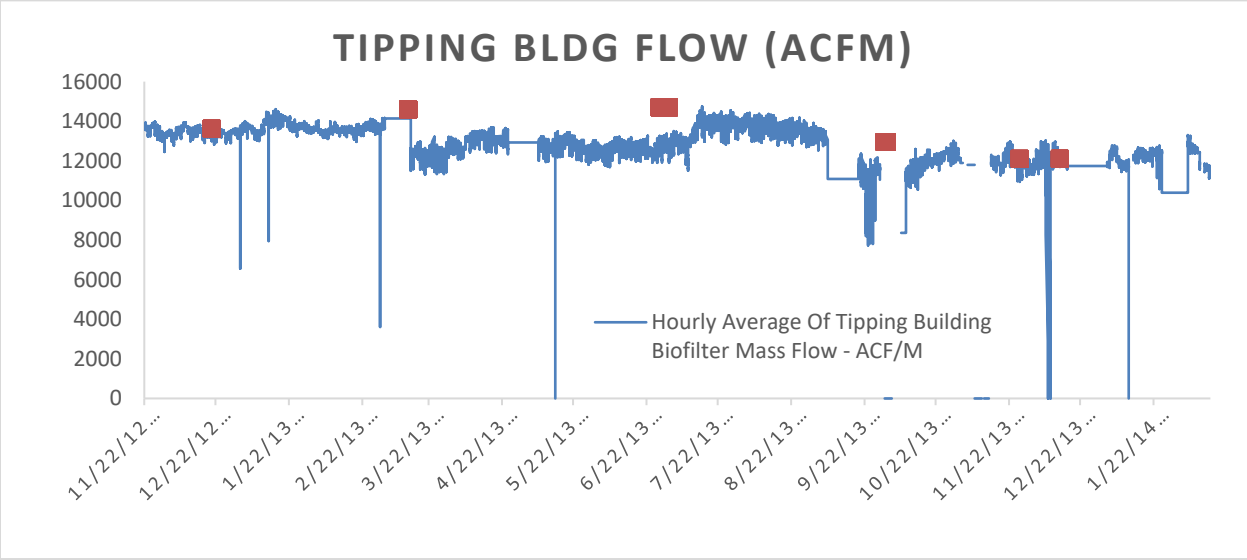


For both the Tipping Building and the Grinding Building, semiannual tracking of the static pressure, rather than continuous measurement will constitute the monitoring of the biofilters to evaluate that they are maintained in good working order, combined with required corrective action to address readings outside of acceptable range.

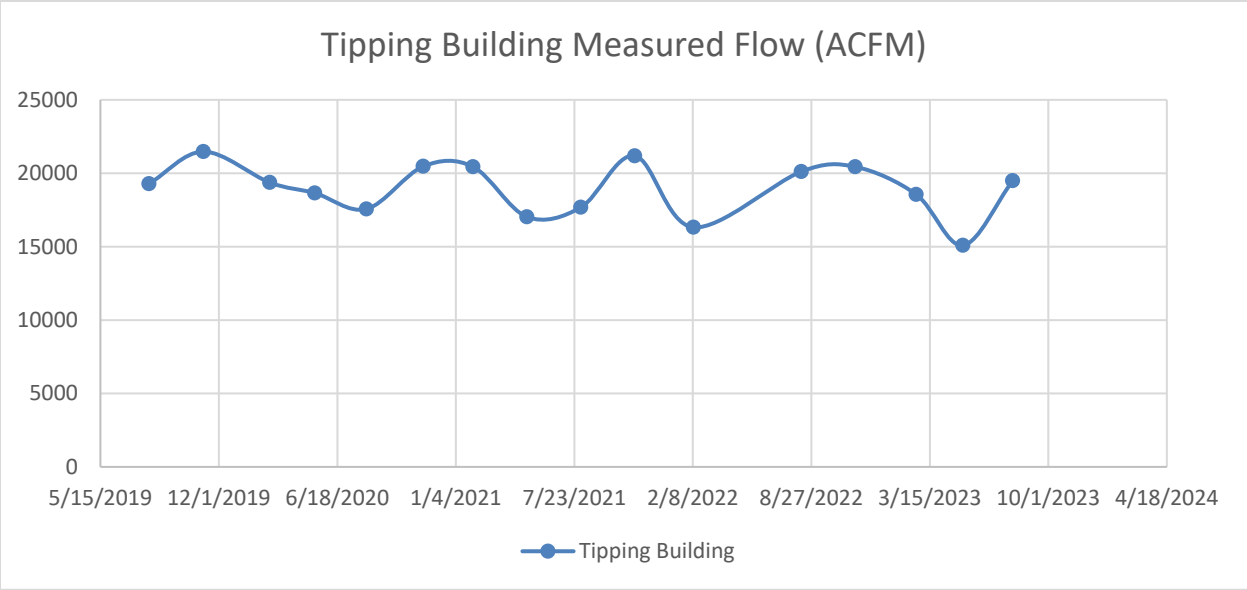
Continuous Monitoring of Tipping Building Exhaust Flow

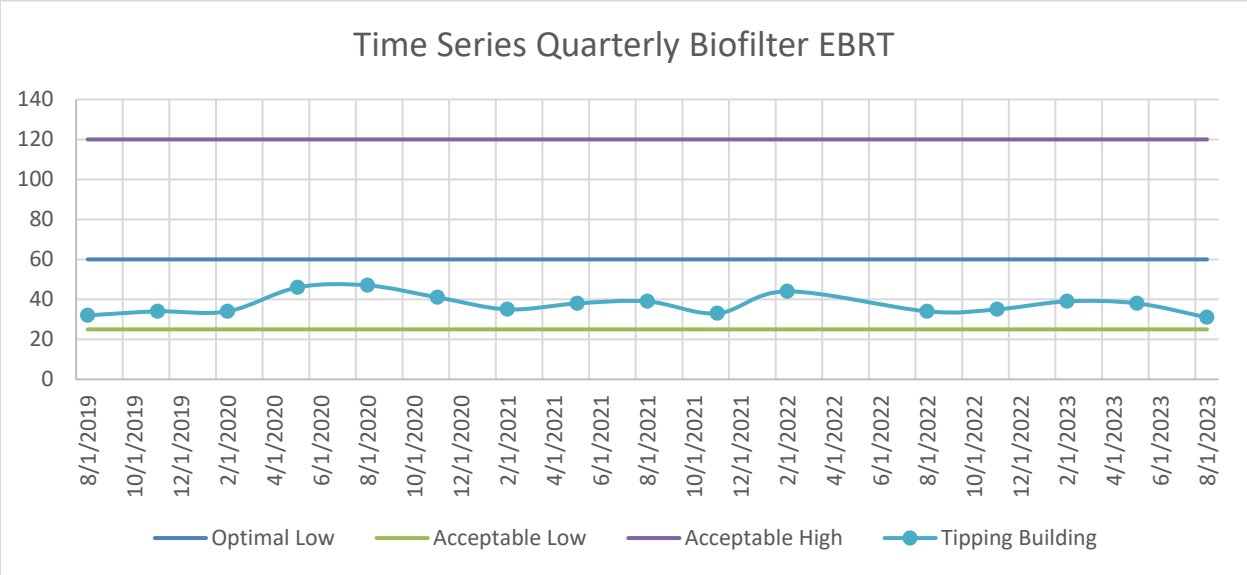
The historic continuous monitoring biofilter exhaust flow data from November 2012 through January 2014 is plotted with the corresponding measurements taken during the third-party quarterly evaluations during that period plotted alongside. Note that the CMS data predates changes in tipping building flow reviewed in NOC 10645 so total flows are lower than those seen in the quarterly evaluations plotted from August 2019 – August 2023.

Tracking of the exhaust flow to the biofilter relates to the residence time in the biofilter and relates to the ventilation system fan settings.



Flow measurements taken during the quarterly third party evaluations from August 2019 through August 2023 are also included below, followed by the calculated empty bed residence time.

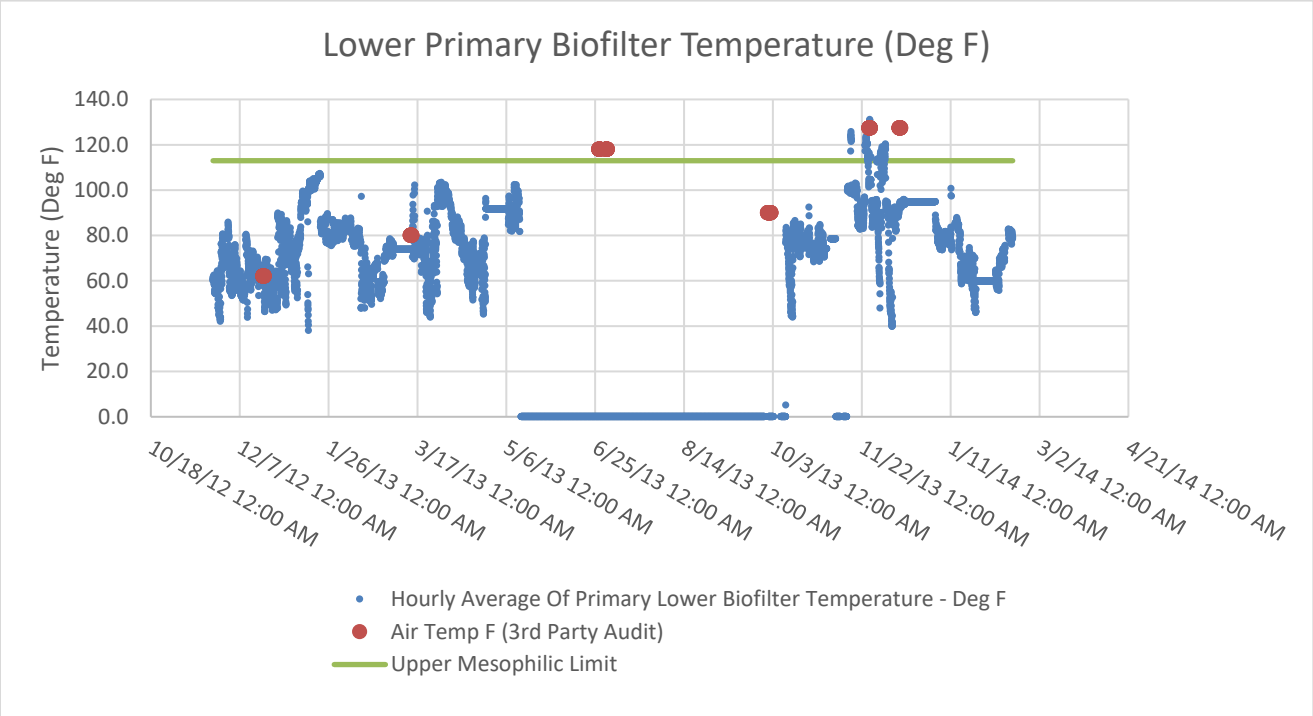


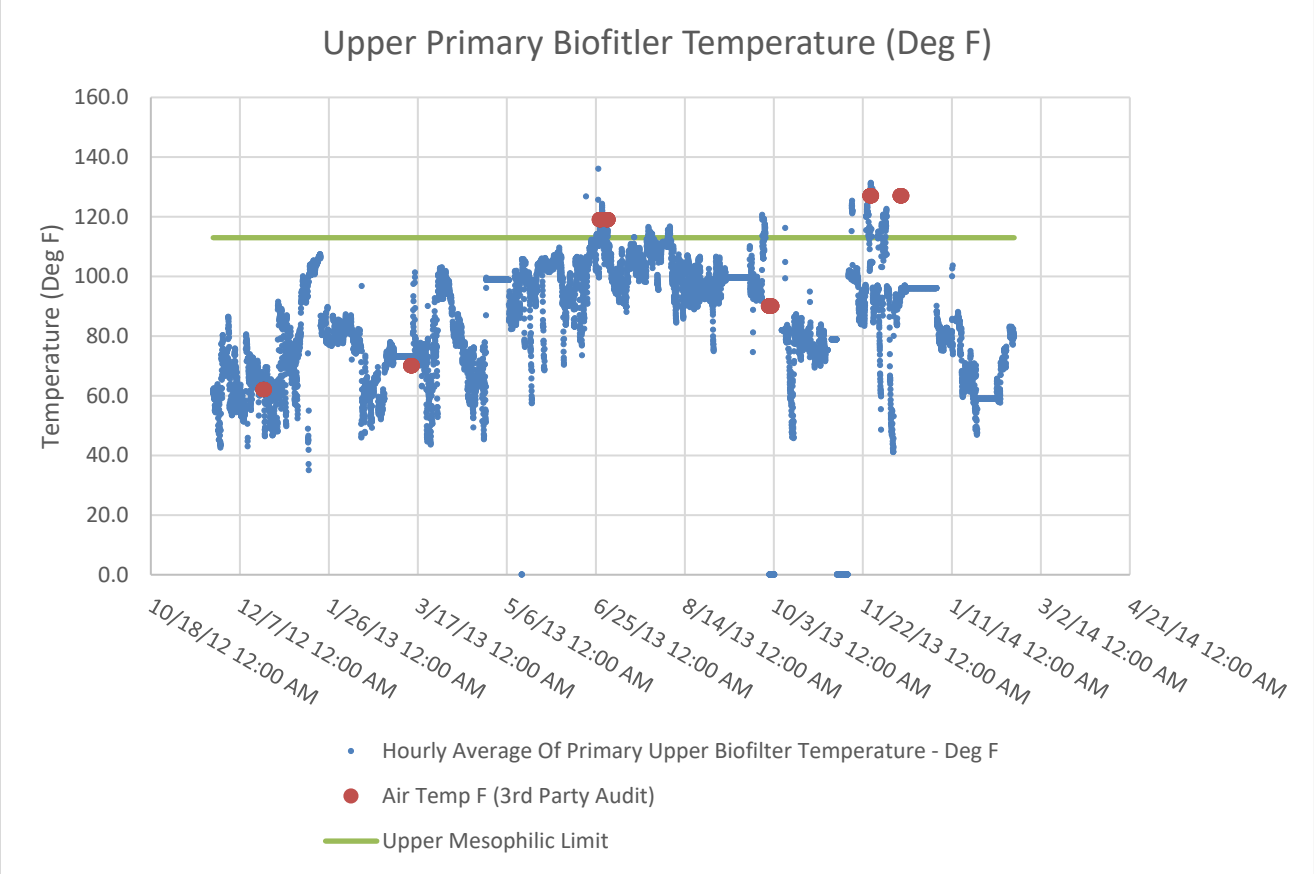


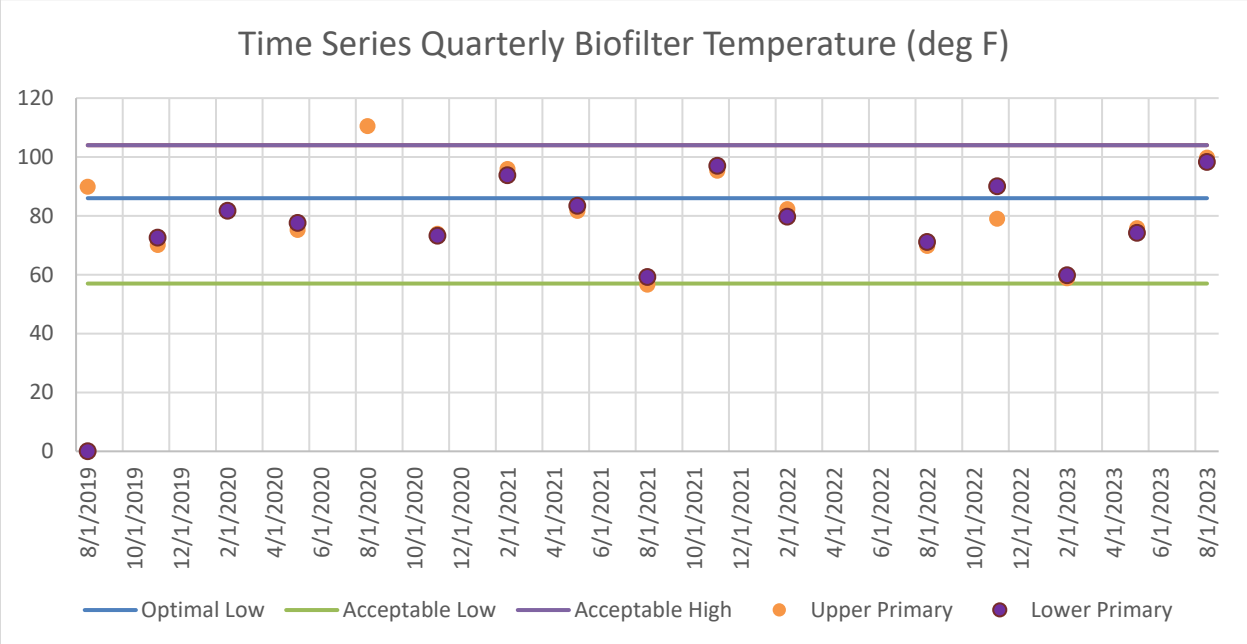
Ongoing measurement of exhaust flow is not found to be necessary to maintaining the quality of the biofilter but will be taken during semiannual evaluations of the biofilters as a part of evaluating the empty bed residence time, and related to the tipping building, tipping building extension, and grinding building ventilation systems operating as designed. Note that in the above plot, optimal high and acceptable high values identified in the 3rd Party evaluation are the same.

Continuous Monitoring of Primary Biofilter Temperature

Cedar Grove Maple Valley was required to collect continuous data on the temperature of the upper primary biofilter and the lower primary biofilter. The data from November 2012 through January 2014 are plotted below with the corresponding temperature data from the quarterly 3rd party biofilter evaluations plotted. The upper mesophilic limit identified in the Composting Handbook is also plotted for reference.




Upper Primary Biofitler Temperature (Deg F)
Temperature (Deg F)
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
10/18/12 12:00 AM
12/7/12 12:00 AM
1/26/13 12:00 AM
3/17/13 12:00 AM
5/6/13 12:00 AM
6/25/13 12:00 AM
8/14/13 12:00 AM
10/3/13 12:00 AM
11/22/13 12:00 AM
1/11/14 12:00 AM
3/2/14 12:00 AM
4/21/14 12:00 AM
Hourly Average Of Primary Upper Biofilter Temperature - Deg F
Air Temp F (3rd Party Audit)
Upper Mesophilic Limit

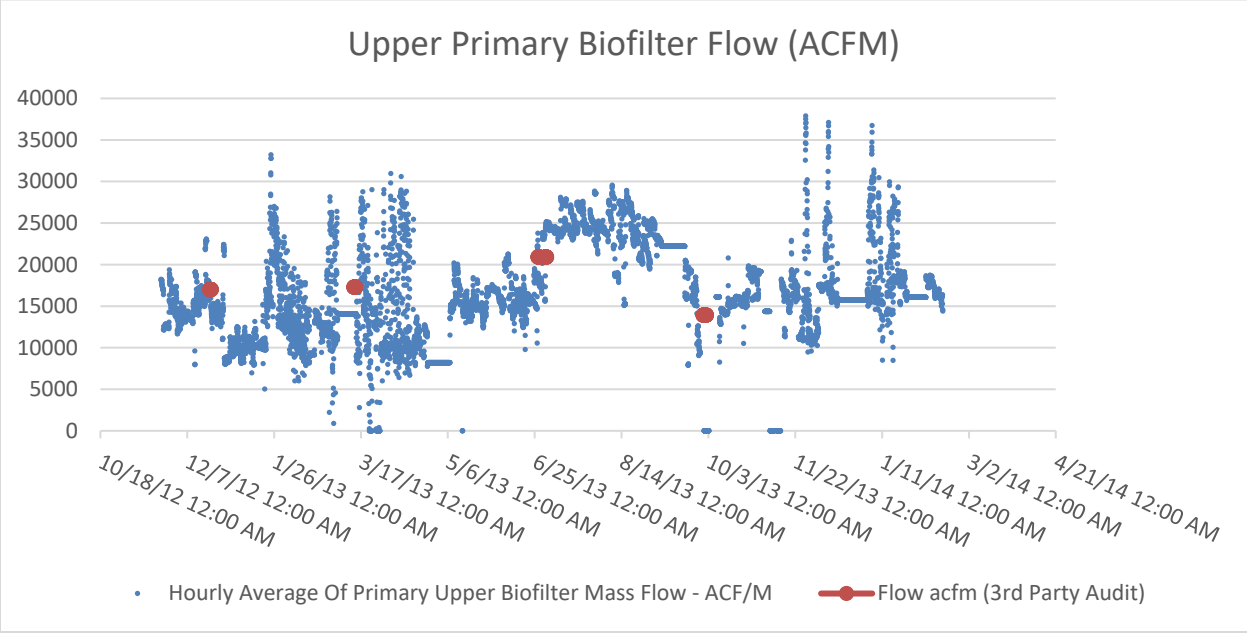

Time Series Quarterly Biofilter Temperature (deg F)
120
100
80
60
40
20
0
8/1/2019
10/1/2019
12/1/2019
2/1/2020
4/1/2020
6/1/2020
8/1/2020
10/1/2020
12/1/2020
2/1/2021
4/1/2021
6/1/2021
8/1/2021
10/1/2021
12/1/2021
2/1/2022
4/1/2022
6/1/2022
8/1/2022
10/1/2022
12/1/2022
2/1/2023
4/1/2023
6/1/2023
8/1/2023
Optimal Low
Acceptable Low
Acceptable High
Upper Primary
Lower Primary

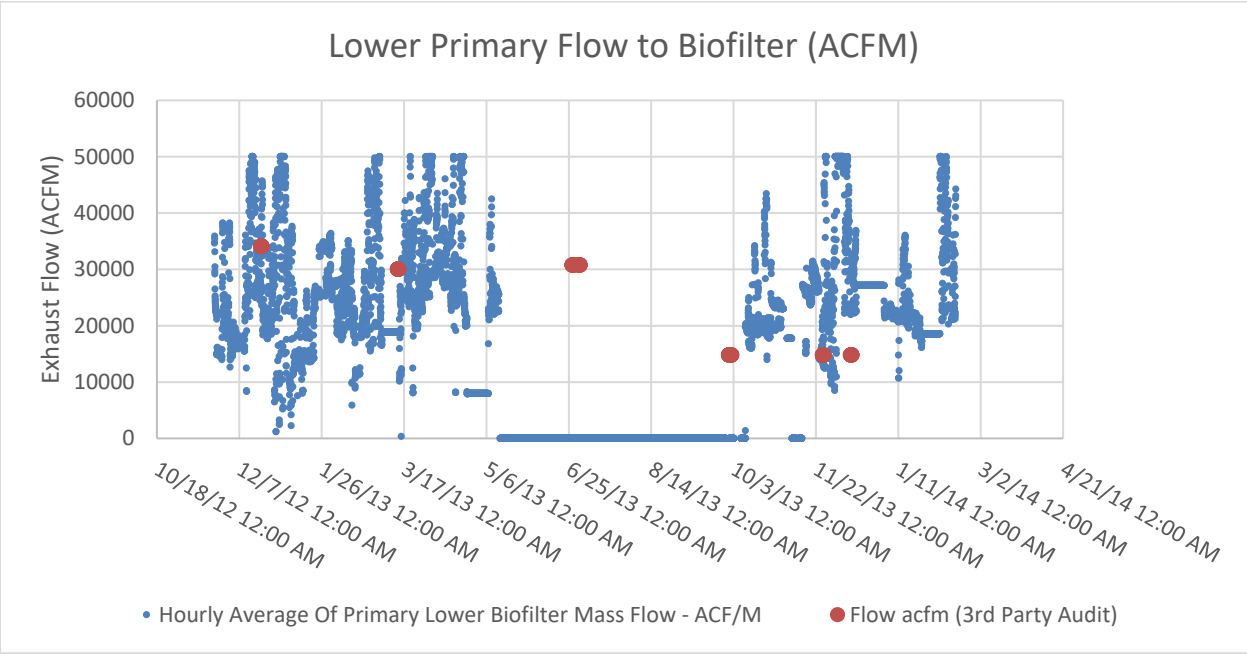
Continuous monitoring data shows biofilter temperature varying on an hourly time scale, with temperatures exceeding 110 degrees F often in the mid-day to afternoon period. The facility can adjust exhaust flow to introduce more fresh air to bring the temperature back into the mesophilic zone based on the readings of the continuous monitoring system. The upper and lower primary biofilters are handling the exhaust flow from the site's ASPs which can reach temperatures exceeding 150-170 degrees F during thermophilic phase. Given the short-term variation in temperature of exhaust routed to the biofilters, the available methods of corrective action and the impact of those temperature changes on maintaining mesophilic environment, the upper primary and lower primary biofilters will need to maintain temperature monitoring.

Continuous Monitoring of Primary Biofilter Flow

The historic continuous monitoring biofilter exhaust flow data from November 2012 through January 2014 is plotted with the corresponding measurements taken during the third-party quarterly evaluations during that period plotted alongside.

Tracking of the exhaust flow to the biofilter relates to the residence time in the biofilter and relates to the ventilation system fan settings as well as the status of which portions of the 6 zone primary ASP system are actively composting. Given the variability in flow associated with operations (e.g. adjusting ambient air fans to the ASPs for temperature control) and contingent on the periodic checks on biofilter residence time required during 3rd party evaluations discussed in Section III.B, PSCAA has determined that continuous flow monitoring on the primary biofilters will not be required moving forward.

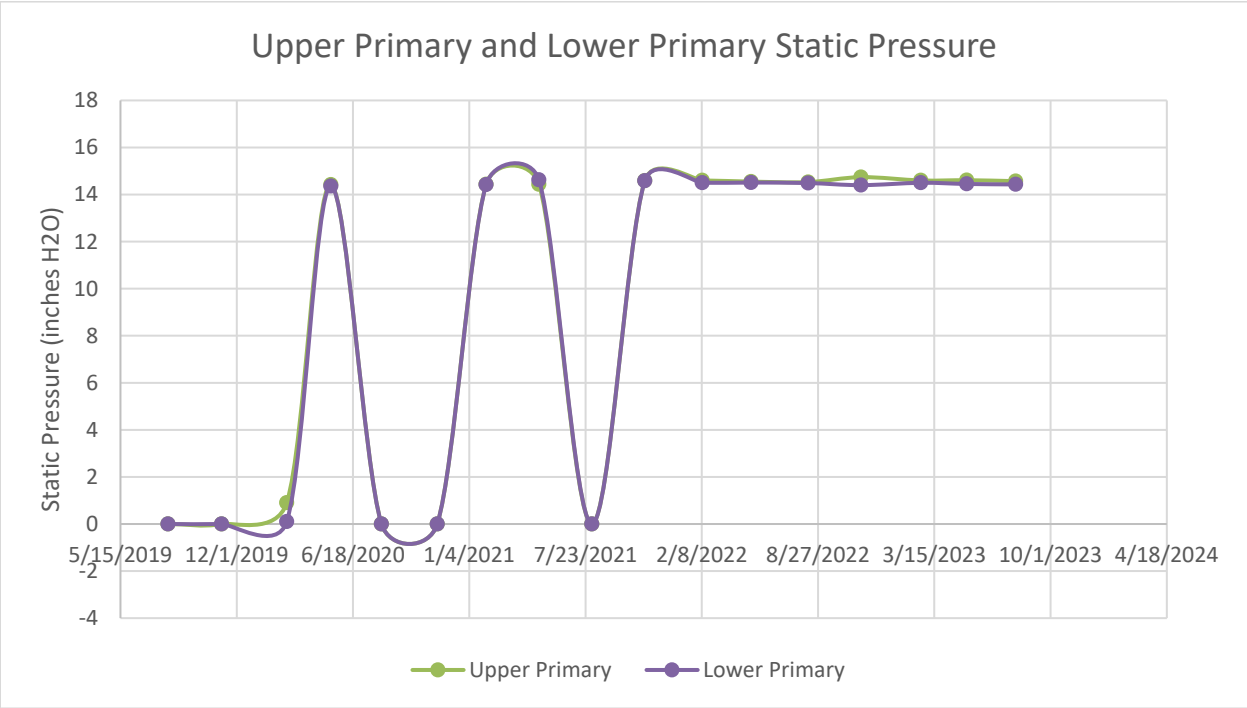




Flows will be collected during third-party evaluations.

Continuous Monitoring of Primary Biofilter Static Pressure

The continuous biofilter static pressure monitoring on the upper and lower primary ASPs that Cedar Grove Maple Valley reported in 2012-2014 showed that continuous monitoring of static pressure is not necessary for maintaining the biofilter media; periodic measurements are sufficient for identifying trends in the biofilter media and instigating corrective action (biofilter media replacement). The static pressure readings from the Upper and Lower Primary biofilters during quarterly evaluations from May 2019 through August 2023 are shown below. The large changes in static pressure correspond with media replacement on the lower primary biofilter in February and March of 2020 and upper primary biofilter media replacement in August 2020.



<u>The Agency's Determination: Continuous Monitoring</u>

Cedar Grove's request to terminate continuous monitoring of the velocity pressures, static pressures, exhaust flow is acceptable, as well as terminating continuous monitoring of temperature on the tipping building biofilter. The Agency has determined that monitoring static pressure and empty bed residence time (calculated from exhaust flow) during periodic 3rd party evaluations will monitor biofilter media aging and efficacy rather than through continuous readings of velocity pressures, static pressures and exhaust flow. This data considered alongside free air space (porosity) will allow for trends in media age to be captured. The tipping building biofilter temperature varies seasonally, and work practice standards will assist in mitigating reduced biofilter efficiency rather than limited options for corrective action which monitoring tipping building and grinding building temperature might inform. Cedar Grove will be required to continue monitoring biofilter temperature on the primary and secondary biofilters, as well as to install continuous temperature monitoring on the east and west biofilters.

Temperature will be required to be monitored hourly at the upper primary, lower primary, east secondary and west secondary biofilters, with corrective action taken if temperature readings fall outside of operational range.

B. Requested reduction in frequency of 3rd party evaluation and extension of evaluation report submittal deadline

Cedar Grove requested to modify Condition No. 9 of OA 10645 to reduce the 3rd Party biofilter and exhaust/capture system evaluations from quarterly to semiannually and to increase the time between

completion of the 3rd Party Evaluation and the deadline for submittal to the Agency from 30 days to 60 days.

The Agency determines that reduction of 3rd Party evaluations is acceptable with the establishment of acceptable operating ranges for measured parameters and required corrective actions and corrective action reporting for measurements out of range. The increase in the deadline submittal is also acceptable with the addition that a summary of corrective action must be included in the report.

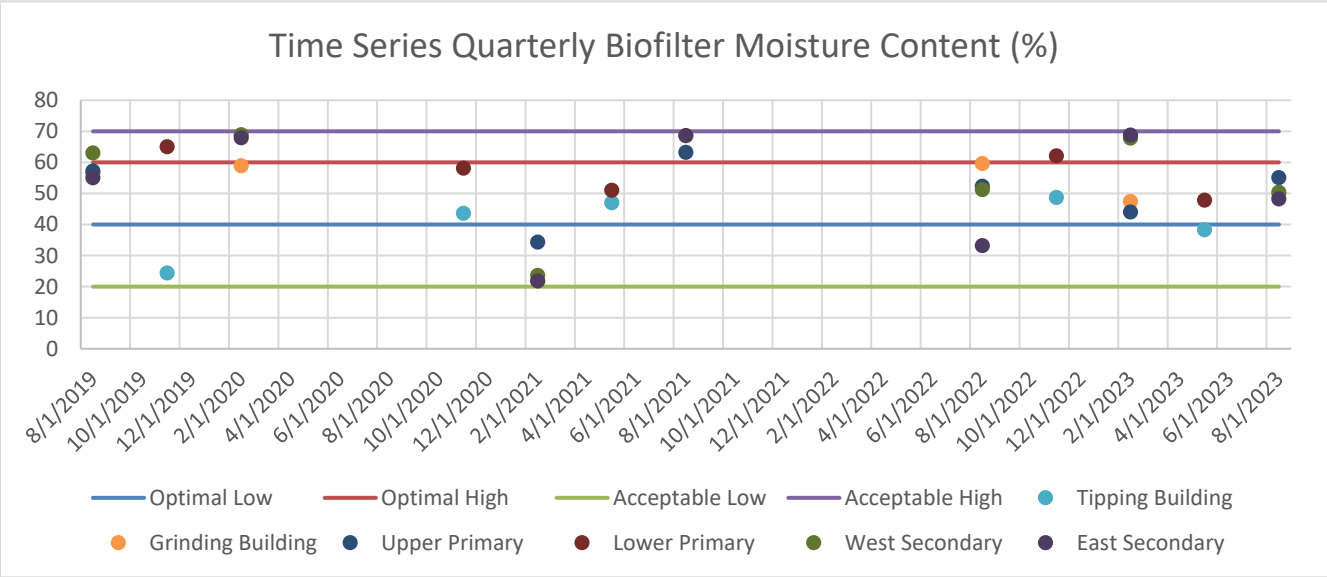
Condition No. 9 of OA No. 10645 states:

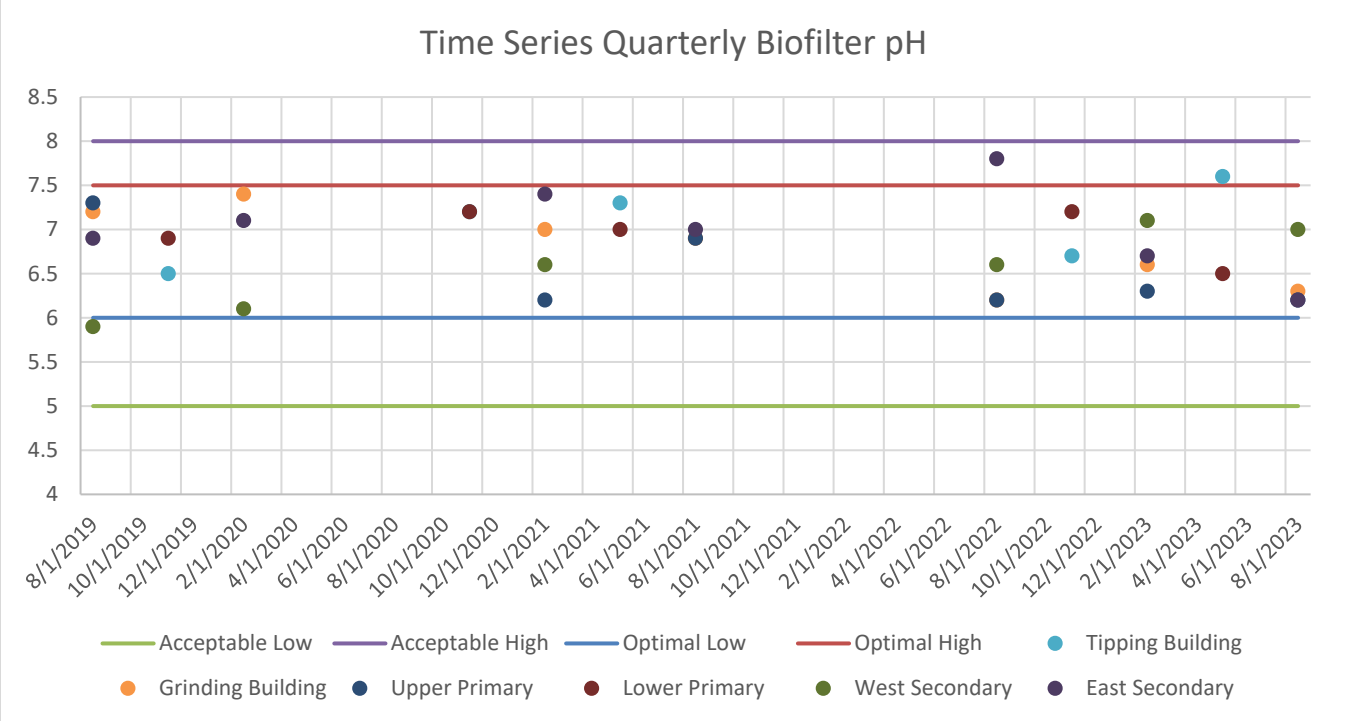
Cedar Grove shall have the operations of the tipping building, pre-processing/sorting and grinding building, zone 7 building and biofilters reviewed and evaluated by an independent third party quarterly. Each evaluation shall be no less than 75 calendar days since the last evaluation and no more than 105 calendar days since the last evaluation. A copy of the written evaluation report shall be submitted to the Agency no later than 30 days after the evaluation date. The purpose of this evaluation is to review the performance of the emission capture system for these buildings and the biofilter operation. The evaluation shall include, but is not limited to:

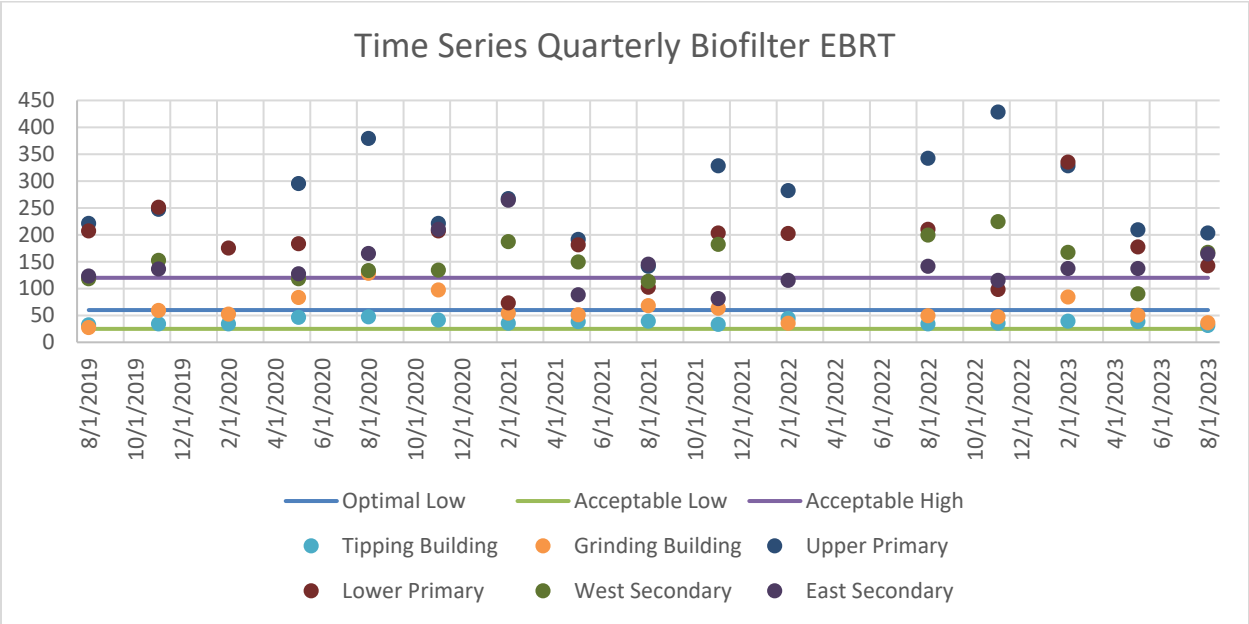
A. Operational condition and integrity of the exhaust/capture system
B. Operational condition and integrity of the biofiltration system
C. Adequacy and effectiveness of the system maintenance program and practices
D. Repair history and troubleshooting efforts
E. Recommendations for continuous improvement of the integrated system operation

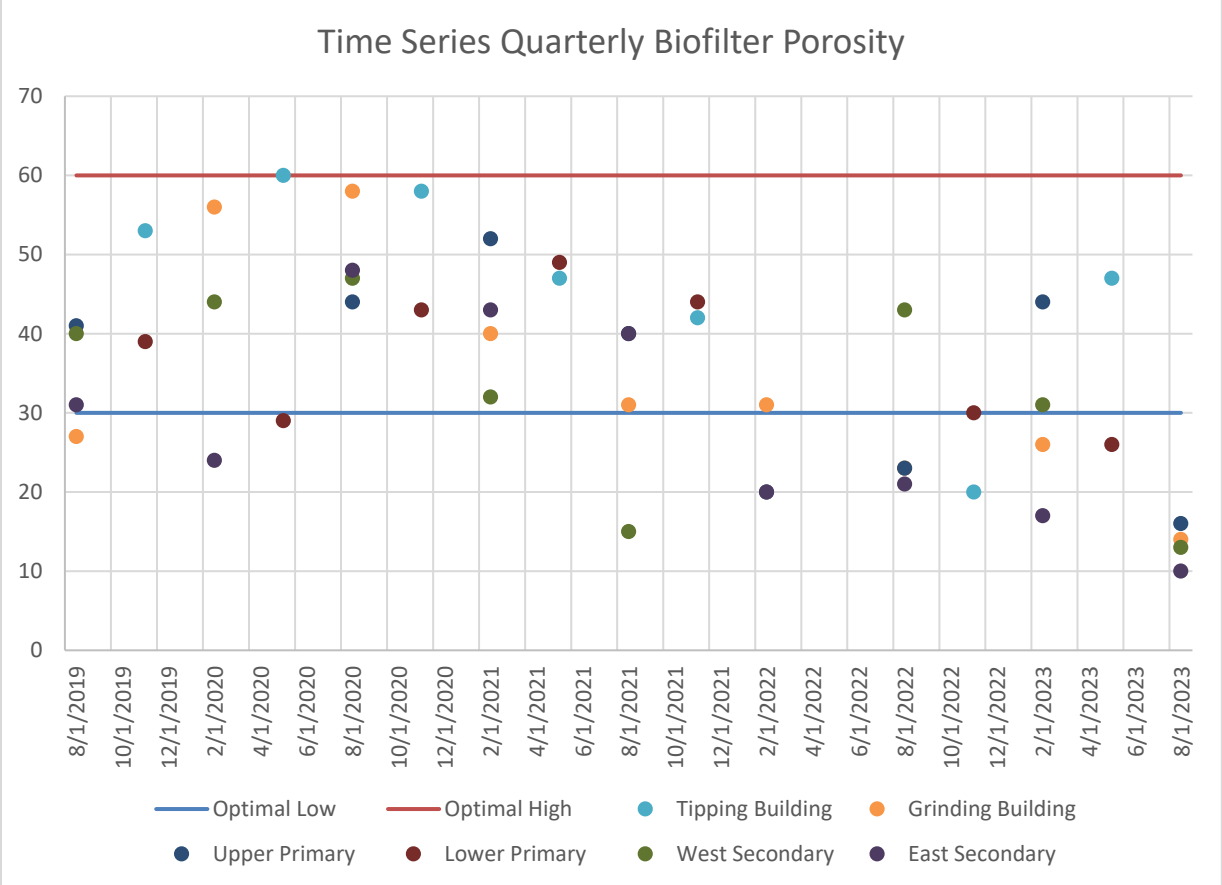
PSCAA reviewed historic quarterly evaluation reports for Cedar Grove to determine whether reduced frequency of 3rd Party Evaluations would meet the requirements of WAC 173-400-111(8) for modifications to an Order of Approval. The Agency evaluated quarterly evaluation reports from August 2019 through August 2023 at the facility and found the following overall trends. For assessing the historic reports, the optimal and acceptable ranges provided in the 3rd Party Evaluation are utilized informationally. Optimal and acceptable ranges for biofilter parameters to be set in Order of Approval 11573 are discussed further in this section:

1. One instance of ventilation/exhaust system structural failure occurred during the review period. Otherwise, capture system and ventilation performance evaluations did not vary evaluation to evaluation.
2. Visual indicators of biofilter maintenance consistently found scattered to significant vegetation growth on the biofilter, rodent holes, hot spots and channeling across each of the biofilters.
3. Porosity falling outside of the evaluation report's recommended and even acceptable ranges did not result in corrective actions to address low porosity.
4. pH consistently is within acceptable range and nearly always within optimal range during measurements.


Time Series Quarterly Biofilter Moisture Content (%)
80
70
60
50
40
30
20
10
0
8/1/2019
10/1/2019
12/1/2019
2/1/2020
4/1/2020
6/1/2020
8/1/2020
10/1/2020
12/1/2020
2/1/2021
4/1/2021
6/1/2021
8/1/2021
10/1/2021
12/1/2021
2/1/2022
4/1/2022
6/1/2022
8/1/2022
10/1/2022
12/1/2022
2/1/2023
4/1/2023
6/1/2023
8/1/2023
Optimal Low
Optimal High
Acceptable Low
Acceptable High
Tipping Building
Grinding Building
Upper Primary
Lower Primary
West Secondary
East Secondary


Time Series Quarterly Biofilter pH
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
8/1/2019
10/1/2019
12/1/2019
2/1/2020
4/1/2020
6/1/2020
8/1/2020
10/1/2020
12/1/2020
2/1/2021
4/1/2021
6/1/2021
8/1/2021
10/1/2021
12/1/2021
2/1/2022
4/1/2022
6/1/2022
8/1/2022
10/1/2022
12/1/2022
2/1/2023
4/1/2023
6/1/2023
8/1/2023
Acceptable Low
Acceptable High
Optimal Low
Optimal High
Tipping Building
Grinding Building
Upper Primary
Lower Primary
West Secondary
East Secondary


Time Series Quarterly Biofilter EBRT
450
400
350
300
250
200
150
100
50
0
8/1/2019
10/1/2019
12/1/2019
2/1/2020
4/1/2020
6/1/2020
8/1/2020
10/1/2020
12/1/2020
2/1/2021
4/1/2021
6/1/2021
8/1/2021
10/1/2021
12/1/2021
2/1/2022
4/1/2022
6/1/2022
8/1/2022
10/1/2022
12/1/2022
2/1/2023
4/1/2023
6/1/2023
8/1/2023
Optimal Low
Acceptable Low
Acceptable High
Tipping Building
Grinding Building
Upper Primary
Lower Primary
West Secondary
East Secondary


Time Series Quarterly Biofilter Porosity
70
60
50
40
30
20
10
0
8/1/2019
10/1/2019
12/1/2019
2/1/2020
4/1/2020
6/1/2020
8/1/2020
10/1/2020
12/1/2020
2/1/2021
4/1/2021
6/1/2021
8/1/2021
10/1/2021
12/1/2021
2/1/2022
4/1/2022
6/1/2022
8/1/2022
10/1/2022
12/1/2022
2/1/2023
4/1/2023
6/1/2023
8/1/2023
Optimal Low
Optimal High
Tipping Building
Grinding Building
Upper Primary
Lower Primary
West Secondary
East Secondary

Cedar Grove's request to change the performance evaluations frequency from quarterly to semiannually is acceptable. The Agency has determined through research and previous biofilter evaluations that biofilter conditions have not typically changed at a rate that would require quarterly evaluations; however, the historic evaluations have also shown that the facility has not initiated corrective action and addressed issues observed during quarterly evaluations including: channeling, hot spots, vegetation growth and low porosity. Thus, the granting of Cedar Grove's request to reduce the frequency of third party evaluations is conditional upon explicit requirements for initiation of corrective action and follow-up documentation of completed corrective action. Specifically, in order to reduce the frequency of biofilter monitoring, initiation and completion of corrective action to remedy visual issues will be required. Initiation of corrective action must be completed and reported as an addendum to the semiannual 3rd party biofilter evaluations at the time of submittal.

C. Acceptable Ranges for Biofilter Parameters

Based on past operation of the biofilters at Cedar Grove, reduced frequency in biofilter evaluation requires corrective action for parameters operating outside of acceptable ranges to mitigate reduced frequency of checks and ensure that the biofilters are maintained to control the Tipping Building, Grinding Building, Primary ASPs, Zone 7 ASP and Secondary ASPs. The acceptable ranges identified in the 3rd party evaluations are included informationally for those parameters listed in the 3rd party evaluation reports.

Table 2 Literature Review of Biofilter Operating Parameters

Parameter	Range	Source(s)
Temperature	20°C - 40°C (68°F-104°F)	Leson and Winer (2012)
	60°F-105°F	*Using Bioreactors to Control Air Pollution* prepared by US EPA Clean Air Technology Center September 2003
	50°F-108°F	Van Leith, Leson & Michelsen (2011)
	40°F-120°F	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022
	57°F-104°F	Third Party Audit Acceptable Range
Moisture Content	40%-60%	*Using Bioreactors to Control Air Pollution* prepared by US EPA Clean Air Technology Center September 2003
	40%-60%	Van Leith, Leson & Michelsen (2011)
	40%-60%	Leson and Winer (2012)
	<50%	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022
	20%-70%	Third Party Audit Acceptable Range
Free Air Space	50%	Frederickson (2013)
	40%-60%	Liu (2017)
	<30%	Third Party Audit Acceptable Range
Pressure Drop	Minimum: <0.2 inch w.c. per ft of depth Maximum: <0.8 inch w.c. per ft of depth	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022

Parameter	Range	Source(s)
Empty Bed Residence Time	45-60 second	Biosolids and Residuals Management Fact Sheet Odor Control in Biosolids Management US EPA September 2000
	10-60 second	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022
	15-60 second	Frederickson (2013)
	>25 seconds	Third Party Audit Acceptable Range
O_2 Content	>5-15%	Frederickson (2013)
pH	5-9	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022
	6.5-7.5	Van Leith, Leson & Michelsen (2011)
	6-8	Frederickson (2013)
	7-8	Leson and Winer (2012)
	5-8	Third Party Audit Acceptable Range

From the ranges identified in Table 2 above, the following ranges are selected for enforceable operating ranges triggering corrective action, along with the basis for the determination:

Table 3 Acceptable Ranges of Biofilter Operating Parameters

Parameter	Acceptable Range	Basis
Temperature	40°F-120°F	Use of widest range from literature review is acceptable in this case due to continuous monitoring of temperature on primary and secondary biofilters, allowing for real-time corrective actions.
Moisture Content	40%-60%	Most consistently recognized moisture content range in peer reviewed articles. Absence of upper limit in Composting Handbook could create issues with overwatered media reducing oxygen and increasing static pressure and potential for channeling.
Free Air Space	40%-60%	Most protective porosity range is needed to address biofilter media degradation for third party evaluations occurring at 6 month intervals.
Pressure Drop	<0.6 inch w.c. per ft of depth increase from baseline pressure drop	Table 12.3 Guidelines for Biofilter Operating Conditions, The Composting Handbook, 2022
Empty Bed Residence Time	>10 seconds	Residence time identified in literature reviews varies with the process exhaust being controlled. Use of the lower end residence time identified in The Composting Handbook focuses on compost exhaust specifically.
O_2 Content	>5%	Frederickson (2013)

pH	6-8	Across sources, there was consistent identification of pH close to 7 (neutral) for optimal bacterial operation. Given the frequency of checks, the medium range of 6-8 for triggered corrective action is selected.

The ranges identified in Table 3 are part of the updates to Condition Nos. 8 and 9 that appear in the redlined version of OA 10645 and the proposed OA 11573.

The Biofiltration background found in Section II also identifies the physical media used in the biofilter bed and maintaining that media bed to address physical media issues such as vegetation growth or uneven settling, and prevention of channeling. The updates to Condition No. 9 also require corrective action associated with the physical media based on visual checks.

D. Emission Estimates for Category A Requests

The Category A requests do not result in an increase in emissions.

E. Ambient Toxics Analysis for Category A Requests

The Category A requests do not result in an increase in emissions.

IV. CATEGORY B: CHANGE IN TIPPING BUILDING METHOD OF OPERATION

A. Requested modification to open second bay door on Tipping Building.

Cedar Grove requested to modify Condition No. 13 of OA 10645 to remove the requirement to keep the second bay door of the tipping building closed during grinding and has proposed installation of an odor neutralizing spray curtain for the bay door. This request is a change to work practice standards for feedstock receipt and storage with the potential to result in an increase in VOC, odor and PM emissions from the tipping building. The applicant requests to open up a two-truck doorway at the tipping building. The applicant has proposed use of an odor control device in the form of an atomized surfactant to neutralize odors released from a spray curtain on the open two-truck doorway for odor control associated with this change to work practice standard.

Cedar Grove's proposed No. 13 states:

> Cedar Grove shall continuously store and/or handle materials described in Condition No. 12 either inside the tipping building or pre-processing/sorting and grinding building, and not expose the material in any way to ambient air until after being processed in the preprocessing/sorting and grinding building. The odor curtain will be in operation when the tipping building truck access doors are in operation and feedstock material is in the building. Additionally, any other access door into the sorting building, excluding the connection tunnel with the operating grinder, shall remain closed at all times when grinding is taking place, except when delivery trucks are entering or exiting while grinding is taking place.

B. BACT Analysis for Tipping Building Change in Method of Operation

As described above in Sections I(A), the change in the method of operation of the tipping building is a modification subject to the requirements of WAC 173-400-111(8) and WAC 173-400-113 including but not limited to compliance with BACT. BACT is a case by case project specific analysis; in conducting a BACT review, the Agency may consider past BACT determinations by the Agency or other entities for the same or similar emission units or processes.

Several different technologies and work practice standards are utilized in practice at commercial composting facilities for emission control from received feedstock materials. The quantity of material received, type of material received, facility design and composting practices are factors affecting what emission controls for feedstock receiving constitute BACT.

1. BACT Review: Similar PSCAA Order of Approvals (OAs) Including Relevant BACT Analyses

NOC OA 12127 (issued 11/17/21) permitted a similar odor control device to the spray curtain proposed by Cedar Grove. NOC OA 12127 was for the working face of a landfill and required the following[6]:

- Operation of the odor control system at all times that cover soil on the working face of the landfill is removed
- Approval of a specific material for atomized application:
    - Confirmed application of material does not constitute masking or concealment;
    - Confirmed absence of any toxic air pollutants under WAC 173-460-150; and
    - Confirmed absence of any hazardous air pollutants specified in Section 112 of the Clean Air Act;

NOC OA 11753 (issued 3/13/22) included permitting of compost feedstock receiving and processing (tipping building) and required "using a designated tipping building for receiving material with a negative ventilation system to capture and route emissions to a biofilter… Based on the design of the tipping building and the ventilation system, the building is not expected to capture 100% of emissions from material being stored in the building. Therefore, as part of the BACT/RACT determination, Lenz will also be required to process all feedstock received by the end of the workday, except in the rare event of primary and back-up equipment failure. This work practice requirement is expected to reduce the potential for emissions from the tipping building."[7] In the event of primary and back-up equipment failure, the operator must store remaining material in the southeast corner of the tipping building with at least 12 inches of biofilter media coverage and maintain records pertaining to the feedstock remaining in the tipping building beyond the 12 hours of receipt or end of workday requirement (NOC 11753 Condition No. 12).

2. BACT Review: Other Regulatory Agencies

[6] 12127cjs pg 8-11
[7] 11753css-cjc-FINAL pg 20

California Air Districts

South Coast Air Quality Management District (SCAQMD) Rule 1133.2 and San Joaquin Air Pollution Control District (SJVAPCD) Rule 4565 and 4566 are composting facility-specific rules. The portions of these rules as they pertain to feedstock receiving are summarized below:

- SJVAPCD Rule 4565 requires mitigation measures depending on the facility's annual feedstock throughput. One Class 1 mitigation measure specifies: "Scrape or sweep, at least once a day, all areas where compostable material is mixed, screened, or stored such that no compostable material greater than 1" in height is visible in areas scraped or swept immediately after scraping or sweeping, except for compostable material in process piles or storage piles."

Washington Department of Ecology

WADOE Order 14AQ-C191[8] (issued 9/17/2019) included the following conditions pertaining to material receiving and stockpiling:

- All feedstock received at the site shall be mixed and placed into compost piles immediately upon tipping except for wood waste and yard debris with less than 10% food waste may be stockpiled on-site provided the stockpile does not emit significant odors and a cover of unscreened finished compost is applied to the stockpile at the end of each day with minimum cover thickness of 12 inches.
- No odor beyond the property boundary; permitting authority may require enclosure of feedstock or mixing operations.

3. Case by Case Analysis

Both the WADOE Order 14AQ-C191 and PSCAA OA 11753 include time limits on stockpiling material prior to composting. These requirements are consistent with industry best practices identified in The Composting Handbook Chapter 12 8.1. These work practices include:

- Mixing of materials off-site before delivery to the composting site (having amendments added at the point of collection)
- Process feedstocks promptly; Chapter 12 8.1 specifies that "highly degradable feedstocks, like food waste, should be processed, or at least covered, on the same day they are received."
- First in-first out handling for addition of oldest materials to piles before newer materials
- Directly incorporating odorous loads into active composting
- Amending odorous feedstocks with dry carbonaceous material which "generally checks odors for at least 24 hour, even without further processing" (Chapter 12 8.1) This can be achieved by blanketing odorous feedstocks with a biocover of dry amendment or compost,

[8] NOC 14AQ-C191 1R, issued 9-17-19 Condition Nos. 5.8-5.10, 5.19.3

mixing in the dry carbonaceous material, and/or unloading onto a bed of dry carbonaceous material

- Keeping the receiving floor and preprocessing area clean

In addition to work practices, enclosure of receiving and stockpiling areas as well as control of exhaust from those enclosures are utilized for odor control. In OA 11753, use of a designated tipping building (three sided enclosure, with roof) under negative ventilation to capture and route emissions to a biofilter was part of the odor BACT determination. WADOE Order 14AQ-C191 allowed for the permitting authority to require enclosure of feedstock or mixing operations for odor mitigation.

The last time the Cedar Grove Maple Valley tipping building, grinding building and tipping building extension were modified was in NOC OA 10645. The applicant submitted the following specifications of exhaust flow to meet a 4 air exchange/hr rate within the buildings:

TABLE 1
Airflow requirements

Biofiler	Volume (CF)	Airflow Req'd for 4 AC/HR	Existing Airflow CFM	New Airflow CFM	Increase in Airflow CFM
Tipping Building	515,000	34,300	14,000	34,300	20,300
Grinding Building	224,900	15,000	16,000	16,000	0
TOTAL	739,900	49,300	30,000	50,300	20,300

[9]

The 4 ACH building exhaust flow was cited as a general requirement from the National Fire Protection Association (NFPA) which is focused on fire prevention rather than contaminant capture. The EPA Performance Evaluation Guide for Large Flow Ventilation Systems, which is focused on the metallurgical industry, identifies a minimum of 20 ACH for building capture.[10] There are other examples of building enclosure for capture and odor control in different industries. For building air in a rendering plant (NOC 12348[11], issued June 6, 2024) monthly measurements to demonstrate negative ventilation of the building or demonstration of at least 15 ACH are proposed requirements for compliance demonstration for capture efficiency of building air routed to a control device. The applicant summarized airflow requirements, which differ slightly from Table 1 shown above from the NOC 10645 application, within Attachment 1 of the 2018 PSCAA Response to Questions on Ventilation System_20181109 memo, listing the actual air flows corresponding to 4 ACH within the tipping building, tipping building extension, and sorting building:

[9] Record 241320 pg 8 of 18 "Cedar Grove New Grinding Building Biofilter Collection System Details" dated February 6, 2014
[10] Section 3.1.4 of EPA Performance Evaluation Guide for Large Flow Ventilation Systems dated July 1984
[11] 12348ram_final condition No. 4.a.i

Building	Attachment 1 Air Volume/hr	Required ACFM for 4 ACH
Tipping Bldg (34,3500 ft^3)	1374000 ft^3/hr	22,900 acfm
Tipping Bldg Extension (171750 ft^3)	687000 ft^3/hr	11,450 acfm
Sorting/Grinding Bldg (221585 ft^3)	886340 ft^3/hr	14772 acfm

Cedar Grove is requesting to revise Condition No. 13 of OA 10645 by removing the language requiring the tipping/grinding building doors to remain closed while grinding is taking place. The proposal suggests that use of an odor curtain would replace that work practice standard of keeping the door shut and discusses use of odor curtains at transfer facilities as a similar application of the technology.

Consistent with the similar proposal for OA 12127, the proposed odor control system is evaluated to confirm the application material does not constitute masking or concealment, confirmed the absence of TAPs and HAPs for the material applied, and consider operational practices for the use of the odor control system.

The material proposed for application is OdorVore Air Treatment which consists of plant derived oils, plant extracted surfactants, amino sucroates and proprietary ingredients. The applicant provided an Odor Control Chemical Neutralizer Mechanism Summary Report detailing the chemical processes resulting in neutralization of odors. As described in the memo[12], OdorVore consists of surfactants and a terpene/terpnoid blend (essential oils) which are atomized into small aqueous droplets that are misted into the air. The droplets create a large surface area for the film of OdorVore material. Malodorous compounds are attracted to the droplets through electrostatic forces and where sorption, deprotonation or acid-base reactions occur, typically forming organic salts (new particulate emissions). While the specific reactions are unique to the odor neutralizing product applied, the memo details similar processes to the manufacturer information provided in support of NOC 12127: the essential oils are the surface for reaction and promote clustering to remove the compounds from the air. As with NOC 12127, a category of the reactions occurring is acidic odorous compounds reacting to form a salt compound in the water spray.

The applicant provided a memo dated December 5, 2022[13] which reviewed all WAC 173-460-150 toxic air pollutants and confirmed the absence of any of these species from the OdorVore product. The safety data sheet specifies no presence of hazardous materials.

The application of the OdorVore air treatment product proposed for the tipping building at Cedar Grove differs in several ways from the application of the odor spray reviewed under NOC 12127:
(1) The tipping building has capacity to route exhaust air to an emission control device and has enclosure whereas the working face of the landfill permitted in NOC OA 12127 is open air.
(2) Work practice standards (e.g. limitations on storage time in the tipping building) are available to mitigate odors associated with storage in the tipping building which are not practicable for the landfill where material is not transitory.

[12] WCG_Cedar Grove Compost Odor Control Chemical Neutralizer Mechanism Summary Report
[13] WCG_Cedar Grove Compost WAC 173-760-150 Ingredient Review

(3) The emissions produced associated with the technology reviewed in NOC OA 12127 explicitly did not form particulate emissions (the unit permitted under NOC OA 12127 "did not get hot enough to vaporize the surfactants so that they don't leave the system, and no particulate should be emitted"[14]). In contrast, the December 5, 2022 memo from Weaver Consultants Group "Odor Control Chemical Neutralizer Mechanism Summary Report" includes formation of particulate emissions. The memo specifies "gaseous acidic malodors are capable of ionizing in the droplet and will typically react by sorption, deprotonation, and acid-base reaction mechanisms by adding across a conjugated double bond the active ingredient [in Odorvore] and forming newly derivatized components such as organic salts…gaseous basic malodors react similarly…by forming non-odorous ammonium salts…" The odor curtain as proposed has the potential for additional particulate emissions associated with the odor neutralization.

The odor curtain as designed also may present challenges for the Odorvore achieving contact time with odorous material (volatiles and PM), which is necessary for the reactions reducing odor to occur. Application of atomized Odorvore at the building opening is not expected to consistently be drawn into the tipping building with the ventilation system as designed. As noted in the application for NOC 11573, 4 air exchanges per hour was proposed based on general requirements from the National Fire Protection Association and was the basis of the design when the ventilation system was reviewed. In the 2018 PSCAA Response to Questions on Ventilation System memo dated November 9, 2018, the response notes that "the tipping building did **not** have a design requirement that the ventilation system's pull or vacuum per minute "at or near" any opening tipping building bay door would exceed the natural ventilation rate to the outdoors".

4. Agency Determination of BACT for Change in Method of Operation

PSCAA agrees with allowing Cedar Grove's request for the tipping building truck access doors to be open contingent upon: the addition of work practice standards associated with tipping building material residence time and biofilter media cover; grinding building material residence time and biofilter media cover[15]; additional requirements for 5% opacity per EPA Method 9 from the building with the opening of the door near to the grinder; and verification of achieving the 4 ACH design flow in the tipping building, tipping building extension, and grinding buildings. PSCAA does not find the addition of the odor curtain as proposed by Cedar Grove to meet BACT for the changes in the method of operation of the tipping building.

The BACT finding for odor and associated VOC for the tipping building opening is the continued use of the negative ventilation of the building exhaust to the biofilter based on the design from NOC 10645, combined with the work practice standards of material residence time and biofilter media coverage, consistent with other enclosures not meeting 100% capture of materials. Cedar Grove provided additional information regarding tipping building operation (discussed in Section XIII) to request that the biofilter cover requirement be limited to feedstock pile surface accessible by front loader. Given that feedstock piles can exceed the front loader maximum reach of 14 feet, this modification potentially renders the biofilter cover a partial cover of feedstock material remaining in

[14] NOC Worksheet 12127 Section G (pg 11)
[15] The biofilter media cover is specified to be at least 95% woody substrate based on industry guidance in Chapter 12 Section 10.8.1 of The Composting Handbook.

the tipping and grinding buildings longer than 24 hours. To mitigate potential reduced coverage, the second bay of the tipping building door will also need to remain closed if any material is present in the tipping building or grinding building that has been on-site for more than 24 hours. Verification of air flows will also be required to ensure that the tipping building, tipping building extension, and grinding building are each achieving the design 4 ACH. Given the proximity of the second open door to the grinding activities, a 5% opacity limit per EPA Method 9 outside of the tipping building and grinding building will be required. The grinding activities are further discussed in the Grinder Review section below.

Consistent with the update to the tipping building openings, the compliance demonstration for the tipping building and grinding building is also within this NOC review. The change in compliance demonstration due to the opening of the Tipping Building bay doors obviates Cedar Grove's request for smoke test procedure modifications.

The tipping building and extension, as well as grinding building are currently permitted under NOC OA 10645 to store all feed stocks except for stumps, brush and clean wood "under negative ventilation until processed and placed on a composting system". Condition No. 14 of NOC 10645 specifies that "Emissions from the tipping building and pre-processing, sorting and grinding building shall be captured and passed through the biofilter. Compliance with this requirement shall be determined by the observation of no visible emissions from any open building face during the release of test smoke or other methods specified in an Agency approved test plan." Condition No. 14 originated in NOC 10052 issued December 22, 2010 and the basis of this condition is the Settlement Agreement Section IV. Paragraph A #3 and E #19-22[16].

The currently approved test procedures for the smoke test originate from the 7-15-13 document attached in the "Modified smoke test procedure- request for re-test" email sent by PSCAA Inspector Manager Rick Hess on 7/15/13[17].

Cedar Grove has proposed modifying the compliance demonstration frequency and methodology outlined in Condition No. 14 of NOC OA 10645 along with the approved test procedure for the smoke test from July 15, 2013.

The opening of the tipping building without associated changes to ventilation is anticipated to reduce capture efficiency in both the tipping building and the grinding building. The July 15, 2013 smoke test procedure is designed to be a test of 100% capture efficiency, which is not the BACT limit proposed with this review. Historic operation of the tipping building and grinding building reflects that neither building meets 100% capture efficiency due to the ventilation design.

Ongoing compliance demonstrations for the capture efficiency and performance of the building ventilation system will focus on parameters that may change or degrade with time, including the tipping building and grinding building biofilter evaluations, ductwork condition, and airflow to the tipping and grinding biofilters. The use of smoke as a visual check to follow building air flow is not proposed for ongoing compliance moving forward. Air flow measurements are anticipated to

[16] 2012-01-25 - 11-2-27192-7 SEA Settlement Agreement (002)
[17] Cedar Grove MV modified smoke test procedure 7-15-13.

provide more quantitative information about changes to back-pressure created by the biofilter degradation and inform any applicable corrective action.

Ongoing compliance demonstration for the addition of material retention time limits and biofilter media coverage of stored material will require daily inspection and associated records to document the residence time of material in the tipping building and grinding building (an existing requirement in Condition No. 16) and the application of biofilter media, as applicable.

Cedar Grove proposes updating Condition No. 14 as follows:

> "Emissions from the tipping building, and the pre-processing, sorting, and grinding building, shall be captured and passed through the biofilter. Compliance with this requirement shall be determined by observation of the smoke test in Condition No. X and by measuring the airflow to the tipping and sorting biofilter to determine if the airflow is greater than four air exchanges per hour."

Given the removal of the smoke test condition, PSCAA updates Condition No. 14 only pertaining to the ventilation flow measurements.

Condition No. 15 previously discussed the quarterly smoke testing. The contents of the condition are no longer needed and Condition No. 15 will be referred to as [RESERVED] in the OA.

PSCAA updates Condition No. 16 to track the application of biofilter media coverage to material in the tipping building or the grinding building for longer than 24 hours.

C. Requested modification to smoke test compliance determination and frequency

Cedar Grove requested a change in the compliance determination of OA 10645 Condition No. 14 from the observation of no visible emissions during release of test smoke or other method specified in an Agency approved test plan to a modified smoke test procedure of confirming test smoke placed in front of the building fan is passing through the biofilter and measuring airflow to be greater than 4 air changes per hour.

Cedar Grove also requested a change in frequency of smoke tests of OA 10645 Condition No. 15 from quarterly to semiannual.

The review of the change in method of operation of the Tipping Building and associated decreased capture efficiency resulted in a new BACT determination requiring work practice standards for covering material remaining in the tipping building and grinding building for longer than 24 hours with biofilter media; a 5% opacity limit on the doors to the tipping building and grinding building; and a compliance demonstration to check for ventilation airflows operating as specified in the application materials for NOC 10645 (4 air changes), as discussed in the BACT Analysis for Tipping Building Change in Method of Operation section above. With the updated compliance demonstration, the smoke test is no longer required, such that the proposed changes to the smoke test procedure and changes in frequency of smoke test no longer apply for proposed OA 11573.

D. Emissions Estimates for Category B Requests

The change in method of operation of the tipping building to open both bay doors results in a more open tipping building with less ventilation capture and has potential to increase PM, VOC and odor emissions. Those increases are calculated as follows:

The EPA Performance Evaluation Guide for Large Flow Ventilation Systems, which is focused on the metallurgical industry, identifies a minimum of 20 ACH for building capture.

Since the tipping building at Cedar Grove Maple Valley was designed with 4 ACH, without the addition of open doors proposed under this review, 20% of emissions are treated as enclosed and routed to a biofilter, and the remaining 80% of emissions are treated as uncontrolled. The emission increase is associated with the reduction in capture efficiency of the building to route exhaust to the biofilter. This reduction is estimated to be about a quarter of the emissions previously routed to the biofilter which would now instead be released out of the building; the opening of the bay doors is estimated to increase the total building openings by about 25%. Utilizing the 2018 PSCAA Compost VOC emission factors for stockpiling and the throughput of stockpiled material established in PCHB decision record 19-014 , the total emissions estimated from the operational change to the tipping and grinding building are as follows. The increased emissions exiting the tipping building are estimated utilizing the PSCAA Compost Emission Factors- Volatile Organic Compounds last updated 5/31/2018.[18] An enclosed stockpile utilizes an emission factor of 0.11 lb VOC/wet ton/day and specifies that "enclosed stockpile is full tipping building under negative air to biofilter. Presumes a well-designed biofilter with close to 100% control and most emissions being lost from building openings prior to biofilter." The use of the stockpile emission factor of 1.1 lb VOC/wet ton/day is utilized for the estimated emissions not routed to the biofilter.:

$$0.2 \times 0.25 \times \frac{1.1\ lb\ VOC}{wet\ ton/day} \times 1\ day\ residence\ time \times \frac{304150\ ton}{yr} \times \frac{1\ ton\ VOC}{2000\ lb\ VOC} = 8.36\ TPY$$

Actual emissions based on the monthly throughputs reported to Seattle King County Department of Health from June 2023 – May 2024 were calculated at:

$$0.2 \times 0.25 \times \frac{1.1\ lb\ VOC}{wet\ ton/day} \times 1\ day\ residence\ time \times \frac{192{,}118\ ton}{yr} \times \frac{1\ ton\ VOC}{2000\ lb\ VOC} = 5.28\ TPY$$

A similar approach was utilized for ammonia emissions estimates for both potential emissions (304,150 ton/yr throughput) and actual June 2023-May 2024 reported throughput:

[18] Final Report- Compost VOC EF, updated 5/31/2018 by Brian Renninger. The 2018 PSCAA VOC emission factors are derived from San Joaquin Valley Air Pollution Control District (SJVAPCD) *Compost Emission Factors* September 2010. These factors were utilized by PSCAA in permitting of expansion of a commercial composting facility, Lenz Enterprises, under OA 17753 issued March 13, 2022 and the same SJVAPCD VOC emission factors were utilized by WA Department of Ecology for review of NOC 14-AQ-C191 issued September 17, 2019 for another commercial composting facility.

$$0.25 \times 0.2 \times \frac{0.0968\ lb\ ammonia}{wet\ ton/day} \times 1\ day\ residence\ time \times \frac{304150\ ton}{yr} \times \frac{1\ ton\ ammonia}{2000\ lb\ ammonia}$$
$$= 0.74\ TPY$$

$$0.25 \times 0.2 \times \frac{0.0968\ lb\ ammonia}{wet\ ton/day} \times 1\ day\ residence\ time \times \frac{192{,}118\ ton}{yr} \times \frac{1\ ton\ ammonia}{2000\ lb\ ammonia}$$
$$= 0.46\ TPY$$

E. Ambient Toxics Impact Analysis for Category B Requests

Existing methods to quantify TAPs from composting processes calculate emissions on the active composting piles rather than stockpiled materials. The modification of the tipping building operating method to more open doors, though mitigated with the application of biofiltration media to stockpiles, has potential to release more VOC to the ambient air, a subset of which can be expected to include some volatile TAP. Methanol and acetaldehyde emissions are estimated by multiplying VOC emissions by the weight percentage from EPA's SPECIATE tool for composting (12.79% for methanol and 0.14% for acetaldehyde). Ammonia is also calculated following the emission factors utilized in NOC 11753.

Ammonia (below SQER of 94.15 lb/24 hour)

$$0.25 \times 0.2 \times \frac{0.0968\ lb\ ammonia}{wet\ ton/day} \times 1\ day\ residence\ time \times \frac{304150\ ton}{yr} \times \frac{1\ yr}{365\ days}$$
$$= 4.03\ lb/day$$

Methanol (below SQER of 1500 lb/24 hour)

$$0.25 \times 0.2 \times \frac{1.1\ lb\ VOC}{wet\ ton/day} \times 1\ day\ \times \frac{304150\ ton}{yr} \times \frac{1\ yr}{365\ days} \times \frac{12.79\ lb\ methanol}{100\ lb\ VOC}$$
$$= 5.86\ lb/day$$

Acetaldehyde (below SQER of 94.71 lb/yr)

$$0.25 \times 0.2 \times \frac{1.1\ lb\ VOC}{wet\ ton/day} \times 1\ day\ \times \frac{304150\ ton}{yr} \times \frac{0.14\ lb\ acetaldehyde}{100\ lb\ VOC} = 23.42\ lb/yr$$

V. CATEGORY C: GRINDER NEW SOURCE REVIEW

A. Grinder replacement

A PSCAA inspection identified a new grinder during the July 12, 2023 on-site inspection and NOC application 11573 was updated to include review of this grinder. This review falls into Category C: Review of a replacement grinder in the existing Grinding Building. Review of the replacement grinder

under proposed Order of Approval 11573 corrects non-compliance with PSCAA Regulation I 6.03 to receive an Order of Approval for new sources of air emissions prior to installation and operation. Figure 7 below shows an example of the grinding equipment used at the facility, though the installation of the grinder at Cedar Grove is within the Grinding Building and not outdoors.

Figure 7 Example of DZH7000 Series Grinder[19]

As discussed in the Facility section within Section II, the grinder combines the feedstocks and grinds them down to specified size before the feedstocks are placed into ASPs.

B. BACT Analysis for grinder replacement

1. <u>BACT Review: Similar PSCAA Order of Approvals (OAs) Including Relevant BACT Analyses</u>

PSCAA has permitted several other grinding units at compost facilities:

NOC OA 12186 permitted a 1,500 wet ton/yr yard waste composting facility and specified PM BACT for material handling: No fugitive dust (visible) emissions at any time, including but not limited to grinding and screening operations. OA 12186 specified corrective action is to be taken immediately upon observation and utilized work practice standards such as hydration of materials prior to being ground, screened or blended.

Given the smaller size of the operation, as well as the use of the grinder for only stumps, brush, and wood, the PM BACT for OA 12186 on the grinder did not require enclosure, whereas the tipping and grinding building activities are required to be conducted inside the building at the Cedar Grove facility, already required in OA 10645 Condition No. 13.

NOC OA 11911 includes the Cedar Grove Everett wood waste grinders which are located outdoors. The Everett wood waste grinders are used only for grinding stumps, brush, finished compost and clean wood. The wood waste grinders must not exceed 10% opacity for any air contaminant for a period or

[19] Image sourced from the Diamond Z manufacturer website: DZH7000 Horizontal Grinder - USA-Made - Diamond Z

periods aggregating more than 3 minutes in any 1 hour from the outdoor grinders and screening equipment as measured by WDOE Method 9A.

The Cedar Grove Everett grinder which grinds and mixes feedstocks, similar to the Maple Valley grinder, has a total enclosure with design flow resulting in 8 ACH.[20] The grinder is required to be fully enclosed with all activities captured and passed through the associated biofilter. Doors to the grinding building are to remain closed at all times during grinding.

OA 11753 reviewed "BACT/RACT for feedstock receiving and processing will be achieved using a designated tipping building for receiving material with a negative ventilation system to capture and route emissions to a biofilter. Additionally, mixing and grinding of material must occur within the tipping building except for bulking agents which are added outside the tipping building... Based on the design of the tipping building and the ventilation system, the building is not expected to capture 100% of emissions from material being stored in the building. Therefore, as part of the BACT/RACT determination, Lenz will also be required to process all feedstock received by the end of the workday, except in the rare event of primary and back-up equipment failure. This work practice requirement is expected to reduce the potential for emissions from the tipping building."

2. Case by Case Analysis

Given the modification to the tipping building truck access doors and the prior BACT determination requiring that the door closest to the grinder remain closed during grinding, the grinder is not fully enclosed and is most similar to the tipping building mixing operations of OA 11753.

3. Agency Determination of BACT for Replacement Grinder

BACT for the feedstock mixing and processing with the replacement grinder is continued operation within the grinding building. The Category B changes to Tipping Building method of operation visible emission limit of 5% opacity per EPA Method 9 are part of the BACT determination for the change in method of operation, and would apply to emissions generated by the grinder whether or not the grinder had been replaced and subject to new source review.

C. Emissions Estimates for Category C Grinder New Source Review

Grinder PM emissions are estimated utilizing the maximum potential material throughput established in PCHB decision record 19-014 and the AP-42 Aggregate Handling and Storage Piles equation (1):

$$E\left(\frac{lb}{ton}\right) = k(0.0032)\frac{(\frac{U}{2.2})^{1.3}}{(\frac{M}{2})^{1.4}}$$

Where:

K = Particle size multiplier (0.35 for PM_{10} and 0.053 for $PM_{2.5}$)

U= Mean wind speed (mph), 1.5, the upper limit of wind speed range specified by AP-42 Equation (1)

[20] April 26, 2012 email from Jerry Barlett to Steve Van Slyke provides building dimensions 25'x25'x27'

M= Material moisture content (%), utilized the upper end high of 4.8%, given the average cover moisture content (12.5%), identified in AP-42 Table 13.2.4-1 for cover at municipal solid waste landfills

PM_{10}:

$$0.35(0.0032)\frac{\frac{1.5}{2.2}^{1.3}}{\frac{4.8}{2}^{1.4}}\frac{lb}{ton}\times\frac{304150\ ton}{yr}=60.8\ \frac{lb}{yr}$$

$PM_{2.5}$:

$$0.053(0.0032)\frac{\frac{1.5}{2.2}^{1.3}}{\frac{4.8}{2}^{1.4}}\frac{lb}{ton}\times\frac{304150\ ton}{yr}=9.2\ \frac{lb}{yr}$$

The grinding is also anticipated to be a source of VOC and odor emissions given the feedstocks processed. There is not a specific emission factor for VOC emissions associated with grinding; a subset of the total VOC emissions associated with stockpiling (as estimated in the Emissions Estimates for Category B Requests section of this worksheet) encompasses these emissions.

D. Ambient Toxics Impact Analysis for Grinder replacement

As with VOC and odor, a subset of the total air toxics calculated in the Ambient Toxics Impact Analysis for Category B Requests section of the worksheet would be emitted from the grinding and feedstock mixing occurring in the grinder.

VI. STATE ENVIONRMENTAL POLICY ACT (SEPA) REVIEW

State Environmental Policy Act (SEPA) review was conducted in accordance with Agency Regulation I, Article 2. The SEPA review is undertaken to identify and help government decision-makers, applicants, and the public to understand how a project will affect the environment. A review under SEPA is required for projects that are not categorically exempt in WAC 197-11-800 through WAC 197-11-890. A new source review action which requires a NOC application submittal to the Agency is not categorically exempt.

The project proposal under this SEPA review is comprised of modifications to biofilter monitoring (Category A requests), change in the tipping building method of operation (Category B requests), and the replacement grinder (Category C requests.) The SEPA review considered Cedar Grove's application materials, all the documents and references cited herein and the following documents:

- MDNS for NOC 7638
- Cedar Grove's amended SEPA checklist (July 12, 2023) and its SEPA Checklist (3/23/2018)
- Cedar Grove's SEPA checklist for NOC OOA 10645
- DNS for NOC 8213

Modification of the biofilter monitoring MDNS issued 10/13/1999 for NOC 7638 included review of the primary biofiltration system, the secondary biofiltration system and the biofilter for the tipping building. The mitigation conditions created pursuant to prior SEPA review were first included in NOC OOA 7638

Condition No. 6. The content of Condition No. 6 was maintained in: NOC OOA 10052, NOC OOA 10456 and NOC OOA 10645 and will be maintained in the issuance of proposed NOC OOA 11573. MDNS 7638 is incorporated by reference for this SEPA determination. Additionally, NOC OOA 8213 reviewed expansion of Zone 7 enclosed composting area along with modification of the West Secondary biofilter for control of emissions from Zone 7. Given that DNS 8213 reviewed changes to the West Secondary biofilter, DNS 8213, issued 7/31/2000, is also incorporated by reference for this proposal.

The change in tipping building method of operation (Category B requests) reviews operation with the tipping building's second bay door open, while the previous SEPA reviews were of the tipping building operating with the second bay door closed. The applicant submitted an amended SEPA checklist by email July 12, 2023. The applicant's checklist identifies odor curtain installation, however, PSCAA's review did not determine the odor curtain installation to be BACT for the opening of the second bay door of the tipping building, as discussed in the BACT Analysis for Tipping Building Change in Method of Operation section of this worksheet. The applicant's checklist does not consider the modification to increase any air emissions; the Agency does not agree with this assertion and included an emission increase associated with opening the bay doors of the tipping building within its review of the proposal. The noise section of the SEPA checklist from the applicant incorrectly refers to a digester system, which is not proposed under NOC 11573. The noise section of the SEPA checklist does include discussion of hours of activity which apply to the proposed modification to the tipping building, specifically the 7AM – 10PM feedstock and composting handling machinery operation. Feedstock processing was historically reviewed under MDNS for NOC OOA 7638 (adopted by reference for this SEPA determination), however there is potential for a small increase in noise associated with opening the tipping building bay door nearest the grinding building. The site must comply with the applicable noise guidelines and requirements established by King County for unincorporated areas. The applicant notes that noise surveying conducted in 2015 were within the rural standard.

NOC Permit
Modification Request-

King County was consulted for comments by email October 12, 2023 and no response was received.

This proposal would modify the bay doors on the existing tipping building at the facility and replace an existing grinder in the grinding building. There are no associated construction changes. The proposal has the potential to increase odor emissions from the tipping building by reducing the capture efficiency, which the proposed conditions of this Notice of Construction OA mitigate through work practice standards for maximum material storage times, biofilter covering of stockpiled material and operation of the grinder within the grinding building. The emissions from the replacement grinding activities are a subset of the emissions associated with the tipping building and grinding building operation. The work practice standards which mitigate overall operation of the tipping building and grinding building also mitigate operation of the replacement grinder due to the location of the replacement grinder within the grinding building connected to the tipping building. Based upon these conditions and the analysis herein, a Determination of Non-Significance (DNS) for air emissions is appropriate.

Other than air emissions (VOCs and odors) and noise discussed above and the water-related impacts conditioned in Condition No. 4 of OA 10645 (originally Condition No. 6 of OA 7638) being retained herein, no other elements of the environment will be impacted by this project.

Additionally, based on the proposed action and the information in the checklists, the project will not: adversely affect environmentally sensitive or special areas, or endangered or threatened species; conflict with local, state, or federal laws or requirements for the protection of the environment, or establish a precedent for future actions with significant effects. Thus, this proposal is not likely to have a probable significant adverse environmental impact, and PSCAA will be issuing of a DNS with public comment concurrent with the public comment period for the proposed OA for this Notice of Construction application.

VII. TRIBAL CONSULTATION

Initial application submittal predates the Agency's Interim Tribal Consultation Policy as adopted by the Board on November 21, 2019, however this project (Category A requests, Category B requests, and Category C grinder review) does not meet any of the criteria for consultation listed in Section II.A of the Agency's Interim Tribal Consultation Policy.

VIII. FACILITY-WIDE EMISSIONS ESIMATES

The grinder installation does not result in an increase of facility-wide emissions, as the grinder is replacing a previously utilized grinder. The incremental facility-wide emission increase due to the work practice standard changes on the tipping building and grinding building is estimated in the Emissions Estimates for Category B Requests section of this worksheet.

IX. OPERATING PERMIT OR PSD

This NOC review is focused on the proposed changes described above and facility-wide emissions are indeterminate at this time. Compost emission studies from Washington State University and the Washington State Department of Ecology are ongoing. Compost facility site-wide emissions may be re-evaluated based on updated factors in the future.

X. NOC FEES AND ANNUAL REGISTRATION FEES

NOC Fees:

Fees have been assessed in accordance with the fee schedule in Regulation I, Section 6.04. All fees must be paid prior to issuance of the final Order of Approval

Fee Description	Cost	Amount Received (Date)
Filing Fee	$ 1,150	
Equipment (tipping building, grinding building, odor spray curtain, biofilters)	$2,400	
SEPA	$800	
Public Notice	$700	
Public Hearing	$2,500	
Filing received		$1,150 (3/28/2018)
Additional fee received		$3,900 (6/13/23)
Total		**$5,050**

*Publication fees to be assessed following 30 day public comment period. Public Hearing fees to be assessed following the 30 day public comment period.

Registration Fees:

Registration fees are assessed to the facility on an annual basis. Fees are assessed in accordance with Regulation I, Section 5.07. The changes proposed under this NOC 11573 do not affect registration fees. The 2023 invoice for registration fees is included below.

Invoice for Year 2023 Registration Fees

Bill To:
Cedar Grove Compost Co **7343 E Marginal Way S** **Seattle, WA 98108** **Attention: Accounts Payable**

Invoice Date:	Invoice #:
November 19, 2022	20230142
Due Date:	**Terms:**
January 03, 2023	Net 45 Days
Facility ID (Registration #):	
25994	

Site Address: ***Cedar Grove Compost Co***
17825 Cedar Grove Rd, Maple Valley, WA 98038

The annual registration fee is required by Washington State law and Puget Sound Clean Air Agency's Regulation I.

Facility Fees and Applicable Regulations	Charges
Base Fee for Registered Sources. Reg I, 5.07(c)	$ 1,150.00
Reg I, 5.03(a)(1) - Facilities subject to federal emission standards (Title 40 CFR) Reg I, 5.03(a)(5) - Facilities with gas or odor control equipment (>= 200 cfm) Reg I, 5.03(a)(8)(D) - Facilities with commercial composting operations	
Additional Fees:	
Reg I, 5.07(c)(1) - 40 CFR 63 Subpart ZZZZ	$ 2,100.00
Reg I, 5.07(c)(6) - Facilities with composting operations (>= 100,000 tons/yr)	$ 23,000.00
	$ 26,250.00
Fee Totals	
TOTAL REGISTRATION FEE	**$ 26,250.00**
The Total Registration Fee is due by January 03, 2023. If unpaid after January 03, 2023, the facility may be subject to enforcement action with civil penalties (Reg I, 5.07(b)).	

XI. PSCAA DATABASE INFORMATION

New NSPS due to this NOCOA?	**No**
New NESHAP due to this NOCOA?	**No**
New Synthetic Minor due to this NOCOA?	**No**

The Category A and B requests are not assocaited with changes to equipment and no changes to PSCAA database are made. The Category C review with updated grinder information is shown below:

Reg: 25994 - Cedar Grove Compost Co Item #: 8
Code: ɔment (buffer, die, drill, grinder, lathe, mill, molder, polisher, planer, router, sander, saw, shear)
Year Installed: 2022 Units Installed: 1 Rated Capacity: 175 Units: Ton/Hr
Primary Fuel: Standby Fuel:
NC/Notification #: 11573 NOC Not Required? (b)(10) Exemption?
Removed?
Operating Requirements:
Comments: Diamond Z 7000 horizontal grinder in grinding/sorting building

XII. APPLICABLE RULES & REGULATIONS

A. Puget Sound Clean Air Agency Regulations

SECTION 5.05 (c): The owner or operator of a registered source shall develop and implement an operation and maintenance plan to ensure continuous compliance with Regulations I, II, and III. A copy of the plan shall be filed with the Control Officer upon request. The plan shall reflect good industrial practice and shall include, but not be limited to, the following:

(1) Periodic inspection of all equipment and control equipment;

(2) Monitoring and recording of equipment and control equipment performance;

(3) Prompt repair of any defective equipment or control equipment;

(4) Procedures for startup, shut down, and normal operation;

(5) The control measures to be employed to ensure compliance with Section 9.15 of this regulation; and

(6) A record of all actions required by the plan.

The plan shall be reviewed by the source owner or operator at least annually and updated to reflect any changes in good industrial practice.

SECTION 6.09: Within 30 days of completion of the installation or modification of a stationary source subject to the provisions of Article 6 of this regulation, the owner or operator or applicant shall file a Notice of Completion with the Agency. Each Notice of Completion shall be submitted on a form

provided by the Agency, and shall specify the date upon which operation of the stationary source has commenced or will commence.

SECTION 9.03: (a) It shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour, which is:

(1) Darker in shade than that designated as No. 1 (20% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or

(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Section 9.03(a)(1).

(b) The density or opacity of an air contaminant shall be measured at the point of its emission, except when the point of emission cannot be readily observed, it may be measured at an observable point of the plume nearest the point of emission.

(c) This section shall not apply when the presence of uncombined water is the only reason for the failure of the emission to meet the requirements of this section.

SECTION 9.09: General Particulate Matter (PM) Standard. It shall be unlawful for any person to cause or allow the emission of particulate matter in excess of the following concentrations:

Equipment Used in a Manufacturing Process: 0.05 gr/dscf.

SECTION 9.11: It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.

SECTION 9.13: It shall be unlawful for any person to cause or allow the installation or use of any device or use of any means designed to mask the emission of an air contaminant which causes detriment to health, safety or welfare of any person.

SECTION 9.15: It shall be unlawful for any person to cause or allow visible emissions of fugitive dust unless reasonable precautions are employed to minimize the emissions. Reasonable precautions include, but are not limited to, the following:

(1) The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;

(2) Surfacing roadways and parking areas with asphalt, concrete, or gravel;

(3) Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and cleaning vehicle

undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or

(4) Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

REGULATION I, SECTION 9.20(a): It shall be unlawful for any person to cause or allow the operation of any features, machines or devices constituting parts of or called for by plans, specifications, or other information submitted pursuant to Article 6 of Regulation I unless such features, machines or devices are maintained in good working order.

B. Washington State Administrative Code

WAC 173-400-040(3): Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

WAC 173-400-040(4): Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition or other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

WAC173-400-111(7): Construction limitations.

(a) Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The permitting authority may extend the eighteen-month period upon a satisfactory showing by the permittee that an extension is justified.

C. Federal

NA

XIII. APPLICANT REVIEW AND PSCAA RESPONSE

Prior to the public comment period described in Section XIV below, PSCAA sent this NOC worksheet 11573, a redlined version of OA 10645 detailing the proposed changes to OA 10645 constituting proposed OA 11573, and a draft OA 11573 to Cedar Grove via email on November 20, 2024. Cedar Grove provided comments on December 6, 2024 which are reproduced below along with PSCAA responses. PSCAA responses were sent to Cedar Grove via email on December 9, 2024.

CGC Comment:

Condition No. 9(a)(2): Can you please confirm that the requirement for an "Engineering assessment that demonstrates that the emissions from the tipping and grinding buildings are under negative ventilation" is met by conducting the visual inspection (Condition No. 9[a][1]) and airflow measurements (Condition No. 14) and verifying that the requirements of those conditions are met?
PSCAA Response:
PSCAA agrees that the engineering assessment consists of the ventilation measurement (Condition 14) and the visual inspection (9(a)(1)). Condition 9.a.2 also includes specification that ensures that the ventilation system is overcoming the pressure drop from the biofilter which would be demonstrated through flow measurement. No changes to the permit conditions are proposed by PSCAA in response to this comment.

CGC Comment:
Condition No. 9(b)(2): The requirement for measuring oxygen content is new and CGC would like to ensure that compliance with the operational range is feasible. Based on our review of Frederickson 2013, cited as the source of PSCAA's proposed operating range, "aerobic heterotrophic bacteria present in biofilters require at least 5-15 percent oxygen to be present within inlet gas streams." Unless there is a scientific basis for limiting the oxygen content to no more than 15 percent, CGC requests that the acceptable range be modified to "at least 5 percent."
PSCAA Response:
PSCAA agrees with this proposed change and notes that the change affects Condition No. 9(b)(3) rather than Condition No. 9(b)(2). The basis for this change is that a more aerobic environment (with oxygen percentages as high as ambient concentrations) alone will not adversely affect mesophilic bacteria such that an upper range is not needed. Condition No. 9.b.3 will be updated to only identify a low of 5% oxygen as the parameter triggering corrective action.

CGC Comment:
Condition Nos. 12 and 13: Thank you for your consideration of CGC's request to operate the facility with the "second door" of the tipping building (i.e., the large door nearest the grinder) open. For operational flexibility, CGC requests that the permit language allow CGC to operate with the second door open with the caveat that one of the two following protective measures be implemented at times when materials remain in the building for more than 24 hours: 1) cover any feed stocks remaining in the tipping building or grinding building for longer than 24 hours or 2) close the tipping building door nearest the grinder intake hopper?
PSCAA Response:
PSCAA has not updated Conditions 12 and 13 based on the above comment.
The BACT determination for the Tipping Building change in method of operation in Section IV.B.4 of the NOC worksheet 11573 relies on work practice standards including limiting material time in the tipping building or else covering with a biofilter cover "consistent with other [compost feedstock receiving] enclosures not meeting 100% capture of materials." Even with the second bay door of the

tipping building closed, the design 4 ACH has limited capture efficiency, evidenced by historic operation of the tipping building and grinding building and smoke tests.
Further, the historic monitoring of the tipping building and grinding building biofilters reviewed under Category A (Section III of NOC worksheet 11573) shows that the biofilters on the tipping building and grinding building regularly fall outside of optimal temperature ranges. As noted in Table 1 of the NOC worksheet for 11573, "Tipping Building biofilter temperature tracks closely with ambient air temperatures. There are not practical corrective actions to address temperature changes. Operating practices in the Tipping and Grinding buildings are needed and discussed under Category B to mitigate reduced biofilter efficiency."

Following receipt of the above PSCAA responses to comment by email, on December 10, 2024, Ron Westmoreland called Madeline McFerran on behalf of Cedar Grove to discuss the operations in the tipping building and said that coverage of the front face of stored materials would be feasible but reaching the top of the biofilter piles with biofilter media cover would not be workable. Following the call, PSCAA sent the below email to Cedar Grove:

RE: NOC 11573 for review

Reply | Reply All | Forward

MM Madeline McFerran
To Jay Blazey; Ron Westmoreland
Cc John Dawson

Wed 12/11/2024 8:15 AM

Hello Ron and Jay,

Ron, thank you for your call yesterday. Since the changes you are proposing pertain to the BACT determination work practice standards, I will need additional information from you about operation issues you anticipate that are associated with covering feedstock remaining in the tipping building and grinding building for more than 24 hours. Please send a written description of the operations in the tipping building, identification of how the process may be incompatible with the conditions as written, why changes to the existing operations in the tipping building that would be compatible are infeasible, and alternatives for work practice standards for mitigating storage in the tipping building and grinding building greater than 24 hours.
Please let me know if you have any additional questions or feedback. We will continue to pause on any next steps for comment period until after receipt of that information.

Thank you,

PUGET SOUND
Clean Air Agency

Madeline McFerran
Engineer II
1904 3rd Ave #105, Seattle, WA 98101
DIRECT 206-689-4063
FAX 206-343-7522
WEBSITE pscleanair.gov

Cedar Grove provided the following response on December 12, 2024:

RE: NOC 11573 for review

RW Ron Westmoreland <ronw@cgcompost.c
To Madeline McFerran; Jay Blazey
Cc John Dawson; Amy Maule

Reply | Reply All | Forward

Thu 12/12/2024 9:55 AM

Follow up. Start by Friday, December 13, 2024. Due by Friday, December 13, 2024.

Hi Madeline,

Thank you for discussing the feasibility of covering feedstock in the tipping building and grinding building. As we discussed, the tipping building is approximately 100 feet wide by 100 feet deep. As material is received throughout each day, older material is piled and pushed towards the far end of the building before being processed. During busy times, the volume of feedstock may reach 50 feet deep and 14 feet high, the maximum height reachable by the loader. While the face of the feedstock can be covered with biofilter material, the loader would not be able to reach the top of the pile to add material. Cedar Grove can commit to covering the face of the feedstock material if residence will exceed 24hrs, up to the maximum height reachable by the loader.

I hope this is what you were requesting as it relates to Tipping building operations and constraints.

Please let me know if this is acceptable or if additional information is required.
Sincerely,

PSCAA reviewed the physical constraints of operation within the tipping building and for the specific configuration and operation at Cedar Grove and determined that the work practice standards BACT determination be modified to combine increased enclosure of the tipping building with biofilter coverage of all accessible portions of the feedstock pile in the tipping building. The addition of closure of the second bay door is a mitigation of the limited biofilter cover. Condition 12 was updated as shown below:

12. With the exception of stumps, brush, and clean wood, all feed stocks brought on site shall be deposited into the tipping building, where they shall be stored under negative ventilation until processed and placed on a composting system. Feed stocks remaining in the tipping building or grinding building for longer than 24 hours from when they are first brought on site must be covered with at least 12 inches of biofilter material for surfaces of the feedstock pile accessible by front loader, at minimum the front face of the feedstock pile. Biofilter media must consist of at least 95% coarse woody media by volume (3-4 inch screen). If any material is present in the tipping building or grinding building for longer than 24 hours, the second bay door of the tipping building must remain closed until the material is removed. Failure to meet the requirements of this Condition No. 12 is a reportable deviation.

XIV. PUBLIC NOTICE

PSCAA has determined that this project has significant public interest and meets the criteria for mandatory public notice under WAC 173-400-171(3). Criteria requiring public notice includes, but is not limited to, a project that exceeds emission threshold rates as defined in WAC 173-400-030 (e.g. 40 tpy NOx, VOC, or SO_2, 100 tpy CO, 15 tpy PM_{10}, 10 tpy $PM_{2.5}$, 0.6 tpy lead), includes a WAC 173-400-091 synthetic minor limit, has a toxic air pollutant emission increase above the acceptable source impact level in WAC 173-460-150, or has significant public interest. The Agency conducted a public comment period on the draft worksheet and Order of Approval for public comment from

DATE to DATE. The Agency held a public hearing on the draft worksheet and Order of Approval on DATE.

A notice of application was also posted on the Agency's website for 15 days. A copy of the website posting is below:

New Construction Projects

Company	Address	Project Description	Date Posted	Contact Engineer
Cedar Grove Compost Co	17825 Cedar Grove Rd, Maple Valley, WA 98038	Application to modify biofilter monitoring, tipping and grinding building test procedures, proposed tipping building odor curtain, and replacement grinder at existing commercial compost facility.	11/20/23	Madeline McFerran

SUMMARY OF COMMENTS RECEIVED AND AGENCY RESPONSES
(to be completed after comment period and hearing)

XV. RECOMMENDED APPROVAL CONDITIONS

Proposed OA 11573 is an updated version of OA 10645. Only those conditions of 10645 for which modification is requested by the applicant and those conditions which are affected by grinder replacement were subject to review. The sections pertaining to the modification requests and the grinder replacement are highlighted below for clarity.

Order of Approval Description:

One Six-Zone Primary Compost Pad using Negative Aeration and a Biofiltration System rated at 130,000 cfm, for yard waste and commercial pre-consumer food waste; one Enclosed Zone 7 Compost Pad and 48,000 cfm biofilter, for yard waste and commercial food waste; 12 Secondary Zones using Negative Aeration and a 66,000 cfm biofilter, for secondary composting of materials from zones 1-7; one In-Vessel Gore Cover Technology Composting System rated at 41,000 tons per year, for yard waste and commercial food waste; one 2,500 gallon Treatment and Holding Tank, for fan condensate; one Tipping Building, controlled by a biofilter rated at 18,000 cfm.; and one building for pre-processing, sorting, and grinding, with it and the tipping building extension controlled by a biofilter rated at 35,300 cfm.

Facility Wide Requirements

3. Cedar Grove shall maintain its O&M/EMS plan in accordance with the requirements of Regulation I Section 5.05(c). The plan must address procedures for determining when the Composting Systems, Tipping Building, Grinding Building, and Biofilter Controls are operating properly and the corrective actions that will be taken when they are not.

4. Pursuant to the State Environmental Policy Act, to assure for all the people of Washington safe, healthful, productive, and aesthetically and culturally pleasing surroundings; to attain the widest

range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; and based on Puget Sound Clean Air Agency Board Resolution No 565, Section 14 and WAC 197-11-660; Cedar Grove Composting:

a. Shall use water drawn from the Aquifer Three, in accordance with the facility's current water right permit and not use water drawn from Aquifer Three in the preparation of feed stocks, nor for moisture addition at any time during the composting or curing process, and;
b. Shall not discharge to any surface water from its retention ponds, without notification to the Washington Department of Ecology as delineated in its NPDES permit.
c. Prior to first placement of feedstocks on Zone 7, Cedar Grove Composting:
    (1) Shall pave the main site access road to reduce fugitive dust; and
    (2) Shall submit and receive Puget Sound Clean Air Agency approval for the following changes to the Environmental Management System (EMS) manual:
        i. Describe the procedures that will be used to manage and maintain storm water retention capacity during the various seasons, while using published long range precipitation forecasts, so as not to exceed the King County METRO wastewater discharge permit limits, the Cedar Hills Landfill force main discharge allotment, or the NPDES permit discharge limits.
        ii. Describe the backup truck pumping and transport procedures for excess storm waters, to be used in the event that the Cedar Hills Landfill force main allotment is reduced or eliminated, and for periods when electricity is lost after a storm event.

5. Cedar Grove shall conduct one daily inspection of the entire material handling system (e.g. conveyor transfer points, air handling system, conveyor covers, access doors, air handling ducting/piping) to determine if the material handling system is damaged and/or not being maintained in good working order. Cedar Grove shall record the date and start time of each daily inspection in a daily log at the time of the inspection, and whether any part of the material handling system is damaged and/or not being maintained in good working order. Each entry shall be initialed by the Cedar Grove employee conducting the inspection. If the material handling system is determined to be damaged and/or not maintained in good working order, Cedar Grove shall record the date and time of discovery and date and time of repair on the inspection log. If the damaged material handling equipment or equipment not maintained in good working order is logged as repaired (or associated processing equipment shut down until corrected) within 180 minutes of discovery, this shall not be a reportable deviation.

6. Cedar Grove shall conduct one daily inspection of its entire facility to observe any visible emissions of fugitive dust. If visible emissions are observed, Cedar Grove shall determine if precautions are being taken to minimize the fugitive dust. In addition, Cedar Grove shall conduct two daily inspections to determine if its dust control equipment (e.g. water spray bars, water truck) is being operated in good working order. Cedar Grove shall record the date and start time of each daily inspection in a daily log at the time of the inspection, and whether any visible dust is observed, precautions are being taken to minimize fugitive dust, and dust control equipment is being operated in good working order. Each entry shall be initialed by the Cedar Grove employee conducting the monitoring. If visible emissions of fugitive dust are observed without precautions taken and/or dust control equipment is not being operated in good working order, Cedar Grove shall record the date and time of discovery and date and time precautions were taken and/or repairs completed on the

inspection log. Any visible fugitive dust event where precautions are logged as taken, to minimize dust emissions within 20 minutes of discovery (or associated processing/ heavy equipment shut down until corrected), shall not be a reportable deviation. If any dust control equipment that is not operating in good working order is logged as corrected within 60 minutes of discovery (or the source of dust shut down until corrected), this shall not be a reportable deviation.

7. Cedar Grove shall conduct one daily visual inspection of each biofilter to determine if the biofilters are channeling, rifting, short circuiting or not being maintained or operated in good working order. Cedar Grove shall record the date and start time of each daily inspection in a daily log, and whether any biofilter is channeling, rifting, short circuiting or not being maintained or operated in good working order at the time of the inspection. Each entry shall be initialed by the Cedar Grove employee conducting the monitoring. If any biofilter is determined to be channeling, rifting, short circuiting or not being maintained or operated in good working order, Cedar Grove shall record the date and time of discovery and date and time of repair on the inspection log. If any biofilter that is channeling, rifting, short circuiting or not being maintained or operated in good working order is logged as corrected by the end of the day of discovery, it shall not be a reportable deviation.

8. Cedar Grove shall install and operate continuous temperature monitoring systems on the east and west secondary biofiltration systems, in addition to the existing continuous temperature monitoring systems on the primary biofiltration systems. The monitoring systems shall measure and record temperatures on a one-hour average basis. A continuous temperature monitoring plan that delineates locations and monitoring methods for the east and west secondary biofiltration systems and addresses monitor QA/QC, data averaging, data retention, and missing data procedures for temperature monitoring on the upper and lower primary biofilters as well as the east and west secondary biofilters shall be submitted to the Agency for approval within 30 days of issuance of this Order. The continuous temperature monitoring system must be installed within 60 days of receipt of Agency approval of the monitoring plan. Cedar Grove must operate and maintain the continuous temperature monitoring system in accordance with the approved temperature monitoring plan on file with the Agency. Changes to the plan must be approved by the Agency prior to implementation. Cedar Grove must take corrective action for any two consecutive 1-hour readings of the biofilter temperature outside of 40°F-120°F. Corrective actions include but are not limited to adjusting fan settings, introduction of heating or cooling air or cooling water to reach 40°F-120°F. Cedar Grove must report any deviations from the continuous temperature monitoring plan QAQC plan, and any temperature deviations which were not successfully corrected within 24 hours and/or any temperature deviation for which no corrective actions were taken in the monthly deviation report as specified in Condition No. 21. Completion of corrective action and demonstrated compliant temperature measurements within 24 hours of a non-compliant reading shall not be considered reportable deviations.

9. Cedar Grove shall have the operations of the tipping building, pre-processing/sorting and grinding building, zone 7 building and all biofilters reviewed and evaluated by an independent third party semiannually. Cedar Grove must notify PSCAA of the date of the on-site evaluation at least 21 days before the evaluation takes place. Each evaluation shall be no less than 150 calendar days since the last evaluation and no more than 210 calendar days since the last evaluation. A copy of the written evaluation report shall be submitted to the Agency no later than 60 days after the evaluation date.

Cedar Grove must also submit a summary of initiated corrective action and status of corrective actions taken in response to the on-site evaluation no later than 60 days after the on-site evaluation date. Failure to initiate corrective actions within 60 days of the on-site evaluation date shall constitute a deviation from this Order. Any identified structural deficiencies or biofilter media readings outside of the operational ranges identified in this condition shall be a reportable deviation and shall be out of compliance with this condition until corrective action is completed and a follow-up measurement or documentation of completed corrective action demonstrate compliance, except as follows: Corrective actions completed and followed by retesting of relevant operational parameters which demonstrate compliance with the ranges identified in this condition Nos. 9.b.ii and 9.b.iii, or repair to address structural deficiencies completed within 60 days of the on-site evaluation shall not be considered violations of this condition. The purpose of the on-site evaluation is to review the performance of the emission capture system for these buildings and the biofilter operation and to initiate and complete corrective action. The on-site evaluation shall include, but is not limited to review of:

a. Operational condition and integrity of the exhaust/capture system including:
   (1) visual inspection of the capture system to identify structural deficiencies. The evaluation must identify corrective actions needed to correct any deficiencies.
   (2) Engineering assessment that demonstrates that the emissions from the tipping and grinding buildings are under negative ventilation. The evaluation must evaluate whether the capture systems are overcoming pressure losses produced by each biofilter's condition and measure flow rate of the capture system biofilter intakes.
   (3) Demonstration that the measured flow rates are meeting the minimum specified flow in Condition No. 14 and identify corrective actions needed to correct any deficiencies.

b. Operational condition and integrity of the biofiltration system including:
   (1) Visual inspection of each biofilter based on a structural assessment. The inspection must identify structural deficiencies such as compaction, channeling, shrinking, crevassing, and vegetation growth. The evaluation must identify corrective actions needed to correct any structural deficiency of a biofilter.
   (2) Testing the media to ensure that each biofilter is adequately biodegrading emissions. Testing of the media must test for the following parameters: moisture content, free air space, pressure drop, empty bed residence time, O_2 content, and pH.
   (3) Results of testing for the following biofilter operating parameters. Readings outside of the optimal ranges identified below requires the initiation of corrective action. The static pressure readings are collected relative to the baseline of a newly installed biofilter and do not require corrective action prior to establishment of the baseline of a newly installed biofilter static pressure. For each biofilter, after the first biofilter media replacement following issuance of this permit, a baseline reading must be taken within 7 calendar days of completion of media replacement. After establishing the baseline of static pressure on the newly installed biofilter, static pressure per foot of biofilter is subject to required corrective action.

Biofilter Bed Parameter	Operational Range
Moisture content (%)	40% - 60%
Free air space (%)	40% - 60%
Pressure Drop	<0.6 inches H_2O/ft of biofilter higher than baseline of newly installed biofilter
Empty Bed Residence Time	>10 seconds
O_2 Content (%)	>5%
pH	6-8

c. Demonstration of the adequacy and effectiveness of the system maintenance program and practices
d. Description of the repair history and troubleshooting efforts
e. Recommendations for continuous improvement of the tipping building, pre-processing/sorting and grinding building, zone 7 building and biofilters.

10. [RESERVED]

11. Cedar Grove shall maintain all monitoring and recordkeeping records required by this Order at the Maple Valley facility, including all deviations reports, and make them available to the Agency upon request. All documents required under this Order shall be kept for a minimum of two years.

Pre-Processing/Sorting and Grinding Building

12. With the exception of stumps, brush, and clean wood, all feed stocks brought on site shall be deposited into the tipping building, where they shall be stored under negative ventilation until processed and placed on a composting system. Feed stocks remaining in the tipping building or grinding building for longer than 24 hours from when they are first brought on site must be covered with at least 12 inches of biofilter material for surfaces of the feedstock pile accessible by front loader, at minimum the front face of the feedstock pile. Biofilter media must consist of at least 95% coarse woody media by volume (3-4 inch screen). If any material is present in the tipping building or grinding building for longer than 24 hours, the second bay door of the tipping building must remain closed until the material is removed. Failure to meet the requirements of this Condition No. 12 is a reportable deviation.

13. Cedar Grove shall continuously store and/or handle materials described in Condition No. 12 either inside the tipping building or pre-processing/sorting and grinding building. Visible emissions at the tipping building doorway must not exceed 5% opacity per EPA Method 9. No fallout from the grinder may exit the tipping building, tipping building extension, or grinding building. Additionally, any other access door into the grinding building, excluding the connection tunnel with the operating grinder, shall remain closed at all times when grinding is taking place, except when delivery trucks are entering or exiting while grinding is taking place.

14. Emissions from the tipping building, and the pre-processing, sorting, and grinding building, shall be captured and passed through the biofilter. Compliance with this requirement shall be determined by:

a. Cedar Grove must measure the airflow to the tipping building and sorting building biofilters semiannually (between 150 and 210 calendar days from the last flow measurement) to determine if the airflow is greater than or equal to four air exchanges per hour, defined as, respectively: 22,900 acfm for the tipping building; 11,450 acfm for the tipping building extension; and 14,772 acfm for the grinding building. Measurements shall be taken according to EPA Methods 1 and 2 or other method approved by PSCAA in writing prior to testing and must consist of a minimum of 3 separate runs. Cedar Grove must notify PSCAA of the date of airflow evaluations at least 21 days before the evaluation date. Any airflow measurement of the tipping building, tipping building extension, or grinding building ventilation systems below the flows identified in this Condition No. 14, shall be a reportable deviation and shall be out of compliance with this condition until corrective action is completed and a follow-up flow measurement using EPA Method 2 or other method approved by PSCAA in writing prior to testing demonstrates compliance with the minimum airflows of this condition. Completion of corrective action and demonstrated compliant flow measurements within 72 hours of a non-compliant reading shall not be considered reportable deviations.
b. Within 7 calendar days of completion of tipping building and/or grinding building biofilter media replacement, Cedar Grove must measure and record the baseline static pressure of the new system in inches of H_2O and baseline height of the biofilter for ongoing monitoring required in Condition No. 9.b

15. [RESERVED]

16. Cedar Grove shall monitor each material load received and record and make entry onto a daily log, whether each material load received was deposited inside or outside the tipping building, whether the material's residence time in the tipping building and grinding building exceeds 24 hours, and the time of biofilter media application to the material stored for longer than 24 hours. Each entry shall be initialed by the Cedar Grove employee conducting the monitoring. Each deviation log entry shall include the time and date of the deviation, customer name, vehicle description (including license plate number), and description of material deposited outside the tipping building.

17. Emissions from Primary Zones 1-7 shall be captured and passed through biofiltration. Within 7 calendar days of completion of biofilter media replacement, Cedar Grove must measure and record the baseline static pressure of the new system in inches of H_2O and baseline height of the biofilter for ongoing monitoring required in Condition No. 9.b

18. Secondary Zones 1-12 shall only accept compost for second phase treatment from Primary Zones 1-7. Within 7 calendar days of completion of biofilter media replacement, Cedar Grove must measure and record the baseline static pressure of the new system in inches of H_2O and baseline height of the biofilter for ongoing monitoring required in Condition No. 9.b.

Gore Cover System

19. Cedar Grove shall conduct one daily visual inspection of the entire Gore cover system to determine if the Gore cover is secured to the ground by use of a weighted device to capture odorous

emissions. Cedar Grove shall record the date and start time of each daily inspection in a daily log, and whether the Gore cover system is secured to the ground by use of a weighted device at the time of the inspection. Each entry shall be initialed by the Cedar Grove employee conducting the monitoring. If the Gore system cover is observed to be not secured to the ground by use of a weighted device, Cedar Grove shall record the date and time of discovery and date and time the Gore System cover was secured to the ground by use of a weighted device on the inspection log. If the Gore system cover is secured to the ground by a weighted device within 60 minutes of discovery, this shall not be a reportable deviation.

20. Cedar Grove shall conduct one daily inspection of the entire Gore cover system in use to determine if any Gore cover material has any visible holes or tears. Cedar Grove shall record the date and start time of each daily inspection in a daily log, and whether any holes or tears in the Gore cover system were observed at the time of the inspection. Each entry shall be initialed by the Cedar Grove employee conducting the monitoring. If the Gore system cover is observed to have visible holes or tears, Cedar Grove shall record the date and times of discovery and date and time repairs were completed on the inspection log. If the holes or tears are logged as completely repaired or corrected by the end of the day of discovery, this shall not be a reportable deviation.

Deviation Reporting

21. Cedar Grove shall prepare monthly compliance deviation reports, on forms prepared or approved by the Agency, and send them to the Agency. Reports shall be received by the Agency within 30 days following the end of the calendar month. Each report shall include a statement of compliance identifying each reportable deviation, the status of any initiated corrective actions, and shall be signed by a responsible official of Cedar Grove certifying that the report is truthful and accurate.

22. Each day a monthly deviation report is not submitted to the Agency, in accordance with this Order, constitutes a separate and distinct reportable deviation. The Agency reserves the right to take additional enforcement action, including but not limited to, seeking injunctive relief in the Superior Court of King County based on information contained within deviation reports or credible information.

Previous Orders of Approval

23. Upon issuance, this Order of Approval cancels and supersedes Order of Approval 10645 dated 3/5/2014.

K. CORRESPONDENCE AND SUPPORTING DOCUMENTS

L. REVIEWS

pscleanair.org
Puget Sound Clean Air Agency

Reviews	Name	Date
Engineer	Madeline McFerran	11/19/2024
Inspector	Corina Frost	11/19/2024
Second Review:	John Dawson	11/19/2024
Applicant:		