BRITISH COLUMBIA

# Environmental Appeal Board

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**DECISION NOS. 2018-EMA-021(i), 020(b), 022(b)-028(b), 031(b)-034(b) and 036(b)-040(b) [Group File: 2018-EMA-G02]**

In the matter of an appeal under section 100 of the *Environmental Management Act,* S.B.C. 2003, c. 53

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|---|---|---|
| **BETWEEN:** | GFL Environmental Inc., Michael Dumancic, Nathalie McGee, Meaghan Lyall, Margaret & Foster Richardson, Wendy Betts, David Frame, Carol Ann La Croix, Joss Rowlands, Shelley Lee, Barry Mah, Trish Steinwand, Harry Dhaliwal, Joan Hislop, Douglas Burgham, Jennifer Burgham, Douglas McDougall, and Michael W. Betts | **APPELLANTS** |
| **AND:** | District Director, *Environmental Management Act* | **RESPONDENT** |
| **AND:** | City of Delta | **THIRD PARTY** |
| **BEFORE:** | A Panel of the Environmental Appeal Board<br>Brenda L. Edwards, Panel Chair<br>Linda Michaluk, Member<br>Reid White, Member | |
| **DATE:** | Conducted by way of oral and written submissions concluding on October 6, 2020 | |
| **APPEARING:** | For the Appellant (GFL): | Gary Letcher, Counsel,<br>Andrea Akelaitis, Counsel |
| | For the Resident Appellants: | Margaret Richardson, Joss Rowlands, David Frame |
| | For the Respondent: | Gregory Nash, Counsel,<br>Alex Little, Counsel |
| | For the Third Party: | Alyssa Bradley, Counsel |

## DECISION ON THE APPEALS

[1] On August 1, 2018, Ray Robb, District Director (the "District Director") for the Metro Vancouver Regional District ("Metro Vancouver"), issued air quality management permit GVA1090 (the "Permit") to Enviro-Smart Organics Ltd., which is now GFL Environmental Inc. ("GFL"). The Permit, which was issued under both the *Environmental Management Act*, S.B.C. 2003, c. 53 (the "*Act*") and the Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008 (the "Bylaw"), authorizes GFL to discharge air contaminants to the air from its aerobic composting operation (the "Facility") in Delta, British Columbia.

[2] GFL appealed various terms and conditions in the Permit. In general terms, GFL asserts that the Permit terms are not advisable for the protection of the environment, are unduly restrictive, and exceed the District Director's authority.

[3] A group of concerned citizens (the "Resident Appellants") also appealed the Permit, but for different reasons than GFL's. Their appeals were joined with GFL's so the appeals could be heard together. The Resident Appellants were made third parties in GFL's appeal and GFL was made a third party in the Resident Appellants' appeals.

[4] The City of Delta ("Delta") is a Third Party in all the appeals.

## BACKGROUND

[5] The background to the Permit and the appeals was thoroughly canvassed in *GFL Environmental Inc. v. District Director*, Decision No. 2018-EMA-021(d), January 15, 2020) (the "First Interim Decision") and will not be repeated, in detail, here. In brief, GFL operates a composting operation at the Facility, located on 11.7 hectares of farmland specifically zoned by Delta for composting operations. The total property is approximately 57.4 hectares. Westcoast Instant Farms operates a turf farm, adjacent to the Facility, on the same 57.4-hectare parcel of land.

[6] The Facility holds a licence issued by the Greater Vancouver Sewerage and Drainage District to accept organic waste to produce compost (the "Licence").

[7] The initial stage of GFL's composting process is carried out "using the aerobic pile method, within two large, free-span covered buildings" (i.e., not enclosed). Organic waste feedstock is piled into windrows on the building's concrete floor. An excavator or other means is used to turn the windrows as needed to optimize the primary composting process.

[8] There is no dispute that composting is an aerobic process, meaning that it occurs in the presence of oxygen. There is also no dispute that oxygen reduces the production of odorous air contaminants and, conversely, a depletion of oxygen can produce odours.

### Overview of the Regulatory Scheme

[9] Section 31 of the *Act* provides Metro Vancouver with certain powers to regulate air contaminants within the Metro Vancouver region. Metro Vancouver

enacted the Bylaw pursuant to section 31(1) of the *Act*, which states that Metro Vancouver "may provide the service of air pollution control and air quality management and, for that purpose, … may, by bylaw, prohibit, regulate and otherwise control and prevent the discharge of air contaminants". In addition, section 31(2)(b) of the *Act* states that "a district director … may, with respect to the discharge of air contaminants in the Metro Vancouver Regional District, exercise all the powers of a director under this Act". Sections 37(2) and (3) of the *Act* provides that a bylaw made under section 31, or a permit issued by the District Director, that conflicts with the *Act* or its regulations is without effect to the extent of the conflict. However, section 37(5) of the *Act* states that a conflict does not exist "solely because further restrictions or conditions are imposed by" the bylaw or permit "unless the minister by order declares that a conflict exists".

[10] The BC Supreme Court has confirmed that the *Act* delegates authority to the regional district to legislate with respect to air quality: see *Greater Vancouver (Regional District) v. Darvonda Nurseries Ltd.*, 2008 BCSC 1251 (at paragraphs 20-21). In addition, the Court stated at paragraph 100 that the *Act* "contemplates that the air quality standards set by [Metro Vancouver] will be different from, and potentially more restrictive than, the standards set by the Province for areas outside [Metro Vancouver]".

[11] Section 5 of the Bylaw prohibits the discharge of air contaminants in the course of business, subject to section 7 of the Bylaw. Under section 7(2), the discharge of an air contaminant is not prohibited where the discharge is "conducted strictly in accordance with the terms and conditions of" a permit.

[12] Under section 11 of the Bylaw, the District Director may issue a permit allowing the discharge of an air contaminant "subject to requirements for the protection of the environment that the district director considers advisable", and without limiting that discretion, the District Director "may do one or more of the following in the permit":

(1) place limits and restrictions on the quantity, frequency and nature of an air contaminant permitted to be discharged and the term for which such discharge may occur;

(2) require the holder of a permit to repair, alter, remove, improve or add to works or to construct new works and to submit plans and specifications for works specified in the permit;

(3) require the holder of a permit to give security in the amount and form and subject to conditions the district director specifies;

(4) require the holder of a permit to monitor, in the manner specified by the district director, an air contaminant, the method of discharging the air contaminant and the places and things that the district director considers will be affected by the discharge of the air contaminant;

(5) require the holder of a permit to conduct studies, keep records and to report information specified by the district director in the manner specified by the district director;

(6) specify procedures for sampling, monitoring and analyses, and procedures or requirements respecting the discharge of an air contaminant that the holder of a permit must fulfill.

[13] Section 3(2) of the Bylaw defines "air contaminant" as follows:

> "**air contaminant**" means a substance that is emitted into the air and that
>
> (a) injures or is capable of injuring the health or safety of a person;
>
> (b) injures or is capable of injuring property or any life form;
>
> (c) interferes or is capable of interfering with visibility;
>
> (d) interferes or is capable of interfering with the normal conduct of business;
>
> (e) causes or is capable of causing material physical discomfort to a person; or
>
> (f) damages or is capable of damaging the environment;

[14] Subsection 3(3) of the Bylaw states that:

> (3) For the purposes of the definition of an air contaminant, it is not necessary to prove:
>
> (a) that the air contaminant, if diluted at or subsequent to the point of discharge, continues to be capable of harming, injuring or damaging a person, life form, property or the environment, or
>
> (b) the actual presence of a person who, or a life form that, is capable of being harmed or injured by the discharge of the air contaminant.

[15] The Bylaw (and the *Act*) defines "environment" to mean "air, land, water and all other external conditions or influences under which humans, animals and plants live or are developed".

[16] It should be noted that "pollution" is not synonymous with "air contaminant". The Bylaw (and the *Act*) states that "pollution" means "the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment". The District Director has broad authority under section 28 of the Bylaw to order a person to take steps to prevent pollution (pollution prevention orders), and under section 29 to stop the cause of pollution (pollution abatement orders).

[17] In *Emily Toews & Elisabeth Stannus v. Director, Environmental Management Act*, Decision Nos. 2013-EMA-007(g) and 2013-EMA-010(g), December 23, 2015 [*Toews*], at paragraph 235, the Board found that when considering whether to authorize air contaminants in a permit (or, in that case, a permit amendment):

> … <u>a cautious and technically rigorous approach should be taken</u> when assessing the potential risks of injury to human health or damage to the environment. <u>Harm or damage that may be caused by the emissions should be controlled, ameliorated and, where possible, eliminated. However, not all harm or damage will be eliminated</u>, given that the permitted emission of "air

contaminants", by its very definition, includes substances that are capable of causing injury to human health and/or damage to the environment.

[underlining added]

[18] The Board adopted that approach when it decided several appeals of an air emissions permit that the District Director had issued to a composting facility operated by Harvest Fraser Richmond Organics Ltd. ("Harvest"): *Tegart et al. v. District Director*, Decision Nos. 2016-EMA-G08, May 21, 2019 [*Tegart*], at paragraph 86.

The Permit

[19] In August of 2017, GFL applied for a permit to authorize "the discharge of air emissions" from its facility. A description of the composting operation and the emission sources were identified as part of the application. At the time of the application and when the Permit was issued, the Facility was an "open-air", i.e., not fully enclosed, operation.

[20] Following public consultation on the permit application, and after considerable discussion between GFL and the District Director (and staff at Metro Vancouver), in the spring of 2018, Metro Vancouver provided GFL with draft permits for comment. In response, GFL provided the District Director with a five-page set of "Proposed Criteria" for an air discharge permit that would allow GFL "to continue operating our composting business in the interim while we move forward in a timely manner towards fully enclosing our operations."

[21] On August 1, 2018, the District Director issued the Permit. The Permit contemplates that the existing facility will continue operating until February 28, 2020 (the "Facility") and that the enclosed facility would operate as of March 1, 2020 (the "New Facility"). These operation dates were varied by the Panel in preliminary decisions summarized below. The Permit is effective for a term of five years, set to expire on September 30, 2023. It is 43 pages long and contains detailed requirements for: operations; design and engineering plan approvals; and 97 submission requirements including those for 13 plans and 15 types of ongoing performance/progress reports. Further, the Permit contains four distinct sections: "Section 1- Authorized Emission Sources"; "Section 2 – General Requirements and Conditions"; "Section 3 – Reporting Requirements" and "Section 4 – Site Plan".

Section 1 – Authorized Emission Sources

[22] This section begins with facility-wide restrictions, i.e., restrictions that apply to all emission sources under the Permit and are further described in four subsections:

1. **Discharge of Odorous Air Contaminants**

   Notwithstanding any other requirement in this Permit, the discharge of odorous air contaminants from the (Facility) in such quantity and quality

that an Approved Person[1] is able to recognize the facility odour for more than five minutes in any ten-minute period at the distances noted in column B in Table 1 is prohibited.

**TABLE 1**

| Column A | Column B |
|---|---|
| **Calendar Year or Date Range** | **Maximum Distance from Facility Fenceline** |
| **2018** | 3 km |
| 01-Jan-2019 to 28-Feb-2020[2] | 2 km |
| 01-Mar-2020 and beyond | 1 km |

2. **Requirement to Cease Receiving Food Waste**

If the District Director determines that (Facility) odours are recognizable by an Approved Person at frequencies greater than three (3) days in any fourteen (14) day period at or beyond the distances in column B of Table 1 for the applicable timeframes as in column A of Table 1, the Permittee must immediately cease receiving any Food Waste, including commingled Food and Yard waste, until such time as the District Director determines that the impacts of the Facility's emissions have been addressed.

The District Director's determination will take into consideration, at a minimum, the following:

-Written reports of observations by an Approved Person(s) that they have recognized Facility air contaminant odours for five minutes in any ten-minute period, at or beyond the distances in column B of Table 1;

-Wind direction at the time of the observations; and

-The odour described in the observations.

The impacts will be considered addressed if the frequency of (Facility) odours recognized by an Approved Person(s) is reduced to three (3) or less days in the preceding fourteen (14) day period at or beyond the distances in column B of Table 1 for the applicable timeframes as in column A of Table 1 or the District Director is satisfied that adequate

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[1] Approved Person is a person that: 1) The District Director has determined is able to recognize GFL Environmental Inc. odours as distinct from other odours; and 2) The District Director is satisfied is neither unusually sensitive nor insensitive to GFL Environmental odours.

[2] The Table does not note an applicable distance for February 29, 2020.

measures have been taken to address the cause of Approved Person odour observations.

3. **Odour Limit** – After March 1, 2020, the maximum 10-minute average concentration of odorous air contaminants from Emission Sources 08 through 10 must not exceed 1.0 odour unit[3] (OU) at the nearest sensitive receptor for more than 0.2% of the time as determined by dispersion modelling using a minimum of one year of meteorological data and based on a dispersion model plan approved by the District Director.

4. **Monthly Quantity of (Compostable) Material Received**

   Until March 1, 2020, the maximum monthly quantity of compostable material received (including depackaging) must not exceed the following:

   During May, June, July, August, September and October = 13,000 tonnes/month

   During November, December, January, February, March, and April = 12,000 tonnes/month.

[23] The Permit then references 10 authorized emission sources:

- Emission Source 01 (de-packaging and covered mixing area) – prohibited after February 28, 2020;
- Emission Source 02 (receiving building) – prohibited after February 28, 2020;
- Emission Source 03 (Building #1 – primary composting with positive aeration discharging through a building opening) - prohibited after February 28, 2020;
- Emission Source 04A (Building #2 – primary composting with positive aeration discharging through a building opening)- prohibited after February 28, 2020;
- Emission Source 04B (Building #2 – primary composting with negative aeration discharging through a biofilter) - prohibited after February 28, 2020;
- Emission Source 05 (aging/curing compost area discharging through a storage pile(s)) – prohibited after February 28, 2020;
- Emission Source 06 (product conveyance, blending and screening area discharging through a transfer point(s)- prohibited after February 28, 2020;
- Emission Source 07 (aeration water treatment pond discharging through the pond surface) – discharge from aerobic treatment of leachate and

[3] An odour unit is the unit defined in the international standard for dynamic olfactometry (EN 13725:2003) that is used for expressing odour as a quantity, or odour concentrations. The unit of measurement is the European odour unit per cubic metre: $ouE/M^3$

stormwater runoff prohibited after February 28, 2020 and after March 1, 2020 authorized discharge is from the aerobic treatment of stormwater runoff;

- Emission Source 08 (receiving, de-packaging, grinding, mixing, transferring, primary and secondary composting discharging through a biofilter and stack);
- Emission Source 09 (finished compost storage area discharging through a building opening) (Building #1); and
- Emission Source 10 (product blending area discharging through a storage pile(s).

Section 2 - General Requirements and Conditions;

[24] This section of the Permit provides general permit requirements that are not specific to GFL's permit. The section includes 9 subheadings: "A. Authorized Works, Procedures and Sources"; "B. Notification of Monitoring Non-Compliance"; "C. Pollution not Permitted"; "D. Bypasses"; "E. Emergency Procedures"; "F. Amendments"; "G. Standard Conditions and Definitions"; "H. Records Retention" and "I. Heating, Ventilation, Air Conditioning and Internal Combustion Engines".

Section 3 – Reporting Requirements

[25] Under Section 3, the Permit requires GFL to submit a Dispersion Modelling Plan to Metro Vancouver for approval and, subsequently to submit a Dispersion Modelling Report based on the Plan, for approval. The Permit requires GFL to demonstrate how the Facility (or New Facility) will achieve 1 odour unit in the ambient air at the nearest sensitive receptor 99.8% of the time. Further, the Permit requires GFL to conduct dispersion modelling based on a ten-minute average of concentrations of odorous air contaminants.

Panel Comments

[26] After the Notices of Appeal were submitted to the Board, the District Director amended the Permit, to extend a deadline for the submission of a report in one instance, as required by the Permit. There is no dispute in this appeal about that amendment; however, the amendment altered the pagination of terms within the Permit. All page references in this decision relate to the Permit, as it existed on December 20, 2018, as this was the most recent version of the Permit available to the panel when it wrote this decision.

[27] In this case, as in *West Coast Reduction Ltd. v. British Columbia (Ministry of Environment),* [2010] B.C.E.A. No. 2 [*West Coast Reduction*], the District Director introduced the concept of measuring air emissions using "odour units" as a compliance mechanism in air emissions permits under the *Act* and the Bylaw. Odour units are not used or defined in any statute, regulation, bylaw, protocol, or guideline in British Columbia.

[28] Based on the evidence in the hearing, the Panel describes the derivation of odour units as follows. A panel of four or more trained odour assessors in a laboratory are exposed to an odour sample and a clean air sample in an

olfactometer (a device used to detect and measure odour dilutions). Initially, the odour is sufficiently diluted so that all panellists indicate that they cannot smell it. The lab operator then reduces the dilution factor of the odour sample, increasing its concentration in a specific ratio. The panellists sniff the odorous sample and the clean air, and again respond whether they can detect a difference between samples. This process continues until half of the panellists indicate that they can "just detect a difference"[4] (i.e., not recognize the odour but perceive a difference between the clean air sample and the other sample), but the other half still cannot. The concentration of the odour sample at this point is equal to one odour unit. The odour detection threshold is described as one odour unit per cubic metre (o.u./$m^3$).

[29] Odour units are recognized as standards by the European Committee for Standardization and have undergone professional assessment. The European standard (EN:13725) (the "European Standard") is based on an assumption that the performance characteristics as determined on reference materials are transferable to other odorants; specifically, that there is a linear relationship between a person's sensitivity to n-butanol and to other odours. Under the European Standard, a potential odour panel member must be able to detect n-butanol in a range between 20-80 parts per billion[5].

[30] For the purpose of this decision, the "Facility" references the operation permitted up to February 28, 2020 (as varied by the Panel in the interim decisions referenced below), and the "New Facility" references the operation permitted after March 1, 2020 (as varied by the Panel in the interim decisions discussed below).

## GFL's Appeal

[31] GFL filed its Notice of Appeal with the Board on August 29, 2018. It appeals various terms and conditions in the Permit on several grounds, including that the District Director erred and exceeded his jurisdiction by including "unduly prescriptive and unnecessary requirements". GFL's detailed grounds of appeal are discussed below.

[32] In terms of relief, GFL requests an order varying the Permit to allow effective and efficient odour mitigation in a way that reasonably advances the sustainability goals of diverting organics from landfill by remaking that organic waste into a useable commodity, compost. The specific Permit amendments sought by GFL are discussed below.

## Preliminary Applications

[33] With its Notice of Appeal, GFL applied for a stay of two categories of terms and conditions in the Permit, pending a decision on the merits of its appeal. On December 10, 2018, the (then) Chair of the Board denied the stay application: *GFL Environmental Inc. v. District Director* (Decision No. 2018-EMA-021(a)). As a result, those terms and conditions remained enforceable according to the deadlines in the Permit.

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[4] Anton van Harreveld testimony, November 7, 2019.
[5] Dr. Dalton's testimony, June 6, 2019, p. 10, lines 23-27 and 33-38

[34] The appeals by GFL and the Resident Appellants were heard together. The hearing of the appeals was originally set for 15 days commencing on June 3, 2019. The hearing convened as scheduled from June 3 to 28, 2019, but was not completed in that time. The hearing reconvened from October 28 to November 15, 2019, before adjourning, again without being completed.

[35] Following that adjournment, on November 20, 2019, GFL brought an application for interim relief. Initially, GFL applied to vary certain deadlines in the Permit from February 28, 2020 and March 1, 2020, to later dates.

[36] Shortly after GFL applied for that interim order, the Resident Appellants also applied for an interim order. They sought to vary and add terms in the Permit. They also sought an order requiring that a separate permit be issued to GFL for new works it was constructing at the site of the existing Facility.

[37] The Panel granted GFL's application[6] (the "First Interim Decision"). In a separate decision issued on the same day, the Panel denied the Resident Appellants' application on the basis that their requests were in the nature of final remedies rather than interim remedies (*Michael Dumancic et al v. District Director*, Decision Nos. 2018-EMA-020(a), 022(a)-028(a), 031(a)-034(a) and 036(a)-040(a), January 15, 2020).

[38] The hearing of the appeals reconvened from March 9 to 16, 2020, and was scheduled to continue the week of March 16 to 20, 2020. However, on March 16, the Resident Appellants sought, and the Panel granted, an adjournment of the hearing due to health concerns related to the COVID-19 pandemic.

[39] Prior to the adjournment on March 16, 2020, GFL advised the other Parties and the Panel that it anticipated bringing an interim application to address deadlines under the Permit, as varied by the First Interim Decision.

[40] On March 18, 2020, by Ministerial Order No. M073, the Minister of Public Safety and Solicitor General declared a state of emergency throughout the Province under the *Emergency Program Act*, R.S.B.C. 1996, c. 111, due to the pandemic. The state of emergency was subsequently extended and, at the time of this decision, continues.[7] A series of Ministerial Orders related to the pandemic followed the initial declaration, including Ministerial Orders relevant to the operation of the Facility as an "essential service".

[41] On April 1, 2020, GFL brought a second application for interim relief asking the Panel for sixty-day extensions to the dates varied in the First Interim Decision. According to GFL, it sought these extensions to provide sufficient time for the emergency situation to subside, and for GFL to identify and assess the impacts, and ripple effects, of emergency conditions on the construction and commissioning of the New Facility, while allowing for ongoing operation of the Facility as an essential

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[6] See, *GFL Environmental Inc. v. District Director*, Decision No. 2018-EMA-021(d), January 15, 2020.
[7] For example, see Order in Council 013/2021, January 19, 2021.

service.[8] Recognizing the looming Permit deadlines, the Panel decided the Second Interim Application on an expedited basis.

[42] The Panel granted the relief sought on April 23, 2020, subject to certain conditions (*GFL Environmental Inc. v. District Director*, Decision No. 2018-EMA-021(e), April 23, 2020) (the "Second Interim Decision"). In particular, GFL was required to submit a further application for interim relief by June 1, 2020, that addressed and provided the best available evidence regarding the state of construction at the New Facility, the timeline for readiness to commence operations, the reasons for delays in construction since the appeals adjourned, the steps taken to address delays, and the consequences if the relief was not granted.

[43] After the hearing adjourned, and in the context of the ongoing provincial state of emergency, the Chair of the Board convened two case management conferences ("CMCs") to discuss options for reconvening the hearing. The first CMC occurred on April 7, 2020, and the second on June 16, 2020. After the second CMC, and after considering the Parties' availability and desire to proceed with an in-person hearing, at the direction of the Board Chair, the Registrar set July 21 to 24, and 27 to 30, 2020, to conclude the hearing of the evidence in the appeals. In order to accommodate the recommended health precautions due to the ongoing pandemic, the Board reserved two hotel ballrooms, wired to record and amplify sound, arranged to provide for the appropriate social distancing, and live-streamed (audio only) the proceedings.

[44] On June 1, 2020, GFL filed a third application for interim relief, as required by the Second Interim Decision. GFL sought "specific timeline relief" that would, with two exceptions, vary the deadlines approved in the Second Interim Decision from June 30, 2020 to August 31, 2020, or from July 1, 2020 to September 1, 2020. The Panel granted the relief sought on June 25, 2020 (see *GFL Environmental Inc. v. District Director*, Decision No. 2018-EMA-021(f), June 25, 2020).

[45] On July 14, 2020, the District Director wrote the Board, giving notice that he intended to bring a motion, at the earliest opportunity, that the Panel Chair and Panel Member Michaluk (the "Member") recuse themselves from continuing with the hearing of the appeal based on allegations of bias.

[46] The Board's Vice Chair, Service Delivery, wrote in reply on July 14, 2020, informing the District Director that, to bring the motion, he needed to file a general application under section 6 of the Board's Practice and Procedure Manual and Rule 16(2). The Vice Chair further advised that filing the application would not act as a postponement of the oral hearing set to reconvene on July 21, 2020.

[47] On July 17, 2020, the District Director filed a three-page Notice of Motion with the Board seeking orders that the Panel Chair and the Member recuse themselves from the hearing, on the basis of actual bias in the proceedings or, alternatively, the reasonable apprehension of bias arising from their conduct in the

[8] See Second Interim Decision at paragraph 27.

proceedings. The District Director filed an affidavit by Ms. Raman Rai, in support of his motion. The District Director also requested that the about-to-be-reconvened hearing occur before Panel Member White alone.

[48] Later in the day on July 20, the Panel received an application from GFL to cross-examine Ms. Rai on her affidavit. GFL also sought orders directing the District Director to provide particulars with respect to parts of the District Director's Notice of Motion, and for a written hearing of the District Director's application and GFL's application in response (the "Application to Cross-Examine").

[49] The hearing reconvened on July 21, 2020.

[50] On July 30, 2020, after 44 days of submissions and evidence, the oral hearing concluded. The Panel Chair subsequently set a schedule for written closing submissions on the merits of the appeal. That schedule ended on October 6, 2020.

[51] On August 7, 2020, the District Director filed a complete recusal application (the "Recusal Application") with supporting documents.

[52] On October 7, 2020, the Panel denied both the Recusal Application and the Application to Cross-Examine (*GFL Environmental Inc. v. District Director*, Decision Nos. 2018-EMA-021(g) & (h), October 7, 2020).

### GFL's position on its appeal

[53] GFL's Statement of Points identified its grounds for appeal as follows:

- the District Director erred in failing to provide written reasons for the Permit requirements;
- the District Director erred by providing unduly prescriptive and unnecessary Permit requirements which are not advisable for the protection of the environment, including the Permit's effective period;
- the District Director exceeded his discretion by providing a flawed compliance mechanism in the Permit; i.e., odour units;
- the District Director exceeded his jurisdiction by improperly delegating his power's and jurisdiction, and breached the rules of procedural fairness by including a prohibition on certain actions triggered by the discharge of odorous air contaminants recognizable by an "Approved Person" (the Sniff Test"[9]); and
- the District Director acted unreasonably or inconsistent with his statutory mandate and in breach of procedural fairness by providing for additional or amended Permit terms, or for requirements subject to approval by the District Director ("placeholders"[10]).

[54] In its Final Submissions at the close of the hearing, GFL did not pursue its first ground of appeal (neither did it expressly abandon the ground), and submitted

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[9] See Permit, page 1, section 1.

[10] Placeholder provisions are the Permit terms that were to be decided to the satisfaction of the District Director after the Permit was issued.

that some of the "unduly prescriptive" Permit terms were now moot as they had been time-limited. GFL's stated intention throughout the permit application and appeal process has been to upgrade the Facility by constructing the New Facility by February 28, 2020[11], subject to the necessary government approvals to construct and operate the New Facility on an expedited basis.

[55] GFL argues that it is significant to recognize, at the outset, that this appeal was conducted as a *de novo* (new) hearing. Much of the evidence presented to the Board was not before the District Director when he decided to issue the Permit. Also, the Board's functions are not limited to remitting the appealed decision back to the original decision-maker, or to confirming, reversing, or varying the appealed decision. GFL submits that, instead, the Board is empowered to make, and has the responsibility to consider making, "any decision that the person whose decision is being appealed could have made" and that the Board "considers appropriate in the circumstances"[12]. The Board can step into the shoes of the decision-maker and may make an entirely new decision. As a result, the Board owes no deference to the District Director.

[56] Further, GFL submits that permit provisions must be clear, be reasonable and promote efficiency. A permit ought not to prescribe more than is necessary.

[57] GFL submits that certain Permit provisions should be removed or varied because they fall within one or more of the following categories: they are unnecessarily prescriptive or are too vague; they do not achieve the appropriate balance mandated under permitting principles; they are not sufficiently connected to the protection of the environment; they undermine the statutory scheme and purpose; or, because the required balancing is better achieved by amending certain terms in the Permit, as proposed by GFL. Further, the Permit provisions do not recognize the Facility's contribution to sustainability as a relevant factor.

[58] GFL argues that the District Director deliberately constructed a highly prescriptive permit and "vigorously" applied "every regulatory tool available". This approach undermines the operational flexibility required for good composting and impedes operational efficiency. The purpose of the Permit, and the *Act*, is to reduce waste created by society to reduce impacts on the environment. By its very nature, composting not only reduces, but also removes, waste from the environment. It is to be encouraged.

[59] Further, GFL asserts that the District Director's decision to treat odour as a "serious public health concern" that should be addressed by strict permit conditions is neither fair, balanced nor reasonable. GFL's position is that before impacts are characterized as a "serious public health concern", direct medical evidence ought to be adduced regarding those impacts on the community in question. GFL submits that the District Director acknowledged, in his testimony, that it is important to be

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[11] Amended to May 1, 2020 in the Board's First Interim Decision, discussed above.

[12] See, British *Columbia Railway Company et al. v. Director of Waste Management*, BCEAB Appeal No. 2000-WAS-018(b). The Board's authority to "make any decision" is confirmed in section 103(c) of the *Act*.

careful about what he says about health issues and GFL's conduct so as not to unnecessarily cause fear or reduce the community's confidence in GFL.

[60] Further, GFL submits that the District Director did not provide any medical evidence that odours from the Facility were having medical impacts on anyone in the community and such a conclusion is not supported by the evidence.

[61] GFL asked the Board to amend the Permit by deleting numerous provisions (including provisions related to the use of "odour units", "speciated odorous air contaminants") and the restriction related to observations by an "Approved Person". GFL also asked the Board to remove other Permit terms arguing that they were not advisable for the protection of the environment. Further, GFL asked that the Board amend the effective period of the Permit.

**GFL's position on the Resident Appellants' appeals**

[62] GFL's position is that the Resident Appellants have not established that varying the Permit as they suggest is advisable for the protection of the environment and, as a result, the appeals ought to be dismissed.

[63] GFL submits that the Resident Appellants focused largely on the Facility whereas it is the New Facility that is now relevant. In its final submission, GFL stated that it would not oppose amending the Permit in certain respects, as proposed by the Resident Appellants, provided other concerns GFL has with the Permit are addressed.

**The Resident Appellants' position on their appeals and GFL's appeal**

[64] The Resident Appellants' view is that the Permit is not prescriptive enough and it affords GFL too much flexibility to operate in a manner that is not advisable for the protection of human health and the environment. They say that odour from the Facility and the New Facility has harmed their health, and negatively impacted their property values and their ability to enjoy their properties. They ask that the Permit be quashed or varied to be more stringent.

[65] In their Statement of Points, the Resident Appellants submit that the District Director:

- failed to consider the impact of the historical and ongoing emissions of odorous air contaminants from the Facility on surrounding residents, including on their right to breathe clean air;
- failed to provide protection or recourse for those residents who lived within the 1, 2, or 3 kilometre radius of the Facility as identified in section 1(1), "Discharge of Odorous Air Contaminants" and specifically, Table 1 at page 1 of the Permit;
- failed to include provisions in the Permit that are consistent with the Bylaw and with recommendations and information provided to him by residents;
- failed to include enforceable Permit conditions that would effectively protect the residents from ongoing emissions from the Facility and the New Facility;
- erred in requiring that the residents submit complaints on an ongoing basis to trigger the Approved Person test under the Permit;
- failed to consider whether GFL is operating in compliance with municipal and provincial zoning and land use designations as required under the Licence.

[66] In their closing submissions, the Resident Appellants state only that the District Director erred in failing to appropriately consider:

- odour complaints prior to and following the issuance of the Permit;
- site-specific circumstances; and
- monitoring requirements and enforcement mechanisms.

[67] The Resident Appellants seek an order from the Board requiring that the District Director amend the Permit by:

- varying the distance in Section 1, Table 1, Column B of the Permit (after March 1, 2020) to "beyond the facility fence line", or "to the nearest sensitive receptor", in describing the distance at which, in certain circumstances, odours from the Facility are not authorized to be recognized;
- providing alternative triggering events for the Permit requirement to cease receiving food waste (section 1(2));
- prohibiting pollution from each emission source;

- adding test requirements of feedstock during the composting process for emission of volatile fatty acids, finished compost for fecal coliform and E. coli, and the surrounding water table for "hazardous materials";
- requiring the removal of finished and unfinished compost from the site prior to the final commissioning of the New Facility, or that any compost onsite be kept in covered stacks of no more than 8 feet in height, with monitoring in place to ensure appropriate oxygen levels in the stacks; and
- requiring a "real-time monitoring program that triggers a real-time warning to GFL if there are odour emissions of concern".

[68] Alternatively, the Resident Appellants seek certain declarations from the Panel. The Panel notes that it is not empowered to grant declaratory relief, so will not summarize those requests in greater detail.

[69] Further, the Resident Appellants ask the Panel to remit the Permit back to the District Director for reconsideration, with directions that he: provide written reasons for the Permit requirements; require "appropriate oxygen and hydrogen sulphide monitoring"; and ensure that the Fraser Health Authority is provided with air dispersion modelling to enable it to offer comment on the permitted emissions.

**The Resident Appellants' position on GFL's appeal**

[70] The Resident Appellants submit that GFL has failed to provide evidence that the Permit requirements are not advisable for the protection of the environment. They submit that the relief sought by GFL would result in a disproportionately adverse impact on the surrounding community and environment. As a result, the Resident Appellants ask that the Board dismiss GFL's appeal.

[71] In their final reply to GFL's appeal, the Resident Appellants ask the Panel to consider evidence that was not tendered during the hearing regarding complaints that the residents have made to Metro Vancouver since the hearing concluded. The Resident Appellants submit that this new evidence establishes that the New Facility is not operating as GFL submitted it would. This request will be addressed later in the decision.

**The District Director's position on GFL's appeal**

[72] The District Director submits that GFL's appeal should be dismissed. In response to GFL's submissions, the District Director submits that the Permit's terms and conditions:

- are advisable for the protection of the environment;
- strike the appropriate balance between the potential risk of harm to human health and the environment on one hand, and the potential benefits of the activity and other societal interests on the other;
- are fair, reasonable and not unduly onerous on GFL;
- are clear and well-defined; and
- are within the District Director's jurisdiction.

[73] The District Director says further that:

- measuring and limiting odorous air contaminants is reasonable and advisable for the protection of the environment;
- the use of "Approved Persons" is an appropriate and verifiable method for determining whether odours from the Facility or the New Facility have been detected past the boundary of GFL's property;
- the "odour unit" requirement is reasonable, reliable, and the best available method that has been adopted by international and Canadian jurisdictions for measuring the quantity of odour emitted from industrial sources;
- the Permit term is appropriate in the circumstances;
- the power to amend or add Permit requirements is within the District Director's jurisdiction and is an appropriate use of his authority in the circumstances; and
- the odour assessment procedure that Metro Vancouver developed to guide Approved Persons in carrying out the Sniff Test, is a reasonable and reliable guidance document to assist Approved Person in carrying out their responsibilities.

[74] Further, the District Director submits that the Permit includes requirements to address the emission of odorous air contaminants from the Facility and the New Facility, including:

- the requirement to stop receiving food waste if "malodour" has been detected by an Approved Person at a distance of 3 kilometres or more from the Facility for more than 5 minutes in any 10-minute period, on more than 3 days in any fourteen-day period;
- until March 1, 2020[13], a limit on the monthly quantity of compostable material received to either 13,000 tonnes/month or 12,000 tonnes/month;
- odour control measures, including aeration requirements;
- source testing and reporting on the quantity of emissions;
- testing for and measuring certain odorous air contaminants;
- the requirement to conduct dispersion modeling of certain odorous air contaminants;
- limits for maximum emission rates for certain odorous air contaminants; and
- after March 1, 2020, a limit on the maximum 10-minute average concentration of "odorous air contaminants" from Emission Sources 08-10, inclusive, to 1.0 "odour unit" at the nearest sensitive receptor for more than 0.2% of the time.

[13] varied by the Board to September 1, 2020

[75] The District Director seeks an order dismissing GFL's appeal and confirming the District Director's decision to issue the Permit.

**The District Director's position on the Resident Appellants' appeals**

[76] The District Director says the Resident Appellants failed to establish, on a balance of probabilities, that the Permit terms are not sufficiently protective of the environment, or that they allow pollution to be caused and, as a result, their appeals ought to be dismissed.

[77] The District Director submits that in making his decision, he:

- acted in good faith in issuing the Permit;
- considered relevant information and documents;
- used personal knowledge and experience and relied on competent and experienced staff;
- sought input from agencies and the public; and
- deliberated on all relevant legal and factual considerations.

[78] The District Director seeks an order dismissing the Resident Appellants' appeal and confirming the Permit.

**Delta's position on the appeals**

[79] Delta submits that the District Director had a reasonable basis for imposing the requirements in the Permit, and he had the statutory authority to do so under the *Act* and the Bylaw. In addition, the District Director has the authority to impose further requirements to address the community's concerns regarding odorous air contaminants discharged from the Facility and the New Facility, and it would be reasonable that he do so.

[80] However, Delta agrees with the Resident Appellants that section 1(1) of the Permit does not adequately address the impact of odorous air contaminants from the Facility and the New Facility on surrounding residents and is not stringent enough. Delta says that the Resident Appellants' submissions regarding amending the distance in Column B of Table 1, Section 1(1) of the Permit are "reasonable".

[81] Delta supports GFL's efforts to fully enclose the Facility but says that more is needed to address community concerns regarding odorous air contaminants being discharged from the Facility and the New Facility. Delta says that Metro Vancouver must be able to assess odorous air contaminants discharged from the Facility and the New Facility in some practical way, to determine compliance with the Permit. Delta says that its staff are, as "Approved Persons" under the Permit, adequately trained to detect and assess odorous air contaminants, and Metro Vancouver is entitled to rely on their observations for determining GFL's compliance with the Permit. Delta says that GFL has not offered a viable alternative to the Sniff Test or the "odour unit" limit under the Permit. Further, Delta says GFL's argument that monthly volume restrictions and temporary "stop receipt" orders under the Permit are invalid and unreasonable is not supported.

[82] Delta initially submitted that it would provide evidence regarding the extent and impact of odours from the Facility and the New Facility on the community, including staff's first-hand knowledge in undertaking odour surveys as "Approved Persons" under the Permit and their training under Metro Vancouver's odour assessment procedure. However, Delta did not call any evidence in the hearing, despite being given the opportunity to do so.

## ISSUES

[83] The overall issue in this appeal is whether the Permit's terms and conditions are advisable for the protection of the environment. That issue includes a consideration of whether:

1. the Panel owes any deference to the District Director;
2. the District Director is required to provide written reasons for the Permit requirements;
3. using odour units as the emission compliance limit in the Permit is an appropriate requirement for the protection of the environment that the Panel considers advisable;
4. the Permit terms relating to "odorous air contaminants" recognizable by an "Approved Person" (the "Sniff Test") are advisable for the protection of the environment;
5. the effective period for the Permit is advisable for the protection of the environment;
6. the District Director included other operating, monitoring, and reporting requirements that are unduly prescriptive and are not advisable for the protection of the environment; and
7. the Permit provisions failed to strike a balance between the interests of GFL in operating a composting facility and the protection of the receiving environment (including the Resident Appellants).

## SUMMARY OF EVIDENCE

[84] During the hearing, the Panel heard 44 days of testimony from 27 witnesses, five of whom were qualified as expert witnesses. In addition, the parties entered 242 exhibits into evidence, including numerous expert reports and technical documents. GFL focused its evidence largely on the New Facility that was permitted to be in operation after March 1, 2020, whereas the District Director and the Resident Appellants focused their evidence largely on concerns about the Facility that was permitted to operate until February 28, 2020. Delta did not call any evidence.

[85] It should be noted that not all the evidence presented to the Panel is specifically referred to in this decision, due to the large volume of material before

the Panel. What follows is a summary of the key evidence. Nevertheless, the Panel considered all the evidence and submissions that were provided.

*Documents that were before the District Director*

[86] All the information that was before the District Director was introduced into evidence before the Panel, including: GFL's application for an air quality permit, the Environmental Protection Notice regarding GFL's application that was publicized (the "Public Notification") and draft permits. In addition, binders of notes, emails, and photographs generated during the permit application process, and involving the three main Metro Vancouver employees who worked on the permit application process and reported to the District Director, were admitted into evidence during the hearing, as were scores of other documents generated by, or sent to, the District Director.

*New document evidence*

[87] In addition, the Panel received and considered document evidence that was not before the District Director when he issued the Permit, including: a technical recommendation memorandum (the "Technical Recommendation Memo") prepared by Metro Vancouver staff after the Permit was issued; expert reports prepared for GFL, the District Director and the Resident Appellants; documents published by the World Health Organization; and, scientific and technical articles, reports and documents related to a new composting facility operating under a contract between the City of Surrey and a private operator, Orgaworld Canada Inc.

*The witnesses and testimonial evidence*

[88] The hearing involved technical and scientific testimony regarding: the composting process and the best available control technology for composting; air emissions, including odorous air emissions, air dispersion modelling, the European standard for measuring odour from industrial facilities in "odour units"; and the appropriateness of using "odour units" as a compliance mechanism in an air quality permit. The Panel heard this evidence from nine technical and expert witnesses called by GFL, the District Director, and the Resident Appellants. These witnesses testified regarding both the scientific studies and information presented to the District Director, as well as information contained in the Technical Recommendation Memo and in scientific journals, studies and in technical reports that the District Director did not receive.

[89] The Panel heard from witnesses regarding: the composting process at the Facility and the new processes planned for the New Facility; the technology and processes that are available to reduce odour from the composting process; the perception of odour; measurements for odour detection; the use of air dispersion modelling to predict the dispersion of odour from the Facility and the New Facility; the impacts of odour on human health and enjoyment of the environment; and, the Permit requirement to monitor and report on odour from the Facility and the New Facility.

[90] Below is a listing of the witnesses who testified, in the order in which they testified on behalf of the parties and including the subject areas in which the expert witnesses were qualified to testify.

[91] The Panel heard testimony from six witnesses called on behalf of GFL, including two representatives of GFL and four witnesses who were called on behalf of the company, three of whom were qualified as experts and whose expert reports were admitted into evidence in the hearing.

*GFL's lay witnesses*

[92] Brian King is a director of GFL and is responsible for GFL's organics processing projects across Canada. He is also the Ontario lead on the Board of Directors for the Compost Council of Canada. Mr. King is a registered Professional Engineer in British Columbia, Alberta, Manitoba, and Nova Scotia. He is also a Professional Project Manager, and a retired Lieutenant Colonel in the Canadian Airforce. He is the Project Manager for GFL in Delta and GFL considers him to be the subject matter expert in composting for GFL although he was not tendered as an expert for the purposes of the appeals.

[93] Jennifer Ahluwalia is GFL's Vice President, Environmental Responsibility and Sustainability. She is the subject matter expert for GFL in odour and air. Ms. Ahluwalia is a registered Professional Engineer in Ontario with experience in air quality management, odour management, air dispersion modelling, reviews of odour assessments and best practices reviews for composting. Prior to working at GFL, Ms. Ahluwalia's experience involved working with at least six composting facilities in Nova Scotia and Ontario, and consulting with regulators to modernize air quality approvals. Mr. Ahluwalia was not put forward as an expert witness.

[94] Paul Geisberger is a registered Professional Engineer in Ontario. He is also the principal consultant at Ramboll Canada Inc., a management firm that consults to industry and government on issues of air quality, air emissions, odour and odour abatement. Prior to his involvement with Ramboll Canada Inc., Mr. Geisberger was employed as the Senior Project Engineer at Pinchin Environmental Limited, where he set up an odour laboratory using the European Standard EN: 13725 (the "European Standard"). The Panel did not accept that Mr. Geisberger was qualified as an expert in odour measurement in Canada. He testified as a lay witness.

*GFL's expert witnesses*:

[95] Thomas Card is a registered Professional Engineer in California and Washington with a master's degree in Civil Engineering and experience in air emissions, including odour emissions. He has participated in more than three hundred air quality projects including assessing air emissions, deciding if control technology is required, designing control facilities and working on new projects where emissions need to be estimated so that controls can be designed. His experience includes working with industries such as pulp and paper, food processing, oil production and refinement, automotive manufacturing, chemical manufacturing, and agriculture processes including composting facilities. Further, Mr. Card has experience with biofiltration systems, packed towers and scrubbers, activated carbon systems, atomized mist systems and thermal oxidizers. He is the

Chair of the American Technical Committee of Design Engineers that deal with odour issues and provide peer review of articles submitted for publication.

[96] Mr. Card was qualified to provide expert evidence on compost processing, operations, design and air emissions from composting. He testified that flexibility is essential to good composting and that the prescriptive Permit terms are antithetical to that process.

[97] Dr. Pamela Dalton is an independent scientist with a doctorate in experimental psychology and a master's degree in public health. She has published fifty-seven peer-reviewed articles including articles on the psychological factors associated with odour, the ability of humans to identify odour, variation in human odour perception, variation of human perception of n-butanol[14], and odour impacts on health. Her experience includes providing peer review for the United States Environmental Protection Agency[15].

[98] Dr. Dalton was qualified to provide expert testimony in the psychological factors associated with the experience of odour on the ability of humans to identify odour, on the variability of human odour perception including to specific substances which include n-butanol and the acute impacts of odour on health. All parties accepted Dr. Dalton's expertise in the areas for which she was tendered.

[99] Frans Vossen is an environmental engineer and a scientific researcher in the Netherlands, and he has a Master of Biology and Environmental Sciences degree. He has international experience in odour consultancy and measurement, including assessment and management, and with the European Standard and working with the composting industry. He is a member of the Dutch Associations of consulting and environmental engineers (NLI, VVM), and a member of the German association of engineers (VDI). He is also the Senior Odour Consultant and a director of Olfasense BV, a consulting firm that provides technical studies and advice on odour-related issues. Prior to that, he was involved in the formation of Odournet, a consulting firm in which he was partnered with Mr. van Harreveld, the expert witness who testified on behalf of the District Director. Mr. Vossen is a past member of the German Committee working on the standardization of odour sampling methods and a member of the Dutch Committee working on the standardization of hedonic tone measurements.

[100] Mr. Vossen was qualified to provide expert testimony regarding the uncertainty related to the European Standard; air dispersion modelling and parameters with respect to air dispersion modelling; the impact or influence of variation in air dispersion modelling parameters on the results of air dispersion modelling; and on certain odour unit guidelines or regulatory limits in the Netherlands with respect to odiferous facilities.

Summary of Mr. King's testimony

[14] N-butanol is a primary alcohol with a characteristic odour.
[15] Dr. Dalton provided a peer review for Anton van Harreveld to the USEPA.

[101] Mr. King testified that the operations at the Facility and the New Facility are governed by three authorizations: The Permit; the Licence issued by the Solid Waste Department of Metro Vancouver; and Ministry of Environment Permit 108476 authorizing the discharge of compostable materials issued under the *Act* (and the *Organic Matter Recycling Regulation*, B.C. Reg. 18/2002).

[102] Mr. King testified that GFL is situated in the agricultural land reserve and, as a result, there is a "cocktail" of odours from various contributing sources including a nearby landfill, cannabis growing operations, and fertilizer (e.g., chicken manure) that is stockpiled and spread on surrounding fields. GFL receives complaints of odours attributed to the Facility at times when it is not operating or when there are other known causes (e.g., a sewage line break).

[103] Mr. King testified that GFL receives 85% of its feedstock from Metro Vancouver member municipalities. The municipalities send commingled waste collected at curbside to GFL as part of Metro Vancouver's organics disposal ban to divert compostable material from landfills.

[104] Mr. King also testified that he attended a "town hall" meeting in the fall of 2017 after GFL purchased the Facility. The District Director was also at the meeting. Mr. King testified that the District Director promoted public contact with Metro Vancouver if residents smelled an odour that they attributed to the Facility. He also spoke to the impact of odour on human health and invited residents to identify their health-related concerns when making complaints. Mr. King testified that, at the meeting, he heard the residents' concerns regarding odour from the Facility.

[105] In a subsequent meeting, hosted by GFL as part of the permitting process, consultants for GFL described an award-winning compost facility owned by GFL and operating in Moose Creek, Ontario (the "Moose Creek facility"). Residents responded to that presentation by stating that they wanted GFL to be required to build a similar structure (i.e., a fully enclosed facility).

[106] After the meeting, Mr. King sought and obtained GFL's commitment to build a new fully enclosed composting facility, estimated to cost $37 million (as of June 2019). The New Facility would be "state-of-the-art" to address concerns from local residents. Mr. King noted that that GFL undertook discussions with Metro Vancouver staff regarding the New Facility based on the understanding that the Permit would have a ten-year term. He referred to notes of a meeting on June 22, 2018, indicating that Metro Vancouver staff and GFL representatives agreed to a Permit expiry date of June 2028. He also testified that GFL was taking steps, in the interim until the New Facility is built and operational, to mitigate the impacts from the Facility on nearby residents. GFL has voluntarily restricted the material being processed, partially enclosed the Facility's existing operations, made operational and personnel changes, added training, and purchased new equipment.

[107] Mr. King testified that he arranged to tour composting facilities in California designed similarly to the, then, proposed New Facility. Representatives from Delta accompanied GFL on those tours. The District Director declined to attend. Mr. King said that he and the Delta representatives commented that they observed no odour from the facilities in the vicinity of nearby businesses and residences.

[108] Both Mr. King and Ms. Ahluwalia testified about their concerns, on behalf of GFL, regarding certain Permit terms and conditions. In their view, the Permit's operating terms are unduly prescriptive and unnecessary, and actually impede GFL's ability to "make good compost" and to mitigate odour from the Facility (and the New Facility). Further, they claimed that the Permit contains dozens of reporting requirements and many testing requirements that lack clarity, do not promote efficiency, and/or are of questionable benefit.

[109] Mr. King also testified as to his concerns with Metro Vancouver's complaint process, including: the identification of the odour source (Metro Vancouver records complaints received by telephone or online, in which GFL is the "suspect" as compared to proven source of odour); the timeliness of Metro Vancouver's referral of complaints to GFL; the limited ability of Metro Vancouver to investigate complaints (a resource issue); and, the lack of follow-up by Metro Vancouver to inform and educate residents of the results of any investigation.

[110] In addition, according to Mr. King, the Permit's effective term does not provide enough time for GFL to amortize the cost of constructing the New Facility and does not recognize the significant investment that GFL is making as part of its commitment to mitigate odour impacts on the community.

[111] In addition, Mr. King testified that some of the Permit requirements conflict with provisions in the Licence. For example, the Licence requires that optimum moisture, temperature, oxygen levels, and porosity are always maintained, whereas the Permit restricts the timing of negative and positive aeration and the turning of the piles. Mr. King testified that, in his experience, it is not common to have exact measures for these factors at each stage of the composting process. Feedstock arriving at the Facility is not homogeneous, and the material's composition changes during the process. As a result, flexibility is needed to adjust and accommodate the changed material during primary composting.

Summary of Ms. Ahluwalia's testimony

[112] Ms. Ahluwalia testified that she is concerned with the Permit terms and conditions regarding the recognition of odour attributed to GFL by an Approved Person. She said that GFL is concerned that the Permit does not stipulate that Approved Persons must be objective (i.e., not from GFL, the community, Metro Vancouver or Delta), trained to recognize odours from GFL as distinct from other contributing odours in the area, and required to differentiate between odours and malodours. Ms. Ahluwalia expressed further concern if Approved Persons are qualified based on their sensitivity to n-butanol (for the reasons expressed by the expert witnesses, Dr. Dalton and Mr. Vossen, described below). She also expressed concern about the distance from the Facility (and the New Facility) at which odour assessments are to occur, because odour disperses and an odour right at the plant boundary will not necessarily have an impact further away in the community.

[113] Ms. Ahluwalia expressed GFL's hope that the Board will either develop, or direct the development of, an odour assessment protocol (with contributions from an expert in odour assessment such as Dr. Dalton). Such a protocol should articulate the concept of an Approved Person, how such a person is designated and

trained, and the scope of what that person can usefully do. Further, the protocol should provide an opportunity for GFL to respond to an Approved Person's findings or observations.

[114] Ms. Ahluwalia also expressed concern regarding the "stop receipt of food waste" provision in the Permit, as it fails to consider that material onsite will continue to contribute to air emissions for months until it leaves the site as finished compost or residuals. Further, interrupting the receipt of material will have an impact on municipalities and other clients who contract with GFL and would need to redirect their material.

[115] Ms. Ahluwalia testified that the Permit requirement that the New Facility must be designed so that the discharge of air emissions from it will not exceed one odour unit more than 0.2% of the time as demonstrated by dispersion modelling is too restrictive. In fact, it represents a "fatal flaw" in the Permit, not because GFL couldn't achieve the limit but because dispersion models may predict an exceedance where none exists. In Ms. Ahluwalia's experience, such an odour unit limit is difficult to achieve and there are many fine details about the sources that need to be input into the model; for example, which emission sources are included is important. Generally, in her experience non-contributing sources such as the biofilter and finished compost would not be included, and if they are, the one odour unit threshold may be exceeded even though those sources contribute background odour and not a material source of odour. In other words, the model will "over predict" what the impact will be on the ground. Other important details include the compounds that are to be sampled, and how those samples are to be gathered. The Permit provides for sampling in odour units using the European Standard and sampling for "odorous air contaminants", but it is unclear what compounds are to be sampled and whether either or both sampling methodologies are required. In their discussions about the Permit, Ms. Ahluwalia asked Ms. Hirvi-Mayne of Metro Vancouver why there were two different sampling methodologies in the Permit, the latter said that Metro Vancouver was looking for insight regarding odours. She added that "we (Metro Vancouver staff) don't think odour units are going to stick, so we want this in the Permit as well".

[116] Ms. Ahluwalia testified that the use of odour units as a compliance measure, as required by the Permit, is problematic. The expert evidence is that the European Standard is under review because there is a fair bit of uncertainty associated with the measurement itself and with the analysis methodology. If the results of testing are not repeatable or reliable, it is difficult to design a facility to meet the criteria (one odour unit). Further, nothing in the measurement of one odour unit relates to malodour. Ms. Ahluwalia expressed concern that one odour unit is quite a low threshold, where half of a trained population can "just detect a difference between two samples". To comply with the requirement, GFL must sample emission sources, put those values and characteristics into a dispersion model together with meteorological and other data, and predict what the concentration of emissions will be at the nearest sensitive receptor. Air dispersion modelling is heavily influenced by the parameters chosen for the model. Ms. Ahluwalia expressed concern about

the requirement to model using the 99.8th percentile parameter[16] and, prior to the issuance of the Permit, asked for the rationale behind Metro Vancouver's selection of that modelling parameter. According to Ms. Ahluwalia, Mr. Scoffield advised that since the maximum was compliance 100 percent of the time, and Ontario uses the 99.5th percentile, he thought that it was appropriate to "split the difference". Ms. Ahluwalia testified that the use of a maximum 1odour unit, ten-minute average ambient performance limit is not an official limit in Ontario permits with which she is familiar. Instead, it is applied on an ad hoc basis and "with little consistency across the province".

[117] Ms. Ahluwalia further testified that while GFL objects to odour units as a compliance mechanism, it may have some use for informational purposes. Regulatory air dispersion models in use in Canada are not designed for odour. GFL does not object to testing for individual compounds such as ammonia, photoreactive volatile organic compounds ("VOCs") and total reduced sulphur ("TRS"). If odour units are removed from the Permit, GFL could use an olfactometric measure with respect to VOCs or other odorous compounds to analyze emissions from the New Facility.

[118] Ms. Ahluwalia testified regarding the timing, frequency and clarity of certain of the monitoring and reporting requirements in the Permit. GFL is required to make just over 100 submissions to Metro Vancouver under the Permit. The magnitude of the reporting has presented challenges to GFL because the reporting distracts GFL's staff (e.g., Mr. King) from focusing on the design and construction of the New Facility. GFL does not object to analyzing and sampling if there is value to the outcome, but the frequency and nature of some of the reporting is of questionable value. Further, it is unclear what GFL is required to report on. In some instances, there are conflicting definitions of "odorous air contaminants" in the Permit that create confusion as to reporting and design requirements. Ms. Ahluwalia testified that there are penal consequences if GFL fails to comply with an unclear provision. She cited an example where Metro Vancouver issued a Notice of Violation to GFL for failing to test for a wide enough spectrum of VOCs when it was, and remains, unclear whether testing for non-photoreactive VOCs (e.g., methane) is required. Further, from an efficiency perspective, Ms. Ahluwalia testified that some of the reporting provisions (e.g., the Biofilter Monitoring Report), if required at all, should be combined and required at an appropriate time after start-up of the New Facility, to provide meaningful data and allow GFL to make room for any needed improvements to the New Facility in their budget.

[119] Ms. Ahluwalia testified that after she joined GFL in 2018, she became aware of the complaint history involving the Facility. She analyzed the complaint history over the two-year period preceding the commencement of the appeal hearing in June 2019 to try to determine what was behind the complaints and what could be done to address them. Ms. Ahluwalia testified that she noted trends in the complaints. Over half of all complaints came from 10 complainants. Further, a large

[16] See Permit section 1(3) "Odour Limit"—emissions from all sources at the Facility must not exceed 1 odour unit more than 0.2% of the time as determined by dispersion modelling.

proportion of the total complaints came from individuals who complained once and did not complain again. There was also a notable increase in complaints following local events where GFL was the subject of discussion. For example, when GFL was discussed at Delta's City Council, during elections, at public meetings or in newspaper articles, complaints spiked. Spikes also followed the Permit issuance and the filing of the appeals.

[120] Ms. Ahluwalia testified that she wanted to work to repair the Facility's relationship with residents. Wendy Betts, one of the Resident Appellants, invited Ms. Ahluwalia to speak at a Town Hall meeting hosted by residents in late August 2018, after the Permit was issued. Ms. Ahluwalia spoke briefly about the planned New Facility to address odour concerns, but the meeting was mostly taken up with the District Director explaining his rationale for Permit terms, and discussions around perceived health impacts from the Facility. She also testified as to the efforts that she and one of the Resident Appellants (Nathalie McGee) made to establish a community liaison group to continue to work with Delta and residents about issues regarding the Facility, and to keep the community updated about the New Facility. Unfortunately, after the community liaison group's initial meeting in December 2018, Delta decided not to participate further, and Ms. Ahluwalia concluded that it was not possible to have productive discussions given the level of anger and distrust in the community toward GFL. Ms. Ahluwalia expressed the hope that the Board would address how to best advance respectful communication going forward.

Summary of Mr. Geisberger's testimony

[121] Mr. Geisberger testified that he was directly involved with one of the largest laboratories in Canada to measure odour units, Pinchin Ltd. He has experience in a laboratory using olfactometry, and with much of the methodology described in the EN: 13725. He stated that when a sample of odorous air comes to a laboratory, it cannot be measured directly. Rather, it is the human response to odour that is measured. The laboratory uses an odour panel comprised of individuals from the general population chosen for their sensitivity to the odorant n-butanol. Panellists are trained and repeatedly re-evaluated in the measurement process. Using an instrument known as an olfactometer[17], panellists are presented with a sample of clean air and diluted samples of the odorous air to sniff. The goal is to identify the lowest concentration of the odorous sample that can be detected. Panellists are trained to focus on the most minute difference between the "clean air" and the odorous sample. Panellists need not identify the odour in the sample; they need only be able to detect that there is "something different" in the odorous sample as compared to clean air sample.

[122] The odour measurement process starts with a very diluted sample. If the panellists cannot detect the odorous sample, the concentration is doubled. One odour unit is defined by the concentration where 50% of the panel can detect a

[17] The European Standard EN 13725:2018 at page 9 defines a dynamic olfactometer as a device that delivers a flow of mixtures of odorous and neutral gas with known dilution factors in a common outlet.

difference between the clean air sample and the odorous sample. This is the panel's odour detection threshold.

[123] Mr. Geisberger stressed that odour panellists are not asked if the odour is "pleasant" or "offensive", they are simply asked if they can detect a difference between the samples.

[124] Mr. Geisberger testified that the one odour unit "odour limit" in the Permit, is a compliance limit after dispersion modelling.

[125] He also testified that odour units have been in Ontario's Source Test Code for measuring and testing emissions ("Method 6") since 2004 and have been included in Ontario environmental approvals. He testified that he would expect that the European Standard is used to measure odour at the Moose Creek facility under an amendment to an approval issued by the Director under the *Environmental Protection Act*[18] in 2013. He noted that the Ontario Ministry of Environment may have modified the use of the European Standard.

[126] He added that he believed that odour samples from British Columbia would be sent to Ontario laboratories.

[127] Mr. Geisberger further testified that his experience working in odour laboratories in Ontario is that there is no air standard for odour in the province. Neither is there a guideline for odour limits, although limits have been placed in some permits. There is a "technical bulletin" that describes how to model at sensitive receptors for compounds such as hydrogen sulphide and methyl mercaptan (compounds with odours attached). The bulletin allows removing data from the air dispersion model for anomalous meteorological events: 0.5% of the highest numbers at each sensitive receptor are removed. The result is that data is used from the 99.5$^{th}$ percentile. In effect, the model allows for the removal of eight hours of data per year (0.5% of the hours in a year). This allows for rare, extreme meteorological conditions that result in relatively brief exceedances, without altering the requirements of the permit. The bulletin does not address mixtures of odorous compounds. Mr. Geisberger noted that the difference of 0.3% between the 99.5$^{th}$ percentile and the 99.8$^{th}$ percentile can be "very significant" to a permittee.

[128] Under cross-examination, Mr. Geisberger conceded that the amended environmental compliance approval issued by the Director of the Ministry of Environment in Ontario to the Moose Creek facility has an odour performance of not more than one odour unit. He noted that the Director in Ontario has the discretion to exclude outlying data points; this is the provision that he had mentioned that allows for exclusion of data related to extreme meteorological conditions.

[129] Mr. Geisberger also testified about the "Nagata method" for measuring odour threshold (i.e., the Yoshio Nagata Measurement of Odor Threshold). The mean of all individual results is calculated to arrive at the odorant's odour detection threshold.

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[18] See Appendix "X" to the Technical Recommendation Memo, "Amended Environmental Compliance Approval Number 9112-9DMTGX" issued under the *Environmental Protection Act* (Ontario) to Lafleche Environmental Inc., dated December 10, 2013.

This is described in a scientific paper that is in evidence and reports on an experiment to measure odour thresholds of 233 substances using the Triangle Odor Bag Method, the standard method for measuring odour in Japan.

[130] Mr. Geisberger testified that in his experience, this Permit marks the first time that odour units are being used as a regulatory standard. He questioned why Metro Vancouver would use a standard that is presently under review in a permit. He added that if the standard changes, the meaning of "odour units" in the Permit would change.

Summary of Mr. Card's testimony

[131] Mr. Card described the composting process, up to September 1, 2020, at the Facility. Feedstock material that arrived at the Facility consisted of food waste, reactive green waste (leaves, grass, yard waste), and stable green waste (wood) was mixed or blended with less reactive green waste and placed into large covered aerated static piles ("CASPs") that were covered with "overs" (a recovered bulking agent such as cedar chips) to shed moisture and retain heat. The CASPs were aerated either positively (by blowing air up through the piles from the bottom) or negatively (by drawing air down through the pile from the top) to control the temperature, moisture and oxygen content of the pile. The material remained in the piles for 20-30 days while the active composting occurred. The CASPs were turned as necessary to introduce more oxygen to the pile. During the composting process, microorganisms degraded unstable organic material (food and green waste) and turned it into stable compost.

[132] Mr. Card explained that the micro-organisms that do this work are only active in a liquid film. Further, intermediate products are produced during this metabolic process. Those products can escape the liquid phase, if they are volatile, or can produce other products that remain liquid. The amount of air introduced into the composting process is critical. It cannot be so high as to remove the liquid film, or the material will become anaerobic. Anaerobic organisms produce more undesirable byproducts that are highly odiferous. In order to maintain aerobic conditions, the operator needs to ensure that there is uniform aeration in the pile, and that the material is well mixed at the outset of the process. Piles that become too "hot" or lack sufficient oxygen become anaerobic.

[133] At the end of the active processing cycle, the material was picked up and placed into curing piles where it remained for another 30-45 days. Air emissions from the curing piles were much lower than from the CASPs, but not as low as at the final product stage. Once the material was "cured", it was screened to remove the bulking agent and any debris. The final product could be used "as is" or mixed with sand or other nutrients before being used as "synthetic soil".

[134] Mr. Card opined that operators need flexibility so that they can constantly manage four key parameters in the composting process: oxygen supply to the piles (aeration); moisture levels in the piles; temperature of the piles; and the changing nature of feedstock (managing for whatever material is received onsite). Prescriptive permit provisions that dictate how the composting is to occur stand in the way of the operator minimizing odours created in the process.

[135] Mr. Card explained that the New Facility (a 21-channel, agitated, in vessel system) has the three most important design factors: it will produce good compost; emissions will be contained; and emissions will be effectively controlled. Feedstock will be placed in one of the 21 channels where the agitation, aeration and moisture will be computer controlled. In terms of creating good compost, the "BDP agitators[19]" to be used in the New Facility are the most effective system that the composting industry has – the agitators mix material in the channels repeatedly and uniformly. As the material is moved along in the channels, a computer calculates the oxygen and moisture to be added based on input data. Further, the New Facility has a BacTee full floor plenum (the floor is made of modules that allow air to flow underneath the biofilter). All air in the New Facility is exchanged 12 times per hour (normal ventilation is only six air exchanges per hour). This means that hot air coming off the top of the piles is being diluted with fresh air and then sent to, and pushed through, the 1.6-acre biofilter which acts as the odour emission control mechanism. In the biofilter, microorganisms consume the diluted air contaminants coming from the compost. Both the composting and the curing of material occurs in the same vessel.

[136] Mr. Card testified that by designing the New Facility to be fully enclosed, with custom designed BDP agitators in an in-vessel system, five aeration zones, permanent sprinklers, high process control technology, a BacTee full floor ventilation system, and the 1.6-acre biofilter, GFL has used "every tool there is to reduce air emissions". He opined that there is "nothing left to do to lower air emissions".

[137] Mr. Card reviewed the report prepared by the Resident Appellants' expert, Dr. Paul. Mr. Card noted that Dr. Paul's comments were directed almost exclusively to the Facility, rather than the New Facility, and most of his comments were not applicable to a large, indoor operation. For example, Dr. Paul referenced what is now the aerated leachate collection pond but will become only on-site storage for stormwater at the New Facility.

[138] Mr. Card pointed to the Permit requirement (at the time) restricting the hours of aeration at the Facility to those times when the piles are being constructed, as an example of a counterproductive requirement that may result in more odour being produced than would otherwise occur. He opined that at the Facility, GFL was meeting the "best operating practices" recommended in Dr. Paul's Compost Operator's Manual (this manual is discussed below in the summary of Dr. Paul's testimony), but the restrictions in the Permit were hindering GFL's operation.

[139] Mr. Card commented further on Dr. Paul's recommended additions to the Permit. He recommended against adding requirements that are not site-specific. There needs to be a scientific basis for recommending a specific bulk density, moisture content, air-filled porosity or oxygen concentration for the composting process. Otherwise, prescribing set factors may result in increased odour emissions from the compost. Further, as to Dr. Paul's recommendations to test the compost,

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[19] BDP Industries custom builds agitators for composting.

Mr. Card opined that testing for volatile fatty acids ("VFAs") is almost never done in the United States because the testing is expensive and time-consuming, and the (human) odour detection threshold is much lower than what the lab can detect. In other words, the human nose can detect VFAs long before a lab test will show there is a problem. Further, Mr. Card agreed with Dr. Paul that VOCs are not a good indicator of odour. Neither is ammonia a good surrogate for odour. Hydrogen sulphide is a small contributor to odour but is ubiquitous to composting – there are always small pockets of hydrogen sulphide present, even in well-run composting operations. Mr. Card recommended testing for methane, because methane emissions within the odour detection threshold indicate that aerobic conditions are present.

[140] In response to a question from the Panel, Mr. Card advised that, in the United States, the emission limits in authorizations are for hydrocarbons, ammonia and dust, not odour.

Summary of Dr. Dalton's testimony

[141] Dr. Dalton testified that the human experience of odour is highly subjective.

[142] Given the variation in the human response to odour, Dr. Dalton opined about the importance of having an objective way of understanding what the actual odour is and what the intensity is while addressing or limiting the subjective and psychological factors that can impact human perception of odour.

[143] Dr. Dalton opined that the starting point in the selection of odour assessors, to ensure objectivity, is that they have no connection with the community under study. Further, odour assessors must be independent and should not be told the reason for the assessment; e.g., a response to complaints.

[144] Dr. Dalton also testified regarding the need for reliability and accuracy in odour assessments. She testified that where multiple odours may be present, the assessor's goal should be to identify *any* odours, not to look for a specific odour contributor. Dr. Dalton stressed the importance of training odour assessors, particularly where there are multiple sources of odour, so they can distinguish one source from others in the environment. Dr. Dalton noted, by way of illustration, that sommeliers and perfumers undergo years of training to ensure that they can detect nuances and distinguish between wines and perfumes that have a similar odorant composition.

[145] Further, Dr. Dalton recommended that odour assessors be trained to distinguish between possible sources of odour by attending those sources and providing them diluted samples from those sources, so that they are tested, trained and retested on how each source might smell if the assessor is a half kilometre or kilometre away from the actual source. Further, odour assessors should operate in pairs, and each assessor ought to be rotated periodically so that different people are reporting from the site. Still further, odour assessors need to be regularly assessed to ensure their continued ability to discriminate between odour sources.

[146] Dr. Dalton explained the human sensitivity to n-butanol, the reference substance in the European Standard, and described how it is used in the process for

selecting people to be odour panellists. Under the European Standard, odour panels are qualified based on their sensitivity to n-butanol. Individuals who are either "very sensitive" and "insensitive" to n-butanol will be disqualified from an odour panel. To be qualified, a panelist must be able to detect n-butanol within a certain range (i.e., 20 to 80 parts per billion). Panellists are qualified in a laboratory setting (a "clean room") where they are presented with a progressively less diluted sample of n-butanol and two or three "pure air" samples. The point at which a panelist can "just detect a difference" between the pure air and the n-butanol sample is measured as one "odour unit".

[147] The use of n-butanol as a qualifying substance was based on an assumption that sensitivity to n-butanol would correlate to sensitivity to another substance. Dr. Dalton testified that several studies have now been published that conclude that an individual's sensitivity to n-butanol does not appear to correlate with their sensitivity to other compounds that may be encountered during environmental investigations. She noted that one study analyzed datasets from three odour laboratories to investigate the relationship between sensitivity to n-butanol and sensitivity to odorants from pig farms: Feilberg, et al. (2018), "Relevance of n-butanol as a reference gas for odorants and complex odors", *Water Science and Technology* 77, at 1751-56. The analysis revealed that sensitivity to n-butanol was not correlated to sensitivity to other odorants in the emissions, even those compounds that were structurally related to n-butanol. In an earlier study by Klarenbeek et al. (2014), "Odor measurements according to EN 13725: A statistical analysis of variance components", *Atmospheric Environment*, 86 at 9-15, the investigators evaluated 412 odour measurements from 33 sources, and concluded that the sensitivity to n-butanol could not be correlated to sensitivity to other odorants. These results were consistent with a study by Zernecke et al. (2011), "Correlation analyses of detection thresholds of four different odorants", *Rhinology* 49, at 331-336. That study showed that, for individuals with a normal sense of smell, there was no correlation between sensitivity to n-butanol and two other odorants (phenylethyl alcohol and isoamyl butyrate).

[148] Dr. Dalton informed the Panel that as a result of the Zernecke study, German states no longer use n-butanol alone to qualify odour panels. Dr. Dalton also testified that she conducted a study in her laboratory which demonstrated that there is no relationship between an odour panel's ability to detect n-butanol and their ability to detect t-butyl mercaptan (one of the odorants used to detect natural gas)[20]. Dr. Dalton testified that the results of these four studies suggest that qualifying an individual to investigate environmental complaints based on sensitivity to n-butanol is not appropriate. Instead, individuals should be tested, evaluated and selected based on their sensitivity to the specific odorants or their mixtures, to be investigated. Given the results of her study, Dr. Dalton's odour laboratory no longer uses n-butanol to qualify panel members for odour measurement. Instead, she qualifies odour panellists based on their sensitivity to the odorant for which they are being tested.

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[20] Dr. Dalton's study was unpublished as of the date of her testimony.

[149] Dr. Dalton advised the Panel that the European Standard is being reviewed, and consideration is being given to using a second reference material due to the concerns regarding the lack of correlation between sensitivity to n-butanol and sensitivity to other odorants. Further, the odour unit measurement is conducted in a clean room where the panellists are directed to pay attention to the difference between samples. Panellists are also directed to avoid exposure to certain substances such as coffee or gum prior to being tested. In Dr. Dalton's opinion, the extrapolation of that experience to the "real world", where odour assessors are directed to look for one odour amongst several, is "highly questionable." There is almost zero correlation between compost compounds and n-butanol. She questions why the Permit would use a "flawed method" of odour measurement when better options are available. For instance, she suggests using a sample that is a mixture of compounds representative of compost (e.g., a VFA such as valeric acid, and hydrogen sulphide) to test the panel.

[150] Dr. Dalton noted that certain factors need to be considered when using the European Standard. One of those factors is that the odour nuisance and the odour annoyance produced by a given odour exposure can be greatly influenced by subjective or psychological effects. Dr. Dalton noted that there are many non-sensory factors influencing the perception of odour. For example, beliefs can cause a person to believe an odour is present when it is not, misattribute the source of the odour, or experience discomfort. This olfactory hallucination can give the person perceiving the odour misinformation about an odour that can be pleasant or unpleasant. Research has shown that up to 30% of the population experience such olfactory hallucinations. The olfactory system is the most suggestible system that we have; it is very malleable.

[151] Dr. Dalton opined that it is critically important to establish whether odours are, in fact, travelling offsite from a putative source and, if so, the frequency and intensity of those odours. Self-reporting, particularly among individuals whose expectations are often unconsciously modulating their perception and odour attribution, is often unreliable.

[152] Dr. Dalton further opined about the "Approved Person" provisions in the Permit. She expressed concern that the findings of an Approved Person may not be reliable. The Permit does not specify how these individuals are selected, qualified or trained to perform odour assessments of the Facility or the New Facility. It is important to know how these individuals will be trained in order to be satisfied that they can reliably distinguish certain odours from others. In her training program for odour assessors, Dr. Dalton ensures that odour assessors: have no connection with the community under assessment (to eliminate the possibility of influence by media or previous experiences); are directed to identify any odours; have sufficient time to gain expertise; work in rotating pairs; and have limited work exposure to avoid fatigue. Further, it is important that odour assessors undergo regular re-testing to ensure that they can continue to discriminate between odours. In other words, there are safeguards in place to ensure the fidelity of the reporting. That reporting includes the odour detection threshold, one or more descriptors of the odour (e.g., musky) and the hedonic value (pleasant or unpleasant). Odour assessors are not given a reason for the assessment (e.g., a complaint).

[153] Important factors for consideration in this case are the other contributing sources of odour in the area of the Facility including decaying organic matter, a landfill, cannabis-growing operations, and fertilizer on farm fields and on the adjacent turf farm. At a distance, these odours will be confusable. Another important factor to consider in assessing reliability is the accessibility of suitable locations (upwind and downwind) from which to assess and trace odour.

[154] In response to the opinion offered by Mr. van Harreveld, Dr. Dalton opined that it is dangerous to refer to unwanted odours as "pollutants". Odours cannot and should not be regulated as pollutants because there is no concentration of an odour that will generate a health effect in an individual such as would be seen for a chemical. The human perception of odour is subjective and is affected by factors such as age, health, gender, genetics, mood, and personal coping strategies. Dr. Dalton opined that it is beyond Mr. van Harreveld's expertise to state that odour perception can contribute to an individual's stress level which can, in turn, lead to disease. She expressed a "grave concern" that providing such information is misleading and could increase the stress levels in the community. Pure odours do not cause anything other than a perception.

[155] During cross-examination by counsel for the District Director, Dr. Dalton was directed to a document summarizing the discussion of attendees at a workshop entitled "Potential Health Effects of Odor from Animal Operations, Wastewater Treatment and Recycling of Byproducts", *Journal of Agromedicine* Vol. 7(1) 2000, by Susan Schiffman, Ph. D and others. In response, Dr. Dalton noted that while one attendee offered an opinion regarding an association between odour and health effects, she stated that there is no good evidence for that proposition. She further noted that, at page 29, the authors of the paper note that "(t)he intensity, duration, and frequency of health symptoms must be carefully evaluated before drawing the conclusion that such symptoms constitute a health effect."

<u>Summary of Mr. Vossen's testimony</u>

[156] Mr. Vossen testified regarding the uncertainty associated with odour units as a way of measuring odours. Even if the European Standard is used, there is a recognized level of uncertainty between a sample's actual result (its trueness) and the measured result, which needs to be considered. The European Standard states that the uncertainty between the actual result and the measured result of the same odour sample can lead to differences in outcome up to a factor of three based on a single sample. If sampling is done in triplicate, the uncertainty or variability in the result can be reduced to a factor of two (that uncertainty is further discussed later in this Decision). Mr. Vossen noted that research has shown that the uncertainty related to environmental samples is much greater than is indicated in the European Standard for sensitivity to n-butanol.

[157] Mr. Vossen testified that if proposed revisions to the European Standard are not adopted, it is unclear that the standard will continue to be used. In his opinion, using a "mixture" of compounds in place of n-butanol is problematic in the environmental context for several reasons: the exact composition will change over time; the sample must be representative; and the sample must influence the

trigeminal nerve (stimulate a response) and must not be "sticky" (i.e., leave a residue in the device) and, therefore, unsuitable for use in an olfactometer.

[158] Mr. Vossen testified that the Permit's facility-wide limit based on odour units is not "relatively close" to limits used in other jurisdictions as suggested by Mr. van Harreveld. Mr. Vossen noted that Mr. van Harreveld used Dutch emission guidelines for wastewater treatment plants as a comparator. Mr. Vossen opined that the more relevant standard for comparison with the standard (limit) in the Permit would be the Dutch standard for composting facilities. Compared to odour criteria from Europe for composting sites, the Permit's limit is far more restrictive. The odour impact limit value for the Facility is 12 times stricter than the odour impact limit value for composting plants in the Netherlands which provide for an odour impact limit of 1.5 odour units based on an hourly average value at the $98^{th}$ percentile. The odour impact limit for the Facility is four times stricter than the limit for wastewater treatment plants which provide for a limit of 0.5 odour units based on an hourly average value at the $98^{th}$ percentile. In comparison to the Permit, 1 odour unit as an hourly average at the $98^{th}$ percentile is equivalent to 8 odour units as a 10-minute average at the $99.8^{th}$ percentile.

[159] Mr. Vossen testified that "leaving olfactometry is not regarded as a good option". He acknowledged that the methodology is not yet perfect, "but we should go on."

*The District Director's lay witnesses*

[160] The Panel heard testimony from six witnesses called on behalf of the District Director, including one witness who was qualified as an expert (whose expert report, in a redacted form, was admitted into evidence in the hearing), four Metro Vancouver staff, and the District Director himself.

[161] The District Director called five witnesses who were not tendered or qualified as experts: Dr. Kathy Preston, Assistant District Director and Lead Senior Engineer, Air Quality Regulation and Enforcement Division, Metro Vancouver; Trevor Scoffield, Permitting Specialist, Metro Vancouver; Maarit Hirvi-Mayne, Senior Project Engineer, Metro Vancouver; Michelle Jones, Permit Compliance and Enforcement Officer, Metro Vancouver; and District Director, Metro Vancouver.

[162] The District Director is a Professional Engineer. His education includes a master's degree in Environmental Engineering from the University of British Columbia, a Bachelor of Applied Science degree in Chemical Engineering (focused on chemical processes) and a Technical Institute Diploma in Industrial Chemistry. Prior to being appointed as District Director for Metro Vancouver, the District Director served as Lower Mainland Industrial Section Head at the Ministry of Environment where he worked from 1989-2005. His duties for the Ministry included drafting permits for signature, and ultimately, issuing air quality permits in his capacity as Assistant Regional Waste Manager or an Assistant Director under the *Waste Management Act* and then the *Environmental Management Act*.

*The District Director's expert witness:*

[163] Anton van Harreveld provided expert testimony on behalf of the District Director. Mr. van Harreveld is the CEO and founder of Odournet, a consulting firm that provides consulting, technical studies and advice to clients (industry and regulators) on how to perform odour emissions testing. He has a Master of Science degree in agricultural engineering where he specialized in the health effects of pollution. Mr. van Harreveld is a convenor[21] of the Comité Européen de Normalisation (CEN) (the European Standards' organization) and a member of the technical committee (TC 264) of the CEN that developed the reference methods in the air quality standard (EN: 13725). He is also a member of the Working Group[22] that recommended the standard that became the European Standard (EN:13725).

[164] Mr. van Harreveld was qualified to provide expert evidence[23] regarding:

- human olfaction;
- olfactometry, olfactometry technology and processes including sample collection, sample conditioning, and sample dilution;
- mode of sample presentation to odour panellists;
- selection and qualification of odour panellists;
- reduction in the variability of human perception;
- processing and validation of data; and statistical quality assessment of results;
- the use of reference materials in olfactometry, including n-butanol;
- the European Standard, including its application, in Europe, for odour testing and effectiveness in measuring and monitoring environmental odour for regulatory purposes, including compliance and enforcement;
- odour measurement, including odour concentration measurement;
- air dispersion modelling, including its use in odour exposure assessment for the regulatory application for air quality criteria for odour exposure and the impact or influence of variation in air dispersion modeling parameters on the results of air dispersion modeling; and
- public health effects of environmental odour exposure, including negative odour.

Summary of Mr. van Harreveld's evidence

[165] Mr. van Harreveld testified that olfactometry is a biological assessment. Odour units, under the European Standard, can provide an accurate measure of odour emitted from an organic waste composting facility, but it is important to recognize that olfactometry has a significant level of uncertainty associated with its

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[21] A "convenor", in this context, means the person responsible for reaching consensus among experts where there previously has not been a consensus.
[22] The Working Group consists of two to three experts nominated from member countries.
[23] Mr. van Harreveld was not qualified to provide expert evidence in all the areas for which he was tendered. Those areas on which he opined in his reports that were beyond his expertise have not been considered in this decision.

use. Mr. van Harreveld opined that the uncertainty of odour concentration measurement is "significant" in magnitude, compared to other standardized measurement methods for single compound air pollutants, using instrumental methods. He noted that, typically, for a single measurement result, the maximum margin of uncertainty under the European Standard 99.5% of the time can be stated as a factor of 2.21[24]. In his view, however, human olfaction remains the best available method to quantify odours for environmental quality management.

[166] Further, the European Standard is based on an underlying assumption that sensitivity to n-butanol is transferable to other odorants or mixtures of odorants. Mr. van Harreveld acknowledged that the validity of this assumption is a live issue in Europe. The Draft European Standard that is currently under consideration provides for a secondary reference to be used for odour panel selection and provides a robust procedure for dealing with uncertainty in laboratory results.

[167] When selecting and educating odour assessors, all aspects of the selection process are important because people are the testers. It is important that there be retrospective screening, continuous qualification, limits on their sensitivity, and that the assessors are consistent over time. Further, panellists follow a code of practice that requires that they refrain from wearing strong odorants (e.g., perfume), eating, smoking, or chewing gum, and that they drink only water for a set period of time prior to participating on the odour panel. In addition, panellists are trained to focus on small differences; i.e., being able to "just detect a difference". The result is the odour detection threshold that defines the one odour unit measurement.

[168] Mr. van Harreveld testified that he is aware of odour labs in Ontario that use the European Standard, but he did not know if they are accredited laboratories. He also testified that the maximum average error for a sample result of 1,000 ouE/m$^3$ is in the range of 453 – 2,209 ouE/m$^3$ in 95% of the cases. That margin of error can be reduced by having a larger number of odour assessors in the odour lab receiving the sample, applying more rigorous training to the assessors, and replicating the analysis (recognizing there is a cost to replicating samples). Given such a result, the regulator could "give the benefit of the doubt" to the community and say that a facility is exceeding the permitted limit for any result greater than 1,000 ouE/m$^3$ or could give the benefit of the doubt to the permittee when the value is less than 2,209 ouE/m$^3$. A regulator may wish to require that samples be taken only to an accredited lab and that the laboratory's uncertainty range is stated. Further, it is important that a facility be given time to address odour results and then re-test to see if the facility is in compliance.

[169] Under cross-examination, Mr. van Harreveld acknowledged that it is important that scientists improve the quality of the uncertainty determination because, if the range of uncertainty is undervalued, there is a greater risk of making a wrong determination. The sampling from a facility (as measured in a lab) is input into a dispersion model that predicts the concentration of the odorant that will occur at certain receptor points in the community. Under cross-examination,

[24] See Mr. van Harreveld's first expert report at pp. 64-65.

Mr. van Harreveld testified that in addition to the uncertainty associated with olfactometry, there is uncertainty related to air dispersion modelling. That uncertainty could be as much as 100%, depending on the air contaminant being modelled. Uncertainty related to modelling sulphur dioxide and ozone is relatively well-defined, but less well-defined for other air contaminants.

[170] In response to questions about the one odour unit limit in the Permit (based on the 10-minute average at the 99.8$^{th}$ percentile), Mr. van Harreveld testified that it is "on the more restrictive end" of the range of values used as air quality criteria for odour exposure, when compared to a limited list of countries. It is comparable to the criteria applied in other jurisdictions that are also on the restrictive end of the range; e.g., the Netherlands has a 0.5 o.u./m$^3$ limit for wastewater treatment plants calculated at the 98$^{th}$ percentile and based on 1-hour average. In response to a question from the Panel, Mr. van Harreveld testified that he agreed with Mr. Vossen's evidence that the percentile difference between the Dutch standards and the Permit (99.8$^{th}$ percentile) is "significant".

[171] Mr. van Harreveld also testified that a person observing an odour compares that odour to their memory when deciding if they "like" or "dislike" the odour (the hedonic tone), and when deciding the level of intensity that they assign to the odour. It is only out of that subjectivity that an odour becomes an annoyance. He added that odour panellists cannot identify an odour with certainty when they first detect it; i.e., at one odour unit. It is only when presented with a sample at five to ten times the concentration of the detection threshold that an individual can correctly identify the odour. Further, if an individual can identify an odour in the field (where there are background contributors), the odour will be at around 15 odour units. Under cross-examination, Mr. van Harreveld clarified that the level at which a panelist detects an odour is that person's odour detection threshold (expressed in odour units). The mean of all individual results is calculated to arrive at the odorant's odour detection threshold. The Nagata Method referenced in the Permit, has compiled a list of odour detection thresholds for a list of compounds. The apparatus used to gather samples (the Triangle Odour Bag) has uncertainty related to its use, as does any measurement method.

[172] As to odour detection thresholds, Mr. van Harreveld testified that odour detectability has three attributes: odour type, hedonic tone and intensity. As to the type of odour, humans are very sensitive to sulphur compounds (hydrogen sulphide, mercaptan, valeric acid, etc.). Hedonic tone varies between individuals and over different age ranges. Some substances are universally negative; e.g., odours from rendering plants. Others, such as coffee, may be viewed, on average, as relatively pleasant, but if the odour is unwanted, it can lead to complaints due to its annoyance level.

[173] Mr. van Harreveld further testified that there is ongoing discussion in the scientific community about whether odour can produce adverse health effects, and if so at what level; e.g., annoyance, or nuisance. This is a matter for public policy. Mr. van Harreveld opined that a stressor such as noise or odour, at a certain level, can cause a stress response in a certain portion of the population. The theory is that odour can lead to annoyance, and repeated annoyance can cause nuisance or

stress. If the exposed population is unable to address the odour, or cannot cope with it, the odour may cause a health response in the individual. Mr. van Harreveld testified that depending on how the stressor is perceived, the stressor may have no impact, some impact, or a lot of impact. The World Health Organization has published general guidelines relating to environmental stressors that include reference to certain specific odorous compounds, such as hydrogen sulphide.

Another Permit and a Certificate of Note Discussed by Lay Witnesses

[174] The District Director and his staff referred at length in their testimonies to two other composting facilities and their associated air emissions authorizations: the Harvest facility in Richmond (the "Harvest facility"), which held an air emissions permit issued by the District Director; and the Orgaworld facility in Surrey (the "Orgaworld facility"), which holds an operational certificate issued under the *Act* by a Director with the Ministry of Environment. A summary of those authorizations which was introduced into evidence in the hearing, follows.

[175] The Orgaworld facility is permitted by operational certificate 108541 (the "Certificate"), which was issued on October 18, 2017. The Certificate authorizes a fully enclosed, anaerobic digesting and composting operation. The Certificate is a 12-page document of which approximately three pages address operational requirements. Section "3. Requirements for Compost Facilities" is further divided into brief subsections "3.1 Compostable Materials", "3.2 Design and Operating Plan", "3.3 Odour Management Plan", "3.4 Leachate Management Plan", "3.5 Changes to Plans", "3.6 Compost Operations" and "3.7 Closure of the Facility".

[176] The Certificate requires the operator to comply with its Design and Operating Plan, which must address design, operation, acceptable materials and/or discharges, leachate management, odour management, monitoring, reporting, closure and post-closure care, and performance requirements for the facility. In terms of odour management, the Certificate provides that the Odour Management Plan must consider identification of odour-generating areas at the facility; appropriate mitigating strategies for each odour generating area; and a table summarizing those strategies, best management practices and emission control technologies (aimed at reducing odour generation) that are being employed and that could *potentially* be employed at the facility, and a complaint management process. The operator is required to operate in accordance with the Odour Management Plan. The Director may request additional information and specify concerns that the facility must address and incorporate into the plan. The Odour Management Plan gives the operator flexibility to address odour generation. The Director becomes involved only if he is not satisfied that odour is being adequately addressed and then identifies the areas that are of concern and, then allows the operator to determine how best to address the concern.

[177] Harvest's permit (GVA 1088) was issued by the District Director on September 30, 2016. It is a 46-page document, of which three pages are general requirements, sixteen pages are operating requirements, and twenty-six pages are reporting requirements. The permit includes detailed works and procedures for each of the 10 emission sources including, for example: specifications for biofilter media and CASPs, including temperature, moisture content, carbon-to-nitrogen-ratio, bulk

density, saturation oxygen concentration in the liquid phase and CASP height; requirements for biofilter inspection and the receiving and mixing of materials; restrictions on storage of "overs, middlings" and finished compost; and facility-wide restrictions based on observations by an "Officer".

Summary of Dr. Preston's evidence

[178] Dr. Preston testified regarding the permit application process and the roles of Metro Vancouver's staff. Metro Vancouver has one specialist assigned to each facility seeking a permit from Metro Vancouver. For GFL, Mr. Scoffield was the assigned Permitting Specialist. He was the "main channel" for communication between Metro Vancouver's team of staff working on GFL's permit application and the Project Manager for GFL, Mr. King. In addition to Mr. Scoffield, Metro Vancouver's team of staff included Ms. Hirvi-Mayne and Dr. Preston, both of whom are registered Professional Engineers. Dr. Preston testified that her role was to review GFL's air quality dispersion model plan and report. Ms. Hirvi-Mayne's role was to review GFL's initial application, provide a technical review of the Facility and the New Facility, and make recommendations with respect to Permit terms and conditions. Mr. Scoffield's role was to channel information to the appropriate people, collect Metro Vancouver staff's comments and ideas, and author the Technical Recommendation Memo recommending Permit terms and conditions to the District Director.

[179] Dr. Preston stated that Metro Vancouver expects permit applicants to provide detailed information regarding the processes that they seek to have authorized including a description of the process, process flow diagrams, a description of the emission sources and air contaminants to be emitted, and the types of emission controls to be used. Dr. Preston stated that Metro Vancouver relies on the accuracy of the information provided, particularly when the facility to be permitted has not yet been built. The application process can take over a year to complete. Once the application is complete, the applicant may be required to issue a public notification of the application. The applicant is then invoiced from Metro Vancouver for the appropriate fee, and air dispersion modelling is requested if it has not already been provided. Next, Metro Vancouver staff carry out a technical review of the application, considering the control technology proposed, the emission estimates, and public input. Staff typically request additional information from the applicant. Then, staff review the air dispersion modelling plans and reports. Finally, staff recommend permit terms and conditions for the District Director's consideration.

[180] Dr. Preston also testified about her history of involvement with the Facility before it was owned by GFL, including Metro Vancouver's attempts to have the previous owner apply for an air quality permit. Dr. Preston testified that she was not an expert in composting, although she had experience in working with the permitting of the Harvest facility. Dr. Preston and other Metro Vancouver staff drew many comparisons between the Facility and the Harvest facility. The District Director issued a permit for the Harvest facility in 2015. It was a very large, covered but not enclosed facility using aerated static pile composting with an anaerobic digester. The Harvest facility received much more organic material each year than did the Facility. Dr. Preston described the Harvest facility as "very

malodorous" both before and after the air quality permit was issued. She also testified that Metro Vancouver received more than 4,000 complaints per year about the Harvest facility. Local residents launched appeals against the Harvest permit and, ultimately, Harvest entered into a consent agreement to wind down its operations. Dr. Preston referred repeatedly to Metro Vancouver's "learnings" from the Harvest permit and its aftermath.

[181] Dr. Preston testified that Metro Vancouver's ambient air quality objectives are more stringent than those of the BC Ministry of Environment and Climate Change Strategy. As a result, Metro Vancouver requires permit applicants to use Metro Vancouver's template for air dispersion models together with the most recent British Columbia Air Quality Dispersion Modelling Guideline. Dr. Preston was unaware of whether the guideline provided for dispersion modelling using odour units. She added that air dispersion models are based on modelling for a substance with a mass such as sulphur dioxide or particulate matter. In GFL's case, she suggested they would be modelling for n-butanol, the reference for odour. Dr. Preston was not able to say if there would be a problem with the model if sensitivity to n-butanol was not transferable to other substances, such as those released at the Facility or expected to be released at the New Facility, to result in the experience of odour among those in the area. Dr. Preston also testified that GFL was required to have a design for the New Facility (approved of by the District Director) in order to run the dispersion model. The New Facility must be designed to meet the ambient air quality objective; i.e., a facility-wide limit of 1 odour unit. The modelling of 1 odour unit is only meaningful in the context of the averaging period and the percentile applied, in this instance a 10-minute average at the 99.8$^{th}$ percentile.

[182] For its permit application, GFL was required to input meteorological data into the dispersion model. GFL was not permitted to use data from the meteorological station installed at the nearby Boundary Bay airport. Instead, GFL was required to install its own onsite station, and use data from it. Further, the dispersion model was to include consideration of a stack to discharge air emissions from the New Facility, although no stack height had been approved by the District Director when the Permit was issued. Dr. Preston testified that GFL objected to conducting dispersion modelling for emissions from a stack (rather than from the biofilter at ground level), when it believed none was required to meet the Permit limit of 1 odour unit.

[183] In response to questions from the Panel, Dr. Preston testified that GFL's draft dispersion modelling report was lacking information about some of the values that went into the model (e.g., stack height, exit temperature of emissions). She told the Panel that there is no uncertainty "built in" to air dispersion modelling but in response to follow-up questions from counsel for GFL, she corrected herself and agreed that the BC Air Quality Dispersion Modelling Guidelines explains that the uncertainty associated with modelling can be as high as 40 percent. She could not say whether the "uncertainty" in the guidelines considered the uncertainty associated with using odour units in the model.

[184] Dr. Preston also testified that she recommended the characterization of odorous air contaminants, in part because she understood that the Board in *West Coast Reduction* had disapproved of odour units but had, she thought, stated that the District Director could require monitoring for substances that cause odour. Also, she believed that it was important for the District Director to have a "full appreciation of the fingerprint of emissions", including the types of air contaminants that are potentially emitted from a composting facility that composts food waste.

[185] Dr. Preston explained how the Permit was issued despite the lack of clarity related to stack height. She testified that, on July 19, 2018, Mr. King wrote to Mr. Scoffield, advising of process improvements that GFL had put in place to address public concerns regarding odour attributed to the Facility. Mr. King further advised Mr. Scoffield that GFL had submitted a proposal to Nav Canada[25] regarding a stack for the New Facility. GFL anticipated a response from Nav Canada in 8 to 12 weeks. Dr. Preston testified that the District Director was not prepared to wait for the response, and he issued the Permit on August 1, 2018.

[186] Dr. Preston also testified that Mr. Scoffield and Mr. King continued to communicate regarding Permit requirements, including limits for air contaminants, up to and including July 31, 2018.

[187] Dr. Preston testified that she and Mr. Scoffield met with the District Director on July 31, 2018, for approximately one hour to recommend Permit terms and conditions. At the time, the Technical Recommendation Memo was not complete. Dr. Preston stated that this was "somewhat unusual" and had only occurred on one previous occasion. Dr. Preston testified that the District Director "wanted to issue something" because "the community wanted something" and "Delta wanted something". These were unusual circumstances. As a result, Mr. Scoffield and Dr. Preston made a verbal recommendation to the District Director. Ms. Hirvi-Mayne was not at the meeting. Dr. Preston testified that the discussions at the meeting included: a recommended operating term for the Permit; concerns regarding the public notification process and how those concerns were addressed; requirements that authorized the District Director to approve the design and emission limits for the New Facility; reporting requirements for the Facility; restrictions recommended on the Facility's (then) operations to address the status quo; GFL's outstanding concerns (odorous air contaminant restrictions for Emission Sources 08-10, the facility-wide odour restriction, and the Approved Person provisions, including the prohibition on continuing to receive food waste following repeated detection of odours from the Facility by Approved Persons, as set out in the Permit); and, identifying those Permit provisions that were included to address public concerns.

[188] Dr. Preston testified that she and Ms. Hirvi-Mayne reviewed and signed the Air Quality Permit Recommendation Memo (referred to in the hearing and in this decision as the Technical Recommendation Memo) authored by Mr. Scoffield and

[25] Nav Canada is a private corporation that owns and operates Canada's civil air navigation services including air traffic control, flight information, weather briefings, etc.

dated November 6, 2018. Ms. Hirvi-Mayne and Dr. Preston's signature are noted on the Memo as having been affixed to it on November 5, 2018.

[189] Dr. Preston testified that the Harvest facility is very similar to the Facility under the Permit and, as a result, Metro Vancouver staff's experience with the Harvest facility informed the recommended terms and conditions for the Permit. For example, the term of the Permit was informed by the term of Harvest's permit which staff felt was too short and, as a result, the District Director issued approvals to authorize ongoing operations. Further, the recommended term took into consideration that GFL was not using best available control technology in the Facility, the New Facility was not fully designed, and there was no dispersion modelling for the New Facility. Staff concluded that there was insufficient information to justify recommending a 10-year term. The "Approved Person" provisions in the Permit were also modelled on Harvest's permit. The prohibition against an odour from the Facility being recognized by an Approved Person at certain distances was recommended with the intention of having distance act as a "surrogate for the intensity" of the odour detected in the community.

[190] Dr. Preston stated that the odour limit in the Permit is a design and outcome requirement for the New Facility and was a key piece in the staff recommendations. However, under cross-examination, she also stated that it is the impact of odours on the community that is most important, not an odour unit number. Dr. Preston testified that the Permit requirements that state "as approved by the District Director" were recommended as "placeholders" for emission sources in the New Facility where the design was not yet finalized. Further, the Permit provides that the District Director must approve the Final Detailed Engineering Plan before the New Facility could be built. The Permit requirement that testing be consistent with the European Standard is used in all Metro Vancouver permits, and Dr. Preston considers it to be the "gold standard". Further, the listing of odorous air contaminants for which GFL was to test, was recommended based on Dr. Preston's understanding that the Board in *West Coast Reduction* stipulated that the District Director could require permittees to monitor the presence of the substance causing the odour. In this case, the types of air contaminants to be tested for are those potentially emitted from a composting facility that composts food waste. Dr. Preston testified that she referred to Dr. Paul's Compost Operator's Manual for the rationale for many of the operating requirements.

[191] In response to a question from the Panel, Dr. Preston testified that the state of knowledge (the science) behind the use of odour units has not changed since the Board's decision in *West Coast Reduction*, but Metro Vancouver staff believe that they have a better argument for the use of odour units now than was marshalled at the time.

[192] Under cross-examination, Dr. Preston testified that there are currently approximately 150 air quality permits that have been issued by Metro Vancouver. While other permits have monitoring requirements measured in odour units, the facility-wide one odour unit limit is unique to GFL's permit. The Permit is also the first in Metro Vancouver to provide for "odorous air contaminants". Dr. Preston acknowledged that the Technical Recommendation Memo does not provide

justification for using odour units as a compliance mechanism in the Permit. Dr. Preston also acknowledged that the Harvest facility and GFL's New Facility are not "very similar". Differences included: the Harvest facility was not fully enclosed; Harvest accepted seafood waste; the Harvest facility's highly odorous digestate from the anaerobic digester was put on top of the CASPs; emissions from the digester were intended to produce methane; and, the Harvest facility only used negative aeration of the CASPs. Further, the Harvest permit did not rely on "Approved Persons" for monitoring and enforcement of the odour limit. Instead, it provided for observations by Metro Vancouver enforcement officers.

[193] Dr. Preston testified that she is an "Approved Person" under the Permit, and that she was qualified as such by the District Director. Her training as an Approved Person included being in a group that watched a PowerPoint presentation on how to conduct an odour assessment. The group then accompanied the District Director in a motor vehicle tour of farms, the seashore and other areas, and the District Director assessed each individual's ability to recognize odours from the Facility. Dr. Preston testified that she was part of the group because she is an Assistant District Director.

[194] Dr. Preston acknowledged that there were "a lot of unknowns" with respect to the New Facility when staff recommended the Permit's terms and conditions. Dr. Preston testified that GFL staff had told her that the use of the biofilter would allow the Facility to operate in compliance with the one odour unit requirement ultimately established in the Permit, although Dr. Preston considered revised air dispersion modelling on emissions sources 08 to 10, including the new biofilter, to be needed.

Summary of Mr. Scoffield's testimony

[195] Mr. Scoffield provided background related to GFL's permit application, the permitting process, and his role in gathering scientific information to support GFL's application. He told the Panel that he manages applications from "higher profile facilities".

[196] Mr. Scoffield testified that Metro Vancouver received GFL's application for an air quality permit on August 3, 2017. At the time, he was aware that there was public concern regarding the Facility. He recommended to the District Director that GFL be required to host a public meeting. The District Director agreed, and that meeting occurred on November 8, 2017. After that meeting, Mr. Scoffield discussed next steps in the process with Mr. King. In January 2018, Metro Vancouver staff met with representatives of GFL. Mr. Cordesman (Vice President, Western Canada) advised Metro Vancouver that GFL was doing market research regarding growing its business and potentially upgrading the Facility. At a meeting in March 2018, GFL presented its plans to build an upgraded Facility and proposed process improvements in the interim. Between March 2018 and July 31, 2018, Metro Vancouver staff and GFL communicated regarding the Facility, the proposed New Facility, transition between the two, and potential Permit provisions.

[197] On June 1, 2018, Mr. Scoffield provided Mr. King with two draft permits for GFL's review and comment. On June 15, 2018, Mr. King provided GFL's detailed response to the draft permits including proposed changes that GFL sought. Metro

Vancouver staff and GFL staff continued to meet and discuss the draft permit provisions including the permitted emission sources and proposed emission levels for air contaminants. On July 31, 2018, just prior to Mr. Scoffield and Dr. Preston making their verbal recommendation to the District Director regarding Permit terms and conditions, Mr. King emailed Mr. Scoffield about the proposed "placeholder" for VOCs.

[198] Mr. Scoffield testified that the Permit was the first that he worked on that addressed odour from a facility and used "odour units". He testified that he included the 99.8$^{th}$ percentile parameter for dispersion modelling testing in the draft permit he recommended to the District Director because he understood that the Orgaworld composting facility in Surrey was required to comply with an emission limit at the point of discharge (a 200 ft. stack) at the 99.5$^{th}$ percentile. He further understood that if no percentile were mentioned, the permittee would be required to comply 100 percent of the time (as he understood was the case for the Moose Creek facility in Ontario). In his judgment, since GFL was not required to have a stack at the New Facility, and since the community was closer to the Facility than was the case with the facility in Surrey, he thought that using the 99.8$^{th}$ percentile was appropriate as it was "in between 99.5 and 100 percent". He did not consider whether there was an appropriate number of hours representing unusual meteorological events that should be removed from the air dispersion model. As a result of staff selecting the 99.8$^{th}$ percentile, the number of hours that do not count toward Permit compliance was set at 0.2% of the hours in a year (i.e., approximately 17.5 hours) based solely on the requirement that GFL was to model air dispersion at the 99.8$^{th}$ percentile.

[199] Mr. Scoffield also testified that, when recommending the appropriate characteristics for air emissions from the Facility, he sought guidance from the Harvest permit, Dr. Paul's Compost Operator's Manual, and GFL's application. He did not look at resources from other jurisdictions, such as the United States Environmental Protection Agency, or other Canadian jurisdictions, to determine what the appropriate characteristics might be for air emissions from a composting facility.

[200] In response to a question from the Board, Mr. Scoffield testified that he considered letters received from local politicians, expressing concerns about the Facility and the timeliness of the permitting process, to be relevant because the politicians were members of the Metro Vancouver Board who set priorities for Metro Vancouver staff.

[201] Mr. Scoffield testified that many of the Permit's terms and conditions with respect to the operation of the Facility were derived from Dr. Paul's Compost Operator's Manual, including: the moisture content, carbon to nitrogen ratio (C:N), and temperature of the compost; and, the size, depth, moisture content, pH and temperature of the biofilter. Mr. Scoffield stated that he had taken a compost operator's course from Dr. Paul, but his personal experience was limited to backyard composting. Other provisions such as the definitions of "food waste" and "yard waste" came from the Licence. The "Approved Person" provisions were based on a provision in the Harvest permit that provided for "observations" by an officer under the *Act*.

[202] He also testified about his intent in using "placeholders" for future provisions. For example, he testified that the Harvest permit was the source of the recommended Permit provision restricting the use of positive aeration in emission source 03 (Building #1) so as to maintain aerobic conditions, and further stipulating that "unless approved by the District Director, aerobic conditions means temperature and oxygen concentration levels in the compost that result in a saturation oxygen concentration in the liquid phase of greater than 2 mg/L (2 ppm)". Mr. Scoffield acknowledged that he was not aware of any other Metro Vancouver air quality permit that had placeholders for permit provisions regarding compliance.

[203] Regarding the New Facility, Mr. Scoffield testified that he recommended the requirement in the Permit that the District Director approve the dissolved oxygen concentration of water in the treatment pond (Emission Source 07) because of his concern that the pond might become anaerobic and be a potential source of odour. Mr. Scoffield did not know what the appropriate oxygen concentration would be for the New Facility, and he wanted GFL to propose something achievable that the District Director would approve. For emissions from the new biofilter and proposed stack (Emission Source 08), Mr. Scoffield included "placeholder" requirements in the Permit regarding the maximum emission flow rate, the stack height and diameter, and the temperature of emissions from the stack, because the New Facility was not yet built, and Metro Vancouver staff had not seen detailed engineering plans for it. As for emissions from the finished compost storage area (ES09), Mr. Scoffield testified that he recommended that GFL be required to store compost in a covered area, because he had observed "random piles" of finished compost. He did not want GFL to be able to put compost piles anywhere they wanted, because he was concerned that there might be emissions from those piles that needed to be authorized.

[204] Mr. Scoffield provided detailed evidence about the creation of the Technical Recommendation Memo. He explained that he was working on a draft memo that was not ready when the District Director called a meeting with him and Dr. Preston to hear their recommendations regarding proposed Permit terms on July 31, 2018. He said there was an "urgency" to issuing the Permit. In his ten years with Metro Vancouver, Mr. Scoffield has not made verbal recommendations for permit terms. He testified that one of main purposes behind a technical recommendation memo is to document the rationale for the recommended permit terms.

[205] Mr. Scoffield testified at length about the July 31, 2018 meeting when he and Dr. Preston verbally recommended permit provisions to the District Director based on a draft permit that they had brought to the meeting. Mr. Scoffield testified that no notes were taken by him or Dr. Preston during the meeting. After the meeting, he worked on the memo as time permitted. After reviewing the memo, on November 5, 2018, Dr. Preston and Ms. Hirvi-Mayne added their signatures to it, and it was provided to the District Director. The District Director directed changes to some of the language in the memo, and Mr. Scoffield edited the electronic version of the November 6, 2018 memo that was stored on Metro Vancouver's database. Mr. Scoffield made several other minor edits to the memo but did not change the date of the memo or bring any of the changes to the attention of the

other signatories. Mr. Scoffield last edited the Technical Recommendation Memo on November 22, 2018. Five amended versions of the Technical Recommendation Memo, all bearing the date November 6, 2018, were introduced into evidence in the hearing following a demand for their disclosure by GFL. Metro Vancouver's document database only saves the five most recent versions of a document, so earlier versions of the Technical Recommendation Memo were unavailable.

[206] In response to a question from the Resident Appellants, Mr. Scoffield testified that Metro Vancouver staff did not seek out any health studies or look for health-related research on the health-effects of composting. Mr. Scoffield stated that he provided the permit application to the Fraser Health Authority and sought their input. Dr. Goran Krstic responded on behalf of the Fraser Health Authority by asking that the Health Authority be provided with air dispersion modelling for the Facility when it becomes available. Dr. Krstic also noted that it is important to estimate the incremental impact of the Facility on local air quality.

[207] While under cross-examination by counsel for GFL, Mr. Scoffield testified that although he drafted the Permit provisions requiring the use of odour units as a compliance measure, he could not recall reviewing the European Standard and he was not aware that it relied on the theory that sensitivity to n-butanol was transferable to other substances. He also was not aware that the European Standard was under revision when the Permit was issued. He relied on Dr. Preston to review that portion of the draft permit. He stated that much of the Permit language regarding a facility-wide odour threshold was prepared by the District Director, based on language used in the Harvest permit.

[208] Mr. Scoffield acknowledged that, to his knowledge, there are no other Metro Vancouver air quality permits that require the use of odour units for a compliance mechanism. He also acknowledged that he did not consider the cost to GFL of covering the biofilter and installing blowers and a stack. He also acknowledged that GFL invited Metro Vancouver staff to visit another facility to see the effectiveness of a BacTee biofilter, without a cover. No one from Metro Vancouver attended the tour. Mr. Scoffield testified that Ms. Hirvi-Mayne authored a letter written on behalf of the District Director, to GFL, authorizing a 15.4-metre stack on the condition that the stack height be increased if revised dispersion modelling did not predict that the New Facility would meet the 1 odour unit threshold with the 15.4-metre stack.

[209] Further, Mr. Scoffield acknowledged that the Permit does not define the term "odorous air contaminants" and he is not aware of any legislation that provides a definition. He acknowledged that the term is used in different contexts at different places in the Permit. In response to a question as to why he did not simply use the term "air contaminants", Mr. Scoffield responded that "we were trying to regulate odour". One of the compounds included in total odorous air contaminants is "Total VOCs". He agreed that it is not clear what is to be included in that group; i.e., whether to include both photoreactive and non-photoreactive VOCs. Neither is the methodology for testing clear. Instead, the methodology for testing "Total VOCs" is as "approved by the District Director". Mr. Scoffield testified that he was not aware that methane is not included in Total VOCs for testing in the compost industry. He based the maximum authorized emission limit for Total VOCs on the Harvest

permit, in part because Metro Vancouver did not want to authorize GFL to emit more than Harvest. Mr. Scoffield testified that the VOC limits in the Permit were based on the Harvest facility but “scaled back” based on GFL’s feedstock.

[210] Mr. Scoffield also acknowledged that the Permit (at page 23), despite requiring GFL to test for and report to the District Director on speciated odorous air contaminants at the inlet and outlet of the biofilter, does not specify what sub-categories of those contaminants (i.e., which of the aldehydes, ketones, amines, ammonia, TRS compounds, organic sulphur compounds, and volatile fatty acids) are to be tested. The monitoring must be conducted concurrently with emissions testing for total odorous air contaminants, in odour units. Mr. Scoffield could not say whether the Permit required GFL to report on the monitoring results for the speciated odorous air contaminants in odour units or concentrations. Nor could he say whether the Permit required GFL to conduct air dispersion modelling using speciated odorous air contaminants.

[211] Under cross-examination, Mr. Scoffield testified that he had heard of the August 30, 2017 report that Metro Vancouver commissioned from Morrison-Hershfield Ltd. entitled “Best Odour Management Practices at Composting Facilities” (the “Morrison Hershfield Report”). In fact, he appended it to the Technical Recommendation Memo although he had only read some of it. He said that he appended it to the Memo because his recommendation regarding the water treatment pond came from the report. He agreed that the report stated that a fully enclosed facility was a “best practice” for composting.

[212] When asked by the Resident Appellants about the distances in Table 1 of the Permit, Mr. Scoffield testified that he believed that GFL would be reducing its impact over time and so the radii provided for in the Table could also decrease over time.

[213] Mr. Scoffield testified that the Permit’s “expiry date” was recommended by Metro Vancouver staff because GFL was building a new facility with untested technology, and staff thought the term ought to be consistent with that of GFL’s direct competitor, the Harvest facility. Under cross-examination, Mr. Scoffield acknowledged that he could not think of another new facility that had made a multi-million-dollar investment that had a permit term of five years or less.

[214] Mr. Scoffield stated that he is an “Approved Person” under the Permit. He did not receive any formal training for the position, but he was assessed by the District Director. That assessment involved the District Director driving a small group of individuals around the Ladner area, in Delta. The vehicle’s windows were down. The individuals were provided with odour survey forms which they completed regarding the odours they observed as they drove around the neighbourhood. The District Director collected the forms at the end of the drive and determined that Mr. Scoffield was neither overly sensitive nor insensitive to odours from GFL.

<u>Summary of Ms. Hirvi-Mayne’s testimony</u>

[215] Ms. Hirvi-Mayne testified regarding her role in the information gathering process, the technical review of the application and the Permit requirements that she recommended to the District Director. She testified that she is a chemical

engineer. Prior to joining Metro Vancouver, her experience working with odour issues arose in the pulp and paper industry. Her role as a Senior Project Engineer at Metro Vancouver is to do a "technical completeness review" of applications received in the Liquid Waste, Solid Waste and Air Quality programs. She initially assesses whether the application makes sense and identifies the correct emissions. Later, she undertakes a more comprehensive review of the application including reviewing: whether the application involves best available technology, what authorized emissions are requested, and the operational levels associated with those emissions. She also looks at the dispersion modelling information. As part of her review, Ms. Hirvi-Mayne reviews what other jurisdictions require of similar industries and she consults references such as the United States Environmental Protection Agency.

[216] Ms. Hirvi-Mayne testified that she was very involved in the permitting of the Harvest facility, and a lot of her work from there was applied to GFL's permit application. Ms. Hirvi-Mayne testified at length about her experience working with the Harvest facility. Like Dr. Preston, Ms. Hirvi-Mayne spoke to the learnings that she took from her experience working with the Harvest facility. She also testified about the Orgaworld composting facility in Surrey, which she understood is required to meet a one odour unit restriction based on a 10-minute average.

[217] Like Mr. Scoffield and Dr. Preston, Ms. Hirvi-Mayne testified about the background to GFL's permit application, including the community experience with odour, the public meetings attended by Metro Vancouver and GFL, and communications leading up to GFL's proposal to build the New Facility. Ms. Hirvi-Mayne testified that by June 2018, the District Director was under political pressure to issue a permit as soon as possible.

[218] Ms. Hirvi-Mayne also testified about the complaint process in the air quality division of Metro Vancouver. The initial intake of complaints is through a call centre. The person taking the complaint completes a form that is forwarded to the officer responsible for the complaint area. In GFL's case, Ms. Jones is the officer responsible who, in turn, forwards the complaint to GFL so that they can determine whether there was an activity at the Facility that might have generated odour at the time of the complaint. Complaints may not be forwarded to GFL until the day after receipt. If five complaints are received identifying a single facility as the suspected cause within one hour, an odour assessment by an Approved Person is triggered. The Approved Person drives upwind and downwind of the facility to determine whether they can recognize an odour from the facility. Under cross-examination, Ms. Hirvi-Mayne acknowledged that Metro Vancouver staff do not ask GFL for input when assessing whether they are the "probable" source of a complaint.

[219] Ms. Hirvi-Mayne testified about some of the reporting requirements in the Permit. For example, she stated that the Materials and Products Report is a standard report that Metro Vancouver requires of permittees and is used as a tool for estimating emissions in the entire region. In the Permit, the report breaks down the organic materials received onsite.

[220] Ms. Hirvi-Mayne testified that she did not review the engineering drawings that GFL was required to provide in the Facility Upgrade Report of March 14, 2019

in any detail. Her review was focused only on ensuring that GFL was proceeding with the upgrade; she testified that she looked only to the Gantt chart (i.e., a chart illustrating the project schedule). Ms. Hirvi-Mayne testified that she saw the detailed engineering drawings as proof that GFL was continuing with the New Facility, and she compared what was authorized in the Permit to what was in the report so that she could recommend approval of the drawings to the District Director.

[221] Ms. Hirvi-Mayne also testified about the Permit requirements regarding testing for "odorous air contaminants". She stated that Metro Vancouver staff considered it a "second best" way to regulate odour from a facility. She stated that such testing is more expensive and difficult to conduct than testing in odour units, but it is in the Permit because staff wanted to ensure the Permit included a testing method that the Board had approved in *West Coast Reduction*.

[222] As to the Permit requirements regarding air dispersion modelling, Ms. Hirvi-Mayne testified that as of March 11, 2020 (the date of her testimony), she had not replied to comments from GFL about the report that she had received in October 2019. Ms. Hirvi-Mayne further testified that she had recommended the one odour unit threshold in the Permit because she believed that people in the vicinity of the Facility were entitled to the same protection as the people of Moose Creek and Surrey, and both the Moose Creek facility and the Surrey facility had composting operations that were subject to a one odour unit limit.

[223] On the issue of the health effects of odour, Ms. Hirvi-Mayne volunteered that Metro Vancouver does not rely on reports from the World Health Organization.

[224] Ms. Hirvi-Mayne testified regarding her involvement in the Harvest permitting process. She acknowledged that Metro Vancouver received more complaints regarding the composting operations after the District Director issued an air quality permit to Harvest than it had prior to the issuance. Under cross-examination, Ms. Hirvi-Mayne acknowledged that the Harvest permit was the source of many of the provisions in GFL's Permit. For example, Ms. Hirvi-Mayne looked to the Harvest permit when recommending an expiration date for the Permit.

[225] She also acknowledged that Metro Vancouver had recently issued air quality permits with 14-year terms for facilities that emit odours (asphalt and greenhouse operations) and are not subject to odour restrictions. She also acknowledged that it was not unusual for Metro Vancouver to issue permits for 10 years or longer. She added that where a facility has been around for a while and spends substantial capital improving their operations, staff generally recommend a longer term.

[226] Ms. Hirvi-Mayne testified that it is not Metro Vancouver's practice to provide the technical recommendation memo related to a permit to the permittee. She described this type of memo as being written at "a very high level"; it does not contain scientific analysis of recommended permit provisions. She usually prepares a separate technical analysis of the recommended permit provisions that analyzes the use of best available control technology and emission limits. She did not undertake that type of analysis in this instance. She acknowledged that only two of the permit applications she has worked on did not include a technical analysis:

Harvest's, and GFL's. The general practice of providing the District Director with a technical recommendation memo to accompany the draft permit was not followed in GFL's case, because there was "a sense of urgency" to issue the Permit. The scientific justification for the Permit was not put in writing.

[227] Ms. Hirvi-Mayne acknowledged that she has no experience with composting, apart from her involvement in the Harvest permit. She has not taken a course in composting. She also acknowledged that, prior to the Harvest permit, she had no experience in permitting odour, and she has not gained any since her involvement in the GFL permitting process.

[228] Ms. Hirvi-Mayne testified that she was the person primarily responsible for recommending the Permit terms and conditions regarding emission rates, and many of the operating requirements for the Facility that were based on her experience with Harvest (e.g., carbon:nitrogen ratio, saturation oxygen concentration, CASP and aging and curing pile heights, as well as conditions regarding the biofilter). Under cross-examination, Ms. Hirvi-Mayne acknowledged that the Harvest facility was the source of a significant number of complaints, and it ceased operations after three years.

[229] Ms. Hirvi-Mayne testified that she participated in the consensus recommendation for a 1 odour unit, facility-wide restriction on emissions, and the recommendations regarding monitoring and reporting in the Permit. Ms. Hirvi-Mayne acknowledged telling Ms. Ahluwalia that the Permit required analysis of speciated odorous air contaminants from the New Facility because Metro Vancouver staff were not sure that "odour units would stick" if GFL were to appeal the Permit. Ms. Hirvi-Mayne testified that she was not aware of whether odour units were a recognized measure in Canada. Ms. Hirvi-Mayne said that the Permit provisions were her way of trying to regulate odour from the New Facility.

[230] Under cross-examination, Ms. Hirvi-Mayne acknowledged that Ms. Ahluwalia had advised Metro Vancouver in September 2019 that GFL could estimate the VOCs from the New Facility and might be able to work with a Permit requirement that set a range for the maximum odour units emitted. Ms. Hirvi-Mayne said that as of March 2020, she had not responded to Ms. Ahluwalia. After considering it, Ms. Hirvi-Mayne agreed that Ms. Ahluwalia's suggestion that GFL be permitted to discharge 87.8 tonnes/year of VOCs, but no more than 12 tons in any month, was an option for the Permit. Ms. Hirvi-Mayne testified that the emission limits in the Permit for ammonia were based on WorkSafeBC limits, the TRS limits were based on the Domtar pulp and paper facility in Kamloops (3 mg/m$^3$), and the Total VOCs was a "compromise" based on discussions with GFL as to what was achievable. There is no ambient air quality objective for VOCs in British Columbia.

[231] Ms. Hirvi-Mayne testified that she considered GFL's gross revenue from the composting operations when she was recommending terms and conditions for the Permit. The Permit's requirements "potentially" would have been less onerous if GFL was earning less revenue. She acknowledged that she did not consider the expenses GFL would incur in complying with the Permit's monitoring and reporting requirements, or the cost of GFL's investment in the New Facility. In response to questions about the Permit's requirements to test for air contaminants, Ms. Hirvi-

Mayne referenced the $7 billion "market cap" that had recently been published for GFL based on the value of its publicly traded stocks. She said she expected more of a large company (like GFL) than she would of a smaller one. She acknowledged, under cross-examination, that GFL was not publicly traded when the Permit was issued, and she had, in fact, not considered its market value when she made her recommendations as she had only read the information online, a few weeks prior to her testimony.

[232] Ms. Hirvi-Mayne testified as to the state of the Facility and the construction of the New Facility on February 27, 2020, when she attended the site with Ms. Jones. Ms. Hirvi-Mayne spoke to a series of photographs that either she or Ms. Jones took at the time. The photographs depicted the enclosed receiving building (Building #1), large blowers that distribute air to the 21-channels where active composting occurs, large agitators including one already installed on a rail system, the exhaust system in Building #2, a sample of the BacTee flooring, the new biofilter, and construction of the building enclosing it. Ms. Hirvi-Mayne testified that the construction and materials she observed appeared to be solid and of good quality. She said it appeared that GFL was meeting its commitment to build a fully enclosed facility. She added that she still had some concerns regarding the 12 air exchanges per hour, as she has only a "very simplified understanding" of the heating, ventilation, and air conditioning system at the New Facility. She declined Mr. King's offer to meet with GFL's air system's mechanical engineer to further her understanding.

[233] Ms. Hirvi-Mayne testified that the goal of the Permit is to reduce the "odour impact" on the community. She stated that "the primary issue at this facility has been odour so we are trying to regulate odour." She explained that she viewed an "odour permit" as equivalent to an "air emissions permit" and she used the terms interchangeably when referencing the Permit. Ms. Hirvi-Mayne explained that the distances in Table 1 of the Permit were included to prohibit odours outside of a given radius. She added that residents are located just as close to Harvest's facility as GFL's Facility, but the population density is not as high near Harvest's facility.

[234] In response to questions from the Panel, Ms. Hirvi-Mayne explained that it was her understanding that 1 odour unit represents the concentration of a sample at which 50 percent of an odour panel can detect the odour. She acknowledged that she did not consider that GFL met the recommended best available technology for composting, as described in the Morrison Hershfield Report. Ms. Hirvi-Mayne acknowledged that, like Mr. Scoffield, she considered the Orgaworld facility in Surrey when making her recommendations. She further acknowledged that she was not aware of any of the Surrey permit or contractual provisions other than a single clause referencing odour units that she received in an email between the commissioning engineer for the Surrey facility and the District Director on which she was copied.

[235] Ms. Hirvi-Mayne told the Panel that it is important that permit terms are clear, achievable and enforceable.

[236] In response to a question from the Panel, Ms. Hirvi-Mayne testified that, to her knowledge, elected officials have twice asked Metro Vancouver to expedite the

permitting process. Those two occasions involved the applications for air quality permits by Harvest and GFL.

Summary of Ms. Jones' testimony

[237] Ms. Jones testified that she has inspected the Facility in her capacity as a Permit Compliance and Enforcement Officer with Metro Vancouver. She will also inspect the New Facility, for compliance with the Licence. Ms. Jones testified that prior to working at Metro Vancouver, she had experience in Scotland, creating permits, drafting licences, following-up on complaints, and conducting odour surveys. She was trained by Scentroid in using an olfactometer and has been tested with respect to her sensitivity to n-butanol. She stated that she could distinguish between odours from the Facility and other odours generated in the area. Ms. Jones testified that the odour generated from Harvest's facility was "overpowering", whereas the impact of the odour from GFL's Facility was less significant.

[238] Ms. Jones has conducted odour surveys at Harvest's facility and at GFL's Facility, and she is the Metro Vancouver employee most experienced with odour surveys respecting the Facility. She is very familiar with the Facility, having conducted inspections at the site since 2013. She receives monthly reports from the Facility. Ms. Jones testified that she attends the Facility unannounced to check for compliance, but also has planned site visits. During site visits, she walks the entire site and observes materials and their processing during primary and secondary composting, curing, and at the finished stage. She also observes the leachate pond. Ms. Jones also testified that there are highly odiferous drainage ditches in the area around GFL's Facility that contain runoff from farm waste.

[239] Ms. Jones is an "Approved Person" under the Permit. As part of her role, she conducts odour surveys in response to complaints regarding the Facility. When she attends the site, Ms. Jones invites a GFL representative to accompany her. There is no process for allowing the GFL representative to provide their odour observations if they attend the odour survey. Ms. Jones testified that it is not unusual for her to be unable to verify complaints.

[240] Ms. Jones testified that odour surveys under the Permit require Approved Persons to complete a declaration if they can recognize odour from the Facility for more than five minutes in any 10-minute period beyond the distances noted in Table 1 of the Permit. She estimates that she conducted more than one hundred odour surveys at the Facility before the Permit was issued. During those surveys, she noted other odours. She described a "soup" of odours in the area. Since the Permit was issued, Ms. Jones has conducted a "couple dozen" Sniff Tests as provided for in the Permit, which she referred to as odour surveys, including five in July 2020. Ms. Jones testified that she has not signed a declaration form during any of her odour surveys because she could not recognize any odour coming from the Facility for five minutes in any 10-minute period as stipulated in the Permit. In response to a question from the Resident Appellants, Ms. Jones testified that prior to the COVID-19 related restrictions, she visited the Facility unmasked and never felt unsafe in breathing the air at the site.

[241] In response to questions from counsel for GFL, Ms. Jones testified that she conducted inspections at the Facility monthly from August 2019 to July 2020 (except for March 2020 due to COVID-19 related restrictions). She found that GFL was compliant with the Licence on every occasion. In June and July 2020, Ms. Jones observed that the New Facility's construction appeared to be progressing on time. In July, she noted that the biofilter was completely constructed, the stack was erected, and the agitators were being commissioned. GFL staff advised her that GFL was about to commence laying material in the biofilter to start the commissioning process.

Summary of the District Director's testimony

[242] The District Director testified that he has been employed in this position since 2005. His responsibilities include issuing air quality permits authorizing the discharge of air contaminants. In addition, he is responsible for managing the Environmental Regulation and Enforcement Division of Metro Vancouver, and oversees three regulatory programs: Solid Waste, Liquid Waste, and Air Quality.

[243] The District Director testified that he has over twenty-five years of experience regulating odour in British Columbia, including fifteen years as the District Director. In his experience, odour produced from industrial facilities has frequently generated public concerns including concerns expressed during permit application processes. He has issued hundreds of decisions regarding permits, approvals and orders including decisions related to odour-producing facilities such as pulp mills, rendering operations and composting facilities.

[244] The District Director testified that, in Metro Vancouver, businesses are prohibited from discharging waste or air contaminants from their operations unless they comply with the applicable Metro Vancouver bylaw or have a permit. Since there is no bylaw with respect to composting, businesses that discharge air contaminants must have a permit.

[245] The District Director testified regarding the background to GFL's permit application. In 2015, Metro Vancouver imposed a surcharge on the disposal of food waste. Metro Vancouver colloquially refers to this as its "ban" on the disposal of organics. In anticipation of the ban, in 2012, the operators of the Harvest facility negotiated an agreement with the Solid Waste Services department at Metro Vancouver to accept food waste. Ultimately, Harvest closed and organics that had been directed to Harvest were redirected to GFL.

[246] The District Director hired Dr. Preston and Ms. Hirvi-Mayne in September 2012 because the District Director had determined that he needed someone who understood how contaminants were formed and treated. Further, he wanted a Metro Vancouver representative who understood chemical engineering processes and could discuss related issues with industry representatives. The District Director testified that Metro Vancouver staff are "generalists" in that they deal with many industries, but in his view, they are "specialists" in pollution control, prevention, collection, and treatment, and the dispersion of air contaminants. He added that, on the GFL file, Ms. Hirvi-Mayne was the "lead" for Metro Vancouver.

[247] The District Director testified that, as a regulator, his goal is two-fold: he wants to authorize only those emissions that will achieve an air quality objective; and he wants to require the use of best available control technology so that if it is possible to achieve better than the ambient air quality ("AAQ") objective for air contaminants, he will "save the assimilative capacity of the environment". He testified that his understanding is that air contaminants can have health effects even if the air contaminant does not exceed the AAQ objective; e.g., for particulate matter.

[248] The District Director further testified that, if a permit holder can "achieve" one odour unit at the receiving environment, he will not receive odour complaints. He added that if GFL emits odours slightly above one odour unit, he will not receive odour complaints.

[249] The District Director testified about his decision-making process regarding permit applications. He testified that Metro Vancouver staff were concerned about GFL's ability to handle the increased volume of feedstock it was receiving due to Harvest shutting down. He added that complaints are an important part of the permitting process. Metro Vancouver does not have an instrument that records the presence of odorous air contaminants. He explained that while particulates such as asbestos can be measured, and standards have been established for particulates that are air contaminants, the situation is different for odours. The District Director testified that the presence of odour is more of a "flag" that there is an air contaminant in the air. Further, neither "odour" nor "odorous air contaminant" are described in the Bylaw.

[250] The District Director also testified that on January 29, 2016, in his capacity as Solid Waste Manager, he issued an amendment to the Licence authorizing GFL to receive up to 150,000 tonnes of material per year (based on a maximum of 411 tonnes/day). The Licence's requirements with respect to "Material Handling and Storage" (section 5.7) and "Operating Practices" were acceptable to him, and he did not consider whether they were also sufficient for an air quality permit. He said that he is constantly educating staff about terms and conditions that are appropriate for licences versus permits. He told the Board that staff often "sneak things in" that are not really relevant to the document because they are "trying to solve other problems".

[251] The District Director explained that in August 2017, he sent notice of GFL's permit application to the Fraser Health Authority, Delta, and fifty-four members of the public who had filed complaints with Metro Vancouver about the Facility. On September 19, 2017, he attended a public meeting about the Facility. He recalled hearing residents describe how odour from the Facility was impacting their health. On September 28, 2017, the District Director wrote to GFL requiring it to hold a public meeting to explain the permit process. GFL held a public meeting on November 8, 2017. The District Director attended that meeting and heard many residents' concerns about the Facility. In total, Metro Vancouver received 170 written comments on the permit application from 134 members of the public and agencies. Public input included complaints of foul, noxious, sour, and acrid odours,

and concern about the negative effects of the Facility on air quality, health, property values and interference with use of residential properties.

[252] After the November 8, 2017 meeting, Mr. King told the District Director that GFL could "do better" than the current operation. Mr. King stated that GFL had built an enclosed facility in Ontario, and he would approach the corporate office about building a similar facility in place of the Facility. The District Director said that he was pleased that Mr. King had heard the residents' concerns and acknowledged that the status quo was no longer acceptable.

[253] Staff from Metro Vancouver and GFL met and communicated over the next several months to discuss the permit application. The District Director attended a meeting with GFL in March 2018 to discuss GFL's proposal to build a fully enclosed facility and treat emissions. Between March and May 2018, staff continued to discuss the proposed facility. The District Director testified that he was "frustrated" because he wanted to move ahead with a permit, but GFL had stipulated that it needed confirmation that Delta would not "veto" an increase in the volume of material authorized to be received at the Facility (to 250,000 tonnes/year) under the Licence as part of its business model justifying the investment of millions of dollars in upgrades to the Facility and the proposed New Facility.

[254] The District Director testified that on May 25, 2018, he replied to an inquiry from Mr. King about GFL' s options if Delta did not approve of the increased volume. He told GFL that it could apply for a new permit or amend its permit application at any time, although Metro Vancouver might refuse the application, but the status quo was not acceptable. The District Director advised GFL that Metro Vancouver would present GFL with two draft permits. Both would provide for the Facility to be phased out, whether working toward the New Facility or not.

[255] On June 1, 2018, based on the District Director's instructions, Mr. Scoffield provided the draft permits to Mr. King as promised, and requested a response. Metro Vancouver staff and GFL staff met and communicated numerous times in June and July 2018 about draft permit terms and conditions. On July 31, 2018, the District Director called a meeting with Dr. Preston and Mr. Scoffield so they could brief him on the draft permit terms and conditions.

[256] The District Director testified that in 2018, before he issued the Permit, he visited the facility in Surrey that was the result of a partnership between the City of Surrey and Orgaworld. At that facility, he observed the schedule of trucks arriving, and saw how they entered the facility through double doors. Further, he noted the facility's anaerobic digester, composting operations, system for producing gas, biofilter system, 70-metre high stack, and instrumentation. The District Director had many discussions with Mr. Selten, Orgaworld's Operations Commissioning Manager.

[257] On July 6, 2018, while the Permit was being drafted for his consideration, the District Director asked if Mr. Selten could provide a copy of the provision from the Orgaworld contract with Surrey that required Orgaworld "to attain one odour unit at the property boundary". In an email dated July 8, 2018, Mr. Selten provided the District Director and Ms. Hirvi-Mayne with language excerpted from a schedule

appended to an agreement between the City of Surrey and Orgaworld, titled *Project Agreement for The Surrey Biofuel Processing Facility Project,* dated February 13, 2015 (the "Surrey Contract"), which stated:

> 4.8 The Facility will be designed to meet the following:
>
> (a) **Odour Performance Standard:** Project Co. will design the odour control system so that all exhaust air, after dispersion into the atmosphere and settlement to the ground, will not exceed 1 $o.u/m^3$ based on a 10 minute average, more than 0.5% of the time, within 1.5 $km^2$ area surrounding the Site[26];

[258] The District Director testified that when he issued the Permit, he had received and considered only this clause [4.8(a) from Schedule 3] appended to the Surrey Contract. Subsequently, the District Director sought and obtained the entire Surrey Contract, and it was introduced at the hearing. The Surrey Contract is a 66-page agreement appending 524 pages of schedules including 102 pages of definitions.

[259] In March 2020, while the appeal hearing was still underway, Metro Vancouver staff emailed an Environmental Protection Officer in the Ministry of Environment and Climate Change Strategy and requested, and subsequently received, copies of the Ministry's September 19, 2017 Technical Memo for the Surrey facility. This memo recommended that an operational certificate be issued. As noted above, the Certificate was issued on October 18, 2017. Staff also requested and received copies of the Operating Plan and the Odour Management Plan for the Orgaworld facility. The District Director introduced all the above-mentioned documents into the hearing. The Certificate authorizes emissions from a discharge stack from an odour abatement system, and a flare stack combusting methane. Authorized works under the Certificate are directly related to the control technologies for treating the emissions. The Certificate does not refer to any composting operations or best practices as authorized works. The only discharge requirement in the Certificate is that the operator is required to suppress odour production at the facility if odour is observed to have migrated beyond the facility. If air quality becomes a concern to the Director, he may require additional measures.

[260] The Ministry's Technical Memo describes the Surrey facility as "an anaerobic digestion and aerobic in-vessel composting facility" that will process organic, liquid and dry waste using an anaerobic digester and a composting system. Further, at page 6, the Technical Memo indicates that the odour unit provision in the Odour Management Plan for the Surrey facility is a design objective. The Technical Memo also details the "odour abatement system" at the Surrey facility, which includes an acid scrubber, a cooling coil, humidifier, four biofilters and a 70-metre-high stack.

[261] The District Director testified that he instructed his staff to obtain compliance certificates for two of Orgaworld's facilities in Ontario. The District Director noted

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[26] Schedule 3, "Design and Construction Specifications" appended to the Surrey Contract.

that those two certificates, like that of the Moose Creek facility, had performance requirements including a one odour unit limit based on 10-minute average (no percentile was noted).

[262] The District Director testified that, in his opinion, the concept underlying the European Standard (i.e., that an odour unit represents the point at which 50% of a properly qualified odour panel can "just detect the difference between clean air and a diluted odour sample") and the Lethal Concentration bioassay test (a test that determines the concentration of a substance that will kill 50% of test organisms exposed to it, also referred to as the "LC50 test") are "highly analogous". The District Director noted that the LC50 test is used by various industries to test the concentration at which discharges to water will poison species of fish such as rainbow trout.

[263] The District Director further testified that, in his view, the "solution to the problem" of odour unit uncertainty is to take the measurement uncertainty into account when assessing GFL's compliance with the one odour unit limit. The uncertainty is a relevant consideration in prosecution where Crown counsel are looking at whether there is a reasonable likelihood of conviction.

[264] The District Director testified that he conceived of and articulated the regime for selecting and training "Approved Persons" under the Permit. He first provided for a Sniff Test by a Metro Vancouver officer in the Harvest permit and, later, revised the test and incorporated it into the "Approved Person" provisions in the Permit.

[265] The District Director's evidence was that there is no written protocol for selecting "Approved Persons" under the Permit. In terms of selection and training, the District Director drove around the Facility in vehicles with of a group of people that he selected, and they stopped at various locations including fields, the ocean, sewage pump stations, dairy farms and a cannabis warehouse. At each stop, the group was asked to record their observations of odour. At the end of the tour, the District Director collected the observation sheets. The District Director accepted all the persons on the tour as Approved Persons.

[266] The District Director acknowledged under cross-examination that the key difference between the "Approved Person" Sniff Test in the Permit and the Sniff Test in Harvest's permit is that the latter required that the odour assessor detect a "malodour", whereas in the Permit, the Approved Person need only "recognize" the odour as being from the Facility, even though the odour might be faint. The focus is on recognizing an odour, from the "soup" of odours surrounding the Facility, as being unique to the Facility.

[267] The District Director further acknowledged that he does not feel obligated to consider input from GFL about the Sniff Test, nor is he required to consult with GFL before deciding that food waste can no longer be received at the Facility.

[268] The District Director testified that he and "potential Approved Persons" drove to various locations downwind of the Facility for him to determine whether they detected the GFL odour and their sensitivity to it. The potential Approved Persons made observations and gave descriptions of the odours and their intensity which

the District Director reviewed to confirm they could correctly distinguish GFL odours from other odours. Several of these individuals, including Ms. Jones (the Permitting and Enforcement Officer assigned to the GFL Facility), also received "Scentroid training" (that training was not further described). The District Director saw no evidence of bias by the potential Approved Persons.

[269] The District Director also cited his testimony that Approved Persons must demonstrate to him that an odour that is "typical" of the Facility is present beyond two kilometres from the Facility, and there are no other sources that could be or are causing the odour. The District Director acknowledged that some staff were not comfortable making a declaration even when they recognized the odour, but he believes that there is no better instrument than the human nose to recognize odour at a distance.

[270] The District Director testified that when he issued the Permit on August 1, 2018, he was satisfied that he had the information he needed to set requirements for protection of the environment and human health. Further, he did not rush to make his decision. Although GFL was still communicating with Metro Vancouver regarding terms and conditions in the draft permits, he was satisfied by July 31, 2018, that he had the information that he needed to issue the Permit.

[271] The District Director testified that he did not feel the need to attend the composting facilities in California with Mr. King and the Delta representatives, as he was content with the technology being proposed.

[272] Under cross-examination, the District Director stated that he told GFL that he wanted the area where finished compost is stored to be included in the facility-wide odour restriction limit because finished compost has been known to be odorous at GFL's and Harvest's facilities. He added that even "pleasant smelling things" have odours that can be measured and have odour units that can be quantified.

[273] The District Director testified that the outcome he was seeking is "air people are happy to breathe."

[274] In response to a question from the Panel, the District Director stated that the purpose of a permit is to protect the receiving environment, but it is also "to enable industrial activity or activities that are undertaken as a course of society." The District Director added that a permit can fail by being either too protective or not being protective enough. For instance, if there is an effluent permit but fish have stopped returning because of the discharge, the permit has failed. He added that if a company failed to be profitable because of a permit and there was no harm to the environment, he would consider that permit to be a failure.

[275] As to the effective period of a permit, the District Director testified that most of the permits issued in Metro Vancouver in the last six years have had terms of greater than five years. The District Director also described factors he considers when setting the term for air emissions permits. He testified that ten-year terms are typically issued to smaller, low-impact facilities where there is a low risk of emissions causing unacceptable conditions in the community. He looks for a proven record in respect of how the facility operates. In his view, shorter term permits are

appropriate when the facility is employing new or evolving technology such as the BacTee biofilter used at the New Facility.

[276] Under cross-examination by the Resident Appellants, the District Director agreed that the residents of Delta have complained to him about what he referred to as "material physical discomfort or health impacts".

*Witnesses for Delta*

[277] At the start of the hearing, Delta expressed its intention to call two witnesses. Although afforded the opportunity, Delta did not call those witnesses to testify, and did not introduce any affidavit or other evidence in the hearing.

*The Resident Appellants' lay witnesses*

[278] The Resident Appellants, who are also third parties in GFL's appeal, called the following lay witnesses (all of whom are residents concerned about the Facility and the New Facility):

- Peter Edwards
- Robert Skinner
- Waverley Steinwand
- Jacqueline Schaeffer
- Onnig-Garo (John) Der Megrian
- Daryl McMillan
- Margaret Richardson
- Meaghan Lyall
- Foster Richardson
- Timothy McGee
- Michael Dumancic
- Carol Lacroix
- Colleen Blatz
- Wendy Betts

*The Resident Appellants' expert witness*

[279] The Resident Appellants also called Dr. John Paul to provide expert testimony on the composting process[27]. Dr. Paul has a Master of Science degree in agriculture and a doctorate in soil biochemistry and soil fertility and is a member of the British Columbia Institute of Agrologists. He is the author of a text titled, "The Compost Facility Operator's Manual".

[280] Dr. Paul teaches a three-day course in all aspects of the composting process. His students include compost facility operators, regulators, government employees, and staff from the Canadian Food Inspection Agency. His course includes instruction on odour control and management. He has designed food processing and composting systems to respond to highly odiferous situations including decomposition of animals, eggs and byproducts resulting from actions associated with the avian flu (culling flocks).

[281] The Panel accepted that Dr. Paul is qualified to provide expert evidence in soil nutrient management and biology; microbiology of soil and compost; and optimizing the microbiologic processing of compostable materials (such as green waste, food waste and other organics).

Summary of testimony from the Resident Appellants' lay witnesses

[282] The Resident Appellants and residents living in the vicinity of the Facility and the New Facility testified. All of them stated that they do not believe that the Permit provides enough protection to them. Many expressed concern that, after the March 1, 2020 deadline in the Permit (as amended by the Panel in its interim decisions), residents who live less than one kilometre from the Facility would not be protected from the effects of odours from the Facility.

[283] They expressed anger and frustration with Delta, which they say has not been responsive to their concerns, and Metro Vancouver, which they say does not investigate complaints in a timely manner.

[284] All the residents stated that they are familiar with the odour generated from the Facility and do not confuse it with any other odours in the area. It may change in intensity, but the odour, when present, is unique. One witness acknowledged that not everyone in the neighbourhood shares his concerns. He has neighbours immediately next door who are either unaware of the odours or are oblivious to them and do not complain.

[285] The residents described the odour from the Facility as unique and offensive, but also as varying in intensity ranging from "unpleasant" to a "nauseous stench". One resident who filed numerous complaints about the Facility with Metro Vancouver used many descriptors for the odour. She, and others, described it as "sour", "foul", "putrid", "rotten", "strong", "rancid", and similar to decaying matter

[27] Much of Dr. Paul's testimony related to the Facility and the composting processes which were only permitted until March 1, 2020 (as amended by the Panel in its interim decisions). His evidence is not summarized with respect to those composting processes. Instead, only that portion of his evidence that is relevant to the New Facility and those operations which are permitted after March 1, 2020 (now September 1, 2020) are summarized.

or feces. One resident testified that she had spent a significant amount of money installing air purifiers to provide clean air for the interior of her residence.

[286] Residents told the Panel that odour from the Facility has interfered with their enjoyment of their property for many years; some residents noted "stink issues" dating back to 2004. The residents testified that due to the unpredictable nature of the odour, they are reluctant to have guests to their homes. When the wind carries the odour to their neighbourhood, residents are unable to enjoy outdoor activities. At times, even indoor activities are impacted by the smell, which can permeate their homes. The intensity and unpredictability of the odours is a source of stress to the residents. Residents testified that they frequently leave their homes and the area to obtain relief from the odour. They spoke to their frustrations and feelings of helplessness and victimization.

[287] Residents testified that they believe the odours are negatively affecting their health, with some testifying that they are concerned about the impact of odour on the development of young children. Several witnesses testified that the District Director acknowledged that there were or may be health consequences resulting from exposure to the odour from GFL. Residents believe that the stress of living with the odours may have a long-term impact on their wellbeing. Residents reported physical and psychological symptoms including headaches, runny nose, sneezing, nausea, inability to taste, throat irritation, gagging, exacerbation of existing illnesses, sleep disruption and feeling stressed.

[288] Several of the residents testified that they will not accept anything less than "zero" odours beyond GFL's property line. Absent a guarantee that there will be no odours from GFL, there is nothing that GFL can do to appease them. Many testified that they are concerned that their properties have decreased in value as a result of the Facility's operations. They stated that they have the right to breathe clean air, and they want the Facility shut down.

[289] Many of the residents testified about Metro Vancouver's complaint process. They described it as time consuming and pointless. They felt that nothing was done in response to their complaints. One of the residents testified that he understood that at least fifteen people needed to complain about an incident for action to be taken by Metro Vancouver. Under cross-examination, some of the witnesses testified that they were not aware that some of their complaints had been investigated and that Metro Vancouver had determined that GFL was not the likely source of the odour due to the prevailing wind direction at the time of the complaint. Others were not aware that a sewer line break had been identified as a likely source of the odour on one occasion. Some residents wanted feedback about their complaints; others did not care about the source, they just wanted the odour to stop impacting them.

[290] Further, many of the residents believe that the odour from the Facility has increased in line with the increase in volume of compost processed, and that GFL had made no efforts to mitigate the odours. Residents testified that they understood the changes in the New Facility are being done to address the odour problem, but they have not been assured that the odour will cease. The residents

remain skeptical that construction of the New Facility will, in fact, address the odour problems.

[291] The residents expressed other concerns that are not within the Panel's jurisdiction.

Summary of Dr. Paul's testimony

[292] Dr. Paul testified that the odour from a composting facility will vary depending on the compounds that are being emitted which, in turn, will depend on the conditions under which the material is being stored and composted, and the state of decomposition. The microbes that are important to composting require oxygen to survive. If they are deprived of oxygen, microbes that do not require it (anaerobes) will thrive. However, there is a fine balance between too little and too much oxygen. If too much oxygen is applied to a composting pile, the material will dry out, the temperature in the pile will drop, and the composting process will slow.

[293] Dr. Paul also testified that gasses that are emitted from yard waste because of microbial metabolic activity will not necessarily amount to annoying odours, unless the yard waste is very wet, dense, or anaerobic. While grass clippings behave similarly to food waste during composting, composting food waste involves different microbial activity depending on the material, its storage temperature, and the length of time in storage. The microbes in composting food waste start to produce smellable acids. Food waste that is not receiving the optimal amount of oxygen during composting produces microbial compounds that can be described as rancid or putrid. Further, VFAs may accumulate when the compostable material contains high concentrations of food waste. VFAs produce a characteristic odour that is different to all others. For example, butyric acid (a VFA) is very malodorous, and tends to blend with other compounds and become part of the makeup of composting facilities. Butyric acid is water soluble and can be dispersed with air. If the moisture content of the compost is excessive, butyric acid may leave the site in leachate.

[294] Dr. Paul testified that neither VOCs nor ammonia are good indicators of odour, but hydrogen sulphide is an excellent indicator of odour because it is detectable at very low concentrations and has a very objectionable odour. When present, it indicates that there is anaerobic activity in the composting process. Dr. Paul opined that the Permit limit for hydrogen sulphide is too high. He suggested that a more appropriate limit for the Facility (but not the New Facility) would be less than one mg per $m^3$ (i.e., one ppm).

[295] Dr. Paul opined that biofilters work better at lower pH (6.5 to 7 being the optimal range) and with the temperature maintained at 25 to 40 degrees Celsius. Dr. Paul recommended measuring the air temperature in the biofilter at the New Facility as well as the air going into the biofilter to determine whether the microbial process in the biofilter is optimized. Further, the airflow into the biofilter should be measured to ensure that ductways are not blocked and to determine if media in the biofilter is settling. A visual inspection, early in the morning when the air is cool, will reveal if air is escaping from the edges of the biofilter media. Further, if there

are changes in the efficiency of the odorous emissions being removed from the Facility, the media may require changing.

[296] Under cross-examination, Dr. Paul testified that his expert evidence ought to be restricted to the Facility in operation up to February 28, 2020 (as amended by Board). He has not visited the Facility and is not familiar with the design or the operations at the New Facility. He did not ask to see the Facility or to learn more about the New Facility. He was also unfamiliar with the feedstock used by GFL; he was not aware of what percent was food waste. Dr. Paul agreed with counsel for GFL's suggestion that it would be dangerous for someone who does not have a lot of knowledge in the science of composting to set out a lot of rules for composting. Operators must understand what is occurring in the composting process, and then exercise their judgment. He added that for factors important to composting, such as the carbon to nitrogen ratio (C:N), pH level for feedstock, moisture content, etc., there will be a range of acceptable conditions. He told the Panel that there "has to be tolerance, but it has to be within experience, understanding and science."

[297] In response to a question from the Panel, Dr. Paul opined that it is possible to effectively eliminate 95 to 98% of malodorous compounds within three to ten days of starting the composting process. He added that it would be "pretty challenging to eliminate 100% of the odour, all of the time". Dr. Paul acknowledged that the Permit is the first air quality permit with which he has had any involvement in British Columbia. He also acknowledged that in his expert report, he did not cite authors whose views diverged from his own with respect to aeration.

## DISCUSSION AND ANALYSIS

***Note:** Issues 1 to 6 were raised by GFL in its appeal. In the discussion of those issues, GFL's submissions are noted first, followed by the District Director's submissions in reply, and then the submissions of the Resident Appellants (third parties in GFL's appeal) and Delta are set out. Issue 7 was raised by the Resident Appellants in their appeals. In the discussion of that issue, the Resident Appellants' submissions appear first, followed by the District Director's submissions in reply and then the submissions of the third parties to those appeals, GFL and Delta.

### 1. Whether the Panel owes any deference to the District Director

*GFL's submissions*

[298] GFL submits that the Panel is empowered to make any decision that the District Director could have made, and the Panel owes no deference to the District Director's decision to issue the Permit containing the terms and conditions that he imposed.

*The District Director's submissions*

[299] The District Director submits that he is an experienced decision-maker with thirty years of experience in environmental regulation. The Panel ought to afford him deference.

*The Resident Appellants' and Delta's submissions*

[300] Neither the Resident Appellants nor Delta made any submissions on the issue of deference.

*The Panel's findings*

[301] The Panel finds that is authorized under section 102(2) of the *Act* to conduct this appeal as a "new hearing". Further, the Panel has broad remedial powers under section 103 of the *Act*. Under section 103(c), the Panel may make any decision that the District Director could have made and that the Panel considers appropriate in the circumstances. The principle of curial deference does not apply where the Legislature clearly intended the Board, as an appellate tribunal, to examine the evidence anew, make its own findings of fact, and, if it deems appropriate, make its own orders.

[302] In addition, section 40 of the *Administrative Tribunals Act* provides the Board with the discretion to "receive and accept information that it considers relevant, necessary and appropriate". That is what we did. Evidence was presented in the hearing that was not before the District Director when he made his decision, and arguments were heard "afresh". As summarized above, new evidence before the Panel included further scientific studies, data, and other information that was not before the District Director. The Panel finds that much more was known about the design and construction of the New Facility and how it will operate at the time of the hearing than was the case when the District Director issued the Permit. However, given that the evidence submitted in the hearing also included a significant volume of information that was before the District Director, the Panel finds that the hearing process is truly a "hybrid" rather than a purely *de novo* hearing.

[303] The Board discussed the hybrid nature of the Board's powers and procedures in *Imperial Oil Ltd. v. Regional Waste Manager* (Appeal Nos. 2003-WAS-007(b); 2003-WAS-016(a), February 6, 2004 [*Imperial Oil*], at page 6:

> In practice most hearings before the Board are a hybrid, of a hearing *de novo* and a true appeal. A full hearing of the evidence occurs, including new evidence, but the government official's decision and the "record" before that decision-maker are also considered by the Board. In the Panel's view, there is some indication that the Legislature intended this to be the case. It has specifically authorized the hearing of evidence under the *Environment Management Act* and has given the Board broad remedial powers. Further, neither the *Environment Management Act* nor the *Waste Management Act* refers to the decision below. However, the Board can summons witnesses and the original decision maker is made a full party. Clearly this allows the Board to hear both the evidence from the record below and additional evidence that was not part of that record.
>
> For the vast majority of appeals, this hybrid procedure facilitates full evidence and argument to be presented to the Board. Defects or deficiencies in the process below may then be cured rather than sent back to the original decision-maker, only to have the administrative decision-making and appeal processes begin again. It therefore results in some administrative efficiencies and cost savings to all involved.

> To summarize, the Panel finds that the legislation provides the Board with the discretion to hear an appeal as a true appeal, an appeal *de novo*, or a hybrid of the two.

[304] Since *Imperial Oil,* the Board has confirmed this characterization of the hearing process: *City of Cranbrook v. Assistant Regional Waste Manager* (Decision No. 1999-WAS-023(c), April 9, 2009); and, *5997889 Manitoba Ltd. v. Acting Regional Executive Director* (Decision No. 2015-WAT-007(a), November 17, 2016). We adopt the Board's reasoning in *Imperial Oil*.

[305] The hybrid nature of some administrative tribunal processes has been recognized by the courts: *Djossou v. Canada (Citizenship and Immigration),* 2014 FC 1080 (CanLII)).

[306] Furthermore, the courts have recognized that the Board is an "expert tribunal": *Burnaby (City) v. Environmental Appeal Board*, 2017 BCSC 2267, at paragraph 64. Similarly, in *Lindelauf v. British Columbia*, 2017 BCSC 626, at paragraphs 34 and 35, the Supreme Court of British Columbia recognized the Board as a "specialized tribunal" that owes no deference to the original decision-maker when conducting an appeal as a new hearing:

> The EAB is a specialized tribunal. The Legislature's decision to establish such a tribunal reflects "the complex and technical nature of the questions that might be raised" and that the tribunal "plays a role that is essential if the system is to be effective, while at the same time ensuring a balance between the conflicting interests involved in environmental protection": *R. v. Consolidated Maybrun Mines Ltd.*, [1998] 1 S.C.R. 706 at para. 57.
>
> … In hearing these appeals, the EAB holds a new hearing. The EAB receives new evidence and arguments that were not before the Water Manager and owes no deference to the decision of the Water Manager under appeal.

[307] The Court recently confirmed that the Board owes no deference to the original decision-maker when the Board is hearing a matter *de novo*: *British Columbia (Assistant Water Manager) v. Chisholm,* 2020 BCSC 545, at paragraph 25. We accept and apply the Court's reasoning in *Chisholm* to these appeals.

[308] As a result, the Panel has considered the evidence that was before the District Director, plus the new evidence that was presented at the appeal hearing and has considered whether to exercise any of its powers under section 103 of the *Act*, including the power to make any decision that the District Director could have made under section 14 of the *Act*. The Panel finds that it is well situated to determine whether, in all the circumstances, the Permit's terms and conditions are advisable for the protection of the environment.

[309] For the above reasons, the Panel finds that, in hearing and deciding these appeals under the *Act* as a new hearing, it owes no deference to the District Director.

### 2. Whether the District Director is required to provide written reasons for the Permit requirements

*GFL's submissions*

[310] GFL submits that the District Director did not provide any rationale for the Permit requirements. GFL submits that such a process should be encouraged as a matter of procedural fairness and to impose discipline on the decision-maker to think through and clearly articulate the basis and justification for Permit provisions.

[311] In this case, the District Director's staff did not prepare the Technical Recommendation Memo explaining the recommended Permit terms until three months after the Permit was issued and two months after GFL filed its appeal.

[312] GFL further submits that Ms. Hirvi-Mayne, Mr. Scoffield and Dr. Preston gave evidence that the purpose of the Technical Recommendation Memo, and the attachments to it, was to record and justify the reasons for the Permit.

[313] GFL submits that it is "inexplicable" that the District Director did not rely on the Technical Recommendation Memo prepared by Metro Vancouver staff in accordance with its purpose; i.e., as the justification for the Permit's terms and conditions, and to inform the Panel with respect to his rationale.

*The District Director's submissions*

[314] The District Director did not make any submissions on whether he was required, or ought as a matter of procedural fairness, to provide a written rationale for the Permit's terms and conditions.

*The Resident Appellants' and Delta's submissions*

[315] Neither the Resident Appellants nor Delta offered any submissions on this issue.

*The Panel's Findings*

[316] The Panel finds that, in some circumstances, a statutory decision-maker is required to provide reasons for their decision: *Baker v. Canada (Minister of Citizenship and Immigration)*, [1999] 2 SCR 817 [*Baker*]. In *Baker*, Madam Justice L'Heureux-Dube, writing for the majority of the Supreme Court of Canada, stated at paragraph 43:

> In my opinion, it is now appropriate to recognize that, in certain circumstances, the duty of procedural fairness will require the provision of a written explanation for a decision. The strong arguments demonstrating the advantages of written reasons suggest that, in cases such as this where the decision has important significance for the individual, when there is a statutory right of appeal, or in other circumstances, some form of reasons should be required.

[317] More recently in *Canada (Minister of Immigration and Citizenship) v. Vavilov,* 2019 SCC 65 (CanLII)[*Vavilov*], at paragraph 79, the Supreme Court of Canada

identified the importance of providing a reasoned basis for a decision. A rationale, or justification, for a decision serves not only the parties but also reviewing bodies, and the decision-maker itself:

> Notwithstanding the important differences between the administrative context and the judicial context, reasons generally serve many of the same purposes in the former as in the latter: *R. v. Sheppard*, 2002 SCC 26, [2002] 1 S.C.R. 869, at paras. 15 and 22-23. Reasons explain how and why a decision was made. They help to show affected parties that their arguments have been considered and demonstrate that the decision was made in a fair and lawful manner. Reasons shield against arbitrariness as well as the perception of arbitrariness in the exercise of public power: *Congrégation des témoins de Jéhovah de St-Jérôme-Lafontaine*, at paras. 12-13. …
>
> [underlining added]

[318] As we have already noted, appeals to the Board are not pure appeals in the sense that the Board is not tasked, as are courts, with determining whether the District Director erred in issuing the Permit. Instead, the Board's mandate in this appeal is to consider whether, based on the evidence presented in the appeal process, the Panel considers the requirements in the Permit to be advisable for the protection of the environment.

[319] That said, the Panel finds that the District Director's failure to provide reasons for the Permit's requirements, in the circumstances, created significant fairness concerns. Although the Technical Recommendation Memo could have explained the District Director's rationale for the Permit's requirements, it was not provided to GFL until after the appeal was filed and, in fact was not created until after the appeal was filed. Further, as discussed in greater detail below, the Panel finds that the Technical Recommendation Memo is not useful as evidence of the District Director's reasoning for the Permit's requirements. This lack of reasons rendered his decision opaque to both the permittee (GFL) and the Panel. The Panel finds that the failure to provide reasons is particularly concerning where, as here, the District Director is including requirements in the Permit which are unprecedented; e.g., "odorous air contaminants", "odour units" as a compliance mechanism, and enforcement action based on the observations of an "Approved Person".

[320] The Panel also finds that in *Vavilov*, the court contemplated circumstances where, on review, the record before the decision-maker could be used to infer reasons for the decision. Here, however, the Technical Recommendation Memo from staff to the District Director was not completed until after the Permit was issued and the appeals filed. Further, there were no notes taken at the meeting where the oral recommendations for Permit requirements were made to the District Director. As a result, there is a large gap in the record of evidence that was before the District Director.

[321] The Panel also finds that the appeal process has cured this defect in the District Director's decision-making process. The appeal process has involved consideration of evidence that was before the District Director and new evidence

that was not before the District Director, as well as fulsome submissions from the parties. Furthermore, the Panel is providing detailed reasons for its decision,

[322] That is not to say that the Panel endorses decision-making that leaves a permittee unable to understand the legal and factual basis for the terms and conditions of the permit with which the permittee must comply. We do not. The Panel finds that the absence of reasons means there is a corresponding lack of transparency and accountability as to the decision-making process. Further, where, as here, the Permit contains numerous placeholders for Permit terms and conditions, and there is an absence of an explanation for why those placeholders were included and are appropriate in the circumstances, there is the potential for misunderstandings, unease and mistrust. It is not to be encouraged.

[323] The Panel finds that, unfortunately, the 305-page Technical Recommendation Memo, which could have been an important document in the hearing by describing the District Director's rationale for including the Permit terms, is of little evidentiary value in these appeals. The Panel finds that it cannot rely on the Technical Recommendation Memo as evidence of the verbal recommendations made to the District Director by Metro Vancouver staff on July 31, 2018. In reaching this conclusion, the Panel considered that the Technical Recommendation Memo was signed by three authors, yet only two of them attended that meeting and have direct knowledge of what was discussed. Ms. Hirvi-Mayne signed the document knowing that it purportedly documented a meeting that she did not attend. Further, the date that accompanies the signature of two of the main authors, Dr. Preston and Ms. Hirvi-Mayne, does not correspond to the date of the Technical Recommendation Memo. The Panel was not provided with an explanation for the inconsistency.

[324] Still further, after the Technical Recommendation Memo was purportedly signed and delivered to the District Director, its content was repeatedly changed, electronically, by Mr. Scoffield. The changed versions were saved in the Orbitt database without presenting them to the other authors for re-signing and without disclosing the final version to the District Director. The Panel finds that post-signature changes to the Technical Recommendation Memo were not disclosed to the other Parties until the Panel learned of those changes during the hearing. Further, Mr. Scoffield testified that the District Director directed at least two changes to the Technical Recommendation Memo after it was signed.

[325] The Panel finds that it is impossible for it to ascertain, with any reasonable degree of certainty which, if any, of the five versions introduced in the hearing is the version that was presented to the District Director for approval. The Panel further finds that there may be more versions of the Technical Recommendation Memo than were introduced at the hearing, given the evidence that Metro Vancouver's document database stores only the most recent five drafts of any document.

[326] The Panel finds that the process by which the Technical Recommendation Memo was created, executed and delivered reveals significant flaws in the process Metro Vancouver followed for assessing GFL's permit application.

[327] The Panel would have found it helpful if the District Director had followed a practice of requiring that he, or his delegate, receive and consider a Technical Recommendation Memo justifying recommended terms and conditions in the Permit before it was issued. The Panel would also have found it helpful if the Technical Recommendation Memo prepared for the District Director had:

- defined the recommended permit terms and conditions that used terminology that is not based in legislation; e.g., "odorous air contaminants";
- defined units of measurement that are not in general use in permits in British Columbia, and had justified their inclusion in the Permit;
- described "placeholders" that indicated the absence of data or information needed to complete the Permit, and identified when the data or information would be available and why staff recommended issuing the Permit in the absence of the data;
- explained the rationale for recommended reporting and monitoring requirements, and explained why the reports and monitoring were thought by staff to be effective, provide material benefit, and advisable for the protection of the environment; and
- described GFL's operations, identified where expected contaminants would be produced, described the potential treatment of those contaminants prior to discharge, and described how GFL anticipated treating the contaminants (if different from potential treatments).

[328] The Panel also would have found it to be more helpful and a fairer process, if the District Director had indicated the extent of his agreement or disagreement with the Technical Recommendation Memo, and the reasons for that agreement or disagreement, signed the memo, and provided the signed memo to GFL together with the Permit.

[329] In sum, the Panel finds that while the District Director was not required to issue written reasons for his decision, the failure to provide those reasons in these circumstances resulted in an unfair process that has only been cured by this appeal process.

### 3. Whether using odour units as the emission compliance limit in the Permit is an appropriate requirement for the protection of the environment that the Panel considers advisable.

*GFL's submissions*

[330] GFL submits that odour units are not an appropriate unit of measurement for compliance purposes in an air quality permit. GFL submits that the evidence regarding the difficulty with using odour units in the Permit establishes eight facts.

[331] First, that there is inherent uncertainty to odour units under the European Standard.

[332] Second, that the fundamental assumption underlying the European Standard, that sensitivity to n-butanol is transferable to other odorants, has been brought into question.

[333] Third, that the draft revision of the European Standard includes an optional secondary reference odorant, to address concerns about the transferability assumption. It is unclear how the new draft European Standard would work, and regardless, the District Director testified that he does not agree with the fundamental [transferability] assumption.

[334] Fourth, that there are uncertainties related to the use of odour units in air dispersion modelling.

[335] Fifth, that no laboratories in British Columbia conduct odour testing using the European Standard. Although there are odour laboratories in Ontario, the evidence before the Board is that the District Director is unaware of whether they are accredited to test samples using the European Standard.

[336] Sixth, that odour units are used differently across different jurisdictions, and depend on modelling software, meteorology, topography, and modelling parameters (including percentile and averaging time periods).

[337] Seventh, that odour and its perception and experience are subjective; odour units are an attempt to present a fundamentally subjective phenomenon as an objective one.

[338] Eighth, that the Permit represents the first time that odour units, with all the above-noted uncertainties, have been used as a compliance requirement in a Metro Vancouver air quality permit.

1. Inherent Uncertainty

[339] GFL submits that the evidence shows that significant uncertainty is “baked in” to odour units under the European Standard.

[340] Mr. Vossen testified that the European Standard recognizes an uncertainty factor of three for a single sample of an odorant. This uncertainty factor could be reduced to a factor of two if odour sampling occurred in triplicate, so that an odour unit measurement of 300 odour units could have a “true value” somewhere in the range of 150 to 600 odour units. GFL submits that the range of potential results for odorants arising under the European Standard raises self-evident issues with respect to a Permit compliance requirement based on odour units.

[341] GFL submits that Mr. van Harreveld confirmed the significant uncertainty associated with the European Standard methodology for determining odour units. Mr. van Harreveld opined that because olfactometry is a biological assessment, it has a significant, innate uncertainty even after most sources of variation have been minimized in the European Standard. He explained that for a reference sample with a true concentration of exactly 1,000 o.u./$m^3$, the odour unit result (after repeated measurements) will be a value between 453 and 2,209 o.u./$m^3$ in 95% of the cases.

[342] GFL maintains that the District Director acknowledged the inherent uncertainty in the European Standard. He testified that the uncertainty of the measurement is important in terms of trying to enforce the Permit, not in terms of whether it is an appropriate limit in the Permit. He explained that if a test result was one odour unit (or greater), he could not be confident that the Permit limit had been met or exceeded, due to the inherent uncertainty with odour units. Further, he was not confident that such a result would meet the necessary threshold of a significant likelihood of conviction, to allow Metro Vancouver to charge GFL under the Bylaw.

[343] GFL submits that, in *West Coast Reduction*, the Board found that odour units are not sufficiently reliable for use in a permit for compliance purposes. Specifically, the Board held that the notion that odour units can be used as an indicator of an environmental "smell" is "simply too flawed" to be used a method of determining compliance and is not suitable for determining whether the environment is adequately protected[28].

[344] GFL points to Dr. Preston's testimony that odour units are generally not used for permit compliance in Metro Vancouver. Dr. Preston testified that, notwithstanding the Board's decision in *West Coast Reduction,* odour units were included in the Permit because the District Director felt he could make a "stronger argument" to convince the Board that odour units are "sufficiently precise" for use as a compliance mechanism, although in her opinion, the uncertainty with odour units has not changed since *West Coast Reduction* was decided in 2010.

[345] Based on Dr. Preston's evidence, GFL submits that there is no justification for the District Director to depart from the Board's decision in *West Coast Reduction.* GFL submits that since the *West Coast Reduction* decision in 2010, the science has further called into question the uncertainty with respect to odour units.

2. Uncertainty related to the Fundamental Assumption underlying the European Standard

[346] GFL argues that Ms. Ahluwalia testified that she is concerned about the odour unit compliance requirement in the Permit, in part, because of the uncertainty regarding the fundamental assumption underlying the European Standard, that sensitivity to n-butanol is transferable to other substances.

[347] Dr. Dalton and Mr. Vossen testified that a fundamental issue with respect to the uncertainty of odour units is the assumption regarding the transferability of sensitivity to n-butanol to other odorants or compounds.

[348] Mr. Vossen testified that it has become clear that n-butanol is a poor reference material.

[349] Note 1 on page 18 to the European Standard sets out that the assumption that sensitivity to n-butanol is transferable to other odorants. Note 1 states:

[28] *West Coast Reduction*, at para. 331.

> NOTE 1 The odour unit is a difficult unit to define, because it relates to a physiological effect to the stimulus that caused it. … The physiological reaction is the unifying reaction that can be caused by a wide range of substances, at an equally wide range of dosages. The potential of a certain amount of a substance to cause a physiological effect can be expressed as a multiple of the dose that would cause an effect in 50% of a population.
>
> …
>
> In the past odour researchers have not used populations of standard test subjects and have only related to the physiological response to the number of dilutions of the dose of a sample to be measured. That practice implies a fundamental inability to compare the dosage of the samples through other means than the population itself. This can only be justified if the researcher is convinced that the samples of the population are sufficiently large to compensate for biological variability within this population. <u>This assumption, however, cannot be fulfilled in the practice of odour measurement</u>. The sample from the population (4 to 8 subjects, more or less randomly chosen) is far too limited a sample to be representative, knowing the variability of sensitivity within the population. This practice does not comply with the statistical requirements as used in toxicological experimental design, as the sample size from the population required to be representative is far larger than the usual number of panel members used in olfactometry.
>
> The solution is to standardise the test subjects, used to assess the physiological effect, by selecting panel members with a known sensitivity to an accepted reference material (now n-butanol [CAS-Nr.71-36-3]). <u>The assumption made is that the sensitivity for the reference will be a predictor for sensitivity to other substances</u>. The dose of other substances and mixtures is then expressed in multiples of the dose that would elicit a physiological reaction equivalent to that of the reference.
>
> [underlining added]

[350] GFL submits that, based on the expert evidence in the hearing, this assumption is no longer tenable. GFL submits that the assumption "has been shaken", and the European Standard is now under revision, in part, to address the issue.

[351] GFL refers to Dr. Dalton's testimony that studies have determined that a person's sensitivity to n-butanol does not correlate with their sensitivity to other odorants.

[352] GFL further submits that the District Director now seeks to introduce the European Standard's "odour units" into a permit in British Columbia at a time when the European Standard is under revision and is in draft revised format. The draft revised standard includes an option for a secondary reference odorant, in addition to n-butanol, in recognition of the lack of transferability of n-butanol to other odorants.

<u>3. Uncertainty related to using a Secondary Reference Odorant</u>

[353] GFL submits that Mr. van Harreveld testified that the Working Group for the revision of the European Standard has proposed an option to allow the possibility of using different odorants that are closer to the field of application for a reference material. Mr. van Harreveld acknowledged that it is not a straightforward matter to prepare odorant mixtures for reference material, and it will be necessary to assess the uncertainty related to those concentrations.

[354] Mr. Vossen testified that he is virtually certain that there would still be a problem with using a secondary reference material in the specific circumstances of the Permit. For example, the reference material would need to consist of a mixture of compounds relevant to those emitted by GFL's composting operations. If the nature of the feedstock processed at GFL would change, the utility of the reference sample would diminish, but it would still be better than using only n-butanol as the reference material. Further, Mr. Vossen testified that if the draft standard (allowing for a secondary reference material) is not accepted, "that could be the grave for olfactometry".

[355] GFL submits that the Board's concerns as expressed in *West Coast Reduction* with respect to the transferability of sensitivity to n-butanol to other odorants have been confirmed. At present, there is nothing tried and tested (as suggested by the District Director) about the "draft" European Standard.

4. Uncertainty related to the use of Odour Units in dispersion modelling

[356] GFL submits that the parameters used for odour unit air dispersion modelling can have a significant effect on the accuracy and relevance of the results. In support of that submission, GFL refers to the following evidence.

[357] Mr. Vossen testified that the purpose of air dispersion modelling is to model the projected dispersion of air emissions from a source. The modeler inputs the emission source, the appropriate meteorological conditions, and information related to the local topography. In addition, the model has important parameters that impact the result: the emission concentration; the percentile representing the amount of time at which certain odour concentrations may occur; and, the averaging time. The percentile selected and the averaging time have a significant impact on the results. Further, it is the odour unit result from an odour panel in a laboratory that is modelled in the air dispersion model, thereby importing any uncertainty or errors from the laboratory into the model.

[358] GFL noted that Mr. Vossen testified that it is common practice in the Netherlands for odour modelling to be based on the 98$^{th}$ percentile and a one-hour average, rather than the 99.8$^{th}$ percentile 10-minute average required by the Permit. Mr. Vossen testified that the odour unit result of air dispersion modelling is significantly affected by these parameters.

[359] Mr. Vossen explained that a result of one odour unit modelled at the 98$^{th}$ percentile would equate to four odour units modelled at the 99.8$^{th}$ percentile. Mr. Vossen testified that the difference in percentile makes a "huge difference" to the model results where there are also differences in averaging time. He explained that

the difference is a factor of eight, such that three odour units at the 99.8th percentile on a 10-minute average, equates to 24 odour units at the 98th percentile on a one-hour average.

[360] GFL submits that the District Director's own expert, Mr. van Harreveld testified that he could not quantify the uncertainty in odour unit air dispersion modelling because of the number of factors that have the potential to impact the outcome of this type of modelling.

[361] GFL also points to the District Director's acknowledgement under cross-examination, that it is easier, based on the results of air dispersion modelling, to achieve one odour unit at the 98th percentile than at the 99.8th percentile. He testified that based on the 99.8th percentile, the permittee may be out of compliance only 0.2% of the time (equivalent to approximately 20 hours per year in recognition of the fact that air will not disperse as modelled in certain circumstances, such as adverse weather conditions).

[362] GFL submits that the District Director testified that the purpose of air dispersion modelling is to "back calculate" the emissions that may be permitted from the stack. The District Director also testified that dispersion modelling for odour units is a means of translating emissions at the stack to the experience of odour in the surrounding community. He noted that air dispersion modelling predicts the probability of certain odour units at ground level in the future; it does not say what actually happens. The Permit requirement is to comply with one odour unit (Facility-wide) 99.8 percent of the time based on predictive modelling.

[363] GFL submits that the District Director acknowledged that even where the model predicts exceedance of the one odour unit requirement, the community is unlikely to detect odour as there is a background odour in the community that could be ten or more odour units[29].

[364] The District Director testified that he included the requirement that GFL conduct air dispersion modelling for two reasons. First, to determine the design requirements for the New Facility for GFL to meet the one odour unit at the nearest sensitive receptor 99.8 percent of the time on a 10-minute average. Second, so that results would be used to back-calculate and fill in "placeholders" in the Permit for stack and biofilter emission quality criteria. He later testified that it might be acceptable for the threshold to be "two" or even "three" odour units.

[365] GFL submits that although Dr. Preston was the Metro Vancouver employee with the most experience in air dispersion modelling, she did not author the air dispersion provisions in the Permit. She testified that she did not know if the British Columbia air dispersion modelling guidelines refer to odour or odour units. Under cross-examination, Dr. Preston acknowledged that odour unit compliance limits in other jurisdictions can only be understood in the context of the specific modelling parameters used in those jurisdictions. She also acknowledged that model sensitivity could increase with higher percentiles and utilizing a 1-hour average

[29] The source of this possible value is unclear.

versus a 10-minute average. Dr. Preston agreed that requiring the use of a 10-minute average, instead of a 1-hour average, in the Permit could make the difference between whether GFL complies with the 1 odour unit provision or not.

[366] Dr. Preston testified that Metro Vancouver's key interest is in minimizing odour impacts in the community, rather than in seeing a particular odour unit measurement number.

[367] GFL submits that Ms. Ahluwalia's evidence as an engineer with experience in using air dispersion models was that they are not designed to model odour. Further, Ms. Ahluwalia testified about her concerns regarding the Permit requirement to identify odour unit levels from individual sources (Emission Sources 08, 09, 10) as well as the New Facility as a whole. Her view, on behalf of GFL, was that the requirement that GFL not exceed the facility-wide 1 odour unit limit more than 0.2% of the time is too restrictive. It represents a considerable design risk for GFL. She explained that while the new biofilter (included in Emission Source 08) is not expected to produce material odour, even the state-of-the-art biofilter will have an odour from the media in it alone (a "woodsy" kind of odour) that must be assigned a value in the model. Further, the requirement to sample finished compost and assign a value to emissions from finished compost (Emission Source 09) adds another odour source to the dispersion model.

[368] GFL submits that Ms. Ahluwalia emphasized the sensitivity of air dispersion models to minor or immaterial odour sources. Although not qualified to give expert evidence, Ms. Ahluwalia testified that based on her experience conducting odour assessments for industry, her view was that the modeler should not include sources that are not significantly contributing to off-site odour impacts, because this will "over predict" or exaggerate what is really happening offsite.

[369] Ms. Ahluwalia also testified that modelling odour units (based on emissions from a stack) may make it appear that a stack is beneficial. In her view, the stack requirement for the New Facility is an "overdesign" component that serves no useful purpose. Further, the addition of a stack means that the BacTee biofilter must be covered and have additional fans installed to extract air from inside the structure and discharge it to the stack. Covering the stack makes it more difficult to conduct inspections and maintain the biofilter, detracting from its value.

[370] GFL submits that Ms. Ahluwalia expressed GFL's concern that there is no clear guidance in British Columbia about either how to conduct an odour assessment or how to model emissions from a facility of this type. If the odour unit testing results and the modelling results are not reliable because of the significant uncertainty associated with odour testing and dispersion modelling, it will be very difficult to rely on odour units as the basis for the design of the New Facility so as to satisfy a 1 odour-unit requirement. Further, given the uncertainty related to the use of odour units, their inclusion in air dispersion modelling could result in over-predicting impacts in the community and indicate that the New Facility is not succeeding at addressing odour impacts when, in fact, it is.

[371] GFL requests that the Permit term requiring an initial air dispersion model plan and report ought to be deleted because they are based on odour units which

are uncertain, and because a Permit limit of 1 odour unit, facility-wide, is not reasonable.

[372] Further, GFL submits that the dispersion modelling requirement under the Permit is an "evergreen" requirement, in that a modelling report and plan must be submitted annually after the initial report and plan. GFL submits that this requirement ought to be deleted for the same reasons as the initial report and plan.

5. Lack of availability of accredited odour laboratories capable of testing under the European Standard

[373] GFL submits that a further difficulty relating to the use of odour units in the Permit is that the European Standard requires that testing laboratories must be accredited to test under the standard. Section 5.1 of the European Standard states:

> The most important requirement of this European standard concerns quality criteria for the overall performance of the sensory measurement method. A testing laboratory shall comply all the quality criteria specified in this clause and can only claim compliance with this standard that has assessed the quality of its performance by means of performance testing.

[374] GFL submits that there is no laboratory in British Columbia that conducts odour unit testing, and this was confirmed by the District Director under cross-examination. He also testified that he is not aware of the status of any Canadian laboratory that has received performance testing accreditation with respect to the European Standard.

6. Uncertainty related to comparison with the use of odour units in other jurisdictions

[375] GFL submits that a reference to 1 odour unit in one jurisdiction does not necessarily mean the same as a reference to 1 odour unit in another. This is particularly so when odour units are derived from dispersion modelling where the percentile and the averaging time parameters used can significantly affect the result.

[376] GFL further submits that Mr. van Harreveld opined in his March 18, 2019 expert report that although the Permit is on the "restrictive end of the range" of values used as odour unit criteria, it is compatible with criteria applied in other jurisdictions. However, GFL notes that Mr. Vossen testified that Mr. van Harreveld's opinion was based on an inappropriate comparator; i.e., wastewater treatment plants in the Netherlands. Mr. Vossen testified that the Netherlands' emission guidelines for composting plants is 1.5 odour units based on a one-hour average at the 98$^{th}$ percentile. Converting the Netherlands' standard to the 99.8$^{th}$ percentile on a 10-minute average would equate to 12 odour units (a factor of eight). Mr. Vossen questioned why Mr. van Harreveld's review of odour unit criteria from around the world excluded criteria from Europe where odour unit values are considerably different.

[377] As to the Ontario regime for odour regulation, GFL submits that neither Mr. van Harreveld nor the District Director were knowledgeable about that regulatory regime. Ms. Ahluwalia testified that her understanding, and experience coincided with the finding in the Morrison Hershfield Report on "best odour management practices for composting", that the use of a maximum 1 odour unit, 10-minute average, ambient performance limit is not an official limit. Instead, it is applied on an ad hoc basis and "with little consistency across the province". Ms. Ahluwalia further testified that based on her experience of working in Ontario, the Ministry of Environment in that province does not have specific guidance on how to model odour units but has a policy document that recommends modelling specific compounds or substances with odour impacts based on a 10-minute average at the 99.5$^{th}$ percentile.

7. Uncertainty related to the subjective perception of odour

[378] GFL submits that the perception of odour in the environment is different than testing for odour in a laboratory. In a lab, qualified panellists' "sole" job is to focus on whether they detect a difference between a clean air sample and a diluted odorous sample. In the "real world", people are unlikely to detect 1 odour unit. Dr. Dalton testified that there must be a four-fold increase in the concentration of an odour before an individual who is not directed to pay attention to an odour, will notice it in their environment.

[379] Further, Ms. Ahluwalia testified that she is concerned with extrapolating one odour unit, as measured in a lab, to a compliance measure in the community. In addition, the odour unit requirement in the Permit does not consider whether the one odour unit level is "malodorous".

[380] GFL submits that the District Director acknowledged that finished compost should not be malodorous, and GFL submits that it was unnecessary to authorize the finished compost area as an emission source. The Permit requires that even if the finished compost is not malodourous, its odours must be included when calculating the 1 odour unit facility-wide requirement in the Permit.

[381] Further, GFL submits that the District Director also testified that it is difficult to quantify the intensity of odour in the field, because dispersion can radically affect odour as the distance from a facility increases. In response to a question from the Panel, the District Director testified that although he believed that the 1 odour unit requirement in the Permit would be protective of the environment, two or three odour units might also be protective.

[382] GFL submits that the uncertainty related to the subjective perception of odour is yet another reason justifying removing it as a unit of measurement in the Permit.

> 8.That odour units are not used as a compliance mechanism in any other Metro Vancouver air quality permit.

[383] GFL submits that the Permit represents the only time that the District Director has used odour units as a compliance mechanism in a Permit. The District Director testified that after the *West Coast Reduction* decision, he did not include odour units in an air quality permit until he was satisfied that odour units could appropriately be used. He stated that he thought that the issues of concern to the Board in that case had been addressed and should not prevent the use of odour units as a compliance mechanism in air quality permits.

[384] GFL submits that no other Metro Vancouver air quality permit uses odour units as a compliance mechanism.

[385] GFL submits that the following Permit provisions that reference or rely on "odour units" ought to be deleted:

- page 3, paragraph 3: "odour limit";
- page 13, Emission Source 08, under "MAXIMUM EMISSION QUALITY": "Odorous Air Contaminants = Concentration(s) and unit(s) as determined by the District Director such that the total ambient concentration of all odorous air contaminants from all emission sources in this permit must not exceed a ten-minute average of one odour unit at the nearest sensitive receptor for more than 0.2% of the time";
- page 15, Emission Source 09, under "MAXIMUM EMISSION QUALITY": "By March 1, 2020: Odorous Air Contaminants = Concentration(s) and unit(s) as approved in writing by the District Director";
- page 16, Emission Source 10, under "MAXIMUM EMISSION QUALITY": "By March 1, 2020: Odorous Air Contaminants = Concentration(s) and unit(s) as approved in writing by the District Director";
- pages 22/23, Emission Source 08: all chart entries on the line associated with the Requirement, "Emissions Testing - New Biofilter(s)";

- pages 24/25, Emission Sources 09 and 10: all chart entries on the line associated with the Requirement, "Emissions testing - Finished Compost Storage Area and Blending";
- pages 35/36, all chart entries on the line associated with the Requirement, "Facility Upgrade Design Dispersion Modelling Report"; and
- pages 36/37, all chart entries on the line associated with the Requirement, "Dispersion Modelling Report."

[386] GFL submits that the District Director's "solution to the problem" of odour unit uncertainty—to take the measurement uncertainty into account when assessing GFL's compliance with the 1 odour unit limit—is not defensible. GFL cannot be expected to accept a Permit term which relies on a regulator's subjective assessment of whether to "excuse" a sampling result that is not in compliance with a permit limit because the limit is too uncertain. GFL submits that the Panel ought not to accept the District Director's submission that he can take the uncertainty into account and exercise his discretion accordingly, and that measurement uncertainty may reduce the risk of GFL being prosecuted for non-compliance with the Permit's odour unit requirements.

[387] GFL submits that in the First Interim Decision, at paragraph 112, the Panel rejected an earlier version of those submissions from the District Director:

> … We do not find the District Director's submissions that a conviction and penalty would unlikely result where the alleged non-compliance is "within the range of measurement uncertainty of the test or device in issue" to be persuasive, and the District Director did not provide sufficient evidence to establish that as a fact. …

[388] GFL submits that the District Director still has not provided sufficient evidence to support that submission. As the Panel stated at paragraph 110 in the First Interim Decision, GFL faces "potentially significant financial or penal consequences" for contravening the Permit's odour unit limits.

[389] For reasons of justice, fairness, legal security and predictability, the courts have recognized that penal provisions must be certain, unambiguous and definitive (e.g., *Front commun des personnes assistées sociales du Québec v. Canada (Canadian Radio-Television and Telecommunications Commission)*, 2003 FCA 394)[*Front commun des personnes assistées sociales du Québec*].

[390] Further, the Board found in *West Coast Reduction*, at paragraphs 328 to 329 and 331, that odour units are too uncertain to be used for compliance purposes where the consequences of non-compliance are significant:

> There is no dispute that there are a range of consequences that may result from a permittee's failure to comply with a permit requirement including prosecution for violating the terms of the permit or for causing pollution. The maximum fine for such an offence is $1,000,000 under the GVRD Bylaw.

> The decision to adopt a new unit of measurement, particularly when there are significant consequences for failure to comply, must be undertaken after careful consideration of the strength and weaknesses of the measure.
>
> …
>
> Based on the evidence presented, the Panel finds that the use of odour units in this context is not reasonable and appropriate. The notion that odour units can be used as an indicator of an environmental "smell" is simply too flawed to be used as a method of determining compliance and is therefore not suitable for determining whether the environment is adequately protected.

*The District Director's submissions*

[391] The District Director submits that the Permit's odour unit requirements are reasonable, reliable, and the best available method for measuring the quantity of odour emitted from industrial sources. Odour units have been adopted by many jurisdictions, internationally and in Canada. The District Director argues that the European Standard (EN: 13725), which is the basis for the odour unit, is the most frequently prescribed standard, internationally, for quantifying odour emissions. Mr. van Harreveld described the standard as a tried and tested method to measure the quantity of odour emitted from an industrial source, including organic waste composting.

[392] The District Director submits that GFL's submission regarding the innate and inherent uncertainty that is a part of the European Standard is a "false controversy" because GFL knows that the Parties agree there is uncertainty in odour concentration measurement in the European Standard's methodology, as there is with all scientific measurement. Mr. van Harreveld testified that the biggest concern is that the uncertainty is given the right magnitude. Mr. van Harreveld opined that the uncertainty is a factor of 2.21, and not a factor of three as suggested by GFL.

[393] The District Director submits that so long as the regulator is aware of the magnitude of the uncertainty, it can take that uncertainty into account. The District Director recognizes the importance of uncertainty from an enforcement perspective, but not from the standpoint of whether the limit itself is appropriate.

[394] The District Director also submits that sensitivity to n-butanol is only one component of a rigorous odour panel selection process that also includes testing for ability to concentrate, take instructions, remain focused, and give consistent answers. Further, Mr. Van Harreveld does not believe that the work presented in the Klarenbeek paper supported the authors' conclusion that sensitivity to n-butanol is not transferrable to other odorants.

[395] The District Director submits that the Klarenbeek and Feilberg papers did not speak to the correlation between sensitivity to n-butanol and sensitivity to other odorants. The District Director submits that Dr. Dalton's opinion that four studies have determined that there is fundamental lack of correlation between the two is "clearly wrong". The District Director submits that Mr. van Harreveld's opinion in this regard ought to be preferred over the opinions of Dr. Dalton and the authors she cited who did not testify. Further, the District Director points out that Mr. van

Harreveld testified that the European Standard represents the current science and is "better than doing nothing and it is the best we can do at this moment."

[396] The District Director submits that it is important to recognize that GFL is only exposed to a penalty for an offence if it is found "beyond a reasonable doubt" (the standard for conviction of an offence) to have contravened the Bylaw. The District Director notes that in some impaired driving cases, courts in British Columbia have recognized the uncertainty in blood alcohol concentration measurements and have given the benefit of the doubt to the accused[30]. The District Director submits that the uncertainty in measuring blood alcohol content does not render the breathalyzer and the ".08 limit" valueless. The limit is certain; the measurement is uncertain, and that is considered when it comes to enforcement. So too, with odour units.

[397] The District Director notes that GFL's experts, Dr. Dalton and Mr. Vossen, both use odour units in their work. Dr. Dalton uses the European Standard for the purpose of measuring an odour detection threshold and understands that it is widely used in Europe for evaluating odour emissions from industrial and agricultural facilities.

[398] The District Director submits that other jurisdictions use "odour units" as a performance requirement in air emissions authorizations. Dr. Preston testified that newer facilities in Ontario are subject to a 1 odour unit performance requirement and older facilities subject to a three odour units' requirement are "grandfathered" into the regulatory regime. The District Director submits that the three Ontario approvals issued under the *Environmental Protection Act,* including GFL's Moose Creek facility, which he introduced into the hearing, can be interpreted as having a limit of 1 odour unit based on a 10-minute average at the 100$^{th}$ percentile.

[399] The District Director also submits that GFL has not referred to the testimony of its own witness, Mr. Geisberger. The District Director points to Mr. Geisberger's testimony working in an odour laboratory in Ontario as "helpful". The District Director submits that he testified that he would accept results from Ontario laboratories to determine the concentration of odorous air contaminants using the European Standard's methodology.

[400] The District Director submits that the Certificate held by the Orgaworld facility in Surrey includes a 1 odour unit requirement and requires the City of Surrey to operate the facility in accordance with an Odour Management Plan. That plan requires that, for the first three years of operation, the facility will maintain odour to a limit of 1.0 o.u./m$^3$ based on a 10-minute average at the 99.5$^{th}$ percentile.

[401] The District Director submits that his own testimony that he found the Orgaworld facility's ability to achieve an outcome of 1 odour unit at the nearest sensitive receptor should be informative.

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[30] See, for example: *R. v. McIvor,* [2008] BCJ No. 2825; *R. v. Bekkers,* 2012 BCSC 471.

[402] The District Director testified that "if they [GFL] are able to achieve a 1 odour unit limit 99.8 percent of the time, or even close to that, my expectation is that most people will not be able to detect it in a lab, let alone the receiving environment, and therefore the community will be protected". He added that, knowing that the Surrey facility was using best available control technology and that "the citizens of Surrey were spared" (of odour impacts presumably), he wanted the same for the residents who live near the Facility. The District Director understood from Ms. Hirvi-Mayne's testimony that with the combination of the BacTee biofilter and the stack at the New Facility, GFL should be able to achieve the performance requirement of 1 odour unit.

[403] The District Director submits that a 1 odour unit requirement is a performance and outcome requirement, or tool to assist in the management and regulation of odour and air quality, and to protect the environment. In his view, this requirement is the best available control technology.

[404] The District Director further submits that the 99.8$^{th}$ percentile requirement is "a compromise between the Moose Creek and Orgaworld requirements". The District Director testified that he instructed staff to reduce the percentile from the 100$^{th}$ percentile, as he felt it was too onerous, and meteorological conditions present once in ten years could result in poor dispersion such that GFL might exceed the limit.

[405] The District Director submits that the 99.8$^{th}$ percentile requirement is consistent with Metro Vancouver's ambitious air quality objectives and should be confirmed.

[406] Further, the District Director submits that the principles underlying the odour unit requirement are used in other industries to promote compliance; e.g., the LC50 test is used to test pulp and paper facilities' compliance with permitted limits on discharge to bodies of water.

[407] The District Director submits that *West Coast Reduction* is not a precedent for the present appeal. It does not need to be overturned, as it was decided based on evidence as to whether the permit requirement in that case was "necessary" for the protection of the environment. In contrast, this appeal is to be decided based on whether the permit requirements in this case are "advisable" for the protection of the environment.

[408] The District Director submits that there is no law, regulation, guideline, or policy in British Columbia that prohibits, restricts, or limits the use of odour units as a performance and outcome requirement in an air quality permit issued by the District Director.

[409] The District Director submits that GFL mischaracterized Mr. Vossen's testimony regarding percentile use in dispersion modelling. Mr. van Harreveld opined that the relationship between different percentiles and averaging times, based on cited reports, is an extrapolation of data on a theoretical basis. The District Director submits that neither Mr. Vossen's nor Mr. van Harreveld's evidence supports GFL's statement that 1 odour unit "would" equate to a result of four odour

units at the 99.8th percentile. The District Director submits that there is no simple mathematical relationship between compliance limits and percentiles.

[410] The District Director submits that Dr. Preston (who was not tendered as an expert) interpreted the BC Air Dispersion Modelling Guidelines as using a factor of 1.65 when converting from a one-hour average to a ten-minute average, rather than a factor of two as did Mr. Vossen. Further, Mr. van Harreveld explained that a modeler should also consider prevailing local meteorological conditions.

[411] The District Director submits that Dr. Preston has more knowledge of dispersion modelling guidelines and related practical considerations than Ms. Ahluwalia, whose professional background and experience is Ontario-focused. Dr. Preston has run dispersion models in British Columbia for decades. Where their evidence differs, the Panel should prefer Dr. Preston's evidence to Ms. Ahluwalia's (though neither was tendered as an expert).

[412] Dr. Preston testified that dispersion models "predict concentrations at different points in space" and use inputs such as wind direction and wind speed to create a three-dimensional wind field for the whole study area for each hour of the year. The District Director submits that the predicted dispersion of GFL's emissions is fundamentally important to a regulator when considering the potential impact of the emissions on the environment. Further, Dr. Preston will review GFL's proposed dispersion modelling plan and report with assistance from the air quality and climate change group at Metro Vancouver. The District Director submits that Dr. Preston is well-qualified to address any concerns that Ms. Ahluwalia may have regarding the dispersion modelling that the Permit requires.

[413] The District Director submits that GFL brought its concern regarding the air dispersion modelling plan and reports to the Panel, instead of to Dr. Preston and the District Director, "all for effect". Metro Vancouver staff are well qualified and willing to discuss model parameters with GFL.

[414] The District Director submits that GFL's submissions that the stack will interfere with the inspection and maintenance of the biofilter "are concerning", as the New Facility should have been designed to prevent that from happening.

[415] The District Director also submits that Ms. Ahluwalia's evidence that finished compost is not a source of odour ought to be given no weight. The District Director testified that his staff have witnessed finished compost piles at the Facility and other operations and observed that they are known to produce odours.

[416] The District Director submits that according to Dr. Preston's testimony, GFL's staff told Metro Vancouver's staff that the biofilter in the New Facility could meet the 1 odour unit requirement. Dr. Preston also testified that GFL needs to conduct revised dispersion modelling at the biofilter's proposed emission rate and present contributions from Emission Sources 8 to 10, including the biofilter. The District Director noted, however, that GFL did not submit that report and it no longer needs to, given the Panel's interim decisions varying certain reporting requirements pending the completion of the appeal process.

[417] The District Director submits that properly completed modelling reports are critically important, because they include data that the regulator can review to determine whether the predicted results support or contradict claims made by a permittee. GFL's draft dispersion modelling report appears, to the District Director, to show that a stack is required if GFL is to meet the Permit limit of 1 odour unit at the nearest sensitive receptor.

[418] The District Director submits that the Panel should not give any weight to GFL's "vague concerns". Those concerns ought to be addressed between GFL and Metro Vancouver staff and, ultimately, the District Director.

*The Resident Appellants' submissions*

[419] The Resident Appellants make no submissions as to the appropriateness of odour units as a compliance mechanism in the Permit. Instead, they submit that although GFL disapproves of the Permit requirements, it has failed to explain how the New Facility acts as an adequate substitute for the monitoring requirements in the Permit. Further, GFL has neglected to propose an alternative mechanism for measuring and monitoring the effectiveness of the New Facility. Further, as the New Facility has no similar comparator, "it is essential that a monitoring/enforcement mechanism is in place to ensure that the system works as Mr. Card anticipates."

[420] The Resident Appellants submit that GFL's history of mismanagement and its failure to propose an alternative monitoring system, as well as the uncertainty associated with the New Facility, point to the "overwhelming conclusion" that the Permit must include requirements for measuring odour emissions to allow for monitoring and enforcement. GFL cannot rely simply on the new technology.

[421] The Resident Appellants maintain that although GFL may have built a New Facility, the Resident Appellants sought a commitment to reduce air emissions. The Resident Appellants submit that GFL's submissions are "nothing more than a poorly disguised attempt to mislead the Panel."

*Delta's submissions*

[422] Delta makes no specific submissions regarding whether odour units are an appropriate compliance mechanism in the Permit. In general, Delta submits that the District Director had a reasonable basis for imposing the requirements in the Permit, and he had the statutory authority to do so under the *Act* and the Bylaw. Delta submits that GFL has not proposed an alternative measurement for ensuring compliance with the Permit terms.

*The Panel's Findings*

[423] A useful starting point for this analysis is the Board's decision in *West Coast Reduction*. In that case, the Board considered an appeal from two decisions of the District Director to amend a permit held by West Coast Reduction Ltd. ("West Coast"), authorizing the discharge of air contaminants from its rendering plant in an industrial area of Vancouver. The amendments had the stated objective of reducing the amount of rendering plant odour experienced in the local community. The

District Director introduced "odour units" as a compliance mechanism in West Coast's permit. The District Director made the amendments on his own initiative.

[424] One of the issues in *West Coast Reduction* was whether the legislation authorized the Greater Vancouver Regional District (now Metro Vancouver) to regulate odour in a permit. West Coast challenged the District Director's authority to introduce odour units as a compliance mechanism in a permit. The Board discussed the appropriateness of including a new unit of measurement, particularly when there are significant consequences for non-compliance, at paragraphs 329 to 331 in *West Coast Reduction*:

> The decision to adopt a new unit of measurement, particularly when there are significant consequences for failure to comply, must be undertaken after careful consideration of the strengths and weaknesses of the measure.
>
> Although odour units are recognized as standards of the ASTM [American Society for Testing Material] and the European Committee for Standardization, and, as such, have undergone professional assessment, the Panel does not believe that this fact alone is of sufficient weight to justify its inclusion in a permit to measure compliance. Rather, the Panel must carefully consider whether odour units, used in the context of measuring odour from a rendering plant – an environmental odour, is reasonable and appropriate.
>
> Based on the evidence presented, the Panel finds that the use of odour units in this context is not reasonable and appropriate. The notion that odour units can be used as an indicator of an environmental "smell" is simply too flawed to be used in determining compliance and is therefore not suitable for determining whether the environment is adequately protected.

[425] The Board then considered the evidence in that case regarding the science behind odour units. In paragraph 335 of *West Coast Reduction*, the Board found that, in terms of odours from the rendering plant, there was "no credible support for" the assumption that there is a linear relationship between a person's sensitivity to n-butanol and to other odours." A telling part of the panel's analysis in that case can be found at paragraphs 332 to 335:

> To begin with, an odour unit is a dilution ratio. The mathematical definition of "ratio" is dimensionless. Therefore, to give an odour unit a "unit of measure", is already predisposing it to a "mass", which it is not, and is therefore arbitrary.
>
> Further, the dilution ratio is equal to the volume of clean air divided by the volume of diluted air (or the diluted odour). In order to attribute a "measure" of odour units to a sample air, human panellists are used. The Panel appreciates that this is considered the best, and possibly the only, means of measuring smell. However, the basis upon which the panellists are chosen, the use of n-butanol, is not without its problems, particularly when it comes to correlation between sensitivity to n-butanol and to environmental odours.
>
> The European Standard is based on an assumption that the performance characteristics as determined on reference materials are transferrable to

> other odorants. Specifically, that there is a linear relationship between a person's sensitivity to n-butanol and to other odours. If the person can detect between 20-80 parts per billion, they qualify to be a panellist. The response obtained to 40 parts per billion in n-butanol is the standard upon which other odorants are referenced.
>
> The Panel finds that there is no credible support for this assumption in the context of the environmental odours at issue in this case.

[426] The Board in *West Coast Reduction* then considered the expert evidence in that case regarding the variability in testing and reporting results in odour units. The Board also considered evidence that the Ministry of Environment used odour units as a performance measure in a permit issued to Maple Leaf Foods Inc., and that odour units are used in environmental regulations in the Netherlands. The Board concluded as follows in paragraphs 347 and 349:

> … the Panel has had the benefit of two experts on this matter. It finds that, regardless of the decisions of other jurisdictions, including odour units for enforcement purposes in West Coast's permit is not reasonable. Although not qualified to give expert evidence on odour units, the Panel also notes that, in Dr. Preston's experience, odour units as a regulatory compliance tool are not in general use in North America, and that [in] many jurisdictions ambient odour criteria are used for system design purposes, as opposed to compliance.
>
> …
>
> In conclusion, the Panel finds that to impose such an imprecise measurement in the permits, which have significant sanctions for non-compliance, is an unreasonable exercise of discretion, and the terms are not enforceable as a result.

[427] The Panel heard evidence that, since the Board's decision in *West Coast Reduction*, the science behind odour units has changed. The assumption underlying the European Standard (that a person's sensitivity to n-butanol is transferable to other odorants), which was of concern to the Board in *West Coast Reduction*, has been directly brought into question as a result of studies by Klarenbeek and others. The Panel was informed that, as a result of those studies, the European Standard is now under review and a draft revision to the European Standard is actively under consideration.

[428] Further, the Panel heard evidence that even if the assumption underlying the European Standard was not under scientific review, there would still be many uncertainties associated with the use of odour units in the Permit as a measure of compliance. The uncertainties are associated with the inherent nature of odour units, the use of secondary references under the draft European Standard, the lack of accredited laboratories in British Columbia, and dispersion modelling using odour units. Further, the Panel heard of the difficulty in comparing the use of odour units in other environmental authorizations with their use in the Permit. We will discuss each of these concerns, in turn.

[429] First, with respect to the inherent uncertainties associated with odour units, the Panel finds that three expert witnesses, Dr. Dalton, Mr. Vossen, and Mr. van Harreveld, agreed that there is an inherent uncertainty associated with the use of odour units. The experts agreed that the significant uncertainty associated with the European Standard methodology for determining odour units arises because an "odour unit" is a biological assessment, and therefore, it has a significant, innate uncertainty even after most sources of variation have been minimized as described in the European Standard. The Panel accepts that consistent expert evidence, and also accepts Mr. Vossen's evidence that there is even greater uncertainty when sampling for environmental odorants that are not "single compounds".

[430] The Panel finds that the District Director acknowledged the innate and inherent uncertainty in the European Standard in his testimony. He testified that the uncertainty of the measurement is important in terms of trying to enforce the Permit, but not in terms of whether it is an appropriate limit in the Permit. Further, the District Director testified that he considers this uncertainty when deciding whether to enforce a permit.

[431] In our view, it is essential that Permit terms are justifiable, capable of being accurately measured, and enforceable. Air quality permits are legally enforceable documents authorizing the discharge of air contaminants to the environment, which would otherwise be prohibited. Further, non-compliance with a term or condition of a permit has significant consequences for the permittee. The Panel endorses the court's reasoning in *Front commun des personnes assistées sociales du Québec* that in reasons of justice, fairness, legal security and predictability, the courts have recognized that penal provisions must be certain, unambiguous and definitive. The Panel finds that there is innate uncertainty associated with the use of odour units that renders it inappropriate for use as a compliance measure in a permit regulating the discharge of air emissions.

[432] Second, with respect to secondary references under the draft European Standard, the Panel accepts Mr. Vossen's evidence that even if the European Standard were to be revised to allow the use of a secondary reference, the reference material in this case should contain a mixture of compounds consistent with those emitted by the composting operations. If the nature of the compost changes over time, the reference sample may need to change as well, otherwise it may no longer correlate to the environmental odours being assessed. As a result, the Panel finds that there remains unacceptable uncertainty associated with using a secondary reference under the European Standard.

[433] Third, with respect to the lack of accredited laboratories for the measurement of odour in British Columbia, even if the European Standard did not involve significant uncertainty, there is no evidence before the Panel that there are odour laboratories in British Columbia capable of testing samples in odour units based on the European Standard.

[434] The Panel finds that it is inappropriate for the District Director to mandate the use of odour units as a measurement unit for compliance purposes in a legally enforceable permit where it is unclear to the District Director that air quality samples can be measured within British Columbia to check for exceedances; and

the odour unit is such an uncertain measurement that it will require the application of discretion before it is enforceable. The Panel finds that it is incumbent that the District Director ensure that the emission limits in a permit are capable of accurate measurement, and enforcement, by the regulator. The Panel finds that where the standard mandated for use in air sampling is so uncertain that samples must be sent to other jurisdictions with different regulatory systems, and where the sample may degrade due to delays in receiving and testing the material, the standard cannot be said to be advisable for the protection of the environment.

[435] Fourth, with respect to dispersion modelling uncertainty, the Panel considered Mr. van Harreveld's testimony that air dispersion modelling has its own inherent uncertainties. In terms of odour unit air dispersion modelling, Mr. van Harreveld testified that he could not quantify that uncertainty because numerous factors can impact the outcome of odour unit modelling. Mr. Vossen testified that the variability or uncertainty in the odour unit analysis is one area of uncertainty in dispersion modelling. Other factors that influence the results of modelling include topography, local meteorology, and the size of the modelling domain. There is no evidence that the BC Air Dispersion Modelling Guidelines, which provide guidance to Metro Vancouver and permit applicants, contemplate modelling in odour units, or that odour units would behave analogously to the n-butanol used in its place in the air dispersion modelling undertaken in this case. The Panel finds that the uncertainty associated with odour units is further exacerbated when inputting odour units into an air dispersion model which has its own uncertainties and for which it may not be designed.

[436] Finally, the Panel finds that there is no evidence that the District Director has used odour units as a compliance mechanism in any other permits that are currently in force. The Surrey facility referenced by the District Director and his staff, is regulated by the Ministry of Environment and Climate Change Strategy, rather than the District Director. The Panel finds that, unlike the Facility at issue in this appeal, the Surrey facility is the subject of a lengthy contractual arrangement between the operator and the host municipality. Still further, the Panel finds that the Surrey facility is significantly different in design and operation from the Facility and the New Facility. Despite the District Director's reliance on the fact that the Surrey facility was bound by an odour unit performance limit, the Panel finds, based on the evidence, that when the District Director issued the Permit, he had not received, and could not have considered, the Surrey Contract's extensive provisions that relate to the design of that facility[31], including monitoring and reporting requirements related to the odour performance standard and a maximum permissible odour emission rate. If he had, he would have noted that unlike the Permit, the 1 odour unit provision in the Surrey Contract was a design parameter for the facility. Further, the Surrey Contract provides for "service failures" which included a financial consequence, calculated daily for failure to meet the maximum permissible odour emission rate[32]. Further, the Panel finds that the District Director

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[31] See Schedule 3 of the Surrey Contract.
[32] See Schedule 4B, section 10.1(h) (Specified Service Failure – odour) of the Surrey Contract.

did not consider that although the Surrey Contract came into effect in February 2015, the Certificate was not issued by the Ministry of Environment until October 18, 2017, and the Certificate does not include a requirement that is comparable to the 1 odour unit compliance mechanism in the Permit.

[437] The Panel finds that parties are free to agree to contract terms that are mutually beneficial if they are otherwise lawful. That is quite different from the District Director imposing permit requirements that, if breached, may be prosecuted as a statutory offence against the permittee. The range of consequences that may result from a permittee's failure to comply with a permit requirement include prosecution for violating the terms of the permit or for causing pollution. The maximum fine for such an offence is $1,000,000 per occurrence under the Bylaw[33].

[438] In sum, based on the evidence before us, we find that the 1 odour unit compliance mechanism in the Permit has no equivalent comparator in the Surrey facility's Certificate. Based on the evidence, we find that the 1 odour unit provision in the Permit is unique in Metro Vancouver (and perhaps in British Columbia). That is not to say that a regulator could not use a new compliance mechanism, where properly supported by scientific evidence of its accuracy, reliability and in the face of clarity regarding its legal enforceability. Here, however, the novelty of using odour units as a compliance mechanism, in the context of the levels of uncertainty associated with its use, gives cause for significant concern.

[439] There is a similar lack of comparable odour unit requirements from other jurisdictions, in evidence before the Panel. The Panel finds that the provincial approval issued for the Moose Creek facility operated by GFL in Ontario includes an "odour performance limit"[34] of 1 odour unit calculated in accordance with a schedule that does not reference the percentile parameter to be modelled, and that stipulates that the Director has discretion to "disregard [sic] outlying data points" based on the dispersion model. Further, the Panel heard evidence that the regulator in Ontario may not enforce odour unit requirements evenly across the Province. The other two Ontario approvals introduced by the District Director are similarly lacking in detail. Further, the Panel did not have the benefit of any evidence regarding the currency of the Ontario approvals or whether there are other context-specific factors that are important to understanding them. The Panel finds that it cannot rely on evidence regarding the use of odour units in another Canadian jurisdiction, in significantly different circumstances, when considering whether the odour unit compliance provisions in the Permit are "requirements for the protection of the environment that the [Panel] considers advisable". Further, the Panel finds that the Permit must stand or fall on its own; its requirements are either advisable for the protection of the environment, or they are not.

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[33] Under section 46 of the Bylaw, a person who contravenes a provision of the Bylaw, a permit, an approval, an order or an emission regulation that is intended to limit the quantity of air contaminants or that specifies the characteristics of air contaminants that may be discharged into the air commits an offence punishable by a fine not exceeding $1,000,000.

[34] Moose Creek facility's approval, at page 5, section 2, "Odour Performance Limit".

[440] When considering the uncertainties described above, the Panel finds that the Board's concerns in *West Coast Reduction* regarding the use of odour units are as relevant today as they were then. The Panel finds that since the decision in *West Coast Reduction,* the Board's concerns have been validated as a result of scientific studies that call into question the assumption underlying the European Standard. The District Director also knew that the European Standard is under review and may be revised.

[441] The Panel adopts the reasoning in *West Coast Reduction* at paragraph 329, that:

> … [t]he decision to adopt a new unit of measurement, particularly when there are significant consequences for failure to comply, must be undertaken after careful consideration of the strength and weaknesses of the measure.

[442] The Panel finds that the evidence before us establishes that the District Director failed to carefully consider the strengths and weaknesses of odour units as a measure when he used odour units in the Permit. Indeed, it was clear that Metro Vancouver staff misunderstood the very definition of 1 odour unit. It is not the point where 50 percent of an odour panel can detect the odour, as Ms. Hirvi-Mayne suggested, but is the point where 50 percent of the odour panel detects that there is a "difference" between the clean air (neutral gas) portal in the olfactometer and the portal with the diluted test sample, without yet being able to identify the odorant. The Panel further finds that the District Director did not consider the 'real world' application of odour units, as evidenced by his testimony that an appropriate odour unit limit for the New Facility could be "one", "two" or "three".

[443] In all the circumstances, the Panel finds that imposing such an imprecise measurement as an odour unit in a permit that has significant sanctions for non-compliance is, as the Board noted in *West Coast Reduction,* "an unreasonable exercise of (the District Director's) discretion". Further, the Panel is not satisfied that the evidence supports the use of odour units, a flawed unit of measure, as a compliance mechanism. As such, the Panel finds that the use of odour units is ill conceived in this case and not advisable for the protection of the environment.

[444] The Panel finds for the reasons set out above, that the District Director included Permit requirements that rely on the use of a flawed compliance mechanism; i.e., odour units. The Panel further finds that using odour units as the emission compliance limit for odours is not a requirement for the protection of the environment that we consider advisable. As a result, the Panel finds that the use of all terms and conditions in the Permit that require use of odour units are unenforceable.[35] The Panel **directs** that the District Director amend the Permit to delete all reference to monitoring, measuring, sampling, reporting, or otherwise using "odour units" or procedures stipulated in EN:13725.

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[35] A list of the Permit terms that are not enforceable due to their reliance on "odour units" as a unit of measurement is appended as "Appendix A".

### 4. Whether the Permit terms relating to "odorous air contaminants" recognizable by an "Approved Person" (the "Sniff Test") are advisable for the protection of the environment.

*GFL's submissions*

[445] GFL submits that the Approved Person provision found at pages 2 and 3 of the Permit (also referred to as the "Sniff Test") is an extra-statutory compliance mechanism. Neither the *Act* nor the Bylaw provide for an Approved Person or a "Sniff Test" in an air quality permit. The Bylaw prohibits the discharge of air contaminants without a permit, and the discharge of emissions that cause pollution. The Approved Person "Sniff Test" is a third type of prohibition, in that it prohibits the discharge of odour in a quantity or quality that would result in an Approved Person being able to recognize that odour at a specific distance from the Facility (and the New Facility). The District Director testified that the "Sniff Test" prohibition does not exist in any other air quality permit issued by Metro Vancouver.

[446] GFL submits that the penalty for violating this extra-statutory mechanism (GFL ceasing to receive food waste) is draconian. It will virtually shut down the Facility, as approximately 80 percent of material received is co-mingled food and green waste from municipal curbside pickup and would have serious impacts on both GFL and its municipal customers.

[447] GFL submits that the provision, as drafted, raises issues with respect to the selection and training of "Approved Persons" as well as concerns regarding the reliability and objectivity of their observations. GFL submits that the evidence before the Panel is that odour assessment programs need to be designed to ensure the objectivity of odour assessors. GFL points to the evidence of Dr. Dalton regarding the human experience of odour, the qualification of odour panellists and the use of odour assessments.

[448] GFL stresses that the Approved Person Sniff Test in the Permit was drafted by the District Director, and he is the person who interprets the results of the process and determines whether to impose a penalty on the permittee.

[449] GFL submits that it would not object to the continued inclusion of an amended Approved Person Sniff Test where "recognition" of a malodour originating from organics processing at the Facility is informative and intended to improve performance, rather than punitive. In such a case, GFL ought to be required to submit a report to the District Director from a qualified person identifying the results of an investigation as to the reason or source of the odour and identifying concrete steps that will be taken by GFL, on an expedited basis, to remedy the issue. The Permit could also require GFL to communicate with the residents to explain the results of the investigation and the steps that will be taken to remedy the situation. GFL would be amenable to further amending the Permit to reduce the distance from the Facility in Column B of Table 1 to 600 metres from September 1, 2020, onward.

*The District Director's submissions*

[450] The District Director submits that the use of an "Approved Person" is an appropriate and verifiable method for determining whether odours from the Facility or the New Facility have been detected past the property boundary. The District Director crafted the Approved Person provision in the Permit based on a provision in Harvest's permit. He testified that his intention in both permits was to use people to determine the presence of "odorous air contaminants" at a distance from the permitted facilities. Dr. Preston testified that the distances set out in Table 1 on page 2 of the Permit were meant to act as a "surrogate for intensity", and by having the distance decrease over time, the Permit is requiring that the emissions and intensity of odour be reduced. Mr. Scoffield described this as a requirement for continuous improvement.

[451] The District Director submits that most of the Approved Persons under the Permit are Metro Vancouver Permitting and Enforcement Officers. They are public servants assessed by the District Director to determine that they can recognize "GFL odours as distinct from other odours", and they are neither unusually sensitive nor insensitive to such odours.

[452] The District Director submits that the concept of using odour surveys at a distance in a regulatory context is not unique to Metro Vancouver. Ms. Jones testified as to her experience conducting odour surveys under a similar procedure in Scotland. The District Director submits that the Orgaworld facility's Odour Management Plan includes an analogous "Sniff Test Scoring Card" where employees of the facility document meteorological conditions, odour offensiveness, and the likely source of odour.

[453] The District Director further submits that he, the owners of the Harvest facility, and the City of Richmond entered into a Consent Agreement to amend Harvest's permit which included a Sniff Test, and which resolved Harvest's appeal against its permit. The resident appellants' appeals against Harvest's permit were not resolved by consent. The Board's decision on the resident appellants' appeals found the Sniff Test in Harvest's amended permit to be an "insightful enforcement tool" and a "timely way to stop the odour from being generated"[36].

[454] The District Director submits that Dr. Dalton's expert opinion ought to be disregarded as "abstract" and "detached from the reality of conditions on the ground in Delta". She has no experience in regulating odour in British Columbia, Canada, or elsewhere. She is an experimental psychologist who was not in a position to meaningfully opine on the District Director's procedure for selecting and training approved persons because, although she asked for more detail on the "Approved Persons" concept, none was forthcoming and she did not try to interview the District Director or any of the Approved Persons about the process. Before Dr. Dalton wrote her expert report, she had only the Permit and Metro Vancouver's Odour Observation Procedure forms. Before she testified, she also had the District Director's Approved Persons presentation, the European Standard, and its proposed revision.

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[36] *Tegart*, at paragraph 283.

[455] The District Director submits that the Approved Person requirement in the Permit should be confirmed, and it should not be varied as suggested by GFL.

*The Resident Appellants' submissions*

[456] The Resident Appellants submit that enforcement of the Permit, based only on complaints by the residents, is not adequate given the lack of Metro Vancouver resources to investigate complaints. Further, relying on GFL to respond to complaints is not a "best practice". They submit that Dr. Dalton's evidence was that while an operator of a facility may be the best detector of changes in an odour emitting process, regular exposure can desensitize people and result in the brain filtering out information. As such, the Resident Appellants submit that Approved Persons who are staff of both Delta and Metro Vancouver are essential to the odour monitoring process. Delta staff should be approved, because they can respond more quickly to a complaint than the more distant Metro Vancouver staff.

[457] The Resident Appellants do not support either the current wording in section 1(1) of the Permit (the prohibition against discharging odorous air contaminants recognizable by an Approved Person at the distances in Table 1), or the variation proposed by GFL. Similarly, they reject the wording in section 1(2) (the requirement to cease receiving food waste) and GFL's proposed amendment. The Resident Appellants submit that these Permit provisions do not adequately protect human health and the environment.

[458] Instead, they seek a variation of the Approved Person requirements that would prohibit the discharge of odorous air contaminants from the Facility (or the New Facility) if an Approved Person can recognize the Facility's (or the New Facility's) odour for more than five minutes in any ten-minute period "beyond the Facility fence line" or, alternatively, at "the nearest sensitive receptor."

[459] The Resident Appellants further submit that section 1(2) of the Permit ought to be further amended to provide that "until such time as all facility upgrades proposed and those required by the Permit are completed, approved, and successfully tested, the organic matter being composted be limited to green waste only". In the alternative, the Resident Appellants ask that the restriction on receiving food waste be amended to provide that "if 30 or more complaints are received within the period of one month, the Permittee must cease receiving any Food Waste, including commingled Food and Yard waste, until such time as the District Director determines that the impacts of the Facility's emissions have been addressed."

*Delta's submissions*

[460] Delta submits that the Sniff Test is an essential requirement in the Permit to control and prevent the discharge of odorous air contaminants generated from the Facility and the New Facility. The Permit authorizes the discharge of odorous air contaminants from the Facility only to the extent set out in the Permit.

[461] Delta also submits that the Permit does not authorize the discharge of odorous air contaminants in circumstances where an Approved Person is able to

recognize the Facility's odour for more than five minutes in any ten-minute period at a certain distance from the Facility. Delta submits that this provision does not amount to a third prohibition created by the District Director.

[462] Neither the term "Approved Person" nor the method for qualifying odour assessors needs to be set out in the *Act* or the Bylaw. Section 1(1) of the Permit is clear regarding when the discharge of odorous air contaminants is unauthorized, and the methodology for determining this. Further, the term "odorous air contaminant" is an appropriate term in the context of the Permit, the Bylaw, and the *Act*.

[463] Delta submits that one of the best ways to address odour complaints is to situationally respond to the odour issues giving rise to complaints. In this instance, an Approved Person is to attend the area around the Facility and New Facility and follow a procedure to determine whether there has been an unauthorized discharge of odorous air contaminants. Delta staff can, and should, be Approved Persons under the Permit given their proximity to the site, which enables them to respond more quickly to odour complaints than Metro Vancouver staff.

[464] Delta did not call evidence regarding the training and observations of its staff as Approved Persons under the Permit. Nevertheless, Delta submits that the evidence supports a finding that Metro Vancouver and Delta staff are adequately trained to detect and assess odorous air contaminants from the Facility, and to determine whether there has been an unauthorized discharge from the Facility. It is reasonable for Metro Vancouver to rely on the Approved Person's observations for determining compliance with the Permit and the Bylaw.

[465] Delta submits that although the "cease receiving food waste" provision in section 1(2) of the Permit has not been triggered since the Permit was issued, the provision is an effective tool to assist in odour abatement. Delta maintains that GFL's submission that the Permit ought to be varied to require only that GFL submit a report when the provision has been triggered, is unreasonable to address the community's concern regarding odorous air contaminants from the Facility.

[466] Delta submits that if the Panel varies the Permit as requested by GFL, there would likely be no clearly enforceable offence under the Bylaw for discharging air contaminants from the Facility, absent a finding that there was a discharge causing pollution. This would defeat the purpose of section 31 of the *Act*, the Bylaw, and the Permit.

[467] Finally, Delta submits that section 1(2) of the Permit is especially reasonable and appropriate given GFL's evidence that it is achievable to contain essentially all odorous air contaminants within the New Facility. However, Delta did not cite any evidence in support of this assertion.

[468] Delta cites the Provincial Court decision in *R. v. Money's Mushrooms Ltd.,* 1997 BCPC 23, involving a prosecution under Metro Vancouver's previous air quality bylaw, for the proposition that the presence of air contaminants from a facility can be established subjectively using the olfactory senses, for the purpose of prosecuting an offence. The Court in that case held that Metro Vancouver was

entitled to rely on information from people affected by the odour from the facility in question.

*The Panel's Findings*

[469] The Panel notes that neither the phrase "Sniff Test" nor "Approved Person" is defined in the Permit or the enabling legislation. The Panel also notes that the phrase "odorous air contaminant(s)" is not defined in the Permit and is not found in the enabling legislation. The Facility Wide Restrictions in sections 1(1) and (2) of the Permit (Discharge of Odorous Air Contaminants and Requirement to Cease Receiving Food Waste) form the basis for much of the remainder of the Permit.

[470] Based on the evidence in the hearing, the Panel finds that these provisions were included because the District Director was attempting to regulate the presence of "odour" in the community, rather than the discharge of air contaminants from the Facility (or the New Facility) as provided for in the *Act* and the Bylaw. Several of Metro Vancouver's staff testified as to this intention.

[471] The Panel notes that section 11 of the Bylaw provides that the District Director may do one or more of the listed actions when issuing a permit to allow the discharge of air contaminants. Section 11(1) authorizes the District Director to "place limits and restrictions on the quantity, frequency and nature of an air contaminant permitted to be discharged and the term for which such discharge may occur".

[472] The Board has previously found, and the Panel agrees, that odour is not a substance, and therefore, does not fall within the definition of "air contaminant" in the *Act* (and the Bylaw): *Tegart*, at paragraph 80, citing *Surrey Langley Environmental Protection Society v. British Columbia (Ministry of Environment, Lands and Parks)*, [1996] B.C.E.A. No. 34 [*Money's Mushrooms*].

[473] As the Board noted in *Money's Mushrooms* at page 10:

> … odor is not a "substance", rather it is the interaction of a substance with the olfactory senses. It is a property of a substance – a consequence.

[474] The Panel finds that under the Permit, the District Director has attempted to control the discharge of "odorous air contaminants" above the 1 odour unit limit based on an Approved Person's recognition of an odour attributed to the Facility (or New Facility) according to the Sniff Test criteria. The Panel finds that this Permit provision is like the order that attempted to restrict "odorous emissions" in *Money's Mushrooms*. However, as noted, the current Bylaw authorizes the District Director to regulate the discharge of "air contaminants," not the presence of odour.

[475] The Bylaw defines an "air contaminant" as meaning any *substance* that is emitted into the air and that: injures or is capable of injuring the health or safety of a person; injures or is capable of injuring property or any life form; interferes or is capable of interfering with visibility; interferes or is capable of interfering with the normal conduct of business; causes or is capable of causing material physical discomfort to a person; or damages or is capable of damaging the environment.

[476] The Panel finds that a permit can only regulate those odours that fall within the definition of "air contaminant" under the Bylaw. We find that odour is not a substance. It is a consequence of a substance being sensed by olfactory receptors. As such, the Panel finds that "odour" is not included in the term "air contaminant." The Panel further finds that the District Director has no authority under section 11 of the Bylaw to place limits or restrictions on the discharge of air emissions from the Facility (or the New Facility) based on an Approved Person's "recognition" of odour from the Facility (or New Facility) in the community. The Panel finds, based on the evidence in the hearing, that the perception or recognition of odour is highly subjective and, as such, requiring the measurement of a such a subjective experience is inappropriate in a Permit.

[477] Still further, the Panel finds, based on the evidence in the hearing, that even if the District Director had the authority (we have found he does not) to create a permit restriction based on the recognition of an "odour" in the environment, the recognition in this instance is based on observations by an Approved Person who is selected, and whose observations are made, based on a process and training that lacks the rigour applied to properly selected odour panellists. The Panel finds that the difference between the odour observations of randomly selected, but highly trained panellists in a strictly controlled laboratory setting is incomparable to the observations of individuals hand-picked by the District Director, and whose training consisted of being driven around in a car and asked to fill in a form at certain selected sites.

[478] In addition, the Panel finds that the qualifications of an Approved Person are assessed by the same person who conceived of the Permit requirement, rather than by a person with experience in assessing odour panellists. The Panel finds that there is insufficient evidence to support a conclusion that the District Director has the requisite education, training, and experience to distinguish someone who is capable of fulfilling the role of an Approved Person from someone who is not.

[479] Still further, the Panel finds that there is no procedure to re-assess an Approved Person's ongoing competence. Neither is there a demonstrated scientific basis for the duration and geographical range of their odour surveys. The Panel finds that properly trained odour assessors observe all odours; they are not directed to look for a specific odour and are not told the reason for their odour assessment, whereas Approved Persons are investigating odour complaints attributed to GFL, under the District Director's guidance.

[480] In sum, the Panel finds that the Approved Person and Sniff Test provisions in the Permit create an operational restriction, based solely on the recognition of an "odour" at certain distances from the Facility, with attendant consequences based on a process that is completely lacking in scientific rigour and for which there is no legal authority.

[481] For all these reasons, the Panel finds that the Approved Person (or Sniff Test) provisions in section 1(1) and (2) in the Permit have no basis in science or law. The Panel further finds that it follows that provisions such as these are not grounded in science or law and are not protective of the environment. In sum, the Panel finds

that the Approved Person provisions in the Permit were ill-advised and are not protective of the environment.

[482] The Panel does not want to leave this discussion without recognizing that the Board in *Tegart* found that the District Director could "address odour" in the Harvest permit. The Panel does not disagree that this allowed the District Director to direct his staff to take certain actions but finds that such direction is distinguishable from the Permit. The Panel acknowledges that it is permissible for odour to be indirectly addressed by permit requirements that address air contaminants that are associated with odours, but this must flow from a legitimate regulation of those contaminants, meeting the requirements laid out in the definition of "air contaminant".

[483] The Panel finds that the Harvest facility which ceased operating under the terms of a consent agreement that was reduced to language in a Permit, is distinguishable from the Permit.

[484] The Panel finds that in the Permit, the District Director has gone much further with the Sniff Test concept than he did in Harvest's permit. In the Permit, the District Director included a provision that prohibits GFL from discharging "odorous air contaminants" in such quantity and quality that an "Approved Person" is able to "recognize the facility odour" for more than five minutes in any ten-minute period, at specified distances (since September 1, 2020, the distance is one kilometre). Further, if the Approved Person recognizes odours from the Facility (or the New Facility) for more than three days in any 14-day period, GFL must cease receiving food waste, including commingled food and yard waste, until the District Director determines that the impacts have been addressed.

[485] The Panel finds that the decision to adopt a new method of measurement (the Sniff Test), particularly when there are significant consequences for failure to comply, must be undertaken after careful consideration of the strengths and weaknesses of the measure and must be within the District Director's authority.

[486] The Panel finds that the District Director failed to consider and address either the strengths and weaknesses of the "Sniff Test," or the limits of his authority, before incorporating the test into the Permit as a method of restricting air emissions on a Facility-wide basis.

[487] For the above reasons, the Panel finds that the Permit terms relating to "odorous air contaminants"[37] recognizable by an "Approved Person" (i.e., the Sniff Test) are not advisable for the protection of the environment. We **direct** that the Permit terms that rely on the observations of an "Approved Person" are to be deleted from the Permit. The Panel also **directs** that all Permit terms requiring monitoring, reporting, sampling, modelling or otherwise requiring the use of, "odorous air contaminants" are to be deleted.

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[37] A list of the Permit terms that reference "odorous air contaminant(s)" which are unenforceable are appended at Appendix "A".

[488] The Panel **directs** that the District Director amend the Permit to require GFL to prepare and provide for the District Director's approval, an Odour Management Plan that identifies by emission source, the air contaminants being emitted which are odorous and GFL's odour mitigating strategies, best practices and technologies that are in use and *potentially could be used* to further reduce and control the emission of air contaminants which are odorous from the New Facility.

[489] Notwithstanding our findings regarding the lawfulness of the Sniff Test in the Permit, the Panel recognizes that there may be utility in olfactory observations (a Sniff Test) as a source of information to inform GFL and the District Director about operations at the Facility that may produce malodours, so that operational steps can be taken to address the source of the odour. These investigative and informational purposes are distinct from using a Sniff Test as a regulatory enforcement mechanism, however.

[490] The Panel **recommends** that the District Director and GFL consult on how to best develop a Sniff Test for informational purposes. The Panel finds that it would be inappropriate for us to direct the inclusion of such a test in the Permit where we did not hear detailed evidence evaluating the type or utility of such testing. We have considered the odour observations (a Sniff Test of a sort) that are provided for in the Surrey contractual arrangement that was introduced in the hearing, but about which we heard very little. We **recommend** that the Director pursue the utility of such observations and consider amending the Permit to include use of such odour observations strictly for informational purposes.

[491] We commend to the District Director and GFL consideration of ambient monitoring—a Sniff Test—intended to limit the ongoing production of odours once detected, that for informational purposes, GFL would:

- detect and measure odour using human observation (a Sniff Test) at the Facility and in the case of complaints at the complainant's location, using agreed procedures (such as the odour measurement procedures provided for in section 3.8 "Measurement of Odour" in the Surrey facility's Odour Management Plan appended to the Surrey Biofuel, Environmental Management Plan, revised July 20, 2017 version);
- conduct daily Sniff Tests at the New Facility (with offsite monitoring in response to complaints) by a person trained in recognizing and reporting New Facility odours, in a manner like the monitoring that is stipulated in section 5.2 "Regular Olfactory Monitoring" of the Surrey facility's Odour Management Plan;
- record daily Sniff Test observations in a manner acceptable to the District Director and produce those records on an annual basis, or as requested by the District Director; and
- report to Metro Vancouver's Permit Enforcement Officer any operational parameters, including emission control performance, that a responsible GFL employee has identified as leading to odour production and emission; and the steps that GFL has taken and intends to take to remedy the issue.

**5. Whether the effective period of the Permit is advisable for the protection of the environment.**

*GFL's submissions*

[492] GFL submits that the Permit's effective period, from August 1, 2018 to until September 30, 2023, is insufficient and ought to be varied to ten years starting from September 1, 2020; i.e., until September 1, 2030. GFL submits that it has voluntarily invested $40 million[38] in constructing the New Facility, which has been operational since September 1, 2020. For the New Facility, the operating period of the Permit is effectively only three years; i.e., until September 30, 2023. Three years is not an appropriate effective period for the New Facility.

[493] GFL submits that the New Facility utilizes proven technology, including biofilters that have been installed in the United States and around the world. Mr. King testified as to his visits to some of those facilities. Further, the BDP agitators, while custom designed for GFL, have been utilized and proven at other facilities. The District Director testified about how he was "happy with the technology" and did not need to be convinced that it would work.

[494] GFL submits that ten to fifteen years is a more appropriate operating period for the New Facility, to allow GFL to amortize its investment and build business confidence and certainty for both the company and its municipal suppliers. GFL notes Mr. King's evidence regarding the three authorizations governing operations at the Facility and New Facility: the Permit, the Licence, and Ministry of Environment permit 108476 issued under the *Act* (allowing the discharge of compostable materials to ground). GFL submits that neither the Licence nor the Ministry of Environment's permit have expiry dates.

[495] GFL notes that Mr. King testified that the effective period of the Permit is one of the key terms of concern to GFL. GFL sought a ten-year term for the Permit to justify the investment in the New Facility, and to ensure that it could enter into contracts with its municipal customers to provide composting services beyond five years. Mr. King testified that GFL undertook discussions with Metro Vancouver staff regarding the New Facility based on the understanding that the Permit would have a ten-year term. He referenced his notes of a meeting on June 22, 2018, indicating that Metro Vancouver staff and GFL representatives agreed to a Permit expiry date of June 2028. The District Director testified that GFL was clear that it had to consider the economics of constructing the New Facility. He later changed the effective period to five years without any explanation to GFL.

[496] GFL submits that the District Director testified that permits have two purposes: to protect the receiving environment and to enable industrial activity; permits balance protection of the environment and the needs of society to have activities that discharge air contaminants. He agreed that permits that cause a

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[38] The source of the $40 million figure is not clear. The Panel notes that the estimated cost of the New Facility in June 2019, prior to the construction delays, was $37 million.

company to fail to be profitable, where there is no evidence of harm to the environment, represent a failure in permitting.

[497] GFL also submits that the District Director testified that he did not believe it was necessary to issue a ten-year permit to GFL so that it could assure investors would get their money back from constructing the New Facility. He noted that he has wide discretion in setting the effective period.

[498] GFL further submits that Mr. Scoffield testified that he could not think of any other Metro Vancouver air emission permit involving a new multimillion-dollar facility that had a term of five years or less. Ms. Hirvi-Mayne testified that Metro Vancouver issues air emission permits for five to fifteen-year periods, with a ten-year term not being unusual. Where a facility makes a substantial capital investment on improving operations, Metro Vancouver staff typically recommend a longer term.

[499] Finally, GFL submits that although the Board heard evidence in June 2019 that GFL was prepared to accept a ten-year effective period (based on an assumption that there would not be a requirement for an enclosed large biofilter, and an associated stack with an electrical system for blowers to move air from the biofilter through the stack) with the Permit amendments and given that the New Facility is now constructed with a stack and enclosed biofilter, GFL submits that the appropriate effective period under the Permit is now ten years commencing on September 1, 2020.

*The District Director's submissions*

[500] The District Director submits that an extension of the Permit's effective period is not advisable for the protection of the environment. The effective period is appropriate considering GFL's historical record of emitting odours, the Facility's impact on the community, and GFL's use of new technology. GFL can use the remaining years of the Permit to demonstrate that it can operate the New Facility without causing harm to the community.

[501] The District Director submits that the effective period for each permit is determined based on its individual merits and circumstances. He acknowledged that although the average Metro Vancouver air emissions permit is for around ten years, most of the facilities with such a term conduct their business in compliance with the permits, do not impact the community, and the public is generally unaware of them. The District Director testified that ten-year terms are typically issued to smaller, low-impact facilities where there is a low risk of emissions causing unacceptable conditions in the community. He needs to see a proven record in respect of how the facility operates. Shorter term permits are appropriate when there is uncertainty, and the facility is employing new or evolving technology such as the BacTee biofilter used at the New Facility. The District Director submits that the Permit's effective period "is consistent with other odiferous and complex facilities" such as those of Harvest and West Coast Reduction, which had permit terms of less than five years.

[502] The District Director submits that GFL has pointed to no testimony to support its assertion that all parties agreed to a June 2028 permit expiry date. The District Director submits that there is no evidence that GFL requires a ten-year term for it to obtain long-term contracts from its customers.

[503] The District Director denies that he changed the effective period to five years without any justification. He points to earlier drafts of the Permit which provided GFL with terms of approximately four years and three years, respectively.

[504] The District Director submits that when he issued the Permit, there was significant uncertainty with respect to the New Facility. He notes that Dr. Preston testified that she recommended the effective period for the Permit because she felt that it provided sufficient time, after the New Facility was operational, to learn what its impact would be on the surrounding environment. The District Director maintains that authorizing unbuilt emission sources until 2023 would give GFL enough time to prove its ability to operate in a way that did not impact the community. If it became clear that GFL was able to achieve an "acceptable" standard of air quality sooner, it could apply for a permit amendment.

*The Resident Appellants' submissions*

[505] The Resident Appellants made no specific submissions on the effective period of the Permit. In general, they submit that given GFL's poor track record of managing odour from the Facility, the terms and conditions of the Permit, albeit weak, are necessary "to hold GFL accountable" until it can demonstrate that the New Facility "adequately reduces the odour".

*Delta's submissions*

[506] Like the Resident Appellants, Delta made no specific submissions on the effective period of the Permit. In general, Delta submits that, based on the evidence at the hearing, the District Director had a "reasonable basis" for imposing the requirements in the Permit, and had the authority to do so under the *Act* and the Bylaw.

*The Panel's Findings*

[507] The Panel notes that the effective period in the Permit governs the operation of the Facility and the New Facility. As of September 1, 2020, only the New Facility is permitted to operate. The Panel finds that the Permit has less than three years remaining in the effective period.

[508] The Panel considered that Harvest's permit, which the District Director used as a comparator, had an effective period of just over three years. However, as the Panel has already found, that facility had significant process differences from the Facility and the New Facility and was operating under very different circumstances. The Panel finds that the Harvest permit is not sufficiently similar to the Permit to be a useful comparator. Further, Harvest was unwilling or unable to invest in capital improvements to address its significant odour issues whereas GFL has acknowledged the community's concerns and injected a significant capital

investment into constructing the New Facility using technology with which the District Director has expressed satisfaction.

[509] The Panel also considered the evidence with respect to numerous other permits issued by the District Director to facilities with the potential to generate odour with effective periods of ten years or more. For example, GVA 0512 authorizes the discharge of air contaminants from a hazardous waste facility in Delta for ten years and GVA 0543 authorizes the discharge of air contaminants from a chemical process and storage plant in Surrey for 14 years. Similarly, GVA 0443 authorizes the discharge of air contaminants from an emulsion and asphalt products plant for 14 years. The Panel considered that those operations were also markedly different from those permitted at the Facility and the New Facility. The Panel finds that the evidence does not indicate a clear basis upon which effective periods are assigned to Permits.

[510] The Panel finds that Metro Vancouver staff were concerned about the Facility and the complaints that it had generated when they recommended the effective period and were not convinced that the New Facility would address residents' concerns.

[511] The Panel finds that GFL's significant investment in the New Facility is evidence that GFL is committed to continue operating a composting facility in Metro Vancouver. Further, the Panel finds that the New Facility includes best available control technology as described in the Morrison Hershfield Report. The Panel is mindful that GFL did not provide actuarial evidence about the time that it believes would be reasonable for it to amortize its expenditure in the New Facility. While GFL made arguments that make sense about the term of the Permit being too short, in the circumstances, they did not provide clear and cogent evidence based on their financial arguments, to justify a ten-year effective period.

[512] The Panel finds that the Permit's effective period does not appropriately balance GFL's needs for business certainty and the public interest (including the interests of residents living in proximity to the New Facility) in minimizing the harmful effects of air contaminants discharged from the New Facility. The Panel notes that the earlier drafts of the Permit that the District Director references in his submissions and which included different effective periods were significantly different from the Permit as issued.

[513] The Panel also finds that the District Director's testimony, that he was satisfied that the New Facility would be using the best available control technology, supports a longer effective period than is in the Permit.

[514] The Panel finds, based on the evidence, that the Permit length that is protective of the environment is six years from the commencement of operations of the New Facility on September 1, 2020. The Panel finds that a six-year term will allow GFL sufficient time to address any issues that arise during the commissioning of the New Facility and demonstrate whether it can comply with the Permit. The Panel further finds that a six-year effective period ought to encourage GFL to continuously improve its operations while working to build a better relationship with residents. The Panel finds that continuous improvement, as demonstrated on the

ground and through communication between the permittee and local residents, is advisable for the protection of the environment.

[515] The Panel **directs** that the effective period of the Permit is to be amended to six years commencing September 1, 2020.

### 6. Whether the District Director included other operating, monitoring, and reporting requirements that are unduly prescriptive and are not advisable for the protection of the environment

*GFL's general submissions*

[516] GFL submits that, in general, the Permit is unduly prescriptive and includes terms that fail to consider the principles of sustainability or fail to give rise to material benefit; will add unnecessary cost; and may delay the GFL-odour abatement upgrade program (construction of the New Facility). Further, these requirements will interfere with the use of best operating practices in GFL's composting operations.

*GFL's initial submissions*

[517] In its Statement of Points, GFL specified that it objected to the Permit provisions that:

- restrict GFL's ability to provide adequate aeration to the compost piles[39];
- require testing, reporting, monitoring, dispersion modelling, provide engineering designs, assessment reports and plans[40] that are unreasonable, unduly prescriptive, not advisable for the protection of the environment, add unnecessary cost, fail to give rise to material benefit and may (and likely will) delay construction of the New Facility;
- restrict the monthly volume of materials received at the Facility[41] - an arbitrary, onerous and unreasonable provision that exceeded the District Director's authority and is not advisable for the protection of the environment;
- prohibit emissions from sources 1, 2, 3, 4(a) and 4(b), 5 and 6 after February 28, 2020 (as amended) - GFL says these are onerous, unreasonable, capricious and arbitrary provisions and they may (and likely will) delay construction of the New Facility and are in excess of the District Director's authority;
- prescribe the moisture content, carbon-to-nitrogen ratio and bulk density such that the provisions inhibit the necessary operational flexibility required to respond to conditions as they arise, and lack reasonable parameters;

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[39] See Permit pages 6 to 8.
[40] See Permit pages 21 to 41.
[41] See Permit page 3, paragraph 4.

- require that oxygen concentration levels in the compost results in a saturation oxygen concentration in the liquid phase of less than 2 mg/L (2 ppm) – GFL says this is an unreasonable and unclear requirement;
- require that there be two screeners and two conveyers – an unnecessary and unreasonable requirement;
- require the differential pressure in the New Facility be continuously monitored using equipment approved by the District Director – an onerous, unnecessary, unreasonable and uncertain provision;
- require certain stack height, diameter and exit temperatures in the New Facility that are unduly prescriptive and otherwise inappropriate for reasons referred to elsewhere;
- require finished compost to be stored inside a partially enclosed structure – an unreasonable and unnecessary requirement;
- refer to "odorous air contaminants", a term with uncertain meaning and of uncertain application;
- provide for requirements and procedures at pages 13 to 15 respecting Emission Sources 08, 09 and 10 that are to be determined by the District Director or approved of by the District Director at an undefined future date with respect to "odorous air contaminants". These terms empower the District Director to impose undetermined and unknown permit requirements which may be informed by arbitrary or capricious standards;
- provide for procedures and requirements at page 29 of the Permit, to provide a "characterization of odorous air contaminants emission testing plan" for review, comment and approval by the District Director. GFL says that these terms are unreasonable, vague and uncertain as odour detection thresholds are derived by the same process as odour units;
- provide for procedures and requirements at pages 22 to 24 of the Permit with respect to Emission Sources 08, 09 and 10 which require emissions testing and characterization of odorous air contaminants, and related requirements on page 28 that require submission of emissions testing plans. GFL says that these terms are unreasonable, vague, and uncertain as they fail to specify what is meant by "odorous air contaminants", are uncertain with respect to odour unit testing, and because odour detection thresholds are derived by the same process as odour units;
- in general, are unduly onerous, and with respect to Emission Sources 09 and 10, should only be required once;
- require a written report of the results of a dispersion modelling assessment of "specific odorous air contaminants"[42] in grams/second, as well as total odour in odour units – an unreasonable, vague and uncertain requirement that may

[42] See Permit, pages 36 and 37.

lead to dozens of modelling scenarios and that is overbroad, not cost effective and unlikely to provide beneficial information;

- prescribe requirements with respect to the new biofilter[43] that are unreasonable and inappropriate, will not assist with, and will detract from the common goal of effective and efficient odour mitigation;
- require unnecessary repetition of dispersion modelling when it ought to only be required once,[44] and fail to stipulate that the District Director will act reasonably, efficiently and consistently with respect to approving a modelling plan;
- require measuring dissolved oxygen in the treatment pond[45] that is unnecessary and unreasonable; and
- require unnecessary duplication in reporting that is unnecessary and inefficient.

[518] GFL submits that Mr. Card's evidence was that flexibility to respond to conditions as they arise throughout the composting process is essential to successful composting and odour mitigation. The prescriptive nature of the Permit requirements is antithetical to that essential adaptive flexibility.

[519] Mr. Card further testified that the New Facility's odour management technology accords with the best available control technology for composting facilities. GFL submits that the District Director acknowledged this fact when he testified that he declined to go with GFL and Delta staff to observe BacTee biofilters in use at other facilities. He testified that he was convinced that the technology that GFL was putting in was excellent and the best that he had seen based on the drawings. He stated "I was happy with the technology that they are doing. There was no need to convince me that the technology would work."

[520] GFL submits that neither the District Director nor any of the staff who worked on the Permit are specialists in composting: the District Director testified that he is a "generalist"; Ms. Hirvi-Mayne, the "lead force" on the Permit, testified that she was "learning as she was going"; Mr. Scoffield testified that he took a composting course from Dr. Paul but, otherwise, his experience with composting was limited to backyard composting, and his work on the Permit was his first experience with a composting facility air quality permitting project; and, Dr. Preston has limited experience with composting, and acknowledged that she is not an expert in the area. She testified that she and her colleagues had "learned" from their experience with the permit for Harvest's facility.

[521] GFL submits that Ms. Jones is the Metro Vancouver Permitting and Enforcement Officer with the most experience with the Facility, but she was not involved in the drafting of the Permit. Further, although Metro Vancouver commissioned the Morrison Hershfield report on best operating practices for a

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[43] See Permit, page 14.
[44] See Permit, page 36.
[45] See Permit, page 12.

composting facility, the District Director does not acknowledge that the New Facility meets the recommendations in the report.

[522] Finally, GFL submits that the District Director failed to recognize sustainability factors or that the Facility is the only practically located, viable, fully enclosed compost facility capable of receiving the quantities of organics generated from the Metro Vancouver Organics Diversion Program. These factors are part of the balance when determining what is advisable for the protection of the environment.

*GFL's final closing submissions*

[523] In its Final Reply, GFL submits that the Permit requirements that it objected to in its Statement of Points are still properly the subject of its appeal and have not been abandoned. However, GFL submits that many of these provisions have become moot given the passage of time, because they reference aspects of the Facility that are no longer operational. Accordingly, GFL focused its closing submissions on the following provisions which are still in force.

[524] GFL submits that the Permit includes both operating requirements, and monitoring and reporting requirements that are unduly prescriptive.

Operating Requirements

[525] GFL submits that the following Permit requirements (referenced by page number in the Permit) are either unduly prescriptive or simply unnecessary, and it asks that they be deleted or amended as follows.

[526] At page 12, Emission Source 07—the first two paragraphs under the heading "WORKS AND PROCEDURES" (referring to the collection of leachate and dissolved oxygen concentration in the treatment pond)—ought to be deleted. GFL submits that these paragraphs are unnecessary for the New Facility where leachate will be managed in a fully enclosed facility. GFL would not object to an amended requirement that the treatment pond not generate unacceptable odour. GFL further submits that leachate management ought to be addressed under the description of Emission Source 08 on page 13 of the Permit.

[527] At pages 13 to 15, Emission Source 08—p. 13—reference to a maximum emission flow rate ought to be deleted. GFL submits that a maximum emission flow rate for Emission Source 08 is unnecessary, will hinder the operator, and will be counterproductive to odour reduction. GFL points to Ms. Ahluwalia's testimony that additional air flow may be needed, depending on throughput, to minimize odour production. GFL does not object to a minimum flow rate requirement of 12 air changes per hour.

[528] Further, at page 13—"MAXIMUM EMISSION QUALITY"—ought to be followed by the requirements (i) after October 1, 2020, best available control technology will be verified by achieving a discharge concentration of 7.5 mg/m$^3$ or less of VOCs, or at least 80% removal efficiency, on a mass basis, across the biofilter, whichever is higher, provided that emissions of VOCs shall not be greater than 12 metric tonnes per month; and (ii) after October 1, 2021, the concentrations (in mg/m$^3$) of emitted

total VOC, TRS, and ammonia, will be set, in writing, by the District Director, after having considered emission data (due to have been submitted to the District Director for approval in writing by October 1, 2021).

[529] GFL submits that the best available control technology is the New Facility's BacTee biofilter, which has been designed to provide optimal residence time for biological destruction of odorous compounds. This design feature, plus the proprietary aerated floor, will enable GFL to achieve a very high level of odour reduction. Further, the effectiveness of the biofilter can be verified by testing for removal efficiency (80%) or an emission concentration of 7.5 $mg/m^3$ at the outlet of the biofilter. GFL submits that this translates into VOC emissions of approximately three tonnes per month. GFL notes that this means that the New Facility will be emitting, from its stack, approximately 70% fewer VOCs than is currently authorized from the Facility by Emission Sources 03, 04A and 04B. GFL submits that the requirements above could be "interim requirements" that could be supplemented by data from actual emissions over eight to twelve months.

[530] Further, at pages 13 to 14, "WORKS AND PROCEDURES" (Emission Source 08) should be amended. GFL submits that the phrases "and any additional best achievable control technologies, as approved by the District Director" should be deleted from the sentence "At all times, including any time that any doors are open, all building air must be collected and directed to a biofilter and any additional best achievable control technologies, as approved by the District Director." GFL submits that this requirement is unnecessary since the stack, biofilter building, and ventilation system are now installed and <u>are</u> the best achievable control technologies. GFL adds that it is inappropriate to enshrine in the Permit an ongoing requirement to satisfy the District Director about best achievable control technologies.

[531] At page 14, also under the heading "WORKS AND PROCEDURES" (Emission Source 08), the phrase, "Differential pressure in the structure must be continuously monitored using equipment approved by the District Director and recorded in a format acceptable to the District Director" ought to be deleted. GFL submits that this provision is unnecessary given the Permit's requirement to keep doors closed, and since the building envelope assessment study will identify what requires monitoring.

[532] Further provisions under "Works and Procedures related to Emission Source 08 ought to be amended by deleting the last paragraph on page 13 and the first two paragraphs on page 14 (defining "food waste" and "yard waste" and requiring mixing within four hours to achieve: moisture content between 50-60%, carbon to nitrogen ratio between 25:1 and 35:1, and bulk density less than 600 kilograms per cubic metre). GFL submits that these provisions are unduly prescriptive. GFL submits that Mr. Card's evidence is that operator flexibility is important for successful composting, and the District Director acknowledged that he does not know much about composting.

[533] At page 14, the reference to stack height ought to be amended to delete "as approved by the District Director" since the District Director gave qualified approval to a 15.4 metre stack (now installed) potentially subject to air dispersion modelling

for odour units. GFL submits that the District Director ought not to be able to require modifications to the stack based on modelling for odour units. If the installed stack height is to be changed, it will require a Permit amendment.

[534] At pages 14-15, under the subheading "Biofilter", the four paragraphs following this heading ought to be deleted, as they are unduly prescriptive.

[535] Specific portions at pages 16 to 17 (Emission Sources 09 and 10) should be deleted. Specifically, under Emission Source 09 ("MAXIMUM EMISSION FLOW RATE"), GFL submits that the provisions "As approved in writing by the District Director ($m^3$/min)" ought to be deleted. In addition, the reference to "saturation oxygen concentrations" should be deleted from both emission sources, as unduly prescriptive.

[536] GFL submits that there should not be a maximum flow rate for the finished compost area, because it is a passive source. Also, there should not be an odour unit limit or a speciated odorous air contaminants limit, for the reasons previously referenced. The appropriate requirement for Emissions Sources 09 and 10 is a Solvita test (a maturity test) to confirm that the material is finished compost, and that there should be "no odours past the plant boundary such that pollution occurs."

Monitoring and Reporting Requirements

[537] GFL submits that the District Director testified that sometimes Metro Vancouver staff ask more of private industry than he thinks is reasonable, and this usually occurs in permit requirements for information reporting.

a. Requirements related to "speciated odorous air contaminants"

[538] GFL submits that the requirements to sample for and characterize speciated odorous air contaminants (according to odour detection thresholds identified by Nagata[46]) should not be included in the Permit, for the same reasons that odour units should not be included. Odorous air contaminants are derived in the same way as odour units, and have the same issues related to uncertainty. Further there is significant expense associated with sampling speciated odorous air contaminants. Still further, GFL submits that it is unclear what laboratories are even able to provide this type of analysis.

[539] GFL also submits that the evidence in the hearing was that Permit terms requiring measuring and reporting of odorous air contaminants are even less helpful than terms requiring measurement and reporting in odour units, given that the concentration of an individual contaminant does not have a discernible effect on the odours experienced by residents, in the context of the "soup" of contaminants in the area.

[540] GFL further submits that Harvest's facility was unsuccessful in testing and characterizing speciated odorous air contaminants—nothing about Harvest's permit was successful, and the Permit ought not to have been modelled on it.

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[46] See Permit, page 29.

b. Other monitoring and reporting requirements

[541] GFL submits that the following amendments should be made to the Permit's requirements with respect to monitoring and reporting: First, for the reasons already given, delete all reference to sampling and reporting in "odour units" (or following methodology specified in the European Standard) and in speciated "odorous air contaminants".

[542] Second, delete the Permit requirement to submit a Materials and Products report (page 29) as duplicative of the Licence and unnecessary.

[543] Third, delete all reference in the Permit to "odorous air contaminants" in the sections of the Permit titled "Emissions Testing Plan - New Biofilter" (page 28) and "Emissions Testing Plan – Finished Compost" (page 28).

[544] Fourth, amend the Permit requirement, to submit an annual Biofilter Monitoring Report by July 31 each year (page 31), into the Odour and Air Quality Complaint Management Plan Performance Review, due September 30$^{th}$ annually (page 38). Further, this provision should be described as a requirement to "provide a summary report of monitoring parameters specified by the designer or the equipment supplier of the system to maintain good operation of the filter". GFL submits that this would coincide with GFL's annual capital budgeting process so that it could address any improvements needed.

[545] Fifth, delete the Permit requirement to submit a Maintenance and Capital Activities Report (page 33) for the New Facility because it is unnecessary to reduce odour and is not advisable for the protection of the environment.

[546] Sixth, delete the requirement to submit a Construction Progress Report (page 37), as the New Facility is completed.

[547] Seventh, amend the requirement to submit a Building Envelope Assessment Report (page 39) to provide for the assessment of the ability of the New Facility to maintain negative pressure to prevent fugitive emissions. GFL proposes the following wording:

> The purpose of the Building Envelope Assessment is to identify any improvements and/or monitoring requirements to ensure that fugitive emissions from the Facility building envelope is prevented at all times. A written report which documents the assessment conducted by an independent Qualified Professional with experience in the assessment of odorous buildings that require capture and control of all room air prior to release to atmosphere. The report must be prepared by the independent Qualified Professional and discuss any deficiencies in the structure that may lead to fugitive emissions due to the size of the openings, wind entrainment, differential pressure gradients, thermal gradient differences, leaks from conveyance devices and failure to maintain negative pressure at all points and at all times within the structure during normal operations. The report must also include recommendations to address all deficiencies as well as recommendations for improving ongoing maintenance and repair.

As part of the assessment, an inventory of all the areas with the potential to have fugitive emissions must be developed and appended to the report.

[548] Lastly, delete the Permit provisions at page 43 entitled "Amended or Additional Requirements". GFL submits that these are an extended power to amend the monitoring and reporting requirements and require additional investigations, test surveys or studies based on results of the monitoring program. GFL submits that both the *Act* and the Bylaw address the process for amending the Permit, and they should govern rather than an internal amendment procedure in the Permit.

[549] GFL also submits that the District Director's submissions (such as describing the Facility as "disastrous" for the residents of Delta and stating that the "odour annoyance should be treated as a serious public health concern") are inflammatory and unnecessarily critical of GFL. The District Director's submissions regarding the Resident Appellants' evidence must be put in context, including:

- many of the Resident Appellants' witnesses testified that they wanted the Facility "gone", and they do not accept the Facility being in their community;
- the Resident Appellants' witnesses testified that they have "zero tolerance" for any odour from the Facility;
- the District Director encouraged residents to describe their health impacts when making complaints to Metro Vancouver about GFL;
- the District Director acknowledged that complaints increase after media coverage about the Facility; and
- Metro Vancouver does not inform complainants when Metro Vancouver determines that GFL is not the likely source of the odour complained about. Ms. Jones testified that Metro Vancouver does not have a direct feedback loop for communicating with complainants about the results of their complaints.

[550] GFL submits that the District Director has failed to acknowledge that GFL responded to the community's concerns by building the New Facility. Further, the District Director does not reference Ms. Jones' evidence that: she did not observe an odour from the Facility within the parameters of the Sniff Test when she conducted odour assessments under the Permit; the New Facility will address the odour issues; and she feels safe breathing the air when she attends the site.

*The District Director's initial submissions*

[551] In his Statement of Points, the District Director submitted that the Permit provisions applicable to the Facility and the New Facility are reasonable and advisable for the protection of the environment.

[552] The District Director submits that requirements in paragraphs 1 and 2 of the Permit (Facility Wide Restrictions regarding Discharge of Odorous Air Contaminants and Requirements to Cease Receiving Food Waste) are reasonable, reasonably certain and reliable, within the District Director's jurisdiction, not an improper delegation of his authority, and do not breach the rules of procedural fairness.

[553] The District Director submits that the Permit's requirement to monitor the differential pressure in the New Facility is clear, reasonable, and is not onerous. Testing, reporting, monitoring, dispersion modelling, engineering design, assessment reports and plans are materially beneficial and will not delay the construction of the New Facility.

[554] The District Director addressed the remaining Permit provisions in his closing submissions.

*The District Director's final submissions*

[555] The District Director submits that GFL has "abandoned its appeal" in respect of the emission source requirements for the Facility, but those requirements should be confirmed because they were carefully considered. He offers the following reasons in support of confirming the emission source requirements.

Emission Source 07 (Aeration Water Treatment Pond)

[556] The District Director submits that Emission Source 07 differs from the other identified emission sources, and the related Permit requirements ought to be confirmed. Further, the Panel ought to reject GFL's proposal to delete the first three provisions under the heading Works and Procedures:

> From March 1, 2020, all leachate must be collected. Leachate, if stored, must be stored in covered tanks with all vents equipped with odour reduction controls approved by the District Director.
>
> Leachate collected on the site and applied to unfinished compost must be applied and used in a manner that minimizes fugitive odour.
>
> Dissolved oxygen concentration of the water in the treatment pond is "as approved by the District Director.

[557] The District Director submits that GFL's proposed variations related to Emissions Source 07 (i.e., the dissolved oxygen requirement and the first two paragraphs under "Works and Procedures" should be deleted, and the leachate management provision ought to be moved) are vague, subjective and not based on science. The District Director submits that GFL should be "required to adhere to an enforceable limit (such as 2 ppm) which GFL can propose". While it is not clear, the Panel assumes the District Director is submitting that GFL could suggest an enforceable limit for the dissolved oxygen requirement.

Emission Source 08 (the New Biofilter)

[558] The District Director submits that although GFL opposes any maximum flow rate for Emission Source 08 (the biofilter), flow rates are standard limits in all Metro Vancouver air quality permits and are an essential method of limiting air contaminants. GFL should not be excepted from these requirements. However, the District Director would not object to removing the requirement for "12 air changes per hour" if the maximum flow rate remains unchanged.

[559] The District Director may be agreeable to GFL's proposal for an emission concentration limit of 7.5 $mg/m^3$ of VOCs at the outlet of the biofilter, if GFL

supports its request with adequate data, which it has not yet done. The District Director would like to see actual data from GFL's New Facility rather than data from facilities in the United States.

[560] Further, the District Director is agreeable to replacing the words "and any additional best available control technologies, as approved by the District Director" on page 13 of the Permit, with a reference to the actual control works that have been installed, provided that the Permit's duration is confirmed.

[561] Similarly, the District Director would not object to removing the last paragraph on page 13 and the first two paragraphs on page 14 (regarding yard waste and food waste) of the Permit, provided that the Permit's performance and outcome requirements are confirmed.

[562] The District Director opposes removing the Permit's requirement to continuously monitor differential pressure in the New Facility. He submits that Ms. Ahluwalia's evidence on this issue ought to be disregarded because she is not an expert on such matters.

[563] The District Director does not oppose amending the reference at page 14 of the Permit to "stack height above ground level = as approved by the District Director" to reflect the built and approved stack dimensions, and including a clarification that "any modifications to stack dimensions require a permit amendment".

[564] The District Director opposes removing the last two paragraphs on page 14 and first two paragraphs on page 15 of the Permit (biofilter operating requirements). He submits that works and measures are standard in Metro Vancouver air quality permits and are authorized by the Bylaw.

Emission Source 09 (Finished Compost Storage Area)

[565] The District Director would not object to removing the maximum emission flow rate for this area, provided that GFL proposes an alternative, such as a maximum flux rate, to limit the quantity of emissions from this source.

[566] The District Director submits that there should be requirements for this source in terms of both odour units and speciated odorous air contaminants. GFL should not be permitted to discharge odorous air emissions up to a level that constitutes pollution. These emissions can have a "disastrous" impact on the community. If GFL can demonstrate, over time, that its emissions are not a source of concern, it can request an amendment to the Permit. These Permit requirements should be confirmed.

[567] The District Director would not object to changing the Permit requirement at page 14 referencing "saturation oxygen concentration in the liquid phase of 2 mg/L (2 ppm)", to a minimum oxygen concentration in the finished compost material (e.g. 10% oxygen concentration). Otherwise, the requirement should be confirmed.

Monitoring and Reporting Requirements for the New Facility

[568] The District Director submits that monitoring and reporting requirements are vitally important components of the Permit, which can both assist GFL in managing its process effectively and demonstrate to the District Director that it is doing so.

[569] The District Director submits that odour units are the most appropriate performance requirement for regulating the New Facility, and the European Standard is the "gold standard" for measuring odours. He states that measuring speciated odorous air contaminants is the second-best method for measuring odours. More frequent testing is typical until a facility demonstrates adequate performance and provides accurate data. The District Director submits that this is particularly important because GFL has previously sought extensions of time to meet requirements. Metro Vancouver should receive quarterly testing results, and this Permit requirement should be confirmed.

[570] The District Director submits that the Permit's requirement for GFL to prepare a Characterization of Odorous Air Contaminants Emissions Testing Plan (Emission Source 08) should be confirmed. The District Director notes that Ms. Hirvi-Mayne testified that she considered the cost implications in recommending this Permit requirement and that the operators of Harvest's facility complied with a similar provision.

[571] The District Director submits that the requirement for GFL to prepare the Material and Products Report should be confirmed. He notes that different authorizations (such as the Licence) require separate reporting.

[572] The District Director submits that the requirement to submit a Biofilter Monitoring Report should be confirmed, but he does not object to combining this report with the Odour and Air Quality Complaint Management Plan. However, the due date should not be varied, because September 30th is "too late in the year to receive the information to be effective". Ms. Hirvi-Mayne testified that the Facility needs to show that it is actively managing complaints that are received, and that it has procedures for mitigating impacts. She added that the Biofilter Monitoring Report is important for GFL "to demonstrate that they are actually paying attention to the performance of the emission control device that they are using."

[573] The District Director submits that the requirement that GFL prepare a Facility Upgrade Dispersion Modelling Plan should be confirmed to ensure that GFL will conduct adequate dispersion modelling consistent with Metro Vancouver's Dispersion Modelling Plan Template. The District Director submits that such plans are required in "many Metro Vancouver air quality permits".

[574] As to the requirement to prepare a Facility Upgrade Dispersion Modelling Report, the District Director submits that Dr. Preston testified as to the deficiencies in the draft report. While the Panel's First Interim Decision extended the due date for this report, and a decision on the actual emission limit has not been made, the requirement should be confirmed. The District Director submits that Dr. Preston testified that she recommended the requirement for a Dispersion Modelling Report that models specific odorous air contaminants, so that the District Director would have a full characterization of the air contaminants emitted from the Facility. Such requirements are in "several Metro Vancouver air quality permits". However, the

District Director advised that he would not object to removing this reporting requirement once GFL submits its third quarter report due October 31, 2020.

[575] The District Director further submits that the requirement for GFL to prepare the Maintenance and Capital Activities Report should not be varied or removed because it "assists with odour reduction", but he would not object to combining it with the Biofilter Monitoring Report. The District Director submits that GFL's proposed amendment to the Building Envelope Assessment Report should not be accepted. The requirement, which Ms. Ahluwalia confirmed was a good idea, should remain as it is.

[576] The District Director submits that the "Amended or Additional Requirements" provision in the Permit is a standard term in Metro Vancouver air quality permits. It is not controversial and should be confirmed.

[577] The District Director submits that performance (monitoring and reporting) requirements are critical components of the Permit, and the most relevant and practical performance requirements are limits on the concentration of air contaminant emissions in terms of odour units, and on the volumetric flow rate of emissions. If the Panel decides that odour units are not advisable for the protection of the environment, it is essential that the speciated odorous air contaminants be limited such that their cumulative impact does not adversely impact the community.

[578] The District Director notes that at page 29 of the Permit, there is a reporting requirement that the lowest concentration that can be measured by the selected method must be less than the detection threshold limit listed in the Nagata paper, but the District Director submits that the Permit does not require the use of the Nagata method. The actual Nagata method is irrelevant to the Permit; it is the detection threshold limit that is important.

[579] The District Director submits that the evidence in the hearing was that the requirement for an Odorous Air Contaminants Emissions Testing Plan on page 29 is tied to the "Characterization of Odorous Air Contaminant Emissions – New Biofilter" requirement on page 23 of the Permit. This plan is required before any testing occurs. The District Director would not object to amending the Permit to replace the words "speciated odorous air contaminants emission testing" at page 29 with the words "required testing on page 23".

[580] Dr. Preston testified that she understood the Board's decision in *West Coast Reduction* to be recommending that the District Director require monitoring of odour and specific odorous air contaminants to determine an odour's exact source. This Permit requirement represents Dr. Preston's attempt to apply her understanding of *West Coast Reduction*.

[581] The District Director submits that the Permit's requirement pertaining to the "Maximum Emission Quality" of Emission Source 08 was drafted to provide flexibility to GFL by suggesting concentrations and units, as opposed to stipulating total odorous air contaminants measured in odour units per cubic metre. The District Director would not object to amending this Permit requirement to indicate that total odorous air contaminants are to be measured only in odour units.

[582] The District Director rejects Ms. Ahluwalia's testimony that testing speciated compounds and comparing them to odour detection thresholds does not help to abate odour. The District Director maintains that knowing which air contaminants are being emitted makes it significantly easier and more cost-effective for an operator to properly design its emission control system.

[583] The District Director testified that measuring odours using odour units instead of speciating air contaminants protects the community better, because odour units capture the "combined odour effect of the whole discharge", whereas speciating air contaminants involves parsing individual contaminants and adding them up to determine the impact. The District Director submits that speciating odorous air contaminants is a "backup plan" if the Panel rejects odour units as a performance requirement, given GFL's lack of alternative proposals. In those circumstances, the requirements related to speciating odorous air contaminants are advisable for the protection of the environment.

[584] Finally, the District Director submits that all the Permit requirements: are advisable for the protection of the environment; strike the appropriate balance between the potential risk of harm to human health and the environment, and the potential benefits of the activity and other societal interests; are fair, reasonable, and not unduly onerous for GFL; are clear and well-defined; and are within the District Director's jurisdiction.

[585] In conclusion, the District Director submits that GFL has failed to meet its burden of proving that the District Director made an error of judgment or law in issuing the Permit subject to the requirements he determined were advisable for the protection of the environment. He requests that GFL's appeal be dismissed, and the Permit be confirmed subject to his closing submissions.

*The Resident Appellants' and Delta'ssubmissions*

[586] Neither Delta nor the Resident Appellants made any submissions about this issue.

*The Panel's findings*

[587] In our consideration of the evidence, we have kept in mind the nature of the permit sought by GFL and the extent of the District Director's authority when issuing a permit. In that context, the Panel will discuss our findings on the permitting process and the Permit, in general, before discussing specific Permit provisions.

[588] The Panel is mindful that staff at Metro Vancouver often referred to the Permit as an "odour permit". We discourage the use of such terminology because it misstates the purpose of the permit and can lead to confusion. Indeed, it was evident in the hearing that the Resident Appellants and Delta (staff and elected officials) believed that the District Director was tasked with and able to regulate odour in their communities. The District Director was tasked under the Bylaw with regulating the emission of air contaminants (some of which may be odorous). If the District Director is satisfied that there is harm to the environment from a substance

that has an identifiable odour (such as hydrogen sulphide), then the District Director may put limits on the emission of that substance.

[589] The Panel considered the entirety of the evidence adduced in the hearing whether specifically referenced in this decision or not. The Panel had the benefit of two experts in composting, Mr. Card and Dr. Paul. Their evidence was informative on the issue of how to make good compost, but, as the Panel noted, the District Director was not regulating the production of compost. The Panel also had the benefit of volumes of documentary evidence including a report commissioned by Metro Vancouver on best odour management practices at composting facilities.

[590] The Panel finds that the Bylaw does not contemplate the issuance of permits that regulate composting or odours. Rather, the Permit is an air emissions permit under the Bylaw, that authorizes the discharge of air emissions initially from an open-air composting operation and, subsequently, from a fully enclosed facility (i.e., the Facility and the New Facility). The Panel finds that the feedstock for the Facility and the New Facility has the potential to be highly odiferous when it arrives on site. The Panel finds that the evidence clearly establishes that providing GFL with flexibility to respond to conditions as they arise throughout the composting process is essential to successful composting and odour mitigation. The Panel further finds that given that the Permit is not an authorization to produce compost, it should not be prescribing how to make "good compost".

[591] The Panel finds that although the District Director, and his staff at Metro Vancouver, are experienced in drafting air emissions permits generally, they are not experts in composting and have no particular expertise in drafting air emissions permits for composting operations. It was evident in the hearing that the Permit, insofar as it addresses the New Facility, relies on odour units, the Approved Person test, and "placeholders" for compliance mechanisms, because staff are not experts in composting. Several said they only have worked on this permit and Harvest, in terms of composting operations and were learning as they went along.

[592] The Panel heard evidence that the District Director, like his staff, is a "generalist" and not an expert in composting. Indeed, neither the District Director nor any of his staff was adduced or accepted as experts.

[593] The Panel accepts that Metro Vancouver staff have taken "learnings" (to use staff terminology) from their attempts to regulate the failed Harvest composting operation and applied them to the permit terms that they recommended to the District Director. The Panel finds that those learnings were not always applied in ways which considered the significant differences between the Harvest and GFL operations. At times, the application of those "learnings" was neither well-reasoned nor advisable for the protection of the environment as required in an air emissions permit.

[594] In addition, the Panel finds that Metro Vancouver staff disregarded a previous Board decision regarding the unreliability of odour units, not because they believed the science had changed but because they thought they could make a better argument to justify relying on the measurement as a compliance mechanism.

[595] The Panel finds that the Permit, with its odour unit restrictions, Approved Person provisions, highly detailed works and procedures provisions, and extensive reporting requirements, is even more prescriptive than the permit it was modelled on; i.e., the Harvest permit issued by the District Director. The evidence before the Panel is that a process-driven, prescriptive approach to permitting did not achieve either Metro Vancouver's regulatory objectives or Harvest's operational objectives. The Panel finds that modelling the Permit on a failed permit was ill-advised and not protective of the environment.

[596] The Panel finds that, in contrast, the Certificate issued by the Ministry of Environment for the Surrey facility is an example of a results-oriented approach. The Panel notes that the District Director and his staff laud the Surrey facility as an example of a successful operation, yet the District Director did not take a results-oriented approach to the Permit.

[597] Having made these general comments, the Panel finds that there are some Permit requirements that are unduly prescriptive, unnecessary and are not advisable for the protection of the environment. We turn now to an analysis of those sections of the Permit raised by the appellants.

<u>Permit Provisions by Emission Source</u>

[598] The Panel finds that the following Permit provisions (by page and emission source) are not advisable for the protection of the environment in the context of an air emissions permit, because they are unduly prescriptive of how GFL manages its operations to reduce the production of fugitive emissions, which may be odorous, and designed to regulate composting rather than the discharge of air emissions, and as such are inappropriate in an air emissions permit.

*Emission Sources 01 - 10*

[599] Regarding page 3, section 1(4), "Monthly Quantity of Material Received", the Panel finds that these provisions restrict GFL from managing the feedstock beyond what is required to comply with the emission limits under the Permit and the terms of the Licence and as such, are not advisable for the protection of the environment. The Panel **directs** that this term be deleted from the Permit.

*Emission Sources 01 - 06*

[600] Respecting pages 4 to 12 of the Permit, regarding Emission Sources 01 – 06, inclusive, the Panel finds that the Permit provisions prescribing the works and procedures for these emission sources are, in general, unduly prescriptive. The provisions are designed to regulate composting rather than air emissions and are inappropriate in an air emissions permit. Further, they provide little, if any, material benefit. The Panel makes no direction with respect to these provisions given that these emission sources are not permitted to operate beyond August 31, 2020 and, as result, the issue of whether the terms are advisable for the protection of the environment is moot.

*Emission Source 07*

[601] Turning to page 12, regarding Emission Source 07, "Aeration water treatment pond discharging through the pond surface approximately as shown on Site Plans 1 and 2", the Panel finds that insofar as the Permit provisions relate to the Facility prior to February 28, 2020 (as varied by the Panel), they are moot. Insofar as the Permit provisions relate to operations at the New Facility, the provisions are not descriptive of the New Facility where leachate is collected inside a building and does not discharge to the former "aeration treatment pond". The Panel finds that the Permit provision prescribing the collection and storage of leachate is inapplicable in the circumstances.

[602] As a result, the placeholder provision requiring that the "dissolved oxygen concentration" of the water in the "treatment pond" is to be only "as approved by the District Director" is inapplicable as there is no "treatment pond" at the New Facility. The Panel **directs** that this placeholder provision be deleted.

[603] Further, the Panel finds that the maximum emission flow rate from Emission Source 07 should not reference discharge from "the aerobic treatment of leachate" as it is inapplicable to the New Facility (where leachate is not collected in a treatment pond) and should only reference the expected discharge of emissions, if any, from stormwater runoff.

[604] Additionally, the Panel **directs** that the Permit be amended (regarding Emission Source 07) to require that the emission of any air contaminants associated with the collection of leachates in Building #2 at the New Facility, and/or with the redirection or collection of stormwater runoff, be addressed in the Permit. The Panel further **directs** that the Permit be amended, if any air contaminants are so identified, to provide that any stormwater pond is to be considered as a possible odour-generating source included in any odour survey conducted for informational purposes. The Panel also **directs** that, if any air contaminants that are odorous are associated with any stormwater redirection or collection, that emissions source ought to be addressed in the Odour Management Plan and reported as required to the District Director.

*Emission Source 08*

[605] On page 13, Emission Source 08 is described as "Receiving, de-packaging, grinding, mixing, transferring, primary and secondary composting discharging through a biofilter and stack approximately as shown on Site Plan 2". The Panel finds that insofar as the Permit provisions relate to the Facility prior to February 28, 2020 (as varied by the Panel), they are moot. Insofar as the Permit provisions relate to operations at the New Facility, they are inaccurate because Emission source 08 only discharges to the environment from a stack (as installed on September 1, 2020).

[606] The Panel **directs** that Emission Source 08 be amended to describe the emission source as the stack (as installed on September 1, 2020).

[607] On page 13, the permitted discharge for Emission Source 08 is described as, "MAXIMUM EMISSION FLOW RATE: as approved by the District Director ($m^3$/min)". The Panel finds that this "placeholder" provision is lacking in key detail regarding the permitted flow rate from the biofilter. The requirement is unduly vague, fails to

provide GFL with clarity and certainty as to what is expected of it, and is, accordingly, unenforceable. The Panel further finds that this Permit term ought to be expressed in tonnes per year to be consistent with the Public Notification.

[608] The Panel **directs** that Permit be amended to stipulate a numerical value for the maximum emission flow rate. The Panel further **directs** that the Permit be amended to provide for the total emissions in tonnes/year that are authorized under the Permit.

[609] Also, at page 13, the Permit sets emission quality standards for Emission Source 08 in two respects, as of March 1, 2020 (a date varied by the Panel in its preliminary decisions):

i. with respect to "Odours (sic) Air Contaminants…", the Panel **directs** that this term be deleted for all the reasons previously given regarding the use of "odour units" and "odorous air contaminants" in the Permit; and

ii. with respect to "Total Volatile Organic Compounds = Concentration (mg/m3) as approved in writing by the District Director", the Panel finds that this term is unduly vague, fails to provide GFL with clarity and certainty as to what is expected of it, and is therefore unenforceable. The Panel **directs** that the Director stipulate a concentration of the VOCs that is relevant to air emissions from a composting facility that is permissible.

[610] Further, at page 13, with respect to provisions under the heading "WORKS AND PROCEDURES", the Panel finds that, in general, the authorized works should be limited to the emission control technology such as the stack and the biofilter discharging through the stack. The Panel further finds that it is not advisable for the protection of the environment to require best management practices for composting processes in an air emission permit whose purpose is to regulate the discharge of air emissions. To the extent that the Works and Procedures provisions are not directly relevant to the regulation of the discharge of air emissions from the New Facility, the Panel **directs** that they are to be deleted. Specifically:

i. The Panel **directs** that the Permit provision beginning, "All material must be stored, received, handled, ground, mixed, and transferred inside a fully enclosed building…" should conclude with the words "directed to a biofilter" and the phrase, "and any best achievable control technologies, as approved by the District Director" should be deleted as the phrase is unduly vague, fails to provide GFL with clarity and certainty as to what is expected of it, and is accordingly unenforceable. Further, the phrase "and any best available control technologies, as approved by the District Director" is unnecessary as, based on the evidence, the Panel finds that the New Facility uses "best available control technology".

ii. The Panel further **directs** that the Permit provisions defining "Food waste" and "Yard waste" be deleted and replaced with reference to the use of those terms in the Licence as it is the Licence that regulates the composting operation whereas the Permit regulates only the discharge of air emissions from the Facility and the New Facility.

iii. The Panel **directs** that the Permit provision requiring the mixing of Food waste and Yard waste be deleted as they are designed to regulate composting rather than the discharge of air emissions, and as such are inappropriate in an air emissions permit and provide no material benefit to the protection of the environment (from air emissions).

iv. The Panel finds that the Permit provisions with respect to opening and closing doors, differential pressure and air changes per hour are relevant to whether fugitive emissions leave the New Facility other than through the stack. The Panel finds that these provisions are protective of the environment and should remain.

v. The Panel **directs** that the Permit provisions serving as "placeholders" for ultimate stack design be amended to reflect the installed stack dimensions.

[611] Further, the Panel finds that the Permit provisions under the subheadings "Biofilter" and "Biofilter media replacement" on pages 14 to 15 of the Permit are overly prescriptive in that they set out specific operation/maintenance considerations. The Panel further finds that while a biofilter is a control technology or treatment to reduce emissions, it would be protective of the environment to require that GFL maintain the filter in good working condition and operate it in accordance with the manufacturer's guidelines. As a result, the Panel **directs** that the Permit terms provisions on pages 14 and 15 under the subheadings "Biofilter" and "Biofilter Media Replacement" be deleted and replaced with a single subheading "Biofilter and Biofilter Media Replacement" followed by requirements that GFL maintain the biofilter in good working condition and operate it in accordance with any applicable manufacturer's guidelines.

*Emission Sources 09 and 10*

[612] Pages 16 to 17 of the Permit define Emission Sources 09 and 10 as "Finished Compost Storage Area (Building #1) discharging through a Building Opening(s) approximately as shown on Site Plan 2" and "Product blending area discharging through a Storage Pile(s) approximately as shown on Site Plan 2". With respect to those Emission Sources, the Panel finds that, in general, the provisions are not an accurate description of the New Facility.

[613] The Panel **directs** that the Permit be amended (regarding Emission Sources 09 and 10) to provide an accurate description of that part of the site that is permitted for these emission sources at the New Facility, and a definition of "Finished Compost". Further, the Panel **directs** that only "Finished Compost" is to be in the area described in the Permit regarding Emission Sources 09 and 10. Further the Panel recommends that any odour management plan developed pursuant to the Panel's recommendations, include a requirement to monitor finished compost stored on site and assess it for remaining in a finished state.

[614] Pages 15 to 17 of the Permit define emissions flow rate and quality by stating for Emission Sources 09 and 10, "MAXIMUM EMISSION FLOW RATE: as approved by the District Director ($m^3$/min)" and "MAXIMUM EMISSION QUALITY: By March 1, 2020" (a date varied by the Panel). Those pages of the Permit also state, with

respect to those Emission Sources, "Odorous Air Contaminants = Concentrations and units as approved in writing by the District Director" and "Total Volatile Organic Compounds = Concentration (mg/m$^3$) as approved in writing by the District Director". The Panel finds that these terms are unduly vague and fail to provide GFL with clarity and certainty regarding what is expected of it in the context of a finished compost storage area or a product blending area.

[615] The Panel finds, based on the evidence in the hearing, that the finished compost area at the New Facility, is not contained in a fully enclosed building, and therefore, is not conducive to measurement of either the flow rate or the quality of the emission. The Panel **directs** that these provisions be deleted from the Permit. Further, the Panel repeats its finding and direction with respect to those aspects of the term that relate to "odorous air contaminants" for all the reasons stated earlier in this decision.

[616] Also, at pages 16 to 17, under the heading, "WORKS AND PROCEDURES", the Permit states, "Works = finished compost, blending materials, and finished product". The Panel finds that, generally, these provisions are designed to regulate composting rather than the discharge of air emissions. As such, they are inappropriate in an air emissions permit and provide no material benefit to the protection of the environment (from air emissions). As a result, the Panel **directs** that the Permit provisions listed under "WORKS AND PROCEDURES" for Emission Sources 09 and 10 be deleted except for the following provision:

> The Permittee must maintain good housekeeping practices in and around the Finished Compost Storage and Blending Area, together with good operating practices at all times for all processing and emission control equipment.

[617] Finally, the Panel **recommends** that the Permit provision presently located on page 18, under section 2, "General Requirements and Conditions", subsection "C. Pollution Not Permitted", be moved to section 1 of the Permit as a "Facility-Wide Restriction" to highlight the overarching nature of the provision.

Permit Provisions regarding Monitoring and Reporting

[618] The Panel finds that, in general, the Permit's monitoring and reporting requirements are vague, onerous and unduly prescriptive. The Panel finds that many of the monitoring and reporting requirements in the Permit relate to composting operations at the Facility, and the construction of and composting operations at the New Facility, rather than to the permitted discharge of air emissions.

[619] The Panel also finds that monitoring and reporting requirements in this case should relate to the discharge of air emissions from the stack at the New Facility, and odour observations by a GFL employee or qualified professional (as provided for in this decision, for information purposes only).

[620] Further, the Panel finds that the requirement to report on the "Final Detailed Engineering Design Plan and Facility Upgrade Transition Plan"[47], is overly

[47] See Report 5 on p. 42 of the Permit.

prescriptive, inserts the District Director into GFL's decision-making regarding design and construction of the New Facility, and does not relate to the discharge of air emissions. The Panel finds that there is insufficient evidence that these Permit provisions relate in any way to the protection of the environment from the emission of air contaminants, dealt with in the Permit. The Panel **directs** that the District Director amend the Permit to delete the requirement to submit a "Final Detailed Engineering Design Plan and Facility Upgrade Transition Plan."

[621] The Panel also finds that, as previously stated, any monitoring and reporting requirements that require the use of odour units or rely on an Approved Person's observations are unenforceable, and we **direct** that all such monitoring and reporting requirements be deleted from the Permit for the reasons given earlier in this decision regarding the Permit's use of the terms "odour units" and "Approved Persons".

[622] The Panel further finds that, as also previously stated, any monitoring and reporting requirements that require the use of speciated "odorous air contaminants" relate to monitoring "odour", rather than air contaminants, and are not within the authority granted to the District Director under the *Act* and Bylaw and are too vague to be enforceable. We **direct** that the District Director amend the Permit to delete monitoring and reporting of "speciated odorous air contaminants" from the Permit for the reasons given earlier in this decision. The Panel recognizes that the requirement to "speciate" was an attempt by the District Director to identify the contaminants causing odour. However, the Panel finds that classes of substances such as TRS or VOCs are known to be emitted from composting and there are standard testing procedures to measure those substances, and we find it appropriate and **direct** that those substances be monitored at the stack (Emission Source 08). If the District Director has identified other air contaminants, that are known to have health impacts or to impact the quality of air emissions (such as sulphur dioxide or particulate matter), and that might reasonably be expected to be emitted from the New Facility, he may add those to the substances to be monitored at the stack.

Panel findings and recommendations related to informational monitoring for "odour"

[623] The Panel finds that any odour monitoring related to operations at the New Facility should be solely for the purpose of *informing* facility operators and Metro Vancouver staff regarding the relationship between operational conditions and emission quality. The Panel finds that such monitoring will afford GFL the opportunity to compare operations data with odour production to better understand and control emissions, and will inform the scientific and technical recommendations regarding composting in general at the New Facility.

[624] The Panel further finds that monitoring the receiving environment beyond the boundary of GFL's property may be useful to Metro Vancouver staff in assessing whether the Permit's conditions are appropriate for the protection of the environment; that is, whether the Permit conditions are achieving the purpose of protecting the environment. The Panel considers that it would be appropriate for the District Director to amend the Permit to include monitoring for informational

purposes as identified in an approved odour monitoring plan provided for in the Permit.

[625] The Panel further **recommends** that the Permit be amended to require GFL to prepare an odour management plan, to provide information related to the capture, treatment, emission, and dilution of air contaminants that are odorous, for the District Director's review and approval. As part of the odour management plan, GFL should be required to maintain a record, in a format acceptable to the District Director, of the odour observations made by GFL staff, and produce the record to the District Director on request. The Panel further **recommends** that the odour monitoring plan be subject to amendment where there is a pattern of observations by GFL staff indicating that operations are not adequately controlling emissions of air contaminants and the District Director is satisfied that an amendment is advisable for the protection of the environment.

[626] The Panel **recommends** that the Permit be amended to require GFL to produce for the District Director's review and approval, an operational monitoring plan similar to the operational aspects addressed in the Design and Operating Plan referenced in sections 3.2 and 3.3 of the Surrey facility's Certificate. The Panel **recommends** that the District Director attach requirements to the operational monitoring plan that he believes are advisable for the protection of the environment, with respect to the emission of air contaminants. The Panel further **recommends** that the operational monitoring plan include: a flow diagram of the GFL composting operation at the New Facility with sources of potential air contaminants with associated odour noted, parameters suitable for evaluating composting activity, and potential and planned emission treatments.

### 7. Whether the Permit provisions failed to strike a balance between the interests of GFL in operating a composting facility and the protection of the receiving environment (including the Resident Appellants)

*The Resident Appellants' submissions*

[627] The Resident Appellants submit that while the District Director must strike a balance between allowing a compost facility to operate for reasons of public or business interest, the Facility is not immune from the requirements and prohibitions necessary to protect the environment. Further, the District Director must give consideration as to whether the public interest is outweighed by the adverse impacts of a facility's odours on local residents.

[628] The Resident Appellants submit that the Board has previously found that when considering whether to authorize air contaminants in a permit or permit amendment, "a cautious and technically rigorous approach should be taken when assessing the potential risks of injury to human health or damage to the environment": *Toews*, at paragraph 235, cited with approval in *Tegart*, at paragraph 86.

[629] The Resident Appellants submit that determining whether the terms of the Permit are sufficiently protective of human health and the environment requires a contextual analysis considering: a) odour complaints prior to and since the issuance

of the Permit; b) the District Director's decision-making process; c) site-specific circumstances; and, d) monitoring and enforcement provisions in the Permit.

a. Odour complaints prior to and since the Permit was issued

[630] As to odour complaints, the Resident Appellants submit that the Facility has a history of "odour issues" that predates GFL's acquisition of the Facility. Following GFL's acquisition, however, odour complaints significantly increased. They submit that the evidence in the hearing was that in 2017, Metro Vancouver received 510 public complaints about odour from the Facility. In 2018, that number had increased to 1,040. Odour descriptors included: "sour", "rancid", "putrid", "rotten", "cheese", "foul stench", "rotting dead carcasses", "decaying garbage", "obnoxious", "sickly sweet", "musty" "like fecal matter" and more.

[631] The Resident Appellants submit that the evidence in the hearing supports a conclusion that the odour from the Facility is distinct and identifiable.

[632] The Resident Appellants submit that the Permit is not sufficiently protective of their health. They attribute negative health impacts to the Facility including nausea and vomiting; eye, nose and throat irritation; skin irritation; poor sleep; anxiety; headaches; and allergic sensitivities. They further submit that Dr. Schiffman and others, in their paper, "Potential Health Effects of Odor from Animal Operations, Wastewater Treatment and Recycling of Byproducts", Journal of Agromedicine Vol. 7(1) 2000, concluded that, for sensitive individuals such as asthmatic patients, exposure to odours may induce health symptoms that persist, and they may experience aggravation of existing health conditions. Further, these symptoms occur at the time of exposure to odorous air contaminants and abate after a short period of time.

[633] The Resident Appellants further submit that despite knowing of the number and nature of complaints prior to issuing the Permit, the District Director issued the Permit with terms and conditions that do not adequately address the residents' complaints about odours from the Facility and the New Facility, which persist and continue to have a detrimental impact on the local community's use and enjoyment of property. The Resident Appellants ask that the Panel consider complaints that they have filed since the hearing concluded which they say demonstrate that the New Facility is not operating as GFL claimed it would.

b. The District Director's decision-making process

[634] The Resident Appellants submit that the District Director gave insufficient attention to the "significant negative impacts to (GFL)'s residential neighbours". Further, the District Director issued the Permit based on information that was not responsive to concerns of the Fraser Health Authority, residents, and Metro Vancouver's regulation and enforcement staff.

[635] The Resident Appellants submit that the District Director failed to aid the Fraser Health Authority in getting the information that it needed, despite having received a draft air dispersion model from GFL.

[636] Despite receiving notice of public health concerns from the Resident Appellants, the District Director issued the Permit without complete and reliable information on the "health hazards" of odorous air contaminants.

[637] The Resident Appellants submit that the Permit focuses on the New Facility and ignores Metro Vancouver staff recommendations and public concerns. The Resident Appellants submit that in the "interim" (which the Panel understands to mean prior to the commencement of operations at the New Facility), the Facility continued to emit odours at levels that significantly impacted residents.

[638] The Resident Appellants note that the District Director did not have the Technical Recommendation Memo before issuing the Permit, as is common practice. They submit that although complaints were summarized in the Technical Recommendation Memo, Dr. Preston testified that complaints were not discussed at the staff verbal briefing of the District Director on July 31, 2018, before the Permit was issued.

[639] The Resident Appellants submit that the District Director issued the Permit while Metro Vancouver staff were still asking questions of GFL, and while information about the design of the New Facility and air dispersion modelling was lacking. The District Director chose to issue the Permit for a shorter term rather than refuse to issue it until he had complete information.

c. Table 1 of the Permit – the Approved Person/Cease Receiving Food Waste provision

[640] As noted earlier in this decision, the Resident Appellants submit that the requirement in the Permit to cease receiving food waste beyond the distances set out in Table 1 at page 1 of the Permit is not protective of the environment because it does not consider that the closest residence is 650 metres from the Facility.

d. Monitoring and enforcement under the Permit

[641] The Resident Appellants submit that Dr. Paul's expert opinion was that hydrogen sulphide and TRS compounds are useful odour identifiers, yet the Permit does not include monitoring requirements regarding these compounds. They ask for permit amendments to address this shortfall.

[642] The Resident Appellants submit that the Compost Facility Operator's Manual presented at the hearing suggests that groundwater testing would be beneficial[48].

[643] The Resident Appellants submit that the requirement regarding Building #1 at page 6 of the Permit, under the heading "Works and Procedures", stipulates restrictions around the use of positive aeration which is not a best practice for composting.

[644] The Resident Appellants note that the Project Agreement for the Orgaworld facility in Surrey (i.e., the Surrey Contract) provides an example of effective monitoring measures for composting facilities that provides the City of Surrey with real-time odour reporting, stack measurements, and meteorological measurements. They also note that the Permit does not incorporate a similar method of monitoring or any effective alternatives.

[645] The Resident Appellants submit that the enforcement mechanisms in the Permit are inadequate and rely on residents to file complaints to trigger enforcement action. They note that GFL's evidence was that it does not receive timely notice of many of the complaints, making it difficult for GFL to implement immediate corrective actions. The Resident Appellants submit that these requirements are onerous, unreasonable, and ineffective.

[646] The Resident Appellants submit that it is evident that the monitoring and enforcement provisions in the Permit are not working, because residents continue to experience "the odours".

*The District Director's submissions*

[647] The District Director submits that he was aware of complaints from the residents about the Facility when he issued the Permit, and he agrees that odour from the Facility is "distinct and identifiable". Further, the District Director acknowledges that he has limited resources available to him in responding to complaints, and Metro Vancouver is unable to respond to all complaints.

[648] As to his decision-making process, the District Director submits that Metro Vancouver staff answered all questions that were posed by the Fraser Health Authority, and the District Director included requirements in the Permit for monitoring hydrogen sulphide and conducting dispersion modelling. Further, the District Director is aware of Dr. Krstic's interest in hydrogen sulphide levels and that Dr. Krstic is generally always interested in dispersion modelling. GFL is required to carry out dispersion modelling under the Permit and to file a Facility Upgrade Design Dispersion Modelling Report as provided for at page 27 of the Permit. A

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[48] See Compost Facility Operator's Manual, at pages 97-98.

dispersion modelling report is not typically provided to a health authority until a final report is received. GFL has not yet filed a final report.

[649] The District Director also submits that the Permit does not ignore measures to reduce odour impacts in the short term. The Permit includes "works and measures", in addition to performance and outcome requirements, to reduce the discharge of odorous air contaminants prior to the completion of the New Facility. The District Director refers to Permit provisions that were adapted from Dr. Paul's Compost Facility Operators Manual or were otherwise supported by Dr. Paul at the hearing including:

- pages 5, 14 – "moisture content between 50% and 60%, carbon-to-nitrogen ratio between 25:1 and 35:1, and bulk density less than 600 kilograms per cubic metre";
- page 7 – "after August 31, 2018, CASP pile heights must not exceed 3 m, as indicated by visual markings on the concrete walls. Pile height restrictions do not include contributions from applied biocovers";
- page 7 – "Biocover must be a minimum depth of 15 cm consisting of woodchips or 'mids and overs' or other high-carbon or high-alkaline, non-odorous cover material.";
- pages 8,9 – "The moisture content of the biofilter media must be between 40% and 70% by weight. The pH of the biofilter media must be between 5.0 and 8.0. The biofilter media temperature must be maintained between 15 and 40°C.";
- page 11 – "Solvita® Maturity Index of seven [(7) or greater] …"; and
- page 12 – "From March 1, 2020 all leachate must be collected…".

[650] The District Director submits that the Approved Persons procedure was included as a requirement to address the impact of odorous air contaminants on the community.

[651] The District Director disputes the Resident Appellants' assertion that health concerns had not been addressed before he issued the Permit. The District Director testified that was made aware of a letter from Dr. Patricia Daly, Chief Medical Health Officer, Vancouver Coastal Health Authority, to Metro Vancouver staff, dated November 25, 2016 (regarding the Harvest facility). The District Director confirmed that the symptoms outlined in Dr. Daly's letter were consistent with complaints he was aware of from Delta residents regarding, what the District Director called, "material physical discomfort or health impacts."

[652] The District Director also submits that, at the time he issued the Permit, he thought that the one kilometre provision in Table 1 at page 1 of the Permit was sufficient. Now, however, having considered the Resident Appellants' evidence, he has changed his view and does not object to an amendment to Table 1, page 1 of the Permit to reflect "650 metres or the nearest occupied residence".

[653] Further, the District Director does not object to varying the Permit to require GFL to undertake "real time odour reporting, stack measurements, and

meteorological measurements", although they may not be advisable for the protection of the environment. The District Director adds, however, that Metro Vancouver staff do not rely solely on complaints from residents to trigger enforcement. The staff also carry out odour surveys when inspecting the Facility as required by the Licence.

[654] Still further, the District Director submits that he relied on information that he has gained over 30 years, and he relied on the collective experience of his staff in issuing the Permit with the terms and conditions that he did. He also sought input from agencies and the public, as noted in the Technical Recommendation Memo. The District Director submits that he testified extensively about the considerations he weighed in making his decision.

[655] The District Director submits that he does not object to the Resident Appellants' request to vary the Permit restriction in section 1, such that the discharge of odorous air contaminants is prohibited where an Approved Person recognizes the Facility odour "beyond the facility fenceline". He also does not object to amending the Permit to require ongoing testing of finished compost and the water table, periodic sampling of material at various stages for VFA concentrations, and adding a provision to restrict material being kept outside prior to final commissioning of the New Facility. Further, the District Director does not object to adding a requirement for a real-time monitoring program that triggers a real-time warning to GFL if there are odour emissions of concern. The District Director did not explain his lack of objection to imposing this requirement.

[656] The District Director does not object to amending the Permit provision to cease receiving food waste until such time as all facility upgrades proposed and required by the Permit are completed, approved and successfully tested, or when 30 or more complaints are received within a one-month period. The District Director did not explain his lack of objection to imposing this potential restriction.

[657] The District Director submits that it is unnecessary to add a Permit term prohibiting the discharge of odours past the fence line such that pollution occurs. Under the Bylaw, the discharge of pollution is already prohibited.

*GFL's submissions*

[658] GFL submits that the Resident Appellants' submissions regarding the description of the "open-air" Facility, the description of Building #1 in the New Facility, and the statement regarding GFL's intent for leachate at the New Facility in their final submissions are not supported by evidence introduced in the hearing.

[659] Further, GFL submits that although the Resident Appellants have referred to the Technical Recommendation Memo as a source of evidence, the memo does not provide evidence of the facts contained in it.

[660] As to complaints about the Facility, GFL reminds the Panel that Ms. Jones, the Metro Vancouver employee most familiar with the Facility, conducted at least a couple dozen Sniff Tests under the Permit, and in none of her assessments was she able to recognize the odour from the Facility at a designated distance for five minutes or more in a ten-minute period.

[661] GFL submits that the evidence in the hearing was that the complaints noted in the Technical Recommendation Memo include all complaints; they are not differentiated by "confirmed complaints".

[662] GFL also submits that the District Director acknowledged the potential for misattribution of odours to the Facility. He also acknowledged that there can be campaigns to increase complaints about the Facility.

[663] GFL notes that the Resident Appellants' submission regarding "in stack" testing at the Surrey facility does not consider the District Director's evidence about concerns he had with the efficacy of such monitoring, particularly for compliance purposes.

[664] GFL submits that the Resident Appellants' submissions regarding the Sniff Test under the Permit are inconsistent. They first submit that the radius in Table 1 ought to be 650 metres or "nearest occupied residence", and later submit that it ought to be measured at "the facility fenceline".

[665] GFL further submits that it has no objection to amending the Permit as suggested by the Resident Appellants to provide for each emission source under "maximum emission quality" that there are to be "no odours past the fence line such that pollution occurs".

[666] GFL submits that the Resident Appellants' submissions regarding testing finished compost and sampling the material at various stages of the composting process for VFAs overlaps with the requirements under the Licence. GFL references Mr. King's testimony about the Licence.

[667] GFL submits that a provision respecting groundwater testing (as suggested in paragraph 116(e) of the Resident Appellants' final submissions) has no place in an air quality permit. GFL also objects to the Resident Appellants' request for "real-time" monitoring because the New Facility ought to be given the opportunity to demonstrate performance before that type of compliance provision is introduced into the Permit. GFL also submits that after the long appeal process, the Board should not remit the Permit back to the District Director for him to reconsider the entire Permit.

[668] As to the Resident Appellants' submissions regarding the "health impacts" of the Permit, GFL submits that there is no independent expert medical evidence before the Board with respect to any health impacts (from emissions from the Facility) on residents. Health impacts can only be addressed through a rigorous analysis anchored in expert evidence of actual impacts. There is no such evidence in this appeal. Further, GFL submits that much of this type of evidence relates to the "general concept" that stress can indirectly relate to physiological issues that can easily become confused with heightened concerns about direct health issues. GFL submits that it is not reasonable for the Resident Appellants to expect this Panel to embark upon a health impacts review without the benefit of an expert evidence process.

[669] As an alternative to the Resident Appellants' submission, GFL has submitted its own version of a Sniff Test provision, and GFL would accept a reduction from one kilometre to 600 metres from the fence line of its property.

[670] Finally, GFL does not agree with any portion of the Resident Appellants' submissions unless specifically stated in GFL's final submissions.

[671] In closing, GFL submits that the Resident Appellants have not established that it is advisable for the protection of the environment to vary the Permit as they request. The Resident Appellants' appeals should not be allowed.

*Delta's submissions*

[672] Delta agrees with the Resident Appellants that section 1(1) of the Permit does not adequately address the impact of odorous air contaminants from the Facility (or the New Facility) on surrounding residents. The provision is not stringent enough. Delta submits that the distance requirement of "facility property boundary" or "nearest occupied residence" or "650 m." rather than "1 km." would be reasonable in section 1(1), Table 1 of the Permit. The evidence in the hearing establishes that a "facility property boundary" restriction is achievable, and the Panel ought to vary the Permit accordingly.

[673] Delta also submits that the Approved Persons provisions in the Permit are essential, and that Delta's staff can and should be Approved Persons under the Permit. Their proximity to the Facility would enable them to respond to complaints in a timely fashion.

[674] Delta supports the remaining provisions of the Permit. Delta makes no submissions with respect to the remainder of the Resident Appellants' submissions.

*The Panel's findings*

<u>The scope of the Panel's jurisdiction</u>

[675] As a general observation, the Panel notes that our findings are limited to those matters that are properly the subject of the appeals and about which evidence has been adduced in the hearing. To the extent that the Resident Appellants' submissions go further, such as into matters related to the Licence and any amendments to it, we have not considered those submissions.

[676] The Resident Appellants' concerns with respect to the Permit's alleged effect on property values are outside of the Board's jurisdiction under the *Act*, as described in *Cobble Hill Holdings Ltd. v. Director, Environmental Management Act*, Decision Nos. 2013-EMA-017(a), 019(b), 020(a) and 021(a), February 5, 2014, at paras. 116 to 118.[49] As a result, the Panel has not considered this aspect of the Resident Appellants' submissions. Similarly, the Panel has no authority to consider

[49] The Panel is not bound by the reasons in that case but agrees with and adopts those reasons on this issue for the purpose of this decision.

matters with respect to property valuation, municipal and provincial zoning, or land use designation.

[677] The Panel finds that the evidence in the hearing clearly established that even without receiving the Technical Recommendation Memo from Metro Vancouver staff, the District Director was well aware of the Resident Appellants' concerns regarding the presence of odour in their community which they attributed to the Facility, before he issued the Permit. Indeed, Metro Vancouver staff and the District Director testified that they considered that the main purpose of the Permit was to reduce the odour impact on the community. We have found, however, that the Permit's purpose is not to directly regulate odour associated with the Facility. The Permit's purpose is to authorize the discharge of air emissions, some of which may be odorous, from a composting operation, subject to terms and conditions that are advisable for the protection of the environment. To put the matter slightly differently, the District Director can only regulate odour insofar as he can regulate the emission of air contaminants that are odorous.

The Panel's approach to assessing harm.

[678] The Panel finds that the air emissions from certain industries including those from agricultural operations, pulp and paper plants, asphalt facilities, and food processing plants, are often highly odiferous. The Panel finds that the District Director's role is not to authorize only those facilities whose odorous air emissions are acceptable to the local community. Rather, the District Director's role, and now ours, is to consider whether to authorize the discharge of air contaminants from the Facility and the New Facility, and if so, to then consider what requirements are advisable for the protection of the environment. Given the definition of "air contaminant" in the Bylaw, this means that we are to consider not only the risk that the discharge may cause harm to the environment itself, but also whether the discharge "injures or is capable of injuring the health or safety of a person", or "causes or is capable of causing material physical discomfort to a person".

[679] The Panel is mindful of the reasoning in *Toews*, cited with approval in *Tegart* at paragraph 86, where the Board found that when considering whether to authorize the discharge of air contaminants under a permit or permit amendment, "a cautious and technically rigorous approach should be taken when assessing the potential risks of injury to human health or damage to the environment."

[680] The Panel finds that reasoning as applicable today as it was in 2013. For greater clarity, we would describe the appropriate approach when assessing the potential risks of injury to human health or harm to the environment from air emissions slightly differently. In our view the approach that should be taken is one that is cautious, technically rigorous, and scientifically sound. We have applied that approach to our consideration of both GFL's and the Resident Appellants' appeals in our consideration of this issue.

[681] The Panel finds that the District Director ensured that the public, the regional health authority, and other appropriate agencies were properly notified of GFL's application for an air emissions permit and were given an opportunity to comment on it. It is not the District Director's role to conduct independent health research or

to create information for consideration by a regional health authority or any other agency. His role is to ensure that available information requested by a regional health authority, or any other consulted agency, is provided in a timely fashion. Further, the District Director's role is to consider feedback from the consultation process in his decision-making when deciding whether to, and upon what terms to, provide a Permit for the emission of air contaminants. Any shortcoming that there may have been in the decision-making process regarding GFL's application has been remedied by the hearing where the Panel has heard the evidence that was before the District Director as well as further evidence tendered in the hearing. The Panel finds that the Resident Appellants have had a fulsome opportunity to provide evidence about whether the permitted discharge is protective of the environment, including whether it is capable of injuring their health or safety, or causing them material physical discomfort.

[682] The Panel observed that the Resident Appellants frequently repeated in their testimony that there was no level of odour from the Facility (or the New Facility) that would be acceptable to them. We find that air emissions permits are not intended to prohibit *all* emissions. The permitting scheme under the *Act* and the Bylaw is not based on a "zero discharge" or "zero odour" policy. It follows that there must be persuasive evidence, such as medically verified or scientifically established evidence, that permitted emissions from the Facility or the New Facility have caused or have the potential to cause health effects or *material* physical discomfort.

[683] The Panel is mindful of the evidence offered in the hearing from the Resident Appellants and their witnesses about the impact of odour in the community on their use and enjoyment of their property and on their wellbeing. The Panel considered the evidence of the residents who testified about their personal experience with odour in the community; odour that they attribute to the Facility. We do not question their belief that odour is causing or has the potential to cause impacts on their health or on the health of their loved ones. We are empathetic to their concerns. We considered the evidence of some witnesses who told the Panel how they were able to follow the odour with their noses and trace it back to the Facility. We have carefully weighed that evidence in the context of other evidence regarding the "soup" of odours in the area, including a drainage ditch adjacent to the Facility that could be odorous, and the frailties of human observations of odour. The Panel finds that when considering whether air emissions from an industrial facility have the potential to, or are, impacting human health or the environment, it is prudent to rely on expert evidence that is properly adduced and subject to cross-examination rather than on anecdotal evidence based on beliefs, however genuinely held. Further, where, as here, the industry being regulated is a composting operation (where odour can be expected in the normal course) and where the industry co-exists with farming operations and a landfill, the need for clear, cogent evidence of harm or material physical discomfort that is causally linked to a particular operation is even greater.

[684] The Resident Appellants have not tendered any expert evidence about the actual health impacts of air emissions from the Facility. The Panel considered the

paper they cited by Dr. Schiffman and others[50], but the Panel notes that the paper was not a peer-reviewed publication; rather, it contains opinions expressed in a workshop. Further, no expert was called to speak to the opinions expressed in the paper. The Panel further notes that the paper expresses the need for more research before any conclusions can properly be drawn on whether exposure to odour may lead to health effects. The Panel finds that there is simply no basis on which it can reliably conclude that air emissions from the Facility or the New Facility have caused or have the potential to cause recognized human health impacts. For greater certainty, the Panel finds that there was insufficient evidence adduced in the hearing to conclude that there are air contaminants from the Facility (or that there will be air contaminants from the New Facility) that cause or are capable of causing material physical discomfort to a person. The Panel finds that absent such evidence, we cannot conclude that the Permit terms fail to protect the Resident Appellants' health, safety and comfort.

The use of "placeholders" in the Permit

[685] The Panel has already found that the District Director issued the Permit while Metro Vancouver staff were still seeking information about the design of the New Facility and before air dispersion modelling had occurred. The Panel finds that, unfortunately, the Permit included a multitude of "placeholders" for information. The Panel has directed those placeholders be removed from the Permit. In our view, it would have been prudent for the District Director to wait until he had that information, before issuing the Permit.

Facility-wide provisions

[686] In this decision, the Panel has already addressed the "Approved Persons" and "cease receiving food waste" provisions contained in section 1 of the Permit regarding facility-wide emission. To reiterate, the Panel has found that the Approved Persons and "cease receiving food waste" provisions in the Permit are not advisable for the protection of the environment (including the residents living in proximity to the Facility and the New Facility) from the emission of air contaminants for the reasons given earlier in this decision.

Monitoring and Enforcing Provisions

[687] As to the Resident Appellants' submissions regarding monitoring and enforcement under the Permit, the Panel notes its findings with respect to issue 6, above, regarding the monitoring and enforcement provisions in the Permit. That said, the Panel agrees that there was evidence before the District Director, and further evidence was adduced in the hearing, that establishes that hydrogen sulphide and TRS compounds are commonly emitted from composting operations and ought to be monitored and reported on under the Permit. The Panel finds that the Permit does not provide a clear, scientifically sound, and enforceable mechanism for monitoring hydrogen sulphide or TRS. The Panel has already found that there are established scientific and technical methods and procedures for such

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[50] See footnote 39.

monitoring, and they ought to be applied in the Permit. The Panel also notes its earlier recommendation that the Permit provide for odour observations in a form like that used in the Surrey facility's Odour Management Plan or an effective alternative. The Panel finds that its directed changes to the Permit are advisable for the protection of the environment, including the health and comfort of residents residing in the area.

[688] The Panel finds that, in general, it is not appropriate in an air emissions permit to require monitoring and reporting on the composting process itself. To be clear, the Panel finds that it is inappropriate to require detailed monitoring and reporting of oxygen content, temperature, moisture content and bulk density of composting material (in CASPs or in-vessel) during the composting process in an air emissions permit. While such provisions may be relevant to an authorization that regulates composting (such as the Licence), they are not relevant to an air emissions permit. The Panel notes our earlier findings that the Permit ought to provide the operator with flexibility in its operations whilst requiring monitoring and enforcement of the air emissions discharged from the Facility at the point of discharge; i.e., the stack.

The role of the complaint process in protecting the residents' interests.

[689] A great deal of time in the hearing was dedicated to Metro Vancouver's complaint process and its role in permit enforcement. The Panel accepts the Resident Appellants' submission that to the extent the Permit provisions rely on residents to file complaints to take enforcement action under the Permit, those provisions place an undue burden on the residents. The evidence before the Panel is that Metro Vancouver's complaint process is ill-equipped to deal with complaints about the Facility, is under-resourced, does not provide the complaints to GFL in a timely fashion, and offers no formal system for follow-up with complainants. Further, the complaint process has no mechanism to recognize the fact that some residents may be more motivated to file complaints than others, or that certain events may trigger an influx of complaints that are not directly related to any activity at the Facility or the New Facility.

[690] The Panel finds, based on the evidence in the hearing, that residents are unaware of the results of any investigation of their complaints, and therefore, they are left to draw their own conclusions as to the source of the odour. Still further, and more fundamental to the issues in these appeals, the evidence was clear that the complaint process, and any investigation which follows, is not designed to provide evidence of whether there has been any unauthorized discharge of air contaminants from the Facility or the New Facility. Accordingly, the Panel finds that while complaints may provide a useful source of information for the District Director and GFL, they are not a surrogate for clear, science-based monitoring and enforcement provisions in a permit.

[691] The Panel heard evidence that the District Director repeatedly encouraged residents to use the complaint process (including describing the "odour" and identifying any health impacts that they attribute to the odour). The Panel finds that the complaint process has left local residents frustrated and ill-informed. The Panel finds based on the evidence in the hearing that reliance on complaints

regarding "odour" to monitor and enforce provisions in an air emissions permit is ineffective, due in part to the highly subjective nature of odour and associated complaints, ultimately, this practice is not protective of the environment due to its many shortcomings as noted above. That said, while Metro Vancouver's complaint process may be contributing to the Resident Appellants' frustration with the permitting and enforcement process, that process is not directly relevant to the issue of whether the Permit's requirements are advisable for the protection of the environment. While the Panel is mandated to consider the merits of the Permit terms, it will be for the District Director and Metro Vancouver staff to enforce those terms, irrespective of public complaint.

[692] Given the importance that Metro Vancouver apparently places on public input in the bylaw enforcement process, the Panel reiterates its **recommendations** regarding Metro Vancouver's complaint process and encourages Metro Vancouver and GFL to consult with interested residents regarding any changes to the process.

Other relief sought by the Resident Appellants.

[693] In response to the remaining relief sought by the Resident Appellants, the Panel notes that it does not have the authority to issue declaratory relief. The Panel finds that the Permit provisions in section 1 of the Permit[51] are not advisable for the protection of the environment for the reasons already given. The Panel finds that it is unnecessary to issue directions or orders prohibiting pollution from the emission sources listed in the Permit, because discharging emissions such that pollution occurs is already prohibited by the Bylaw and by section 2 of the Permit. The Panel declines to require further monitoring and testing of the material in the vessels (during the active composting), because we find that such testing is not properly addressed in an air emissions permit.

[694] The Panel agrees that it would be beneficial if the District Director were to provide the Fraser Health Authority with the final air dispersion modelling plan for comment. We **recommend** that he share any feedback from the Fraser Health Authority with GFL and interested residents.

[695] The Panel finds it unnecessary to address the Resident Appellants' request for a Permit amendment to address the presence of finished or unfinished compost on site, "prior to the final commissioning of the New Facility", because the issue is now moot.

[696] The Panel declines to make any order regarding "real time monitoring" and "a real-time warning" for "odour emissions of concern" given our findings regarding the purpose of the Permit; it is not an "odour" Permit. Further, the Panel finds that there is insufficient evidence regarding the utility or reliability of such a system.

New Evidence

[697] Finally, the Panel notes that in response to GFL's closing submissions, the Resident Appellants sought to introduce new evidence regarding complaints some residents have made to Metro Vancouver about odour they attribute to the New Facility since the hearing concluded. The Resident Appellants did not bring an application (to which the other Parties would be entitled to respond) to re-open the hearing.

[698] The Panel Chair reminded the Parties throughout the hearing process that the Panel would hear all the evidence before concluding the oral part of the hearing. The Resident Appellants were reminded that the evidentiary part of the hearing had concluded when, at the conclusion of the hearing they asked if they could *then* request a site visit. The Panel Chair told the parties repeatedly that they would be afforded the opportunity to make written submissions.

[699] Further, throughout the hearing the Parties brought numerous applications. The Panel Chair and Board staff repeatedly took the time to educate the Resident Appellants about the application process. Just prior to filing their closing arguments, the Resident Appellants made submissions with respect to an application brought by the District Director (a recusal application) wherein the Resident Appellants

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[51] Section 1(3) Odour Limit was not raised by the Resident Appellants but is addressed elsewhere in the Decision.

raised new issues. They were instructed, again, of the need to bring an application if they wished to raise new issues outside of the hearing process. They declined to do so.

[700] The Panel finds that by the time the Resident Appellants filed their final submissions in response to GFL's appeal, they understood, or should have understood, they could not adduce evidence for the first time, outside of the hearing, without being granted permission from the Panel Chair. The Panel notes that the Board's Rule 22 provides:

> **Rule 22 – Closing of the record**
>
> 1. At the conclusion of the hearing, the record will be closed unless the panel directs otherwise.
> 2. Once the record is closed, no additional evidence will be accepted unless the panel decides that the evidence is material, and that there is a good reason for the failure to produce it in a timely fashion.
> 3. If an application to reopen the hearing to allow additional evidence is granted by the panel, the other parties will have an opportunity to reply to the new evidence.
> 4. The hearing will not be reopened once the Board's final decision is issued.

[701] The Resident Appellants made clear in their submissions that they knew that what they were seeking to introduce was new evidence that had not been introduced in the hearing. Indeed, they noted that they could not have introduced the evidence in the hearing as it concerned complaints about the operation of the New Facility made by one or more local residents, to Ms. Jones in her role as Metro Vancouver's Permit Compliance and Enforcement Officer, *after* the hearing had concluded.

[702] The Resident Appellants have not brought an application to reopen the hearing. Neither have they explained what new information could be gleaned from complaints made after the oral hearing, that had not already been established by the discussion of the hundreds of complaints earlier in the hearing.

[703] In the circumstances, the Panel declines to direct that the hearing be reopened to allow the new evidence that the Resident Appellants seek to tender and to the extent that the Resident Appellants referenced that new evidence in their submissions, we have not considered it in reaching this decision.

## OBSERVATION

[704] The Panel makes the following observation for the benefit of the parties and the public.

[705] It became clear to the Panel during the hearing that the District Director was subjected to extreme pressure from the community and elected officials in Delta and on the Metro Vancouver Board to issue a permit that would address the community's concerns regarding odour in their community that they attributed to the Facility. In fact, it was apparent during the hearing that many of the residents believed that if sufficient pressure were put on the District Director, he could

require GFL to cease operating or relocate. Further, it was apparent that the District Director had faced similar pressure in the context of Harvest's facility. In the face of this pressure, the District Director issued what his staff referred to as an "odour permit" to GFL in what appeared to be an attempt to satisfy the residents' concerns in circumstances where the Permit terms were not justifiable.

[706] By any measure, the appeal was "hard fought" by the District Director, the Resident Appellants and GFL. While it may be a natural reaction for the District Director to want to "defend" a permit that he has issued, that is not his role. The District Director's role at a hearing before the Board, is to explain the rationale for the Permit terms and why he believed they were advisable for the protection of the environment.

[707] In this case, the hearing became so adversarial, that the Panel feels that there is now more "bad blood" between the Parties than there was before the Permit was issued. That is extremely unfortunate. The Resident Appellants and GFL are neighbours and need to co-exist. For that reason, the Panel **recommends** that the District Director work with GFL to establish an advisory group to bring GFL and residents together to share information, on an ongoing basis, regarding the operation of the New Facility. The Panel notes that GFL expressed an interest in working with residents to share information, and it may be that the time is ripe to start that work.

[708] The Panel also **recommends** that Metro Vancouver revisit its complaint process to determine how it might provide feedback to residents, on a regular basis on the results of their complaints, including any investigations that were undertaken, whether the complaint was substantiated, and what, if any, remedial action was taken by a permittee.

## DECISION

[709] In making this decision, the Panel has considered all relevant and admissible evidence and the submissions of the parties, whether specifically reiterated in this decision, or not.

[710] For the reasons provided above, GFL's appeal is granted subject to the Panel's findings noted above. The Resident Appellants' appeal is granted, in part, as noted above.

[711] For convenience, the Panel summarized its directions to the District Director, below. The Parties should refer to the body of this Decision for a full listing and description of the Panel's directions.

<u>Summary of Directions to the District Director regarding varying the Permit.</u>

1. Amend the effective period of the Permit to six years commencing September 1, 2020.
2. Delete Permit terms that rely on the observations of an "Approved Person".

3. Delete all Permit references to monitoring, measuring, sampling, modelling, reporting or otherwise using "odour unit(s)" or "OUs". A list of such Permit terms with respect to currently authorized emission sources is attached as Appendix "A".
4. Delete all Permit references to monitoring, reporting, sampling, modelling or otherwise requiring the use of "odorous air contaminants" are to be deleted. A list of such Permit terms with respect to currently authorized emission sources is attached as Appendix "A".
5. Delete all terms that require the use of procedures stipulated in EN:13725.
6. Amend the Permit to require GFL to prepare and provide, for informational purposes and for the District Director's approval, an Odour Management Plan identifying (by emission source), the air contaminants being emitted which are odorous and GFL's odour mitigating strategies, best practices and technologies that are in use and *potentially could be used* to further reduce and control the emission of air contaminants which are odorous from the New Facility.
7. Delete the term referenced under the heading "Monthly Quantity of Material Received" at page 3, section 1(4).
8. Delete any reference to discharge from "the aerobic treatment of leachate" under the heading "MAXIMUM EMISSION FLOW RATE", at page 12, regarding Emission source 07.
9. Delete the placeholder provision at page 12, regarding Emission Source 07, under the heading, "WORKS AND PROCEDURES", requiring that the "dissolved oxygen concentration" of the water in the "treatment pond" is to be only "as approved by the District Director".
10. Amend the Permit (regarding Emission Source 07) to require that the emission of any air contaminants associated with the collection of leachates in Building #2 at the New Facility and/or with the redirection or collection of stormwater runoff, be addressed.
11. Amend the Permit to provide that the stormwater pond is to be considered as a possible odour-generating source included in any odour survey conducted for informational purposes.
12. Amend the Permit to require that any air contaminants that are odorous and that are associated with any stormwater redirection and its collection, are to be addressed in the Odour Management Plan and reported as required to the District Director.
13. Amend the description of Emission Source 08 at page 13 to refer to the emission source as the stack (as installed on September 1, 2020).
14. Amend the Permit to stipulate a numerical value for the maximum emission flow rate at page 13.
15. Amend the Permit to provide for the total emissions in tonnes/year that are authorized under the Permit.

16. Amend "WORKS AND PROCEDURES" at page 13 to delete all works and procedures that are not directly relevant to the regulation of the discharge of air emissions. In particular,

    i. the Permit provision beginning, "All material must be stored, received, handled, ground, mixed, and transferred inside a fully enclosed building…" should conclude with the words "directed to a biofilter" and the phrase, "and any best achievable control technologies, as approved by the District Director" should be deleted. Further, delete the phrase "and any best available control technologies, as approved by the District Director";

    ii. delete the Permit provisions defining "Food waste" and "Yard waste" and replace those terms with reference to the applicable terms in the Licence;

    iii. delete the Permit provision requiring the mixing of Food waste and Yard waste;

    iv. amend the Permit provision at page 14 regarding stack height to reflect the installed stack dimensions.

17. Amend "WORKS AND PROCEDURES" (regarding Emission Source 08) at pages 14 to15 to delete all provisions following and including the subheadings, "Biofilter" and "Biofilter Media Replacement" and substitute a single subheading "Biofilter and Biofilter Media Replacement" followed by requirements that GFL maintain the biofilter in good working condition and operate it in accordance with any applicable manufacturer's guidelines.

18. Amend the Permit (regarding Emission Sources 09, 10) at pages 16 to 17 to provide an accurate description of that part of the site where these emission sources are permitted at the New Facility and provide a definition of "Finished Compost"; Amend the Permit to provide that only "Finished Compost" is permitted in the described area and that any product that is not "finished" is to be removed from the site or returned to Building #2.

19. Delete the Permit provisions that require measurement of either the flow rate or the quality of the emission from the Finished Compost area or Product Blending Area (Emission Source 09, 10).

20. Amend reference at pages 16 and 17, under "WORKS AND PROCEDURES" (regarding Emission Sources 09 and 10) by deleting the terms but for the following provisions:

    > "The Permittee must maintain good housekeeping practices in and around the Finished Compost Storage and Blending Area, together with good operating practices at all times for all processing and emission control equipment".

Reporting Requirements

21. Delete the requirement at page 42, to submit, for the District Director's approval, a "Final Detailed Engineering Design Plan and Facility Upgrade Transition Plan".
22. Delete all reference to monitoring and reporting of "speciated odorous air contaminants".
23. Amend the Permit to require monitoring using standard testing procedures to measure, at the stack, for classes of substances known to be emitted from composting (such as TRS and VOCs), or other air contaminants identified by the District Director as odorous and expected to be emitted from a composting operation such as the New Facility.

Summary of Recommendations

[712] The Panel's recommendations are summarized, as follows. The Panel recommends that the District Director:

1. amend the Permit to move the Permit provision presently located on page 18, under section 2, "General Requirements and Conditions", subsection "C. Pollution Not Permitted", to section 1 of the Permit as a "Facility-Wide Restriction;
2. consult with GFL on the development of an odour observations protocol or Sniff Test, to be used for informational purposes at the New Facility;
3. require GFL to prepare an odour management plan for the District Director's review and approval. The Panel also recommends that any odour management plan developed pursuant to the Panel's recommendations, include a requirement to monitor finished compost on site and assess it for remaining in a finished state.
4. require GFL, as part of the odour management plan, to maintain a record, in a format acceptable to the District Director, of the odour observations made by GFL staff, and produce the record to the District Director on request. The Panel further recommends that the odour monitoring plan be subject to amendment where there is a pattern of observations by GFL staff indicating that operations are not adequately controlling emissions and the District Director is satisfied that an amendment is advisable for the protection of the environment;
5. require GFL to produce for the District Director's review and approval, an operational monitoring plan similar to the operational aspects addressed in the Design and Operating Plan referenced in sections 3.2 and 3.3 of the Surrey facility's Certificate. The Panel recommends that the District Director attach requirements to the operational monitoring plan that he believes are advisable for the protection of the environment, with respect to the emission of air contaminants. The Panel further recommends that the operational monitoring plan include: a flow diagram of the GFL composting operation at

the New Facility with sources of potential odour noted, parameters suitable for evaluating composting activity, and potential and planned emission treatments;

6. work with GFL to establish an advisory group to bring GFL and residents together to share information, on an ongoing basis, regarding the operation of the New Facility; and
7. take steps to recommend that Metro Vancouver revisit its complaint process to determine how it might provide feedback to residents, on a regular basis on the results of their complaints, including any investigations that were undertaken, whether the complaint was substantiated, and what, if any, remedial action was taken by a permittee.

"Brenda L. Edwards"

Brenda L. Edwards, Panel Chair
Environmental Appeal Board

"Linda Michaluk"

Linda Michaluk, Panel Member
Environmental Appeal Board

"Reid White"

Reid White, Panel Member
Environmental Appeal Board

March 12, 2021

## Appendix "A"

### List of Permit Terms Using "odour unit(s)" or "odorous air contaminant(s)"

As noted in the Decision, all* Permit terms requiring measuring, sampling, monitoring, or reporting in "odour unit(s)" ("OU") or "odorous air contaminant(s)" are unenforceable and to be deleted from the Permit, including:

### *Odour Unit(s)*

- Page 3, section 1(3)- "Odour Limit"
- Page 13, Emission Source 08 – "Maximum Emission Quality" – "units" to the extent the term references "odour units"
- Page 16, Emission Source 09 – "Maximum Emission Quality" – "units" to the extent the term references "odour units"

  Page 17, Emission Source 10 - "Maximum Emission Quality" – "units" to the extent the term references "odour units"

<u>Reporting Requirements</u>

- Page 21, section 3, Emission Source 08 – "Emissions Testing – New Biofilter(s)" – Parameter(s) – "Odorous Air Contaminants" and all references to sample collection and analysis for "odorous air contaminants" to be consistent with procedures specified in EN 13725:2003.
- Page 22, section 3 – Emission Source 08 – "Characterization of "Odorous Air Contaminant" Emissions – New Biofilter(s)" – all references to testing and reporting "odorous air contaminants" concurrently with emission testing for total odorous air contaminants, in "odour units".
- Page 23 to 24, section 3 – Emission Source 09, 10 – "Emissions Testing – Finished Compost Storage Area and Blending" – all references to a written report detailing "the total odorous air contaminant concentration" in "odour units"; and all reference to sample collection and analysis to be consistent with procedures specified in EN 13725:2003.
- Page 35, section 3 – "Facility Upgrade Design Dispersion Modelling Report" – delete all reference to achieving "1 odour unit (OU)" in the ambient air at the nearest sensitive receptor 99.8% of the time.
- Page 36 to 37, section 3 – "Dispersion Modelling Report" – delete all reference to reporting "total odour in odour units" and to model scenarios "of odours and emissions in the community to meet 1 OU at the nearest sensitive receptor 99.8% of the time."

### *Odorous Air Contaminant(s)*

- Page 2, section 1 (1) – "Discharge of odorous air contaminants"
- Page 3, section 1 (3) – "Odour Limit"
- Page 13, Emission Source 08 – Maximum Emission Quality- "Odours [sic] Air Contaminants"

- Page 16, Emission Source 09 – "Maximum Emission Quality" – "Odorous Air Contaminants"
- Page 16, Emission Source 10 – "Maximum Emission Quality" – "Odorous Air Contaminants" and all references to sample collection and analysis for "odorous air contaminants" to be consistent with EN 13725:2003.

Reporting Requirements

- Page 21, section 3, Emission Source 08 – Emissions Testing – New Biofilter – Parameter – delete all references to "Odorous Air Contaminants."
- Page 23, section 3, Emission Source 08 – Characterization of "Odorous Air Contaminant" Emissions – New Biofilter – delete all references to testing and reporting "odorous air contaminants", including under "Parameter(s)."
- Pages 23 to 24, section 3, Emission Sources 09, 10 – "Emissions Testing – Finished Compost Storage Area and Blending" – Parameter(s) - "Odorous Air Contaminants" – Delete all reference to testing for "odorous air contaminants".
- Page 28, section 3, Emission Source 08 – "Emissions Testing Plan – New Biofilter" – delete all reference in the plan to emissions testing "of odorous air contaminants."
- Page 28, section 3, Emission Sources 09, 10 – "Emissions Testing Plan – Finished Compost Sources" – delete all reference in the plan to emissions testing "for odorous air contaminants".
- Page 29, section 3, Emission Source 08 – "Characterization of Odorous Air Contaminants Emissions Testing Plan" – delete all reference in the plan to "odorous air contaminants."
- Pages 40 to 43, section 3, "Facility Upgrade Reports", Report 5 – "Final Detailed Engineering Design Plan and Facility Upgrade Transition Plan" – delete all reference to the plan including initial "requests" for the "odorous air contaminants" to be authorized for future sources ES 08 to ES 10.

* Those monitoring and reporting requirements referencing "odour unit(s)", "OU", or "odorous air contaminant(s)" for emission sources which are no longer authorized have not been included in this Appendix but, by reason of the Decision, are nonetheless unenforceable.