CITY OF VANCOUVER

CITY CLERK'S DEPARTMENT
Access to Information & Privacy

File No.: 04-1000-20-2019-506

October 1, 2019

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am responding to your request of August 7, 2019 for:

> **Records (i.e. reports and email) that discuss the toxicity of the surface of Brockton Oval running track, from January 1, 2015 to August 7, 2019.**

All responsive records are attached. Some information in the records has been severed, (blacked out), under s.13(1) and s.15(1)(l) of the Act. You can read or download this section here: http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96165_00.

Under section 52 of the Act you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your request. The Act allows you 30 business days from the date you receive this notice to request a review by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number assigned to your request (#04-1000-20-2019-506); 2) a copy of this letter; 3) a copy of your original request for information sent to the City of Vancouver; and 4) detailed reasons or grounds on which you are seeking the review.

Please do not hesitate to contact the Freedom of Information Office at foi@vancouver.ca if you have any questions.

Yours truly,

Barbara J. Van Fraassen, BA
Director, Access to Information & Privacy
Barbara.vanfraassen@vancouver.ca
453 W. 12th Avenue Vancouver BC V5Y 1V4

*If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. Or you can call the FOI Case Manager at 604.871.6584.

Encl.

:kt

From: "Gagnon, Yann" <Yann.Gagnon@vancouver.ca>
To: "Mack, Tiina" <tiina.mack@vancouver.ca>
Date: 5/15/2018 3:32:57 PM
Subject: 170927 Oval Tracks Characterisation Risk Assessment.pdf
Attachments: 170927 Oval Tracks Characterisation Risk Assessment.pdf

Some bedtime reading...

HEMMERA

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September 27, 2017
File: 358-044.01

City of Vancouver
507 West Broadway, Suite 320
Vancouver, BC V5Z 0B4

Attn: Christiaan Iacoe, B.Sc., EP, Contaminated Sites Specialist

Dear Mr. Iacoe,

Re: Characterization of Running Track Material and Health Risk Assessment, Brockton and Balaclava Ovals, Vancouver, BC

1.0 INTRODUCTION

This Work was performed in accordance with Environmental Consulting Services #PS20161560 standing offer agreement between Hemmera Envirochem Inc. ("Hemmera") and City of Vancouver ("Client"), dated June 8, 2017 ("Contract"). This Report has been prepared by Hemmera, based on fieldwork conducted by Hemmera, for sole benefit and use by City of Vancouver. In performing this Work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This Work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

The intent of this work was to (a) characterize the running track material and (b) complete an evaluation of potential health risks to workers and track users due to the inhalation of dust generated from the track surface at both the Balaclava Oval, at 30th Ave. and Balaclava St., and at the Brockton Oval, in Stanley Park, both in Vancouver, BC (**Figure 1**). Toxicity characteristic leaching procedure (TCLP) testing of the bulk track material was also done to characterize the material for disposal purposes, should this be required.

2.0 ASSESSMENT OF TRACK MATERIAL QUALITY

2.1 SAMPLE COLLECTION METHODOLOGY

Collection of samples for chemical analysis, TCLP testing and silica content and measurement of dust particulate levels during raking, was conducted on July 28, 2017.

2.1.1 Samples for Chemical Analysis

Bulk samples of the track material were collected according to established procedures for soil sampling, as outlined in the *BC Ministry of Environment (MOE) British Columbia Field Sampling Manual*. Samples were collected from the surface, to a depth of approximately 10 cm, using a stainless steel trowel.

Samples collected for chemical, silica and TCLP analysis were placed into 125-mL glass jars supplied by Maxxam Analytics of Burnaby, BC (Maxxam). The jarred samples were filled to the lid and packed tightly to prevent oxidation prior to sealing. Sample jars were identified using labels supplied by Maxxam, noting the date and sample number. The sample jars were then temporarily stored in insulated coolers with ice packs to minimize chemical alteration prior to laboratory analysis. The coolers were delivered to Maxxam at the end of the day by the field staff. A site-specific chain-of-custody form accompanied the samples. This form contained pertinent sampling information and analytical requirements, and followed the samples through the analytical process to final sample disposal. This documentation provided a traceable history of the sample from the time of collection to disposal, and ensured that analytical determinations were performed within recommended holding times.

2.1.2 Dust Particulate Levels

Total particulate matter (TPM) was measured using a calibrated Dusttrak 2 hand-held air borne particulate monitor for a total duration of 36 minutes (1:25pm – 2:01 pm), with readings output every minute. The Dusttrak was secured on the rake in the location of highest dust accumulation in order to determine a worst-case exposure scenario. The results were used to estimate worker exposure to TPM and silica as well as risks associated with inhalation of metals, hydrocarbons and silica present in dust.

2.2 RESULTS

2.2.1 Chemical Characterization

Samples of the bulk track material collected at Brockton Oval and Balaclava Oval were analysed for concentrations of metals, petroleum hydrocarbons (PHC) and polycyclic aromatic hydrocarbons (PAHs). The measured concentrations were then compared to BC Contaminated Sites Regulations (CSR) Stage

10 Amendments[1] standards for Urban Parks (PL). The results, which are tabulated in **Table 1** (attached) and presented in **Figure 2A** and **Figure 2B**. Substances identified as exceeding applicable standards (highlighted in tables and figures) were evaluated further (**Section 4.1**).

2.2.2 Silica Composition

The silica composition was between 15.5 to 17% (by weight) of the sample from the Brockton Oval and 11.4 to 13% (by weight) of the sample from the Balaclava Oval (**Table 2** attached).

2.2.3 TCLP Analysis

The results of the TCLP analysis for metals are presented in **Table 3** (attached). The results show that track material would not be considered hazardous waste for disposal purposes.

2.2.4 Dust Measurements

The results of the dust monitoring conducted using the Dusttrak 2 are presented in **Table 2-1**. Estimated crystalline silica concentrations were estimated based on a 16% crystalline silica composition, which is the upper end of the concentrations measured, as presented above.

Table 2-1 Results of Dust Monitoring

	Units	Total Suspended Particulate (Dust) Concentration	Estimated Crystalline Silica Concentration[1]
Average	mg/m^3	7.12	1.14
Maximum	mg/m^3	58.1	9.3
8-hour Time-Weighted Average	mg/m^3	0.534	0.085

[1] Estimated based on an assumed 16% (by weight) silica composition of track material.

3.0 WORKER SAFETY EVALUATION

A worker safety evaluation was done to address concerns raised about exposure to dust by tractor operators during raking activities. For this assessment, measured levels of total particulate matter (TPM) and silica concentrations were estimated based on measured dust levels and the percent silica composition of the track material. These values were compared with the Worksafe BC guidelines for silica and total particulate matter (TPM) and expressed as 8-hour time weighted average (TWA) concentrations as per the Worksafe BC guidelines. The results are shown in **Table 3-1**.

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[1] These standards will come into force November 1, 2017.

Table 3-1– Comparison of Measured Concentrations and Worksafe Guidelines

Substance	Units	Measured Concentration as an 8-hour TWA	Worksafe BC 8-TWA Guideline[1]
Total Particulate Matter	mg/m^3	0.534	3
Amorphous Silica	mg/m^3	0.534[(2)]	4
Crystalline Silica	mg/m^3	0.085[(3)]	0.025

(1) Worksafe BC (2017) available at https://www.worksafebc.com/en.
(2) Assumed that all particulate matter is present as total amorphous silica.
(3) Estimated based on an assumed 16% (by weight) silica composition of track material.

The result presented above indicate that exposure to TPM and amorphous silica does not present a risk to workers since the measured concentrations are well below the Worksafe BC guidelines.

The estimated concentration of crystalline silica is about 3.5 times higher than the applicable guideline. It is important to note however, that the sample was collected above the rake where dust concentrations are highest. The amount of dust that workers would be exposed to driving the tractor (with cab) would be significantly less.

Based on the above results, it is unlikely that workers are exposed to total particulate matter, amorphous silica or crystalline silica at concentrations greater than the applicable Worksafe BC guidelines. As such, adverse health effects due to the inhalation of dust during raking activities are unlikely.

4.0 RISK ASSESSMENT

A human health risk assessment was completed to assess the potential risks to Park Workers and Recreational Track Users associated with exposure the track material. The assessment was conducted in general accordance with the BC Ministry of the Environment (BC MOE) guidance on risk assessment (BC MOE 2008).

4.1 CHEMICAL SCREENING

Receptor-specific screening of contaminants of potential concern (COPCs) was performed to determine which contaminants warrant further assessment of risk based on existing land use using the approaches outlined in CSAP (2012)[2] and BCMOE (2008)[3]. This involved comparing the maximum measured concentrations of contaminants in the bulk track material with the applicable soil standards under the Contaminated Site Regulation (CSR). Since the new numerical omnibus standards (Stage 10) will come into effect on November 1, 2017, the CSR Stage 10 Amendments, Schedule 3.1 – Part 1, Matrix Numerical

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2 CSAP (2012). CSAP Technical Guidance for Risk Assessment COPC Screening, CSAP Technical Review #10, February 16, 2012.
3 BCMOE (2008). Protocol 13 Screening Level Risk Assessment, August 1, 2008

Soil Standards, Parkland Human Health Protection, Intake of Contaminated Soil values were used. If no matrix standard was available, then the CSR Stage 10 Amendments, Schedule 3.1 –Part 2, Generic Numerical Soil Standards to Protect Human Health, Parklands) values were adopted.

If a contaminant was detected at a concentration greater than the applicable standard, then it was identified as a COPC and evaluated further using a quantitative risk assessment approach. A summary of the chemicals detected at concentrations above the applicable standards are presented below in **Table 4-1**.

Table 4-1 Site Contaminant Surface Soil COPC Screening

Contaminants	Maximum Track Surface Conc. (mg/kg)	CSR PL Standards (Human intake)	Human COPC?
Brockton Oval			
No constituents were found to exceed human health standards			
Balaclava Oval			
EPH C_{19-32}/ HEPH	2,800 (Fractions: 2240 –Aliphatic; 560 –Aromatic)	1000	**Yes**
Benzo(a)pyrene	77	10	**Yes**
Benzo(b+j)fluoranthene	120	95	**Yes**
Dibenzo(a,h)anthracene	14	10	**Yes**

Based on this evaluation, the Brockton Oval track material does not have any substances present at concentrations greater than the applicable standards. This result indicates that exposure to the track material by park users and site workers does not present a health risk.

The track material at the Balaclava Oval was found to have concentrations of EPH C_{19-32}/ HEPH, benzo(a)pyrene, benzo(b+j)fluoranthene, and dibenzo(a,h)anthracene at concentrations greater than the applicable standards. Therefore, these substances were evaluated further using a quantitative risk assessment approach, as discussed below.

4.2 Quantitative Risk Assessment

The quantitative assessment evaluated the potential risks to site workers and park users associated with exposure to substances detected in the Balaclava Oval track material at concentrations greater than the applicable standards. Considering the nature of the material, inhalation of contaminants that may be present in dust was considered the most important exposure pathway.

4.2.1 Receptor Characterization

Characteristics of the Park Workers are presented in **Table 4-2** and those of a Recreational Track User are presented in **Table 4-3**.

Table 4-2 Receptor Characteristics – Workers

Exposure Characteristics	Assumed Properties and Values	Source
Age	≥20 years of age	Health Canada, 2012[4]
Body weight (kg)	70.7	Health Canada, 2012
Inhalation rate (m^3/day)	16.6	Health Canada, 2012
Particulate Concentration in air (kg/m^3)	7.12E-06	Average measured (**Table 2-1**)
Hours/days exposed	2	Assumed based on observation and discussion with staff
Days per week exposed / 7 days	1	Professional Judgement
Weeks per year exposed / 52 weeks	1*	Professional Judgement and communications (Jim Burkel, *pers. comm.*)
Total years exposed to Site [carcinogens only]	35	Health Canada, 2012
Life Expectancy (LE) (yr.) [Carcinogens only]	80	Health Canada, 2012

***Note:** In order to avoid over-averaging exposures to COPCs that have threshold modes-of-action, the weekly exposure was not amortized over a year (i.e., 1/1 instead of 1/52).

Table 4-3 Receptor Characteristics – Recreational Track Users

Exposure Characteristics	Assumed Properties and Values	Source
Age	≥20 years of age	Health Canada, 2012
Body weight (kg)	70.7	Health Canada, 2012
Inhalation rate (m^3/day)	50.4	Average adult rate – Moderate exercise (US EPA 2011[5])
Particulate Concentration in air (kg/m^3)	2.5E-07	Health Canada, 2012 (assume dusty conditions)
Hours/days exposed	1	Professional Judgement
Days per week exposed / 7 days	7	Professional Judgement
Weeks per year exposed / 52 weeks	52/52 (non-carcinogens) 52/52 (carcinogens)	Professional Judgement
Total years exposed to Site [carcinogens only]	60	Health Canada, 2012
Life Expectancy (LE) (yr.) [Carcinogens only]	80	Health Canada, 2012

[4] Health Canada (2012) Part 1: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA) version 2.0
[5] U.S. EPA. Exposure Factors Handbook (2011) U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/052F

4.3 TOXICITY ASSESSMENT

Toxicity reference values (TRVs) which identify the amount of chemical that individuals (including sensitive individuals) may safely be exposed to continuously for an entire lifetime were selected based on the effect endpoint and the quality of the supporting documentation using the hierarchy adopted by the BC MOE: i) TRVs from the US EPA IRIS database, ii) Health Canada and iii) other published sources such as the World Health Organization (WHO), the Agency for Toxic Substances and Disease Registry (ATSDR) or the Netherlands National Institute for Public Health (RIVM).

A summary of the TRVs adopted for each COPC are presented in **Table 4-4**.

Table 4-4 Toxicity Reference Values – Human Health

COPC	RfD (mg/kg-day)	Reference	SF (per mg/kg/day)	Reference
Petroleum Hydrocarbons				
EPH C_{19-32} / HEPH – Aliphatic Fraction	2.0	CCME, 2008	nc	n/a
EPH C_{19-32} / HEPH – Aromatic Fraction	0.03	CCME, 2008	nc	n/a
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	3.0E-04	US EPA 2017[6]	1.0	US EPA 2017
Benzo(b+j)fluoranthene	5.0E-02	RIVM, 2001[7]	0.1	US EPA 2017
Dibenzo(a,h)anthrancene	5.0E-03	RIVM, 2001	1.0	US EPA 2017

Notes: The reference doses (RfDs) for oral was used for particulate inhalation, as TRVs specific to this pathway are not available.
The RfD for EPH C_{19-32} / HEPH was calculated from the BC CSR standard of 1,000 mg/kg, assuming a 70.7 kg adult and an ingestion rate of 0.00002 kg/day.
RfD – Reference Dose
SF – Slope factor
COPC – Constituent of Potential Concern
nc – non-carcinogenic

4.4 PREDICTION OF RISKS TO HUMAN RECEPTORS – BALACLAVA OVAL

Assuming that the human receptors (Park Workers, Recreational Track Users) are continuously exposed to the maximum concentrations of identified constituents of potential concern (COPCs, i.e. EPH C_{19-32}/ HEPH, benzo(a)pyrene, benzo(b+j)fluoranthene, and dibenzo(a,h)anthracene; **Table 4-1**), and the receptor characteristics are as presented in **Table 4-2** and **Table 4-3,** exposure doses were predicted. These exposure doses were then compared to toxicity reference values (TRVs), in order to evaluate the potential for risk; if the modelled dose exceeded the TRV, then risks were predicted for that COPC-receptor combination.

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6 US EPA (2017) Integrated Risk Information System (IRIS) https://cfpub.epa.gov/ncea/iris2/atoz.cfm

7 RIVM (2011) Re-evaluation of human-toxicological maxi- mum permissible risk levels. report # 711701 025. A.J. Baars, R.M.C. Theelen, P.J.C.M. Janssen,. March 2001.

To characterize potential for non-carcinogenic health risks, the standard hazard quotient (HQ) approach for non-carcinogenic health effects from inhalation exposures to COPCs was adopted:

$$HQ = \frac{ADD}{TRV}$$

Where:

HQ = Hazard Quotient

ADD = Average Daily Dose (mg/kg/day)

TRV = Toxicological Reference Value (mg/kg/day)

The provincial standard for essentially negligible non-cancer risk is 1.

Incremental lifetime cancer risks (ILCR) were calculated by multiplying pathway-specific lifetime average daily dose (LADD; mg/kg/day) by pathway specific slope factors (SF; per mg/kg/day) as follows:

$$ILCR = LADD * SF$$

The ILCR represents the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. For carcinogens associated with the same target organ and the same form of cancer, ILCRs are additive. The BC MOE considers cancer risks less than 1 in 100,000 (1E-05) as negligible and in these cases no further assessment of health risks is required.

The predicted non-cancer and cancer risks for Park Workers and Recreational Track Users are presented in **Table 4-5** and **Table 4-6**, respectively.

Table 4-5 Estimated Risks for Park Worker

COPC	Non-Cancer Effects		Cancer Effects	
	Exposure from Dust Inhalation (mg/kg/day)	Hazard Quotient (HQ)	Exposure from Dust Inhalation (mg/kg/day)	Incremental Lifetime Cancer Risk (ILCR)
Petroleum Hydrocarbons				
EPH C_{19-32} / HEPH – Aliphatic Fraction	4.5E-05	2.23E-05	n/a	n/a
EPH C_{19-32} / HEPH – Aromatic Fraction	1.1E-05	3.71E-04	n/a	n/a
EPH C_{19-32} / HEPH – Both Fractions	5.6E-05	3.94E-04	n/a	n/a

COPC	Non-Cancer Effects		Cancer Effects	
	Exposure from Dust Inhalation (mg/kg/day)	Hazard Quotient (HQ)	Exposure from Dust Inhalation (mg/kg/day)	Incremental Lifetime Cancer Risk (ILCR)
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	1.5E-06	5.11E-03	1.9E-08	1.92E-08
Benzo(b+j)fluoranthene	2.4E-06	4.78E-05	3.0E-08	2.99E-09
Dibenzo(a,h)anthrancene	2.8E-07	5.57E-05	3.5E-09	3.48E-09
Total PAHs	n/a	n/a	n/a	2.56E-08

Table 4-6 Estimated Risks for a Recreational Track User

COPC	Non-Cancer Effects		Cancer Effects	
	Dose from Particulate Inhalation (mg/kg/day)	Soil Particulate Inhalation HQ	Exposure from Dust Inhalation (mg/kg/day)	Soil Particulate Inhalation ILCR
Petroleum Hydrocarbons				
EPH C_{19-32} / HEPH – Aliphatic Fraction	1.7E-05	8.32E-06	n/a	n/a
EPH C_{19-32} / HEPH – Aromatic Fraction	4.2E-06	1.39E-04	n/a	n/a
EPH C_{19-32} / HEPH – Both Fractions	2.1E-05	1.47E-04	n/a	n/a
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	5.7E-07	1.91E-03	4.3E-07	4.29E-07
Benzo(b+j)fluoranthene	8.9E-07	1.78E-05	6.7E-07	6.68E-08
Dibenzo(a,h)anthrancene	1.0E-07	2.08E-05	7.8E-08	7.80E-08
Total PAHs	n/a	n/a	n/a	5.74E-07

For Park Workers and Recreational Track Users, none of the HQs exceeded the default threshold of 1 and none of the ILCRs exceeded the default threshold of 1 in 100,000. Therefore, adverse health risks to individuals that may be exposed to substances present in the track material are not expected.

4.5 Quantitative Risk Assessment for Toddlers

Toddlers are usually the most sensitive life stage when evaluating exposure to contaminants present in soil and air because they have higher inhalation and ingestion rates relative to their body weight. However, the potential for exposure to contaminants present in the track material is considered low given that they are not expected to play in the track material and likely will be carried or pushed in strollers. Nevertheless, a quantitative assessment was conducted to address this receptor group. Receptor characteristics for toddlers are presented in **Table 4-7**.

Table 4-7 Receptor Characteristics – Recreational Track Users (Toddlers)

Exposure Characteristics	Assumed Properties and Values	Source
Age	7 months to 4 years	Health Canada, 2012
Body weight (kg)	16.5	Health Canada, 2012
Inhalation rate (m^3/day)	8.3	Health Canada, 2012
Soil Ingestion rate (kg/day)	0.00008	Health Canada, 2012
Particulate Concentration in air (kg/m^3)	2.5E-07	Health Canada, 2012 (assume dusty conditions)
Exposed skin surface area (cm^2) (assume hands, arms and legs)	430 (hands) 890 (arms) 1,690 (legs)	Health Canada, 2012
Soil Loading to exposed hands (kg/cm^2/event)	1.0E-07	Health Canada, 2012
Soil loading to exposed skin other than hands (kg/cm^2/event)	1.0E-08	Health Canada, 2012
Hours/days exposed	1	Professional Judgement
Dermal exposure events/day	1	Health Canada, 2012
Days per week exposed / 7 days	7	Professional Judgement
Weeks per year exposed / 52 weeks	52/52	Professional Judgement

It was assumed that toddlers could be exposed to track surface material via incidental ingestion, dermal contact and particulate inhalation, hence all pathways were considered, and the sum of these pathways was determined

Toxicity reference values and hazard quotient calculations were the same as for the adult receptors. The predicted non-cancer risks for Recreational Track Users (Toddlers) are presented in **Table 4-8**.

Table 4-8 Estimated Risks for Recreational Track User (Toddlers)

COPC	Hazard Quotient (Incidental Soil Ingestion)	Hazard Quotient (Dermal Contact)	Hazard Quotient (Particulate inhalation)	Hazard Quotient (Sum) (HQ)
Petroleum Hydrocarbons				
EPH C_{19-32} / HEPH – Aliphatic Fraction	2.7E-03	4.7E-04	2.9E-06	3.2E-03
EPH C_{19-32} / HEPH – Aromatic Fraction	4.5E-02	7.8E-03	4.9E-05	5.3E-02
EPH C_{19-32} / HEPH – Both Fractions	-	-	-	5.6E-02
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	6.2E-01	7.9E-02	6.7E-04	7.0E-01
Benzo(b+j)fluoranthene	5.8E-03	7.4E-04	6.3E-06	6.6E-03
Dibenzo(a,h)anthrancene	6.8E-03	8.7E-04	7.4E-06	7.7E-03

For toddler receptors, none of the HQs exceeded the default threshold of 1, therefore, adverse health risks to individuals that may be exposed to substances present in the track material are not expected. Cancer risks are not evaluated for toddlers, as this lifestage is only a short portion of the total life span of a human.

5.0 CHARACTERIZATION OF MATERIAL FOR DISPOSAL

Concentrations of measured constituents (metals, hydrocarbons) in track surface material were compared to industrial land use (IL) standards, in order to evaluate their potential for disposal at the City of Vancouver Landfill. Specifically, the incoming (November 2017 omnibus) IL standards were used, excluding those standards that assess groundwater to drinking water and surface water pathways.

The results of this evaluation are presented in attached **Table 4**. Concentrations of many of the PAHs (benza(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a.h)anthrancene, indeno(1,2,3-c,d)pyrene, phenanthrene, pyrene) in the track material at Balaclava Oval exceed applied IL standards. Thus, disposal at the City of Vancouver Landfill would not be permitted. However, track surface material from the Brockton Oval can be disposed of in the landfill since concentrations are below the IL standards.

6.0 CONCLUSIONS

The worker safety evaluation assessed the potential for workers to be exposed to concentrations of total particulate matter and silica (amorphous and crystalline) greater than the applicable Worksafe BC guidelines. This evaluation found that workers are unlikely to be exposed to total particulate matter, amorphous silica or crystalline silica at concentrations greater than the applicable Worksafe BC guidelines. As such, adverse health effects due to the inhalation of dust during raking activities are unlikely. However, as a precautionary measure, raking should be done with a tractor equipped with an enclosed cab, to prevent excess inhalation of dust.

Evaluation of the potential for risks due to exposure of contaminants in the dust from the track material found that risks to Park Workers and Recreational Track Users were not predicted. Additionally, toddlers that may be exposed to track material via incidental ingestion, dermal contact, and particulate inhalation would not have the potential for risks.

We have appreciated the opportunity of working with you on this project and trust that this report is satisfactory to your requirements. Please feel free to contact the undersigned regarding any questions or further information that you may require.

Report prepared by:
Hemmera Envirochem Inc.

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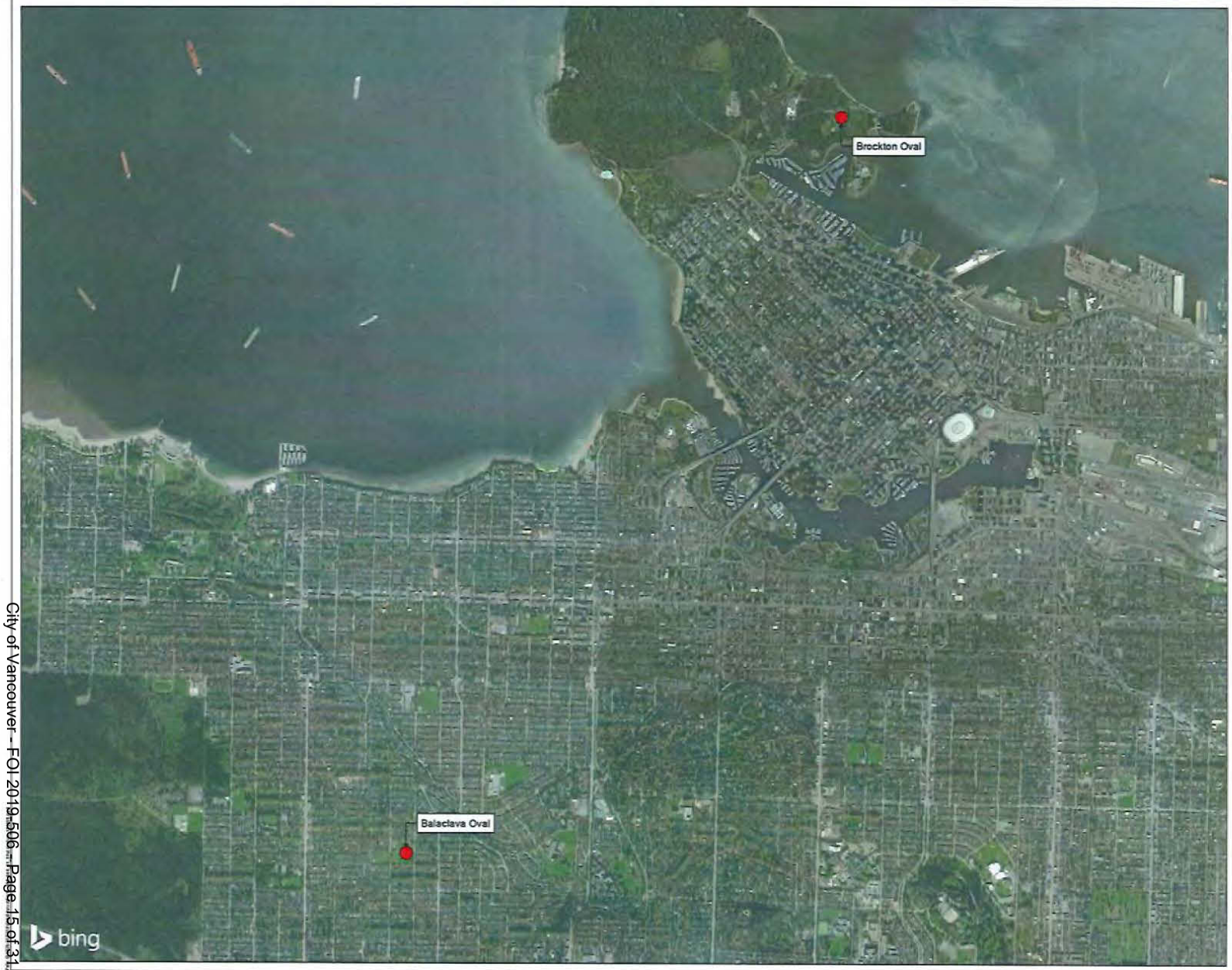
Report peer reviewed by:
Hemmera Envirochem Inc.

Ron Haley, M.Sc., MBA, EP
Project Director and Senior Risk Assessor
604.669.0424 (161)
rhaley@hemmera.com

FIGURES



Oval Track Assessments
Balaclava Oval and Brockton Oval, Vancouver, BC

Site Location

Legend

- Site Location

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Aerial Image: Bing Maps Aerial
- Inset Basemap: ESRI World Topographic Map

N

1:30,000

0 300 600 900
Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

358-044.01	Production Date: Sep 5, 2017	Figure 1

HEMMERA City of Vancouver

Location ID:	Brockton Oval		
Sample ID:	SS17-1	SS17-2	SS17-3
Date Sampled:	01/08/2017	01/08/2017	01/08/2017
Parameter			
Barium	436	407	418
Remaining Metals	<	<	<
Petroleum Hydrocarbons	<	<	<
Polycyclic Aromatic Hydrocarbons	<	<	<

Oval Track Assessments
Balaclava Oval and Brockton Oval, Vancouver, BC

Analytical Results - Brockton Oval

Legend

- Sample Location
- Sample location exceeds applicable standard for one or more parameters analyzed

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
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Sources

- Aerial Image: ESRI World Imagery

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1:1,000

0 10 20 30
Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

358-044.01	Production Date: Sep 5, 2017	Figure 2A

HEMMERA City of Vancouver

Location ID:	Balaclava Oval			
Sample ID:	SS17-4	SS17-5	SS17-6	SS17-100 (Duplicate of SS17-6)
Date Sampled:	01/08/2017	01/08/2017	01/08/2017	01/08/2017
Parameter				
Metals	<	<	<	<
EPH C19-C32	2800	1700	1300	1500
HEPHs	2100	1300	990	1200
Remaining PHCs	<	<	<	<
Anthracene	7.3	5.3	4.7	5.6
Benzo(a)anthracene	75	43	34	36
Benzo(a) pyrene	77	47	37	39
Benzo(b+j)fluoranthene	120	70	54	58
Benzo(k)fluoranthene	38	23	17	18
Dibenz(a,h)anthracene	14	8.3	6.4	6.5
Fluoranthene	190	110	84	96
Indeno(1,2,3-c,d)pyrene	68	42	33	34
Naphthalene	12	9.1	4.6	5.7
Phenanthrene	51	34	25	28
Pyrene	260	150	110	130
Remaining PAHs	<	<	<	<

Oval Track Assessments
Balaclava Oval and Brockton Oval, Vancouver, BC

Analytical Results - Balaclava Oval

Legend

- Sample Location
- Sample location exceeds applicable standard for one or more parameters analyzed
- Property Parcel

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Aerial Image: ESRI World Imagery

N

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Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

355-044.01	Production Date: Sep 5, 2017	Figure 2B

HEMMERA City of Vancouver

TABLES

Table 1: Soil Analytical Results

			Location	Brockton Oval			Balaclava Oval			
			Sample ID	SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-6	SS17-100
			Date Sampled	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	**output unit**	**EQL**	BC CSR PL, Stage 10 Ammendments							
Inorganics										
Moisture	%	0.3	-	3.2	1.7	1.4	2.8	1.6	2.1	2.2
pH (Lab)	pH_Units		-	6.45	6.44	6.24	6.54	6.92	5.46	5.4
Metals										
Aluminium	mg/kg	100	40,000	15,500	20,000	21,500	9380	8230	7500	8660
Antimony	mg/kg	0.1	20	0.98	1.2	0.8	0.53	0.59	0.53	0.52
Arsenic	mg/kg	0.5	10	5.16	7.19	7.22	3.42	3.47	2.97	3.01
Barium	mg/kg	0.1	350	436	407	418	217	208	256	263
Beryllium	mg/kg	0.2	1-150	0.39	0.43	0.43	0.31	0.24	0.23	0.21
Bismuth	mg/kg	0.1	-	<0.1	0.11	0.13	0.1	<0.1	<0.1	<0.1
Cadmium	mg/kg	0.05	1-30	0.144	0.198	0.165	0.109	0.08	0.164	0.163
Calcium	mg/kg	100	-	10,800	15,700	16,300	6040	5620	7470	8160
Chromium (III+VI)	mg/kg	1	60	25.8	36.6	37.5	13	11.4	9.7	11.7
Cobalt	mg/kg	0.3	25	7.64	9.54	9.32	4.23	3.6	3.07	3.26
Copper	mg/kg	0.5	70-150	59.3	95.1	102	29.1	27.7	24.1	24.7
Iron	mg/kg	100	35,000	19,000	24,100	24,000	10,700	10,400	8570	8530
Lead	mg/kg	0.1	120	40.7	39.6	51.7	16	14.2	8.15	8.52
Lithium	mg/kg	5	65	16.1	19.9	19.1	7.9	7.7	8	8.1
Magnesium	mg/kg	100	-	3240	3330	3800	1890	1640	1650	1750
Manganese	mg/kg	0.2	2000	241	192	236	113	97.3	86.6	81.8
Mercury	mg/kg	0.05	25	0.112	<0.05	0.087	<0.05	<0.05	<0.05	<0.05
Molybdenum	mg/kg	0.1	3	1.09	1.86	1.85	1.09	1.19	0.97	1.07
Nickel	mg/kg	0.8	70-150	31.7	49.3	48.8	18.7	21.1	13.6	14.4
Phosphorus	mg/kg	10	-	790	1150	1160	388	417	407	413
Potassium	mg/kg	100	-	876	889	1030	553	521	520	562
Selenium	mg/kg	0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	mg/kg	0.05	20	0.08	0.124	0.136	0.056	<0.05	<0.05	<0.05
Sodium	mg/kg	100	-	813	738	689	2890	3190	34,400	33,600
Strontium	mg/kg	0.1	20,000	377	364	365	137	155	193	202
Thallium	mg/kg	0.05	9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	mg/kg	0.1	50	2.35	2.77	2.68	0.75	1.08	0.63	1.24
Titanium	mg/kg	1		770	871	958	498	406	370	401
Uranium	mg/kg	0.05	15	0.718	1.06	1.18	0.547	0.482	0.408	0.442
Vanadium	mg/kg	2	100	51.3	66.4	66.5	31.7	27.5	23.9	26.1
Zinc	mg/kg	1	150-200	69.8	101	88.6	31.5	27.6	23.3	21.7
Zirconium	mg/kg	0.5		6.77	6.52	4.91	5.54	5.23	3.64	3.14

Table 1: Soil Analytical Results

			Location	Brockton Oval			Balaclava Oval			
			Sample ID	SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-6	SS17-100
			Date Sampled	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	output unit	EQL	BC CSR PL, Stage 10 Ammendments							
EPH										
EPH C10-C19	mg/kg	100	1000	140	<100	<100	350	300	210	220
EPH C19-C32	mg/kg	100	1000	250	<100	<100	2800	1700	1300	1500
HEPHs	mg/kg	100	1000	250	<100	<100	2100	1300	990	1200
LEPHs	mg/kg	100	1000	140	<100	<100	290	260	180	180
PAH										
2-methylnaphthalene	mg/kg	0.02	100	0.4	0.066	0.08	2.5	2.3	1.2	3
Acenaphthene	mg/kg	0.005	2000	0.041	0.0068	0.0067	0.18	0.13	0.088	0.07
Acenaphthylene	mg/kg	0.005	-	0.082	0.0063	0.011	9	6.7	4.7	4.9
Anthracene	mg/kg	0.004	2.5	0.098	0.006	0.01	7.3	5.3	4.7	5.6
Benzo(a)anthracene	mg/kg	0.02	1	0.24	<0.02	0.026	75	43	34	36
Benzo(a) pyrene	mg/kg	0.02	10	0.14	<0.02	<0.02	77	47	37	39
Benzo(b)fluoranthene	mg/kg	0.02	-	0.16	<0.02	<0.02	73	44	34	36
Benzo(b+j)fluoranthene	mg/kg	0.02	1	0.26	<0.02	<0.02	120	70	54	58
Benzo(g,h,i)perylene	mg/kg	0.05	-	0.056	<0.05	<0.05	86	54	43	45
Benzo(k)fluoranthene	mg/kg	0.02	1	0.09	<0.02	<0.02	38	23	17	18
Chrysene	mg/kg	0.02	400	0.3	<0.02	0.045	110	64	51	55
Dibenz(a,h)anthracene	mg/kg	0.02	1	0.024	<0.02	<0.02	14	8.3	6.4	6.5
Fluoranthene	mg/kg	0.02	50	0.67	0.039	0.073	190	110	84	96
Fluorene	mg/kg	0.02	1000	<0.02	<0.02	<0.02	0.69	0.43	0.32	0.33
Indeno(1,2,3-c,d)pyrene	mg/kg	0.02	1	0.064	<0.02	<0.02	68	42	33	34
Naphthalene	mg/kg	0.01	0.6	0.34	0.037	0.047	12	9.1	4.6	5.7
High Molecular Weight PAHs	mg/kg	0.05	-	2.5	0.07	0.22	1000	610	470	520
Total PAHs	mg/kg	0.05	-	4.1	0.26	0.48	1100	670	510	570
Phenanthrene	mg/kg	0.01	5	0.7	0.065	0.11	51	34	25	28
Low Molecular Weight PAHs	mg/kg	0.05	-	1.7	0.19	0.27	82	58	41	47
Pyrene	mg/kg	0.02	10	0.62	0.031	0.075	260	150	110	130

Table 2: Silica Analysis

		Brockton Oval			Balaclava Oval			
		SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-100	SS17-6
		01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	output unit							
Silica Analysis								
Cristobalite	wt%	1.5	2.0	1.5	0.5	1.0	1.5	1.0
Quartz	wt%	14	13	15	12	11	9.4	9.9
Tridymite	wt%	1	1	1	1	1	0.5	0.5
Total Crystalline Silica	wt%	16.0	15.5	17.0	13.0	12.5	11.4	11.4
Total Crystalline Silica (8-hour TWA)	mg/m^3	0.09	0.08	0.09	0.07	0.07	0.06	0.06

Table 3: TCLP Analysis

		Location	Brockton Oval			Balaclava Oval			
		Sample ID	SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-100	SS17-6
		Date Sampled	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	**output unit**	TCLP							
Inorganics									
pH (Final)	pH Units		4.92	4.92	4.9	4.92	4.91	4.92	4.93
pH of Leaching Fluid	pH Units		4.9	4.9	4.9	4.9	4.9	4.9	4.9
pH (after HCL)	pH_Units		1.15	1.1	1.09	1.01	1.24	1.05	1.11
pH (Initial)	pH_Units		6.24	6.47	6.63	6.59	6.23	8.02	6.84
Metals									
Antimony	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Arsenic	µg/L	2500	<100	<100	<100	<100	<100	<100	<100
Barium	µg/L	100,000	520	250	310	110	120	140	140
Beryllium	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Boron	µg/L	500,000	<100	<100	<100	<100	120	<100	<100
Cadmium	µg/L	500	<100	<100	<100	<100	<100	<100	<100
Chromium (III+VI)	µg/L	5000	<100	<100	<100	<100	<100	<100	<100
Cobalt	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Copper	µg/L	100,000	<100	<100	<100	<100	<100	<100	<100
Iron	µg/L	-	<500	<500	<500	<500	<500	<500	<500
Lead	µg/L	5000	1570	<100	<100	<100	<100	<100	<100
Mercury	µg/L	100	<2	<2	<2	<2	<2	<2	<2
Molybdenum	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Nickel	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Selenium	µg/L	1000	<100	<100	<100	<100	<100	<100	<100
Silver	µg/L	5000	<10	<10	<10	<10	<10	<10	<10
Thallium	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Uranium	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Vanadium	µg/L	-	<100	<100	<100	<100	<100	<100	<100
Zinc	µg/L	500,000	<100	220	<100	<100	<100	<100	<100
Zirconium	µg/L	-	<100	<100	<100	<100	<100	<100	<100

Table 4: Soil Analytical Results for Disposal

			Location	Brockton Oval			Balaclava Oval			
			Sample ID	SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-6	SS17-100
			Date Sampled	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	output unit	EQL	BC CSR IL, Stage 10 Ammendments (excluding groundwater pathways)							
Inorganics										
Moisture	%	0.3	-	3.2	1.7	1.4	2.8	1.6	2.1	2.2
pH (Lab)	pH_Units		-	6.45	6.44	6.24	6.54	6.92	5.46	5.4
Metals										
Aluminium	mg/kg	100	250,000	15,500	20,000	21,500	9380	8230	7500	8660
Antimony	mg/kg	0.1	40	0.98	1.2	0.8	0.53	0.59	0.53	0.52
Arsenic	mg/kg	0.5	40	5.16	7.19	7.22	3.42	3.47	2.97	3.01
Barium	mg/kg	0.1	1500	436	407	418	217	208	256	263
Beryllium	mg/kg	0.2	350	0.39	0.43	0.43	0.31	0.24	0.23	0.21
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Copper	mg/kg	0.5	300	59.3	95.1	102	29.1	27.7	24.1	24.7
Iron	mg/kg	100	150,000	19,000	24,100	24,000	10,700	10,400	8570	8530
Lead	mg/kg	0.1	1000	40.7	39.6	51.7	16	14.2	8.15	8.52
Lithium	mg/kg	5	450	16.1	19.9	19.1	7.9	7.7	8	8.1
Magnesium	mg/kg	100	-	3240	3330	3800	1890	1640	1650	1750
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Potassium	mg/kg	100	-	876	889	1030	553	521	520	562
Selenium	mg/kg	0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	mg/kg	0.05	40	0.08	0.124	0.136	0.056	<0.05	<0.05	<0.05
Sodium	mg/kg	100	-	813	738	689	2890	3190	34,400	33,600
Strontium	mg/kg	0.1	1000	377	364	365	137	155	193	202
Thallium	mg/kg	0.05	25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	mg/kg	0.1	300	2.35	2.77	2.68	0.75	1.08	0.63	1.24
Titanium	mg/kg	1		770	871	958	498	406	370	401
Uranium	mg/kg	0.05	2000	0.718	1.06	1.18	0.547	0.482	0.408	0.442
Vanadium	mg/kg	2	300	51.3	66.4	66.5	31.7	27.5	23.9	26.1
Zinc	mg/kg	1	450	69.8	101	88.6	31.5	27.6	23.3	21.7
Zirconium	mg/kg	0.5		6.77	6.52	4.91	5.54	5.23	3.64	3.14

Table 4: Soil Analytical Results for Disposal

			Location	Brockton Oval			Balaclava Oval			
			Sample ID	SS17-1	SS17-2	SS17-3	SS17-4	SS17-5	SS17-6	SS17-100
			Date Sampled	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017	01/08/2017
ChemName	output unit	EQL	BC CSR IL, Stage 10 Ammendments (excluding groundwater pathways)							
EPH										
EPH C10-C19	mg/kg	100	2000	140	<100	<100	350	300	210	220
EPH C19-C32	mg/kg	100	5000	250	<100	<100	2800	1700	1300	1500
HEPHs	mg/kg	100	5000	250	<100	<100	2100	1300	990	1200
LEPHs	mg/kg	100	2000	140	<100	<100	290	260	180	180
PAH										
2-methylnaphthalene	mg/kg	0.02	950	0.4	0.066	0.08	2.5	2.3	1.2	3
Acenaphthene	mg/kg	0.005	15,000	0.041	0.0068	0.0067	0.18	0.13	0.088	0.07
Acenaphthylene	mg/kg	0.005	-	0.082	0.0063	0.011	9	6.7	4.7	4.9
Anthracene	mg/kg	0.004	30	0.098	0.006	0.01	7.3	5.3	4.7	5.6
Benzo(a)anthracene	mg/kg	0.02	10	0.24	<0.02	0.026	75	43	34	36
Benzo(a) pyrene	mg/kg	0.02	50	0.14	<0.02	<0.02	77	47	37	39
Benzo(b)fluoranthene	mg/kg	0.02	-	0.16	<0.02	<0.02	73	44	34	36
Benzo(b+j)fluoranthene	mg/kg	0.02	10	0.26	<0.02	<0.02	120	70	54	58
Benzo(g,h,i)perylene	mg/kg	0.05	-	0.056	<0.05	<0.05	86	54	43	45
Benzo(k)fluoranthene	mg/kg	0.02	10	0.09	<0.02	<0.02	38	23	17	18
Chrysene	mg/kg	0.02	4500	0.3	<0.02	0.045	110	64	51	55
Dibenz(a,h)anthracene	mg/kg	0.02	10	0.024	<0.02	<0.02	14	8.3	6.4	6.5
Fluoranthene	mg/kg	0.02	200	0.67	0.039	0.073	190	110	84	96
Fluorene	mg/kg	0.02	9500	<0.02	<0.02	<0.02	0.69	0.43	0.32	0.33
Indeno(1,2,3-c,d)pyrene	mg/kg	0.02	10	0.064	<0.02	<0.02	68	42	33	34
Naphthalene	mg/kg	0.01	20	0.34	0.037	0.047	12	9.1	4.6	5.7
High Molecular Weight PAHs	mg/kg	0.05	-	2.5	0.07	0.22	1000	610	470	520
Total PAHs	mg/kg	0.05	-	4.1	0.26	0.48	1100	670	510	570
Phenanthrene	mg/kg	0.01	50	0.7	0.065	0.11	51	34	25	28
Low Molecular Weight PAHs	mg/kg	0.05	-	1.7	0.19	0.27	82	58	41	47
Pyrene	mg/kg	0.02	100	0.62	0.031	0.075	260	150	110	130

From: "Mack, Tiina"
To: "PB Commissioners" <PBCommissioners@vancouver.ca>
CC: "PB Communications" <PB.Communications@vancouver.ca>
"Park Board GM's Office" <pbgmo@vancouver.ca>
"Gagnon, Yann" <yann.gagnon@vancouver.ca>
"PB - SMT \(Senior Management Team\) - DL" s.15(1)(l)
"Hutch, Dave" <dave.hutch@vancouver.ca>
Date: 6/7/2018 4:56:00 PM
Subject: Balaclava Park and Stanley Park - Brockton Oval Track conditions

---

Hello Commissioners,

At the May 12 and June 4th meetings a Commissioner enquired about the condition of the Stanley Park Brockton Oval and Balaclava Park tracks, and this email responds to these requests.

These track surfaces are comprised of petroleum by-products containing silica sometimes referred to as 'cinder'. The potential for inhalation of the silica dust generated during track maintenance is of growing concern for the health and safety of workers, and therefore maintenance work was paused on these tracks early in 2017. An independent contaminated site specialist investigated the issue and prepared a report in the fall of 2017.

It is important to recognize that while there are no concerns for the general public, the particulates are of concern to horticultural staff who mechanically weed and trim the oval grounds. Minimal tractor maintenance will be done on the surfaces over the next year (tractor maintenance is possible as workers sit in a protected cab).

Staff have included funds to for surface material replacement in the Draft 2019-22 Capital Plan and the Track and Field Strategy, currently underway, will give us additional direction for how to proceed at these locations.

Yours truly,

Tiina Mack, Landscape Architect | Manager of Park Development
Vancouver Board of Parks and Recreation | 2099 Beach Avenue
t. 604.257.8471 tiina.mack@vancouver.ca

From: "Mack, Tiina"
To: "Bromley, Malcolm" <Malcolm.Bromley@vancouver.ca>
CC: "Sangalang, Ellen" <ellen.sangalang@vancouver.ca>
Date: 6/7/2018 2:00:48 PM
Subject: RE: Brockton Oval refurbishment - info for Chair - should I email all Commissioners now?

Hi Malcolm

You responded to Stuart already, correct?

Do you now want me to email all Commissioners?

Thanks in advance for the clarification

Tiina

From: Bromley, Malcolm
Sent: Thursday, June 07, 2018 11:15 AM
To: Mack, Tiina
Cc: Wilton, Shauna; Hutch, Dave; Silva, Octavio; McDonald, Erica; Sangalang, Ellen
Subject: Re: Brockton Oval refurbishment - info for Chair - draft for review

A good idea. Reference that a Commissioner received an enquiry

Malcolm Bromley
General Manager
Vancouver Board of Parks and Recreation

On Jun 7, 2018, at 10:58 AM, Mack, Tiina <tiina.mack@vancouver.ca> wrote:

Hi,

Please see the following info for the Chair, and I am wondering if we should share this with all Commissioners?

Thank you

Tiina

Rugby Practice Field Renewal
Park Development and Recreation staff have had annual dialogue with the Rugby Club for several years and they would like to renew and expand the practice rugby field adjacent to the oval. There is a small ball diamond backstop located here also. This project is of concern given the need to excavate and First Nations interests, work on the ongoing Stanley Park Plan, and in 2017 we advised that expansion was not recommended due to but that renovation of the existing footprint may be possible. Staff are meeting with the Rugby Club in late June and once a funding arrangement can be confirmed (Park Board presently has no funds available for this field renovation), staff will submit the project to the Stanley Park Intergovernmental Working group for consideration. This project has been included on the Vancouver Field Sport Federation on their 2019-22 Capital Plan project list, amongst others.

Brockton Oval – Track Surface

The oval itself is due for renewal, it is s a cinder track that is under consideration in the Track and Field Strategy. These track surfaces are comprised of petroleum by-products containing silica sometimes referred to as 'cinder'. The potential for inhalation of the silica dust generated during track maintenance is of growing concern for the health and safety of workers, and therefore maintenance work was paused on these tracks early in 2017. An independent contaminated site specialist investigated the issue and prepared a report in the fall of 2017. It is important to recognize that while there are no concerns for the general public, the particulates are of concern to horticultural staff who manually weed and trim the adjacent grounds. Minimal tractor maintenance will be done on the surfaces over the next year while staff make plans and seek funds to for surface material replacement in the 2019-22 Capital Plan. The Track and Field Strategy, once approved by the Board, will give us additional direction for how to proceed at these locations.

s.13(1)

Please let us know if you would like additional information.

Sincerely

<image002.png> Tiina Mack, Landscape Architect | Manager of Park Development
Vancouver Board of Parks and Recreation | 2099 Beach Avenue
t. 604.257.8471 tiina.mack@vancouver.ca

,

From: Bromley, Malcolm
Sent: Wednesday, May 30, 2018 8:40 AM
To: Mack, Tiina; Hutch, Dave; Chan, Cheryl
Subject: FW: Brockton Oval refurbishment

Can folks remind me the history of this and the concerns raised at that time?

From: Mackinnon, Stuart
Sent: Tuesday, May 29, 2018 5:26 PM
To: Bromley, Malcolm; Wilton, Shauna; Park Board GM's Office
Subject: Brockton Oval refurbishment

Good Afternoon,

I have been invited to meet with a few folks who are interested in an up-grade for Brockton. I have told them I am prepared to meet and listen but I have no information to share.

Is there information to share? Anything by way of background and/or plans would be very helpful to me.

Thank you
s.

Stuart Mackinnon, Chair
Vancouver Board of Parks & Recreation

t: @betterparks blog: www.betterparks.ca

From: "Bromley, Malcolm" <Malcolm.Bromley@vancouver.ca>
To: "Mack, Tiina" <tiina.mack@vancouver.ca>
CC: "Wilton, Shauna" <shauna.wilton@vancouver.ca>
"Hutch, Dave" <dave.hutch@vancouver.ca>
Date: 6/7/2018 10:58:05 AM
Subject: Re: Brockton Oval refurbishment

I cut and pasted your info. Thx
On Jun 7, 2018, at 10:44 AM, Mack, Tiina <tiina.mack@vancouver.ca> wrote:

Hi Malcolm and Shauna,

I can send some info to Stewart before noon – do you have time and/or do you want to vet it first?

It's a combo of info from my team, Octavio's, and Dave's.

Thank you

Tiina

From: Hutch, Dave
Sent: Thursday, June 07, 2018 10:40 AM
To: Mack, Tiina
Subject: FW: Brockton Oval refurbishment
Importance: High

I assume this is you?

From: Bromley, Malcolm
Sent: Thursday, June 07, 2018 7:38 AM
To: Mackinnon, Stuart
Cc: Wilton, Shauna; Park Board GM's Office; Hutch, Dave
Subject: Re: Brockton Oval refurbishment

Hi Stuart
We have some background and we'll get it to you ASAP.
Malcolm.
On Jun 7, 2018, at 7:17 AM, Mackinnon, Stuart <Stuart.Mackinnon@vancouver.ca> wrote:

Good Morning Malcolm,

My meeting with the BC Rugby folks re: Brockton is today. I wonder if ther is any background available, or if there is any news I can share with them.

Thanks.
s.

Stuart Mackinnon, Chair
Vancouver Board of Parks & Recreation

t: @betterparks blog: www.betterparks.ca

From: Bromley, Malcolm
Sent: May 29, 2018 7:56 PM
To: Mackinnon, Stuart
Cc: Wilton, Shauna; Park Board GM's Office; Hutch, Dave
Subject: Re: Brockton Oval refurbishment

Hi Stuart.
I'll check with staff. It rings a bell It may have been proposed earlier in this term but raised First Nations issues. Will let you know.

Malcolm Bromley
General Manager - Vancouver Park Board

On May 29, 2018, at 5:25 PM, Mackinnon, Stuart <Stuart.Mackinnon@vancouver.ca> wrote:

Good Afternoon,

I have been invited to meet with a few folks who are interested in an up-grade for Brockton. I have told them I am prepared to meet and listen but I have no information to share.

Is there information to share? Anything by way of background and/or plans would be very helpful to me.

Thank you
s.

Stuart Mackinnon, Chair
Vancouver Board of Parks & Recreation

t: @betterparks blog: www.betterparks.ca

Malcolm Bromley
General Manager - Vancouver Park Board

Malcolm Bromley
General Manager - Vancouver Park Board

From: "Mack, Tiina"
To: "Gagnon, Yann" <yann.gagnon@vancouver.ca>
"Normann, Howard" <howard.normann@vancouver.ca>
CC: "Embley, Erin" <erin.embley@vancouver.ca>
"Hutch, Dave" <dave.hutch@vancouver.ca>
Date: 6/5/2018 11:20:21 AM
Subject: RE: Condition of Running tracks (Brockton and Balaclava) - Draft Commissioner Enquiry Response for your review

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Hi Yann and Howard,

Do you have any changes to the proposed response to the Commissioners below?

I should send it soon.

Thanks very much,

Tiina

From: Mack, Tiina
Sent: Monday, May 28, 2018 3:00 PM
To: Gagnon, Yann; Hutch, Dave; Normann, Howard
Cc: Embley, Erin
Subject: Condition of Running tracks (Brockton and Balaclava) - Draft Commissioner Enquiry Response for your review

Hi,

Here is some draft text for the response back to the Commissioner enquiry from the last Board meeting about the condition of these cinder tracks.

Howard and Yann, please advise of any changes/additions you need. I think some complaints are coming into Commissioners and 311, although I've only had one that I can recall. Perhaps we can think about a machine groom sometime in June? Can I add this to the statement below?

Balaclava Park and Stanley Park- Brockton Point Oval Track Conditions

These track surfaces are comprised of petroleum by-products containing silica sometimes referred to as 'cinder'. The potential for inhalation of the silica dust generated during track maintenance is of growing concern for the health and safety of workers, and therefore maintenance work was paused on these tracks early in 2017. An independent contaminated site specialist investigated the issue and prepared a report in the fall of 2017.

It is important to recognize that while there are no concerns for the general public, the particulates are of concern to horticultural staff who manually weed and trim the oval grounds. Minimal tractor maintenance will be done on the surfaces over the next year while staff make plans and seek funds to for surface material replacement in the 2019-22 Capital Plan. The Track and Field Strategy, once approved by the Board, will give us additional direction for how to proceed at these locations.

Cheers

Tiina