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**Request for Approval to Change the Foreshore Passive Treatment System Monitoring and Maintenance Plan -
Foreshore Area of Burrard Inlet located Down Slope from the Eastern Impounding Basin, Area 2, Parkland Burnaby
Refinery, Burnaby, BC**

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The purpose of this letter is to request approval on behalf of PRBC from the Ministry of Environment and Climate Change Strategy (ENV) to reduce the frequency of monitoring and sampling associated with the Foreshore Passive Treatment System (FPTS). The 2022 Monitoring and Maintenance Plan (MMP) for the FPTS is attached to this letter and the rationale for the proposed modifications to the frequency of inspections and porewater sampling at the Foreshore Site is presented below. Any changes to the sampling frequency or termination of parts or the whole of the sampling program requires the approval of ENV (ENV, April 2018).

Background

AECOM Canada Ltd. (AECOM) has prepared the attached 2022 Monitoring and Maintenance Plan (2022 MMP) for the FPTS to maintain and assess the performance of the FPTS along the Foreshore area of Burrard Inlet located down slope from the Eastern Impounding Basin, Area 2 of the Parkland Burnaby Refinery (hereafter referred to as "the Foreshore Site") (**Figure 1**).

The FPTS was installed at the Foreshore Site between July 10 through October 30, 2017 and designed and constructed to be the final remedial action to address any free-phase and dissolved phase hydrocarbon and sheens along the Foreshore of Burrard Inlet. The FPTS consists of a larger Eastern section (60 m) and a smaller Western section (20 m). The multicomponent FPTS is comprised of permeable subsurface treatment cells for the mitigation of light non-aqueous phase liquids (LNAPL) and dissolved phase hydrocarbons impacted porewater. The FPTS also contains an oleophilic biobarrier (OBB) surface layer for the prevention of sheens. To assess the performance of the FPTS, thirty-three (33) monitoring wells (PW17-1 through PW17-33), divided into four types Up Gradient Wells, performance Wells, Sentry Wells and Compliance Wells were installed at the Site in 2017.

FPTS Basis of Design

The Remedial Action Plan (RAP) gives the basis of design for the FPTS (AECOM 2016). The FPTS was designed with built-in redundancy, or "belt-and-suspenders", and contingency. Per the *Foreshore Passive Treatment System Construction Report* (AECOM, 2017a), the following factors provide redundancy or over-design:

- The samples of contaminated water, upon which the design testing and calculations were based, were taken from wells at the Refinery because elevated light extractable petroleum hydrocarbons in water (LEPHw) concentrations were not able to be found at the Foreshore or even up gradient at the railroad;
- Based on a conservative estimate of the quantity of NAPL entering the FPTS and the ability of organoclay to absorb LNAPL, the mass of Aquagate+Organoclay (AG+OC) exceeds the minimum mass required to absorb a 30 year flow of LNAPL by a factor of seven;
- Based on a conservative estimate of the concentration of dissolved LEPHw entering the FPTS and the ability of activated carbon to absorb LEPHw, the mass of Aquagate+Powdered Activated Carbon (AG+PAC) exceeds the minimum mass required to absorb a 30 year flow of dissolved LEPHw by a factor of 4 to 46 times;
- LNAPL has not been observed in the former Interim Remedial Action (IRA) barriers since September 2011, and LNAPL was not observed during the IRA demolition or FPTS construction;
- Surface water sheens observed within the boom have been rare and have not been observed since March 2015; and,
- Up gradient remedial systems are precluding the movement of LNAPL past the Refinery property.

Summary of Modifications to the FPTS MMP 2019 to 2021

The initial FPTS MMP dated December 21, 2017 (AECOM, 2017b) was prepared to maintain and assess the performance of the FPTS and was based on the Ministry of Environment and Climate Change Strategy's (ENV) supported RAP (AECOM, 2016). The initial FPTS MMP indicated after three years, data collected at the Foreshore Site would be reviewed to assess the monitoring and sampling frequency to be proposed for subsequent years. The initial FPTS MMP is considered as equivalent to a Performance Verification Plan as defined by ENV.

An addendum to the initial MMP was prepared on December 12, 2019 to include reporting requirements for the Foreshore Site requested by ENV and to capture approved modifications to the Foreshore Monitoring and Sampling Program in 2019 (AECOM, 2019). Any changes to the sampling frequency or termination of parts or the whole of the sampling program requires the approval of ENV (ENV, April 2018).

Historical modifications to the initial FPTS MMP related to the Foreshore Monitoring and Sampling Program are summarized below in **Table A:**

Table A. Modifications of the Foreshore Monitoring and Sampling Program

Year	Modification	Comment
2019	Frequency of porewater sampling reduced from quarterly to semi-annual.	As per the sampling schedule included in the initial FPTS MMP (AECOM, 2017b), the frequency of porewater sample collection at the Site was reduced. ENV was notified of this modification to the sampling program on November 28, 2018 (Parkland, 2018); ENV provided approval on December 7, 2018 (ENV, 2018).
	Collection of surface water samples was discontinued.	52 surface water samples were collected from 12 sampling locations in 2018, none of the samples collected contained concentrations of COCs above the applicable RBMTs and in many instances were below their respective reported detection limits. ENV was notified of this modification to the sampling program on January 30, 2019 (Parkland, 2019a); ENV provided approval on February 25, 2019 (ENV, 2019a).
	Collection of porewater samples from the French drains (aka Contingency	Eight select French drain (aka CBPs) locations were sampled in June, September and December 2018; none

Year	Modification	Comment
	Biodegradation Points [CBPs] was discontinued.	of the samples collected contained concentrations of COCs above the applicable RBMTs and in many instances were below their respective reported detection limits. ENV was notified of this modification to the sampling program on May 9, 2019 (Parkland, 2019b). ENV provided approval on November 25, 2019 (ENV, 2019b).
2020	Frequency of porewater sampling reduced from semi-annual to annual.	Porewater data collected post-construction of the FPTS supported a reduced monitoring program based on the low concentrations and stability of contaminants of concern (COCs). ENV was notified of this modification to the sampling program on May 12, 2020 (Parkland, 2020). ENV provided approval on May 19, 2020 (ENV, 2020).
	June 2020 began NAPL monitoring in 12 select wells during quarterly inspections at the Site.	The additional NAPL monitoring events were implemented based on ENV's request (ENV, 2020) to ensure the acceptable performance of the FPTS in between annual monitoring events.
2021	Annual porewater sampling event moved to March.	The annual sampling event was moved to March in order to collect porewater samples during low tide in the wet season during daylight hours, due to safety concerns associated with completing the program during December at night during low tides.

Summary of and Basis for Recommended Modifications to the FPTS 2022 MMP

Based on the data collected post-construction of the FPTS, AECOM recommended continuing annual sampling of the 33 porewater monitoring wells associated with the FPTS in March 2022 (AECOM, 2021c). Elevated concentrations of LEPHw observed in Up Gradient Well PW17-16 have historically corresponded with sampling events completed in winter and spring months. Elevated concentrations of COCs in porewater samples collected from Up Gradient and Sentry Wells have historically been observed between December and April. In recent 2020 and 2021 sampling events, higher concentrations of COCs were observed in March 2021 compared to December 2020. Therefore, in order to monitor the highest concentrations over three years, it is recommended annual sampling event be conducted in the first three months of 2023.

Within the attached FPTS 2022 MMP, AECOM recommends the following:

- A reduction in the frequency of inspections of the FPTS from quarterly to semi-annual beginning in 2023 based on the following:
 - LNAPL has not been detected in any of the Foreshore monitoring wells associated with the FPTS since they were installed in 2017.
 - LNAPL has not been detected in monitoring wells located upgradient of the Foreshore Site, along the CPR ROW since 2012. Select wells immediately upgradient of the FPTS are monitored on a quarterly basis, all wells on the CPR ROW are monitored on a semi-annual basis.
 - Inspections of the FPTS completed between 2017 and 2021 indicated no significant deficiencies in the FPTS. Minor maintenance was completed to cover exposed portions of geogrid and geotextile layers and exposed bases of concrete well protectors in September 2021.

- A reduction in the frequency of porewater sample collection to biennial (every two years) in 2023, then reduced to quinquennial (every five years) in 2025, based on field and analytical data collected between 2017 and 2022:
 - The absence of sheens or measurable LNAPL within all 33 monitoring wells associated with the FPTS.
 - Since 2017 concentrations of COCs have remained below the applicable RBMTs in all 33 monitoring wells - with the exceptions noted previously in two wells (dissolved copper in PW17-5 in 2018 and LEPHw in PW17-16 between 2018 and 2019 and 2022).
 - Concentrations of PHCs have not been reported above the laboratory RDL in five (PW17-01, PW17-04, PW17-09, PW17-13, PW17-31) of the eight Up Gradient Wells. Of the remaining three Up Gradient Wells, a concentration of VPHw has been detected only once in PW17-26 (January 2018) above its RDL. Concentrations of benzene have been reported sporadically in PW17-21 above its RDL between 2018 and 2020. Concentrations of PHCs have decreased in well PW17-26 since April 2018. Detectable concentrations of benzo(a)pyrene and/or naphthalene have only been reported in two Up Gradient Wells; twice in PW17-01 in April 2018 and December 2020, and once in PW17-16 in January 2018.
 - Between 2017 and 2022 detectable concentrations of benzene and VPH have been detected in only two Sentry Wells (PW17-19 and PW17-29) associated with the Eastern FPTS. Detectable concentrations of PHCs have not been reported in any of the remaining Sentry Wells since 2017. Detectable concentrations of benzo(a)pyrene and naphthalene have only been reported once in two Sentry Wells (PW17-14 and PW17-19) in December and April 2018, respectively.
 - Concentrations of COCs have not been detected in any of the Compliance Wells above 50% of the applicable RBMTs.

The FPTS 2022 MMP for the Foreshore Site is attached as an appendix to this letter. Any changes to the sampling frequency or termination of parts or the whole of the sampling program requires the approval of ENV. The purpose of this letter is to request ENV's approval of the proposed modifications to the frequency of inspections and porewater sampling associated with the FPTS.

Rationale for Proposed Modifications to the FPTS MMP Post 2022

Site Setting

The Foreshore Site is located on the southern shore of Burrard Inlet, north of Area 2 of the Burnaby. The former LNAPL seeps observed in April 2010, were located at the base of a north facing benched slope. The upper portion of the slope (Upper Bench) is located within the Refinery fence line and is the northern berm of the Eastern Impounding Basin (EIB). The topography north of the fence line drops sharply but flattens out at a Lower Bench in the vicinity of the Refinery property line. The topography continues to drop past the Lower Bench to a pair of Canadian Pacific Railway (CPR) railway tracks. There is a steep downward embankment north of the railway tracks onto the Foreshore. Refer to the Conceptual Site Model (**Figure 2**).

Current Conditions Foreshore Site

Contaminants of Concern (COCs) associated with the Foreshore Site include: benzene, toluene, ethylbenzene, xylenes (BTEX), LEPHw, VPHw, benzo(a)pyrene, naphthalene, dissolved copper, and dissolved zinc. Based on a Human Health and Ecological Risk Assessment at the Foreshore Site, Risk-Based Management Targets (RBMTs) were developed by SLR Consulting Canada (SLR, 2014). The RBMTs were accepted by the ENV in their letter dated August 28, 2014 (ENV, 2014). RBMTs are presented below in **Table B**.

Table B. Foreshore Risk Based Management Targets

Parameter	RBMT micrograms per litre ($\mu\text{g/L}$)
LEPHw	300
VPHw	1,500

Parameter	RBMT micrograms per litre ($\mu\text{g}/\text{L}$)
Benzene	2,100
Toluene	770
Ethylbenzene	320
Xylenes	330
Naphthalene	44
Benzo(a)pyrene	0.28
Dissolved copper	6.2
Dissolved zinc	90

Chevron Canada Limited (Chevron) first observed LNAPL seeps on the north, downward slope of the Parkland (formerly Chevron) Burnaby Refinery towards Burrard Inlet during an inspection on April 21, 2010. LNAPL observations at the Foreshore Site have been collected since 2011; a measurable thickness of LNAPL was last reported in historical monitoring well P5.5-3R (associated with the former Eastern Interim Remedial Action [IRA] barrier) in September 2011. The Eastern and Western IRA barriers were removed from the Foreshore Site immediately prior to the construction of the FPTS in 2017.

Since construction of the FPTS was completed in October 2017, porewater monitoring and sampling was conducted at the Site on a monthly basis for six months (until April 2018) per the initial FPTS MMP (AECOM, 2017b). The frequency of monitoring and sampling was reduced to a quarterly basis in 2018, to a semi-annual basis in 2019, and annually in 2020, 2021 and 2022. Fourteen sampling events have been completed at the Site between November 2017 and March 2022, during that time LNAPL has not been detected in any of the 33 monitoring wells associated with the Site. **Table 1** presents monitoring data since construction of the FPTS. **Tables 2, 3 and 4** present analytical data collected at the Foreshore Site between 2017 and 2022. Since November 2017, only two wells have reported concentrations above their applicable RBMTs:

- Up Gradient Well PW17-16, is the only well in which the RBMT for LEPHw (300 micrograms per litre [$\mu\text{g}/\text{L}$]) has exceeded (January, February, March, April and December 2018, December 2019 and March 2022), with an average concentration of 311 $\mu\text{g}/\text{L}$ and a maximum of 490 $\mu\text{g}/\text{L}$. Concentrations of LEPH in PW17-16 were reported below the laboratory (RDL) in December 2020, just above the RDL in March 2021 (280 $\mu\text{g}/\text{L}$), and above the RBMT in March 2022 (330 $\mu\text{g}/\text{L}$); and
- Performance Well PW17-5 contained a concentration of dissolved copper reported above its RBMT (6.2 $\mu\text{g}/\text{L}$) in September 2018, with an average concentration of 3.23 $\mu\text{g}/\text{L}$ and a maximum of 15.8 $\mu\text{g}/\text{L}$. Between December 2018 and March 2022, concentrations of dissolved copper have been reported below the RBMT, with an average concentration of 2.3 $\mu\text{g}/\text{L}$.

Between 2017 and 2018 detectable concentrations of BTEX and/or benzo(a)pyrene were reported in six Compliance Wells (PW17-03, PW17-08, PW17-11, PW17-12, PW17-15, and PW17-30) associated with the Foreshore Site, but at concentrations well below the applicable RBMTs. Between 2019 and 2022, none of the Compliance Wells contained concentrations of LEPHw, BTEX, VPHw, and/or benzo(a)pyrene above their RDLs. Concentrations of LEPHw, VPHw, and naphthalene have not been reported above their RDLs in any of the Compliance Wells since 2017. **Graph 4** presents concentrations of benzene, VPHw and LEPHw in Compliance Wells.

Between 2017 and 2022 detectable concentrations of benzene and VPH have been detected in only two Sentry Wells (PW17-19 and PW17-29) associated with the Eastern FPTS. Detectable concentrations of LEPHw, VPHw, ethylbenzene, toluene, and xylenes have not been reported in any of the Sentry Wells since 2017. Detectable concentrations of benzo(a)pyrene and naphthalene have only been reported once in two Sentry Wells (PW17-14 and PW17-19) in December and April 2018, respectively. **Graph 5** presents concentrations of benzene, VPHw and LEPHw in Sentry Wells.

Previously reported elevated dissolved copper concentrations detected in sampling events completed in January, February, or September 2018 were determined to likely be associated with contamination resulting from field filtering samples, or contamination during sample preparation and dilution at the laboratory (AECOM 2019). Between 2019 and 2021 none of the porewater samples collected from any of the 33 porewater monitoring wells contained concentrations of dissolved copper above the applicable RBMT. Concentrations of dissolved zinc have not been detected above the applicable RBMT (90 µg/L) in any monitoring well since construction of the FPTS.

Based on the data collected post-construction of the FPTS, AECOM recommends continuing annual sampling of the FPTS in March 2023 and then reducing the frequency of sampling to biennial (every two years) after 2023 and then reduced to quinquennial (every five years) in 2025.

Current Conditions Upgradient of the Foreshore Site

CPR ROW

Field and analytical data included in the summary below has been reported in the *Canadian Pacific Railway Right-of-Way Groundwater Monitoring and Sampling Report 2021* (AECOM, 2022a).

Upgradient of the FPTS, on the CPR Right-of-Way (ROW), an 80 m interception trench was installed in 2011 to collect oily water and LNAPL that was discovered in the south ditch of the CPR ROW in April 2010. In 2012, seventeen monitoring wells were installed along the CPR ROW (**Figure 3**). Monitoring of select wells on the CPR ROW has been completed monthly and quarterly since 2012. Between 2015 and 2021, monitoring and sampling of the wells has been completed on a semi-annual basis. In summary, the historical and current conditions upgradient of the Foreshore Site are:

- LNAPL has not been detected in any of the 17 monitoring wells along the CPR ROW since July 2012, when a measurable thickness of LNAPL was detected in MW12-1S (AECOM, 2021a).
- A measurable thickness of LNAPL has not been detected in the two extraction wells (CPR-1 and CPR-2) associated with interception since monitoring began in March 2011.
- A petroleum hydrocarbon sheen was last observed in CPR-1 in July 2016 and in CPR-2 in April 2016 (AECOM, 2021a).
- For the two wells on the CPR ROW upgradient of the Western FPTS (MW12-2 and MW12-2.5), concentrations of petroleum hydrocarbons (PHCs¹) and/or naphthalene have not been detected above the Contaminated Sites Regulation (CSR) protection of marine aquatic life (AW) standards since 2013 in MW12-2, and since 2014 in MW12-2.5 (AECOM, 2021a).
- Four groundwater monitoring wells (MW12-1S, MW12-1I, MW12-5.5 and MW12-3) are located upgradient of the Eastern FPTS on the CPR ROW.
 - Three wells (MW12-1S, MW12-1I and MW12-5.5) have historically contained concentrations of PHCs including LEPHw, VHw, VPHw, benzene, toluene, xylenes and/or naphthalene above CSR AW standards since they were installed in 2012 (AECOM, 2021a).
 - Between 2016 and 2021, MW12-1S has contained concentrations of PHCs above CSR standards (refer to **Graph 1**). Concentrations of PHCs and naphthalene in MW12-1I have not exceeded the standards since 2019 (refer to **Graph 2**). Neither well has contained concentrations of dissolved metals above CSR standards since they were installed in 2012 (AECOM, 2021a).
 - Concentrations of PHCs and/or naphthalene have not been detected above CSR AW standards since 2015 in well MW12-5.5; concentrations of dissolved zinc above CSR standards have been recorded in this well since 2013 (AECOM, 2021a).

¹ PHCs include benzene, toluene, ethylbenzene, xylenes, volatile and light extractable petroleum hydrocarbons in water.

- The fourth well (MW12-3) has not contained concentrations of petroleum hydrocarbons, PAHs or dissolved metals above CSR AW standards since it was installed in 2012 (AECOM, 2022a).

Refinery Area 2

Field and analytical data included in the summary below has been reported in the 2021 Perimeter Monitoring Program and Perimeter Extraction System (AECOM, 2022b).

Upgradient of the CPR ROW, the Perimeter Extraction System (PES) is located along the northern fence line of Area 2 of the Refinery. The PES is comprised of a line of 40 closely spaced extraction wells (**Figure 2**), commissioned in 2012. The purpose of the PES is to provide a hydraulic barrier to intercept and preclude the off-site migration of LNAPL and dissolved phase PHCs in groundwater originating from the Area 2 LNAPL plume. Six monitoring wells (A2MW09-05I, U8, U9, A2MW09-10, A2MW09-11, and A2MW09-12) are located upgradient of the Eastern and Western FPTS and monitored and sampled as part of the semi-annual Perimeter Monitoring Program (PMP). In summary:

- A measurable thickness of LNAPL has not been recorded in four wells (A2MW09-05I, U8, U9, and A2MW09-12) since they were installed in 2005 (U8 and U9) and 2009 (A2MW09-05I and A2MW09-12) (AECOM, 2021b).
- A measurable thickness of LNAPL was last detected in A2MW09-10 (20 mm) in November 2011 and A2MW09-11 in May 2015 (10 mm) (AECOM, 2021b).
- Concentrations of PHCs and/or naphthalene have not been detected above CSR AW standards in well A2MW09-12 since 2010, in well U8 since 2011, and in wells U9 and A2MW09-05I since April 2018.
- Concentrations of PHCs and/or naphthalene in A2MW09-10 and A2MW09-11 were detected above CSR AW standards in 2021.
- **Graph 3** presents historical concentrations of light and volatile extractable petroleum hydrocarbons in water (LEPHw/VPHw), xylenes, and naphthalene in well A2MW09-11, as well as groundwater and historical LNAPL elevations; concentrations of PHCs and naphthalene have remained relatively stable since the PES was commissioned in 2012.

Maintenance and Inspections of the FPTS

Since construction of the FPTS was completed in 2017, AECOM completed inspections to check the integrity of the FPTS on a monthly basis until April 2018 when the frequency of inspections was reduced to quarterly. The FPTS has been monitored on a quarterly basis since that time. A detailed table of inspection results is attached in **Table 5**.

Based on inspections of the FPTS completed between 2019 and 2021, AECOM recommended that additional cobbles and/or boulders be placed over exposures of the geogrid/filter fabric down slope of Sentry Wells on both the Eastern and Western FPTS and to cover the exposed concrete bases of CBPs (AECOM, 2020; AECOM, 2021). On September 27, 2021 the FPTS was upgraded with additional rock material, refer to the 2021 Foreshore Passive Treatment System Maintenance and Inspection Memo (AECOM, 2022c).

The FPTS was visually inspected during quarterly inspection events in January, March, July, and October and 2022. Two small exposures of geogrid were observed along the contact point between the rip rap and cobble layer along the northern extent of the Western FPTS in March 2022 (AECOM, 2022d). These exposures were observed embedded underneath the northern extent of the newly laid rip rap and are not considered to compromise the effectiveness of the FPTS. Inspections indicate there are no significant deficiencies in the FPTS since it was constructed in 2017 (AECOM, 2022d). The two small exposures of geogrid along the northern extent of the Western FPTS in March 2022 were not observed during inspections completed at the Site in July and October 2022. No significant concerns were noted during inspections of the FPTS completed in July and October 2022 (AECOM, 2022e).

Summary

Since construction of the FPTS, monitoring data indicates that the FPTS is operating as designed for mitigating the migration of COCs to ecological receptors and waters of Burrard Inlet and that upgradient sources have been reduced based on:

- The absence of sheens or measurable LNAPL within the Up Gradient, Performance, Sentry and Compliance Wells of the FPTS;
- Dissolved phase COCs in all 33 monitoring are below their applicable RBMTs;
- The elevated dissolved copper concentrations detected in porewater in select 2018 sampling events were not observed between 2019 and 2021. Previous elevated dissolved copper concentrations are considered anomalous and do not appear to be related to the FPTS or Refinery operations;
- The monitoring and sampling completed in 2020 and 2021 confirms that RBMTs have been met in all 33 monitoring wells associated with the Foreshore Site;
- LNAPL has not been detected in any of the 17 monitoring wells along the CPR ROW since July 2012, when a measurable thickness of LNAPL was detected in MW12-1S (AECOM, 2021a); and,
- Of the six monitoring wells (A2MW09-05I, U8, U9, A2MW09-10, A2MW09-11, and A2MW09-12) located upgradient of the Eastern and Western FPTS, a measurable thickness of LNAPL has not been recorded in four wells (A2MW09-05I, U8, U9, and A2MW09-12) since they were installed in 2005 and 2009. LNAPL was last measured in two wells (A2MW09-10, A2MW09-11) in November 2011 and May 2015, respectively.

It has been 12 years since the initial LNAPL seep was observed and five years of monitoring post FPTS installation supports the update of the initial FPTS MMP to reflect a reduced frequency.

Any changes to the sampling frequency or termination of parts or the whole of the sampling program requires the approval of ENV, the existing frequency of sampling (annual) and inspections (quarterly) will be maintained at the Site until ENV confirms the modifications proposed are acceptable.

Yours sincerely,



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STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Parkland Refining (B.C.) Ltd. (Client) in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

AECOM shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. AECOM accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

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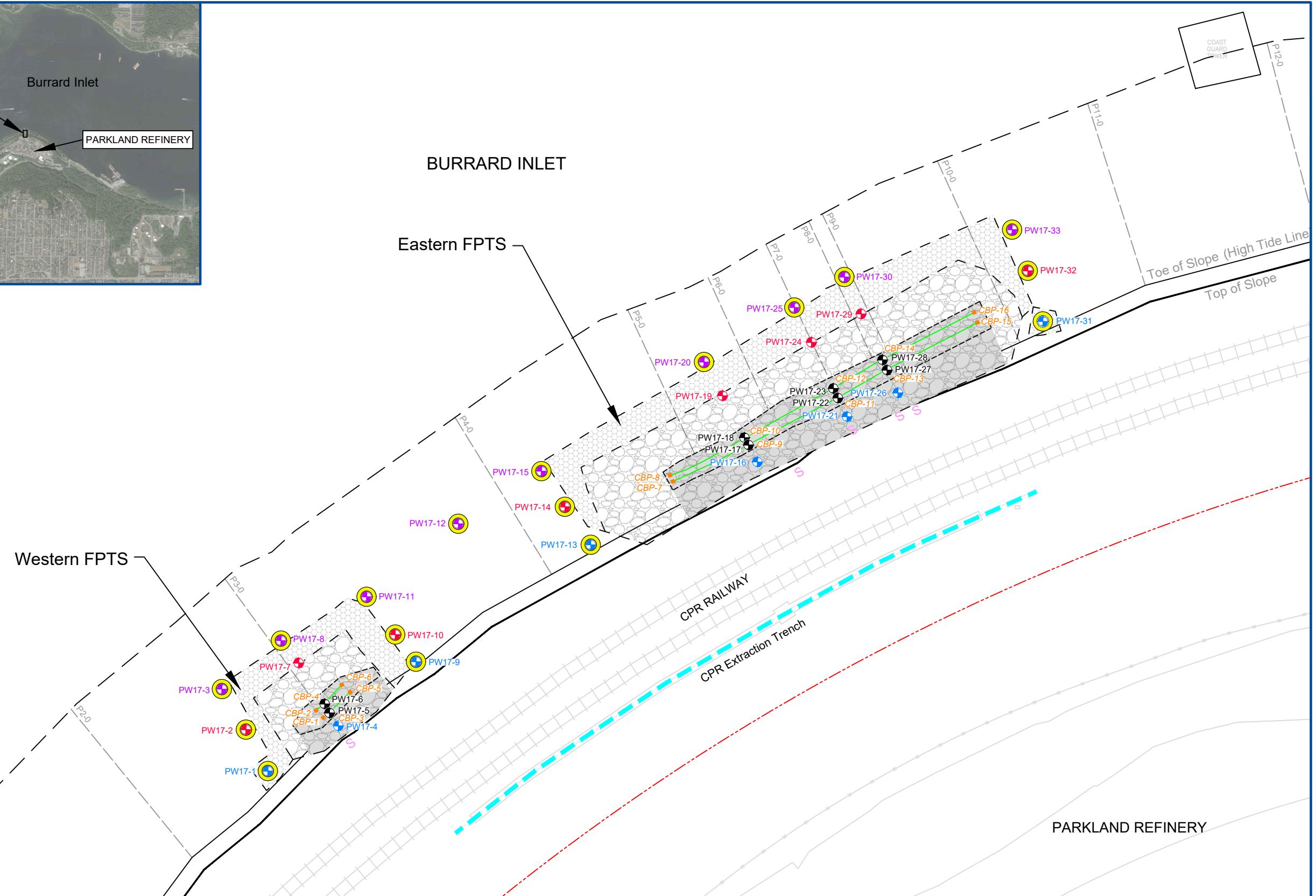
This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

FIGURES

Figure 1 – Site Map and Foreshore Sampling Locations

Figure 2 – Conceptual Site Model

Figure 3 – Area 2 Site Map



SOURCE: GOOGLE EARTH IMAGE (2016)

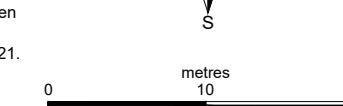
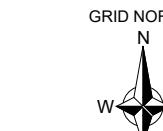
Property Line		Impermeable Sheet
Fence Line		Cobble Mat
Foreshore Sampling Transect		Rip Rap Embankment
CPR Extraction Trench		French Drain
		NAPL Seep Observed in 2010
		Contingency Biodegradational Piping

- POREWATER SAMPLES
- Compliance Well
- Sentry Well
- Performance Well
- Up Gradient Well
- ENV Requires Notifications

ABBREVIATIONS:	
COC	Contaminants of Concern
CPR	Canadian Pacific Railway
ENV	BC Ministry of Environment & Climate Change Strategy
NAPL	Non-Aqueous Phase Liquid
RBMT	Risk-Based Management Targets
NOTES:	

1

1. The Foreshore Passive Treatment System (FPTS) was installed between July 12 and October 21, 2017.
 2. The FPTS was upgraded with additional material on September 27, 2017.
 3. BC ENV requires written notification within 30 days of exceedances of COCs above RBMTs in select wells.
 4. BC ENV requires immediate verbal and written notification of COCs above Upper Cap Concentrations (Protocol 11) in all wells.



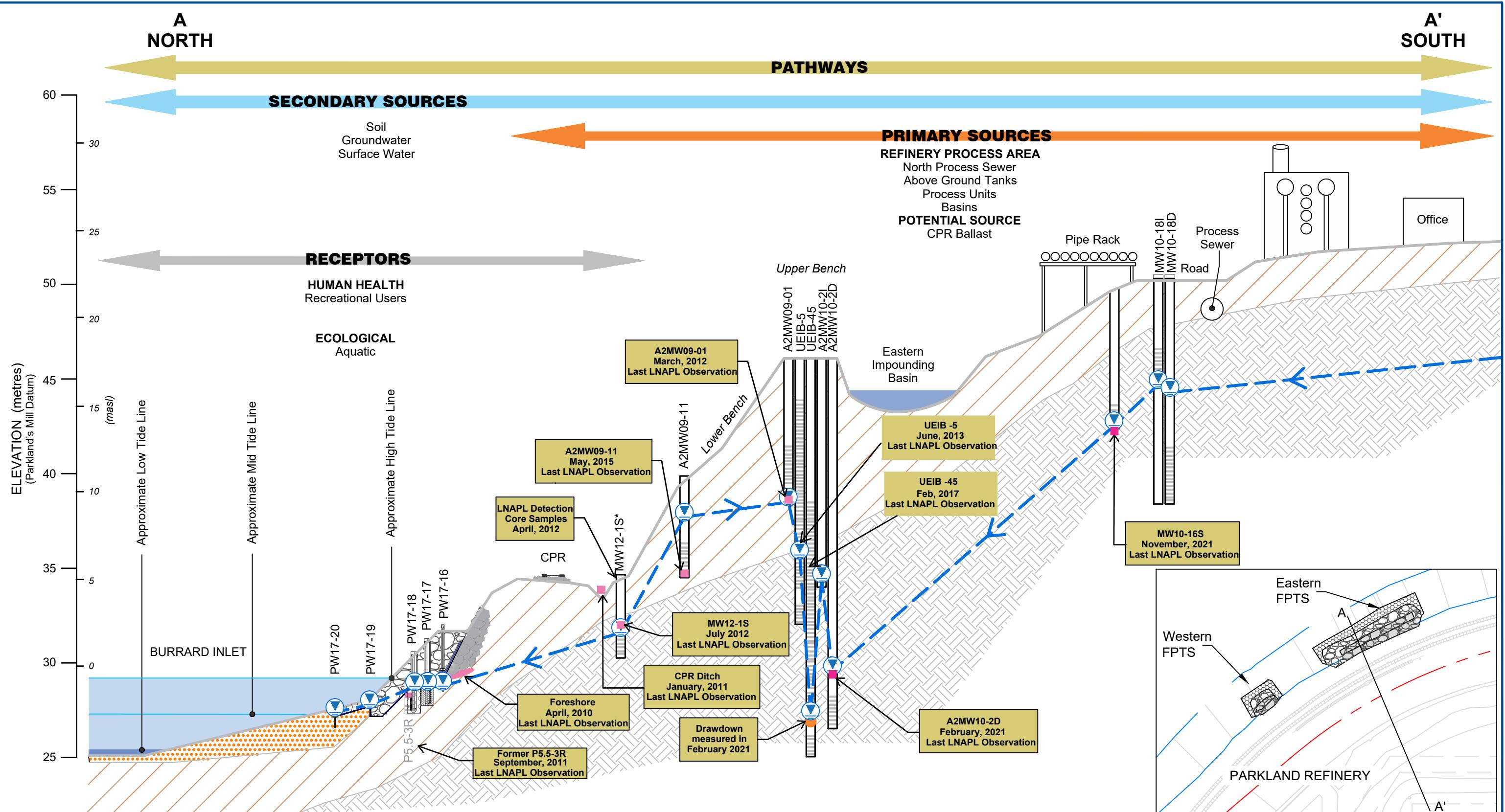
SITE MAP AND FORESHORE SAMPLING LOCATIONS

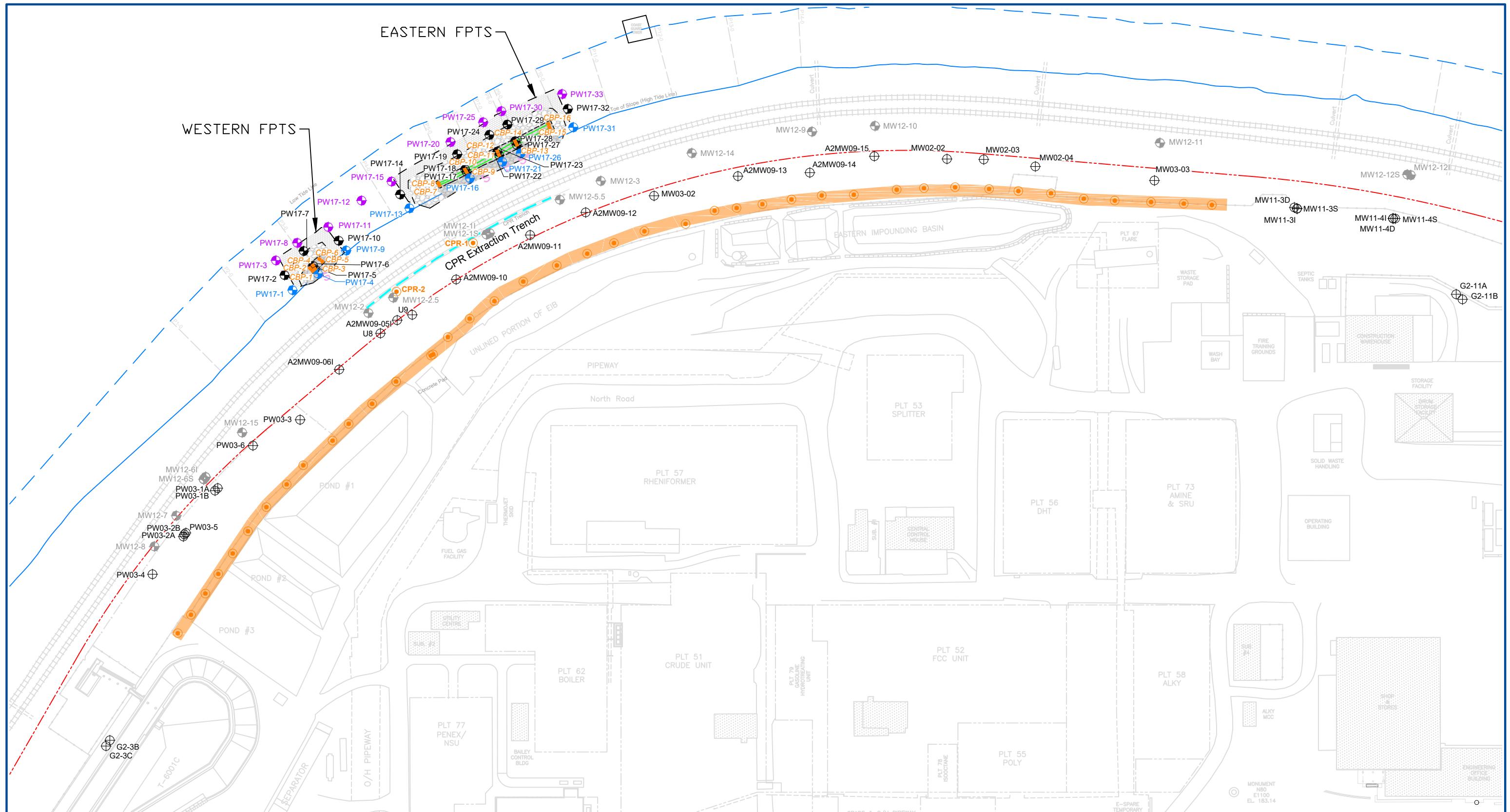
**2022 Foreshore Passive Treatment System
Monitoring and Maintenance Plan**
Foreshore Area of Burrard Inlet Down Slope from the Eastern
Compounding Basin, Area 2, Parkland Refinery, Burnaby, B.C.

PARKLAND REFINING (B.C.) LTD.

PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
January 2022	60628556	SGC	0

FIGURE 1





LEGEND:

- Property Line
- Fence Line
- Foreshore Sampling Transect
- Canadian Pacific Railway (CPR) Interception Trench
- Perimeter Extraction System (PES)

- Monitoring Well
- Sentry Monitoring Well
- Active Extraction Well
- Compliance Well
- Sentry Well
- Performance Well
- Up Gradient Well
- Impermeable Sheet
- Cobble Mat
- Rip Rap Embankment
- Foreshore Passive Treatment System
- French Drain
- Contingency Biodegradational Piping
- NAPL Seep Observed in 2010

FPTS

French Drain



metres

2022 FORESHORE PASSIVE TREATMENT SYSTEM MONITORING AND MAINTENANCE PLAN FORESHORE AREA OF BURRARD INLET DOWN SLOPE FROM THE EASTERN IMPOUNDING BASIN
Area 2 - Parkland Refinery, Burnaby, BC

PARKLAND REFINING (B.C.) LTD.

DATE:	PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
January 2022	60628556	NT	0	FIGURE 3

TABLES

Table 1 – Porewater Monitoring Data

Table 2 - Concentrations of Petroleum Hydrocarbons in Porewater Samples

Table 3 – Concentrations of Polycyclic Aromatic Hydrocarbons in Porewater Samples

Table 4 – Concentrations of Dissolved Metals in Water Samples

Table 5 – Inspection and Maintenance Notes

TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
Post-Construction FPTS - Porewater													
PW17-01	14-Nov-17	20:11	21:31	1.33	29.12	50	0.85-1.15	NM	---	ND	0.677	28.44	DUP 1
PW17-01	12-Dec-17	17:35	20:21	1.33	29.12	50	0.85-1.15	NM	---	ND	0.74	28.38	---
PW17-01	16-Jan-18	20:55	23:41	1.335	29.12	50	0.85-1.15	NM	---	ND	0.855	28.27	Monitoring well cap found off on 15-Jan-18; purged dry and re
PW17-01	13-Feb-18	20:52	22:42	1.320	29.12	50	0.85-1.15	NM	---	ND	0.607	28.51	---
PW17-01	21-Mar-18	13:58	15:11	1.237	29.12	50	0.85-1.15	NM	---	ND	0.837	28.28	DUP 6 (only dissolved metals was duplicated)
PW17-01	17-Apr-18	12:13	13:48	1.325	29.12	50	0.85-1.15	NM	---	ND	0.723	28.40	---
PW17-01	13-Jun-18	10:40	12:18	1.314	29.12	50	0.85-1.15	NM	---	ND	0.62	28.50	Well cap off; purged dry (approximately 4 litres)
PW17-01	11-Sep-18	11:30	13:36	1.33	29.12	50	0.85-1.15	NM	---	ND	0.76	28.36	---
PW17-01	4-Dec-18	19:50	22:04	1.335	29.12	50	0.85-1.15	NM	---	ND	0.75	28.37	---
PW17-01	5-Jun-19	11:26	14:04	1.333	29.12	50	0.85-1.15	20	---	ND	0.631	28.49	---
PW17-01	11-Dec-19	21:01	0:05	1.349	29.12	50	0.85-1.15	5	---	ND	0.8	28.32	---
PW17-01	22-Jun-20	11:12	13:26	1.338	29.12	50	0.85-1.15	0	---	ND	0.785	28.34	---
PW17-01	28-Sep-20	9:40	10:17	1.329	29.12	50	0.85-1.15	0	---	ND	0.811	28.31	---
PW17-01	8-Dec-20	18:20	19:12	1.326	29.12	50	0.85-1.15	45	---	ND	0.763	28.36	---
PW17-01	3-Mar-21	15:53	15:08	1.339	29.12	50	0.85-1.15	0	---	ND	0.540	28.58	Clear
PW17-01	4-Jun-21	8:28	12:00	1.329	29.12	50	0.85-1.15	5	---	ND	0.842	28.28	---
PW17-01	17-Aug-21	10:31	11:30	1.33	29.12	50	0.85-1.15	0	---	ND	0.825	28.30	---
PW17-01	15-Oct-21	9:28	11:00	1.321	29.12	50	0.85-1.15	20	---	ND	0.794	28.33	---
PW17-01	24-Jan-22	15:59	18:00	1.326	29.12	50	0.85-1.15	5	---	ND	0.773	28.35	---
PW17-01	8-Mar-22	13:51	16:00	1.322	29.12	50	0.85-1.15	10	---	ND	0.473	28.65	Clear
PW17-01	13-Jul-22	9:57	11:00	1.319	29.12	50	0.85-1.15	20	---	ND	0.865	28.26	---
PW17-01	7-Oct-22	9:04	9:00	1.337	29.12	50	0.85-1.15	30	---	ND	0.614	28.51	---
PW17-02	14-Nov-17	20:25	21:31	1.215	27.72	50	0.85-1.15	NM	---	ND	0.27	27.45	---
PW17-02	12-Dec-17	19:10	20:21	1.21	27.72	50	0.85-1.15	NM	---	ND	0.455	27.27	---
PW17-02	16-Jan-18	20:16	23:41	1.217	27.72	50	0.85-1.15	NM	---	ND	0.283	27.44	---
PW17-02	13-Feb-18	21:00	22:42	1.215	27.72	50	0.85-1.15	NM	---	ND	0.520	27.20	---
PW17-02	21-Mar-18	14:13	15:11	1.215	27.72	50	0.85-1.15	NM	---	ND	0.480	27.24	---
PW17-02	17-Apr-18	12:15	13:48	1.205	27.72	50	0.85-1.15	NM	---	ND	0.528	27.19	---
PW17-02	13-Jun-18	10:43	12:18	1.148	27.72	50	0.85-1.15	NM	---	ND	0.494	27.23	Well cap off; purged dry (approximately 4 litres)
PW17-02	11-Sep-18	11:40	13:36	1.22	27.72	50	0.85-1.15	NM	---	ND	0.260	27.46	---
PW17-02	3-Dec-18	20:10	21:24	1.215	27.72	50	0.85-1.15	NM	---	ND	0.578	27.14	---
PW17-02	5-Jun-19	11:39	14:04	1.215	27.72	50	0.85-1.15	ND	---	ND	0.541	27.18	---
PW17-02	11-Dec-19	20:35	0:05	1.206	27.72	50	0.85-1.15	15	---	ND	0.283	27.44	---
PW17-02	8-Dec-20	18:30	19:12	1.209	27.72	50	0.85-1.15	20	---	ND	0.214	27.51	---
PW17-02	3-Mar-21	15:15	15:08	1.217	27.72	50	0.85-1.15	0	---	ND	0.584	27.14	Clear

Parkland Refining (B.C.) Ltd.

Z:\Legacy\cabnny1fp001\prod\1686\Projects\URS-CHEVRON\60628556 2020 Foreshore Monitoring\500 - Deliverables\FPTS M&M Plan\Tables\20221025-Post FPTS Master Tables Foreshore_RS.xlsx

TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-02	8-Mar-22	13:55	16:00	1.202	27.72	50	0.85-1.15	20	---	ND	0.467	27.25	Clear
PW17-03	16-Nov-17	22:25	22:45	1.348	27.24	50	0.85-1.15	NM	---	ND	0.413	26.83	---
PW17-03	12-Dec-17	20:17	20:21	1.345	27.24	50	0.85-1.15	NM	---	ND	0.29	26.95	---
PW17-03	15-Jan-18	22:48	23:07	1.356	27.24	50	0.85-1.15	NM	---	ND	0.650	26.59	---
PW17-03	14-Feb-18	23:15	23:18	1.345	27.24	50	0.85-1.15	NM	---	ND	0.628	26.61	---
PW17-03	23-Mar-18	16:12	16:49	0.936	27.24	50	0.85-1.15	NM	---	ND	0.278	26.96	Well cap off on March 21; purged dry
PW17-03	16-Apr-18	13:10	13:10	1.409	27.24	50	0.85-1.15	NM	---	ND	1.338	25.90	---
PW17-03	12-Jun-18	10:25	11:35	1.338	27.24	50	0.85-1.15	NM	---	ND	0.409	26.83	---
PW17-03	10-Sep-18	12:30	12:54	1.357	27.24	50	0.85-1.15	NM	---	ND	0.623	26.62	---
PW17-03	3-Dec-18	20:17	21:24	1.351	27.24	50	0.85-1.15	NM	---	ND	0.242	27.00	---
PW17-03	4-Jun-19	12:56	13:23	1.348	27.24	50	0.85-1.15	ND	---	ND	0.998	26.24	---
PW17-03	11-Dec-19	21:59	0:05	1.349	27.24	50	0.85-1.15	10	---	ND	0.462	26.78	---
PW17-03	10-Dec-20	20:33	20:42	1.334	27.24	50	0.85-1.15	5	---	ND	0.425	26.82	---
PW17-03	3-Mar-21	14:57	15:08	1.348	27.24	50	0.85-1.15	0	---	ND	0.398	26.84	Clear
PW17-03	7-Mar-22	16:09	15:00	1.339	27.24	50	0.85-1.15	5	---	ND	0.717	26.52	Cloudy
PW17-04	15-Nov-17	19:51	22:09	3.39	31.19	50	0.45-0.75	NM	---	ND	2.705	28.48	---
PW17-04	13-Dec-17	19:15	21:04	3.355	31.19	50	0.45-0.75	NM	---	ND	2.875	28.31	---
PW17-04	16-Jan-18	21:00	23:41	3.378	31.19	50	0.45-0.75	NM	---	ND	2.784	28.41	---
PW17-04	14-Feb-18	21:41	23:18	3.377	31.19	50	0.45-0.75	NM	---	ND	2.921	28.27	---
PW17-04	23-Mar-18	15:40	16:49	3.38	31.19	50	0.45-0.75	NM	---	ND	2.857	28.33	---
PW17-04	18-Apr-18	13:30	14:28	3.355	31.19	50	0.45-0.75	NM	---	ND	2.814	28.38	---
PW17-04	13-Jun-18	11:01	12:18	3.359	31.19	50	0.45-0.75	NM	---	ND	2.883	28.31	---
PW17-04	11-Sep-18	12:13	13:36	3.01	31.19	50	0.45-0.75	NM	---	ND	2.90	28.29	Biofoul, orange
PW17-04	5-Dec-18	21:30	22:43	3.398	31.19	50	0.45-0.75	NM	---	ND	2.95	28.24	---
PW17-04	5-Jun-19	12:01	14:04	3.381	31.19	50	0.45-0.75	15	---	ND	2.94	28.25	1st sample had large amounts of biofoul, sampled again. 2nd
PW17-04	11-Dec-19	21:52	0:05	3.395	31.19	50	0.45-0.75	ND	---	ND	2.891	28.30	orange biofoul,
PW17-04	22-Jun-20	11:08	13:26	3.382	31.19	50	0.45-0.75	0	---	ND	2.956	28.23	---
PW17-04	28-Sep-20	9:35	10:17	3.114	31.19	50	0.45-0.75	0	---	ND	1.917	29.27	---
PW17-04	10-Dec-20	18:52	20:42	3.354	31.19	50	0.45-0.75	0	---	ND	2.782	28.41	---
PW17-04	4-Mar-21	15:49	17:04	3.387	31.19	50	0.45-0.75	0	---	ND	2.925	28.27	---
PW17-04	4-Jun-21	9:21	12:00	3.378	31.19	50	0.45-0.75	0	---	ND	2.954	28.24	---
PW17-04	17-Aug-21	10:17	11:30	3.351	31.19	50	0.45-0.75	5	---	ND	2.991	28.20	---
PW17-04	15-Oct-21	9:21	11:00	3.371	31.19	50	0.45-0.75	0	---	ND	2.759	28.43	---
PW17-04	24-Jan-22	15:49	18:00	3.371	31.19	50	0.45-0.75	0	---	ND	2.916	28.27	---
PW17-04	8-Mar-22	14:11	16:00	3.373	31.19	50	0.45-0.75	ND	---	ND	2.948	28.24	Cloudy, light grey, DUP1
PW17-04	13-Jul-22	9:45	11:00	3.375	31.19	50	0.45-0.75	0	---	ND	2.883	28.31	---
PW17-04	7-Oct-22	8:58	9:00	3.397	31.19	50	0.45-0.75	0	---	ND	2.980	28.21	---

TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-05	15-Nov-17	20:10	22:09	3.105	30.22	50	0.64-1.00	NM	---	ND	1.985	28.24	---
PW17-05	13-Dec-17	19:35	21:04	3.085	30.22	50	0.64-1.00	NM	---	ND	2.13	28.09	DUP 2
PW17-05	16-Jan-18	21:18	23:41	3.092	30.22	50	0.64-1.00	NM	---	ND	2.063	28.16	---
PW17-05	14-Feb-18	21:50	23:18	3.100	30.22	50	0.64-1.00	NM	---	ND	2.200	28.02	---
PW17-05	23-Mar-18	15:50	16:49	3.108	30.22	50	0.64-1.00	NM	---	ND	2.123	28.10	---
PW17-05	18-Apr-18	13:32	14:28	3.090	30.22	50	0.64-1.00	NM	---	ND	2.110	28.11	---
PW17-05	13-Jun-18	11:21	12:18	3.077	30.22	50	0.64-1.00	NM	---	ND	2.190	28.03	---
PW17-05	11-Sep-18	12:24	13:36	3.08	30.22	50	0.64-1.00	NM	---	ND	2.170	28.05	---
PW17-05	5-Dec-18	21:40	22:43	3.11	30.22	50	0.64-1.00	NM	---	ND	2.240	27.98	---
PW17-05	5-Jun-19	12:30	14:04	3.088	30.22	50	0.64-1.00	25	---	ND	2.234	27.99	---
PW17-05	11-Dec-19	22:04	0:05	3.088	30.22	50	0.64-1.00	ND	---	ND	2.092	28.13	---
PW17-05	22-Jun-20	11:13	13:26	3.099	30.22	50	0.64-1.00	0	---	ND	2.182	28.04	---
PW17-05	28-Sep-20	9:30	10:17	3.088	30.22	50	0.64-1.00	0	---	ND	2.241	27.98	---
PW17-05	10-Dec-20	17:30	20:42	3.088	30.22	50	0.64-1.00	0	---	ND	2.031	28.19	---
PW17-05	4-Mar-21	15:40	17:04	3.092	30.22	50	0.64-1.00	0	---	ND	2.125	28.10	Slightly Cloudy, Brown
PW17-05	4-Jun-21	9:24	12:00	3.071	30.22	50	0.64-1.00	0	---	ND	2.206	28.01	---
PW17-05	17-Aug-21	10:24	11:30	3.08	30.22	50	0.64-1.00	5	---	ND	2.273	27.95	---
PW17-05	15-Oct-21	9:24	11:00	3.075	30.22	50	0.64-1.00	0	---	ND	2.053	28.17	---
PW17-05	24-Jan-22	15:56	18:00	3.083	30.22	50	0.64-1.00	0	---	ND	2.091	28.13	---
PW17-05	8-Mar-22	14:41	16:00	3.079	30.22	50	0.64-1.00	ND	---	ND	2.123	28.10	Cloudy, Light brown
PW17-05	13-Jul-22	9:50	11:00	3.096	30.22	50	0.64-1.00	0	---	ND	2.080	28.14	---
PW17-05	7-Oct-22	9:01	9:00	3.102	30.22	50	0.64-1.00	0	---	ND	2.188	28.03	---
PW17-06	15-Nov-17	20:25	22:09	3.123	29.79	50	0.84-1.20	NM	---	ND	1.55	28.24	---
PW17-06	13-Dec-17	19:50	21:04	3.11	29.79	50	0.84-1.20	NM	---	ND	1.58	28.21	---
PW17-06	16-Jan-18	21:30	23:41	3.115	29.79	50	0.84-1.20	NM	---	ND	1.627	28.17	---
PW17-06	14-Feb-18	23:00	23:18	3.120	29.79	50	0.84-1.20	NM	---	ND	1.650	28.14	---
PW17-06	23-Mar-18	16:00	16:49	3.135	29.79	50	0.84-1.20	NM	---	ND	1.688	28.10	---
PW17-06	18-Apr-18	13:40	14:28	3.110	29.79	50	0.84-1.20	NM	---	ND	1.698	28.09	---
PW17-06	13-Jun-18	11:18	12:18	3.109	29.79	50	0.84-1.20	NM	---	ND	1.770	28.02	---
PW17-06	11-Sep-18	12:32	13:36	3.11	29.79	50	0.84-1.20	NM	---	ND	1.730	28.06	---
PW17-06	5-Dec-18	21:50	22:43	3.13	29.79	50	0.84-1.20	NM	---	ND	1.810	27.98	---
PW17-06	5-Jun-19	12:48	14:04	3.112	29.79	50	0.84-1.20	ND	---	ND	1.820	27.97	---
PW17-06	11-Dec-19	22:20	0:05	3.108	29.79	50	0.84-1.20	ND	---	ND	1.801	27.99	---
PW17-06	10-Dec-20	19:12	20:42	3.101	29.79	50	0.84-1.20	0	---	ND	1.770	28.02	---
PW17-06	4-Mar-21	15:32	17:04	3.119	29.79	50	0.84-1.20	0	---	ND	1.834	27.96	Clear
PW17-06	8-Mar-22	14:20	16:00	3.11	29.79	50	0.84-1.20	ND	---	ND	1.825	27.97	Cloudy Light Brown

TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-07	15-Nov-17	21:21	22:09	1.105	27.29	50	0.70-1.00	NM	---	ND	0.24	27.05	---
PW17-07	12-Dec-17	20:20	20:21	1.105	27.29	50	0.70-1.00	NM	---	ND	0.55	26.74	---
PW17-07	15-Jan-18	23:30	23:07	1.113	27.29	50	0.70-1.00	NM	---	ND	0.601	26.69	---
PW17-07	13-Feb-18	21:13	22:42	1.118	27.29	50	0.70-1.00	NM	---	ND	0.530	26.76	---
PW17-07	21-Mar-18	14:24	15:11	1.118	27.29	50	0.70-1.00	NM	---	ND	0.363	26.93	---
PW17-07	17-Apr-18	12:22	13:48	1.102	27.29	50	0.70-1.00	NM	---	ND	0.451	26.84	---
PW17-07	12-Jun-18	9:42	11:35	1.105	27.29	50	0.70-1.00	NM	---	ND	0.284	27.01	---
PW17-07	10-Sep-18	12:25	12:54	1.10	27.29	50	0.70-1.00	NM	---	ND	0.370	26.92	---
PW17-07	3-Dec-18	20:33	21:24	1.12	27.29	50	0.70-1.00	NM	---	ND	0.545	26.75	---
PW17-07	5-Jun-19	11:24	14:04	1.11	27.29	50	0.70-1.00	ND	---	ND	0.291	27.00	---
PW17-07	11-Dec-19	21:36	0:05	1.111	27.29	50	0.70-1.00	10	---	ND	0.313	26.98	---
PW17-07	10-Dec-20	20:12	20:42	1.105	27.29	50	0.70-1.00	15	---	ND	0.507	26.78	---
PW17-07	3-Mar-21	15:35	16:13	1.499	27.29	50	0.70-1.00	0	---	ND	0.332	26.96	Clear
PW17-07	8-Mar-22	14:40	16:00	1.102	27.29	50	0.70-1.00	ND	---	ND	0.281	27.01	Clear
PW17-08	16-Nov-17	22:36	22:45	1.33	26.6	50	0.84-1.20	NM	---	ND	0.92	25.68	---
PW17-08	12-Dec-17	20:55	20:21	1.345	26.6	50	0.84-1.20	NM	---	ND	0.2	26.4	---
PW17-08	15-Jan-18	23:20	23:07	1.353	26.6	50	0.84-1.20	NM	---	ND	0.414	26.19	Water pooled inside the casing (does not drain); water is below
PW17-08	14-Feb-18	22:52	23:18	1.347	26.6	50	0.84-1.20	NM	---	ND	0.448	26.152	---
PW17-08	21-Mar-18	16:20	15:11	1.356	26.6	50	0.84-1.20	NM	---	ND	0.2	26.4	---
PW17-08	16-Apr-18	13:15	13:10	1.345	26.6	50	0.84-1.20	NM	---	ND	0.239	26.361	---
PW17-08	12-Jun-18	10:50	11:35	1.388	26.6	50	0.84-1.20	NM	---	ND	0.379	26.221	Clear
PW17-08	10-Sep-18	12:41	12:54	1.353	26.6	50	0.84-1.20	NM	---	ND	0.425	26.175	---
PW17-08	3-Dec-18	21:11	21:24	1.357	26.6	50	0.84-1.20	NM	---	ND	0.235	26.365	---
PW17-08	4-Jun-19	12:50	13:23	1.346	26.6	50	0.84-1.20	ND	---	ND	0.353	26.247	Trace orange solids present
PW17-08	11-Dec-19	22:34	0:05	1.344	26.6	50	0.84-1.20	ND	---	ND	0.315	26.285	---
PW17-08	10-Dec-20	20:43	20:42	1.343	26.6	50	0.84-1.20	20	---	ND	0.238	26.362	---
PW17-08	3-Mar-21	15:24	16:13	1.414	26.6	50	0.84-1.20	0	---	ND	0.558	26.042	Clear
PW17-08	7-Mar-22	15:45	16:00	1.346	26.6	50	0.84-1.20	ND	---	ND	0.256	26.344	Cloudy
PW17-09	14-Nov-17	20:43	21:31	1.37	28.55	50	0.85-1.15	NM	---	ND	0.53	28.02	---
PW17-09	12-Dec-17	18:00	20:21	1.36	28.55	50	0.85-1.15	NM	---	ND	0.61	27.94	---
PW17-09	15-Jan-18	20:43	23:07	1.366	28.55	50	0.85-1.15	NM	---	ND	1.659	27.18	---
PW17-09	13-Feb-18	21:33	22:42	1.360	28.55	50	0.85-1.15	NM	---	ND	0.350	28.20	---
PW17-09	21-Mar-18	14:48	15:11	1.380	28.55	50	0.85-1.15	NM	---	ND	0.678	27.87	---
PW17-09	17-Apr-18	12:30	13:48	1.358	28.55	50	0.85-1.15	NM	---	ND	0.540	28.01	---
PW17-09	12-Jun-18	9:35	11:35	1.360	28.55	50	0.85-1.15	NM	---	ND	0.579	27.97	Orange water
PW17-09	10-Sep-18	11:33	12:54	1.370	28.55	50	0.85-1.15	NM	---	ND	0.530	28.02	---
PW17-09	4-Dec-18	19:55	22:04	1.370	28.55	50	0.85-1.15	NM	---	ND	0.561	27.99	---

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TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-09	5-Jun-19	11:05	14:04	1.368	28.55	50	0.85-1.15	5	---	ND	0.575	27.98	Orange colour, some orange solids
PW17-09	11-Dec-19	20:20	0:05	1.369	28.55	50	0.85-1.15	5	---	ND	0.506	28.04	Orange biofoul
PW17-09	22-Jun-20	11:03	13:26	1.368	28.55	50	0.85-1.15	0	---	ND	0.551	28.00	---
PW17-09	28-Sep-20	9:22	10:17	1.369	28.55	50	0.85-1.15	0	---	ND	0.514	28.04	---
PW17-09	10-Dec-20	18:28	20:42	1.364	28.55	50	0.85-1.15	45	---	ND	0.709	27.84	---
PW17-09	3-Mar-21	15:57	16:13	1.370	28.55	50	0.85-1.15	20	---	ND	0.564	27.99	Clear; Biofoul
PW17-09	4-Jun-21	9:13	12:00	1.354	28.55	50	0.85-1.15	10	---	ND	0.292	28.26	---
PW17-09	17-Aug-21	10:08	11:30	1.350	28.55	50	0.85-1.15	60	---	ND	0.415	28.14	---
PW17-09	15-Oct-21	9:17	11:00	1.354	28.55	50	0.85-1.15	5	---	ND	0.455	28.10	---
PW17-09	24-Jan-22	15:43	18:00	1.362	28.55	50	0.85-1.15	10	---	ND	0.451	28.10	---
PW17-09	8-Mar-22	13:30	16:00	1.364	28.55	50	0.85-1.15	15	---	ND	0.456	28.09	Silty
PW17-09	13-Jul-22	9:35	11:00	1.364	28.55	50	0.85-1.15	20	---	ND	0.596	27.95	---
PW17-09	7-Oct-22	8:56	9:00	1.378	28.55	50	0.85-1.15	35	---	ND	0.416	28.13	---
PW17-10	15-Nov-17	20:57	22:09	1.395	27.25	50	0.85-1.15	NM	---	ND	0.17	27.08	---
PW17-10	12-Dec-17	20:10	20:21	1.38	27.25	50	0.85-1.15	NM	---	ND	0.205	27.05	---
PW17-10	15-Jan-18	20:52	23:07	1.375	27.25	50	0.85-1.15	NM	---	ND	0.397	26.86	---
PW17-10	13-Feb-18	21:25	22:42	1.375	27.25	50	0.85-1.15	NM	---	ND	0.477	26.77	---
PW17-10	21-Mar-18	14:36	15:11	1.385	27.25	50	0.85-1.15	NM	---	ND	0.32	26.93	---
PW17-10	17-Apr-18	12:35	13:48	1.368	27.25	50	0.85-1.15	NM	---	ND	0.295	26.96	---
PW17-10	12-Jun-18	9:37	11:35	1.367	27.25	50	0.85-1.15	NM	---	ND	0.322	26.93	Clear
PW17-10	10-Sep-18	11:27	12:54	1.38	27.25	50	0.85-1.15	NM	---	ND	0.400	26.85	---
PW17-10	3-Dec-18	20:43	21:24	1.396	27.25	50	0.85-1.15	NM	---	ND	0.385	26.87	---
PW17-10	5-Jun-19	11:07	14:04	1.379	27.25	50	0.85-1.15	5	---	ND	0.431	26.82	---
PW17-10	11-Dec-19	21:25	0:05	1.378	27.25	50	0.85-1.15	5	---	ND	0.362	26.89	---
PW17-10	10-Dec-20	19:45	20:42	1.371	27.25	50	0.85-1.15	20	---	ND	0.378	26.87	---
PW17-10	3-Mar-21	15:39	16:13	1.379	27.25	50	0.85-1.15	0	---	ND	0.823	26.43	Clear
PW17-10	8-Mar-22	14:23	16:00	1.373	27.25	50	0.85-1.15	15	---	ND	0.191	27.06	Clear
PW17-11	16-Nov-17	22:13	22:45	1.415	26.72	50	0.74-1.10	NM	---	ND	0.21	26.51	---
PW17-11	12-Dec-17	20:57	20:21	1.44	26.72	50	0.74-1.10	NM	---	ND	0.42	26.3	---
PW17-11	15-Jan-18	23:00	23:07	1.444	26.72	50	0.74-1.10	NM	---	ND	0.558	26.16	---
PW17-11	14-Feb-18	22:38	23:18	1.425	26.72	50	0.74-1.10	NM	---	ND	0.735	25.99	---
PW17-11	21-Mar-18	15:50	15:11	0.457	26.72	50	0.74-1.10	NM	---	ND	0.24	26.48	---
PW17-11	16-Apr-18	13:20	13:10	1.439	26.72	50	0.74-1.10	NM	---	ND	0.488	26.23	---
PW17-11	12-Jun-18	10:30	11:35	1.442	26.72	50	0.74-1.10	NM	---	ND	0.618	26.10	---
PW17-11	10-Sep-18	12:34	12:54	1.456	26.72	50	0.74-1.10	NM	---	ND	0.771	25.95	---
PW17-11	3-Dec-18	20:56	21:24	1.455	26.72	50	0.74-1.10	NM	---	ND	0.513	26.21	---
PW17-11	4-Jun-19	12:41	13:23	1.45	26.72	50	0.74-1.10	ND	---	ND	0.728	25.99	Trace orange solids present

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2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-11	10-Dec-19	22:15	23:27	1.454	26.72	50	0.74-1.10	5	---	ND	0.691	26.03	---
PW17-11	10-Dec-20	20:28	20:42	1.44	26.72	50	0.74-1.10	5	---	ND	0.457	26.26	---
PW17-11	3-Mar-21	15:07	16:13	1.451	26.72	50	0.74-1.10	0	---	ND	0.404	26.32	Clear
PW17-11	7-Mar-22	16:11	15:00	1.445	26.72	50	0.74-1.10	5	---	ND	0.384	26.34	Cloudy Light Grey
PW17-12	15-Nov-17	21:45	22:09	1.465	27.03	50	0.85-1.15	NM	---	ND	0.255	26.78	Slightly turbid
PW17-12	12-Dec-17	20:31	20:21	1.455	27.03	50	0.85-1.15	NM	---	ND	0.62	26.41	---
PW17-12	15-Jan-18	22:48	23:07	1.463	27.03	50	0.85-1.15	NM	---	ND	0.902	26.13	---
PW17-12	14-Feb-18	22:15	23:18	1.455	27.03	50	0.85-1.15	NM	---	ND	0.498	26.53	---
PW17-12	21-Mar-18	15:05	15:11	1.466	27.03	50	0.85-1.15	NM	---	ND	0.372	26.66	DUP 7 (only dissolved metals was duplicated)
PW17-12	17-Apr-18	12:42	13:48	1.446	27.03	50	0.85-1.15	NM	---	ND	0.408	26.62	---
PW17-12	12-Jun-18	10:12	11:35	1.452	27.03	50	0.85-1.15	NM	---	ND	0.763	26.27	---
PW17-12	10-Sep-18	12:57	12:54	1.466	27.03	50	0.85-1.15	NM	---	ND	0.793	26.24	---
PW17-12	4-Dec-18	21:57	22:04	1.46	27.03	50	0.85-1.15	NM	---	ND	0.93	26.10	---
PW17-12	4-Jun-19	12:32	13:23	1.46	27.03	50	0.85-1.15	5	---	ND	1.024	26.01	Orange solids present
PW17-12	10-Dec-19	22:04	23:27	1.460	27.03	50	0.85-1.15	5	---	ND	0.870	26.16	---
PW17-12	10-Dec-20	19:53	20:42	1.448	27.03	50	0.85-1.15	5	---	ND	0.357	26.67	---
PW17-12	3-Mar-21	14:51	16:13	1.458	27.03	50	0.85-1.15	0	---	ND	0.542	26.49	Clear
PW17-12	7-Mar-22	16:20	15:00	1.446	27.03	50	0.85-1.15	ND	---	ND	0.734	26.30	Clear
PW17-13	14-Nov-17	21:00	21:31	1.33	28.9	50	0.85-1.15	NM	---	ND	0.405	28.5	---
PW17-13	12-Dec-17	18:10	20:21	1.32	28.9	50	0.85-1.15	NM	---	ND	0.39	28.51	---
PW17-13	15-Jan-18	21:30	23:07	1.323	28.9	50	0.85-1.15	NM	---	ND	0.466	28.43	---
PW17-13	13-Feb-18	21:55	22:42	1.328	28.9	50	0.85-1.15	NM	---	ND	0.523	28.38	---
PW17-13	21-Mar-18	15:38	15:11	1.335	28.9	50	0.85-1.15	NM	---	ND	0.398	28.50	---
PW17-13	17-Apr-18	12:48	13:48	1.310	28.9	50	0.85-1.15	NM	---	ND	0.492	28.41	---
PW17-13	12-Jun-18	8:55	11:35	1.315	28.9	50	0.85-1.15	NM	---	ND	0.476	28.42	---
PW17-13	10-Sep-18	10:30	12:54	1.325	28.9	50	0.85-1.15	NM	---	ND	0.497	28.40	---
PW17-13	4-Dec-18	20:05	22:04	1.325	28.9	50	0.85-1.15	NM	---	ND	0.470	28.43	---
PW17-13	5-Jun-19	10:44	14:04	1.325	28.9	50	0.85-1.15	ND	---	ND	0.500	28.40	---
PW17-13	10-Dec-19	22:45	23:27	1.334	28.9	50	0.85-1.15	85	---	ND	0.497	28.40	---
PW17-13	22-Jun-20	10:58	13:26	1.516	28.9	50	0.85-1.15	0	---	ND	0.512	28.39	---
PW17-13	28-Sep-20	9:15	10:17	1.325	28.9	50	0.85-1.15	0	---	ND	0.533	28.37	---
PW17-13	8-Dec-20	19:23	19:12	1.309	28.9	50	0.85-1.15	0	---	ND	0.473	28.43	---
PW17-13	3-Mar-21	16:13	16:13	1.325	28.9	50	0.85-1.15	0	---	ND	0.355	28.55	Clear
PW17-13	4-Jun-21	9:07	12:00	1.309	28.9	50	0.85-1.15	15	---	ND	0.534	28.37	---
PW17-13	17-Aug-21	10:00	11:30	1.31	28.9	50	0.85-1.15	30	---	ND	0.558	28.34	---
PW17-13	15-Oct-21	9:10	11:00	1.311	28.9	50	0.85-1.15	20	---	ND	0.374	28.53	---
PW17-13	24-Jan-22	15:39	18:00	1.315	28.9	50	0.85-1.15	5	---	ND	0.438	28.46	---

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TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-13	8-Mar-22	13:22	16:00	1.314	28.9	50	0.85-1.15	35	---	ND	0.420	28.48	Cloudy, light grey
PW17-13	13-Jul-22	9:31	11:00	1.319	28.9	50	0.85-1.15	15	---	ND	0.452	28.45	---
PW17-13	7-Oct-22	8:52	9:00	1.338	28.9	50	0.85-1.15	5	---	ND	0.350	28.55	---
PW17-14	14-Nov-17	21:15	21:31	1.4	27.83	50	0.85-1.15	NM	---	ND	0.19	27.64	---
PW17-14	12-Dec-17	18:20	20:21	1.39	27.83	50	0.85-1.15	NM	---	ND	0.37	27.46	---
PW17-14	15-Jan-18	21:08	23:07	1.398	27.83	50	0.85-1.15	NM	---	ND	0.388	27.44	---
PW17-14	13-Feb-18	21:30	22:42	1.388	27.83	50	0.85-1.15	NM	---	ND	0.474	27.36	---
PW17-14	21-Mar-18	15:30	15:11	1.398	27.83	50	0.85-1.15	NM	---	ND	0.48	27.35	---
PW17-14	17-Apr-18	12:51	13:48	1.388	27.83	50	0.85-1.15	NM	---	ND	0.224	27.61	---
PW17-14	12-Jun-18	8:59	11:35	1.388	27.83	50	0.85-1.15	NM	---	ND	0.484	27.35	---
PW17-14	10-Sep-18	10:47	12:54	1.400	27.83	50	0.85-1.15	NM	---	ND	0.015	27.82	---
PW17-14	4-Dec-18	20:10	22:04	1.395	27.83	50	0.85-1.15	NM	---	ND	0.13	27.70	---
PW17-14	5-Jun-19	10:50	14:04	1.390	27.83	50	0.85-1.15	10	---	ND	0.13	27.70	---
PW17-14	10-Dec-19	22:30	23:27	1.385	27.83	50	0.85-1.15	ND	---	ND	0.182	27.65	Orange colour/biofoul pieces present
PW17-14	8-Dec-20	19:42	19:12	1.386	27.83	50	0.85-1.15	0	---	ND	0.104	27.73	---
PW17-14	3-Mar-21	15:51	16:13	1.394	27.83	50	0.85-1.15	0	---	ND	0.145	27.69	Clear
PW17-14	7-Mar-22	15:50	15:00	1.378	27.83	50	0.85-1.15	15	---	ND	0.184	27.65	Cloudy
PW17-15	16-Nov-17	21:54	22:45	1.405	27.03	50	0.84-1.20	NM	---	ND	0.295	26.73	---
PW17-15	13-Dec-17	20:10	21:04	1.39	27.03	50	0.84-1.20	NM	---	ND	0.39	26.64	---
PW17-15	15-Jan-18	22:48	23:07	1.394	27.03	50	0.84-1.20	NM	---	ND	0.857	26.17	---
PW17-15	14-Feb-18	22:20	23:18	1.388	27.03	50	0.84-1.20	NM	---	ND	0.514	26.52	---
PW17-15	21-Mar-18	15:17	15:11	1.386	27.03	50	0.84-1.20	NM	---	ND	0.306	26.72	---
PW17-15	17-Apr-18	13:01	13:48	1.385	27.03	50	0.84-1.20	NM	---	ND	0.595	26.44	---
PW17-15	12-Jun-18	11:59	11:35	1.387	27.03	50	0.84-1.20	NM	---	ND	1.213	25.82	---
PW17-15	10-Sep-18	13:03	12:54	1.399	27.03	50	0.84-1.20	NM	---	ND	0.910	26.12	---
PW17-15	4-Dec-18	21:47	22:04	1.395	27.03	50	0.84-1.20	NM	---	ND	0.935	26.10	---
PW17-15	4-Jun-19	12:28	13:23	1.395	27.03	50	0.84-1.20	5	---	ND	1.013	26.02	Trace silty sediments present
PW17-15	10-Dec-19	21:48	23:27	1.400	27.03	50	0.84-1.20	5	---	ND	0.780	26.25	---
PW17-15	10-Dec-20	20:11	20:42	1.381	27.03	50	0.84-1.20	5	---	ND	0.452	26.58	---
PW17-15	3-Mar-21	14:32	16:13	1.493	27.03	50	0.84-1.20	0	---	ND	0.484	26.55	Clear
PW17-15	7-Mar-22	15:51	15:00	1.390	27.03	50	0.84-1.20	ND	---	ND	0.736	26.29	Cloudy; Light Grey
PW17-16	15-Nov-17	22:00	22:09	3.270	31.44	50	0.45-0.75	NM	---	ND	2.590	28.85	---
PW17-16	13-Dec-17	20:20	21:04	3.260	31.44	50	0.45-0.75	NM	---	ND	2.645	28.79	---
PW17-16	16-Jan-18	21:57	23:41	3.223	31.44	50	0.45-0.75	NM	---	ND	2.646	28.79	DUP1
PW17-16	14-Feb-18	23:20	23:18	2.826	31.44	50	0.45-0.75	NM	---	ND	2.714	28.73	DUP1
PW17-16	22-Mar-18	16:30	15:57	3.265	31.44	50	0.45-0.75	NM	---	ND	2.631	28.81	---

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POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-16	18-Apr-18	12:56	14:28	3.255	31.44	50	0.45-0.75	NM	---	ND	2.615	28.83	DUP-1
PW17-16	13-Jun-18	12:20	12:18	3.226	31.44	50	0.45-0.75	NM	---	ND	2.690	28.75	DUP-2
PW17-16	11-Sep-18	12:30	13:36	3.240	31.44	50	0.45-0.75	NM	---	ND	2.660	28.78	---
PW17-16	5-Dec-18	22:50	22:43	3.270	31.44	50	0.45-0.75	NM	---	ND	2.690	28.75	---
PW17-16	5-Jun-19	13:07	14:04	3.271	31.44	50	0.45-0.75	ND	---	ND	2.733	28.71	Orange in colour
PW17-16	12-Dec-19	22:10	0:44	3.254	31.44	50	0.45-0.75	ND	---	ND	2.488	28.95	Orange biofoul
PW17-16	22-Jun-20	10:38	13:26	3.261	31.44	50	0.45-0.75	0	---	ND	2.699	28.74	---
PW17-16	28-Sep-20	8:44	10:17	3.265	31.44	50	0.45-0.75	0	---	ND	2.820	28.62	---
PW17-16	9-Dec-20	20:14	19:58	3.262	31.44	50	0.45-0.75	0	---	ND	2.603	28.84	DUP-1
PW17-16	4-Mar-21	14:52	17:04	3.267	31.44	50	0.45-0.75	0	---	ND	2.669	28.77	Clear; DUP-3
PW17-16	4-Jun-21	8:55	12:00	3.266	31.44	50	0.45-0.75	5	---	ND	2.699	28.74	---
PW17-16	17-Aug-21	9:43	11:30	3.205	31.44	50	0.45-0.75	0	---	ND	2.862	28.58	---
PW17-16	15-Oct-21	9:01	11:00	3.234	31.44	50	0.45-0.75	25	---	ND	2.726	28.71	---
PW17-16	24-Jan-22	15:33	18:00	3.228	31.44	50	0.45-0.75	5	---	ND	2.645	28.80	---
PW17-16	8-Mar-22	15:17	16:00	3.262	31.44	50	0.45-0.75	ND	---	ND	2.808	28.63	Clear
PW17-16	13-Jul-22	9:16	11:00	3.258	31.44	50	0.45-0.75	0	---	ND	2.635	28.81	---
PW17-16	7-Oct-22	8:46	9:00	3.282	31.44	50	0.45-0.75	0	---	ND	2.918	28.52	---
PW17-17	15-Nov-17	22:36	22:09	3.205	30.76	50	0.64-1.00	NM	---	ND	1.935	28.82	---
PW17-17	13-Dec-17	20:36	21:04	3.200	30.760	50	0.64-1.00	NM	---	ND	2.000	28.76	DUP 3
PW17-17	16-Jan-18	21:00	23:41	3.188	30.76	50	0.64-1.00	NM	---	ND	1.958	28.8	DUP2
PW17-17	14-Feb-18	23:23	23:18	3.197	30.76	50	0.64-1.00	NM	---	ND	1.928	28.83	DUP2
PW17-17	22-Mar-18	16:50	15:57	3.200	30.76	50	0.64-1.00	NM	---	ND	1.932	28.83	---
PW17-17	18-Apr-18	13:02	14:28	3.195	30.76	50	0.64-1.00	NM	---	ND	1.930	28.83	DUP-2
PW17-17	13-Jun-18	12:29	12:18	2.187	30.76	50	0.64-1.00	NM	---	ND	2.006	28.75	---
PW17-17	11-Sep-18	12:40	13:36	3.200	30.76	50	0.64-1.00	NM	---	ND	2.000	28.76	DUP-1
PW17-17	5-Dec-18	23:00	22:43	3.210	30.76	50	0.64-1.00	NM	---	ND	2.015	28.75	---
PW17-17	5-Jun-19	13:10	14:04	3.200	30.76	50	0.64-1.00	ND	---	ND	2.070	28.69	Orange in colour
PW17-17	12-Dec-19	21:55	0:44	3.202	30.76	50	0.64-1.00	ND	---	ND	1.889	28.87	Orange biofoul
PW17-17	22-Jun-20	10:44	13:26	3.187	30.76	50	0.64-1.00	0	---	ND	2.075	28.69	Very minor orange biofoul on probe
PW17-17	28-Sep-20	8:40	10:17	3.197	30.76	50	0.64-1.00	0	---	ND	2.196	28.56	---
PW17-17	9-Dec-20	20:21	19:58	3.190	30.76	50	0.64-1.00	0	---	ND	1.973	28.79	---
PW17-17	4-Mar-21	15:14	17:04	3.200	30.76	50	0.64-1.00	0	---	ND	2.003	28.76	Clear; Biofoul
PW17-17	4-Jun-21	8:57	12:00	3.194	30.76	50	0.64-1.00	0	---	ND	2.067	28.69	---
PW17-17	17-Aug-21	9:49	11:30	3.190	30.73	50	0.64-1.00	0	---	ND	2.202	28.53	---
PW17-17	15-Oct-21	9:05	11:00	3.193	30.73	50	0.64-1.00	10	---	ND	2.060	28.67	---
PW17-17	24-Jan-22	15:36	18:00	3.188	30.73	50	0.64-1.00	0	---	ND	2.000	28.73	---
PW17-17	8-Mar-22	15:13	16:00	3.188	30.73	50	0.64-1.00	ND	---	ND	2.141	28.59	Cloudy, Light Orange
PW17-17	13-Jul-22	9:22	11:00	3.192	30.73	50	0.64-1.00	0	---	ND	2.005	28.73	---

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-17	7-Oct-22	8:48	9:00	3.212	30.73	50	0.64-1.00	0	---	ND	2.245	28.49	---
PW17-18	15-Nov-17	22:15	22:09	3.420	30.6	50	0.84-1.20	NM	---	ND	1.780	28.82	DUP 3; water has a black tint
PW17-18	13-Dec-17	21:00	21:04	3.390	30.6	50	0.84-1.20	NM	---	ND	1.840	28.76	---
PW17-18	16-Jan-18	22:49	23:41	3.398	30.6	50	0.84-1.20	NM	---	ND	1.810	28.79	DUP3
PW17-18	14-Feb-18	23:25	23:18	3.290	30.6	50	0.84-1.20	NM	---	ND	1.868	28.73	DUP3
PW17-18	22-Mar-18	16:50	15:57	3.405	30.6	50	0.84-1.20	NM	---	ND	1.802	28.80	---
PW17-18	18-Apr-18	13:20	14:28	3.390	30.6	50	0.84-1.20	NM	---	ND	1.800	28.80	DUP-3
PW17-18	13-Jun-18	12:17	12:18	2.356	30.6	50	0.84-1.20	NM	---	ND	1.856	28.74	DUP-3
PW17-18	11-Sep-18	12:55	13:36	3.400	30.6	50	0.84-1.20	NM	---	ND	1.870	28.73	DUP-2
PW17-18	5-Dec-18	23:10	22:43	3.410	30.6	50	0.84-1.20	NM	---	ND	1.850	28.75	---
PW17-18	5-Jun-19	13:25	14:04	3.394	30.6	50	0.84-1.20	ND	---	ND	1.935	28.67	---
PW17-18	12-Dec-19	21:40	0:44	3.404	30.6	50	0.84-1.20	5	---	ND	1.756	28.84	---
PW17-18	9-Dec-20	20:40	19:58	3.389	30.6	50	0.84-1.20	40	---	ND	1.830	28.77	---
PW17-18	4-Mar-21	15:33	17:04	3.399	30.6	50	0.84-1.20	15	---	ND	1.864	28.74	Clear; Hydrocarbon-like odour
PW17-18	8-Mar-22	15:18	16:00	1.393	30.6	50	0.84-1.20	ND	---	ND	1.972	28.63	Cloudy, Light Orange
PW17-19	14-Nov-17	22:12	21:31	1.355	28.21	50	0.87-1.15	NM	---	ND	0.81	27.4	---
PW17-19	12-Dec-17	18:40	20:21	1.325	28.21	50	0.87-1.15	NM	---	ND	0.49	27.72	---
PW17-19	15-Jan-18	21:58	23:07	0.934	28.21	50	0.87-1.15	NM	---	ND	0.753	27.46	---
PW17-19	13-Feb-18	22:12	22:42	1.323	28.21	50	0.87-1.15	NM	---	ND	0.769	27.44	---
PW17-19	21-Mar-18	16:05	15:11	1.321	28.21	50	0.87-1.15	NM	---	ND	0.748	27.46	---
PW17-19	16-Apr-18	12:17	13:10	1.323	28.21	50	0.87-1.15	NM	---	ND	0.585	27.63	---
PW17-19	12-Jun-18	9:37	11:35	1.319	28.21	50	0.87-1.15	NM	---	ND	0.604	27.61	---
PW17-19	10-Sep-18	11:05	12:54	1.330	28.210	50	0.87-1.15	NM	---	ND	0.790	27.42	---
PW17-19	4-Dec-18	20:25	22:04	1.325	28.210	50	0.87-1.15	NM	---	ND	0.410	27.80	Porewater has a slight orange colour
PW17-19	4-Jun-19	12:13	13:23	0.920	28.210	50	0.87-1.15	40	---	ND	0.428	27.78	Orange solids present
PW17-19	10-Dec-19	21:15	23:27	1.333	28.210	50	0.87-1.15	20	---	ND	0.439	27.77	Orange colour
PW17-19	8-Dec-20	19:19	19:12	1.320	28.210	50	0.87-1.15	40	---	ND	0.279	27.93	---
PW17-19	3-Mar-21	16:16	16:13	1.331	28.210	50	0.87-1.15	35	---	ND	0.422	27.79	Clear; Biofoul
PW17-19	7-Mar-22	15:30	15:00	1.319	28.210	50	0.87-1.15	90	---	ND	0.449	27.76	Silty
PW17-20	14-Nov-17	21:30	21:31	1.49	27.58	50	0.64-1.00	NM	---	ND	0.2	27.38	---
PW17-20	12-Dec-17	19:30	20:21	1.48	27.58	50	0.64-1.00	NM	---	ND	0.32	27.26	---
PW17-20	15-Jan-18	21:44	23:07	1.482	27.58	50	0.64-1.00	NM	---	ND	0.303	27.28	---
PW17-20	13-Feb-18	22:00	22:42	1.480	27.58	50	0.64-1.00	NM	---	ND	0.610	26.97	---
PW17-20	21-Mar-18	16:20	15:11	1.488	27.58	50	0.64-1.00	NM	---	ND	0.597	26.98	DUP 8 (only dissolved metals was duplicated)
PW17-20	16-Apr-18	12:35	13:10	0.833	27.58	50	0.64-1.00	NM	---	ND	0.473	27.11	---
PW17-20	12-Jun-18	9:28	11:35	1.478	27.58	50	0.64-1.00	NM	---	ND	0.477	27.10	---

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-20	10-Sep-18	11:13	12:54	1.490	27.58	50	0.64-1.00	NM	---	ND	0.250	27.33	---
PW17-20	4-Dec-18	20:30	22:04	1.490	27.58	50	0.64-1.00	NM	---	ND	0.290	27.29	---
PW17-20	4-Jun-19	12:15	13:23	1.481	27.58	50	0.64-1.00	35	---	ND	0.440	27.14	---
PW17-20	10-Dec-19	21:29	23:27	1.484	27.58	50	0.64-1.00	20	---	ND	0.500	27.08	---
PW17-20	9-Dec-20	21:35	19:58	1.471	27.58	50	0.64-1.00	20	---	ND	0.211	27.37	---
PW17-20	3-Mar-21	14:22	16:13	1.487	27.58	50	0.64-1.00	35	---	ND	0.204	27.38	Clear; Biofoul
PW17-20	7-Mar-22	15:20	15:00	1.477	27.58	50	0.64-1.00	15	---	ND	0.160	27.42	Clear
PW17-21	15-Nov-17	---	22:09	2.645	31.38	50	0.45-0.75	NM	---	ND	dry	NC	well not sampled - infilled with silt and sand at bottom; well is dry
PW17-21	13-Dec-17	---	21:04	2.62	31.38	50	0.45-0.75	NM	---	ND	dry	NC	well not sampled - infilled with silt and sand at bottom; well is dry
PW17-21	16-Jan-18	NS	23:41	2.621	31.38	50	0.45-0.75	NM	---	ND	2.445	28.94	Well not sampled - infilled with silt and sand at bottom; well is dry
PW17-21	15-Feb-18	NS	23:52	2.613	31.38	50	0.45-0.75	NM	---	ND	Dry	NA	Well not sampled - infilled with silt and sand at bottom; well is dry
PW17-21	22-Mar-18	16:20	15:57	3.708	31.38	20	0.45-0.75	NM	---	ND	2.642	28.74	Well was repaired and sampled
PW17-21	18-Apr-18	12:25	14:28	3.708	31.38	20	0.45-0.75	NM	---	ND	2.162	29.22	---
PW17-21	14-Jun-18	11:06	13:03	3.71	31.38	20	0.45-0.75	NM	---	ND	2.480	28.90	---
PW17-21	12-Sep-18	14:45	14:18	3.368	31.38	20	0.45-0.75	NM	---	ND	2.573	28.81	---
PW17-21	6-Dec-18	20:47	23:21	3.35	31.38	20	0.45-0.75	NM	---	ND	2.380	29.00	---
PW17-21	5-Jun-19	13:28	14:04	3.36	31.38	20	0.45-0.75	ND	---	ND	2.550	28.83	---
PW17-21	12-Dec-19	21:20	0:44	3.352	31.38	20	0.45-0.75	ND	---	ND	1.221	30.16	---
PW17-21	22-Jun-20	11:18	13:26	3.36	31.38	20	0.45-0.75	0	---	ND	2.572	28.81	---
PW17-21	28-Sep-20	8:54	10:17	3.361	31.38	20	0.45-0.75	0	---	ND	2.598	28.78	---
PW17-21	9-Dec-20	19:10	19:58	3.354	31.38	20	0.45-0.75	0	---	ND	2.312	29.07	---
PW17-21	3-Mar-21	16:56	16:13	3.379	31.38	20	0.45-0.75	0	---	ND	2.371	29.01	Clear
PW17-21	4-Jun-21	8:41	12:00	3.358	31.38	20	0.45-0.75	0	---	NM	NM	NM	Tip of probe not attached - Solinst Model 102 narrow interface
PW17-21	17-Aug-21	10:41	11:30	3.367	31.38	20	0.45-0.75	0	---	ND	2.736	28.64	Mouse nest
PW17-21	15-Oct-21	9:34	11:00	3.355	31.38	20	0.45-0.75	5	---	ND	2.430	2.52	Empty mouse nest
PW17-21	24-Jan-22	15:30	18:00	ND	31.38	20	0.45-0.75	0	---	NM	NM	NM	No sheen observed on surface water within well.
PW17-21	7-Mar-22	16:39	15:00	3.358	31.38	20	0.45-0.75	ND	---	NM	2.521	28.86	Clear
PW17-21	13-Jul-22	9:11	11:00	3.369	31.38	20	0.45-0.75	0	---	ND	2.479	28.90	---
PW17-21	7-Oct-22	9:09	9:00	3.36	31.38	20	0.45-0.75	0	---	ND	2.811	28.57	---
PW17-22	15-Nov-17	23:24	22:09	3.52	31.14	50	0.64-1.00	NM	---	ND	2.385	28.76	---
PW17-22	13-Dec-17	20:35	21:04	3.515	31.14	50	0.64-1.00	NM	---	ND	2.415	28.73	DUP 4
PW17-22	16-Jan-18	22:50	23:41	3.501	31.14	50	0.64-1.00	NM	---	ND	2.362	28.78	DUP4
PW17-22	15-Feb-18	21:15	23:52	3.490	31.14	50	0.64-1.00	NM	---	ND	2.391	28.75	DUP4
PW17-22	22-Mar-18	16:10	15:57	3.515	31.14	50	0.64-1.00	NM	---	ND	2.262	28.88	DUP4
PW17-22	18-Apr-18	12:32	14:28	3.500	31.14	50	0.64-1.00	NM	---	ND	2.238	28.90	DUP-4
PW17-22	14-Jun-18	10:45	13:03	3.495	31.14	50	0.64-1.00	NM	---	ND	2.265	28.88	DUP-4
PW17-22	10-Sep-18	13:23	12:54	3.507	31.14	50	0.64-1.00	NM	---	ND	2.443	28.70	---

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PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-22	5-Dec-18	23:12	22:43	3.53	31.14	50	0.64-1.00	NM	---	ND	2.3	28.84	DUP-3
PW17-22	5-Jun-19	13:47	14:04	3.528	31.14	50	0.64-1.00	ND	---	ND	2.461	28.68	DUP-2
PW17-22	12-Dec-19	21:36	0:44	3.513	31.14	50	0.64-1.00	ND	---	ND	2.211	28.93	DUP-1
PW17-22	22-Jun-20	10:54	13:26	3.515	31.14	50	0.64-1.00	0	---	ND	2.491	28.65	---
PW17-22	28-Sep-20	8:49	10:17	3.513	31.14	50	0.64-1.00	0	---	ND	2.608	28.53	---
PW17-22	9-Dec-20	19:31	19:58	3.526	31.14	50	0.64-1.00	0	---	ND	2.286	28.85	DUP-3
PW17-22	4-Mar-21	15:00	17:04	3.519	31.14	50	0.64-1.00	0	---	ND	2.361	28.78	Clear
PW17-22	4-Jun-21	8:39	12:00	3.513	31.14	50	0.64-1.00	0	---	ND	2.45	28.69	---
PW17-22	17-Aug-21	9:39	11:30	3.49	31.14	50	0.64-1.00	0	---	ND	2.591	28.55	---
PW17-22	15-Oct-21	8:56	11:00	3.488	31.14	50	0.64-1.00	5	---	ND	2.423	28.72	---
PW17-22	24-Jan-22	15:32	18:00	3.495	31.14	50	0.64-1.00	0	---	ND	2.344	28.80	---
PW17-22	9-Mar-22	14:25	16:00	3.515	31.14	50	0.64-1.00	ND	---	ND	2.554	28.59	Clear
PW17-22	13-Jul-22	9:04	11:00	3.506	31.14	50	0.64-1.00	0	---	ND	2.357	28.78	---
PW17-22	7-Oct-22	8:43	9:00	3.533	31.14	50	0.64-1.00	0	---	ND	2.634	28.51	---
PW17-23	15-Nov-17	23:35	22:09	3.22	30.58	50	0.84-1.20	NM	---	ND	1.815	28.76	---
PW17-23	13-Dec-17	20:55	21:04	3.2	30.58	50	0.84-1.20	NM	---	ND	1.86	28.72	---
PW17-23	16-Jan-18	22:58	23:41	3.183	30.58	50	0.84-1.20	NM	---	ND	1.755	28.82	---
PW17-23	15-Feb-18	21:22	23:52	3.205	30.58	50	0.84-1.20	NM	---	ND	1.825	28.76	---
PW17-23	22-Mar-18	16:20	15:57	3.234	30.58	50	0.84-1.20	NM	---	ND	1.728	28.85	---
PW17-23	18-Apr-18	12:42	14:28	3.200	30.58	50	0.84-1.20	NM	---	ND	2.695	27.89	---
PW17-23	14-Jun-18	11:32	13:03	3.200	30.58	50	0.84-1.20	NM	---	ND	1.720	28.86	---
PW17-23	10-Sep-18	13:30	12:54	3.197	30.58	50	0.84-1.20	NM	---	ND	1.863	28.72	---
PW17-23	6-Dec-18	21:05	23:21	3.220	30.58	50	0.84-1.20	NM	---	ND	1.720	28.86	DUP-4
PW17-23	5-Jun-19	13:44	14:04	3.185	30.58	50	0.84-1.20	ND	---	ND	1.910	28.67	DUP-3
PW17-23	12-Dec-19	21:56	0:44	3.212	30.58	50	0.84-1.20	ND	---	ND	1.673	28.91	DUP-2
PW17-23	9-Dec-20	20:06	19:58	3.202	30.58	50	0.84-1.20	0	---	ND	1.781	28.80	---
PW17-23	4-Mar-21	15:15	17:04	3.028	30.58	50	0.84-1.20	0	---	ND	1.771	28.81	Clear
PW17-23	9-Mar-22	14:34	16:00	3.207	30.58	50	0.84-1.20	ND	---	ND	2.007	28.57	Green cap off on arrival, Clear
PW17-24	15-Nov-17	20:45	22:09	1.345	28.12	50	0.85-1.15	NM	---	ND	0.465	27.66	---
PW17-24	12-Dec-17	18:50	20:21	1.33	28.12	50	0.85-1.15	NM	---	ND	0.26	27.86	---
PW17-24	15-Jan-18	23:20	23:07	1.342	28.12	50	0.85-1.15	NM	---	ND	0.487	27.64	---
PW17-24	13-Feb-18	22:45	22:42	1.317	28.12	50	0.85-1.15	NM	---	ND	0.520	27.60	---
PW17-24	21-Mar-18	16:55	15:11	1.398	28.12	50	0.85-1.15	NM	---	ND	0.503	27.62	---
PW17-24	17-Apr-18	13:15	13:48	1.330	28.12	50	0.85-1.15	NM	---	ND	0.588	27.53	---
PW17-24	12-Jun-18	9:43	11:35	1.328	28.12	50	0.85-1.15	NM	---	ND	0.474	27.65	---
PW17-24	10-Sep-18	10:50	12:54	1.320	28.12	50	0.85-1.15	NM	---	ND	0.460	27.66	---
PW17-24	4-Dec-18	20:45	22:04	1.340	28.12	50	0.85-1.15	NM	---	ND	0.375	27.75	Well covered with sand

Parkland Refining (B.C.) Ltd.

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20221025-Post FPTS Master Tables Foreshore_RS.xlsx

TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-24	4-Jun-19	11:59	13:23	1.345	28.12	50	0.85-1.15	10	---	ND	0.512	27.61	Orange solids present
PW17-24	10-Dec-19	20:42	23:27	1.341	28.12	50	0.85-1.15	5	---	ND	0.465	27.66	orange colour
PW17-24	8-Dec-20	19:07	19:12	1.337	28.12	50	0.85-1.15	5	---	ND	0.673	27.45	---
PW17-24	3-Mar-21	16:12	16:13	1.345	28.12	50	0.85-1.15	0	---	ND	0.478	27.64	Clear
PW17-24	9-Mar-22	15:18	16:00	1.339	28.12	50	0.85-1.15	15	---	ND	0.388	27.73	Cloudy, Light Orange/brown
PW17-25	14-Nov-17	22:01	21:31	1.285	27.43	50	0.85-1.15	NM	---	ND	0.22	27.21	DUP 2
PW17-25	12-Dec-17	19:45	20:21	1.27	27.43	50	0.85-1.15	NM	---	ND	0.27	27.16	---
PW17-25	15-Jan-18	22:03	23:07	1.278	27.43	50	0.85-1.15	NM	---	ND	0.299	27.13	---
PW17-25	13-Feb-18	22:33	22:42	1.281	27.43	50	0.85-1.15	NM	---	ND	0.295	27.14	---
PW17-25	21-Mar-18	16:47	15:11	1.282	27.43	50	0.85-1.15	NM	---	ND	0.262	27.17	DUP 9 (only dissolved metals was duplicated)
PW17-25	16-Apr-18	12:47	13:10	1.263	27.43	50	0.85-1.15	NM	---	ND	0.225	27.21	---
PW17-25	12-Jun-18	9:51	11:35	1.263	27.43	50	0.85-1.15	NM	---	ND	0.259	27.17	---
PW17-25	10-Sep-18	11:00	12:54	1.270	27.430	50	0.85-1.15	NM	---	ND	0.270	27.16	---
PW17-25	4-Dec-18	20:50	22:04	1.275	27.430	50	0.85-1.15	NM	---	ND	0.200	27.23	Well covered with sand
PW17-25	4-Jun-19	12:03	13:23	1.268	27.430	50	0.85-1.15	ND	---	ND	0.290	27.14	---
PW17-25	10-Dec-19	21:18	23:27	1.273	27.430	50	0.85-1.15	10	---	ND	0.254	27.18	---
PW17-25	9-Dec-20	21:18	19:58	1.260	27.430	50	0.85-1.15	0	---	ND	0.265	27.17	---
PW17-25	3-Mar-21	14:15	16:13	1.274	27.430	50	0.85-1.15	0	---	ND	0.196	27.23	DUP-2
PW17-25	7-Mar-22	15:11	15:00	1.268	27.430	50	0.85-1.15	25	---	ND	0.262	27.17	Clear
PW17-26	16-Nov-17	19:53	22:45	3.792	31.81	50	0.45-0.75	NM	---	ND	2.786	29.02	---
PW17-26	13-Dec-17	21:10	21:04	3.868	31.81	50	0.45-0.75	NM	---	ND	2.865	28.94	---
PW17-26	16-Jan-18	22:48	23:41	3.389	31.81	50	0.45-0.75	NM	---	ND	2.807	29	---
PW17-26	15-Feb-18	21:20	23:52	3.775	31.81	50	0.45-0.75	NM	---	ND	2.940	28.87	---
PW17-26	22-Mar-18	13:22	15:57	3.805	31.81	50	0.45-0.75	NM	---	ND	2.838	28.97	DUP 1
PW17-26	17-Apr-18	14:11	13:48	3.790	31.81	50	0.45-0.75	NM	---	ND	2.842	28.97	---
PW17-26	14-Jun-18	12:25	13:03	3.790	31.81	50	0.45-0.75	NM	---	ND	2.920	28.89	---
PW17-26	12-Sep-18	13:05	14:18	3.380	31.81	50	0.45-0.75	NM	---	ND	2.960	28.85	---
PW17-26	6-Dec-18	21:22	23:21	3.810	31.81	50	0.45-0.75	NM	---	ND	0.735	31.08	---
PW17-26	6-Jun-19	11:21	14:48	3.800	31.81	50	0.45-0.75	ND	---	ND	3.125	28.69	---
PW17-26	12-Dec-19	22:27	0:44	3.789	31.81	50	0.45-0.75	65	---	ND	2.926	28.88	DUP-3, orange biofoul
PW17-26	22-Jun-20	10:33	13:26	3.789	31.81	50	0.45-0.75	0	---	ND	3.094	28.72	---
PW17-26	28-Sep-20	9:00	10:17	3.793	31.81	50	0.45-0.75	0	---	ND	3.185	28.63	---
PW17-26	9-Dec-20	18:50	19:58	3.786	31.81	50	0.45-0.75	140	---	ND	2.933	28.88	---
PW17-26	4-Mar-21	15:38	17:04	3.805	31.81	50	0.45-0.75	0	---	ND	2.978	28.83	Clear; Biofoul; DUP-1
PW17-26	4-Jun-21	8:34	12:00	3.785	31.81	50	0.45-0.75	15	---	ND	3.087	28.72	---
PW17-26	17-Aug-21	9:22	11:30	3.775	31.81	50	0.45-0.75	10	---	ND	3.150	28.66	---

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-26	15-Oct-21	8:47	11:00	3.777	31.81	50	0.45-0.75	25	---	ND	2.945	28.87	---
PW17-26	24-Jan-22	15:24	18:00	3.794	31.81	50	0.45-0.75	30	---	ND	2.907	28.90	---
PW17-26	9-Mar-22	13:40	16:00	3.780	31.81	50	0.45-0.75	ND	---	ND	3.061	28.75	DUP 3, Cloudy Orange
PW17-26	13-Jul-22	8:54	11:00	3.803	31.81	50	0.45-0.75	0	---	ND	2.918	28.89	---
PW17-26	7-Oct-22	8:33	9:00	3.809	31.81	50	0.45-0.75	0	---	ND	3.236	28.57	---
PW17-27	16-Nov-17	20:25	22:45	3.815	31.4	50	0.64-1.00	NM	---	ND	2.54	28.86	---
PW17-27	13-Dec-17	21:20	21:04	3.805	31.4	50	0.64-1.00	NM	---	ND	2.650	28.75	---
PW17-27	16-Jan-18	22:55	23:41	3.807	31.4	50	0.64-1.00	NM	---	ND	2.555	28.85	---
PW17-27	15-Feb-18	21:28	23:52	3.808	31.4	50	0.64-1.00	NM	---	ND	2.538	28.86	---
PW17-27	22-Mar-18	15:40	15:57	3.818	31.4	50	0.64-1.00	NM	---	ND	2.481	28.92	DUP 2
PW17-27	17-Apr-18	14:05	13:48	3.800	31.4	50	0.64-1.00	NM	---	ND	2.507	28.89	---
PW17-27	14-Jun-18	12:20	13:03	3.800	31.4	50	0.64-1.00	NM	---	ND	2.570	28.83	---
PW17-27	12-Sep-18	13:01	14:18	3.810	31.4	50	0.64-1.00	NM	---	ND	2.660	28.74	DUP-3
PW17-27	6-Dec-18	21:35	23:21	3.820	31.4	50	0.64-1.00	NM	---	ND	2.600	28.80	DUP-5
PW17-27	6-Jun-19	11:50	14:48	3.810	31.4	50	0.64-1.00	ND	---	ND	2.763	28.64	---
PW17-27	12-Dec-19	20:50	0:44	3.817	31.4	50	0.64-1.00	10	---	ND	2.418	28.98	---
PW17-27	22-Jun-20	10:50	13:26	3.809	31.4	50	0.64-1.00	0	---	ND	2.766	28.63	---
PW17-27	28-Sep-20	9:48	10:17	3.806	31.4	50	0.64-1.00	0	---	ND	2.861	28.54	---
PW17-27	9-Dec-20	19:25	19:58	3.807	31.4	50	0.64-1.00	0	---	ND	2.532	28.87	---
PW17-27	4-Mar-21	15:10	17:04	3.812	31.4	50	0.64-1.00	0	---	ND	2.589	28.81	Clear; DUP-2
PW17-27	4-Jun-21	8:31	12:00	3.784	31.4	50	0.64-1.00	0	---	ND	2.724	28.68	---
PW17-27	17-Aug-21	9:29	11:30	3.800	31.4	50	0.64-1.00	0	---	ND	2.855	28.55	---
PW17-27	15-Oct-21	8:51	11:00	3.805	31.4	50	0.64-1.00	10	---	ND	2.522	28.88	---
PW17-27	24-Jan-22	15:27	18:00	3.806	31.4	50	0.64-1.00	10	---	ND	2.573	28.83	---
PW17-27	9-Mar-22	14:45	16:00	3.782	31.4	50	0.64-1.00	ND	---	ND	2.803	28.60	Cloudy Light Grey
PW17-27	13-Jul-22	8:48	11:00	3.805	31.4	50	0.64-1.00	0	---	ND	2.593	28.81	---
PW17-27	7-Oct-22	8:36	9:00	3.814	31.4	50	0.64-1.00	0	---	ND	2.891	28.51	---
PW17-28	16-Nov-17	20:15	22:45	3.24	30.53	50	0.84-1.20	NM	---	ND	1.403	29.13	---
PW17-28	13-Dec-17	21:25	21:04	3.225	30.53	50	0.84-1.20	NM	---	ND	1.760	28.77	---
PW17-28	16-Jan-18	23:00	23:41	3.225	30.53	50	0.84-1.20	NM	---	ND	1.688	28.85	---
PW17-28	15-Feb-18	21:38	23:52	3.228	30.53	50	0.84-1.20	NM	---	ND	1.778	28.75	---
PW17-28	22-Mar-18	15:55	15:57	3.243	30.53	50	0.84-1.20	NM	---	ND	1.612	28.92	DUP 3
PW17-28	18-Apr-18	12:30	14:28	3.225	30.53	50	0.84-1.20	NM	---	ND	1.639	28.89	---
PW17-28	14-Jun-18	12:04	13:03	3.220	30.53	50	0.84-1.20	NM	---	ND	1.690	28.84	---
PW17-28	12-Sep-18	13:10	14:18	3.230	30.53	50	0.84-1.20	NM	---	ND	1.730	28.80	DUP-4
PW17-28	6-Dec-18	21:49	23:21	3.245	30.53	50	0.84-1.20	NM	---	ND	1.670	28.86	DUP-6
PW17-28	6-Jun-19	12:18	14:48	3.236	30.53	50	0.84-1.20	ND	---	ND	1.778	28.75	Particulate matter/sediments present

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-28	12-Dec-19	21:04	0:44	3.178	30.53	50	0.84-1.20	5	---	ND	1.577	28.95	---
PW17-28	9-Dec-20	19:47	19:58	3.224	30.53	50	0.84-1.20	0	---	ND	1.671	28.86	---
PW17-28	4-Mar-21	15:02	17:04	3.233	30.53	50	0.84-1.20	0	---	ND	1.697	28.83	Clear
PW17-28	9-Mar-22	15:12	16:00	3.226	30.53	50	0.84-1.20	5	---	ND	1.908	28.62	Cloudy Light Grey
PW17-29	14-Nov-17	22:30	21:31	1.410	28.24	50	0.85-1.15	NM	---	ND	0.63	27.61	---
PW17-29	12-Dec-17	19:00	20:21	1.395	28.24	50	0.85-1.15	NM	---	ND	0.610	27.63	---
PW17-29	15-Jan-18	23:28	23:07	1.400	28.24	50	0.85-1.15	NM	---	ND	0.661	27.58	---
PW17-29	14-Feb-18	21:17	23:18	1.401	28.24	50	0.85-1.15	NM	---	ND	0.637	27.60	---
PW17-29	21-Mar-18	21:17	15:11	1.407	28.24	50	0.85-1.15	NM	---	ND	0.623	27.62	---
PW17-29	17-Apr-18	13:25	13:48	1.394	28.24	50	0.85-1.15	NM	---	ND	0.595	27.65	---
PW17-29	12-Jun-18	11:30	11:35	1.397	28.24	50	0.85-1.15	NM	---	ND	0.603	27.64	Silty to clear water
PW17-29	11-Sep-18	12:53	13:36	1.401	28.24	50	0.85-1.15	NM	---	ND	0.556	27.68	---
PW17-29	4-Dec-18	21:05	22:04	1.405	28.24	50	0.85-1.15	NM	---	ND	0.57	27.67	Well covered with sand
PW17-29	4-Jun-19	11:46	13:23	1.402	28.24	50	0.85-1.15	10	---	ND	0.458	27.78	---
PW17-29	10-Dec-19	20:24	23:27	1.405	28.24	50	0.85-1.15	5	---	ND	0.542	27.70	---
PW17-29	8-Dec-20	20:13	19:12	1.292	28.24	50	0.85-1.15	0	---	ND	0.572	27.67	---
PW17-29	3-Mar-21	16:30	16:13	1.397	28.24	50	0.85-1.15	10	---	ND	0.456	27.78	Clear
PW17-29	7-Mar-22	14:53	15:00	1.396	28.24	50	0.85-1.15	25	---	ND	0.634	27.61	Cloudy Light Grey
PW17-30	14-Nov-17	21:45	21:31	1.37	27.39	50	0.84-1.20	NM	---	ND	0.200	27.19	---
PW17-30	12-Dec-17	20:00	20:21	1.36	27.39	50	0.84-1.20	NM	---	ND	0.200	27.19	---
PW17-30	15-Jan-18	22:14	23:07	1.373	27.39	50	0.84-1.20	NM	---	ND	0.210	27.18	---
PW17-30	14-Feb-18	21:06	23:18	1.363	27.39	50	0.84-1.20	NM	---	ND	0.210	27.18	---
PW17-30	21-Mar-18	17:05	15:11	1.387	27.39	50	0.84-1.20	NM	---	ND	0.324	27.07	---
PW17-30	16-Apr-18	12:55	13:10	1.362	27.39	50	0.84-1.20	NM	---	ND	0.221	27.17	---
PW17-30	12-Jun-18	11:38	11:35	1.359	27.39	50	0.84-1.20	NM	---	ND	0.202	27.19	---
PW17-30	11-Sep-18	13:09	13:36	1.377	27.39	50	0.84-1.20	NM	---	ND	0.253	27.14	---
PW17-30	4-Dec-18	21:10	22:04	1.37	27.39	50	0.84-1.20	NM	---	ND	0.240	27.15	Well covered with sand
PW17-30	4-Jun-19	11:46	13:23	1.371	27.39	50	0.84-1.20	5	---	ND	0.238	27.15	---
PW17-30	10-Dec-19	20:59	23:27	1.273	27.39	50	0.84-1.20	10	---	ND	0.178	27.21	---
PW17-30	9-Dec-20	19:10	19:58	1.354	27.39	50	0.84-1.20	0	---	ND	0.225	27.17	---
PW17-30	3-Mar-21	14:08	16:13	1.371	27.39	50	0.84-1.20	0	---	ND	0.134	27.26	Clear
PW17-30	7-Mar-22	15:00	15:00	1.366	27.39	50	0.84-1.20	10	---	ND	0.192	27.20	Clear
PW17-31	14-Nov-17	22:50	21:31	1.28	29.31	50	0.85-1.15	NM	---	ND	0.490	28.82	---
PW17-31	11-Dec-17	16:41	19:34	1.26	29.31	50	0.85-1.15	NM	---	ND	0.660	28.65	---
PW17-31	16-Jan-18	22:45	23:41	1.254	29.31	50	0.85-1.15	NM	---	ND	0.628	28.68	---
PW17-31	14-Feb-18	20:30	23:18	1.255	29.31	50	0.85-1.15	NM	---	ND	0.620	28.69	---

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TABLE 1
POREWATER MONITORING DATA 2022
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-31	22-Mar-18	14:04	15:57	1.273	29.31	50	0.85-1.15	NM	---	ND	0.464	28.85	---
PW17-31	17-Apr-18	13:40	13:48	1.254	29.31	50	0.85-1.15	NM	---	ND	0.453	28.86	---
PW17-31	12-Jun-18	11:22	11:35	1.258	29.31	50	0.85-1.15	NM	---	ND	0.563	28.75	---
PW17-31	12-Sep-18	13:40	14:18	1.270	29.31	50	0.85-1.15	NM	---	ND	0.571	28.74	---
PW17-31	4-Dec-18	21:40	22:04	1.270	29.31	50	0.85-1.15	NM	---	ND	0.690	28.62	---
PW17-31	4-Jun-19	11:06	13:23	1.261	29.31	50	0.85-1.15	ND	---	ND	0.522	28.79	---
PW17-31	10-Dec-19	19:50	23:27	1.264	29.31	50	0.85-1.15	5	---	ND	0.571	28.74	---
PW17-31	22-Jun-20	10:27	13:26	1.266	29.31	50	0.85-1.15	0	---	ND	0.464	28.85	---
PW17-31	28-Sep-20	9:10	10:17	1.262	29.31	50	0.85-1.15	10	---	ND	0.529	28.78	---
PW17-31	8-Dec-20	20:36	19:12	1.258	29.31	50	0.85-1.15	10	---	ND	0.527	28.78	---
PW17-31	4-Mar-21	14:40	17:04	1.266	29.31	50	0.85-1.15	10	---	ND	0.738	28.57	Clear
PW17-31	4-Jun-21	8:23	12:00	1.253	29.31	50	0.85-1.15	0	---	ND	0.178	29.13	---
PW17-31	17-Aug-21	9:10	11:30	1.255	29.31	50	0.85-1.15	0	---	ND	0.405	28.91	---
PW17-31	15-Oct-21	8:41	11:00	1.254	29.31	50	0.85-1.15	25	---	ND	0.379	28.93	---
PW17-31	24-Jan-22	15:17	18:00	1.263	29.31	50	0.85-1.15	5	---	ND	0.388	28.92	---
PW17-31	7-Mar-22	NM	15:00	NM	29.31	50	0.85-1.15	NM	---	ND	NM	NM	Wooden platform on top of well, unable to access, well not m
PW17-31	13-Jul-22	8:42	11:00	1.260	29.31	50	0.85-1.15	5	---	ND	0.369	28.94	Lid handle broken, difficult to open
PW17-31	7-Oct-22	9:21	9:00	1.278	29.31	50	0.85-1.15	0	---	ND	0.359	28.95	Lid fixed
PW17-32	14-Nov-17	22:40	21:31	1.34	27.58	50	0.85-1.15	NM	---	ND	0.150	27.43	---
PW17-32	11-Dec-17	16:55	19:34	1.33	27.58	50	0.85-1.15	NM	---	ND	0.350	27.23	---
PW17-32	16-Jan-18	22:55	23:41	1.335	27.58	50	0.85-1.15	NM	---	ND	0.330	27.25	---
PW17-32	14-Feb-18	20:40	23:18	1.328	27.58	50	0.85-1.15	NM	---	ND	0.230	27.35	---
PW17-32	22-Mar-18	14:41	15:57	1.344	27.58	50	0.85-1.15	NM	---	ND	0.058	27.52	---
PW17-32	17-Apr-18	13:51	13:48	1.325	27.58	50	0.85-1.15	NM	---	ND	0.268	27.31	---
PW17-32	12-Jun-18	11:45	11:35	1.313	27.58	50	0.85-1.15	NM	---	ND	0.479	27.10	Slightly turbid, clear
PW17-32	11-Sep-18	13:25	13:36	1.338	27.58	50	0.85-1.15	NM	---	ND	0.593	26.99	---
PW17-32	4-Dec-18	21:20	22:04	1.34	27.58	50	0.85-1.15	NM	---	ND	0.325	27.26	Water is orange
PW17-32	4-Jun-19	11:24	13:23	1.338	27.58	50	0.85-1.15	20	---	ND	0.332	27.25	Orange solids present
PW17-32	10-Dec-19	20:28	23:27	1.34	27.58	50	0.85-1.15	50	---	ND	0.395	27.19	---
PW17-32	8-Dec-20	20:39	19:12	1.298	27.58	50	0.85-1.15	40	---	ND	0.330	27.25	---
PW17-32	3-Mar-21	16:48	16:13	1.339	27.58	50	0.85-1.15	0	---	ND	0.161	27.42	Clear; Biofoul
PW17-32	7-Mar-22	14:04	15:00	1.346	27.58	50	0.85-1.15	60	---	ND	0.627	26.95	Cloudy, Light Grey
PW17-33	14-Nov-17	22:31	21:31	1.29	27.53	50	0.85-1.15	NM	---	ND	0.72	26.81	---
PW17-33	12-Dec-17	20:15	20:21	1.275	27.53	50	0.85-1.15	NM	---	ND	0.64	26.89	---
PW17-33	15-Jan-18	22:30	23:07	1.279	27.53	50	0.85-1.15	NM	---	ND	0.668	26.86	---
PW17-33	14-Feb-18	21:05	23:18	1.264	27.53	50	0.85-1.15	NM	---	ND	0.488	27.04	---
PW17-33	22-Mar-18	14:55	15:57	1.28	27.53	50	0.85-1.15	NM	---	ND	0.214	27.32	---

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FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
PW17-33	16-Apr-18	13:05	13:10	1.267	27.53	50	0.85-1.15	NM	---	ND	0.354	27.18	---
PW17-33	12-Jun-18	11:53	11:35	1.273	27.53	50	0.85-1.15	NM	---	ND	0.356	27.17	---
PW17-33	11-Sep-18	13:47	13:36	1.283	27.53	50	0.85-1.15	NM	---	ND	0.801	26.73	---
PW17-33	4-Dec-18	21:21	22:04	1.28	27.53	50	0.85-1.15	NM	---	ND	0.36	27.17	---
PW17-33	4-Jun-19	11:32	13:23	0.872	27.53	50	0.85-1.15	ND	---	ND	0.246	27.28	Trace particulate matter present
PW17-33	10-Dec-19	20:49	23:27	1.267	27.53	50	0.85-1.15	5	---	ND	0.325	27.21	---
PW17-33	9-Dec-20	21:02	19:58	1.262	27.53	50	0.85-1.15	50	---	ND	0.368	27.16	---
PW17-33	3-Mar-21	13:53	16:13	1.269	27.53	50	0.85-1.15	10	---	ND	0.344	27.19	Clear
PW17-33	7-Mar-22	14:24	15:00	1.276	27.53	50	0.85-1.15	10	---	ND	0.597	26.93	Cloudy, Light Grey
Post-Construction FPTS - Contingency Biodegradational Piping (CBP)													
CBP-1	13-Jun-18	11:02	12:18	3.031	NM			NM	---	ND	2.148	NC	---
CBP-1	13-Sep-18	13:50	15:08	3.093	NM			NM	---	ND	2.138	NC	---
CBP-1	5-Dec-18	21:13	22:43	3.098	NM			NM	---	ND	2.187	NC	---
CBP-2	13-Jun-18	11:05	12:18	2.171	NM			NM	---	ND	1.878	NC	---
CBP-2	13-Sep-18	14:04	15:08	3.218	NM			NM	---	ND	1.859	NC	---
CBP-2	4-Dec-18	22:10	22:04	2.24	NM			NM	---	ND	1.95	NC	---
CBP-5	13-Jun-18	11:42	12:18	3.102	NM			NM	---	ND	2.088	NC	---
CBP-5	13-Sep-18	14:20	15:08	3.026	NM			NM	---	ND	2.032	NC	---
CBP-5	5-Dec-18	22:00	22:43	3.035	NM			NM	---	ND	2.11	NC	---
CBP-6	13-Jun-18	11:45	12:18	3.082	NM			NM	---	ND	1.776	NC	---
CBP-6	13-Sep-18	14:35	15:08	3.077	NM			NM	---	ND	1.725	NC	---
CBP-6	5-Dec-18	22:15	22:43	3.11	NM			NM	---	ND	1.81	NC	---
CBP-7	13-Jun-18	12:01	12:18	2.954	NM			NM	---	ND	1.953	NC	DUP-1
CBP-7	12-Sep-18	13:47	14:18	2.97	NM			NM	---	ND	2.000	NC	---
CBP-7	5-Dec-18	22:30	22:43	3.04	NM			NM	---	ND	1.960	NC	---
CBP-8	13-Jun-18	12:10	12:18	3.061	NM			NM	---	ND	1.745	NC	---
CBP-8	12-Sep-18	13:58	14:18	3.07	NM			NM	---	ND	2.78	NC	---
CBP-8	5-Dec-18	22:45	22:43	3.089	NM			NM	---	ND	1.743	NC	---
CBP-15	14-Jun-18	11:34	13:03	3.580	NM			NM	---	ND	2.500	NC	---
CBP-15	12-Sep-18	14:20	14:18	3.587	NM			NM	---	ND	2.608	NC	---
CBP-15	6-Dec-18	22:20	23:21	3.190	NM			NM	---	ND	2.570	NC	---

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
CBP-16	14-Jun-18	11:50	13:03	3.170	NM			NM	---	ND	1.710	NC	---
CBP-16	12-Sep-18	14:40	14:18	3.190	NM			NM	---	ND	1.810	NC	---
CBP-16	6-Dec-18	22:35	23:21	3.300	NM			NM	---	ND	1.780	NC	---
Additional Wells													
PR2-8S	28-Sep-20	13:54	10:17	NM	NM			NM	---	ND	NM	NM	---
PR2-8I	28-Sep-20	13:55	10:17	NM	NM			NM	---	ND	NM	NM	---
PR2-8D	28-Sep-20	13:56	10:17	2.364	NC			NM	---	ND	0.394	NC	---
Post-Construction FPTS - Surface Water													
P3-6-NBO	11-Dec-17	15:03	19:34	0.4	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-6-NBO	20-Mar-18	10:35	14:28	0.4	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-6-NBO	14-Jun-18	7:52	13:03	0.6	NA	NA	NBO	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with another probe
P3-6-NBO	12-Sep-18	23:17	14:23	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-6-NBO	3-Dec-18	15:25	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-6-O	11-Dec-17	14:18	19:34	1	NA	NA	SW	NM	---	ND	NM	NC	---
P3-6-O	20-Mar-18	9:08	14:28	1	NA	NA	SW	NM	---	ND	NM	NC	---
P3-6-O	14-Jun-18	7:15	13:03	0.9	NA	NA	SW	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262)
P3-6-O	12-Sep-18	21:20	14:23	1.5	NA	NA	SW	NM	---	ND	NM	NC	---
P3-6-O	3-Dec-18	14:38	21:24	0.5	NA	NA	SW	NM	---	ND	NM	NC	---
P3-12-NBO	11-Dec-17	18:12	19:34	0.3	NA	NA	NBO	NM	---	ND	NM	NC	DUP 1
P3-12-NBO	20-Mar-18	13:50	14:28	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-12-NBO	14-Jun-18	9:51	13:03	0.55	NA	NA	NBO	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with another probe
P3-12-NBO	13-Sep-18	1:10	3:07	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-12-NBO	3-Dec-18	19:36	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P3-12-O	11-Dec-17	15:48	19:34	1	NA	NA	SW	NM	---	ND	NM	NC	---
P3-12-O	20-Mar-18	11:50	14:28	1	NA	NA	SW	NM	---	ND	NM	NC	---
P3-12-O	14-Jun-18	8:56	13:03	1.25	NA	NA	SW	NM	---	ND	NM	NC	DUP-5; Issues with the pH probe (YSI 14262); pH measured with another probe
P3-12-O	12-Sep-18	23:25	14:23	1.5	NA	NA	SW	NM	---	ND	NM	NC	---
P3-12-O	3-Dec-18	16:14	21:24	2	NA	NA	SW	NM	---	ND	NM	NC	DUP-2
P6-6-NBO	11-Dec-17	14:30	19:34	0.6	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-6-NBO	20-Mar-18	9:33	14:28	0.6	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-6-NBO	14-Jun-18	7:36	13:03	0.5	NA	NA	NBO	NM	---	ND	NM	NC	Issues with the pH probe; pH measured with another probe

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Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
P6-6-NBO	12-Sep-18	21:39	14:23	0.15	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-6-NBO	3-Dec-18	14:53	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-6-O	11-Dec-17	13:49	19:34	1	NA	NA	SW	NM	---	ND	NM	NC	---
P6-6-O	20-Mar-18	8:25	14:28	1	NA	NA	SW	NM	---	ND	NM	NC	---
P6-6-O	14-Jun-18	7:04	13:03	1	NA	NA	SW	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262)
P6-6-O	12-Sep-18	21:12	14:23	0.5	NA	NA	SW	NM	---	ND	NM	NC	Arrived at sample location late due to boom issues
P6-6-O	3-Dec-18	14:14	21:24	0.5	NA	NA	SW	NM	---	ND	NM	NC	---
P6-12-NBO	11-Dec-17	17:44	19:34	0.5	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-12-NBO	20-Mar-18	12:10	14:28	0.5	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-12-NBO	14-Jun-18	---	13:03	NM	NA	NA	NBO	NM	---	ND	NM	NC	Could not sample; missed sampling window.
P6-12-NBO	13-Sep-18	0:30	3:07	0.25	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-12-NBO	3-Dec-18	17:39	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P6-12-O	11-Dec-17	15:29	19:34	1	NA	NA	SW	NM	---	ND	NM	NC	---
P6-12-O	20-Mar-18	11:03	14:28	1	NA	NA	SW	NM	---	ND	NM	NC	DUP 5
P6-12-O	14-Jun-18	8:40	13:03	0.85	NA	NA	SW	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with ano
P6-12-O	12-Sep-18	22:40	14:23	1.5	NA	NA	SW	NM	---	ND	NM	NC	DUP-5
P6-12-O	3-Dec-18	15:58	21:24	2	NA	NA	SW	NM	---	ND	NM	NC	---
P8-6-NBO	11-Dec-17	14:44	19:34	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-6-NBO	20-Mar-18	9:23	14:28	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-6-NBO	14-Jun-18	7:25	13:03	0.5	NA	NA	NBO	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with ano
P8-6-NBO	12-Sep-18	21:30	14:23	0.15	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-6-NBO	3-Dec-18	15:04	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-6-O	11-Dec-17	14:07	19:34	1	NA	NA	SW	NM	---	ND	NM	NC	---
P8-6-O	20-Mar-18	8:11	14:28	1	NA	NA	SW	NM	---	ND	NM	NC	---
P8-6-O	14-Jun-18	7:05	13:03	1	NA	NA	SW	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262)
P8-6-O	12-Sep-18	21:03	14:23	0.5	NA	NA	SW	NM	---	ND	NM	NC	Arrived at sample location late due to boom issues
P8-6-O	3-Dec-18	14:27	21:24	0.5	NA	NA	SW	NM	---	ND	NM	NC	---
P8-12-NBO	11-Dec-17	17:20	19:34	0.4	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-12-NBO	20-Mar-18	12:00	14:28	0.4	NA	NA	NBO	NM	---	ND	NM	NC	DUP 10 (only dissolved and total metals was duplicated)
P8-12-NBO	14-Jun-18	9:12	13:03	0.4	NA	NA	NBO	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with ano
P8-12-NBO	12-Sep-18	23:58	14:23	0.25	NA	NA	NBO	NM	---	ND	NM	NC	---
P8-12-NBO	3-Dec-18	17:58	21:24	0.3	NA	NA	NBO	NM	---	ND	NM	NC	---

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PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID	Date Sampled	Sample Time	Low Tide	Total Depth of Well (m from TOC) ²	Top of Casing Elevation (TOC, mASL) ¹	Well Diameter (mm)	Screened Interval (m bgs)	Headspace Vapour Concentration (ppm unless otherwise noted)	Depth to Product (m from TOC)	Apparent Product Thickness (mm)	Depth to Water (DTW, m from TOC)	Porewater Elevation (mASL) ¹	Observations
P8-12-O	11-Dec-17	15:15	19:34	0.8	NA	NA	SW	NM	---	ND	NM	NC	---
P8-12-O	20-Mar-18	10:48	14:28	0.8	NA	NA	SW	NM	---	ND	NM	NC	---
P8-12-O	14-Jun-18	8:35	13:03	0.9	NA	NA	SW	NM	---	ND	NM	NC	Issues with the pH probe (YSI 14262); pH measured with ano
P8-12-O	12-Sep-18	21:58	14:23	1	NA	NA	SW	NM	---	ND	NM	NC	---
P8-12-O	3-Dec-18	15:44	21:24	1.5	NA	NA	SW	NM	---	ND	NM	NC	DUP-1

Notes:

1 - Elevations are in Parkland Datum = Geodetic Datum + 91.52 feet.

Abbreviations:

m - metres

m bgs - metres below ground surface

mASL - metres above sea level

mg/L - milligrams per liter

mm - millimetres

ppm - parts per million

--- - no observations

Acronyms:

DTW - depth to water

FPTS - Foreshore Passive Treatment System

NA - not applicable

NM - not measured

ND - not detected

TOC - top of casing

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
Post-Construction FPTS																		
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP1 (P3-12-NBO)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD											11-Dec-17		---	---	---	---	---	
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP-5 (P3-12-NBO)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD											14-Jun-18		---	---	---	---	---	
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	13-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
DUP-2 (P3-12-NBO)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
QA/QC RPD											3-Dec-18		---	---	---	---	---	
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	0.79	<0.75
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	13-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
P6-12-O	Surface Water	PW17-20																

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FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

														LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
														5,000	15,000	10,000	25,000	20,000	3,000
Upper Cap Concentrations¹														300	1,500	2,100	320	770	330
RBMT²														250	100	0.5	0.5	0.5	0.75, 0.5 ³
Reported Detection Limit																			
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report							
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP-5 (P6-12-O)	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.45	<0.75	
QA/QC RPD										---	12-Sep-18		---	---	---	---	---		
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75	
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75	
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-1 (P8-12-NBO)	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD										---	3-Dec-18		---	---	---	---	---		
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<250.	<100.	<0.5	<0.5	<0.45	<0.75	
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75	
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75	
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75	
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75	
CBP-6	Porewater	CBP-6	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-6	Porewater	CBP-6	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
CBP-6	Porewater	CBP-6	ALS	Hex															

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													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
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RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
CBP-8	Porewater	CBP-8	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
CBP-8	Porewater	CBP-8	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	6-Dec-18	L2207439	<250	<100	2.51	<0.50	<0.50	<0.75
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP1 (PW17-01)	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD													14-Nov-17	---	---	---	---	---
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Sep-18	L2162362	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	GC-MS/FID	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	GC-MS/FID	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-01	Porewater	PW17-01	ALS	GC-MS/FID	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
PW1																		

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-03	Porewater	PW17-03	ALS	GC-MS/FID	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-03	Porewater	PW17-03	ALS	GC-MS/FID	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-03	Porewater	PW17-03	ALS	GC-MS/FID	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	23-Mar-18	L2071889	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2162362	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	GC-MS/FID	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-04	Porewater EAZ	PW17-04	ALS	GC-MS/FID	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50
PW17-04	Porewater EAZ	PW17-04	ALS	GC-MS/FID	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<250	<100	<0.50	<0.50	<0.50	<0.50
DUP1 (PW17-04)	Porewater EAZ	PW17-04	ALS	GC-MS/FID	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<250	<100	<0.50	<0.50	<0.50	<0.50
QA/QC RPD													---	---	---	---	---	
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<250	<100	<0.5	<0.5	<0.5	<0.75
DUP2 (PW17-05)	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<250	<100	<0.5	<0.5	<0.5	<0.75
QA/QC RPD													---	---	---	---	---	
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	23-Mar-18	L2071889	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<250	<100	<0.5	<0.5	<0.5	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-05	Porewater EAZ	PW17-05	ALS	GC-MS/FID	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Dec-20	VA20C3128	&					

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
													5,000	15,000	10,000	25,000	20,000	3,000
													300	1,500	2,100	320	770	330
													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Nov-17	L2023092	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-08	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-08	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-08	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-08	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Dec-18	L2205028	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	5-Jun-19	L2286145	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	11-Dec-19	L2395640	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	GC-MS/FID	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Dec-20	VA20C3128	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	GC-MS/FID	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Mar-21	VA21A3930	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-07	Porewater EAZ	PW17-07	ALS	GC-MS/FID	S	W FPTS	0.70-1.00	0.7	1	Beach sand	8-Mar-22	VA22A4771	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	<250.	<100.	<0.5	0.71	1.15	3.72
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Dec-18	L2205028	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Dec-19	L2395640	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	GC-MS/FID	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	GC-MS/FID	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-08	Porewater	PW17-08	ALS	GC-MS/FID	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.7

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
													5,000	15,000	10,000	25,000	20,000	3,000
													300	1,500	2,100	320	770	330
													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-10 Bottle 1 ³	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	480.	<100	<0.50	<0.50	<0.50	<0.75
PW17-10 Bottle 2 ³	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	<250	---	---	---	---	---
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-10	Porewater	PW17-10	ALS	GC-MS/FID	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-10	Porewater	PW17-10	ALS	GC-MS/FID	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-10	Porewater	PW17-10	ALS	GC-MS/FID	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Mar-22	VA22A4771	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Nov-17	L2023753	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Apr-18	L2080621	<250.	<100.	<0.5	0.54	0.8	2.81
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Dec-18	L2205028	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	GC-MS/FID	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	GC-MS/FID	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-11	Porewater	PW17-11	ALS	GC-MS/FID	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-12	Porewater	PW17-12	ALS	GC-MS/FID	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-12	Porewater	PW17-12	ALS	GC-MS/FID	C	IBA	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-12	Porewater	PW17-12	ALS	GC-MS/FID	C	IBA	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L						

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
													5,000	15,000	10,000	25,000	20,000	3,000
													300	1,500	2,100	320	770	330
													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-14	Porewater	PW17-14	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-14	Porewater	PW17-14	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-14	Porewater	PW17-14	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	13-Dec-17	L2035368	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-15	Porewater	PW17-15	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	<250.	<100.	11.	9.62	<0.5	4.46
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<250.	<100.	17.	13.	<0.5	2.85
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	430.	1120.	50.9	120.	0.91	19.
DUP1 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	410.	1250.	53.	115.	0.99	19.
QA/QC RPD											16-Jan-18		11.0%	4.0%	4.3%	---	0.0%	
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	290.	800.	20.	4.1	<0.5	4.43
DUP1 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	320.	860.	22.9	7.61	<0.5	4.33
QA/QC RPD											14-Feb-18		7.2%	13.5%	59.9%	---	2.3%	
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	300.	750.	43.	26.7	0.58	5.3
PW17-16	Porewater EAZ</																	

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

PARKLAND BURNABY REFINERY 2022 FPTS MONITORING AND MAINTENANCE PLAN														LEPH _w	VPH _w	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations ¹														5,000	15,000	10,000	25,000	20,000	3,000
RBMT ²														300	1,500	2,100	320	770	330
Reported Detection Limit														250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report							
DUP - 2 (PW17-16)	Porewater EAZ	PW17-16	ALS	GC-MS/FID	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	320.	260.	3.72	<0.50	<0.50	<0.75	
QA/QC RPD															---	9%	---	---	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	<250.	<100.	5.04	<0.5	<0.5	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<250.	<100.	7.29	1.81	<0.5	<0.75	
DUP3 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<250.	<100.	7.62	1.85	<0.5	<0.75	
QA/QC RPD															4.4%	---	---	---	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<250.	<100.	1.55	<0.5	<0.5	<0.75	
DUP2 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<250.	<100.	1.59	<0.5	<0.5	<0.75	
QA/QC RPD															---	---	---	---	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<250.	<100.	2.81	<0.5	<0.5	<0.75	
DUP2 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<250.	<100.	2.82	<0.5	<0.5	<0.75	
QA/QC RPD															0.4%	---	---	---	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<250.	120.	17.7	0.69	<0.5	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<250.	<100.	37.7	1.98	<0.5	<0.75	
DUP-2(PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	NA	18-Apr-18	L2081868	<250.	<100.	38.4	1.99	<0.5	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	<250.	500.	79.6	10.3	0.56	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<250.	210.	40.	0.52	<0.5	<0.75	
DUP-1 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<250.	250.	41.9	<0.5	<0.5	<0.75	
QA/QC RPD															4.6%	---	---	---	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<250	150.	13.1	0.64	<0.50	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<250	190.	24.	0.84	<0.50	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<250	280.	10.6	<0.50	<0.50	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<250	<100.	2.71	<0.50	<0.50	<0.75	
PW17-17	Porewater EAZ	PW17-17	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<250	310.	5.01	1.62	<0.50	<0.50	
PW17-17	Porewater EAZ	PW17-17	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	8-Mar-22	VA22A4771	250.	140.	1.83	<0.50	<0.50	<0.75	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD															---	---	---	---	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD															---	---	---	---	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD															---	---	---	---	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP-3(PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP-3(PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD															13-Jun-18	---	---	---	---
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	<250.	<100.	<0.5	<0.5	<0.5</		

Parkland Refining (B.C.) Ltd.

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TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
													5,000	15,000	10,000	25,000	20,000	3,000
													300	1,500	2,100	320	770	330
													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Dec-17	L2034402	<250.	120.	5.53	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	15-Jan-18	L2045142	<250.	<100.	3.52	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	13-Feb-18	L2056920	<250.	<100.	11.4	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	21-Mar-18	L2070802	<250.	<100.	13.2	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	16-Apr-18	L2080621	<250.	<100.	11.4	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Jun-18	L2111276	<250.	<100.	5.29	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Sep-18	L2161513	<250.	<100.	2.3	<0.5	<0.5	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Dec-18	L2205928	<250	<100	8.29	<0.50	<0.50	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Dec-19	L2395326	<250	<100	7.23	<0.50	<0.50	<0.75
PW17-19	Porewater	PW17-19	ALS	GC-MS/FID	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	<250	<100	7.80	<0.50	<0.50	<0.75
PW17-19	Porewater	PW17-19	ALS	GC-MS/FID	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<250	<100	8.23	<0.50	<0.50	<0.75
PW17-19	Porewater	PW17-19	ALS	GC-MS/FID	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	7-Mar-22	VA22A4673	<250	<100	3.9	<0.50	<0.50	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	16-Apr-18	L2080621	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	GC-MS/FID	C	E FPTS	0.64-1.00	0.64	1	Beach sand	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	GC-MS/FID	C	E FPTS	0.64-1.00	0.64	1	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-20	Porewater EAZ	PW17-20	ALS	GC-MS/FID	C	E FPTS	0.64-1.00	0.64	1	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Nov-17	---	---	---	Monitoring well not sampled - infilled	---	---	
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-17	---	---	---	Monitoring well not sampled - infilled	---	---	
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	---	---	---	Monitoring well not sampled - infilled	---	---	
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	---	---	---	Monitoring well not sampled - infilled	---	---	
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<250.	<100.	0.67	<0.5	<0.5	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	<250	<100	0.7	<0.50	<0.50	<0.75
PW17-21	Porewater EAZ	PW17-21	ALS	Hexane	U	E F												

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

														LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹														5,000	15,000	10,000	25,000	20,000	3,000
RBMT²														300	1,500	2,100	320	770	330
Reported Detection Limit														250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report							
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP 4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD											22-Mar-18		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP-4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD											22-Mar-18		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
DUP-4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
QA/QC RPD											22-Mar-18		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-3 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD											5-Dec-18		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-2 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD											5-Jun-19		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-1 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<250	<100	<0.50	<0.50	<0.50	<0.75	
PW17-22	Porewater EAZ	PW17-22	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-3 (PW17-22)	Porewater EAZ	PW17-22	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD											9-Dec-20		---	---	---	---	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50	
PW17-22	Porewater EAZ	PW17-22	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	<250	<100	<0.50	<0.50	<0.50	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	1.08	0.9	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-4 (PW17-23)	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD											6-Dec-18		---	---	---	---	---	---	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-3 (PW17-23)	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75	
QA/QC RPD											5-Jun-19		---	---	---	---	---	---	
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<250	<100	<0.50	<0.50	<0.50	<0.75	
DUP-2																			

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-24	Porewater	PW17-24	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-24	Porewater	PW17-24	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-24	Porewater	PW17-24	ALS	GC-MS/FID	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP2 (PW17-25)	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD													14-Nov-17	---	---	---	---	---
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-25	Porewater	PW17-25	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Nov-17	L2023753	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<250.	150.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	L2057618	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP 1 (PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD													22-Mar-18	---	---	---	---	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	<250.	<100.	<0.5	<0.5	<0.5	<0.75
DUP 1 (PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	<250.	<100.	<0.5	<0.5	<0.5	<0.75
QA/QC RPD													6-Jun-19	---	---	---	---	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75											

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report	LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes		
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000		
RBMT²													300	1,500	2,100	320	770	330		
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³		
QA/QC RPD													22-Mar-18		---	---	---	---		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	<250.	<100.	0.61	<0.5	<0.5	<0.75		
DUP-3(PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	<250.	<100.	0.54	<0.5	<0.5	<0.75		
QA/QC RPD													12-Sep-18		---	---	---	---		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75		
DUP-5 (PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75		
QA/QC RPD													6-Dec-18		---	---	---	---		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Jun-19	L2287095	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-27	Porewater EAZ	PW17-27	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-27	Porewater EAZ	PW17-27	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50		
DUP-2 (PW17-27)	Porewater EAZ	PW17-27	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50		
QA/QC RPD													4-Mar-21		---	---	---	---		
PW17-27	Porewater EAZ	PW17-27	ALS	GC-MS/FID	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	<250	<100	<0.50	<0.50	<0.50	<0.75		
QA/QC RPD													16-Nov-17	L2023753	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
DUP 3(PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
QA/QC RPD													22-Mar-18		---	---	---	---		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
DUP 4(PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
QA/QC RPD													12-Sep-18		---	---	---	---		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	0.5	<0.75		
DUP-6 (PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<250	<100	<0.50	<0.50	<0.50	<0.75		
QA/QC RPD													6-Dec-18		---	---	---	---		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Jun-19	L2287095	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-28	Porewater	PW17-28	ALS	GC-MS/FID	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75		
PW17-28	Porewater	PW17-28	ALS	GC-MS/FID	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50		
PW17-28	Porewater	PW17-28	ALS	GC-MS/FID	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Mar-22	VA22A4919	<250	<100	<0.50	<0.50	<0.50	<0.75		
QA/QC RPD													14-Nov-17	L2022366	<250.	<100.	2.04	<0.5	<0.5	<0.75
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<250.	<100.	0.52	<0.5	<0.5	<0.75		
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75		
PW17-29	Porewater	PW17-29																		

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
													5,000	15,000	10,000	25,000	20,000	3,000
													300	1,500	2,100	320	770	330
													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Nov-17	L2022366	<250.	<100.	0.63	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	<250.	<100.	0.55	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	<250.	<100.	32.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Sep-18	L2162362	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	<250.	<100.	<0.50	<0.50	<0.50	<0.75
PW17-30	Porewater	PW17-30	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-30	Porewater	PW17-30	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-30	Porewater	PW17-30	ALS	GC-MS/FID	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Sep-18	L2163271	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-31	Porewater	PW17-31	ALS	GC-MS/FID	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-31	Porewater	PW17-31	ALS	GC-MS/FID	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50
PW17-31	Porewater	PW17-31	ALS	GC-MS/FID	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	---	NS	NS	NS	NS	NS
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<250.	<100.	<0.5	<0.5	<0.5	<0.75
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<250.	<100.	<			

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations ¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT ²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-33	Porewater	PW17-33	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-33	Porewater	PW17-33	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
PW17-33	Porewater	PW17-33	ALS	GC-MS/FID	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK 1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Nov-17	L2023092	<250	<100	<0.5	<0.5	<0.5	<0.75
RINSATE-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Dec-17	L2033765	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Jan-18	L2045142	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Nov-17	L2023753	<250	<100	<0.5	<0.5	<0.5	<0.75
RINSATE-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Dec-17	L2034402	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Jan-18	L2045816	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Dec-17	L2035368	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS		NA	NA	NA	NA	NA	NA	15-Feb-18	L2056920	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS		NA	NA	NA	NA	NA	NA	14-Feb-18	L2056918	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-3	NA	NA	ALS		NA	NA	NA	NA	NA	NA	15-Feb-18	L2057618	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Apr-18	L2080621	---	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	17-Apr-18	L2081248	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Jun-18	L2111276	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Jun-18	L2111824	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112662	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	10-Sep-18	L2161513	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Sep-18	L2162362	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163271	<250	<100	<0.5	<0.5	<0.5	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	4-Dec-18	L2205928	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	5-Dec-18	L2206732	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	4-Jun-19	L2285149	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	5-Jun-19	L2286145	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	10-Dec-19	L2395326	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Dec-19	L2395640	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	8-Dec-20	VA20C2850	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	10-Dec-20	VA20C3128	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	4-Mar-21	VA21A4107	<250	<100	<0.50	<0.50	<0.50	<0.50
R-BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	7-Mar-22	VA22A4673	<250	<100	<0.50	<0.50	<0.50	<0.75
R-BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	8-Mar-22	VA22A4771</td						

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPHW	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
T-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Dec-17	L2035368	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Jan-18	L2045142	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Jan-18	L2045142	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Jan-18	L2045816	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Jan-18	L2045816	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Feb-18	L2056920	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Feb-18	L2056918	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Feb-18	L2056918	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	15-Feb-18	L2057618	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	20-Mar-18	L2070135	---	<100.	<0.5	<0.5	<0.45	<0.75
T-BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	---	<100.	<0.5	<0.5	<0.5	<0.75
T-BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	---	<100.	<0.5	<0.5	<0.5	<0.75
T-BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	22-Mar-18	L2071404	---	<100.	<0.5	<0.5	<0.5	<0.75
T-BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	23-Mar-18	L2071889	---	<100.	<0.5	<0.5	<0.5	<0.75
T-BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	16-Apr-18	L2080621	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	17-Apr-18	L2081248	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	18-Apr-18	L2081868	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Jun-18	L2111276	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Jun-18	L2111276	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Jun-18	L2111824	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Jun-18	L2111824	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112693	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-6	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112693	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-7	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112662	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	10-Sep-18	L2161513	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	10-Sep-18	L2161513	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Sep-18	L2162362	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Sep-18	L2162362	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163271	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163271	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-7	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163427	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-8	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163427	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-6	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	13-Sep-18	L2164036	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205028	---	<100.	<0.5	<0.5	<0.5	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	4-Dec-18	L2205928	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	5-Dec-18	L2206732	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-6	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	6-Dec-18	L2207439	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-1	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	4-Jun-19	L2285149	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-2	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	4-Jun-19	L2285149	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	5-Jun-19	L2286145	---	<100	<			

TABLE 2
CONCENTRATIONS OF PETROLEUM HYDROCARBON PARAMETERS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													LEPH _w	VPH _w	Benzene	Ethylbenzene	Toluene	Xylenes
Upper Cap Concentrations¹													5,000	15,000	10,000	25,000	20,000	3,000
RBMT²													300	1,500	2,100	320	770	330
Reported Detection Limit													250	100	0.5	0.5	0.5	0.75, 0.5 ³
Sample ID ⁴	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Laboratory Report						
TRAVEL BLANK-3	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Dec-19	L2395640	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-4	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	11-Dec-19	L2395640	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-5	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Dec-19	L2396150	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-6	NA	NA	ALS	NA	NA	NA	NA	NA	NA	NA	12-Dec-19	L2396150	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	8-Dec-20	VA20C2850	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	9-Dec-20	VA20C3039	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-3	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	9-Dec-20	VA20C3039	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-5	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	10-Dec-20	VA20C3128	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-3	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-4	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	4-Mar-21	VA21A4107	---	<100	<0.50	<0.50	<0.50	<0.50
TRAVEL BLANK-5	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	4-Mar-21	VA21A4107	---	<100	<0.50	<0.50	<0.50	<0.50
TRAVEL BLANK-1	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	7-Mar-22	VA22A4673	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-2	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	7-Mar-22	VA22A4673	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-3	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	9-Mar-22	VA22A4919	---	<100	<0.50	<0.50	<0.50	<0.75
TRAVEL BLANK-4	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	8-Mar-22	VA22A4771	---	<100	<0.50	<0.50	<0.50	<0.50
TRAVEL BLANK-5	NA	NA	ALS	GC-MS/FID	NA	NA	NA	NA	NA	NA	8-Mar-22	VA22A4771	---	<100	<0.50	<0.50	<0.50	<0.50

Notes

< - Sample concentration less than the detection limit indicated.

--- - Sample not analyzed for indicated parameter.

1 - Protocol 11 Table 6. Water Upper Cap Concentrations for Schedule 3.2 Substances

2 - On February 28, 2014, SLR submitted a Human Health and Ecological Risk Assessment (HHERA) to determine Risk-Based Management Targets (RBMTs) for PCOCs associated with the Foreshore seeps which was accepted by the MoE in their letter dated August 28, 2014.

BOLD	Sample concentration is detected
SHADE	Sample concentration greater than RBMT
SHADE	Sample Concentration greater than Upper Cap

Abbreviations

µg/L [ppb] - micrograms/litre [parts per billion]

m - metres

Acronyms

AG - aquagate

C - Compliance well (Post-construction)

CS - well located cross slope

DL - detection limit

EAZ - ecologically active zone

E FPTS - Eastern Foreshore Passive Treatment System

IBA - In between area

LEPH_w - light extractable petroleum hydrocarbons in water

NA - not applicable

GC-MS/FID - Gas Chromatography - Mass Spectrometry / Flame Ionization Detection

NS - Not Sampled

OC - organoclay
P - Performance well (Post-construction)
PAC - powder activated carbon
RBMT - risk based management target
S - Sentry well (Post-construction)
U - Up gradient well (Post-construction)
VPH _w - volatile petroleum hydrocarbons in water
W FPTS - Western Foreshore Passive Treatment System
QA/QC - Quality Assurance / Quality Control
RPD - Relative Percent Difference

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations ¹													1	100
RBMT ²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
Post-Construction FPTS														
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	0.0084	<0.05
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<0.005	<0.05
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<0.005	<0.05
P3-6-NBO	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
P3-6-O	Surface Water	PW17-06	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
DUP1 (P3-12-NBO)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
QA/QC RPD											11-Dec-17		---	---
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<0.005	<0.05
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	13-Sep-18	L2163427	<0.005	<0.05
P3-12-NBO	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
DUP-2 (P3-12-NBO)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
QA/QC RPD											3-Dec-18		---	---
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
DUP-5 (P3-12-O)	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
QA/QC RPD											14-Jun-18		---	---
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
P3-12-O	Surface Water	PW17-08	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	0.054
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<0.005	<0.05
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<0.005	<0.05
P6-6-NBO	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
P6-6-O	Surface Water	PW17-18	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<0.005	<0.05
P6-12-NBO	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	0.01	<0.050
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
DUP 5 (P6-12-O)	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
QA/QC RPD										20-Mar-18		---	---	
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
DUP-5 (P6-12-O)	Surface Water	PW17-20	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
QA/QC RPD										12-Sep-18		---	---	
P6-12-O	Surface Water	PW17-20	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<0.005	<0.05
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<0.005	<0.05
P8-6-NBO	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
P8-6-O	Surface Water	PW17-28	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	<0.005	<0.05
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	<0.005	<0.05
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	<0.005	<0.05
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
P8-12-NBO	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
DUP-1 (P8-12-NBO)	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	<0.0050	<0.050
QA/QC RPD													3-Dec-18	---
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	<0.005	<0.05
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	<0.005	<0.05
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	<0.005	<0.05
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	<0.005	<0.05
P8-12-O	Surface Water	PW17-30	ALS	Hexane	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	<0.0050	<0.050
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	<0.005	<0.05
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	<0.005	<0.05
CBP-1	Porewater	CBP-1	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<0.005	<0.05
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	<0.005	<0.05
CBP-2	Porewater	CBP-2	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	4-Dec-18	L2205928	<0.0050	<0.050
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	0.0184	<0.05
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	0.0212	<0.05
CBP-5	Porewater	CBP-5	ALS	Hexane	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
CBP-6	Porewater	CBP-6	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	0.0116	<0.05
CBP-6	Porewater	CBP-6	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	<0.005	<0.05
CBP-6	Porewater	CBP-6	ALS	Hexane	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	<0.0050	<0.050
CBP-7	Porewater	CBP-7	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	<0.005	<0.05
DUP-1 (CBP-7)	Porewater	CBP-7	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	<0.005	<0.05
QA/QC RPD													13-Jun-18	---
CBP-7	Porewater	CBP-7	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	12-Sep-18	L2163271	<0.005	<0.05
CBP-7	Porewater	CBP-7	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
CBP-8	Porewater	CBP-8	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<0.005	<0.05
CBP-8	Porewater	CBP-8	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<0.005	<0.05
CBP-8	Porewater	CBP-8	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	<0.0050	<0.050
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	14-Jun-18	L2112662	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	12-Sep-18	L2163271	<0.005	<0.05
CBP-15	Porewater	CBP-15	ALS	Hexane	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	6-Dec-18	L2207439	<0.0050	<0.050
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	0.007	<0.05
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<0.005	<0.05
CBP-16	Porewater	CBP-16	ALS	Hexane	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<0.0050	<0.050
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
DUP1 (PW17-01)	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
QA/QC RPD											14-Nov-17		---	---
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	16-Jan-18	L2045816	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	0.0068	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Jun-18	L2111824	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Sep-18	L2162362	<0.005	<0.05
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	<0.0050	<0.050
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.050
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Dec-19	L2395640	<0.0050	<0.050
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	0.0256	0.054
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-01	Porewater	PW17-01	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Jun-18	L2111824	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	<0.005	<0.05
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<0.0050	<0.050
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<0.0050	<0.050
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Benzo(a)pyrene ³	Naphthalene	
Upper Cap Concentrations¹												1	100	
RBMT²												0.28	44	
Reported Detection Limit												0.005	0.05	
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-02	Porewater	PW17-02	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Nov-17	L2023753	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	23-Mar-18	L2071889	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-03	Porewater	PW17-03	ALS	Hexane	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	23-Mar-18	L2071889	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2162362	<0.005	<0.05
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Dec-18	L2206732	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Dec-19	L2395640	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-04	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
DUP-1 (PW17-04)	Porewater EAZ	PW17-04	ALS	Hexane	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
QA/QC RPD												8-Mar-22	---	---
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
DUP2 (PW17-05)	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
QA/QC RPD													---	---
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	23-Mar-18	L2071889	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<0.005	<0.05
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<0.0050	<0.050
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Dec-19	L2395640	<0.0050	<0.050
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-05	Porewater EAZ	PW17-05	ALS	Hexane	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	23-Mar-18	L2071889	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	<0.005	<0.05
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Dec-19	L2395640	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-06	Porewater	PW17-06	ALS	Hexane	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Nov-17	L2023092	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Jun-18	L2111276	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	5-Jun-19	L2286145	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	11-Dec-19	L2395640	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-07	Porewater EAZ	PW17-07	ALS	Hexane	S	W FPTS	0.70-1.00	0.7	1	Beach sand	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Dec-19	L2395640	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-08	Porewater	PW17-08	ALS	Hexane	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Sep-18	L2161513	<0.005	<0.05
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Dec-19	L2395640	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-09	Porewater	PW17-09	ALS	Hexane	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations ¹													1	100
RBMT ²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<0.0050	<0.050
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	<0.0050	<0.050
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-10	Porewater	PW17-10	ALS	Hexane	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Nov-17	L2023753	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Dec-18	L2205028	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-11	Porewater	PW17-11	ALS	Hexane	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	0.0188	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	0.0052	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	0.0052	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	0.016	<0.05
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	0.0147	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-12	Porewater	PW17-12	ALS	Hexane	C	IBA	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Sep-18	L2161513	<0.005	<0.05
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-19	L2395326	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-13	Porewater	PW17-13	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	0.046	<0.050
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	<0.0050	<0.050
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-14	Porewater	PW17-14	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	13-Dec-17	L2035368	0.008	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	<0.005	<0.05
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	0.011	<0.050
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	<0.0050	<0.050
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-15	Porewater	PW17-15	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	<0.005	<0.05
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<0.005	<0.05
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<0.005	2.1
DUP1 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<0.005	1.98
QA/QC RPD											16-Jan-18		---	5.9%
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	<0.005	<2.
DUP1 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	<0.005	<2.
QA/QC RPD											14-Feb-18		---	---
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<0.005	<2.
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<0.005	<5.
DUP-1(PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<0.005	<5.
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	<0.005	<0.7
DUP-2(PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	<0.005	<0.9
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2162362	<0.005	<0.2
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Dec-18	L2206732	<0.0050	<2.0
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.70
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	<0.0050	<0.60
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	<0.0050	<0.400
DUP-1 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	<0.0050	<0.450
QA/QC RPD											9-Dec-20		---	---

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Benz(a)pyrene ³	Naphthalene	
Upper Cap Concentrations ¹												1	100	
RBMT ²												0.28	44	
Reported Detection Limit												0.005	0.05	
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<0.0050	<0.700
DUP-3 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<0.0050	<0.670
PW17-16	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
DUP-2 (PW17-16)	Porewater EAZ	PW17-16	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	<0.0050	<0.050
QA/QC RPD											8-Mar-22		---	---
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	<0.005	<0.05
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
DUP3 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
QA/QC RPD											13-Dec-17		---	---
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
DUP2 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
QA/QC RPD											16-Jan-18		---	---
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<0.005	<0.05
DUP2 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	<0.005	<0.05
QA/QC RPD											14-Feb-18		---	---
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<0.005	<0.05
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<0.005	<0.05
DUP-2(PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<0.005	<0.05
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	<0.005	<0.05
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<0.005	<0.05
DUP-1 (PW17-17)	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	<0.005	<0.05
QA/QC RPD											11-Sep-18		---	---
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<0.0050	<0.060
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<0.0050	<0.10
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<0.0050	<0.200
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<0.0050	<0.210
PW17-17	Porewater EAZ	PW17-17	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<0.005	<0.05
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<0.005	<0.05
QA/QC RPD											15-Nov-17		---	---
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<0.005	<0.05
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<0.005	<0.05
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<0.005	<0.05
QA/QC RPD											16-Jan-18		---	---

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	<0.005	<0.05
DUP3 (PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	<0.005	<0.05
QA/QC RPD													---	---
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<0.005	<0.05
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<0.005	<0.05
DUP-3(PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<0.005	<0.05
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<0.005	<0.05
DUP-3(PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	<0.005	<0.05
QA/QC RPD													---	---
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	<0.005	<0.05
DUP-2(PW17-18)	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	<0.005	<0.05
QA/QC RPD													---	---
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-18	Porewater	PW17-18	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	8-Mar-22	VA22A4771	<0.0050	<0.050
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Dec-17	L2034402	<0.005	<0.2
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	15-Jan-18	L2045142	<0.005	<0.1
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	13-Feb-18	L2056920	<0.005	<0.2
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	21-Mar-18	L2070802	<0.005	<0.2
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	16-Apr-18	L2080621	<0.005	0.096
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Jun-18	L2111276	<0.005	<0.07
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Sep-18	L2161513	<0.0050	<0.060
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Dec-18	L2205928	<0.0050	<0.050
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Jun-19	L2285149	<0.0050	<0.050
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Dec-19	L2395326	<0.0050	<0.050
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<0.005	<0.05
PW17-19	Porewater	PW17-19	ALS	Hexane	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	15-Jan-18	L2045142	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Benzo(a)pyrene ³	Naphthalene	
Upper Cap Concentrations¹												1	100	
RBMT²												0.28	44	
Reported Detection Limit												0.005	0.05	
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Sep-18	L2161513	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	3-Mar-21	VA21A3930	<0.005	<0.05
PW17-20	Porewater EAZ	PW17-20	ALS	Hexane	C	E FPTS	0.64-1.00	0.64	1	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Nov-17	Monitoring well not sampled - infilled with sediment		
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-17	Monitoring well not sampled - infilled with sediment		
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	Monitoring well not sampled - infilled with sediment		
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	Monitoring well not sampled - infilled with sediment		
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<0.005	<0.09
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	<0.005	<0.2
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	<0.005	<0.2
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2163271	<0.0050	<0.20
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	<0.0050	<0.10
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	<0.0050	<0.090
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	<0.0050	<0.100
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	<0.0050	<0.110
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	3-Mar-21	VA21A3930	<0.005	<0.05
PW17-21	Porewater EAZ	PW17-21	ALS	---	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	<0.005	<0.05
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
DUP4 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
QA/QC RPD											13-Dec-17	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
DUP4 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
QA/QC RPD											16-Jan-18	---	---	
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	<0.005	<0.05
DUP4 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	<0.005	<0.05
QA/QC RPD											15-Feb-18	---	---	

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<0.005	<0.05
DUP 4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<0.005	<0.05
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<0.005	<0.05
DUP-4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	<0.005	<0.05
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<0.005	<0.05
DUP 4(PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<0.005	<0.05
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Sep-18	L2161513	<0.005	<0.05
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
DUP-3 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	<0.0050	<0.050
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<0.0050	<0.050
DUP-2 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	<0.0050	<0.050
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<0.0050	<0.050
DUP-1 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<0.0050	<0.050
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<0.0050	<0.050
DUP-3 (PW17-22)	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<0.0050	<0.050
QA/QC RPD													---	---
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-22	Porewater EAZ	PW17-22	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	<0.0050	<0.050
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	10-Sep-18	L2161513	<0.0050	<0.050
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<0.0050	<0.050
DUP-4 (PW17-23)	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<0.0050	<0.050
QA/QC RPD													---	---
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<0.0050	<0.050
DUP-3 (PW17-23)	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations ¹													1	100
RBMT ²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
QA/QC RPD													5-Jun-19	---
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<0.0050	<0.050
DUP-2 (PW17-23)	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<0.0050	<0.050
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	<0.005	<0.05
PW17-23	Porewater	PW17-23	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Mar-22	VA22A4919	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.005	<0.05
PW17-24	Porewater	PW17-24	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
DUP2 (PW17-25)	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
QA/QC RPD													14-Nov-17	---
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	0.006	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-25	Porewater	PW17-25	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Nov-17	L2023753	<0.005	<0.05
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	<0.005	<0.05
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	<0.005	<0.05
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	L2057618	<0.005	<0.2
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<0.005	<0.1
DUP 1(PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	<0.005	<0.05
QA/QC RPD													22-Mar-18	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	17-Apr-18	L2081248	<0.005	<0.2
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	<0.005	<0.2
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Sep-18	L2163271	<0.005	<0.2
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	<0.0050	<0.050
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	<0.0050	<0.050
DUP 1(PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	<0.0050	<0.050
QA/QC RPD													6-Jun-19	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	<0.0050	<0.050
DUP 3 (PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	<0.0050	<0.050
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	<0.0050	<0.050
DUP-2(PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	<0.0050	<0.050
QA/QC RPD													9-Dec-20	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<0.0050	<0.050
DUP-1(PW17-26)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	<0.0050	<0.050
QA/QC RPD													4-Mar-21	---
PW17-26	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Mar-22	VA22A4919	<0.0050	<0.050
DUP-3(PW17-276)	Porewater EAZ	PW17-26	ALS	Hexane	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Mar-22	VA22A4919	<0.0050	<0.050
QA/QC RPD													9-Mar-22	---
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Nov-17	L2023753	<0.005	<0.3
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	<0.005	<0.05
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	<0.005	<0.05
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	<0.005	<0.07
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<0.005	<0.05
DUP 2(PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	<0.005	<0.05
QA/QC RPD													22-Mar-18	---
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	17-Apr-18	L2081248	<0.005	<0.05
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	<0.005	<0.05
DUP-3(PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	<0.005	<0.05
QA/QC RPD													---	---
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	<0.0050	<0.050
DUP-5 (PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	<0.0050	<0.050
QA/QC RPD													---	---
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Jun-19	L2287095	<0.0050	<0.050
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	<0.0050	<0.050
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<0.0050	<0.050
DUP-2(PW17-27)	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	<0.0050	<0.050
QA/QC RPD													---	---
PW17-27	Porewater EAZ	PW17-27	ALS	Hexane	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	<0.0050	<0.050
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Nov-17	L2023753	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<0.005	<0.05
DUP 3(PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	<0.005	<0.05
QA/QC RPD													---	---
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	<0.005	<0.05
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<0.005	<0.05
DUP-4(PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	<0.005	<0.05
QA/QC RPD													---	---
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<0.0050	<0.050
DUP-6 (PW17-28)	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	<0.0050	<0.050
QA/QC RPD													---	---
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Jun-19	L2287095	<0.0050	<0.050
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	<0.0050	<0.050
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	<0.005	<0.050
PW17-28	Porewater	PW17-28	ALS	Hexane	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Mar-22	VA22A4919	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benzo(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Feb-18	L2056918	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	<0.005	<0.05
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Sep-18	L2162362	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Jun-19	L2285149	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-19	L2395326	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-29	Porewater	PW17-29	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Sep-18	L2162362	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-30	Porewater	PW17-30	ALS	Hexane	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Sep-18	L2163271	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Benz(a)pyrene ³	Naphthalene	
Upper Cap Concentrations¹												1	100	
RBMT²												0.28	44	
Reported Detection Limit												0.005	0.05	
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Mar-21	VA21A4107	<0.0050	<0.050
PW17-31	Porewater	PW17-31	ALS	Hexane	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	---	NS	NS
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-32	Porewater	PW17-32	ALS	Hexane	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	<0.005	<0.05
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	<0.0050	<0.050
PW17-33	Porewater	PW17-33	ALS	Hexane	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	<0.0050	<0.050
R-BLANK 1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	15-Nov-17	L2023092	<0.005	<0.05

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Benz(a)pyrene ³	Naphthalene
Upper Cap Concentrations¹													1	100
RBMT²													0.28	44
Reported Detection Limit													0.005	0.05
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	15-Jan-18	L2045142	<0.005	<0.05
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	15-Feb-18	L2056920	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	16-Nov-17	L2023753	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	16-Jan-18	L2045816	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	14-Feb-18	L2056918	<0.005	<0.05
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	13-Dec-17	L2035368	<0.005	<0.05
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	15-Feb-18	L2057618	<0.005	<0.05
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	<0.005	<0.05
RINSATE-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	11-Dec-17	L2033765	<0.005	<0.05
RINSATE-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	12-Dec-17	L2034402	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	17-Apr-18	L2081248	<0.005	<0.05
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	12-Jun-18	L2111276	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	13-Jun-18	L2111824	<0.005	<0.05
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112662	<0.005	<0.05
R-BLANK 1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	10-Sep-18	L2161513	<0.005	<0.05
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	11-Sep-18	L2162362	<0.005	<0.05
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163271	<0.0050	<0.050
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	<0.0050	<0.050
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	4-Dec-18	L2205928	<0.0050	<0.050
R-BLANK-3	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	5-Dec-18	L2206732	<0.0050	<0.050
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	4-Jun-19	L2285149	<0.0050	<0.050
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	5-Jun-19	L2286145	<0.0050	<0.050
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	10-Dec-19	L2395326	<0.0050	<0.050
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	11-Dec-19	L2395640	<0.0050	<0.050
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	8-Dec-20	VA20C2850	<0.0050	<0.050
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	10-Dec-20	VA20C3128	<0.0050	<0.050
R-BLANK-1	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	<0.0050	<0.050
R-BLANK-2	NA	NA	ALS	Hexane	NA	NA	NA	NA	NA	NA	4-Mar-21	VA21A4107	<0.0050	<0.050

Notes

< - Sample concentration less than the detection limit indicated.

--- - Sample not analyzed for indicated parameter.

1 - Protocol 11 Table 6. Water Upper Cap Concentrations for Schedule 3.2 Substances

2 - On February 28, 2014, SLR submitted a Human Health and Ecological Risk Assessment (HHERA) to determine Risk-Based Management Targets (RBMTs) for PCOCs associated with the Foreshore seeps which was accepted by the MoE in their letter dated August 28, 2014.

TABLE 3
CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS IN POREWATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Benzo(a)pyrene ³	Naphthalene	
Upper Cap Concentrations¹												1	100	
RBMT²												0.28	44	
Reported Detection Limit												0.005	0.05	
Sample ID ³	Matrix	Sample Location	Laboratory	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report		

3 - The Ministry of Environment and Climate Change Strategy (ENV) requires the co-reporting of PAHs when LEPH and HEPH calculations are required, consequently, LEPH and HEPH must be co-reported with the corresponding PAH results. Although these PAHs are not considered site specific contaminants of concern (COCs), they were analyzed to calculate LEPH and/or HEPH and were either not detected or detected below Updated Screening Levels (USLs). For the purpose of this monitoring report, these PAHs have not been tabulated; however, as it is an ENV requirement, the data has been included in the ALS laboratory reports provided in Appendix C.

BOLD	Sample concentration is detected
SHADE	Sample concentration greater than RBMT
SHADE	Sample Concentration greater than Upper Cap

Abbreviations

µg/L [ppb] - micrograms/litre [parts per billion]

m - metres

Acronyms

AG - aquagate

C - Compliance well (Post-construction)

EAZ - ecologically active zone

E FPTS - Eastern Foreshore Passive Treatment System

IBA - In between area

NA - not applicable

NS - no standard established for indicated parameter.

OC - organoclay

P - Performance well (Post-construction)

PAC - powder activated carbon

RBMT - risk based management target

S - Sentry well (Post-construction)

U - Up gradient well (Post-construction)

W FPTS - Western Foreshore Passive Treatment System

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
Upper Cap Concentrations¹													6.2	90
RBMT²													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
Post-Construction FPTS														
P3-6-NBO	Surface Water	PW17-06	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	23.7	<20.
P3-6-NBO	Surface Water	PW17-06	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<10.	<60.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.68	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	1.91	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	0.62	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.83	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	0.88	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	1.56	<3.
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	<0.50	<3.0
P3-6-NBO	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	<0.50	<3.0
P3-6-O	Surface Water	PW17-06	CRC ICPMS	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	10.8	<20.
P3-6-O	Surface Water	PW17-06	CRC ICPMS	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	1.18	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	1.28	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.72	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	0.7	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	<0.5	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	0.66	<3.
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	<0.50	<3.0
P3-6-O	Surface Water	PW17-06	HR ICPMS	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	1.35	<3.0
P3-12-NBO	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	29.5	<20.
DUP1 (P3-12-NBO)	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	7.8	<20.
QA/QC RPD													116.4%	---
P3-12-NBO	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<10.	<60.
DUP1 (P3-12-NBO)	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<10.	<60.
QA/QC RPD													---	---
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.83	3.2
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	1.04	3.1
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	0.55	<3.
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.75	<3.
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	13-Sep-18	L2163427	D	0.53	<3.
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	13-Sep-18	L2163427	T	0.74	<3.
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	0.53	<3.0
DUP-2 (P3-12-NBO)	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	0.52	4.1

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
QA/QC RPD													3-Dec-18	
P3-12-NBO	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.92	3.3
DUP-2 (P3-12-NBO)	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.51	5.3
QA/QC RPD													3-Dec-18	
P3-12-O	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	13.5	<20.
P3-12-O	Surface Water	PW17-08	CRC ICPMS	NA	W FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	0.77	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	1.54	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.56	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	0.77	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	0.61	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	0.67	<3.
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	0.59	<3.0
P3-12-O	Surface Water	PW17-08	HR ICPMS	NA	W FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	0.85	<3.0
P6-6-NBO	Surface Water	PW17-18	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	20.8	<20.
P6-6-NBO	Surface Water	PW17-18	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<10.	<60.
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.6	3.8
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	1.32	4.6
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	0.6	3.8
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.68	0.7
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	<0.5	<3.
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	0.63	<3.
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	<0.50	<3.0
P6-6-NBO	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.59	<3.0
P6-6-O	Surface Water	PW17-18	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	28.1	<20.
P6-6-O	Surface Water	PW17-18	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	1.1	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	1.2	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.65	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	<0.5	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	<0.5	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	0.92	<3.
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	<0.50	<3.0
P6-6-O	Surface Water	PW17-18	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	0.59	<3.0

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
Upper Cap Concentrations ¹													200	1,000
RBMT ²													6.2	90
Reported Detection Limit (Dissolved)													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
P6-12-NBO	Surface Water	PW17-20	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	23.1	<20.
P6-12-NBO	Surface Water	PW17-20	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<10.	<60.
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.51	<3.
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	1.26	3.5
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	<0.5	<3.
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	0.71	<3.
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	0.58	8.6
P6-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.81	7.1
P6-12-O	Surface Water	PW17-20	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	23.9	<20.
P6-12-O	Surface Water	PW17-20	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	0.8	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.66	<3.
QA/QC RPD									20-Mar-18				---	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	1.12	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	1.11	<3.
QA/QC RPD									20-Mar-18				0.0	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.51	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	<0.5	<3.
QA/QC RPD									14-Jun-18				---	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	1.78	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.66	<3.
QA/QC RPD									14-Jun-18				---	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	0.63	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	0.55	<3.
QA/QC RPD									14-Jun-18				---	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	<0.50	<3.
DUP5 (P6-12-O)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	0.66	<3.
QA/QC RPD									14-Jun-18				---	---
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	<0.50	<3.0
P6-12-O	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	0.55	<3.0
P8-6-NBO	Surface Water	PW17-28	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	22.2	<20.
P8-6-NBO	Surface Water	PW17-28	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	11.	<60.
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.69	<3.
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	0.63	<3.0

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	1.03	<3.0
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.7	<3.0
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	0.5	<3.0
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	0.7	<3.0
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	<0.50	<3.0
P8-6-NBO	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	<0.50	<3.0
P8-6-O	Surface Water	PW17-28	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	22.5	<20.
P8-6-O	Surface Water	PW17-28	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	1.22	7.4
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	1.04	10.1
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.73	<3.0
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	0.7	<3.0
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	0.51	<3.0
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	0.79	4.7
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	0.55	<3.0
P8-6-O	Surface Water	PW17-28	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	0.61	<3.0
P8-12-NBO	Surface Water	PW17-30	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	D	19.3	<20.
P8-12-NBO	Surface Water	PW17-30	CRC ICPMS	NA	E FPTS	NBO	NBO	NBO	---	11-Dec-17	L2033765	T	<0.3	<60.
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	0.59	<3.
DUP10 (P8-12-NBO)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	D	<0.5	<3.
QA/QC RPD									20-Mar-18			---	---	---
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	0.84	<3.
DUP10 (P8-12-NBO)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	20-Mar-18	L2070135	T	0.86	<3.
QA/QC RPD									20-Mar-18			---	---	---
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	D	0.56	<3.
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	14-Jun-18	L2112693	T	0.92	<3.
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	D	<0.5	<3.
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	12-Sep-18	L2163427	T	0.68	<3.
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.58	<3.0
DUP-1 (P8-12-NBO)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	T	0.65	4.2
QA/QC RPD									3-Dec-18			---	---	---
P8-12-NBO	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	<0.50	<3.0
DUP-1 (P8-12-NBO)	Surface Water	PW17-20	HR ICPMS	NA	E FPTS	NBO	NBO	NBO	---	3-Dec-18	L2205030	D	0.52	<3.0
QA/QC RPD									3-Dec-18			---	---	---

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
Upper Cap Concentrations ¹													200	1,000
RBMT ²													6.2	90
Reported Detection Limit (Dissolved)													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
P8-12-O	Surface Water	PW17-30	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	D	19.	<20.
P8-12-O	Surface Water	PW17-30	CRC ICPMS	NA	E FPTS	SW	SW	SW	---	11-Dec-17	L2033765	T	<10.	<60.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	D	0.76	4.1
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	20-Mar-18	L2070135	T	0.83	<3.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	D	0.52	<3.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	14-Jun-18	L2112693	T	0.81	<3.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	D	<0.5	<3.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	12-Sep-18	L2163427	T	0.62	<3.
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	D	0.77	4.1
P8-12-O	Surface Water	PW17-30	HR ICPMS	NA	E FPTS	SW	SW	SW	---	3-Dec-18	L2205030	T	0.52	<3.0
CBP-1	Porewater	CBP-1	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-1	Porewater	CBP-1	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	D	1.01	1.6
CBP-1	Porewater	CBP-1	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.50	<3.0
CBP-2	Porewater	CBP-2	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-2	Porewater	CBP-2	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	D	0.22	1.6
CBP-2	Porewater	CBP-2	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	4-Dec-18	L2205928	D	<0.50	<3.0
CBP-5	Porewater	CBP-5	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-5	Porewater	CBP-5	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Sep-18	L2164036	D	<0.2	<1.
CBP-5	Porewater	CBP-5	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.50	<3.0
CBP-6	Porewater	CBP-6	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-6	Porewater	CBP-6	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Sep-18	L2164036	D	<0.2	1.1
CBP-6	Porewater	CBP-6	HR ICPMS	CBP	W FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	D	<0.50	<3.0
CBP-7	Porewater	CBP-7	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	<3.
DUP-1(CBP-7)	Porewater	CBP-7	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	<3.
QA/QC RPD									13-Jun-18			---	---	---
CBP-7	Porewater	CBP-7	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	12-Sep-18	L2163271	D	<0.5	4.4
CBP-7	Porewater	CBP-7	HR ICPMS	CBP	W FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.20	1.3
CBP-8	Porewater	CBP-8	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-8	Porewater	CBP-8	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	D	<0.5	<3.
CBP-8	Porewater	CBP-8	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	D	<0.20	<1.0

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FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
Upper Cap Concentrations ¹													200	1,000
RBMT ²													6.2	90
Reported Detection Limit (Dissolved)													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
CBP-15	Porewater	CBP-15	HR ICPMS	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-15	Porewater	CBP-15	HR ICPMS	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	12-Sep-18	L2163271	D	<0.5	3.2
CBP-15	Porewater	CBP-15	HR ICPMS	CBP	E FPTS	0.9-1.0	0.9	1.0	Imported sand and AG/OC	6-Dec-18	L2207439	D	0.22	<1.0
CBP-16	Porewater	CBP-16	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	<3.
CBP-16	Porewater	CBP-16	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	D	<0.5	<3.
CBP-16	Porewater	CBP-16	HR ICPMS	CBP	E FPTS	1.1-1.2	1.1	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	D	<0.40	<2.0
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	2.8	<10.
DUP1 (PW17-01)	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	<10.	<50.
QA/QC RPD										14-Nov-17			---	---
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	D	38.9	12.
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	16-Jan-18	L2045816	D	<4.	<20.
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	D	2.3	<10.
DUP6 (PW17-01)	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	0.64	5.4
PW17-01	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	0.81	5.6
QA/QC RPD										21-Mar-18			---	3.6%
PW17-01	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	D	<0.5	3.6
PW17-01	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Jun-18	L2111824	D	0.55	<3.
PW17-01	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Sep-18	L2162362	D	0.54	4.7
PW17-01	Porewater	PW17-01	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	D	0.68	<3.0
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	D	0.63	2.7
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Dec-19	L2395640	D	0.36	2.
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	D	0.44	2.1
PW17-01	Porewater	PW17-01	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	D	0.4	1.7
PW17-01	Porewater	PW17-01	CRC ICPMS (HMI)	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	D	0.43	1.6
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	2.4	<10.
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	38.	<10.
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-02	Porewater	PW17-02	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	0.79	<3.
PW17-02	Porewater	PW17-02	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	0.69	<3.
PW17-02	Porewater	PW17-02	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Jun-18	L2111824	D	<0.5	3.2
PW17-02	Porewater	PW17-02	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	D	0.73	<3.
PW17-02	Porewater	PW17-02	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	D	0.69	<3.0
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	D	0.64	1.2

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
												200	1,000	
Upper Cap Concentrations¹												6.2	90	
RBMT²												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	D	0.38	<1.0
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	D	0.66	1.2
PW17-02	Porewater	PW17-02	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.51	<1.0
PW17-02	Porewater	PW17-02	CRC ICPMS (HMI)	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Mar-22	VA22A4771	D	0.45	<1.0
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Nov-17	L2023753	D	<10.	<50.
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	23.7	<10.
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	4.1	<20.
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	D	4.5	<10.
PW17-03	Porewater	PW17-03	HR ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	23-Mar-18	L2071889	D	0.83	4.7
PW17-03	Porewater	PW17-03	HR ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	D	<2.	<10.
PW17-03	Porewater	PW17-03	HR ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	0.66	<3.
PW17-03	Porewater	PW17-03	HR ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	<0.5	<3.
PW17-03	Porewater	PW17-03	HR ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	D	<0.50	<3.0
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	0.58	<1.0
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	D	0.4	<1.0
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	D	0.46	3.1
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.54	1.6
PW17-03	Porewater	PW17-03	CRC ICPMS	C	W FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	D	<4.	<20.
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	D	40.4	13.
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	D	5.2	<10.
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	D	3.6	<5.
PW17-04	Porewater EAZ	PW17-04	HR ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	23-Mar-18	L2071889	D	<0.5	4.5
PW17-04	Porewater EAZ	PW17-04	HR ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	D	<1.	<5.
PW17-04	Porewater EAZ	PW17-04	HR ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	D	<0.5	3.9
PW17-04	Porewater EAZ	PW17-04	HR ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2162362	D	<0.5	<3.
PW17-04	Porewater EAZ	PW17-04	HR ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Dec-18	L2206732	D	<0.50	<3.0
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	D	<0.20	1.3
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Dec-19	L2395640	D	<0.20	<1.0
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	10-Dec-20	VA20C3128	D	0.2	1.2
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	D	<0.20	1.1
PW17-04	Porewater EAZ	PW17-04	CRC ICPMS (HMI)	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	D	<0.20	<1.0
DUP-1 (PW17-04)	Porewater EAZ	PW17-04	CRC ICPMS (HMI)	U	W FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	D	<0.20	<0.20
QA/QC RPD										8-Mar-22		---	---	

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	D	<4.	<20.
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	<2.	<10.
DUP2 (PW17-05)	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2022366	D	<2.	<10.
QA/QC RPD													13-Dec-17	---
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	1.63	<2.
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	D	2.43	2.2
PW17-05	Porewater EAZ	PW17-05	HR ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	23-Mar-18	L2071889	D	1.36	<3.
PW17-05	Porewater EAZ	PW17-05	HR ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	D	0.79	<1.
PW17-05	Porewater EAZ	PW17-05	HR ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	D	1.52	<3.
PW17-05	Porewater EAZ	PW17-05	HR ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	D	15.8	<3.
PW17-05	Porewater EAZ	PW17-05	HR ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	D	4.76	<2.0
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	D	1.6	3.7
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Dec-19	L2395640	D	3.23	<1.0
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Dec-20	VA20C3128	D	1.08	1.
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	D	1.74	<1.0
PW17-05	Porewater EAZ	PW17-05	CRC ICPMS (HMI)	P	W FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	8-Mar-22	VA22A4771	D	1.48	<1.0
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	D	<4.	<20.
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	D	23.1	<10.
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	D	3.6	<10.
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	D	2.25	2.4
PW17-06	Porewater	PW17-06	HR ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	23-Mar-18	L2071889	D	<1.	<5.
PW17-06	Porewater	PW17-06	HR ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	D	<0.4	<2.
PW17-06	Porewater	PW17-06	HR ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	<3.
PW17-06	Porewater	PW17-06	HR ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	D	<0.5	<3.
PW17-06	Porewater	PW17-06	HR ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	D	<0.50	<3.0
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	D	<0.20	<1.0
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Dec-19	L2395640	D	<0.20	<1.0
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	10-Dec-20	VA20C3128	D	<0.20	<1.0
PW17-06	Porewater	PW17-06	CRC ICPMS	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	D	<0.20	<1.0
PW17-06	Porewater	PW17-06	CRC ICPMS (HMI)	P	W FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	8-Mar-22	VA22A4771	D	<0.20	<1.0
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Nov-17	L2023092	D	<10.	<50.
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Dec-17	L2034402	D	14.	<50.
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	15-Jan-18	L2045142	D	4.6	22.
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-07	Porewater EAZ	PW17-07	HR ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	21-Mar-18	L2070802	D	<0.5	9.8

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-07	Porewater EAZ	PW17-07	HR ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	17-Apr-18	L2081248	D	0.58	5.2
PW17-07	Porewater EAZ	PW17-07	HR ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	12-Jun-18	L2111276	D	0.58	6.4
PW17-07	Porewater EAZ	PW17-07	HR ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Sep-18	L2161513	D	0.86	5.8
PW17-07	Porewater EAZ	PW17-07	HR ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Dec-18	L2205028	D	0.52	<3.0
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	5-Jun-19	L2286145	D	0.48	3.3
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	11-Dec-19	L2395640	D	0.27	1.4
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	10-Dec-20	VA20C3128	D	0.31	1.8
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS	S	W FPTS	0.70-1.00	0.7	1	Beach sand	3-Mar-21	VA21A3930	D	<0.20	1.6
PW17-07	Porewater EAZ	PW17-07	CRC ICPMS (HMI)	S	W FPTS	0.70-1.00	0.7	1	Beach sand	8-Mar-22	VA22A4771	D	0.31	<1.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	D	<10.	<50.
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	D	49.3	11.
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	D	<4.	<20.
PW17-08	Porewater	PW17-08	HR ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	D	1.73	6.7
PW17-08	Porewater	PW17-08	HR ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	D	<2.	<10.
PW17-08	Porewater	PW17-08	HR ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	D	0.63	3.4
PW17-08	Porewater	PW17-08	HR ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	D	<0.5	<3.
PW17-08	Porewater	PW17-08	HR ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Dec-18	L2205028	D	<0.50	<3.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	D	0.63	<1.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Dec-19	L2395640	D	0.39	<1.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	D	0.4	<1.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	D	0.43	<1.0
PW17-08	Porewater	PW17-08	CRC ICPMS	C	W FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	<4.	<20.
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	D	35.7	18.
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	D	<4.	<20.
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	D	<4.	<20.
PW17-09	Porewater	PW17-09	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	<0.5	<3.
PW17-09	Porewater	PW17-09	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	D	<0.5	<3.
PW17-09	Porewater	PW17-09	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	D	<0.5	<3.
PW17-09	Porewater	PW17-09	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Sep-18	L2161513	D	<0.5	<3.
PW17-09	Porewater	PW17-09	HR ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	D	<0.50	<3.0
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	D	<0.20	1.2
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Dec-19	L2395640	D	<0.20	1.3
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-20	VA20C3128	D	6.18	3.9

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-09	Porewater	PW17-09	CRC ICPMS	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	D	1.43	<1.0
PW17-09	Porewater	PW17-09	CRC ICPMS (HMI)	U	W FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	D	0.42	<1.0
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	D	<10.	<50.
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	33.7	<10.
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	<10.	<50.
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-10	Porewater	PW17-10	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	0.85	4.
PW17-10	Porewater	PW17-10	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	0.66	4.2
PW17-10	Porewater	PW17-10	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	1.18	<3.
PW17-10	Porewater	PW17-10	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	0.92	4.4
PW17-10	Porewater	PW17-10	HR ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Dec-18	L2205028	D	0.69	4.7
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	D	0.72	3.5
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-19	L2395640	D	0.77	1.4
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	D	0.61	2.3
PW17-10	Porewater	PW17-10	CRC ICPMS	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.62	1.9
PW17-10	Porewater	PW17-10	CRC ICPMS (HMI)	S	W FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Mar-22	VA22A4771	D	0.6	1.6
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Nov-17	L2023753	D	<4.	<20.
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Dec-17	L2034402	D	45.2	10.
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	14-Feb-18	L2056918	D	6.7	<20.
PW17-11	Porewater	PW17-11	HR ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	21-Mar-18	L2070802	D	<0.50	<3.0
PW17-11	Porewater	PW17-11	HR ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	16-Apr-18	L2080621	D	<2.	<10.
PW17-11	Porewater	PW17-11	HR ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	12-Jun-18	L2111276	D	<0.50	<3.0
PW17-11	Porewater	PW17-11	HR ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Sep-18	L2161513	D	<0.50	<3.0
PW17-11	Porewater	PW17-11	HR ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Dec-18	L2205028	D	<0.50	<3.0
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	4-Jun-19	L2285149	D	<4.0	<20
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-19	L2395326	D	<0.20	<1.0
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	10-Dec-20	VA20C3128	D	<0.20	<1.0
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	3-Mar-21	VA21A3930	D	<0.20	<1.0
PW17-11	Porewater	PW17-11	CRC ICPMS	C	W FPTS	0.74-1.10	0.74	1.1	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	D	<10.	<50.
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	52.1	11.
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	5.7	<20.

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	D	<10.	<50.
PW17-12	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	<0.5	<3.
DUP7 (PW17-12)	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	0.51	<3.
QA/QC RPD													---	---
PW17-12	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	<0.5	<3.
PW17-12	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	0.98	18.7
PW17-12	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	0.78	<3.
PW17-12	Porewater	PW17-12	HR ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	0.59	<3.0
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	0.64	<1.0
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	0.32	<1.0
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	10-Dec-20	VA20C3128	D	0.37	1.4
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.43	<1.0
PW17-12	Porewater	PW17-12	CRC ICPMS	C	IBA	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	16.6
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	<4.	<20.
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	D	39.5	11.
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	D	3.7	<10.
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	13-Feb-18	L2056920	D	<4.	<20.
PW17-13	Porewater	PW17-13	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	1.06	1.9
PW17-13	Porewater	PW17-13	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	D	2.23	<3.
PW17-13	Porewater	PW17-13	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	D	1.15	<3.
PW17-13	Porewater	PW17-13	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Sep-18	L2161513	D	1.45	3.1
PW17-13	Porewater	PW17-13	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	D	1.47	<3.0
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	5-Jun-19	L2286145	D	1.25	1.7
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-19	L2395326	D	1.2	1.6
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	D	2.05	<1.0
PW17-13	Porewater	PW17-13	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	D	1.25	1.4
PW17-13	Porewater	PW17-13	CRC ICPMS (HMI)	U	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Mar-22	VA22A4771	D	1.68	1.8
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	<2.	<10.
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	40.3	13.
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-14	Porewater	PW17-14	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	1.	8.
PW17-14	Porewater	PW17-14	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	0.92	7.8
PW17-14	Porewater	PW17-14	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	0.65	4.2
PW17-14	Porewater	PW17-14	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	0.59	<3.

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-14	Porewater	PW17-14	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	0.85	3.4
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	5-Jun-19	L2286145	D	0.6	3.6
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	0.83	3.5
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	D	0.56	3.4
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.51	1.8
PW17-14	Porewater	PW17-14	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Nov-17	L2023753	D	<4.	<20.
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	13-Dec-17	L2035368	D	22.5	<20.
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	D	31.7	<20.
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	D	<4.	<20.
PW17-15	Porewater	PW17-15	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	D	<0.5	<3.
PW17-15	Porewater	PW17-15	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	17-Apr-18	L2081248	D	<0.5	<3.
PW17-15	Porewater	PW17-15	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	D	<0.5	4.4
PW17-15	Porewater	PW17-15	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Sep-18	L2161513	D	<0.5	<3.
PW17-15	Porewater	PW17-15	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	D	<0.50	<3.0
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	D	<4.0	<20
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	D	0.21	1.2
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-20	VA20C3128	D	0.27	1.4
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	D	0.4	<1.0
PW17-15	Porewater	PW17-15	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Nov-17	L2023092	D	<4.	<20.
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	D	29.7	10.
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	D	1.	4.6
DUP1 (PW17-16)	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	D	1.07	4.7
QA/QC RPD										16-Jan-18		---	---	
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	D	1.6	4.
DUP1 (PW17-16)	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Feb-18	L2056918	D	7.46	11.5
QA/QC RPD										14-Feb-18		129.4%	---	
PW17-16	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	D	0.34	5.
PW17-16	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	D	<0.2	1.7
DUP1 (PW17-16)	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	D	<0.2	1.7
QA/QC RPD										18-Apr-18		---	---	
PW17-16	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	D	0.62	5.5
DUP-2 (PW17-16)	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Jun-18	L2111824	D	0.64	6.9
QA/QC RPD										13-Jun-18		---	22.6%	

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-16	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	11-Sep-18	L2162362	D	0.77	4.6
PW17-16	Porewater EAZ	PW17-16	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Dec-18	L2206732	D	<0.20	1.3
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	D	0.33	3.7
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	D	<1.0	<5.0
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	D	<0.4	<2
DUP1 (PW17-16)	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	D	0.52	<2
QA/QC RPD										9-Dec-20			---	---
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	D	<1.0	<5.0
DUP-3 (PW17-16)	Porewater EAZ	PW17-16	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	D	<1.0	<5.0
PW17-16	Porewater EAZ	PW17-16	CRC ICPMS (HMI)	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	D	<0.20	<1.0
DUP-2 (PW17-16)	Porewater EAZ	PW17-16	CRC ICPMS (HMI)	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	8-Mar-22	VA22A4771	D	<0.20	<1.0
QA/QC RPD										8-Mar-22			---	---
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	D	1.48	11.5
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	1.2	<4.
DUP3 (PW17-17)	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	2.24	<4.
QA/QC RPD										13-Dec-17			60.5%	---
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	1.4	2.5
DUP2 (PW17-17)	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	1.36	2.5
QA/QC RPD										16-Jan-18			2.9%	---
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	D	0.37	2.6
DUP2 (PW17-17)	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Feb-18	L2056918	D	0.4	3.
QA/QC RPD										14-Feb-18			---	---
PW17-17	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	D	<0.2	1.7
PW17-17	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	D	<0.2	1.3
DUP2 (PW17-17)	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	D	<0.2	1.5
QA/QC RPD										18-Apr-18			---	---
PW17-17	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Jun-18	L2111824	D	<0.5	22.3
PW17-17	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	D	<0.5	16.5
DUP-1 (PW17-17)	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	11-Sep-18	L2162362	D	<0.5	15.7
QA/QC RPD										11-Sep-18			5.0%	---
PW17-17	Porewater EAZ	PW17-17	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.20	1.9
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	D	<1.0	<5.0
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	D	<0.20	1.4
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	D	<0.2	1.3
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	D	<0.20	<1.0
PW17-17	Porewater EAZ	PW17-17	CRC ICPMS (HMI)	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	8-Mar-22	VA22A4771	D	<0.20	1.6

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	D	3.35	<5.
DUP3 (PW17-18)	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	D	3.71	<5.
QA/QC RPD										15-Nov-17			10.2%	---
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	D	18.3	<4.
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	D	1.14	2.5
DUP3 (PW17-18)	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	D	2.54	4.
QA/QC RPD										16-Jan-18			76.1%	---
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	D	1.68	1.8
DUP3 (PW17-18)	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Feb-18	L2056918	D	2.89	3.
QA/QC RPD										14-Feb-18			53.0%	---
PW17-18	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	D	<0.2	4.1
PW17-18	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	D	<0.2	<1.
DUP3 (PW17-18)	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	D	<0.2	<1.
QA/QC RPD										18-Apr-18			---	---
PW17-18	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	7.5
DUP3 (PW17-18)	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Jun-18	L2111824	D	<0.5	8.8
QA/QC RPD										18-Apr-18			---	16.0%
PW17-18	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	D	0.54	34.9
DUP-2 (PW17-18)	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	11-Sep-18	L2162362	D	0.6	35.
QA/QC RPD										11-Sep-18			---	0.3%
PW17-18	Porewater	PW17-18	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Dec-18	L2206732	D	<0.50	<3.0
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	D	<2.0	15.
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	D	<0.20	4.8
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	D	<0.2	6.6
PW17-18	Porewater	PW17-18	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	D	<0.40	<2.0
PW17-18	Porewater	PW17-18	CRC ICPMS (HMI)	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	8-Mar-22	VA22A4771	D	0.35	6.3
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	2.4	8.7
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Dec-17	L2034402	D	34.9	11.6
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	15-Jan-18	L2045142	D	<1.	<5.
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	13-Feb-18	L2056920	D	4.3	6.2
PW17-19	Porewater	PW17-19	HR ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	<0.2	2.4
PW17-19	Porewater	PW17-19	HR ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	16-Apr-18	L2080621	D	<0.2	3.4
PW17-19	Porewater	PW17-19	HR ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	12-Jun-18	L2111276	D	1.04	3.
PW17-19	Porewater	PW17-19	HR ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Sep-18	L2161513	D	5.	5.
PW17-19	Porewater	PW17-19	HR ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Dec-18	L2205928	D	<0.50	<3.0

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	4-Jun-19	L2285149	D	2.9	<10
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	10-Dec-19	L2395326	D	1.02	2.6
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	D	1.48	2.2
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	D	0.24	1.6
PW17-19	Porewater	PW17-19	CRC ICPMS	S	E FPTS	0.87-1.15	0.87	1.15	Weathered Colluvium	7-Mar-22	VA22A4673	D	<2	<10
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	14-Nov-17	L2022366	D	2.9	6.
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Dec-17	L2034402	D	36.6	8.8
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	15-Jan-18	L2045142	D	<1.	<5.
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	13-Feb-18	L2056920	D	2.4	<5.
PW17-20	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	21-Mar-18	L2070802	D	<0.5	<3.
DUP8 (PW17-20)	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	21-Mar-18	L2070802	D	<0.5	<3.
QA/QC RPD										21-Mar-18			---	---
PW17-20	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	16-Apr-18	L2080621	D	<0.4	<2.
PW17-20	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	12-Jun-18	L2111276	D	<0.5	5.
PW17-20	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Sep-18	L2161513	D	<0.5	3.6
PW17-20	Porewater EAZ	PW17-20	HR ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	4-Dec-18	L2205928	D	<0.50	8.1
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	4-Jun-19	L2285149	D	<2.0	<10
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	10-Dec-19	L2395326	D	0.76	2.5
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	9-Dec-20	VA20C3039	D	0.46	7.1
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	3-Mar-21	VA21A3930	D	1.09	2.6
PW17-20	Porewater EAZ	PW17-20	CRC ICPMS	C	E FPTS	0.64-1.00	0.64	1	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Nov-17	---	---	---	---
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-17	---	---	---	---
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	---	---	---	---
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	---	---	---	---
PW17-21	Porewater EAZ	PW17-21	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	D	0.47	1.5
PW17-21	Porewater EAZ	PW17-21	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	18-Apr-18	L2081868	D	<1.	<5.
PW17-21	Porewater EAZ	PW17-21	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	D	0.87	1.4
PW17-21	Porewater EAZ	PW17-21	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Sep-18	L2163271	D	1.6	<3.
PW17-21	Porewater EAZ	PW17-21	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	D	0.95	1.9
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	5-Jun-19	L2286145	D	<1.0	<5.0
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	D	<1.0	<5.0
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	D	0.52	<2
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	3-Mar-21	VA21A3930	D	0.43	<2.0
PW17-21	Porewater EAZ	PW17-21	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	7-Mar-22	VA22A4673	D	1.01	1.0

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Nov-17	L2023092	D	1.22	<5.
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	1.29	<4.
DUP4 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	5.02	<5.
QA/QC RPD										13-Dec-17			118.2%	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	<0.4	2.1
DUP4 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	<0.4	2.6
QA/QC RPD										16-Jan-18			---	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	D	1.22	4.1
DUP4 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	D	0.67	3.1
QA/QC RPD										15-Feb-18			---	---
PW17-22	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	D	<0.2	1.8
DUP 4(PW17-22)	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	D	0.46	2.1
QA/QC RPD										22-Mar-18			---	---
PW17-22	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	D	<0.2	<1.
DUP 4(PW17-22)	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	18-Apr-18	L2081868	D	<0.2	<1.
QA/QC RPD										18-Apr-18			---	---
PW17-22	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	D	<0.5	3.1
DUP 4(PW17-22)	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	D	<0.5	3.
QA/QC RPD										14-Jun-18			---	---
PW17-22	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	10-Sep-18	L2161513	D	<0.5	5.2
PW17-22	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.20	1.5
DUP-3 (PW17-22)	Porewater EAZ	PW17-22	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Dec-18	L2206732	D	<0.20	1.5
QA/QC RPD										5-Dec-18			---	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	D	<2.0	<10
DUP-2 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	5-Jun-19	L2286145	D	<4.0	<20
QA/QC RPD										5-Jun-19			---	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	D	0.53	1.2
DUP-1 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	D	0.49	<1.
QA/QC RPD										12-Dec-19			---	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	D	1.53	3.60
DUP3 (PW17-22)	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	D	1.5	3.4
QA/QC RPD										9-Dec-20			2.0%	---
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	D	1.12	<1.0
PW17-22	Porewater EAZ	PW17-22	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	D	1.83	<5

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Nov-17	L2023092	D	1.64	<3.5
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	D	19.	<4.
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	D	0.57	<1.
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	D	0.41	1.8
PW17-23	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	D	<0.5	<3.
PW17-23	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	D	<0.2	<1.
PW17-23	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	D	<0.5	7.3
PW17-23	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	10-Sep-18	L2161513	D	<0.5	14.8
PW17-23	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	D	<0.40	2.
DUP-4 (PW17-23)	Porewater	PW17-23	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	D	<0.20	1.7
QA/QC RPD										6-Dec-18			---	---
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	D	<2.0	16.
DUP-3 (PW17-23)	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	5-Jun-19	L2286145	D	<4.0	<20
QA/QC RPD										5-Jun-19			---	---
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	D	0.33	1.4
DUP-2 (PW17-23)	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	D	0.32	2.4
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	D	0.34	11.9
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	D	0.38	<1.0
PW17-23	Porewater	PW17-23	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Mar-22	VA22A4919	D	<1	<5
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Nov-17	L2023092	D	<10.	<50.
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	62.7	14.
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	16.7	<20.
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-24	Porewater	PW17-24	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	<0.5	<3.
PW17-24	Porewater	PW17-24	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	<0.5	<3.
PW17-24	Porewater	PW17-24	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	0.6	<3.
PW17-24	Porewater	PW17-24	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	0.72	<3.
PW17-24	Porewater	PW17-24	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	<0.50	<3.0
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	<4.0	<20
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	<0.2	<1.
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	D	0.26	1.7
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.21	<1.0
PW17-24	Porewater	PW17-24	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	<4.	<20.
DUP2 (PW17-25)	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	<4.	<20.

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
QA/QC RPD													---	---
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	54.3	11.
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	13-Feb-18	L2056920	D	<4.	<20.
PW17-25	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	0.89	<3.
DUP9 (PW17-25)	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	21-Mar-18	L2070802	D	0.96	<3.
QA/QC RPD													---	---
PW17-25	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	D	<1.	<5.
PW17-25	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	<1.	<3.
PW17-25	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Sep-18	L2161513	D	1.15	<3.
PW17-25	Porewater	PW17-25	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	0.88	<3.0
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	1.56	2.6
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	0.68	<1.0
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	D	0.7	1.5
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.68	1.5
PW17-25	Porewater	PW17-25	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Nov-17	L2023753	D	0.84	7.7
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	13-Dec-17	L2035368	D	19.3	7.5
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	16-Jan-18	L2045816	D	5.45	7.3
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	15-Feb-18	L2057618	D	8.96	10.
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	D	0.26	2.3
DUP 1(PW17-26)	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	22-Mar-18	L2071404	D	0.27	2.1
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium					
QA/QC RPD													---	---
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	17-Apr-18	L2081248	D	<0.5	<3.
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	14-Jun-18	L2112662	D	<0.2	1.2
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Sep-18	L2163271	D	<0.5	8.2
PW17-26	Porewater EAZ	PW17-26	HR ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Dec-18	L2207439	D	0.21	2.
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	D	0.41	3.4
DUP 1(PW17-26)	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	6-Jun-19	L2287095	D	<0.40	3.5
QA/QC RPD													---	---
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	D	0.3	2.1
DUP 3 (PW17-26)	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	12-Dec-19	L2396150	D	0.22	1.6
QA/QC RPD													---	---
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	D	<0.2	2.3
DUP 2(PW17-26)	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Dec-20	VA20C3039	D	<0.2	2.6

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
QA/QC RPD													9-Dec-20	
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	D	<0.20	<1.0
DUP-1(PW17-26)	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	4-Mar-21	VA21A4107	D	<0.20	<1.0
PW17-26	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Mar-22	VA22A4919	D	<1	<5
DUP-3 (PW17-26)	Porewater EAZ	PW17-26	CRC ICPMS	U	E FPTS	0.45-0.75	0.45	0.75	Weathered Colluvium	9-Mar-22	VA22A4919	D	<1	<5
QA/QC RPD													8-Mar-22	
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Nov-17	L2023753	D	<2.	<10.
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	13-Dec-17	L2035368	D	4.12	<2.
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	16-Jan-18	L2045816	D	6.48	7.5
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	15-Feb-18	L2057618	D	5.7	7.8
PW17-27	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	D	<2.	<1.
DUP 2(PW17-27)	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	22-Mar-18	L2071404	D	<2.	<1.
QA/QC RPD													22-Mar-18	
PW17-27	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	17-Apr-18	L2081248	D	<0.5	<3.
PW17-27	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	14-Jun-18	L2112662	D	0.95	<3.
PW17-27	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	D	<0.5	<3.
DUP-3(PW17-27)	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Sep-18	L2163271	D	<0.5	<3.
QA/QC RPD													12-Sep-18	
PW17-27	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	D	<0.20	<1.0
DUP-5 (PW17-27)	Porewater EAZ	PW17-27	HR ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Dec-18	L2207439	D	<0.20	<1.0
QA/QC RPD													6-Dec-18	
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	6-Jun-19	L2287095	D	0.4	1.9
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	12-Dec-19	L2396150	D	0.31	1.2
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Dec-20	VA20C3039	D	0.58	3.4
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	D	0.75	<1.0
DUP-2(PW17-27)	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	4-Mar-21	VA21A4107	D	0.75	<1.0
PW17-27	Porewater EAZ	PW17-27	CRC ICPMS	P	E FPTS	0.64-1.00	0.64	1	Imported sand and AG/OC	9-Mar-22	VA22A4919	D	1.31	<5
QA/QC RPD													4-Mar-21	
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Nov-17	L2023753	D	<2.	<10.
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	13-Dec-17	L2035368	D	29.4	6.
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	16-Jan-18	L2045816	D	0.33	<1.
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	15-Feb-18	L2057618	D	10.7	9.6
PW17-28	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	D	0.99	<1.
DUP 3(PW17-28)	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	22-Mar-18	L2071404	D	<2.	<1.
QA/QC RPD													22-Mar-18	

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-28	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	18-Apr-18	L2081868	D	<0.2	<1.
PW17-28	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	14-Jun-18	L2112662	D	<0.5	3.5
PW17-28	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	D	1.44	6.5
DUP-4(PW17-28)	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Sep-18	L2163271	D	1.52	7.
QA/QC RPD										12-Sep-18			5.4%	7.4%
PW17-28	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	D	0.2	<1.0
DUP-6 (PW17-28)	Porewater	PW17-28	HR ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Dec-18	L2207439	D	<0.20	<1.0
QA/QC RPD										6-Dec-18			---	---
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	6-Jun-19	L2287095	D	<4.0	<20
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	12-Dec-19	L2396150	D	<0.2	1.4
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Dec-20	VA20C3039	D	0.22	1.3
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	4-Mar-21	VA21A4107	D	0.28	<1.0
PW17-28	Porewater	PW17-28	CRC ICPMS	P	E FPTS	0.84-1.20	0.84	1.2	Imported sand and AG/PAC	9-Mar-22	VA22A4919	D	<1	<5
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Nov-17	L2022366	D	<4.	<20.
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Dec-17	L2034402	D	41.7	11.
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	15-Jan-18	L2045142	D	4.9	<20.
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	14-Feb-18	L2056918	D	3.8	<10.
PW17-29	Porewater	PW17-29	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	21-Mar-18	L2070802	D	0.65	<3.
PW17-29	Porewater	PW17-29	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	17-Apr-18	L2081248	D	0.51	<3.
PW17-29	Porewater	PW17-29	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	12-Jun-18	L2111276	D	0.72	<3.
PW17-29	Porewater	PW17-29	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	11-Sep-18	L2162362	D	0.74	<3.
PW17-29	Porewater	PW17-29	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Dec-18	L2205928	D	<0.50	<3.0
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	4-Jun-19	L2285149	D	<2.0	<10
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	10-Dec-19	L2395326	D	<0.2	2.
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	8-Dec-20	VA20C2850	D	<0.2	1.6
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	3-Mar-21	VA21A3930	D	0.48	1.2
PW17-29	Porewater	PW17-29	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Weathered Colluvium	7-Mar-22	VA22A4673	D	<2	<10
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Nov-17	L2022366	D	<4.	<20.
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Dec-17	L2034402	D	48.6	10.
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	15-Jan-18	L2045142	D	<4.	<20.
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	14-Feb-18	L2056918	D	5.3	<10.
PW17-30	Porewater	PW17-30	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	21-Mar-18	L2070802	D	0.9	<3.
PW17-30	Porewater	PW17-30	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	16-Apr-18	L2080621	D	<1.	<5.
PW17-30	Porewater	PW17-30	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	12-Jun-18	L2111276	D	1.04	<3.
PW17-30	Porewater	PW17-30	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	11-Sep-18	L2162362	D	1.1	<3.

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc	
Upper Cap Concentrations ¹												200	1,000	
RBMT ²												6.2	90	
Reported Detection Limit (Dissolved)												0.2	1	
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
PW17-30	Porewater	PW17-30	HR ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Dec-18	L2205928	D	0.74	<3.0
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	4-Jun-19	L2285149	D	<4.0	<20
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	10-Dec-19	L2395326	D	0.63	<1.0
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	9-Dec-20	VA20C3039	D	0.78	1.9
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	3-Mar-21	VA21A3930	D	0.76	1.1
PW17-30	Porewater	PW17-30	CRC ICPMS	C	E FPTS	0.84-1.20	0.84	1.2	Beach sand	7-Mar-22	VA22A4673	D	<2	<10
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	<4.	26.
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	D	37.5	<20.
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	D	2.1	<10.
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	D	5.1	7.8
PW17-31	Porewater	PW17-31	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	D	0.98	<3.
PW17-31	Porewater	PW17-31	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	1.18	<3.
PW17-31	Porewater	PW17-31	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	0.98	<3.
PW17-31	Porewater	PW17-31	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Sep-18	L2163271	D	1.52	8.8
PW17-31	Porewater	PW17-31	HR ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	0.83	<3.0
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	<4.0	<20
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	0.75	2.6
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	D	<1.	<5.
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Mar-21	VA21A4107	D	0.5	1.1
PW17-31	Porewater	PW17-31	CRC ICPMS	U	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	---	D	NS	NS
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	2.8	11.7
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Dec-17	L2033765	D	29.7	<20.
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Jan-18	L2045816	D	2.8	<10.
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	D	3.	19.3
PW17-32	Porewater	PW17-32	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	D	0.62	8.7
PW17-32	Porewater	PW17-32	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	17-Apr-18	L2081248	D	<0.5	4.7
PW17-32	Porewater	PW17-32	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	<0.5	4.2
PW17-32	Porewater	PW17-32	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	D	0.73	<3.
PW17-32	Porewater	PW17-32	HR ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	1.01	8.8
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	1.3	6.1
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	2.22	6.8
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	8-Dec-20	VA20C2850	D	1.59	4.9
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.71	5.1
PW17-32	Porewater	PW17-32	CRC ICPMS	S	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2	<10

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc
Upper Cap Concentrations ¹												200	1,000
RBMT ²												6.2	90
Reported Detection Limit (Dissolved)												0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved	
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Nov-17	L2022366	D	<2.
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Dec-17	L2034402	D	36.3
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	15-Jan-18	L2045142	D	<4.
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	14-Feb-18	L2056918	D	<2.
PW17-33	Porewater	PW17-33	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	22-Mar-18	L2071404	D	<0.5
PW17-33	Porewater	PW17-33	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	16-Apr-18	L2080621	D	<1.
PW17-33	Porewater	PW17-33	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	12-Jun-18	L2111276	D	<0.5
PW17-33	Porewater	PW17-33	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	11-Sep-18	L2162362	D	<0.5
PW17-33	Porewater	PW17-33	HR ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Dec-18	L2205928	D	<0.50
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	4-Jun-19	L2285149	D	<1.0
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	10-Dec-19	L2395326	D	<0.2
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	9-Dec-20	VA20C3039	D	0.22
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	3-Mar-21	VA21A3930	D	0.32
PW17-33	Porewater	PW17-33	CRC ICPMS	C	E FPTS	0.85-1.15	0.85	1.15	Beach sand	7-Mar-22	VA22A4673	D	<2
F-Blank-1A	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	<2.
F-Blank-1B	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	<2.
F-Blank-1C	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	0.85
F-Blank-2A	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	<2.
F-Blank-2B	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	0.68
F-Blank-2C	Deionized water	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	19-Mar-18	L2070133	D	0.7
R-BLANK	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	D	0.22
R-BLANK	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	22-Mar-18	L2071404	D	<2.
R-BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	16-Apr-18	L2080621	D	<0.2
R-BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	12-Jun-18	L2111276	D	<0.2
R-BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	17-Apr-18	L2081248	D	<0.5
R-BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	13-Jun-18	L2111824	D	<0.2
R-BLANK-3	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112662	D	<0.2
R-BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	10-Sep-18	L2161513	D	<0.2
R-BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	11-Sep-18	L2162362	D	<0.5
R-BLANK-3	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	12-Sep-18	L2163271	D	<0.5
R-BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	D	<0.50
R-BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	4-Dec-18	L2205928	D	<0.20
R-BLANK-3	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	5-Dec-18	L2206732	D	<0.20
R-BLANK-1	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	5-Jun-19	L2286145	D	<0.20
R-BLANK-2	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	5-Jun-19	L2286145	D	<0.20

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PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

													Copper	Zinc
													200	1,000
													6.2	90
													0.2	1
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved		
R-BLANK-1	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	10-Dec-19	L2395326	D	<0.20	<1.0
R-BLANK-2	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	11-Dec-19	L2395640	D	<0.20	<1.0
R-BLANK-1	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	8-Dec-20	VA20C2850	D	<0.20	<1.0
R-BLANK-2	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	10-Dec-20	VA20C3128	D	<0.20	1.8
R-BLANK-1	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	3-Mar-21	VA21A3930	D	<0.20	<1.0
R-BLANK-2	NA	NA	CRC ICPMS (HMI)	NA	NA	NA	NA	NA	NA	8-Mar-22	VA22A4771	D	<0.20	<1.0
TRAVEL BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	20-Mar-18	L2070135	T	<0.5	<3.
T-BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	T	<2.	<1.
T-BLANK-3	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	21-Mar-18	L2070802	T	<2.	<1.
T-BLANK-4	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	22-Mar-18	L2071404	T	<0.5	<3.
T-BLANK-5	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	23-Mar-18	L2071889	T	<0.5	<3.
T-BLANK-5	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112693	T	<0.5	<3.
T-BLANK-6	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	14-Jun-18	L2112693	T	<0.5	<3.
TRAVEL BLANK-1	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	T	<0.50	<3.0
TRAVEL BLANK-2	NA	NA	HR ICPMS	NA	NA	NA	NA	NA	NA	3-Dec-18	L2205030	T	<0.50	<3.0
R-BLANK-2	NA	NA	CRC ICPMS	NA	NA	NA	NA	NA	NA	4-Mar-21	VA21A4107	D	<0.20	<1.0

Notes

< - Sample concentration less than the detection limit indicated.

--- - Sample not analyzed for indicated parameter.

@ - AECOM considers the December 2017 porewater and surface water dissolved copper data as suspect.

- Deionized water filter assessment samples.

1 - Protocol 11 Table 6. Water Upper Cap Concentrations for Schedule 3.2 Substances

2 - On February 28, 2014, SLR submitted a Human Health and Ecological Risk Assessment (HHERA) to determine Risk-Based Management Targets (RBMTs) for PCOCs associated with the Foreshore seeps which was accepted by the MoE in their letter dated August 28, 2014.

BOLD	Sample concentration is detected
SHADE	Sample concentration greater than RBMT
SHADE	

Abbreviations

µg/L [ppb] - micrograms/litre [parts per billion]

m - metres

Acronyms

TABLE 4
CONCENTRATIONS OF DISSOLVED METALS IN WATER SAMPLES (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

												Copper	Zinc
												200	1,000
Upper Cap Concentrations¹												6.2	90
RBMT²												0.2	1
Reported Detection Limit (Dissolved)													
Sample ID	Matrix	Sample Location	Method	Well Location	Location Area	Screened Interval (m)	Top Screen (m)	Bottom Screen (m)	Lithology of Screen Interval (Primary)	Sample Date	Report	Total/Dissolved	

AG - aquagate

C - Compliance well (Post-construction)

CCME - Canadian Council of Ministers of the Environment (Updates to May 2008). Marine unless otherwise noted as FW (freshwater).

CRC ICPMS - Collision/Reaction Cells Inductively Coupled Plasma Mass Spectrometry

CSR/10 - Contaminated Sites Regulation (including up to Stage 11 amendments, November 2017) divided by ten (10)

D - dissolved metals

EAZ - ecologically active zone

E FPTS - Eastern Foreshore Passive Treatment System

HR ICPMS - High Resolution Inductively Coupled Plasma Mass Spectrometry

NBO - near bottom samples

NS - no standard established for indicated parameter.

OC - organoclay

P - Performance well (Post-construction)

PAC - powder activated carbon

RBMT - risk based management target

S - Sentry well (Post-construction)

SW - surface water samples

T - total metals

U - Up gradient well (Post-construction)

W FPTS - Western Foreshore Passive Treatment System

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
15-Jan-18	Eastern	Yes	Yes	No	No	No	No	
	Western	Yes	Yes	No	No	No	No	
13-Feb-18	Eastern	Yes	Yes	No	No	No	No	
	Western	Yes	Yes	No	No	No	No	
20-Mar-18	Eastern	Yes	Yes	No	No	No	No	
	Western	Yes	Yes	No	No	No	No	
17-Apr-18	Eastern	Yes	Yes	No	No	No	No	
	Western	Yes	Yes	No	No	No	No	
12-Jun-18	Eastern	Yes	Yes	No	No	No	No	Minor chips observed on well lid of PW17-30
	Western	Yes	Yes	No	No	No	No	Minor chips observed on well lid of PW17-2 Minor chips observed on casing rim of CBP-5 Small portions of exposed geogrid/filter fabric and oleophilic biobarrier (OBB) (approximately 0.20 m by 0.30 m in size) at the corner of the toe of riprap embankment, approximately 7 m northwest of PW17-3 (refer to Photos 1 and 2 in Appendix H). Small portion of OBB (approximately 0.24 m by 0.24 m in size) exposed at the northwest corner of the toe of the cobble mat, approximately 5 m northwest of PW17-3.
13-Sep-18	Eastern	Yes	Yes	No	No	No	No	Minor chips observed on well lid of PW17-30
	Western	Yes	Yes	No	No	No	No	Minor chips observed on well lid of PW17-2 A small portion of exposed geogrid (approximately 0.20 m by 0.30 m in size) at the northwest corner of the toe of riprap embankment, approximately 7 m northwest of PW17-3. Small portion of OBB (approximately 0.24 m by 0.24 m in size) exposed at the northwest corner of the toe of the cobble mat, approximately 5 m northwest of PW17-3.
5-Dec-18	Eastern	Yes	Yes	No	Yes, one shallow rooted plant observed east of PW17-26; removed	No	No	Minor chips observed on casings of wells PW17-2 and PW17-7. Field staff built up cobble protection around well PW17-1.
	Western	Yes	Yes	No	No	No	No	Minor chips observed on casings of wells PW17-25 and PW17-30.
25-Mar-19	Eastern	Yes	Yes	No	Small weeds present	Hand pulled larger plants, no further action required.	No	Minor chips observed on well lid and/or casing rim of most wells. A small portion of OBB exposed at Western FPTS. This was repaired by hand excavating 1 m ² around the exposed portion of the OBB and re-installing it to a depth of 0.4 m below grade and covered with sand and cobbles. The work was conducted at low tide to minimize impacts to aquatic life.
	Western	Yes	Yes	No	One thorn bush present	Hand pulled larger plants, no further action required.	No	Geogrid and filter fabric exposed in four areas along the contact point between the rip rap and cobble interface of the Eastern FPTS. Thickness of cobble mat determined by height of protective casing exposed above grade at PW17-7, PW17-8, PW17-19,

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
4-Jun-19	Eastern	NM	Yes	No	NM	NA	No	Minor chips observed on well lid and/or casing rim of most wells.
	Western	NM	Yes	No	NM	NA	No	Geogrid and filter fabric exposed in nine areas (six on the Eastern FPTS and three on the Western FPTS) along the contact point between the rip rap and cobble interface. Two hand dug test pits (TP) completed down slope of the Eastern FPTS to determine thickness of the cobble layer TP1: Sand 0-0.13 m; cobbles 0.13-0.30 m. TP2: Sand 0-0.13 m; cobbles 0.13-0.38 m.
11-Sep-19	Eastern	Yes	Yes	No	Small weeds and tree saplings present among upgradient wells	Hand pulled larger plants, additional removal may be required.	No	Minor chips observed on well lid and/or casing rim of most wells. Geogrid and filter fabric exposed in ten areas. Six areas on the Eastern FPTS and three areas on the Western FPTS along the contact point between the rip rap and cobble interface. One area of geogrid was exposed east of the rip rap of the Western FPTS
	Western	Yes	Yes	No	Small weeds present	None	No	Three hand dug test pits completed: two down slope of Eastern FPTS and one down slope of the Western FPTS. TP1: Sand 0-0.12 m; cobbles 0.12-0.38 m. TP2: Sand 0-0.07 m; cobbles 0.07-0.42 m. TP3: Cobbles 0-0.43 m
10-Dec-19	Eastern	Yes	Yes	No	No	No	No	Minor chips observed on well lid and/or casing rim of most wells.
	Western	Yes	Yes	No	No	Hand pulled larger plants, no further action required.	No	Geogrid and filter fabric exposed in ten areas. Six areas on the Eastern FPTS and three areas of Western FPTS along the contact point between the rip rap and cobble interface. One area of geogrid was exposed east of the rip rap of the Western FPTS. Three hand dug test pits completed: two down slope of Eastern FPTS and one down slope of the Western FPTS. TP1: Sand 0-0.20 m; cobbles 0.20-0.43 m TP2: Sand 0-0.14 m; cobbles 0.14-0.41 m TP3: Cobbles 0-0.44 m
12-Mar-20	Eastern	Yes	Yes	No	Small woody shrubs and blackberry growing along southern edge; no vegetation growth on treatment cells; some vines hanging over southern edge of riprap	Hand pulled small shrubs and trimmed vines; pulled around 25 plants; no vegetation of concern left	No	No major damage; chipping of PW17-30; moderate barnacle growth on most wells; six areas of geogrid and filter fabric exposed TP1: Sand from 0 - 0.13mbgs; Cobble from 0.13 - 0.42mbgs; No liner encountered TP2: Sand from 0 - 0.17mbgs; Cobble from 0.17 - 0.39 mbgs; No liner encountered
	Western	Yes	Yes	No	Growth of small weeds overtop of treatment cells; no vegetation growth of concern on northern side; vegetation branches and vines hanging over riprap barrier	Hand pulled around 10 small vegetation; no vegetation of concern left	No	No major damage; chipping of CBP-5; moderate barnacle growth on most wells; four areas of geogrid and filter fabric exposed TP3: Cobble from 0 - 0.38mbgs; Liner encountered

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
22-Jun-20	Eastern	Yes	Yes	No	Numerous 1m tall weeds growing on top of the barrier around the upgradient wells; no vegetation on top of treatment cells or OBB layer; Overhanging vegetation on southern side of the barrier are present	Hand pulled numerous weeds	No	Wells submerged at high tide have barnacle and seaweed growth on the outer casing; most wells have received minor chipping of the protective casing TP1: Sand from 0 - 0.13mbgs; Cobble from 0.13 - 0.42mbgs; No liner encountered TP2: Sand from 0 - 0.04mbgs; Cobble from 0.04 - 0.48 mbgs; Liner encountered
	Western	Yes	Yes	No	A couple of 1m tall weeds growing on top of the barrier around the upgradient wells; no vegetation was observed on top of the treatment cells or the OBB layer; Overhanging vegetation on the southern side of the barrier are present	Hand pulled numerous weeds	No	Wells submerged at high tide have barnacle and seaweed growth on the outer casing; most wells have received minor chipping of the protective casing TP3: Cobble from 0 - 0.52mbgs; Liner encountered
28-Sep-20	Eastern	Yes	Yes	No	1m of vegetation growth overhanging the barrier on the southern side; growth of small weeds overtop of treatment cells are present; pose no risk to cell integrity; no indication of vegetation growing through installed liner	Hand pulled numerous small weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well TP1: Sand from 0 - 0.14mbgs; Cobble from 0.14 - 0.52mbgs; Liner encountered TP2: Sand from 0 - 0.02mbgs; Cobble from 0.02 - 0.52 mbgs; Liner encountered
	Western	Yes	Yes	No	1m of vegetation growth overhanging the barrier on the southern side; growth of small weeds overtop of treatment cells are present; pose no risk to cell integrity; no indication of vegetation growing through installed liner	Hand pulled numerous small weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well TP3: Cobble from 0 - 0.52mbgs; Liner encountered
8-Dec-20	Eastern	Yes	Yes	No	1m of vegetation growth overhanging the barrier on the southern side; growth of small weeds overtop of treatment cells are present; pose no risk to cell integrity; no indication of vegetation growing through installed liner	No vegetation was removed	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well TP1: Sand from 0 - 0.08mbgs; Cobble from 0.08 - 0.42mbgs; Liner encountered TP2: Sand from 0 - 0.10mbgs; Cobble from 0.10 - 0.45 mbgs; Liner encountered
	Western	Yes	Yes	No	1m of vegetation growth overhanging the barrier on the southern side; growth of small weeds overtop of treatment cells are present; pose no risk to cell integrity; no indication of vegetation growing through installed liner	No vegetation was removed	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well; Concrete base of CBP-6 is no longer completely covered with riprap TP3: Cobble from 0 - 0.53mbgs; Liner encountered
3-Mar-21	Eastern	Yes	Yes	No	No growth above treatment cells or OBB surface layer. Vegetation growth along Up Gradient wells as well as overhanging on southern edge of the barrier.	No. Hand pulled some weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well. TP1: Sand from 0 - 0.03 mbgs; Cobble from 0.03 - 0.40 mbgs; Liner encountered. TP2: Sand from 0 - 0.02; Cobble from 0.02 - 0.46 mbgs; Liner encountered.

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
3-Jun-21	Western	Yes	Yes	No	No growth above treatment cells or OBB surface layer. Vegetation growth along Up Gradient wells as well as overhanging on southern edge of barrier.	No. Hand pulled some weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well. J-plug replaced at PW17-7. TP3: Cobble from 0- 0.63 m bgs; Liner not encountered. Concrete base of CBP-6 is not completely covered by rip-rap.
4-Jun-21	Eastern	Yes	Yes	No	No growth above treatment cells or OBB surface layer. Vegetation growth along upper gradient wells as well as overhanging on southern edge of the barrier.	No. Hand pulled all weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well. Base of concrete protector exposed on PW17-31. Geogrid and filter fabric exposed in six areas along the contact point between the rip rap and cobble interface. TP1: Sand from 0 - 0.05mbgs; Cobble from 0.05 - 0.45mbgs; Liner encountered TP2: Sand from 0 - 0.02mbgs; Cobble from 0.02 - 0.48 mbgs; Liner encountered
	Western	Yes	Yes	No	No growth above treatment cells or OBB surface layer, vegetation growth along upper gradient wells as well as overhanging on southern edge of barrier.	No. Hand pulled all weeds. Overhanging vegetation on the south side of the barrier should be monitored; potential removal planned in the future.	No	No major damage; all wells have barnacles and seaweed growth on the outer surface of the protective casing; minor chipping is present on the protective casing as well. Base exposed on CBP-6. Base of concrete protectors exposed on , PW7-6 and CBP-2, PW17-1 Geogrid and filter fabric exposed in four areas along the contact point between the rip rap and cobble interface. TP3: Cobble from 0 - 0.40mbgs
17-Aug-21	Eastern	Yes	Yes	No	Weeds grown along top of barrier; overhanging vegetation along southern side; no growth above treatment cells or OBB layer	Recommend removing overhanging vegetation; handpulled weeds	No	All wells outside barrier have barnacle growth and seaweed; minor chipping. Concrete base exposed PW17-31. Geogrid and filter fabric exposed in six areas along the contact point between the rip rap and cobble interface. TP1: Sand from 0 - 0.20mbgs; Cobble from 0.20 - 0.42mbgs; Liner encountered. TP2: Sand from 0 - 0.08 mbgs; Cobble from 0.08 - 0.44 mbgs; Liner encountered.
	Western	Yes	Yes	No	Weeds growing along top of barrier; overhanging vegetation along southern side; no growth above treatment cells or OBB layer	Recommend removing overhanging vegetation; did not need to handpull weeds	No	All wells outside barrier have barnacle growth and seaweed; minor chipping. Concrete bases exposed on: CBP-6; PW17-6; CBP-2;PW17-1; Geogrid and filter fabric exposed in four areas along the contact point between the rip rap and cobble interface. TP3: Cobble from 0 - 0.34mbgs, water infiltrated into test pit, preventing further advancement.
15-Oct-21	Eastern	Yes	Yes	No	Weeds growing on southern side of barrier; Overhanging vegetation along southern side; No growth on top of treatment cells or OBB layer	No, recommend trimming overhanging vegetation on southern side	No	All wells outside barrier have barnacle and seaweed growth as well as minor chipping; CBP-8, PW17-18, PW17-28 minor chipping from rock placement; No concrete bases exposed. Geogrid and filter fabric exposed in one area of Eastern FPTS, cobbles placed on top. TP1: Sand from 0 - 0.13mbgs; Cobble from 0.13 - 0.46mbgs; Liner encountered TP2: Cobble from 0 - 0.40 mbgs; Liner encountered

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
	Western	Yes	Yes	No	Sparse weeds on southern edge of barrier; Overhanging vegetation along southern side; No growth along treatment cells or OBB layer	No, recommend trimming overhanging vegetation on southern side	No	All wells outside barrier have barnacle and seaweed growth as well as minor chipping; PW17-6 and CBP-5 have minor chipping from rock placement; No concrete bases exposed TP3: Cobble from 0 - 0.41mbgs; Liner encountered
24-Jan-22	Eastern	Yes	Yes	No	Weeds (small) growing on south side of barrier; Overhanging vegetation along southern side; No growth on top of treatment cells or OBB layer	No	No	Most wells outside barrier have barnacle and seaweed growth as well as minor chipping; CBP-8, PW17-18, PW17-28 minor chipping from rock placement; No concrete bases exposed. TP1: Sand from 0 - 0.15mbgs; Cobble from 0.15 - 0.40mbgs; Liner encountered
	Western	Yes	Yes	No	Some weeds on southern edge of barrier; Overhanging vegetation along southern side; No growth along treatment cells or OBB layer	No	No	Most wells outside barrier have barnacle and seaweed growth as well as minor chipping; PW17-6 and CBP-5 have minor chipping from rock placement; No concrete bases exposed.
7-Mar-22	Eastern	Yes	Yes	No	Weeds (small) growing on south side of barrier; No growth on top of treatment cells or OBB layer	No	No	All wells outside barrier have barnacle growth as well as minor chipping
	Western	Yes	Yes	No	Some weeds on southern edge of barrier; No growth along treatment cells or OBB layer	No	No	All wells outside barrier have barnacle growth as well as minor chipping
7-Mar-22	Eastern	Yes	Yes	No	Tall weeds growing on south side of barrier, overhanging vegetation along south side. No growth on top of treatment cell or OBB layer	Yes	No	Most wells outside barrier have barnacle growth as well as minor chipping
	Western	Yes	Yes	No	Weeds that are small on southern edge of barrier; Overhanging vegetation along south side. No growth along treatment cells or OBB layer	No	No	Most wells outside barrier have barnacle growth as well as minor chipping
13-Jul-22	Eastern	Yes	Yes	No	Tall weeds growing on south side of barrier, overhanging vegetation along south side. No growth on top of treatment cell or OBB layer	Yes	No	Most wells outside barrier have barnacle growth as well as minor chipping. PW17-31, wood plank removed, handle of concrete protector broken, difficult to open. TP1: Sand 0 - 0.1mbgs; Cobble from 0.1 - 0.4mbgs; liner encountered
	Western	Yes	Yes	No	Weeds that are small on southern edge of barrier, overhanging vegetation along south side. No growth along treatment cells or OBB layer	No	No	TP2: Sand 0 - 0.15mbgs; Cobble from 0.15 - 0.4mbgs; liner encountered TP3: Sand 0 - 0.2mbgs; Cobble from 0.2 - 0.4mbgs; water infiltrated into test pit, preventing further advancement.

TABLE 5
FORESHORE PASIVE TREATMENT SYSTEM INSPECTIONS (2022)
FORESHORE POST FPTS CONSTRUCTION
PARKLAND BURNABY REFINERY
2022 FPTS MONITORING AND MAINTENANCE PLAN

Date	FPTS	Rip Rap layer maintained at 1.4m	Cobble layer above OBB surface layer maintained at 0.4m	Rip Rap or Cobble replacement Required	Vegetation present above treatment cells or OBB surface layer	Vegetation Removal Required	Damaged Monitoring Wells	Comments
7-Oct-22	Eastern	Yes	Yes	No	Tall weeds growing on south side of barrier, overhanging vegetation along south side. No growth on top of treatment cell or OBB layer	Yes	No	Most wells outside barrier have barnacle growth as well as minor chipping. The concrete protectors of six wells (PW17-16, PW17-17, PW17-21, PW17-22, PW17-26, and PW17-26) associated with the Eastern FPTS have graffiti, no damage or writing observed on the inside of protectors. Handle for PW17-31 repaired.
	Western	Yes	Yes	No	Small weeds on southern edge of barrier, overhanging vegetation along south side. No growth along treatment cells or OBB layer	No	No	

Notes

1. The FPTS was installed at the Foreshore Site between July 10 through October 30, 2017.
2. Additional rock material was added to the Foreshore Site on September 27, 2021.

Abbreviations:

shore Passive Treatment System

NA - Not applicable

NM - Not monitored

m bgs - metres below ground surface

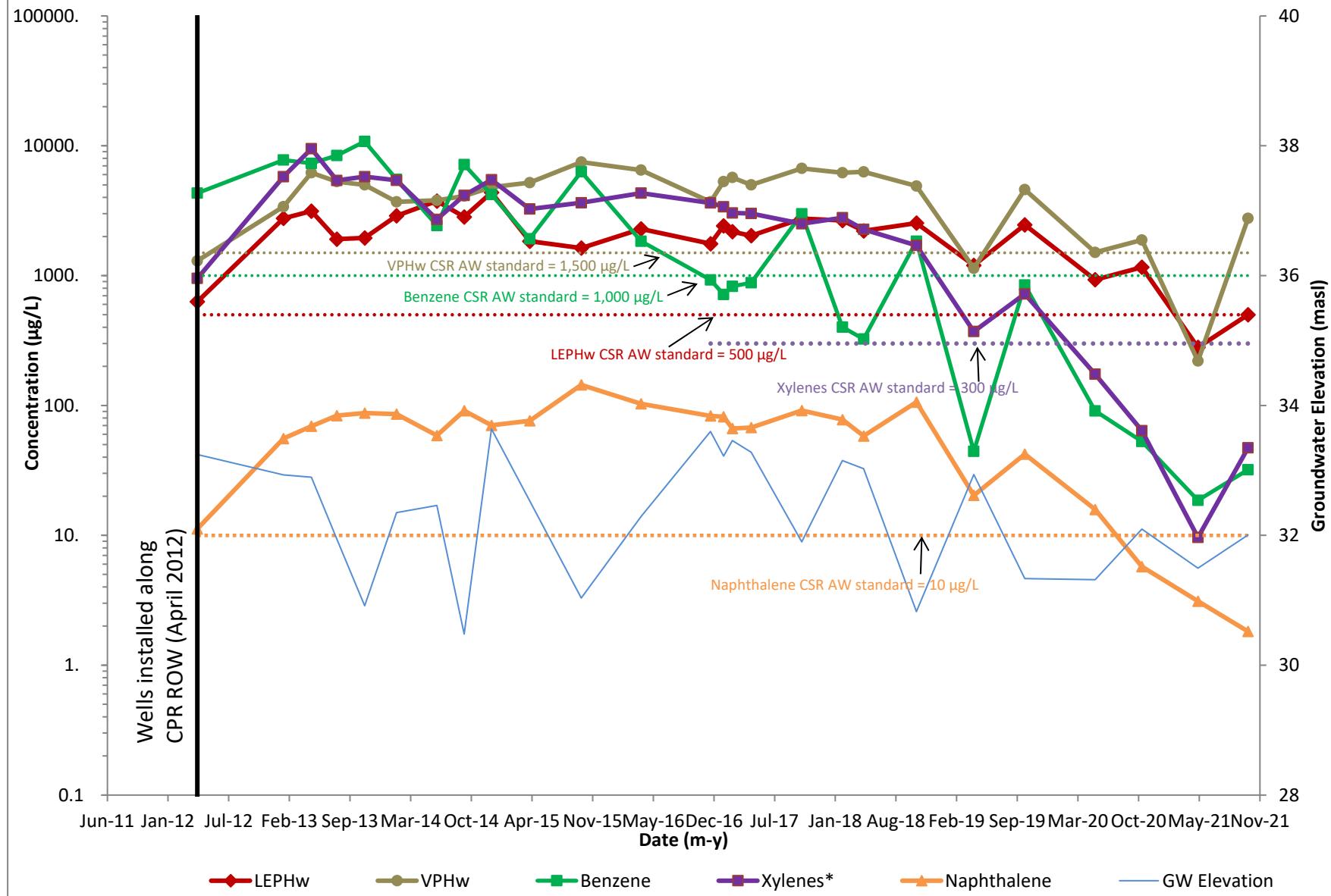
B - Oleophilic biobarrier



GRAPHS

Graphs 1-5

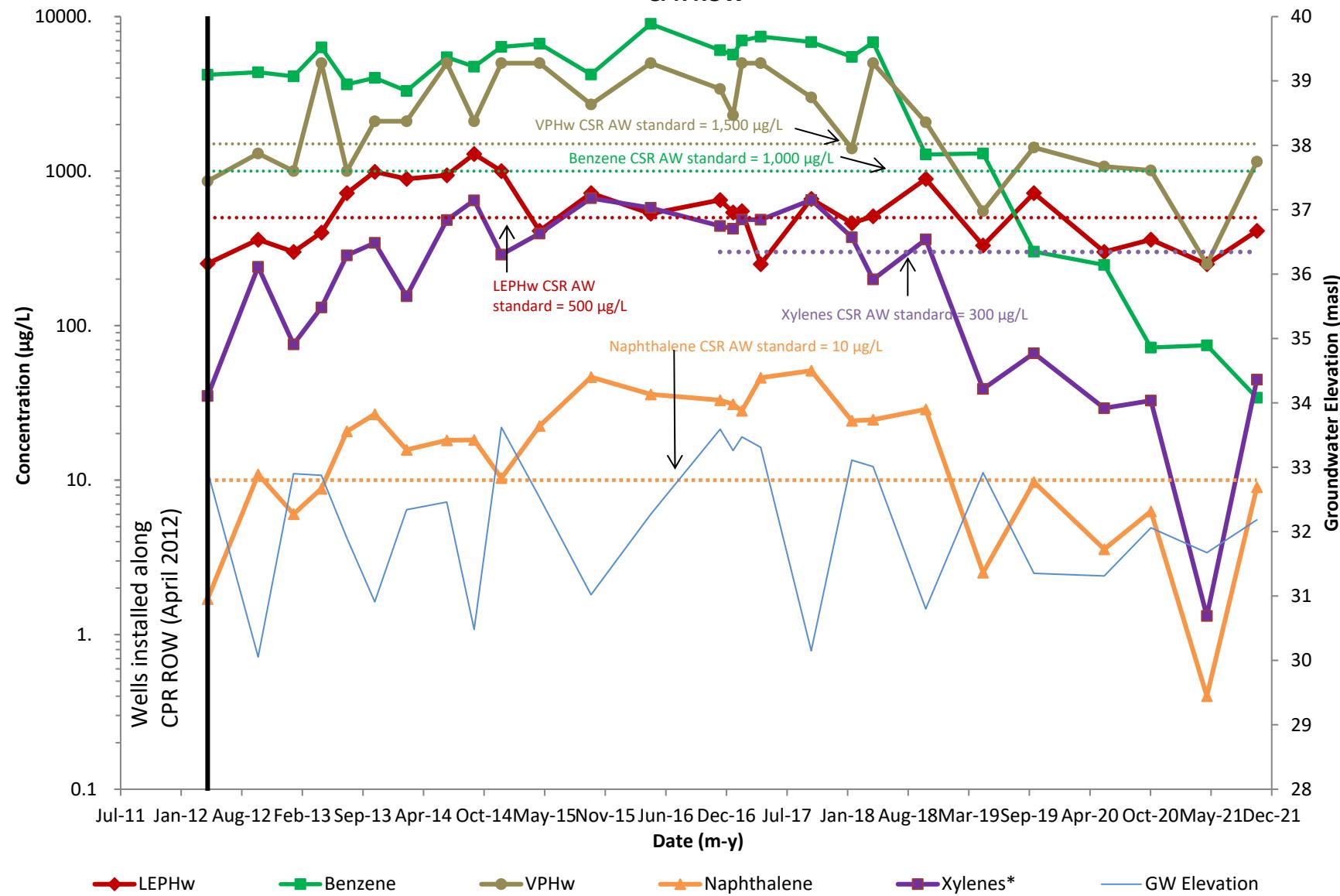
**Graph 1 Concentrations of Contaminants of Concern in Monitoring Well MW12-1S
CPR ROW**



*Xylenes AW CSR Standard came into effect on October 27, 2016 as part of the Stage 10 Amendment

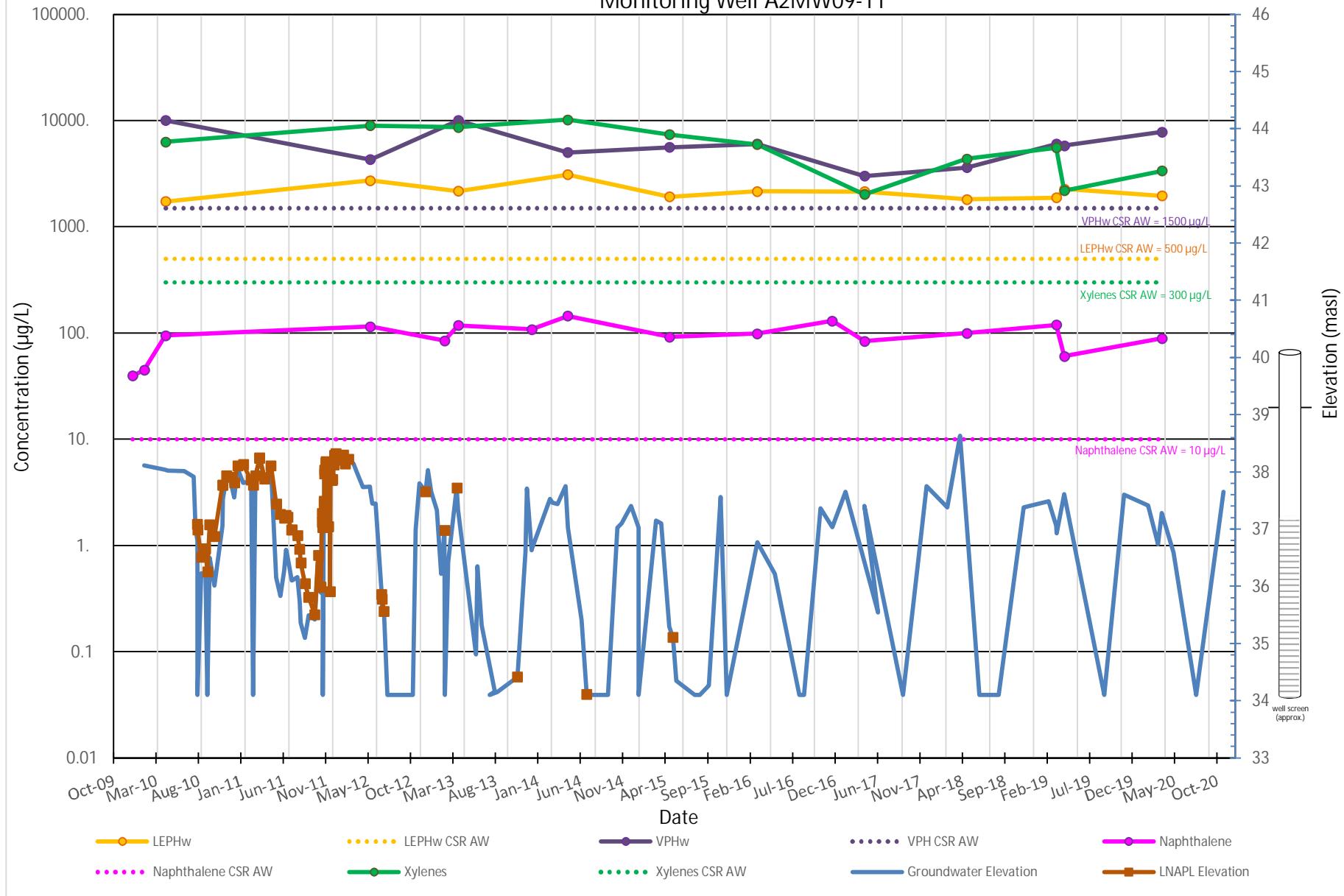
Graph 2 Concentrations of Contaminants of Concern in Monitoring Well MW12-1I

CPR ROW



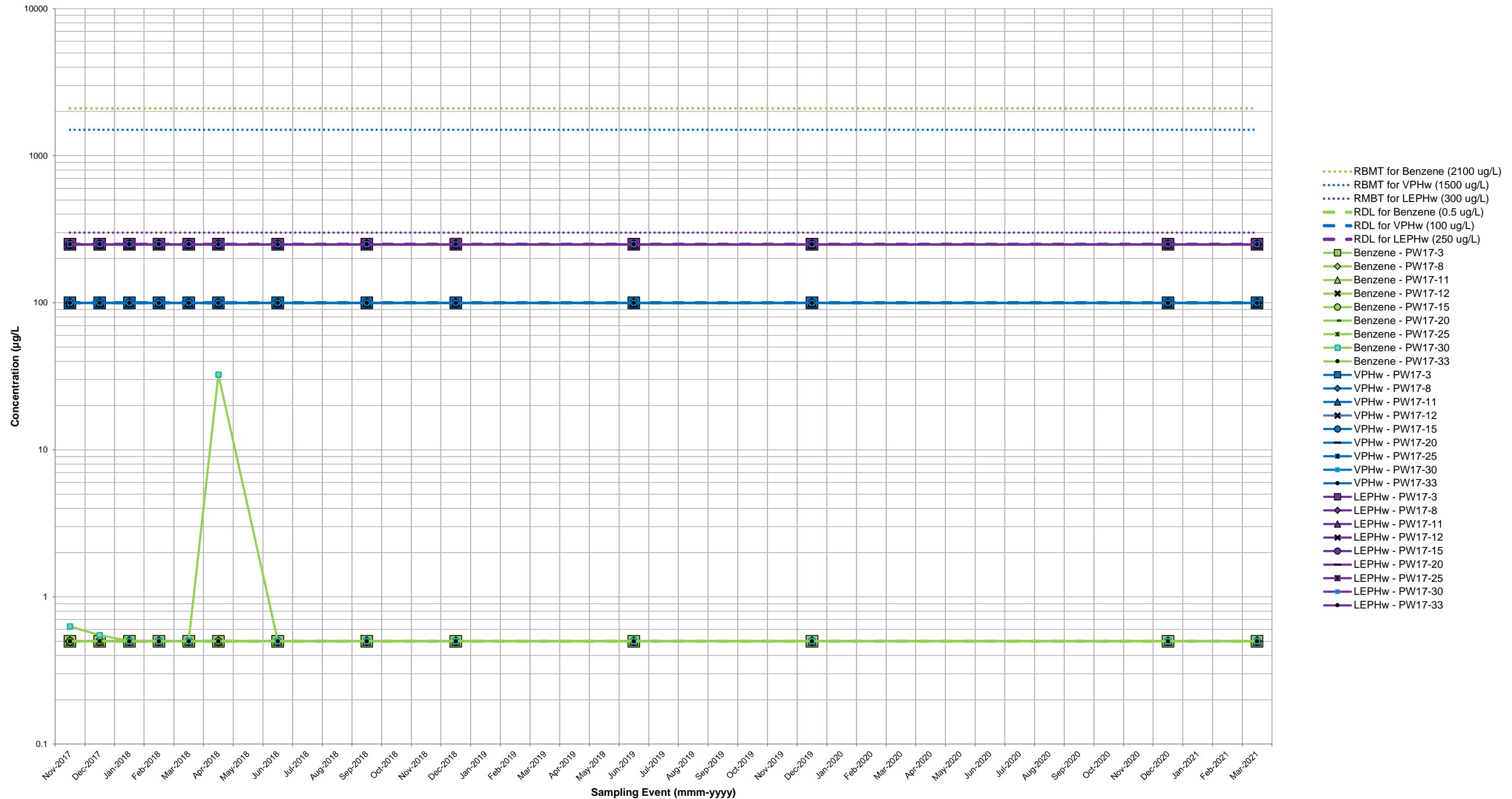
*Xylenes AW CSR Standard came into effect on October 27, 2016 as part of the Stage 10 Amendment

Graph 3: Concentrations of LEPHw, VPHw, Xylenes, and Naphthalene in Area 2
Monitoring Well A2MW09-11

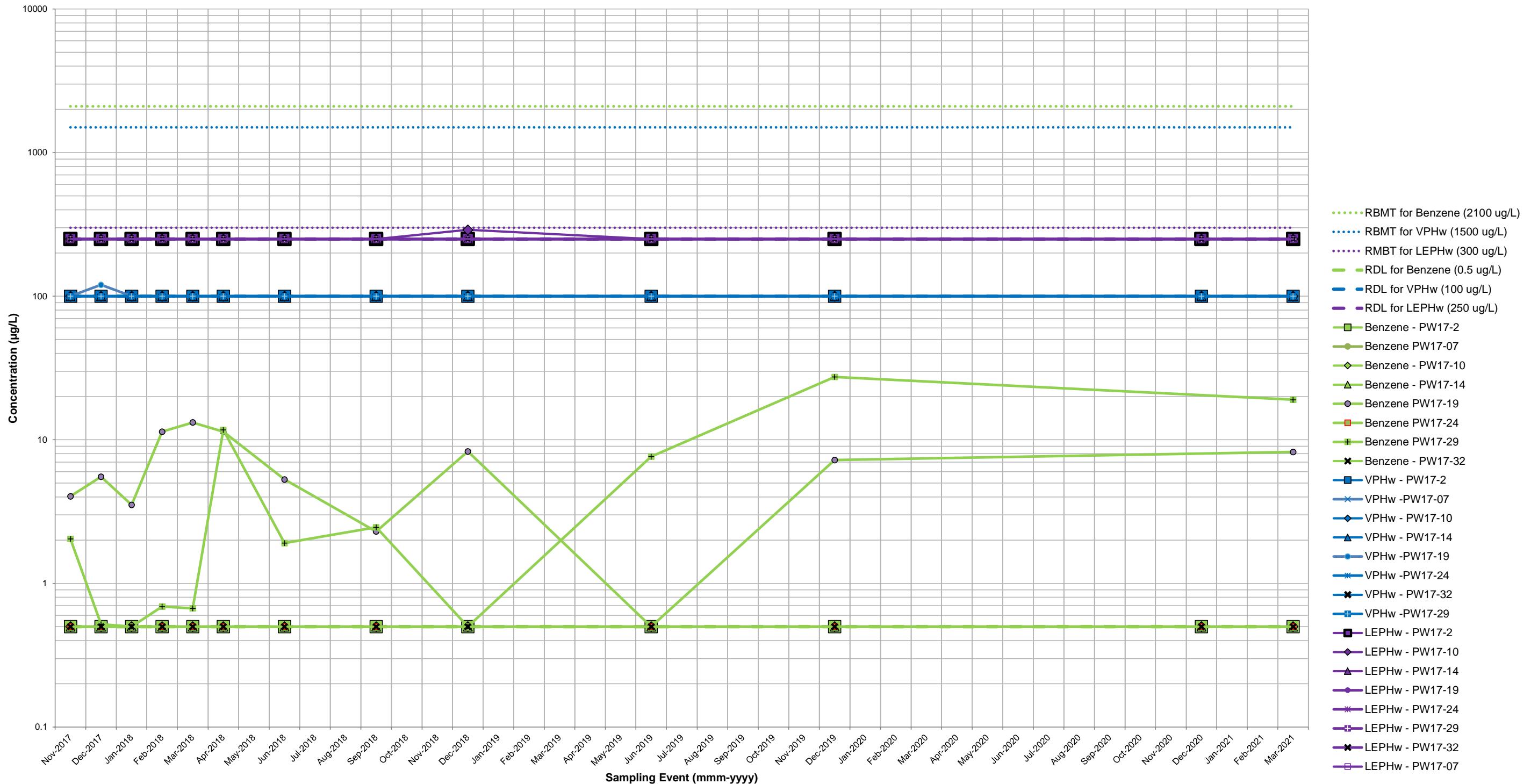


Graph 4

Concentrations of Benzene, VPHw and LEPHw in FPTS Compliance Wells PW17-3, PW17-8, PW17-11, PW17-12, PW17-15, PW17-20, PW17-25, PW17-30, and PW17-33



Graph 5
Concentrations of Benzene, VPHw and LEPHw in Sentry Wells PW17-2, PW17-07, PW17-10, PW17-14, PW17-19, PW17-24, PW17-29, and PW17-32



APPENDIX A
2022 FORESHORE PASSIVE TREATMENT SYSTEM
MONITORING AND MAINTENANCE PLAN



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Project ref:
60628556

Date:
December 8, 2022

Re: 2022 Foreshore Passive Treatment System Monitoring and Maintenance Plan – Foreshore Area of Burrard Inlet Located Down Slope from the Eastern Impounding Basin, Area 2, Parkland Burnaby Refinery, Burnaby, B.C.

AECOM has prepared this 2022 Monitoring and Maintenance Plan (MMP) for the Foreshore Passive Treatment System (FPTS) to maintain and assess the performance of the FPTS along the Foreshore area of Burrard Inlet located down slope from the Eastern Impounding Basin, Area 2 of the Parkland Burnaby Refinery (hereafter referred to as "the Foreshore Site") (**Figure 1**).

The initial FPTS MMP dated December 21, 2017 (AECOM, 2017) was prepared to maintain and assess the performance of the FPTS and was based on the Ministry of Environment and Climate Change Strategy's (ENV) supported Remedial Action Plan (RAP) prepared in 2016 (AECOM, 2016). The FPTS 2022 MMP is considered as equivalent to a Performance Verification Plan as defined by ENV.

Monitoring and sampling of the Foreshore Site is performed in accordance with the MMP and is completed under the oversight of ENV.

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- Appendix A Regulatory Context
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1. 2022 MONITORING AND MAINTENANCE PLAN FOR THE FORESHORE PASSIVE TREATMENT SYSTEM

This 2022 Monitoring and Maintenance Plan (FPTS 2022 MMP) has been prepared to maintain and assess the performance of the Foreshore Passive Treatment System (FPTS) along the Foreshore area of Burrard Inlet located down slope from the Eastern Impounding Basin, Area 2 of the Parkland Burnaby Refinery (hereafter referred to as “the Foreshore Site”).

2. SUMMARY OF THE FORESHORE PASSIVE TREATMENT SYSTEM

The FPTS was designed and constructed to be the final remedial action to address any free-phase and dissolved phase hydrocarbon and sheens at the Foreshore Site. The FPTS, installed between July and October 2017, consists of a larger Eastern section (60 m) and a smaller Western section (20 m). The multicomponent FPTS is comprised of permeable subsurface treatment cells for the mitigation of light non-aqueous phase liquids (LNAPL) and dissolved phase hydrocarbons impacted porewater. The FPTS also contains an oleophilic biobarrier (OBB) surface layer for the prevention of sheens.

To assess the performance of the FPTS, thirty-three (33) monitoring wells (PW17-1 through PW17-33), divided into four types Up Gradient Wells, Performance Wells, Sentry Wells and Compliance Wells were installed at the Site during construction of the FPTS and will be monitored and sampled under this MMP (refer to **Table 1**). Generally, all wells were screened between 0.45 and 1.2 metres (m) below ground surface (bgs) with a 0.3 m length screened interval and in some instances a 0.36 m length screen (stainless steel prepacked screens), as presented in the FPTS Construction report (AECOM 2017).

3. OBJECTIVES

The FPTS 2022 MMP is considered as equivalent to a Performance Verification Plan as defined by ENV, the objectives of the FPTS 2022 MMP are as follows:

- Assess the presence/absence of NAPL and the concentrations of dissolved phase contaminants of concern (COCs) in porewater at the Site;
- Assess the performance of the remedial treatment cells and OBB; and
- Maintain the integrity of the FPTS by checking and, where needed, replacing the protective rip-rap, cobbles, repairing or replacing monitoring wells, and by managing vegetation as required.

4. SCOPE OF WORK

The scope of work for the FPTS MMP is as follows:

- Ensure all required authorizations are obtained and followed;
- Inspect and gauge monitoring wells on the Foreshore Site and coordinate repairs or replacements for damaged wells;
- Monitor porewater wells and collect porewater samples from monitoring wells associated with the FPTS per the schedule provided below. Porewater samples will be submitted to a Canadian Association for Laboratory Accreditation (CALA) certified laboratory on a standard turn-around-time basis for analysis of the following COCs: benzene, toluene, ethylbenzene, xylenes (BTEX), volatile petroleum hydrocarbons in water (VPHw), light extractable petroleum hydrocarbons in water (LEPHw), benzo(a)pyrene, naphthalene, dissolved copper and dissolved zinc;
- Screen water samples for color, clarity, temperature, pH, dissolved oxygen (DO), salinity, electrical conductivity, oxidation reduction potential (ORP), turbidity, and total dissolved solids (TDS);

- Complete trend analysis of COC concentrations and compare analytical results to their respective Risk-Based Management Target (RBMTs) (refer to **Appendix A**);
- Maintain the integrity of the treatment cells and the OBB surface layer, which will include inspection and maintenance of the rip-rap, cobbles, vegetation and monitoring wells;
- Provide analysis and science-based recommendations that address the well monitoring and sampling frequency after eight years (i.e. 2031);
- Reporting; and,
- Notification to ENV (if required).

5. MONITORING COMPONENTS OF THE FPTS MMP

5.1 Well Network

To assess the performance of the FPTS, thirty-three (33) monitoring wells (PW17-1 through PW17-33) (refer to Table 1) were installed at the Site during construction of the FPTS. Generally, all wells were screened between 0.45 and 1.2 metres (m) below ground surface (bgs) with a 0.3 m length screened interval and in some instances a 0.36 m length screen (stainless steel prepacked screens), as presented in the FPTS Construction report (AECOM 2017).

Table 1. Monitoring Wells Associated with The FPTS

Well Type	Rationale	Well Name
Up Gradient Wells (8)	Monitoring wells installed up gradient of the treatment cells. These wells will be used to monitor porewater concentrations entering the Site.	PW17-1, PW17-4, PW17-9, PW17-13, PW17-16, PW17-21, PW17-26, and PW17-31
Performance Wells (8)	Monitoring wells installed within the treatment cells. These wells will be used to evaluate the ability of the treatment cells to reduce petroleum hydrocarbon concentrations through adsorption and degradation.	PW17-5, PW17-6, PW17-17, PW17-18, PW17-22, PW17-23, PW17-27 and PW17-28
Sentry Wells (8)	Monitoring wells located down slope of the treatment cells, but still within the FPTS. These wells will be used to evaluate the performance of the treatment cells, but also provide an early warning if elevated concentrations of dissolved COCs have migrated past the treatment cells.	PW17-2, PW17-7, PW17-10, PW17-14, PW17-19, PW17-24, PW17-29, and PW17-32
Compliance Wells (9)	Monitoring wells installed twelve meters north of the toe of the slope and beyond the limit of the FPTS.	PW17-3, PW17-8, PW17-11, PW17-12, PW17-15, PW17-20, PW17-25, PW17-30, and PW17-33

5.2 Analytical Program

Porewater samples collected from the monitoring wells will be submitted to a Canadian Association for Laboratory Accreditation (CALA) certified laboratory on a standard turn-around-time basis, for the following laboratory analyses:

- BTEX and VPHw
- LEPHw
- Benzo(a)pyrene and naphthalene
- Dissolved copper and dissolved zinc

5.3 Porewater Sampling Schedule

The sampling schedule for years 2023 through 2030 is summarized in **Table 2** below. Porewater samples will be collected on a biennial basis (every two years), in 2023 and 2025. After 2025 the sampling frequency will be reduced to quinquennial (every five years).

Table 2. Monitoring Well Designation and Sampling Schedule

Well / Location	Designation	Frequency	
		2023-2025	2030
Western Seep Area			
PW17-1	Up Gradient Well	Biennial	Quinquennial
PW17-2	Sentry Well	Biennial	Quinquennial
PW17-3	Compliance Well	Biennial	Quinquennial
PW17-4	Up Gradient Well	Biennial	Quinquennial
PW17-5	Performance Well	Biennial	Quinquennial
PW17-6	Performance Well	Biennial	Quinquennial
PW17-7	Sentry Well	Biennial	Quinquennial
PW17-8	Compliance Well	Biennial	Quinquennial
PW17-9	Up Gradient Well	Biennial	Quinquennial
PW17-10	Sentry Well	Biennial	Quinquennial
PW17-11	Compliance Well	Biennial	Quinquennial
In-between Area			
PW17-12	Compliance Well	Biennial	Quinquennial
Eastern Seep Area			
PW17-13	Up Gradient Well	Biennial	Quinquennial
PW17-14	Sentry Well	Biennial	Quinquennial
PW17-15	Compliance Well	Biennial	Quinquennial
PW17-16	Up Gradient Well	Biennial	Quinquennial
PW17-17	Performance Well	Biennial	Quinquennial
PW17-18	Performance Well	Biennial	Quinquennial
PW17-19	Sentry Well	Biennial	Quinquennial
PW17-20	Compliance Well	Biennial	Quinquennial
PW17-21	Up Gradient Well	Biennial	Quinquennial
PW17-22	Performance Well	Biennial	Quinquennial
PW17-23	Performance Well	Biennial	Quinquennial
PW17-24	Sentry Well	Biennial	Quinquennial
PW17-25	Compliance Well	Biennial	Quinquennial
PW17-26	Up Gradient Well	Biennial	Quinquennial
PW17-27	Performance Well	Biennial	Quinquennial
PW17-28	Performance Well	Biennial	Quinquennial
PW17-29	Sentry Well	Biennial	Quinquennial
PW17-30	Compliance Well	Biennial	Quinquennial
PW17-31	Up Gradient Well	Biennial	Quinquennial
PW17-32	Sentry Well	Biennial	Quinquennial
PW17-33	Compliance Well	Biennial	Quinquennial

6. FPTS INSPECTION AND MAINTENANCE

To ensure acceptable performance of the FPTS and maintain integrity of the system, inspections were completed on a quarterly basis in 2022. The frequency of inspections will be reduced to a semi-annual basis between 2023 through 2030, during which time inspections will be completed in March and September.

The inspections and actions will include:

- Monitoring for the presence of LNAPL in 12 select monitoring wells (including eight Up Gradient Wells [PW17-01, PW17-04, PW17-09, PW17-13, PW17-16, PW17-21, PW17-26, and PW17-31] and four Organoclay Performance Wells [PW17-05, PW17-17, PW17-22, and PW17-27]). Wells will be monitored using an oil/water interface probe along with a flame ionization detector (e.g. Eagle RKI) for the collection of combustible headspace vapours,
- Visual inspection of the system to check that two layers of rip-rap are above the treatment cells (i.e., maintaining a thickness of approximately 1.4 m) and two layers of cobbles are above the OBB surface layer (i.e., maintaining a thickness of 0.4 m).
 - If necessary, replacing and adding rip-rap and/or cobbles as required to maintain the required thickness.
- Visual inspection of the FPTS to make sure vegetation is not growing above the treatment cells or the OBB surface layer. The roots of the vegetation may puncture the liner, reducing the system effectiveness.
 - If necessary, removing any vegetation that may affect the treatment cells or the OBB surface layer.
- Inspection of the monitoring well network for damage.
 - If necessary, replacing/repairing any wells that are destroyed or damaged.

7. PROGRAM REVIEW

The RBMTs (refer to **Appendix A**), will be used as screening levels for Compliance and Sentry Wells. Action will be taken if any of the following conditions occur:

- If there is an exceedance above a RBMT in porewater collected from a Compliance or Sentry Well, the well will be re-sampled twice immediately (e.g., twice within the month following the exceedance).
- If there are two consecutive exceedances in a Compliance or Sentry Well above an RBMT, data from adjacent Compliance, Sentry, Performance and Up Gradient Wells will be assessed to determine if this exceedance is indicative of a wider issue and what further action is required, if any. This will occur in consultation with ENV.
- If LNAPL is detected in any of the Compliance or Sentry Wells, porewater samples will be collected from adjacent Compliance, Sentry, Performance and Up Gradient Wells to determine what further action is required. This will occur in consultation with ENV.

The FPTS includes contingency piping into which bioremediation enhancements (e.g., nutrients, sulphate and nitrate) may be applied as appropriate to further aid the breakdown of petroleum hydrocarbons. If bioremediation enhancements are applied, they would be done in consultation with ENV and other stakeholders and be recorded in the Annual FPTS Monitoring Report.

In 2030, the data collected between 2022 and 2030 will be reviewed to assess if the Site monitoring and sampling frequency change to every 5 years is still appropriate. The frequency of future Site monitoring and sampling will be assessed based on the absence, decrease, stabilization, or increase of concentrations of COCs in porewater, primarily in Compliance and Sentry Wells.

8. REPORT

Annual FPTS Monitoring Reports will be prepared and will contain the following key elements:

- Summary
- Statement of Objectives
- Description of Monitoring and/or Sampling
- Presentation of Data
- Presentation of any monitoring and maintenance of the FPTS

- Interpretation and Evaluations
- Recommendations

The Annual FPTS Monitoring Reports will be prepared under the direction of a Contaminated Sites Approved Professional (CSAP) and submitted for ENV's review on an annual basis on or before July 31 of each year.

9. ENV NOTIFICATIONS

In the event exceedances of COCs are observed in Compliance Wells and the following Up Gradient and Sentry Wells (PW17-1, PW17-2, PW17-9, PW17-10, PW17-13, PW17-14, PW17-31 and PW17-32) above the applicable RBMTs, written notification to ENV will be reported within 30 (thirty) days from the date of observation. The wells specified by ENV for notification in the event of an exceedance are highlighted in Figure 1 attached.

In the event exceedances of Upper Cap Concentrations (Protocol 11) are observed in any porewater wells ENV will be notified immediately through verbal and written notifications.

Yours very truly,
AECOM

per:



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STATEMENT OF QUALIFICATIONS AND LIMITATIONS

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Parkland Refining (B.C.) Ltd. (Client) in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

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- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

FIGURES



SOURCE: GOOGLE EARTH IMAGE (2016)

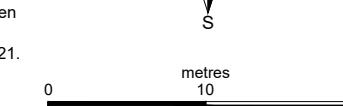
Property Line		Impermeable Sheet
Fence Line		Cobble Mat
Foreshore Sampling Transect		Rip Rap Embankment
CPR Extraction Trench		French Drain
		NAPL Seep Observed in 2010
		Contingency Biodegradational Piping

- POREWATER SAMPLES
- Compliance Well
- Sentry Well
- Performance Well
- Up Gradient Well
- ENV Requires Notifications

ABBREVIATIONS:	
COC	Contaminants of Concern
CPR	Canadian Pacific Railway
ENV	BC Ministry of Environment & Climate Change Strategy
NAPL	Non-Aqueous Phase Liquid
RBMT	Risk-Based Management Targets
NOTES:	

1

1. The Foreshore Passive Treatment System (FPTS) was installed between July 12 and October 21, 2017.
 2. The FPTS was upgraded with additional material on September 27, 2017.
 3. BC ENV requires written notification within 30 days of exceedances of COCs above RBMTs in select wells.
 4. BC ENV requires immediate verbal and written notification of COCs above Upper Cap Concentrations (Protocol 11) in all wells.



SITE MAP AND FORESHORE SAMPLING LOCATIONS

**2022 Foreshore Passive Treatment System
Monitoring and Maintenance Plan**
Foreshore Area of Burrard Inlet Down Slope from the Eastern
Compounding Basin, Area 2, Parkland Refinery, Burnaby, B.C.

PARKLAND REFINING (B.C.) LTD.

PROJECT NO.:	DRAWN BY:	REVISION NO.:	DRAWING NO.:
January 2022	60628556	SGC	0

FIGURE 1

APPENDIX A

REGULATORY CONTEXT

The British Columbia Ministry of Environment and Climate Change Strategy (ENV) approved the Stage 13 Amendment to the Contaminated Sites Regulation (CSR) on February 1, 2021. Pursuant to the CSR, standards for aquatic life water use apply to groundwater located within 500 metres of a surface water body containing aquatic life. Standards for aquatic life water use also apply where there is the potential for contaminated groundwater to flow through preferential corridors that discharge directly to a surface water body containing aquatic life.

In 2014, SLR Consulting (Canada) Ltd (SLR) derived Risk Based Management Targets (RBMTs) for the Site and completed a Human Health and Ecological Risk Assessment (HHERA) for the contaminants associated with the seeps (SLR 2014). The HHERA was submitted to ENV, Port of Vancouver (POV – formerly Port Metro Vancouver) and Fraser Health. The RBMTs are intended to be used as a risk management tool to assess the performance of the FPTS. The RBMTs were developed to be protective of aquatic plants and invertebrates at the community level and fish at the population level. The HHERA did not find any significant risk to human health; therefore, RBMTs were not needed for human receptors.

These RBMTs were established and accepted by the ENV in 2014 (ENV, 2014).

RBMTs for Site porewater were developed for benzene, ethylbenzene, toluene, xylenes, benzo(a)pyrene, naphthalene, VPHw, LEPHw, dissolved copper, and dissolved zinc. The results of SLR's HHERA indicated that all other previously identified COCs were no longer considered to be a concern to humans or marine aquatic life. Concentrations of COCs reported in porewater samples will be screened against the RBMTs, present in **Table A-1** below.

TABLE A-1 FORESHORE RISK BASED MANAGEMENT TARGETS

Parameter	RBMT micrograms per litre ($\mu\text{g}/\text{L}$)
LEPHw	300
VPHw	1,500
Benzene	2,100
Toluene	770
Ethylbenzene	320
Xylenes	330
Naphthalene	44
Benzo(a)pyrene	0.28
Dissolved copper	6.2
Dissolved zinc	90

APPENDIX B

**FORESHORE MONITORING WELLS CONSTRUCTION
DETAILS**

TABLE B-1 FORESHORE MONITORING WELLS CONSTRUCTION DETAILS

Monitoring Well	Well Type	Total Depth (m bgs)	Top of Well Screen (m bgs)	Bottom of Well Screen (m bgs)	Screen type
PW17-1	Up Gradient	1.20	0.85	1.15	PVC
PW17-2	Sentry	1.20	0.85	1.15	PVC
PW17-3	Compliance	1.20	0.85	1.15	PVC
PW17-4	Up Gradient	0.80	0.45	0.75	PVC
PW17-5	Performance	1.10	0.64	1.00	SS
PW17-6	Performance	1.30	0.84	1.20	SS
PW17-7	Sentry	1.05	0.7	1.00	PVC
PW17-8	Compliance	1.30	0.84	1.20	SS
PW17-9	Up Gradient	1.20	0.85	1.15	PVC
PW17-10	Sentry	1.25	0.85	1.15	PVC
PW17-11	Compliance	1.20	0.74	1.10	SS
PW17-12	Compliance	1.20	0.85	1.15	PVC
PW17-13	Up Gradient	1.20	0.85	1.15	PVC
PW17-14	Sentry	1.20	0.85	1.15	PVC
PW17-15	Compliance	1.30	0.84	1.20	SS
PW17-16	Up Gradient	0.80	0.45	0.75	PVC
PW17-17	Performance	1.10	0.64	1.00	SS
PW17-18	Performance	1.30	0.84	1.20	SS
PW17-19	Sentry	1.20	0.87	1.15	PVC
PW17-20	Compliance	1.10	0.64	1.00	SS
PW17-21	Up Gradient	0.80	0.45	0.75	PVC
PW17-22	Performance	1.10	0.64	1.00	SS
PW17-23	Performance	1.30	0.84	1.20	SS
PW17-24	Sentry	1.20	0.85	1.15	PVC
PW17-25	Compliance	1.25	0.85	1.15	PVC ¹
PW17-26	Up Gradient	0.80	0.45	0.75	PVC
PW17-27	Performance	1.10	0.64	1.00	SS
PW17-28	Performance	1.30	0.84	1.20	SS
PW17-29	Sentry	1.20	0.85	1.15	PVC
PW17-30	Compliance	1.30	0.84	1.20	SS
PW17-31	Up Gradient	1.20	0.85	1.15	PVC
PW17-32	Sentry	1.20	0.85	1.15	PVC
PW17-33	Compliance	1.20	0.85	1.15	PVC

Notes:

m bgs - metres below ground surface

SS - Stainless steel wrapped screen prepacked with 20/40 sand

PVC - Schedule 40 - 10 slot screen

1 - Screen consisted of a 3" - 10 slot screen surrounding a 2" - 10 slot screen prepacked with 20/40 filter sand (manufactured by Bluemax Drilling)

APPENDIX C

POREWATER SAMPLE COLLECTION METHODOLOGIES

MONITORING, WELL PURGING AND WATER SAMPLING METHODOLOGY

There are 33 monitoring wells at the Site (Figure 1 and Table B-1).

Porewater monitoring will include recording the time of day, depth to water (DTW), depth to product (DTP) and total depth of the well (TD). The DTW and DTP will be measured using an oil/water interface probe which will be decontaminated between monitoring wells to prevent cross contamination. Combustible headspace vapours will be collected from porewater monitoring wells using a flame ionization detector (e.g. Eagle RKI).

Porewater samples will be collected from each monitoring well using dedicated high-density polyethylene and silicone tubing attached to a peristaltic pump, to ensure minimal entrainment of silt in the sample as well as minimal losses of volatile constituents. Prior to sample collection, water will be purged from the well for approximately 5 to 10 seconds until clear. During purging, field parameters including pH, temperature, electrical conductivity, salinity, TDS, ORP, DO, and turbidity will be monitored and documented. During purging and sample collection, care will be taken to remove water from near the top of the water column to minimize any disturbance and subsequent entrainment of solids near the base of the well. Samples will be placed into a cooler containing blue or wet ice and kept under chain-of-custody procedures until delivery to a CALA certified laboratory on a standard turnaround time.

DECONTAMINATION

All non-disposable water monitoring and sampling equipment (i.e., interface probes and YSI multimeters) will be decontaminated between sample locations as follows:

- Washing external and internal surfaces of the sampling equipment with amended water²; scrubbing as necessary to remove dirt, grime, grease, and oil;
- Rinsing with de-ionized water; and
- Double rinsing with de-ionized water.

² Amended water is a 0.5% solution of an environmentally friendly cleaner labelled Liquinox and de-ionized water.

APPENDIX D

**QUALITY ASSURANCE AND QUALITY CONTROL
PROCEDURES**

DATA QUALITY ASSURANCE/QUALITY CONTROL

In order to assure the integrity and defensibility of the data collected, rigorous QA/QC protocols will be observed. These protocols ensure that all samples are properly collected, identified, stored, shipped, and documented. Standard operating procedures (SOPs) for sample collection and storage, equipment decontamination, and sample chain of custody protocols will be followed. Porewater samples will be collected using sampling techniques discussed above. The use of these methods ensures the quality, soundness, and defensibility of the data obtained. The laboratory analytical data, once generated, will be proofed for inconsistencies and anomalies. Field duplicates, trip blanks, and rinsate blanks will be collected for QA/QC purposes.

Field Duplicate Samples

Field duplicate samples are two identical samples that are submitted to the laboratory with no indication that they are the same. The analysis of field duplicate samples provides an indication of the total precision of the sampling and analysis process. Field duplicate samples will be collected and analyzed at a rate of approximately 10% of samples for a given analytical suite.

Trip Blanks

Trip blanks are samples of clean deionized, distilled (Reagent Grade Type II) water that are prepared in the laboratory, taken to the field, retained on site throughout sample collection, returned to the laboratory, and analyzed with the environmental samples. The QA/QC review will identify trip blanks with detections of target analytes and evaluates the effect of the detections on associated sample results for possible cross-contamination during transport. One trip blank will be included for analysis in every cooler submitted to the laboratory.

Rinsate Blanks

Rinsate blanks are samples of deionized and distilled analyte free (Reagent Grade Type II) water that are prepared in the field by pouring water over or through decontaminated field sampling equipment³, prior to the collection of the environmental samples. The QA/QC review identifies rinsate blank detections of target analytes and evaluates the effect of the detections on associated sample results for possible cross-contamination during sample collection. Rinsate blank samples will be collected and analyzed at a rate of approximately 5% of samples for petroleum hydrocarbon parameters (BTEX, VPH_w, and LEPH_w).

Precision

Precision measures the reproducibility of repetitive measurements and is usually expressed in terms of imprecision. It is strictly defined as the degree of mutual agreement among multiple independent measurements as the result of repeated application of the same process under similar conditions.

Analytical precision is a measurement of the variability associated with the duplicate (*i.e.*, two) or replicate (*i.e.*, more than two) analyses of the same sample in the laboratory, and is determined by the analysis of matrix spike duplicate or laboratory duplicate samples.

Total precision is a measurement of the variability associated with the entire sampling and analysis process. It is determined by the analysis of duplicate or replicate field samples and incorporates any variability introduced by the analytical procedure, sample collection and handling procedures, and matrix factors. Precision data must be interpreted by taking into consideration these possible sources of variability.

Duplicate field samples will be collected, and duplicate spiked or unspiked samples will be analyzed to assess analytical precision. The results will be assessed using the relative percent difference (RPD) between duplicate measurements. The equation used to calculate RPD for duplicate samples is:

³ Throughout the 2020 and 2021 sampling programs, the decontaminated equipment used for the collection of the rinsate blanks included the oil/water interface meter.

$$RPD = \frac{(A - B)}{((A + B) / 2)} \times 100$$

where:

A	=	analytical result
B	=	duplicate result.

Note that for RPDs the result can be a positive or a negative value. RPDs are often presented as absolute RPDs, in which case the absolute value of the RPD is reported, always resulting in a positive number. Reporting the absolute RPD results in a reduction in information, since, for instance, if a duplicate sample consistently returned higher results than the original sample, all RPD values would be negative and it may be an indication of a precision problem. In this case, if absolute RPD was reported, no indication would be forthcoming.

Total precision will be determined by collecting field duplicate samples. These samples were collected and analyzed at a rate of approximately 10% of total samples for each analytical suite.

Analytical precision will be determined in the laboratory by running matrix spike/matrix spike duplicate (MS/MSD) pairs, or by running laboratory duplicate analyses. These samples will be analyzed at a rate of approximately 5% for each analytical suite.

Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (e.g., variability due to imprecision) and systematic error (e.g., bias). Therefore, accuracy reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ beyond acceptable limits from the true value or known concentration of the spike or standard. Acceptance criteria are indicated in the individual standardized analytical methods.

Analytical accuracy is typically measured by determining the percent recovery of known target analytes that are spiked into a field sample (i.e., a surrogate or matrix spike), or reagent water (i.e., laboratory control sample [LCS] or blank spike) before extraction at known concentrations. Percent recovery is calculated as:

$$\%REC = \frac{A}{B} \times 100$$

where:

A	=	obtained value
B	=	true value.

Analytical accuracy was determined in the laboratory by the running of MS samples or laboratory control samples. These samples will be analyzed at a minimum rate of 5% for each analytical suite.

Completeness

Completeness for this investigation was defined as the percentage of valid analytical results. Results made uncertain due to missed hold times, improper calibration, blank contamination, or poor calibration verification results would be deemed invalid. Results that may be flagged due to matrix effects are not considered invalid. Completeness for projects should exceed 90%. Completeness is calculated by:

$$completeness = \frac{A}{B} \times 100$$

where:

A	=	number of valid analytical results
B	=	total number of analytical results.