

Reprovisioning of Diamond Hill Crematorium: Contamination Assessment Report and Remediation Action Plan

Hong Kong Productivity Council / Architectural Services Department

Revised Final

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INTRODUCTION

1.1 Background

- 1.1.1 Scott Wilson Limited have been commissioned by the Hong Kong Productivity Council to carry out an assessment of land contamination at the site of the Diamond Hill Crematorium.
- 1.1.2 This report presents the findings of a Phase II Contamination Assessment undertaken at the site of the current Diamond Hill Crematorium. The site area covered in this report includes the existing crematorium and the proposed location of the reprovisioned crematorium immediately to the south.
- 1.1.3 This report comprises the Contamination Assessment Report and Remedial Assessment Plan for the site and has been prepared in accordance with the guidance given in the following documents:
 - Annex 19 of the Environmental Impact Assessment Ordinance Technical Memorandum;
 - Practical Note for Professional Persons (ProPECC) Note PN 3/94,
 "Contaminated Land Assessment and Remediation": and
 - "Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair/Dismantling Workshops", Environmental Protection Department, EPD/TR1/99.
- 1.1.4 A Contamination Assessment Plan (CAP) has previously been prepared and endorsed by the Environmental Protection Department (EPD).

1.2 Objectives

- 1.2.1 The objectives of this report are to:
 - Present the findings of the site investigation;
 - Assess the concentrations of contaminants found against relevant criteria;
 - Determine the requirement for any remedial works;
 - Specify the extent and nature of remedial works.

SITE INVESTIGATIONS

- 2.1 Location of Exploratory Holes
- 2.1.1 A total of 17 samples were taken from ten locations. The sampling points comprised two drillholes, two trial pits and six surface sampling points.
- 2.1.2 The locations of sampling points are shown on Figure 1. The rationale for location of the sampling points and the analytical tests scheduled are indicated in Table 2.1.

Table 2.1: Sampling Points

Location	Exploratory Hole (depth)	Planned Sampling Depths (mbgl)	Analytical Requirements
Fuel storage	DH1 (7m)	4.5m; 5.5m; 7m	Petroleum hydrocarbons
tank	DH2 (7m)	4.5m; 5.5m; 7m	(TPH)
	TP1	0.5m; 1.5m; 3m	Polyaromatic Hydrocarbon (PAH)
Dangerous	TP2 (3m)	0.5m; 1.5m; 3m	TPH
Goods store			PAH
West of stack	S1 (0.1m)	0.1m	
	S2 (0.1m)	0.1m	Metals
	S3 (0.1m)	0.1m	PAH
North of stack	S4 (0.1m)	0.1m	Dioxins
East of stack	S5 (0.1m)	0.1m	
South of stack	S6 (0.1m)	0.1m	

- 2.1.3 The location of sampling points generally matched the proposed locations and depths in the CAP. Minor variations were necessary due to site conditions, and these are noted below.
- 2.1.4 Trial pit TP1 was terminated at 0.9m due to the presence of large boulders preventing further excavation. Samples were taken from 0.5m and 0.9m depth below ground level. No evidence of fuel pipelines or fuel contamination was noted in this area. It is therefore considered that the samples taken from this trial pit are adequate to determine whether contamination is present in this area.
- 2.1.5 Drillhole and trial pit logs are included as Appendix A.
- 2.2 Summary of Ground Conditions
- 2.2.1 Ground conditions were found to consist of sandy fill material with rock fragments, to depths of up to 2m below ground level, overlying completely decomposed medium grained granite or colluvium. Groundwater was not encountered in any of the exploratory holes.

- 2.2.2 No visual or olfactory evidence of contamination was noted during site investigations.
- 2.3 Requirement for Further Investigations
- 2.3.1 The CAP recommended additional site investigations in areas of the site that are currently in use and cannot readily be accessed. These investigations will be carried out once the existing facility has been decommissioned. The additional site investigations are required in the vicinity of the existing CLP substation during Phase I of the construction and demolition works, and around the ovens and flues inside the crematorium building during Phase II of the construction and demolition works. Once access to these areas is available, a sampling and analysis plan will be prepared for approval by EPD, additional investigations will take place, and the need for remedial works will be determined. Any remedial works required will be in addition to those described in this current report.
- 2.3.2 The existing crematorium will operate until 2006, and there is the possibility that further contamination could occur between the time of the current investigations (2003) and 2006, particularly as a result of continuing aerial deposition. It is therefore proposed that, once the crematorium has ceased operating during Phase II, confirmatory surface samples will be taken from the samples points S1 to S6 at a depth of 0.1m, and these samples will be analysed for the same suite of determinands (i.e. dioxins, metals and PAH) in order to confirm that no further contamination has occurred. The Remediation Action Plan will be revised on the basis of these results.
- 2.3.3 The underground fuel storage tank and associated pipework will be removed as part of the site formation works. The base of the excavations will be inspected by a suitably experienced environmental specialist in order to determine whether there is any visual or olfactory evidence of fuel contamination. If such contamination is suspected, then confirmatory soil sampling will be carried out, and the samples analysed for TPH.

3. CONTAMINATION ASSESSMENT

- 3.1 Analytical Results
- 3.1.1 Analyses for metals, TPH and PAH were undertaken at Hong Kong Productivity Council laboratories. Analysis for dioxins was carried out at Alta Analytical Laboratory in the United States.
- 3.1.2 A summary of the analytical results is included as Appendix B.
- 3.2 Assessment Criteria
- 3.2.1 The analytical results were compared to the assessment criteria as outlined in Table 3.1 below.

Table 3.1: Assessment Criteria

Compound	Assessment Criteria (mg/kg unless stated otherwise)	Derivation of Assessment Criteria
Arsenic	30	Dutch "B" Level, as quoted in ProPECC PN 3/94
Barium	400	Dutch "B" Level, as quoted in ProPECC PN 3/94
Cadmium	5	Dutch "B" Level, as quoted in ProPECC PN 3/94
Chromium	250	Dutch "B" Level, as quoted in ProPECC PN 3/94
Cobalt	50	Dutch "B" Level, as quoted in ProPECC PN 3/94
Соррег	100	Dutch "B" Level, as quoted in ProPECC PN 3/94
Lead	150	Dutch "B" Level, as quoted in ProPECC PN 3/94
Mercury	2	Dutch "B" Level, as quoted in ProPECC PN 3/94
Molybdenum	40	Dutch "B" Level, as quoted in ProPECC PN 3/94
Nickel	100	Dutch "B" Level, as quoted in ProPECC PN 3/94
Tin	50	Dutch "B" Level, as quoted in ProPECC PN 3/94
Zinç	500	Dutch "B" Level, as quoted in ProPECC PN 3/94
Total Petroleum Hydrocarbons (C6 – C36)	1000	Dutch "B" Level, as quoted in ProPECC PN 3/94 for mineral oils
Polyaromatic Hydrocarbons (total)	20	Dutch "B" Level, as quoted in ProPECC PN 3/94 for total PAH
Diavina	4 and Taxinin	Destination Continued to the state of the st
Dioxins	1 ng/g Toxicity Equivalent (TEQ)	Preliminary Remediation Goal for residential soils, United States Environmental Protection Agency OSWER Directive 9200.4-26 "Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites", 13 April 1998

3.2.2 In accordance with the requirements of EPD, an additional two samples (representing approximately 10% of the total number of samples) were analysed for a suite of metals including those listed in Table 3.1 and also silver, beryllium, antimony, selenium, thallium and vanadium. These additional metals are listed in Table E1 of EPD/TR1/99. There are no Hong Kong assessment criteria for total concentrations of these metals in soil.

- 3.3 Assessment of Results
- 3.3.1 The following samples exceeded the assessment criteria
 - S3: lead (180 mg/kg); tin (190 mg/kg)
 - S5: tin (160 kg/kg).
- 3.3.2 The concentrations of organic determinands (TPH, PAH or dioxin) were below the assessment criteria in all cases. TPH analysis was carried out using modified USEPA Method 8015 and the results reported in the ranges C6–C9, C10–C28 and C28–C36. All TPH results were below the relevant detection limits.
- 3.3.3 The concentrations of the additional metals listed in Table E1 of EPD/TR1/99 (Ag, Be, Sb, Se, Tl, V) cannot be directly compared to specific assessment criteria. However, the concentrations of these metals were either below the detection limit or at low levels, and it is therefore considered that these results do not indicate significant contamination.
- 3.3.4 Toxicity Characteristic Leaching Procedure (TCLP) tests were carried out on samples S3 and S5, to determine the solubility and mobility of lead and tin in these samples and hence determine the suitability for landfill disposal. The concentrations of lead and tin were as shown in Table 3.2.

Table 3.2: Results of TCLP Tests for parameters exceeding assessment criteria

	Lead (ppm)	Tin (ppm)
Landfill Disposal Criteria	50	250
S3	0.03	0.015
S5	<0.01	<0.01

3.3.5 It is proposed that confirmatory samples are taken in the locations of sample points S1 to S6 once the crematorium ceases operation, as described in Section 2.3.2 above. These samples will also be analysed for the full suite of TCLP determinands as listed in Table E1 of EPD/TR1/99, in order to confirm suitability for landfill disposal.

4. REMEDIATION ACTION PLAN

- 4.1 Extent of Contamination
- 4.1.1 The assessment criteria for certain metals were exceeded in 2 surface samples, taken from S3 (lead and tin) and S5 (tin only).
- 4.1.2 In accordance with ProPECC Note PN 3/94, remedial works are required in the areas where contamination has been identified.
- 4.1.3 The remaining samples showed no evidence of metal or organic contamination, suggesting that the two samples where contamination was present represent isolated hot-spots. It should be noted that the concentrations of lead and tin in these two samples, whilst exceeding the Dutch B Level, are below the Dutch C Level, and are therefore not indicative of severe contamination.
- 4.1.4 It has been assumed that the contamination observed at S3 and S5 extends to a depth of 0.5m below surface, and within a radius of 5m from each location. The total volume of affected soil is therefore estimated at 0.5 x 5 x 5 x 3.14 = approximately 40 m³ in each location, giving a total of 80 m³ for the two locations.
- 4.2 Removal of Underground Fuel Tank
- 4.2.1 During removal of the underground fuel storage tank, appropriate precautions should be taken to avoid contamination. All fuel tanks and associated pipework should be emptied prior to any demolition work being undertaken. Any remaining sludge or sediment in the tanks or pipework should be removed and disposed of as chemical waste in accordance with the appropriate regulations for disposal of such material.
- 4.2.2 The base of the excavations will be inspected by a suitably experienced environmental specialist in order to determine whether there is any visual or olfactory evidence of fuel contamination. If such contamination is suspected, then confirmatory soil sampling will be carried out, and the samples analysed for TPH.
- 4.3 Additional Investigations
- 4.3.1 The Contamination Assessment Report (CAP) recommended additional site investigations in areas of the site that are currently in use and cannot readily be accessed. These investigations will be carried out once the existing facility has been decommissioned but prior to demolition. The additional site investigations are required:
 - · in the vicinity of the existing CLP substation during the Phase I works, and
 - around the cremators, chimney and flues inside the crematorium building during the Phase II works.

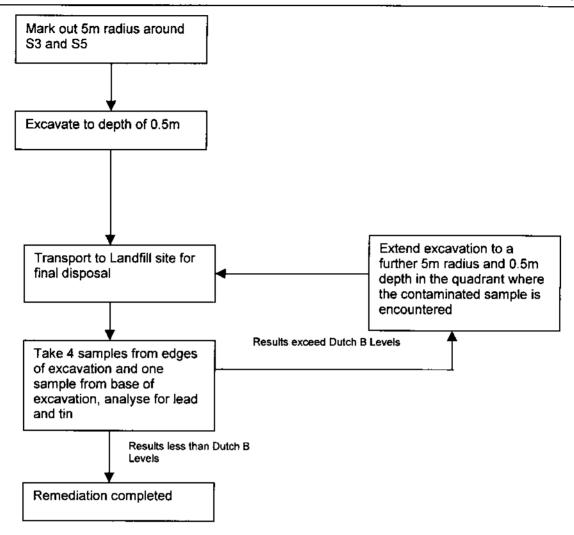
- 4.3.2 The scope of these additional investigations are to recover soil samples from around the CLP substation during the Phase I works, and to recover samples of dust/ash from inside the cremators, chimneys and flues during the Phase II works.
- 4.3.3 Once access to these areas is available, a sampling and analysis plan should be prepared for approval by EPD, additional investigations will take place, and the need for remedial works will be determined.
- 4.3.4 As discussed in Section 2.3.2, once the crematorium has ceased operating during Phase II, confirmatory surface samples will be taken from the samples points S1 to S6 at a depth of 0.1m, and these samples will be analysed for dioxins, metals and PAH in order to confirm that no further contamination has occurred.
- 4.3.5 The requirements for testing are summarised in Table 4.1 below.

Table 4.1: Requirements for Additional Investigations

Location	Parameters to be Tested
CLP Substation:	Polychlorinated biphenyls (PCBs)
(soil samples)	TPH
During Phase I	
Ash around cremators, chimneys and flues inside crematorium building: (Ash/particulate matter samples) During Phase II	Dioxins Metals ("Dutch List": Cr, Co, Ni, Cu, Zn, As, Mo, Cd, Sn, Ba, Hg, Pb) PAH
Confirmatory surface samples from sample points S1 to S6 at a depth of 0.1m	Dioxins Metals ("Dutch List": Cr, Co, Ni, Cu, Zn, As, Mo, Cd, Sn, Ba, Hg, Pb) PAH

- 4.4 Objectives of Remediation Works
- 4.4.1 The objectives of the remediation works are to remove contamination from those areas where concentrations of contaminants exceed the Dutch B Levels.
- 4.5 Design and Implementation of Remediation Works
- 4.5.1 Possible remedial techniques for treating soil contaminated with metals include;
 - Landfill disposal
 - Solidification/Stabilisation
- 4.5.2 Since the likely volume of soil that is contaminated is small (less than 100m³), it is considered that landfill disposal is the most appropriate remedial technique.
- 4.5.3 The remedial works will consist of removing soil from an area of 5m radius around sample locations S3 and S5, to a depth of 0.5m, and disposing of this material to landfill.

- 4.5.4 TCLP testing has been undertaken, and the concentrations of lead and tin in the TCLP tests were several orders of magnitude lower than the Landfill Disposal Criteria. Hence pre-treatment of the soil prior to landfill disposal is not deemed necessary. Further TCLP testing (for the full suite of parameters listed in Table E1 of EPD/TR1/99) will be carried out on the confirmatory samples recovered from locations S1-S6 after decommissioning of the crematorium in 2006, for those samples which require landfill disposal.
- 4.5.5 Confirmatory testing will be carried out following excavation at each location, in order to confirm that all contaminated material has been removed. The confirmatory testing will consist of five samples in each location, situated immediately to the north, south, east and west of each location, and at the base of the excavation, to be analysed for lead and tin. If the results of analysis are less than the Dutch B Levels, no further excavation will be required. If the concentrations exceed the Dutch B Level, then the area of excavation should be extended, and further confirmatory testing should be carried out following this excavation. In this event, the area of excavation should be extended by a further 5m radius in the quadrant where the contaminated sample is encountered, or by a further 0.5m depth if the contaminated sample is from the base of the excavation. This procedure should be followed until no further contamination is encountered.
- 4.5.6 The remedial works will be carried out following decommissioning of the Existing Cremtorium.
- 4.5.7 The proposed remedial works are shown in the following flowchart.



- 4.6 Potential Additional Remedial Requirements
- 4.6.1 Should contamination be encountered beneath the fuel tank or the CLP substation, further remedial work will be required.
- 4.6.2 Such potential contamination would consist of either TPH (in the case of the fuel tank) or PCBs (in the case of the CLP substation).
- 4.6.3 Although there is no evidence to date of contamination associated with the fuel tank, and the drillholes around the fuel tank do not indicate contamination, there is the possibility that the material directly underlying the fuel tank may be contaminated with TPH. A realistic worst case estimate is that the volume of contaminated material would no more than 105m³ (i.e. approximately 7m x 5m x 3m depth). For this volume of material, treatment by bioremediation is likely to be uneconomic, and the recommended remedial strategy would be landfill disposal. The actual remedial strategy to be adopted is subject to the findings of the supplementary investigations.

- 4.6.4 The likelihood of significant widespread PCB contamination beneath the substation is considered to be low, due to the low mobility of PCBs in the environment and the low likelihood of a spillage occuring. As a realistic worst-case estimate, it could be assumed that less than 25m³ (i.e. 5m x 5m x 1m depth) of material could be contaminated, and may require stabilisation with cement prior to disposal to landfill. The actual remedial strategy to be adopted is subject to the findings of the supplementary investigations.
- 4.7 Particular Requirements for Remedial Works

Health and Safety Precautions

- 4.7.1 The site workers engaged in the remedial works should be provided with adequate personal protective equipment, which should include:
 - Protective footwear;
 - Gloves:
 - Dust masks; and
 - Overalls.
- 4.7.2 A clean area should be provided, equipped with washing facilities. Eating, drinking and smoking should only be permitted within designated "clean" areas after washing.
- 4.7.3 Excavated material should not be stockpiled, but should immediately be treated/transported to landfill on a daily basis...

Avoidance of Impacts on Water Quality

- 4.7.4 In order to avoid impacts on water quality during remedial works, care will be taken to minimise the mobilisation of sediment during excavation and transport. Measures to be adopted will be based on the recommendations set out in Practice Note for Professional Persons ProPECC PN1/94 "Construction Site Drainage". The results of the site investigation suggest that there is unlikely to be any requirement for dewatering of excavations, since groundwater was not encountered in any of the exploratory holes.
- 4.7.5 The contractor carrying out the remedial works will be required to submit a method statement detailing the measures to be taken to avoid water quality impacts. Typical measures would include;
 - · Carry out the works during the dry season (i.e. October to March) if possible;
 - Use bunds or perimeter drains to prevent run-off water entering excavations:
 - Sheet or otherwise cover excavations whenever rainstorms are expected to occur;
 - Minimise the requirements for stockpiling of material and ensure any stockpiles are covered;
 - Temporary on-wit stockpiling of contaminated materials should be avoided, and all excavated contaminated soils/materials should be disposed of on a daily basis;

 Ensure that any discharges to storm drains pass through an appropriate silt trap.

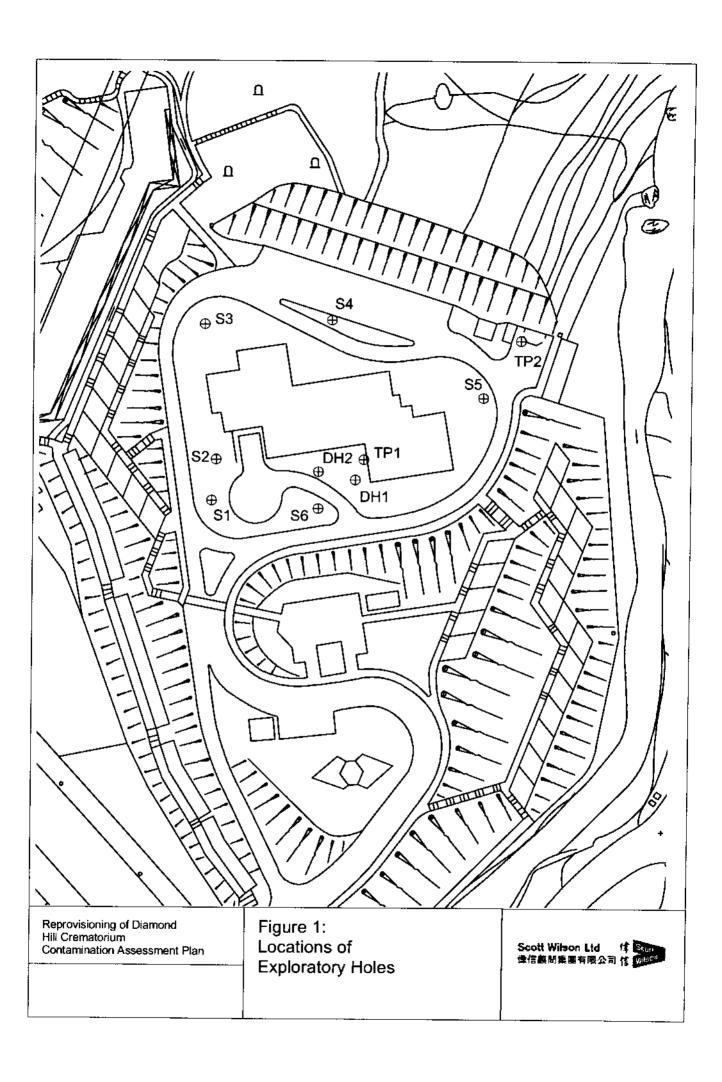
Waste Disposal Requirements

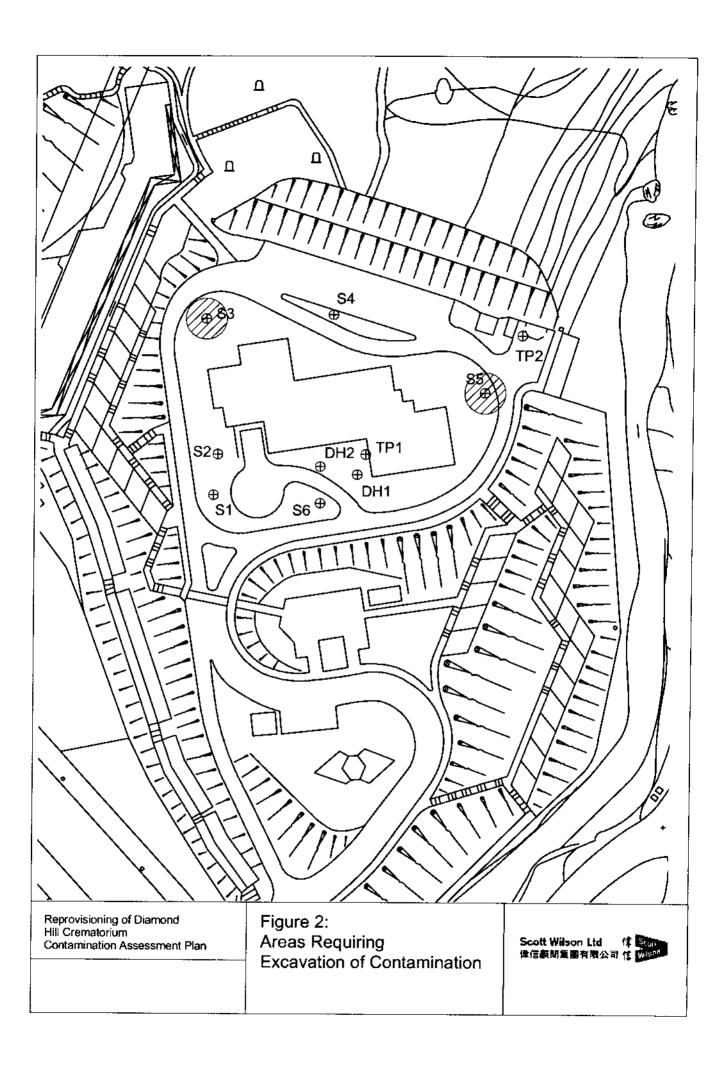
- 4.7.6 An application for permission to dispose of excavated material should be made to the Facilities Management Group of EPD three months prior to disposal.
- 4.7.7 A "trip-ticket" system should be implemented. Each load of contaminated soil despatched to landfill should be accompanied by an admission ticket.
- 4.7.8 Vehicles leaving the site should be adequately sheeted to prevent dispersion of contaminated material during transport. The wheels of vehicles should be cleaned prior to leaving site, to prevent contaminated material leaving site on the wheels of vehicles.

Compliance Report

4.7.9 Following completion of remediation works, a Remediation Report should be compiled and submitted, to demonstrate that the remediation works have been carried out in accordance with the Remediation Action Plan. The Remediation Report should include details of the excavation works carried out, records of material taken to landfill, and results of confirmatory testing, and should be submitted to EPD for approval before the commencement of building works.

FIGURES





APPENDIX A DRILLHOLE AND TRIAL PIT LOGS

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	d gray, rad b angular fine to	r decomposed into	t 440) epotted 45y ffre to course	medk/m	folls, grey and recomposed,	The state of the s		hat the depths depths of 0.50m	I the depths of nd 3.00m.				until fervestigation works		TRIAL PIT NO.	TP2		Geotéchnics a concrete engg. Grong kong) Limited	
Description	Relimbrised CONCRETE. Derse, dr.y. yelitowseh becenn (16Y'R 8/4), daspeled grsy, mel med withst, lefty fine to cares 8/40 with mech angular fine to control carrell stand curren co.c. was recovered.	breakinally cobble and boulder about allothy decompose and moderabily decomposed grantes and concrete frequency, occasionally please pipe and plead chagneers	Attramety wast, motet, yatkwish brown (1698 44) spodes Write, grvy and locatly dapped pint, completely decomposed, readium grained GRAMIE, Sithy fan to con-	SAND with series engular to subanquies thes to medium gravel atted quarts and rock fragatients]	Extremely weak, droken, rad (10R &K) spectred white, grey and profess, when place years brown, completely decomposed, profess, and not the state.	tome angular to adomyclar five to machine praval aband	at a depth of 3.00m.	 2 nos. of grass jar samples were taken at the depths of 0.50m, 1.50m and 3.00m. Plastic bag samples was taken at the depths of 0.50m. 	1 50m and 3.00m. 3. Small disturbed samples were taken at the depths of 0.50m, 1.00m, 1.50m, 2.00m, 2.50m and 3.00m.				d Hill Crematorium-Gro		1	. 1	٦L	GEOTECHNICS & CONC	
	Reinforced CONCRETE Dense, dry, yellowish b and within, silly fine to c course carried sized dus	exceptionally cobble as abd moderately decar fregments, occasional	Attramety west, molet, yaltovish brown Willia, gry and locally dappled pink, coun decomposed, medium grained glightly in	SAND with beste engular to subangular. Gravel altod quartz and rock fragonerts)	Extremely weak, croist green, dappied years	Some angular to suban Quartz and rock fragas	ITHE DIT WITH THOMISMEND BY IN GEOMIN OF 3.00mm Notes:	1. 2 nos. of grass jar samples v of 0.50m, 1.50m and 3.00m. 2. Plastic bag samples were tai	1.50m and 3.00m. 3. Small disturbed sa 0.50m, 1.00m, 1.50			PROJECT	Reprovisioning of Dismond Hill Crematorium-Ground (revestigation worts for Eld. Music		Sheet 1 of	ŀ	Date Remeland 15,01,000	4	
Legend									·						1	Ę			
Depth (m)	3 3	<u> </u>	*	* ;			3	3	**************************************	3	9	TCLAZ	A SD 067144		N 422970.53		H.B. Teang	, v	
Skitch				and low		in the second se	No recomposed grantle of size 0.28m x 0.12m.	Secured states approv becomposed grants of size 0.30m y 0.21m. (Billiack drawage place of diameter 70mm) (West to very west, mote, yellowish from (10) R 5.4) applied white and black, highly to completely decomposed medium mained fast surre	(Signity safty find to coarse SAND with some angular fine to coarse graves sized quartz and rock tragments)		1.60 m McErc 1.60m McErc 1.60m	PLAN (not to scale) Contract No. :	Works Order Inc	Condinees	SECTION DATE STREET	A		1-	
•		2				Remarks: ①Broken PVC pipe,	Red plastic fragments.	(Black drainage ploe of di ONstark to vary weak, mote black, highly to complete			MACE A. M. MACE B.	REMARKS Ground Water	No Groundwater Plant Used	Bhewing Domes Strates Come E. a.	State	Stability Hebis		Johnson Johnson Others	3
E E			£_1	ੜੇ ੜ * *	. "	#	9	3	\$ 2				1 1	77	Constitution		;	_	-
	•	-	-	** ***	• **							SYMBOLS		Underlanded Herre. Belight	ĺ,	ţ	Mathe Demaky Tay	į.	į

APPENDIX B CHEMICAL TEST RESULTS

		Dioxin	Silver	Arsenic	Barium	Berylium	Cadmium	Cobalt	Chromium	Copper	Mercury
		ng/g, TEQ	mg/kg	mg/kg	mg/kg	mg/kg	ma/ka	ma/ka	ma/ka	ma/ka	ma/ka
Assessment Criteria	t Criteria	1	¥	30	400	AN	2	50	250	100	,
Sample ID	Depth								222	2	7
Surface Samples											
S1	0.1m	0.00833		2.7	23		<0.05	_	11		,
\$2	0.1m	0.00787		2.2	32	i	<0.05	,		.00	400
S3	0.1m	0.00637		4.3	17		<0.05	2	,	2	20.05
84	0.1m	0.00378		1.7	않		60.0	1 60	1 60	٧	200
S5	0.1m	0.00894		5.9	5.7		<0.05	-	2	, -	000
98	0.1m	0.00518		1.8	25		<0.05	2	9	- α	800
									,	,	3
Trial Pits											
TP1	0.5m		⊽	1.6	26	\	<u> </u>	V		7	70.05
TP1	0.9m									,	3
TP2	0.5m										
TP2	1.5m		⊽	1.4	9	V	<0.05	a c	7 0	7	400
TP2	3.0m						23.5		o i	2	0.0
	-										
Drillholes											
DH1 4	4.5-5.0m										
	5.6-6.1m										
	7.0-7.5m										
	4.5-5.0m										
	5.6-6.1m										
DH2 7	7.0-7.5m		-								
					1						

	Lead	ng/L	30	15
	Tin	ng/L	<10	<10
3			0.1m	0.1m
TCLP Results			S3	SS

┋╒┊╎╏╏┋═╇╍╎╏╏╏╏╏╏╏			Molybdenum	Nickel	Lead	Antimony	Selenium	Ţ	Thallium	Vanadium	Zinc	C6-C9 TPH
Output 40 100 150 NA 50 NA Depth 6.1m <1 4 87 25 NA 0.1m <1 4 87 25 13 0.1m <1 2 140 13 13 0.1m <1 3 10 15 15 0.1m <1 3 10 15 15 0.1m <1 3 70 6 15 15 0.1m <1 3 44 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ma/ka	ma/ka	ma/ka	ma/ka	maika
Depth 4 87 25 0.1m <1	Assessmen	ıt Criteria	40	100	150	Ϋ́	Ϋ́	50	ΑN	AN	5005	0001
0.1m <1 4 87 25 0.1m <1 2 5 140 13 0.1m <1 2 180 190 0.1m <1 3 95 15 0.1m <1 3 110 160 0.5m 3 3 44 <1 <1 <1 0.5m 0.5m 14 <1 4 <1 <1 0.5m 3 3 44 <1 4 <1 <1 0.5m 0.5m 14 <1 4 <1 <1 4.5-6.0m 4.5-6.0m 4.5-6.0m 4.5-6.0m 4.5-6.0m 4.5-6.0m 4.5-6.0m 5.6-6.1m 5.0-7.5m 6.6-6.1m 6.6-6.1m 6.6-6.1m 6.6-6.1m	Sample ID	Depth									3	2
0.1m <1 4 87 25 0.1m 2 5 140 13 0.1m <1	Surface Samples											
0.1m 2 5 140 13 0.1m <1 2 180 190 0.1m <1 3 110 160 0.1m <1 3 110 160 0.1m <1 3 110 160 0.5m 3 44 <1 <1 <1 0.5m 0.5m 14 <1 <1 <1 1.5m <5 0.8 14 <1 <1 <1 5.6e.6.1m 4.5e.5.0m 5.6e.6.1m 7.0-7.5m 7.0-7.5m	S1	0.1m	٠	4	87			25			ę	
0.1m <1	S2	0.1m	2	5	140		i i	13			27	
0.1m <1	S3	0.1m	۲۷	2	180			190			2 8	
0.1m <1	S4	0.1m	\<	3	95			75			3 4	
0.5m 3 70 5 0.5m 3 3 44 <1	S5	0.1m	₹	3	110			160			2 2	
0.5m 3 34 <1	98	0.1m	۷.	3	70			ď			S C	
0.5m 3 34 <1 <1 7 <1 0.9m 0.5m 0.5m 4 <1								,			87	
0.5m 3 344 <1	Trial Pits											
0.9m 0.5m 0.5m 41	TP1	0.5m	3	3	44	₹	\ \ \	,	7	4.6	,	ļ
0.5m 45m 4	TP1	0.9m				-	,		,	2	25	7
1.5m <5	TP2	0.5m										7
3.0m 4.5-5.0m 5.6-6.1m 7.0-7.5m 4.5-5.0m 5.6-6.1m 7.0-7.5m	TP2	1.5m	\$	0.8	14	۷	V	7	7	•	,	7 9
	TP2	3.0m						,	7	-	2	7
												2
	Drillholes											
		4.5-5.0m										۶
		5.6-6.1m	i.]	7 9
		7.0-7.5m										7
		4.5-5.0m				:						7,
		5.6-6.1m										5
		7.0-7.5m			İ							2
												7

Assessment Criteria Sample ID Depth				Computerio	Acenapinylene	Anthracene	
Assessmer Sample ID Surface Samples		mg/kg	mg/kg	6a/gu	ba/bn	ng/kg	ug/kg
Sample ID Surface Samples	nt Criteria	1000	1000	ΑN	ΨN	10000	AN
Surface Samples	Depth						
S1	0.1m			\$	\$	<5	< <u>\$</u>
S2	0.1m			< 5	5.4	\$	17
S3	0.1m			<5	\$	\$	5.6
S4	0.1m			<5	\$>	\$	33
SS	0.1m			<5	\$	\$	77
Se	0.1m			<5	\$	\$	\$25
Trial Pits							
TP1	0.5m	<25	<25	\$	<5	\$	\$
TP1	0.9m	<25	<25	\$	<5	\$	< >2
TP2	0.5m	<25	<25	\$	<5	\$	
TP2	1.5m	<25	<25	<5	\$	\$5	\$ \$5
TP2	3.0m	<25	<25	< 2	\$	\$	<5
)
Drillholes							
DH1	4.5-5.0m	<25	<25	\$	^	<5	5
DH1	5.6-6.1m	<25	<25	\$	<5	\$	<5
DH1	7.0-7.5m	<25	<25	\$	\$	^ 2	^ ^55
DH2	4.5-5.0m	<25	<25	\$	\$	^ 2	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
DH2	5.6-6.1m	<25	<25	\$	<5	\$	\$
DH2	7.0-7.5m	<25	<25	<5	<5	<5	\$

transment Criteria 1 1 10 Depth 10 Depth 11 10 Depth 11 10 0.1 m 1.5 m 1	ug/kg NA S4 34 37 37	ug/kg NA	ug/kg	ug/ka
0.5m 0.5m 0.5m 0.5m 0.5m 0.5m 0.5m 0.5m	NA <55 <55 <55 <55 <55 <55 <55 <55 <55 <5	AA.	À	
0.1m 0.1m 0.1m 0.1m 0.1m 0.1m 0.5m 1.5m 1.5m 3.0m 4.5-5.0m	\$4 34 \$5 <5		ΑN	AN
0.1m 0.1m 0.1m 0.1m 0.1m 0.5m 1.5m 1.5m 3.0m 4.5-5.0m	\$4			
0.1m 0.1m 0.1m 0.1m 0.1m 0.5m 1.5m 3.0m 3.0m 5.6-6.1m	\$4 34 \$5 5			
0.1m 0.1m 0.1m 0.1m 0.5m 0.5m 0.5m 1.5m 3.0m 5.6-6.1m	34 <5 <5	\$5	\$\$	\$
0.1m 0.1m 0.1m 0.1m 0.5m 0.5m 1.5m 3.0m 3.0m	37	47	16	12
0.1m 0.1m 0.1m 0.5m 0.5m 1.5m 3.0m 3.0m	37	< 5	\$	5.4
0.1m 0.1m 0.5m 0.9m 0.5m 1.5m 3.0m 4.5-5.0m		24	21	32
0.1m 0.5m 0.9m 0.5m 1.5m 3.0m 3.0m 4.5-5.0m	7	13	<5	12
0.5m 0.9m 0.5m 1.5m 3.0m 4.5-5.0m 5.6-6.1m	<5	<5	<5	\$
0.5m 0.9m 0.5m 1.5m 3.0m 4.5-5.0m				,
0.5m 0.9m 0.5m 1.5m 3.0m 4.5-5.0m				
0.9m 0.5m 1.5m 3.0m 4.5-5.0m	\$	<.	<5	\$
0.5m 1.5m 3.0m 4.5-5.0m 5.6-6.1m	<5	<5	<5	5 4
3.0m 3.0m 4.5-5.0m 5.6-6.1m	\$	< 52	<5	2 4
3.0m 4.5-5.0m 5.6-6.1m	→	\$ \$	5>	2 4
4.5-5.0m 5.6-6.1m	<55	\$	<.	7 4
4.5-5.0m 5.6-6.1m				,
4.5-5.0m 5.6-6.1m				
5.6-6.1m	<5	\$	<55	4
	\$\triangle \chi_2 \tag{2}) \$	\$	7 4
DH1 7.0-7.5m <5	\$	< <u><</u>	\$ 4	7 4
DH2 4.5-5.0m <5	<	\$	\$ \$5	7 4
DH2 5.6-6.1m <5	\$>	\$ \$	\$5 \$5	2 4
DH2 7.0-7.5m <5	<2	\$	۸ ۸	, 4

9 ug/kg ug/kg NA 5000 NA 5000 S 5 650 S 65			Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeni(1,2,3-cd)pyrene	Napthalene	Phenanthrene
nnt Criteria NA 10000 NA 5000 Depth C <th></th> <th></th> <th>ug/kg</th> <th>ug/kg</th> <th>ug/kg</th> <th>6a/gn</th> <th>ug/kg</th> <th>ug/kg</th>			ug/kg	ug/kg	ug/kg	6a/gn	ug/kg	ug/kg
Depth Column cf cf 0.1m cf cf cf 0.5m cf cf cf 1.5m cf cf cf <t< th=""><th>Assessme</th><th>ent Criteria</th><th>ΨN</th><th>10000</th><th>ΨŽ</th><th>ΨX</th><th>5000</th><th>10000</th></t<>	Assessme	ent Criteria	ΨN	10000	ΨŽ	ΨX	5000	10000
0.1m <5	Sample ID	Depth						
0.1m 55 10 66 60 0.1m 89 24 65 80 60 0.1m 65 12 65 60 60 0.1m 65 23 65 60 60 0.1m 65 23 65 60 60 0.1m 65 65 66 60 0.5m 65 65 65 60 0.5m 65 65 65 65 0.5m 65 65 65 65 1.5m 65 65 65 65 3.0m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65 4.5-5.0m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65	urface Samples							
0.1m 8.9 24 6 36 50 6	S1	0.1m	9>	10	<5	<5	<50	7.5
0.1m 66 12 65 60 0.1m 92 39 65 23 60 0.1m 65 23 65 96 60 0.1m 65 65 96 60 60 0.5m 65 65 65 60 0.5m 65 65 65 60 0.5m 65 65 65 60 1.5m 65 65 65 60 3.0m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65 6.6-6.1m 65 65 65 65 <th< th=""><th>S2</th><th>0.1m</th><th>6.8</th><th>24</th><th><5</th><th>36</th><th><50</th><th>1-1</th></th<>	S2	0.1m	6.8	24	<5	36	<50	1-1
0.1m 9.2 39 <5	S3	0.1m	9>	12	\$	<5	<50	6.8
0.1m <5	S4	0.1m	9.2	39	\$	23	<50	11
0.1m 65 65 65 650 0.5m 65 65 65 65 0.5m 65 65 65 65 0.5m 65 65 65 65 1.5m 65 65 65 65 3.0m 65 65 65 65 3.0m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65 7.0-7.5m 65 65 65 65 5.6-6.1m 65 65 65 65 7.0-7.5m 65 65 65 65 5.6-6.1m 65 65 65 65 7.0-7.5m 65 65 65 65 7.0-7.5m 65 65 65 65 7.0-7.5m 65 65 65 65 8 6 6	SS	0.1m	9>	23	<5	9.6	<50	22
0.5m <5	Se	0.1m	<u>\$</u> >	<5	<5	<5	<50 <	\$
0.5m <5								
0.5m 65 65 65 60 0.9m 65 65 65 60 0.5m 65 65 65 65 1.5m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65 4.5-5.0m 65 65 65 65 5.6-6.1m 65 65 65 65 7.0-7.5m 65 65 65 65 7.0-7.5m 65 65 65 65	Trial Pits							
0.9m 5 6	TP1	0.5m	9>	\$>	ŝ	<5	<50	<5
0.5m <5 <5 <5 <50 1.5m <5 <5 <5 <50 3.0m <5 <5 <50 <50 4.5-5.0m <5 <5 <5 <50 2.6-6.1m <5 <5 <5 <50 4.5-5.0m <5 <5 <5 <50 4.5-5.0m <5 <5 <50 5.6-6.1m <5 <5 <5 <50 5.6-6.1m <5 <5 <5 <50 7.0-7.5m <5 <5 <5 <50	TP1	0.9m	\$>	\$>	<5	<5	<50	\$
1.5m <5 <5 <5 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 	TP2	0.5m	-25	G>	<5	9>	°50	<5
3.0m <5 <5 <5 <50 4.5-5.0m <5 <5 <5 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50	TP2	1.5m	<5>	\$>	<5	<5	×50	\$
4.5-5.0m <5	TP2	3.0m	<u> </u>	<5	\$	<5	<50	\$
4.5-5.0m <5 <5 <5 <5 5.6-6.1m <5 <5 <5 <50 7.0-7.5m <5 <5 <5 <50 4.5-5.0m <5 <5 <5 <50 5.6-6.1m <5 <5 <5 <50 7.0-7.5m <5 <5 <50 <50								
4.5-5.0m <5 <5 <5 <5 5.6-6.1m <5 <5 <5 <5 7.0-7.5m <5 <5 <5 <5 5.6-6.1m <5 <5 <5 <5 7.0-7.5m <5 <5 <5 <5	Drillholes				İ			
5.6-6.1m <5 <5 <5 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50 </td <th>DH1</th> <th>4.5-5.0m</th> <td>\$></td> <td>\$</td> <td>~</td> <td><5</td> <td><50</td> <td>\$</td>	DH1	4.5-5.0m	\$>	\$	~	<5	<50	\$
7.0-7.5m <5 <5 <5 <50 4.5-5.0m <5 <5 <5 <50 5.6-6.1m <5 <5 <5 <50 7.0-7.5m <5 <5 <50	DH1	5.6-6.1m	9>	~ 5	\$	<5	<50	∜
4.5-5.0m <5 <5 <5 5.6-6.1m <5 <5 <5 7.0-7.5m <5 <5 <50	H	7.0-7.5m	9>	\$>	<5	<5	<50	\$
5.6-6.1m <5 <5 <5 <5 7.0-7.5m <5	DH2	4.5-5.0m	9>	<5	\$	<5	<50	\$
7.0-7.5m <5 <5 <5 <5	DH2	5.6-6.1m	<5	<5	<5	<5	<50	\$
-	DH2	7.0-7.5m	9>	<5	<5	<5	<50	\$

\$ \$	mg/kg 20 0.0259 0.02418 0.0418 0.3042 0.1249 <□L <□L <□L <□L <□L <□L <□L <□L <□L <□L	10000 100000 100000 100000 100000 100000 100000 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 10000 100000 10000 10000 10000 10000 10000 10000 10000 10000 10000 1000	0.1m 0.1m 0.1m 0.1m 0.1m 0.1m 0.1m 0.1m
7.0-7.5m <5	2 0	\$ \\$	7.0-7.5m
5.6-6.1m <5	<dl< td=""><td>\$</td><th>4.5-5.0m</th></dl<>	\$	4.5-5.0m
4.5-5.0m <5 5.6-6.1m <5			
es 4.5-5.0m <5 5.6-6.1m <5			
4.5-5.0m <5 5.6-6.1m <5	ÇD[\$	3.0m
3.0m <5 4.5-5.0m <5 5.6-6.1m <5	^DL	<5	1.5m
3.0m <5 3.0m <5 4.5-5.0m <5 5.6-6.1m <5	<u>څ</u>	\$	0.5m
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0.9m <5 0.5m <5 1.5m <5 3.0m <5 4.5-5.0m <5	۵Ĺ	\$	0.5m
0.5m <5 0.9m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5 4.5-5.0m <5			
0.5m <5 0.9m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5	<dl< td=""><td><5</td><th>0.1m</th></dl<>	<5	0.1m
0.1m <5 0.5m <5 0.9m <5 1.5m <5 3.0m <5 3.0m <5 3.0m <5	0.1249	19	0.1m
0.1m 19 0.1m <5 0.5m <5 0.9m <5 1.5m <5 1.5m <5 4.5-5.0m <5 3.0m <5 3.0m <5	0.3042	42	0.1m
0.1m 42 0.1m 19 0.1m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5 3.0m <5	0.0418	12	0.1m
0.1m 12 0.1m 42 0.1m 19 0.1m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5 3.0m <5	0.2703	24	0.1m
0.1m 24 0.1m 12 0.1m 42 0.1m 42 0.1m 65 0.5m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5 3.0m <5 3.0m <5 3.0m <5	0.0259	8.4	0.1m
0.1m 8.4 0.1m 24 0.1m 12 0.1m 42 0.1m 42 0.1m 45 0.5m <5 0.5m <5 0.5m <5 1.5m <5 3.0m <5 3.0m <5			
0.1m 8.4 0.1m 24 0.1m 12 0.1m 12 0.1m 19 0.1m 65 0.5m <5 0.9m <5 1.5m <5 3.0m <5 3.0m <5 3.0m <5 3.0m <5			Depth
Pile ID Depth Samples 8.4 \$1 0.1m 8.4 \$2 0.1m 12 \$3 0.1m 42 \$4 0.1m 42 \$5 0.1m 42 \$6 0.1m 45 \$1 0.5m 45 \$2 0.5m 45 \$2 0.5m 45 \$2 1.5m 45 \$2 3.0m 45 H 4.5-5.0m 45	20	10000	nt Criteria
Assessment Criteria 10000 Pile ID Depth 8.4 Samples 0.1m 8.4 \$1 0.1m 24 \$2 0.1m 42 \$3 0.1m 42 \$4 0.1m 42 \$5 0.1m 45 P1 0.5m 45 P2 0.5m 45 P2 1.5m 45 P2 3.0m 45 H1 4.5-5.0m 45 H1 5.6-6.1m 45	mg/kg	ug/kg	
ug/kg Assessment Criteria 10000 ple ID Depth Samples 0.1m \$1 0.1m \$2 0.1m \$3 0.1m \$4 0.1m \$5 0.1m \$6 0.1m \$7 0.5m \$7 0.5m \$2 1.5m \$2 1.5m \$2 1.5m \$2 3.0m \$3 0.5m \$4 0.5m \$5 0.5m \$4 0.5m \$5 0.5m \$6 0.5m \$7 0.5m \$6 0.5m \$7 0.5m \$6 0.5m \$7 0.5m \$8 0.5m \$1 0.5m \$2 0.5m \$3 0.5m \$4 0.5m \$5 0.5m \$			



Test Report No. : T013101

Page No. : 1 of 19

Date of Issue : 31/03/2003

Test Completed Date: 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Analytical Results.				
Sample Name (Sample No.)	Total Silver (mg/kg)	Total Arsenic (mg/Kg)	Total Barium (mg/kg)	Total Be (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-2 20/03/2003	SEDIMENT-METAL-3 10/03/2003	
TP1 (0.50m) (WT0303043)	< 1	1.6	26	< 1
S1 (0.10m) (WT0303045)	N.R.	2.7	23	N.R.
S2 (0.10m) (WT0303046)	N.R.	2.2	32	N.R.
S3 (0.10m) (WT0303047)	N.R.	4.3	. 17	N.R.
S4 (0.10m) (WT0303048)	N.R.	1.7	50	N.R.

Approval Signatory:

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Test Report No. :

2 of 19 Page No. :

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date: 05/03/2003

Approved Signatory

: Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Total Silver (mg/kg)	Total Arsenic (mg/Kg)	Total Barium (mg/kg)	Total Be (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-2 20/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003
S5 (0.10m) (WT0303049)	N.R.	5.9	57	N.R.
S6 (0.10m) (WT0303050)	N.R.	1.8	25	N.R.

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T013101 Test Report No. :

Page No. : 3 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date: 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Cadmium (mg/kg)	Total Cobalt (mg/kg)		Total Copper (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003
TP1 (0.50m) (WT0303043)	< 0.05	< 1	4	< 1
S1 (0.10m) (WT0303045)	< 0.05	. 1	11	7
S2 (0.10m) (WT0303046)	< 0.05	2	7	29
S3 (0.10m) (WT0303047)	< 0.05	2	2	7.
S4 (0.10m) (WT0303048)	0.09	3	6	. 6

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Test Report No. :

Page No. : 4 of 19

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date : 05/03/2003

Approved Signatory

: Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Total Cadmium (mg/kg)	Total Cobalt (mg/kg)	Total Chromium (mg/kg)	Total Copper (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003
S5 (0.10m) (WT0303049)	< 0.05	1	5	11
S6 (0.10m) (WT0303050)	< 0.05	. 2	6	8.

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T013101 Test Report No. :

5 of 19 Page No. :

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Total Mercury (mg/kg)	Total Mo (mg/kg)	Total Nickel (mg/kg)	Total Lead (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003
TP1 (0.50m) (WT0303043)	< 0.05	. 3	3	44
S1 (0.10m) (WT0303045)	0.20	< 1	4	87
S2 (0.10m) (WT0303046)	0.50	2	5	140
S3 (0.10m) (WT0303047)	< 0.05	< 1	2	180.
S4 (0.10m) (WT0303048)	0.07	, < 1	3	95

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Test Report No. :

Page No. : 6 of 19

Date of Issue : 31/03/2003

Test Completed Date: 31/03/2003

Client : EMD

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date : 05/03/2003

Approved Signatory

: Grace Ting

Remarks

Analytical Results:

Milaly lical itesuitor				
Sample Name (Sample No.)	Total Mercury (mg/kg)	Total Mo (mg/kg)	Total Nickel (mg/kg)	Total Lead (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003
S5 (0.10m) (WT0303049)	0.06	< 1	3	110
S6 (0.10m) (WT0303050)	0.09	. < 1	3	70

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Test Report No. : T013101

Page No. : 7 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date: 05/03/2003

Test Completed Date: 31/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Total Antimony (mg/kg)	Total Selenium (mg/kg)	Total Tin (mg/kg)	Total Thallium (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	Sediment-Metal-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	
TP1 (0.50m) (WT0303043)	< 1	< 1	. 7	< 1
S1 (0.10m) (WT0303045)	N.R.	N.R.	25	N.R.
S2 (0.10m) (WT0303046)	N.R.	N.R.	13	N.R.
S3 (0.10m) (WT0303047)	N.R.	N.R.	190	N.R.
S4 (0.10m) (WT0303048)	N.R.	N.R.	15	N.R.

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Test Report No. : T013101

8 of 19 Page No. :

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Total Antimony (mg/kg)	Total Selenium (mg/kg)	Total Tin (mg/kg)	Total Thallium (mg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003		SEDIMENT-METAL-3	SEDIMENT-METAL-3 10/03/2003
S5 (0.10m) (WT0303049)	N.R.	N.R.	160	N.R.
S6 (0.10m) (WT0303050)	N.R.		5	N.R.

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TEST REPORT

Test Report No.: T013101

Page No. : 9 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

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Test Completed Date : 31/03/2003

Analytical Results:

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Sample Name (Sample No.)	Total Vanadium (mg/kg)	Total Zinc (mg/kg)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-TPH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
TP1 (0.50m) (WT0303043)	15	30	< 50	< 5
TP1 (0.90m) (WT0303044)	N.R.	N.R.	< 50	< 5
S1 (0.10m) (WT0303045)	· N.R.	39	N.R.	< 5
S2 (0.10m) (WT0303046)	N.R.	77	N.R.	< 5
S3 (0.10m) (WT0303047)	N.R.	36	N.R.	< 5

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TEST REPORT

Test Report No. : T013101

Page No. : 10 of 19

Date of Issue : 31/03/2003

Test Completed Date: 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

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Analytical Results:

Analytical Results:				
Sample Name (Sample No.)	Total Vanadium (mg/kg)	Total Zinc (mg/kg)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)
Method Code Analysis Date	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-METAL-3 10/03/2003	SEDIMENT-TPH-1 12/03/2003	SEDIMENT-FAH-1 12/03/2003
S4 (0.10m) (WT0303048)	N.R.	46	N.R.	< 5
S5 (0.10m) (WT0303049)	N.R.	. 59	N.R.	< 5
S6 (0.10m) (WT0303050)	· N.R.	. 28	N.R.	< 5

Approval Signatory:

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T013101 Test Report No. :

Page No. : 11 of 19

Date of Issue : 31/03/2003

: EMD Client

Address :

: Eight soil samples delivered by the client Sample Description

Sample Received Date : 05/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date: 31/03/2003

Analytical Results:

Analytical Results:				
Sample Name (Sample No.)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a)anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
TP1 (0.50m) (WT0303043)	< 5	< 5	< 5	< 5
TP1 (0.90m) (WT0303044)	< 5	. < 5	< 5	< 5
S1 (0.10m) (WT0303045)	· < 5	< 5	< 5	< 5 .
S2 (0.10m) (WT0303046)	5 . 4	< 5	17	30 .
S3 (0.10m) (WT0303047)	< 5	< 5	5.6	< 5 '

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TEST REPORT

Test Report No.: T013101

Page No. : 12 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date: 05/03/2003

05/03/2003 Test Completed Date : 31/03/2003

Approved Signatory

: Grace Ting

Remarks

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Analytical Results:

Allalytical Rosules				
Sample Name (Sample No.)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)	Benzo(a)anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
S4 (0.10m) (WT0303048)	< 5	< 5	33	33
S5 (0.10m) (WT0303049)	< 5	. < 5	1.7	6.6
S6 (0.10m) (WT0303050)	. < 5	< 5	< 5	< 5

Approval Signatory:

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Test Report No. :

Page No. : 13 of 19

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory

: Grace Ting

Remarks

Alas Dagulton

Analytical Results: Sample Name (Sample No.)	Benzo(b)floura- nthene (µg/kg)	Benzo(g,h,i)- perylene(µg/kg)	Benzo(k)fluora- nthene (µg/kg)	Chrysene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
TP1 (0.50m) (WT0303043)	< 5	< 5	< 5	< 5
TP1 (0.90m) (WT0303044)	< 5	. < 5	. < 5	< 5
S1 (0.10m) (WT0303045)	· < 5	< 5	< 5	· < 5 ·
S2 (0.10m) (WT0303046)	34	4 7	16	. 17
S3 (0.10m) (WT0303047)	< 5	. < 5	· < 5	5.4

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Test Report No.: T013101

Page No. : 14 of 19

Date of Issue : 31/03/2003

Test Completed Date: 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date: 05/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

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Sample Name (Sample No.)	Benzo(b)floura- nthene (µg/kg)	Benzo(g,h,i)- perylene(µg/kg)	Benzo(k)fluora- nthene (µg/kg)	Chrysene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
S4 (0.10m) (WT0303048)	37	. 24	21	32
S5 (0.10m) (WT0303049)	12	. 13	. < 5	12
S6 (0.10m) (WT0303050)	. < 5	< 5	. < 5	< 5

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TEST REPORT

Test Report No.: T013101

Page No. : 15 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date: 05/03/2003

Approved Signatory : Grace Ting

Remarks

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Test Completed Date: 31/03/2003

Analytical Results:

Allany trock i too area.				
Sample Name (Sample No.)	Dibenzo(a,h)an- thracene(µg/kg)	Fluoranthene (µg/kg)	Fluorene (µg/kg)	Indeno(1,2,3-cd))pyrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
TP1 (0.50m) (WT0303043)	< 5	< 5	< 5	< 5
TP1 (0.90m) (WT0303044)	< 5	. < 5	< 5	< 5
S1 (0.10m) (WT0303045)	. < 5	10.	< 5	< 5
S2 (0.10m) (WT0303046)	8.9	24	< 5	36
S3 (0.10m) (WT0303047)	< 5	. 12	< 5	. < 5

Approval Signatory:

7

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T013101 Test Report No. :

Page No. : 16 of 19

Date of Issue : 31/03/2003

Test Completed Date : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

Approved Signatory

: Grace Ting

Remarks

Analytical Results:

Analytical Results.				
Sample Name (Sample No.)	Dibenzo(a,h)an- thracene(µg/kg)	Fluoranthene (µg/kg)	Fluorene (µg/kg)	Indeno(1,2,3-cd))pyrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
S4 (0.10m) (WT0303048)	9.2	39	< 5	23
S5 (0.10m) (WT0303049)	< 5	23	. < 5	9.6.
S6 (0.10m) (WT0303050)	· < 5	< 5	< 5	. < 5

Approval Signatory:

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TEST REPORT

Test Report No. : T013101

Page No. : 17 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003

/2003 Test Completed Date : 31/03/2003

Approved Signatory

y : Grace Ting

Remarks

Analytical Results:

To pary a contract to the cont				
Sample Name (Sample No.)	Naphthalene (μg/kg)	Phenanthrene (µg/kg)	Pyrene (µg/kg)	
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	
TP1 (0.50m) (WT0303043)	< 50	< 5	< 5	
TP1 (0.90m) (WT0303044)	< 50	. < 5	< 5	
S1 (0.10m) (WT0303045)	< 50	7.5	8.4.	
S2 (0.10m) (WT0303046)	< 50	. 11	24 .	
S3 (0.10m) (WT0303047)	< 50	. 6.8	. 12 ·	

Approval Signatory:

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Test Report No. :

Page No.: 18 of 19

Date of Issue : 31/03/2003

Client : EMD

Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003 : Grace Ting

Test Completed Date: 31/03/2003

Approved Signatory

Remarks

Analytical Results:

, a., a., a				
Sample Name (Sample No.)	Naphthalene (µg/kg)	Phenanthrene (µg/kg)	Pyrene (µg/kg)	
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	
S4 (0.10m) (WT0303048)	< 50	11	42	
S5 (0.10m) (WT0303049)	< 50	. 22	19	
S6 (0.10m) (WT0303050)	< 50	. < 5	< 5	

Approval Signatory:



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TEST REPORT

Test Report No. : T013115

Page No.: 1 of 6

Date of Issue : 04/04/2003

Test Completed Date: 30/03/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date: 07/03/2003

Approved Signatory : Grace Ting

Remarks

emarks :

Analytical Results:

A Period a communities				
Sample Name (Sample No.)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)
Method Code Analysis Date	SEDIMENT-TPH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH1 (4.50-5.00m) (WT0303079)	< 50	< 5	< 5	< 5
DH1 (5.60-6.10m) (WT0303080)	< 50	. < 5	< 5	< 5
DH1 (7.00-7.50m) (WT0303081)	< 50	< 5	< 5	< 5

Approval Signatory:

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Test Report No. :

Page No.: 2 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

: Three soil samples delivered by the client Sample Description

Sample Received Date : 07/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date : 30/03/2003

Analytical Results:

, a long a comment				
Sample Name (Sample No.)	Benzo(a)anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)	Benzo(b)floura- nthene (µg/kg)	Benzo(g,h,i)- perylene(µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH1 (4.50-5.00m) (WT0303079)	< 5	< 5	< 5	< 5
DH1 (5.60-6.10m) (WT0303080)	< 5	. < 5	< 5	< 5
DH1 (7.00-7.50m) (WT0303081)	· < 5	< 5	< 5	< 5

Approval Signatory:

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T013115 Test Report No. :

Page No.: 3 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

: Three soil samples delivered by the client Sample Description

Sample Received Date : 07/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date : 30/03/2003

Analytical Results:

Alialytical Itesules.				
Sample Name (Sample No.)	Benzo(k)fluora- nthene (µg/kg)	Chrysene (µg/kg)	Dibenzo(a,h)an- thracene(µg/kg)	Fluoranthene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH1 (4.50-5.00m) (WT0303079)	< 5	< 5	< 5	< 5
DH1 (5.60-6.10m) (WT0303080)	< 5	< 5	< 5	< 5
DH1 (7.00-7.50m) (WT0303081)	· < 5	< 5	< 5	< 5

Approval Signatory:

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Test Report No. :

Page No.: 4 of 6

Date of Issue : 04/04/2003

Test Completed Date: 30/03/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date: 07/03/2003

Approved Signatory : Grace Ting Remarks

Analytical Results:

Sample Name (Sample No.)	Fluorene (µg/kg)	Indeno(1,2,3-cd)pyrene (µg/kg)	Naphthalene (μg/kg)	Phenanthrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH1 (4.50-5.00m) (WT0303079)	< 5	< 5	< 50	< 5
DH1 (5.60-6.10m) (WT0303080)	< 5		< 50	< 5
DH1 (7.00-7.50m) (WT0303081)	. < 5	< 5	< 50	< 5

Approval Signatory:

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Test Report No. :

Page No.: 5 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

SEDIMENT-PAH-1

Sample Received Date: 07/03/2003

Test Completed Date: 30/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Pyrene
(Sample No.)	(µg/kg)

Method Code	SEDIMENT-PAH-1
Analysis Date	12/03/2003
DH1 (4.50-5.00m) (WT0303079)	< 5

DH1	(5.60-6.10m)		
(WTC	303080)	<	5

(W10303080)		
DH1 (7.00-7.50m)		_
(WT0303081)	•	< 5

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T013106 Test Report No. :

> Page No. : 1 of 6

Date of Issue : 04/04/2003

Test Completed Date: 29/03/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date: 06/03/2003

: Grace Ting Approved Signatory

Remarks

Analytical Results:

Allaly Hour Nooules				
Sample Name (Sample No.)	C6-C36 TPH mg/kg	Acenaphthene (μg/kg)	Acenaphthylene (µg/kg)	Anthracene (μg/kg)
Method Code Analysis Date	SEDIMENT-TPH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH2 (4.50-5.00)m (WT0303057)	< 50	< 5	< 5	< 5
DH2 (5.60-6.10)m (WT0303059)	< 50	. < 5	< 5	< 5
DH2 (7.00-7.50)m (WT0303061)	< 50	< 5	< 5	< 5

Approval Signatory:

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TEST REPORT

Test Report No.: T013106

Page No.: 2 of 6

Date of Issue : 04/04/2003

Test Completed Date: 29/03/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 06/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name (Sample No.)	Benzo(a)anthra- cene (μg/kg)	Benzo(a)pyrene (μg/kg)	Benzo(b)floura- nthene (µg/kg)	Benzo(g,h,i)- perylene(µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH2 (4.50-5.00)m (WT0303057)	< 5	< 5	< 5	< 5
DH2 (5.60-6.10)m (WT0303059)	< 5	. < 5	< 5	< 5
DH2 (7.00-7.50)m (WT0303061)	· < 5	< 5	< 5	< 5

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TEST REPORT

Test Report No.: T013106

Page No. : 3 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 06/03/2003

Test Completed Date: 29/03/2003

Approved Signatory : G

: Grace Ting

Remarks

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Analytical Results:

Sample Name (Sample No.)	Benzo(k)fluora- nthene (µg/kg)	Chrysene (µg/kg)	Dibenzo(a,h)an- thracene(µg/kg)	Fluoranthene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH2 (4.50-5.00)m (WT0303057)	< 5	< 5	< 5	< 5
DH2 (5.60-6.10)m (WT0303059)	< 5	. < 5	< 5	< 5
DH2 (7.00-7.50)m (WT0303061)	· < 5	< 5	< 5	< 5

Approval Signatory:

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T013106 Test Report No. :

> 4 of 6 Page No. :

Date of Issue : 04/04/2003

Client : EMD

Address :

: Three soil samples delivered by the client Sample Description

Sample Received Date : 06/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date : 29/03/2003

Analytical Results:

Sample Name (Sample No.)	Fluorene (µg/kg)	Indeno(1,2,3-cd) pyrene (µg/kg)	Naphthalene (µg/kg)	Phenanthrene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
DH2 (4.50-5.00)m (WT0303057)	< 5	. < 5	< 50	< 5
DH2 (5.60-6.10)m (WT0303059)	< 5	. < 5	< 50	< 5
DH2 (7.00-7.50)m (WT0303061)	. < 5	< 5	< 50	< 5

Approval Signatory:

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TEST REPORT

Test Report No. : T013106

Page No.: 5 of 6

Date of Issue : 04/04/2003

Test Completed Date: 29/03/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 06/03/2003

Approved Signatory : Grace Ting

Remarks

Grace Ting

< 5

Analytical Results:

Sample Name Pyrene (Sample No.) (µg/kg)

Method Code SEDIMENT-PAH-1 Analysis Date 12/03/2003

DH2 (4.50-5.00)m (WT0303057)

DH2 (5.60-6.10)m (WT0303059) < 5

DH2 (7.00-7.50)m (WT0303061) < 5

Approval Signatory:

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T013118 Test Report No. :

1 of 6 Page No. :

Date of Issue : 07/04/2003

Test Completed Date : 28/03/2003

Client : EMD

Address :

: One soil sample delivered by the client Sample Description

Sample Received Date : 10/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Anthracene	Acenaphthylene	Acenaphthene	C6-C36 TPH	Sample Name
(µg/kg)	(µg/kg)	(µg/kg)	mg/kg	(Sample No.)
SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-TPH-1	Method Code
12/03/2003	12/03/2003	12/03/2003	12/03/2003	Analysis Date
< 5	< 5	< 5	< 50	TP2 (0.5m) (WT0303085)

Approval Signatory:

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Test Report No. :

Page No. : 2 of 6

Date of Issue : 07/04/2003

Client : EMD

Address :

Sample Description : One soil sample delivered by the client

Sample Received Date : 10/03/2003

Test Completed Date: 28/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Benzo(a)anthra-	Benzo(a)pyrene	Benzo(b)floura-	Benzo(g,h,i)-
(Sample No.)	cene (µg/kg)	(µg/kg)	nthene (µg/kg)	perylene(µg/kg)
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003	12/03/2003
TP2 (0.5m) (WT0303085)	< 5	< 5	< 5	< 5

Approval Signatory:

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T013118 Test Report No. :

3 of 6 Page No. :

Date of Issue : 07/04/2003

Client : EMD

Address :

Sample Description : One soil sample delivered by the client

Sample Received Date : 10/03/2003

Test Completed Date : 28/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Benzo(k)fluora-	Chrysene	Dibenzo(a,h)an-	Fluoranthene	
(Sample No.)	nthene (µg/kg)	(µg/kg)	thracene(µg/kg)	(µg/kg)	
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	
Analysis Date	12/03/2003	12/03/2003	12/03/2003	12/03/2003	
TP2 (0.5m) (WT0303085)	< 5	< 5	< 5	< 5	

Approval Signatory:

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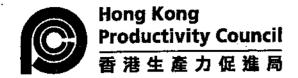
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Test Report No. : T013118

Page No. : 4 of 6

Date of Issue : 07/04/2003

Test Completed Date: 28/03/2003

Client : EMD

Address :

: One soil sample delivered by the client Sample Description

Sample Received Date: 10/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Fluorene Indeno(1,2,3-cd (μg/kg))pyrene (μg/kg)		Naphthalene	Phenanthrene	
(Sample No.)			(µg/kg)	(µg/kg)	
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	
Analysis Date	12/03/2003	12/03/2003	12/03/2003	12/03/2003	
TP2 (0.5m) (WT0303085)	< 5	< 5	< 50	< 5	

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TEST REPORT

Test Report No. : T013118

Page No. : 5 of 6

Date of Issue : 07/04/2003

Client : EMD

Address :

Sample Description : One soil sample delivered by the client

Sample Received Date : 10/03/2003

Approved Signatory : Grace Ting

Remarks

-

Test Completed Date: 28/03/2003

Analytical Results:

Sample Name Pyrene (Sample No.) (µg/kg)

Method Code

SEDIMENT-PAH-1

Analysis Date

12/03/2003

TP2 (0.5m) (WT0303085)

< 5

Approval Signatory:

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Test Report No. : T013119

Page No. : 1 of 10

Date of Issue : 07/04/2003

Client : EMD

Address :

Sample Description : Two soil samples delivered by the client

Sample Received Date: 11/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date: 02/04/2003

Analytical Results:

Sample Name	Total Silver (mg/Kg)	Total Arsenic	Total Barium	Total Be
(Sample No.)		(mg/Kg)	(mg/Kg)	(mg/kg)
Method Code	SEDIMENT-METAL-2	SEDIMENT-METAL-2	SEDIMENT-METAL-2	SEDIMENT-METAL-2
Analysis Date	25/03/2003	20/03/2003	26/03/2003	26/03/2003
TP2 (1.50)m (WT0303086)	< 1	1.4	6.0	< 1

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TEST REPORT

Test Report No.: T013119

Page No. : 2 of 10

Date of Issue : 07/04/2003

Test Completed Date: 02/04/2003

Client : EMD

Address :

Sample Description : Two soil samples delivered by the client

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

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Analytical Results:

Sample Name (Sample No.)	Total Cadmium (mg/Kg)	Total Cobalt (mg/kg)	Total Chromium (mg/Kg)	Total Copper (mg/Kg)
Method Code Analysis Date	SEDIMENT-METAL-2 25/03/2003	SEDIMENT-METAL-3 02/04/2003	SEDIMENT-METAL-2 25/03/2003	SEDIMENT-METAL-2 25/03/2003
TP2 (1.50)m (WT0303086)	< 0.05	0.8	0.5	0.5

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Test Report No. : T013119

> 3 of 10 Page No. :

Date of Issue : 07/04/2003

Test Completed Date: 02/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Total Mercury (mg/Kg)	Total Mo	Total Nickel	Total Lead
(Sample No.)		(mg/Kg)	(mg/Kg)	(mg/Kg)
Method Code	SEDIMENT-HG-2	SEDIMENT-METAL-2	SEDIMENT-METAL-2	SEDIMENT-METAL-2
Analysis Date	24/03/2003	26/03/2003	27/03/2003	27/03/2003
TP2 (1.50)m (WT0303086)	< 0.5	< 5	0.8	14

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Test Report No. : T013119

Page No. : 4 of 10

Date of Issue : 07/04/2003

Test Completed Date: 02/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

Analytical Results:

Sample Name	Total Antimony (mg/Kg)	Total Selenium	Total Tin	Total Thallium
(Sample No.)		(mg/kg)	(mg/Kg)	(mg/kg)
Method Code	SEDIMENT-METAL-2	Sediment-Metal-3	SEDIMENT-METAL-2	SEDIMENT-METAL-2
Analysis Date	24/03/2003	01/04/2003	27/03/2003	26/03/2003
TP2 (1.50)m (WT0303086)	< 1	4	< 1	< 1

Approval Signatory:

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TEST REPORT

Test Report No.: T013119

Page No.: 5 of 10

Date of Issue : 07/04/2003

Test Completed Date: 02/04/2003

Client : EMD

Address :

Sample Description : Two soil samples delivered by the client

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

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Analytical Results:

Sample Name	Total Vanadium	Total Zinc	C6-C36 TPH	Acenaphthene
(Sample No.)	(mg/kg)	(mg/Kg)	mg/kg	(µg/kg)
Method Code	Sediment-Metal2	SEDIMENT-METAL-2	SEDIMENT-TPH-1	SEDIMENT-PAH-1
Analysis Date	25/03/2003	24/03/2003	12/03/2003	12/03/2003
TP2 (1.50)m (WT0303086)	1	15	< 50	< 5
TP2 (3.00)m (WT0303087)	N.R.	Ņ.R.	< 50	< 5

Approval Signatory:

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Test Report No. : T013119

Page No. : 6 of 10

Date of Issue : 07/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date: 02/04/2003

Analytical Results:

Sample Name	Acenaphthylene (µg/kg)	Anthracene	Benzo(a)anthra-	Benzo(a)pyrene
(Sample No.)		(µg/kg)	cene (µg/kg)	(µg/kg)
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003	12/03/2003
TP2 (1.50)m (WT0303086)	< 5	< 5	< 5	< 5
TP2 (3.00)m (WT0303087)	< 5	. < 5	< 5	< 5

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T013119 Test Report No. :

7 of 10 Page No. :

Date of Issue : 07/04/2003

Test Completed Date: 02/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date : 11/03/2003

: Grace Ting

Approved Signatory

Remarks

Analytical Results:

Analytical Results.				
Sample Name (Sample No.)	Benzo(b)floura- nthene (µg/kg)	Benzo(g,h,i)- perylene(ug/kg)	Benzo(k)fluora- nthene (µg/kg)	Chrysene (µg/kg)
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003
TP2 (1.50)m (WT0303086)	< 5	< 5	< 5	< 5
TP2 (3.00)m (WT0303087)	< 5	. < 5	< 5	< 5

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T013119 Test Report No. :

> Page No. : 8 of 10

Date of Issue : 07/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date: 11/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date : 02/04/2003

Analytical Results:

Sample Name	Dibenzo(a,h)an-	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene (µg/kg)
(Sample No.)	thracene(µg/kg)	(µg/kg)	(µg/kg)	
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003	12/03/2003
TP2 (1.50)m (WT0303086)	< 5	< 5	< 5	< 5
TP2 (3.00)m (WT0303087)	< 5	. < 5	< 5	< 5

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Test Report No. : T013119

Page No. : 9 of 10

Date of Issue : 07/04/2003

Client : EMD

Address :

: Two soil samples delivered by the client Sample Description

Sample Received Date : 11/03/2003

Approved Signatory : Grace Ting

Remarks

Test Completed Date: 02/04/2003

Analytical Results:

Sample Name (Sample No.)	Naphthalene (μg/kg)	Phenanthrene (µg/kg)	Pyrene (μg/kg)	
Method Code Analysis Date	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	SEDIMENT-PAH-1 12/03/2003	
TP2 (1.50)m (WT0303086)	< 50	< 5	< 5	
TP2 (3.00)m (WT0303087)	< 50	. < 5	< 5	

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Hong Kong Productivity Council 香港生產力促進局

Environmental Management Division

環境管理部

TESTING METHODS - INORGANICS

Parameter		Method	Reference		Parameter	Method	Reference
] Water/Wastewat	er				Gold	WTM-AU-1	In House Method
pН		WTM-PH-1	APHA 17ed 4500-H*B		Calcium	WTM-CA-1	Flame Photometry
Conductivity		WTM-COND-1	APHA 18cd 2510B			WTM-CA-2	APHA 18ed 3500-Ca D
Acidity	·	WTM-ACID-I	APHA 18ed 2310B			WTM-CA-3 WTM-IC-2	APHA 18ed 3111 Ion Chromatography
Alkalinity (as Cac		WTM-ALKA-I	APHA 17ed 2320B In House Method		Sodium	WTM-NA-1	APHA 17ed 3500-Na D
Alkalinity (as Nat	JH)	WTM-ALKA-1 WTM-HARD-1	APHA 17ed 2340C		Socien	WTM-IC-2	Ion Chromatography
Total Hardness Total Dissolved S	olide	WTM-TDS-1	APHA 17ed 2540C	•	Potassium	WTM-K-1	APHA 17ed 3500-K D
Total Suspended S		WTM-SS-1	APHA 17ed 2540D			WTM-IC-2	Ion Chromatography
Total Solids		WTM-TS-I	APHA 17ed 2540B		Hexavalent Chromium	WTM-CR6-1	APHA 18ed 3500-Cr D
VSS (Volatile Sus	pended Solids)	WTM-VSS-1	APHA 17ed 2540B		Boron (total)	WTM-TB-1	APHA 19ed 4500-B B
Senicable Solids		WTM-SETT-I	APHA 17ed 2540F		Work late.	WTM-ICP-1	APHA 19ed 3120B
Moisture Content		WTM-MOIST-1	In House Method		Turbidity Total Cyanide	WTM-TURB-I WTM-CN-I	APHA 18ed 2310B APHA 17ed 4500-CN C&D
Dry Solid Conten		WTM-DS-I WTM-SVI-I	In House Method APHA 18ed 2710D		Iolai Cyanide	WTM-CN-2	APHA 18ed 4500-CN C&F
S.V.I. (Sludge Vol Colour	imme incex)	WTM-COLOR-1	Lovibond Tintometer 25mm cell		Standard Plate Count	MTM-SPC-1	APHA 20ed 9215A&B
Carbonate		WTM-CO3-I	APHA 18ed 2320B		Total Coliform	MTM-COLI-1	DoE 7.8 & 7.9
Bicarbonate		WTM-HCO3-I	APHA 18ed 2320B		Fecal Coliform	MTM-FECO-1	APHA 18ed 9222D
Oil & Grease		WTM-Q&G-2	APHA 20ed 5520B		E.Coli	MTM-ECOLI-1	DoE 7.8 & 7.9 plus in-situ urease test
Dissolved Oxyger	1	WTM-DO-1	APHA 18ed 4500C		Legionellae pacumophila	MTM-LEG-I	AS/NZS 3896:1998
		WTM-DO-2	BS6068:Section2.15:1986		Residual Chlorine Total Residual Chlorine	WTM-CL2-1 WTM-CL2-2	APHA 18ed 4500-C1B "HACH" DR/3000 Procedure C.2
	liochemical Oxygen	M IW-ROD-I	APHA 17ed 5210B&4500-O C		Salinity	WTM-SALI-2	Refractometer
Demand)		WTM-BOD-2	APHA 17ed 5210 B & BS6068:		Total Surfactant (Sum of An		
		n I In DOD 2	Section2.15:1986		A. Surfactant (Anionic)	WTM-MBAS-I	In house method
		WTM-BOD-3*	BS6068:Section 2.14:1990			(MBAS calculated as Ac	erosol OT, mol. Wt. At 444)
Sample preparation	on for settled COD		TES Scheme S.S. No.5 to Gazette		N. Surfactant (Nonionic)	WTM-CTAS-1	BS6068:Section2.24:1986
			Ext. No. 9/1995		Oxygen Absorbed Value	WTM-OAV-1	Water Treatment Handbook Degrement,
COD (Chemical C	Oxygen Demand)	WTM-COD-I	APHA 17ed 5220B		Fluoride	WTM-F-1	1973 P.603 APHA 18ed 4500-F C
		WTM-COD-2 WTM-COD-3	APHA 18ed 5220D In House Method		Finoriae	WTM-IC-1	lon Chromatography
		WTM-COD-4	ASTM D 1252-88 Method B 1992		Sulphite	WTM-SO3-1	APHA 18ed 4500-SO, EB
Chloride		WTM-CL-1	APHA 17ed 4500-CIB		Titration curve	WTM-TIC-1	Potentiometric Titration Method
•		WTM-IC-1	Ion Chromatography		Silica	WTM-SIQ4-1	Test Kit Method
Ammonia-N		WTM-NH3-1	APHA 17ed 4500-NH,B,C		Phenois	WTM-PHEN-I	APHA 18ed 5530 A,B&C
	*******	WTM-NHB-2	APHA 17ed 4500-NH,B,E		T10	WTM-PHEN-2	APHA 18ed 5530 A,B&D
Total Nitrogen (St Total Kjeldabl Nit	um of K-N, NO, N &	: NO,N) WTM-KN-I	APHA 17ed 4500NorgB & NH, E		Total Organic Carbon Volatile Acids	WTM-TOC-1 WTM-VA-1	ISO8245:1987 APHA 18ed 5560C
Nitrite-N	uogen	WTM-NO2-1	APHA 18ed 4500-NO, B		Chłorophyll	WTM-CHLO-1	APHA 19ed 10200H
11121011		WTM-IC-1	Ion Chroniatography				·
Nitrate-N		WTM-N03-2	APHA 18ed 4500-NO, D	П	Sediment		
		WTM-NO3-3	APHA 18ed 4500-NO, E		Total Nitrogen	SEDIMENT-TN-1	APHA 17ed 4500NorgB & NH,E
		WTM-IC-1	Ion Chromatography		Sulphate	SEDIMENT-SO4-1	Extraction: 0.01M CaCl ₂
Oxidized-N (Sum		WTM-NO3-3	APHA 18ed 4500-NO, E		Metals	OUTSIMENT METALL	Analysis: APHA 18ed 4500-SO ₄ °C
Phosphorus (solul	ore)	WTM-P-1 WTM-IC-1	APHA 18ed 4500-P C Ion Chromatography		WEIRIS	SEDIMENT-METAL-I	Digestion : Aqua Regia Analysis : AAS/GFAAS
Total Reactive Ph	esphorus	WTM-P-2	APHA 18ed 4500-P E			WTM-ICPMS-2	Digestion : Aqua Regia
Total Phosphorus		WTM-TP-I	APHA 18ed 4500-P B&C				Analysis: In-house method
		WTM-TP-2	APHA 198d 4500-P B&E		Mercury	SEDIMENT-HQ-1	Cold Vapour Atomic Absorption
Sulphate		WTM-SO4-1	In-house method		mac 200	SEDIMENT-HG-2	Cold Vapour Atomic Absorption
0.4-6:4-		WTM-IC-I	Ion Chromatography APHA 18ed 4500-S2 C&E		TOC, TC Dry Solid Content/	SEDIMENT-TOC-1 SEDIMENT-DS-1	Oxidation by Combustion Gravimetric method
Sulphide		WTM-S-I WTM-S-2	"HACH" DR/3000 Procedure S.5		Moisture Content	SED HARM 1-D2-1	GIEARISEIUC WEGOOG
Pretreatment for s	oluble metals	W 101-3-2	APHA IRed 3030B		MOBILE COMON		
Pretreatment for to			APHA 17ed 3030E	Ш	Biological Tissues		
			APHA 18ed 3030A, E&F.3b		Metals		Digestion: USEPA method 200.3
			APHA 19ed 3030F				Analysis : AAS/GFAAS
Metals (for ppm le	evel)	WTM-METAL-I	APHA 17ed 3111		Mercury		Cold Vapour Atomic Absorption
(for ppb le	uaD.	WTM-METAL-2	(Digestion: APHA 17ed 3030E) APHA 18ed 3113	īV	Saline Water		
(101 ppn re	401)	WINFBILLING	(Digestion: APHA 17ed 3030E)	1,		WTM-SEAWATER-2	In House Method
		WTM-METAL-4	In House Method		,	WTM-METAL-4	In House Method
			(Digestion: APHA 17ed 3030E)		Cobalt and Zinc	WTM-SEAWATER-2	In House Method
Magnesium		WTM-IC-2	Ion Chromatography			WTM-METAL-1	In House Method
Sclenium		WTM-METAL-3	HydrideGeneration				7. 77 Maddad
Мегецгу		WTM-HG-2	(Digestion: APHA 18ed 3030F 3b) Cold Vapour Atomic Absorption		Arsenic & Chromium Mercury	WTM-METAL-5 WTM-HG-2	In House Method Coid Vapour Atomic Absorption
Antimony		WTM-METAL-6	In House Method		Ammonia-N	WTM-NH3-3	APHA 20ed 4500-NH ₃ F
,			(Digestion: APHA 18ed 3030F 3a)		71171171117111171111	.,	,,_
*Remarks :for BOD(W	TM-BOD-3)	(1) Method of storage	of sample : 4°C		Total Organic Carbon (T(-C)	(1) Method of storage of s	ample : 4°C
	•	(2) Type of Seed : Pal	syseed		WTM-TOC-1		f sample : Add H ₁ PO ₄ to pH 2
		(3) Number of days o	fiscubation: 5				
Reference Notes:	APHA	American Public Heat	Ith Association "Standard Methods for Exam	ùrustio:	n of Water and Wastewate ."		
1	ASTM	Annual Book of Amer	rican Society for Testing and Materials Stand				
	BS	British Standard Instit					
	ISO USEPA		ution for Standardization mental Protection Agency				
	DoE	Department of the En	vironment, Department of Health & Social S			a (1983). The Bacteriological	Examination of Drinking Water Supplies 1982.
	in-situ menso test	A.P. Dufour & V.J. Co	sbelli; Applied Microbiology, June 1975, p.8	Z6-833	s.		



Environmental Management Division

環境管理部

TESTING METHODS - ORGANICS

	Parameter	Method	Reference	<u>Parameter</u>	Method	Reference
I.	Water/Wastewater			II. Sediment/Soil		
•	BTEX Petroleum Hydrocarbons	WTM-BTEX-I	USEPA 8260B	BTEX Petroleum Hydrocarbons	SEDIMENT-BTEX-1	USEPA 8260B
	C ₄ -C ₁₀ Gasoline range organics (GRO)*	WTM-GRO-1	USEPA 8015B	C _s -C _m Gasoline range organics (GRO)*	WTM-DRO-1	USEPA 8015B
	C ₁₀ -C ₂₄ Diesel range organics (DRO) *	WTM-DRO-1	USEPA 8015B	C ₁₀ -C ₂₂ Diesel range organics (DRO)	SEDIMENT-DRO-I	USEPA 8015B
	Organochlorine Pesticides (OCP)	WTM-OCF-I	USEPA 8081	Organochlorine Pesticides (OCP)	SEDIMENT-OCP-1	USEPA 8081
	Organophosphosphate Pesticides (OPP)	WTM-OPP-1	USEPA 8141	Organophosphosphate Pesticides (OPP)	SEDIMENT-OPP-1	USEPA 8141
	Polynuclear Aromatic Hydrocarbons (PAHs)	WTM-PAH-1	USEPA 8270C	Polynuclear Aromatic Hydrocarbons (PAHs)	SEDIMENT-PAH-1	USEPA 8270C
	Trihalomethane (THM)	WTM-VOC-1	USEPA 8260B	Trihalomethane (THM)	WTM-VOC-1	USEPA \$260B
	Volatile Organic Compounds (VOCs)	WTM-VOC-1	USEPA 8260B	Volatile Organic Compounds (VOCs)	WTM-VOC-I	USEPA 8260B
	Polychlorinated Biphenyls (PCBs)	WTM-PCB-1	USEPA 8082	Polychlorinated Biphenyls (PCBs)	SEDIMENT-PCB-1	USEPA 8082
	TriButyl Tin (TBT)	WTM-TBT-1	Krone et al	Total PCBs	SEDIMENT-TPCB-1	USEPA 8082
	Phenols	WTM-HENOL-1	USEPA 8270C	TriButyl Tin (TBT)	SEDIMENT-TBT-1	Krone et al
				Phenols	SEDIMENT-PHENOL-1	USEPA 8270C
Ш.	Paint					
	Volatile Organic Compounds		ASTM D3960			

*C_s-C₁₀ Gasoline range organics content is defined as the collective concentration of all organics which elute between 2-methylpentane (C_s) and n0-decane(C₁₀).

[♠] C₁₀ C₂₀ Diesel range organics content is defined as the collective concentration of all organics which einte between n-decane(C₁₀) and N-octacosane(C₂₀). USEPA — United States Environmental Protection Agency Krone et al — Marine Environmental research, 27, 1-18, 1989

Reference Notes:

4	ALTA

Method Blank							EPA METHOD 8290
Matrix: Soil		8	QC Batch No.:	3871	1	Lab Sample: 0-MB001	
Sample Size: 10 g		Date	Date Extracted:	26-	26-Mar-03	Date Analyzed DB-5: 30-Mar-03	Date Analyzed DB-225: NA
Analyte Con	Conc. (pg/g)	DLa	EMPCb	MDL c	Qualifiers	Labeled Standard	%R LCL-UCL ^d Qualifiers
CDD	GN	0.212		0.234		<u>IS</u> 13C-2,3,7,8-TCDD	47.6 40 - 135
E	2 2	0.159		0.374		13C-1,2,3,7,8-PeCDD	53.3 40 - 135
Ö	2 2	0.307		0.202		13C-1,2,3,4,7,8-HxCDD	47.3 40 - 135
	Q.	0.281		0.615		13C-1,2,3,6,7,8-HxCDD	40-
	Q.	0.290		0.253		13C-1,2,3,4,6,7,8-HpCDD	40-
Д	Q.	0.357		0,268		13C-OCDD	
	Q	0.426		0.709		13C-2,3,7,8-TCDF	
TCDF	QN QN	0.183		0.139		13C-1,2,3,7,8-PeCDF	
OF	Q	0.285		0.326		13C-2,3,4,7,8-PeCDF	
		0.235		0.336		13C-1,2,3,4,7,8-HxCDF	
. F.	Q	0.117		0.336		13C-1,2,3,6,7,8-HxCDF	42.7 40 - 135
	£	0.115		0.395		13C-2,3,4,6,7,8-HxCDF	
	£	0.128	•	0.287		13C-1,2,3,7,8,9-HxCDF	40-
	Q	0.201		0.380		13C-1,2,3,4,6,7,8-HpCDF	
Ä.	Q	0.202		0.217		13C-1,2,3,4,7,8,9-HpCDF	•
	QN	0.228		0.336		13C-OCDF	40
	MD	0.596		0.641		CRS 37CI-2,3,7,8-TCDD	57.6 40-135
Totals						Toxic Equivalent Quotient (TEQ) Data) Data
Total TCDD	Q.	0.212				TEQ (Min-Max): 0 - 0.594	
Total PeCDD	ND.	0.159					
Total HxCDD	OZ OZ	0.291				a. Sample specific estimated detection limit.	
Total HpCDD	Q	0.357				b. Estimated maximum possible concentration.	00.
Total TCDF	QN	0.183				c. Method detection limit.	
Total PeCDF	Q	0.258	:		:	d. Lower control limit - upper control limit.	Added Totals
Total HxCDF	Q.	0.138				e, TEQ based on International Toxic Equivalent Factors (11 EF-1989)	ulent Factors (11 EF-1969).
Total HpCDF	Ð	0.216				1	i
Amalineti PAIII						Approved By: William J	William J. Luksemburg 02-Apr-2003 11:10

Analyst: JMH



OPR Results				EPA METHOD 8290	HOD 8290
Matrix: Soil		QC Batch No.:	3871	Lab Sample: 0-OPR001	
Sample Size: 10 g		Date Extracted:	26-Mar-03	Date Analyzed DB-5: 30-Mar-03 Date Analyzed DB-225:	B-225: NA
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard %R	TCL-UCL
2,3,7,8-TCDD	10.0	9.24	7 - 13	IS 13C-2,3,7,8-TCDD 102 4	40 - 135
1,2,3,7,8-PeCDD	50.0	49.1	35 - 65	13C-1,2,3,7,8-PeCDD 107 4	40 - 135
1,2,3,4,7,8-HxCDD	50.0	50.3	35 - 65	13C-1,2,3,4,7,8-HxCDD 88.9 4	40 - 135
1,2,3,6,7,8-HxCDD	50.0	48.9	35 - 65	13C-1,2,3,6,7,8-HxCDD 110	40 - 135
1,2,3,7,8,9-HxCDD	50.0	49.4	35 - 65	13C-1,2,3,4,6,7,8-HpCD 101	40 - 135
1,2,3,4,6,7,8-HpCDD	50.0	53.3	35 - 65	13C-OCDD 110 4	40 - 135
осрр	100	105	70 - 130	13C-2,3,7,8-TCDF 121	40 - 135
2,3,7,8-TCDF	10.0	90.6	7 - 13	13C-1,2,3,7,8-PeCDF 106	40 - 135
1,2,3,7,8-PeCDF	50.0	50.9	3565	·	40 - 135
2,3,4,7,8-PeCDF	50.0	51.3	35 - 65	13C-1,2,3,4,7,8-HxCDF 78.2	40 - 135
1,2,3,4,7,8-HxCDF	50.0	52.8	35 - 65	13C-1,2,3,6,7,8-HxCDF 81.6	40 - 135
1,2,3,6,7,8-HxCDF	50.0	52.8	35 - 65		40 - 135
2,3,4,6,7,8-HxCDF	50.0	52.8	35 - 65	13C-1,2,3,7,8,9-HxCDF 95.0	40 - 135
1,2,3,7,8,9-HxCDF	50.0	51.3	35 - 65	13C-1,2,3,4,6,7,8-HpCD 96.6	40 - 135
1,2,3,4,6,7,8-HpCDF	50.0	53.9	35 - 65	13C-1,2,3,4,7,8,9-HpCD 106	40 - 135
1,2,3,4,7,8,9-HpCDF	50.0	52.6	35 - 65	13C-OCDF 114 4	40 - 135
OCDF	100	103	70 - 130	CRS 37Cl-2,3,7,8-TCDD 101	40 - 135

Approved By: William J. Luksemburg 02-Apr-2003 11:16

Analyst JMH



Sample ID: HKP	HKPC-S1								EPA METHOD 8290	1OD 8290
Chent Data				Sample Data		Laboratory Data				
	Hong Kong Productivity Counci	tivity Counci	_	Matrix:	Soil	Lab Sample:	23505-001	Date Received:	sived:	17-Mar-03
Project: Soil / Date Collected: NA	Soil Analysis NA			Sample Size:	11.11 g	QC Batch No.:	3871	Date Extracted:	acted:	26-Mar-03
				%Solids:	89.7	Date Analyzed DB-5:	31-Mar-03	Date Al	Date Analyzed DB-225:	1-Apr-03
Analyte	Conc. (pg/g)	DLa	EMPCb	MDL c	Qualifiers	Labeled Standard		%R	TCT-TCT _q 0	Oualifiers
2.3.7.8-TCDD	2	0.246		0.234		IS 13C-2,3,7,8-TCDD	_	95.1	40 - 135	
12378-PeCDD	1.28			0.374	Ą	13C-1,2,3,7,8-PeCDD		101	40 - 135	
1.2.3.4.7.8-HxCDD	1.50			0.202	Ą	13C-1,2,3,4,7,8-HxCDD	<u>е</u>	87.7	40 - 135.	
1.2.3.6.7.8-HxCDD	2.27			0.615	∢	13C-1,2,3,6,7,8-HxCDD		101	40 - 135	
1.2.3.7.8.9-HxCDD	2.41	٠.		0.253	¥	13C-1,2,3,4,6,7,8-HpCDD	_	105	40 - 135	
1.2.3.4,6,7.8-HpCDD	41.2			0.268		13C-OCDD		125	40 - 135	•
OCDD	3510			0.709		13C-2,3,7,8-TCDF	÷	121	40 - 135	
2,3,7,8-TCDF	1.49			0.139		13C-1,2,3,7,8-PeCDF		105	40 - 135	
1,2,3,7,8-PeCDF	1.83			0.326	¥	13C-2,3,4,7,8-PeCDF		109	40 - 135	
2,3,4,7,8-PeCDF	3.14			0.336		13C-1,2,3,4,7,8-HxCDF		74.6	40 - 135	· ·
1,2,3,4,7,8-HxCDF	2.65			0.336		13C-1,2,3,6,7,8-HxCDF	*1.7	9.92	40 - 135	
1,2,3,6,7,8-HxCDF	2.79			0.395		13C-2,3,4,6,7,8-HxCDF		85.6	40 - 135	
FIXCDF	4.39	:		0.287		13C-1,2,3,7,8,9-HxCDF		93.0	40 - 135	
1.2.3.7.8.9-HxCDF	0.886			0.380	٧	13C-1,2,3,4,6,7,8-HpCDF		95.0	40 - 135	
1,2,3,4,6,7,8-HpCDF	12.8	٠.		0.217	· ·	13C-1,2,3,4,7,8,9-HpCDF		901	40 - 135	
1,2,3,4,7,8,9-HpCDF	1.26			0.336	¥		·	121	40 - 135	
OCDF	6.73			0.641		CRS 37Cl-2,3,7,8-TCDD		6'96	40 - 135	
Totals	!					Toxic Equivalent Quotient (TEQ) Data	uotieut (TEQ)	Datae		
Total TCDD	22.6					TEQ (Min-Max): 8.21 - 8.45	21 - 8.45		÷	-
Total PeCDD	56.6		27.0		٠				er Se	
Total HxCDD	39.3					a. Sample specific estimated detection limit.	ed detection hmit.			
Total HpCDD	84.8			-		b. Estimated maximum possible concentration.	ssible concentration.		·	
Total TCDF	28.4					c. Method detection limit.				
Total PeCDF	29.3		29.5			d. Lower control limit - upper control limit.	per control limit.	· . ·		
Total HxCDF	29.1					e. TEQ based on International Toxic Equivalent Factors (TEF-1989).	mal Toxic Equivaler	nt Factors (IT	EF-1989).	
Total HpCDF	20.2									
Analyst: JMH						Approved By:	William J. Luksemburg	uksemburg	g 02-Apr-2003 11:16	11:16

William J. Luksemburg 02-Apr-2003 11:16

Approved By:



Sample ID: HKP	HKPC-S2								EPA METHOD 8290	IOD 8290
Duta			031	Sample Data		Laboratory Data				
Project: Hong	Hong Kong Productivity Counci. Soil Analysis	y Counci.		Matrix:	Soil	Lab Sample:	23505-002	Date Received:	ceived:	17-Mar-03
lected;				Sample Size:	11.46 g	QC Batch No.:	3871	Date Ex	Date Extracted:	26-Mar-03
Time Collected: NA				%Solids:	87.9	Date Analyzed DB-5:	31-Mar-03	Date A	Date Analyzed DB-225:	1-Apr-03
Analyte C	Conc. (pg/g)	DL^{a}	$\mathbf{EMPC}^{\mathbf{b}}$	MDL c	Qualifiers	Labeled Standard		%R	TCT-nCT _q	Oualifiers
2,3,7,8-TCDD	0,262		ļ. -	0.234	A	IS 13C-2,3,7,8-TCDD	::: ::: :::	7.96	40 - 135	
1,2,3,7,8-PeCDD	0.825			0.374	Ą	13C-1,2,3,7,8-PeCDD		101	40 - 135	
1,2,3,4,7,8-HxCDD	1.06			0.207	V	13C-1,2,3,4,7,8-HxCDD		89.2	40 - 135	
1,2,3,6,7,8-HxCDD	2.07			0.615	4	13C-1,2,3,6,7,8-HxCDD		9.66	40 - 135	
1,2,3,7,8,9-HxCDD	1.80			0.253	¥	13C-1,2,3,4,6,7,8-HpCDD		105	40 - 135	:
1,2,3,4,6,7,8-HpCDD	45.2			0.268		13C-OCDD		123	40 - 135	:
(OCDD	3070			0.709	-	13C-2,3,7,8-TCDF	: *	118	40 - 135	: .
2,3,7,8-TCDF	1.44			0.139		13C-1,2,3,7,8-PeCDF		104	40 - 135	
1,2,3,7,8-PeCDF	1.89			0.326	¥	13C-2,3,4,7,8-PeCDF	· .	107	40 - 135	
2,3,4,7,8-PeCDF	3.17			0.336		13C-1,2,3,4,7,8-HxCDF		74.2	40 - 135	
1,2,3,4,7,8-HxCDF	3,45			0.336		13C-1,2,3,6,7,8-HxCDF		6.97	40 - 135	
1,2,3,6,7,8-HxCDF	2.87			0.395		13C-2,3,4,6,7,8-HxCDF	:	84.7	40 - 135	٠
2,3,4,6,7,8-HxCDF	4.57	. •		0.287		13C-1,2,3,7,8,9-HxCDF		92.9	40 - 135	· .
1,2,3,7,8,9-HxCDF	0.915			0.380	Ą	13C-1,2,3,4,6,7,8-HpCDF		96.3	40 - 135	
1,2,3,4,6,7,8-HpCDF	15.7			0.217		13C-1,2,3,4,7,8,9-HpCDF		107	40 - 135	
1,2,3,4,7,8,9-HpCDF	1.26			0.336	٧	13C-OCDF		119	40 - 135	
OCDF	9.59			0.641		CRS 37CI-2,3,7,8-TCDD		94.9	40 - 135	:
Totals					:	Toxic Equivalent Quotient (TEQ) Data ^e	otient (TEQ)	Data ^e		
Total TCDD	17.9					TEQ (Min-Max): 7.88 - 7.88	8 - 7.88		-	
Total PeCDD	21.7	:	22.2							
Total HxCDD	32.3					a. Sample specific estimated detection limit.	detection limit.			
Total HpCDD	9.98	·				b. Estimated maximum possible concentration.	ible concentration			*.
Total TCDF	33.5					c. Method detection limit.	:			
Total PeCDF	34.5		34.9			d. Lower control limit - upper control limit,	er control limit,			
Total HxCDF	33.7					e. TEQ based on International Toxic Equivalent Factors (ITEF-1989)	al Toxic Equivale	it Factors (IT	EF-1989).	
Total HpCDF	24.8							• :		

Analyst: JMH

Project 23505



Sample ID: HKP	HKPC-S3		:						EPA METHOD 8290	1OD 8290
Client Data				Santole Data		Laboratory Data				
	Hong Kong Productivity Counci	ty Counci		Matrix:	Soil	Lab Sample:	23505-003	Date Re	Date Received:	17-Mar-03
Project: Soil A Date Collected: NA	Soil Analysis NA			Sample Size:	12.24 g	QC Batch No.:	3871	Date E	Date Extracted:	26-Mar-03
				%Solids:	80.1	Date Analyzed DB-5:	31-Mar-03	Date ,	Date Analyzed DB-225:	1-Apr-03
Analyte C	Conc. (pg/g)	DL ³	EMPCb	MDL c	Qualifiers	Labeled Standard		%R	rcrncr _q o	Oualifiers
23.7.8-TCDD	Q		0.256	0.234		IS 13C-2,3,7,8-TCDD		93.8	40 - 135	·
1.2.3.7.8-PeCDD	1,23			0.374	٧	13C-1,2,3,7,8-PeCDD	QQ	97.4	40 - 135	•
1.2.3.4.7.8-HxCDD	1.45			0.202	∢	13C-1,2,3,4,7,8-HxCDD		81.1	40 - 135	
1,2,3,6,7,8-HxCDD	1.94			0.615	Ą	13C-1,2,3,6,7,8-HxCDD		2.96	40 - 135	
1,2,3,7,8,9-HxCDD	1.90			0.253	¥	13C-1,2,3,4,6,7,8-HpCDD		7.76	40 - 135	
1,2,3,4,6,7,8-HpCDD	37.2			0.268		13C-OCDD		116	40 - 135	
OCDD	1860			0.70		13C-2,3,7,8-TCDF		112	40 - 135	
2,3,7,8-TCDF	1.57			0.139		13C-1,2,3,7,8-PeCDF		7.76	40 - 135	
1,2,3,7,8-PeCDF	2.06			0.326	٧	13C-2,3,4,7,8-PeCDF	-: ^{***} .*	101	40 - 135	
2,3,4,7,8-PeCDF	3.01			0.336		13C-1,2,3,4,7,8-HxCDF		70.5	40 - 135	
1,2,3,4,7,8-HxCDF	2.51		·	0.336	A	13C-1,2,3,6,7,8-HxCDF		72.0	40 - 135	٠.
1,2,3,6,7,8-HxCDF	2.60		:	0.395		13C-2,3,4,6,7,8-H×CDF		6.08	40 - 135	
2,3,4,6,7,8-HxCDF	3.89			0.287		12C-1,2,3,7,8,9-HxCDF		87.7	40 - 135	- : - :
1,2,3,7,8,9-HxCDF	0.861			0.380	٧	13C-1,2,3,4,6,7,8-HpCDF		90.4	40 - 135	
1,2,3,4,6,7,8-HpCDF	10.8			0.217		13C-1,2,3,4,7,8,9-HpCDF		98.2	40 - 135	eri eri
1 2 3.4.7,8,9-HpCDF	J 20			0.336	₹.	13C-0CDF		111	40 - 135	
OCD	6.04			0.641		CRS 37Cl-2,3,7,8-TCDD	CDD	98.2	40 - 135	
Totals		Ì				Toxic Equivalent Quotient (TEQ) Data	uotient (TEQ)) Data ^e		
Total TCDD	24.1	i i	24.9			TEQ (Min-Max): 6.25 - 6.50	.25 - 6.50	:		
Total PeCDD	27.0		27.5							
Total HxCDD	34.8					a. Sample specific estimated detection limit.	ed detection limit.		: : : :	
Total HpCDD	79.4					b. Estimated maximum possible concentration	ssible concentration	Ġ		
Total TCDF	32.0					c, Method detection limit.	1			
Total PeCDF	32.4					d. Lower control little - upper control little:	oper control limit.	. : !	1080)	
Total HxCDF	27,3			-		e. TEQ based on International Toxic Equivalent Factors (LIEF-1707)	onai Ioxic Equival	ent ractors (1, E.F1, 909 j.	
Total HpCDF	17.1		. !							
Analyst: JMH						Approved By:	William J. Luksemburg	Luksembu	rg 02-Apr-2003 11:16	11:16

Analyst: JMH



Hong Kong Productivity Counci Soil Analysis NA NA CONC. (pg/g) DL a EMPC ^b CDD 0.314 CDD 0.701 EXCDD 1.39 EXCDD 1.41 -HpCDD 22.7 F 0.739 CDF 1.14 CDF 1.29 EXCDF 1.29 EXCDF 1.29 EXCDF 1.29 EXCDF 1.29 EXCDF 1.45 EXCDF 1.48 EXCDF 1.4	م ا		Laboratory Data Lab Sample: 23505-004 Di QC Batch No.: 3871 Di	
Hone Kone Productivity Counci Soil Analysis etcd: NA Etcd: NA Etcd: NA Conc. (pg/g) DL a EMPC ^b R-PeCDD 0.314 R-PeCDD 0.701 7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 TCDF 0.739 R-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 2.30 8,9-HxCDF 0.427 CDD 14.5 CDD 14.5 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.724 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 CDD 14.8 EMPCDF 0.730 EMPC	Sample Size:		23505-004 3871	
etet NA Exect NA Exect NA Exect NA Conc. (pg/g) DL a EMPC ^b CDD 0.314 S-PeCDD 0.701 7,8-HxCDD 0.899 7,8-HxCDD 1.39 8,9-HxCDF 1.49 8,9-ECDF 1.69 7,8-ExCDF 1.29 7,8-ExCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 0.724 CDD 14.5 CDD 14.5 CDD 14.8 CDD 14.8 CDD 14.8 CDD 23.0 pcDD 23.0 pcDD 23.0	Sample Size:	Soil	3871	Date Received: 17-Mar-03
## Conc. (pg/g) DL a EMPC b TCDD 0.314 8-PeCDD 0.701 7,8-HxCDD 0.899 7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 7,8-ExCDF 1.29 7,8-ExCDF 1.29 7,8-ExCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 0.724 CDD 14.5 CDD 14.5 CDD 14.8 EMPC b EMPC	%Solids:	11.48 g		Date Extracted: 26-Mar-03
Conc. (pg/g) DL	och wn	86.5	Date Analyzed DB-5: 31-Mar-03 D	Date Analyzed DB-225: NA
TCDD 0.314 8-PeCDD 0.701 7,8-HxCDD 0.899 7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 TCDF 0.739 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 0.427 6,7,8-HpCDF 6.60 7,8,9-HpCDF 0.724 CDD 14.5 CDD 14.8	ز	Qualifiers	Labeled Standard %R	LCL-UCL ^d Qualifiers
8-PeCDD 0.701 7,8-HxCDD 0.899 7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 915 TCDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 6.60 6,7,8-HpCDF 6.60 7,8,9-HpCDF 6.724 4.39 CDD 14.5 14.8 cCDD 14.8 15.8 xCDD 23.0 pCDD 42.1	0.234	A	IS 13C-2,3,7,8-TCDD 103	40 - 135
7,8-HxCDD 0.899 7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 TCDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 6.60 7,8-HpCDF 6.60 7,8,9-HpCDF 6.60 7,8,9-HpCDF 14.5 6,7,8-HpCDF 6.50 7,8,9-HpCDF 7,8,9-HpCDF 6.50 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8,9-HpCDF 7,8-HpCDF	0.374	Ą	13C-1,2,3,7,8-PeCDD 111	40 - 135
7,8-HxCDD 1.39 8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 915 TCDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 0.427 6,7,8-HpCDF 6.60 7,8,9-HpCDF 6.724 7,8,9-HpCDF 14.8 CDD 14.5 14.8 cCDD 14.5 15.8 xCDD 23.0 pCDD 42.1	0.202	A	13C-1,2,3,4,7,8-HxCDD 89.0	40 - 135
8,9-HxCDD 1.41 6,7,8-HpCDD 22.7 1CDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 6.60 6,7,8-HpCDF 6.60 7,8,9-HpCDF 6.724 4.39 CDD 14.5 14.8 5CDD 23.0 pCDD 23.0	0.615	¥	13C-1,2,3,6,7,8-HxCDD 107	40 - 135
6,7,8-HpCDD 22.7 TCDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 2.30 8,9-HxCDF 6.60 7,8,9-HpCDF 6.60 7,8,9-HpCDF 14.8 CDD 14.5 CDD 14.8 CDD 14.8 CDD 23.0 pCDD 23.0	0.253	Ą	13C-1,2,3,4,6,7,8-HpCDD 109	40 - 135
915 8-PeCDF 0.739 8-PeCDF 1.14 8-PeCDF 1.69 7,8-HxCDF 1.29 7,8-HxCDF 2.30 8,9-HxCDF 0.427 6,7,8-HpCDF 6.60 7,8,9-HpCDF 0.724 CDD 14.5 CDD 14.5 xCDD 23.0 pCDD 42.1	0.268		13C-OCDD 122	40 - 135
0.739 1.14 1.69 1.29 1.45 2.30 0.427 0.427 F 0.724 4.39 14.8 14.8 14.8 14.8 14.8	0.70	:	13C-2,3,7,8-TCDF 122	40 - 135
1.14 1.69 1.29 1.45 2.30 0.427 0.724 4.39 14.5 14.8 15.8 23.0	0.139		13C-1,2,3,7,8-PeCDF 108	40 - 135
1.69 1.29 1.45 2.30 0.427 0.724 4.39 14.8 14.8 15.8 23.0 42.1	0.326	A	13C-2,3,4,7,8-PeCDF [11]	40 - 135
1.29 1.45 2.30 0.427 0.427 0.724 4.39 14.8 14.8 14.8 15.8 23.0	0.336	A	13C-1,2,3,4,7,8-HxCDF 75.7	40 - 135
1.45 2.30 0.427 0.427 0.724 4.39 14.5 14.8 14.8 23.0 42.1	0.336	A	13C-1,2,3,6,7,8-HxCDF 79.9	40 - 135
2.30 0.427 0.427 0.724 4.39 14.5 14.8 15.8 23.0 42.1	0.395	∢	13C-2,3,4,6,7,8-HxCDF 88.2	40 - 135
0.427)F 6.60)F 0.724 4.39 14.5 14.8 15.8 23.0 42.1	0.287	A	13C-1,2,3,7,8,9-HxCDF 95.8	40 - 135
1F 6.60 4.39 14.5 14.8 15.8 23.0 42.1	0.380	¥	13C-1,2,3,4,6,7,8-HpCDF 98.8	40 - 135
14.8 14.8 15.8 23.0 42.1	0.217	• .	13C-1,2,3,4,7,8,9-HpCDF 111	40 - 135
4.39 14.5 14.8 14.8 15.8 23.0 42.1	0.336	Ą	13C-OCDF 121	40 - 135
14.5 14.8 23.0 42.1	0.641	Ψ	CRS 37Cl-2,3,7,8-TCDD 105	40 - 135
14.5 14.8 23.0 42.1			Toxic Equivalent Quotient (TEQ) Datae	٠
14.8 23.0 42.1	14.8		TEQ (Min-Max): 3.78 - 3.78	
23.0	15.8			
42.1			a. Sample specific estimated detection limit.	
			b. Estimated maximum possible concentration.	
Total TCDF 13.9 14.2	14.2		c. Method detection limit.	
Total PeCDF 14.8			d. Lower control limit - upper control limit.	
Total HxCDF 14.8			e. TEQ based on International Toxic Equivalent Factors (ITEF-1989)	ors (ITEF-1989).
Total HpCDF 10.9				

Analyst: JMH

Approved By:

William J. Luksemburg 02-Apr-2003 11:16



Sample ID: HKP	HKPC-S6						EPA ME	EPA METHOD 8290
Data	-		Sample Data		Laboratory Data			
Project: Soil	Hong Kong Productivity Council Soil Anglysis	ច	Matrix:	Soil	Lab Sample:	23505-006	Date Received:	17-Mar-03
llected:			Sample Size:	11.33 g	QC Batch No.:	3871	Date Extracted:	26-Mar-03
Time Collected: NA			%Solids:	89.5	Date Analyzed DB-5:	31-Mar-03	Date Analyzed DB-225:	NA .
Analyte C	Conc. (pg/g) DL ^a	${f EMPC}^{ m p}$	MDI_c	Qualifiers	Labeled Standard	rd %R	R LCL-UCL ^d	Qualifiers
2,3,7,8-TCDD	CK.	0.154	0.234		IS 13C-2,3,7,8-TCDD	DD 84.2	2 40 - 135	
1,2,3,7,8-PeCDD	0.529		0.374	٧	13C-1,2,3,7,8-PeCDD	CDD 90.9	9 40 - 135	
1,2,3,4,7,8-HxCDD	0.657		0.202	¥	13C-1,2,3,4,7,8-HxCDD	HxCDD 76.6	6 40 - 135	
1,2,3,6,7,8-HxCDD	0.771		0.615	4	13C-1,2,3,6,7,8-HxCDD	HxCDD 94.6	.6 40 - 135	
1,2,3,7,8,9-HxCDD	0.875		0.253	¥	13C-1,2,3,4,6,7,8-HpCDD	8-HpCDD 95.9	9 40 - 135	
1,2,3,4,6,7,8-HpCDD	18.9		0.268		13C-OCDD	111	1 40 - 135	
OCDD	2110		0.70	:	13C-2,3,7,8-TCDF	OF 104	4 40 - 135	
2,3,7,8-TCDF	0.887		0.139		13C-1,2,3,7,8-PeCDF	CDF 91.0	.0 40 - 135	
1,2,3,7,8-PeCDF	1.11		0.326	. A	13C-2,3,4,7,8-PeCDF	CDF 95.6	.6 40 - 135	
2,3,4,7,8-PeCDF	2.51		0.336		13C-1,2,3,4,7,8-HxCDF	HxCDF 67.4	4 40 - 135	
1,2,3,4,7,8-HxCDF	2.23		0.336	Α	13C-1,2,3,6,7,8-HxCDF	HxCDF 68.9	9 40-135	:
1,2,3,6,7,8-HxCDF	1.88		0.395	¥	13C-2,3,4,6,7,8-HxCDF	HxCDF 77.4	4 40 - 135	
2,3,4,6,7,8-HxCDF	3.08		0.287		13C-1,2,3,7,8,9-HxCDF	HxCDF 83.7	7 40 - 135	
1,2,3,7,8,9-HxCDF	0.574		0.380	¥,	13C-1,2,3,4,6,7,8-HpCDF	8-HpCDF 87.8	.8 40 - 135	
1,2,3,4,6,7,8-HpCDF	8.77		0.217		13C-1,2,3,4,7,8,9-HpCDF	9-HpCDF 99.7	7 40 - 135	
1,2,3,4,7,8,9-HpCDF	969.0		0.336	Ą	13C-OCDF	109	9 40 - 135	
OCDF	3.14		0.641	Ą	CRS 37Cl-2,3,7,8-TCDD	DD 97.4	4 40 - 135	
Totals					Toxic Equivalent Quotient (TEQ) Datae	otient (TEQ) Do	ata ^e	
Total TCDD	4.43	5.36			TEQ (Min-Max): 5.06 - 5.22	5 - 5.22		
Total PeCDD	6.53	7.47						
Total HxCDD	6.11				a. Sample specific estimated detection limit	detection limit.		
Total HpCDD	36.2				b. Estimated maximum possible concentration.	ble concentration.		
Total TCDF	0.61				c. Method detection limit.	•		
Total PeCDF	22.2				d. Lower control limit - upper control limit.	r control limit.		
Total HxCDF	20.6	20.8			e. TEQ based on International Toxic Equivalent Factors (ITEP-1989)	ıl Toxic Equivalent I	actors (ITEP-1989).	
Total HpCDF	12.4				٠.			

Analyst JMH

Approved By:

William J. Luksemburg 02-Apr-2003 11:16

Project 23505

Robert S. Mitzel 25-Apr-2003 09:51

Approved By:



Hone Kone Productivity Councies Manire Soil Lab Sample 23611-001 NA	NH PW	HKPC-S5							EPA METHOD 8290	(OD 8290
Hong Kong Productivity Council NA	Data			Sample Data		Laboratory Data				
NA		g Kong Productivity Counci		Matrix:	Soil	Lab Sample:	23611-001	Date Received:	ived:	11-Apr-03
NA NA %Solids: 87.5 Conc. (pg/g) DL a EMPC b MDL c Qualifiers Conc. (pg/g) DL a EMPC b MDL c Qualifiers CDD 1.53 0.234 A EACDD 1.53 0.202 A EACDD 2.59 0.268 0.268 EACDD 2.51 0.253 A EACDD 2.52 0.258 0.258 EACDD 2.53 0.258 0.236 EACDF 2.99 0.236 0.236 EACDF 3.24 0.236 0.237 EACDF 1.14 0.236 0.237 EACDF 1.43 0.237 0.241 EACDF 1.43 0.237 EACDF 1.43 0.241 EACDF 1.43 0.336 0.237 EACDF 2.52 0.236 0.236 EACDF 2.52 0.236 EACDF 2.52 0.236 EACDF 2.52 0.236 0.236 EACDF 2.52 0.236	llected:		•	Sample Size:	11.35 g	QC Batch No.:	3957	Date Extracted:	icted:	22-Apr-03
Conc. (pg/g) DL a EMPCb MDL c Qualitiers DD 0.594 0.234 A CDD 1.53 0.374 A CDD 1.70 0.202 A HxCDD 2.59 0.615 A HxCDD 2.51 0.253 A HxCDD 2.51 0.253 A HxCDD 2.53 0.139 0.268 HxCDF 3.24 0.336 0.139 CDF 4.07 0.336 A,B HxCDF 3.24 0.336 A,B 4xCDF 1.14 0.380 A,B HxCDF 1.14 0.380 A,B HxCDF 1.26 0.217 0.41 HpCDF 1.43 0.641 0.641 D 42.4 0.641 0.641 D 51.2 0.336 A HpCDF 1.43 0.641 0.641 D 44.1 0.641 <				%Solids:	87.5	Date Analyzed DB-5:	23-Apr-03	Date An	Date Analyzed DB-225:	24-Apr-03
DD 0.594 CDD 1.53 CDD 1.53 CDD 1.53 CDD 1.53 CDD 2.59 CDF 2.59 CDF 2.99 CDF 2.99 CDF 3.24 CDF 3.24 CDF 3.24 CDF 3.24 CDF 3.24 CDF 4.07 CDF 3.24 CDF 3.24 CDF 4.07 CDF 3.24 CDF 6.336 CDF 6.336 CDF 7.8	•	DI	EMPC		Qualifiers	Labeled Standa		%R	rce-uct ^d o	Oualifiers
CDD 1.53 0.374 A EXCDD 1.70 0.202 A EXCDD 2.59 0.615 A EXCDD 2.51 0.253 A EXCDD 2.51 0.268 A EXCDD 2.420 0.709 A OF 2.99 0.139 C CDF 2.99 0.336 A EXCDF 4.07 0.336 A,B EXCDF 4.78 0.336 A,B HPCDF 1.14 0.380 A,B HPCDF 1.26 0.217 A HPCDF 1.43 0.641 A A 42.6 0.641 A D 44.1 0.641 A D 44.1 0.641 A D 111 0.641 A D 111 0.033 A D 111 0.033 A D 111 0.034 A D 111 0.034 A	2,3,7,8-TCDD	0.594		0.234		-		76.2	40 - 135	i
ExCDD 1.70 0.202 A ExCDD 2.59 0.615 A ExCDD 2.51 0.253 A ExCDD 2.51 0.268 A ExCDD 2.420 0.709 0.709 F 3.29 0.139 0.139 CDF 2.99 0.326 0.336 ExCDF 4.07 0.336 A ExCDF 4.78 0.336 A ExCDF 1.14 0.380 A,B HpCDF 1.26 0.217 A HpCDF 1.26 0.336 A S17 0.641 0.641 D 44.1 0.641 D 51.2 0.641 D 111 0.641	1,2,3,7,8-PeCDD	1.53		0.374	<			76.1	40 - 135	
4xCDD 2.59 0.615 4xCDD 2.51 0.253 A 4xCDD 2.51 0.268 A 5420 0.709 0.709 O	1,2,3,4,7,8-HxCDD	1.70		0.202	¥	13C-1,2,3,4,7,8-		9.62	40 - 135	
EKCDD 2.51 0.253 A F.HpCDD 53.6 0.268 0.268 F. 3.29 0.709 0.709 CDF 2.99 0.139 0.139 CDF 2.99 0.326 0.336 ECDF 4.07 0.336 0.336 EXCDF 4.78 0.380 A,B EMCDF 1.14 0.387 0.217 HpCDF 1.26 0.217 0.641 HpCDF 1.43 0.641 A A 42.4 42.6 0.641 D 51.2 0.641 0.641 D 69.8 70.3	1,2,3,6,7,8-HxCDD	2.59		0.615		13C-1,2,3,6,7,8-		75.9	40 - 135	
HPCDD 53.6 0.268 2420 0.709 2420 0.709 DF 3.29 0.139 CDF 2.99 0.326 CDF 4.07 0.336 HCDF 3.24 0.336 HCDF 4.78 0.336 HCDF 1.14 0.380 A.B HPCDF 12.6 0.217 HPCDF 1.43 0.336 A 42.6 D 51.2 D 51.2 D 69.8 70.3	1,2,3,7,8,9-HxCDD	2.51		0.253	Α	13C-1,2,3,4,6,7,		83.6	40 - 135	
2420 0.709 NF 3.29 0.139 CDF 2.99 0.326 CDF 4.07 0.336 IxCDF 3.24 0.336 IxCDF 3.68 0.336 IxCDF 1.14 0.380 A,B I+pCDF 12.6 0.217 I+pCDF 14.3 0.346 N 42.4 42.6 D 51.2 D 51.2 D 51.2 D 69.8 70.3	1,2,3,4,6,7,8-HpCDD	53.6		0.268		13C-0CDD	7	72.9	40 - 135	
Secondary	ОСDD	2420		0.70		13C-2,3,7,8-TCI		77.8	40 - 135	
CDF 2.99 0.326 CDF 4.07 0.336 HxCDF 3.24 0.336 HxCDF 3.68 0.395 HxCDF 1.14 0.380 A,B HyCDF 12.6 0.217 -HpCDF 12.6 0.336 A -HpCDF 1.43 0.336 A -HpCDF 1.44 0.336 A -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.641 -HpCDF 1.45 0.336 -HpCDF 1.45 0.336 -HpCDF 1.45 0.336 -HpCDF 1.45 0.336 -HpCDF 1.45 0.336	2,3,7,8-TCDF	3.29		0.139		13C-1,2,3,7,8-Pe		82.8	40 - 135	
CDF 4.07 0.336 HxCDF 3.24 0.336 HxCDF 4.78 0.395 HxCDF 1.14 0.380 A,B HpCDF 12.6 0.217 HpCDF 1.43 0.316 A 8.17 0.641 D 51.2 D 51.2 D 51.2 D 51.2 D 69.8 70.3	1,2,3,7,8-PeCDF	2.99		0.326		13C-2,3,4,7,8-Pe		79.4	40 - 135	
txCDF 3.24 0.336 txCDF 3.68 0.395 txCDF 4.78 0.287 txCDF 1.14 0.380 A,B HpCDF 12.6 0.217 A -HpCDF 1.43 0.336 A -HpCDF 1.43 0.641 A -HpCDF 42.4 42.6 A D 51.2 A A D 111 A A 69.8 70.3 A A	2,3,4,7,8-PeCDF	4.07		0.336		13C-1,2,3,4,7,8-		6.97	40 - 135	
4xCDF 3.68 0.395 4xCDF 4.78 0.287 4xCDF 1.14 0.380 A,B 4xCDF 12.6 0.217 4pcDF 1.43 0.336 A 4pcDF 1.43 0.641 4pcDF 42.6 0.641 5pcDF 44.1 42.6 5pcDF 111 70.3	1,2,3,4,7,8-HxCDF	3.24		0,336		13C-1,2,3,6,7,8-		78.5	40 - 135	
txCDF 4.78 0.287 txCDF 1.14 0.380 A,B HpCDF 12.6 0.217 A -HpCDF 1.43 0.336 A 8.17 0.641 A D 42.4 42.6 D 51.2 70.3 69.8 70.3	1,2,3,6,7,8-HxCDF	3.68		0.395		13C-2,3,4,6,7,8-		73.3	40 - 135	
HyCDF 1.14 0.380 A,B -HpCDF 12.6 0.217 -HpCDF 1.43 0.336 A 8.17 0.641 42.4 42.6 D 51.2 D 51.2 G9.8 70.3	2,3,4,6,7,8-HxCDF	4.78		0.287		13C-1,2,3,7,8,9-		17.77	40 - 135	
-HpCDF 12.6 0.217 -HpCDF 1.43 0.336 A 8.17 0.641 42.4 42.6 D 51.2 D 51.2 D 111 C-HpCDF 12.6 D 51.2 D 69.8 70.3	1,2,3,7,8,9-HxCDF	1.14		0.380	A,B	13C-1,2,3,4,6,7,		75.7	40 - 135	
-HpCDF 1.43 0.336 A 8.17 0.641	1,2,3,4,6,7,8-HpCDF	12.6		0.217		13C-1,2,3,4,7,8,		97.6	40 - 135	
8.17 0.641 42.4 42.6 5 44.1 D 51.2 D 111 D 111	1,2,3,4,7,8,9-HpCDF	1.43		0.336	¥	13C-OCDF	7	70.3	40 - 135	
D 51.2 D 111 D 69.8	OCDF	8.17		0.641				86.6	40 - 135	
D 51.2 D 111 D 69.8	Totals					Toxic Equivalent Que	otient (TEQ) I)ata ^e		·
D 51.2 D 11.1 G 69.8	Total TCDD	42.4	42.6			TEQ (Min-Max): 8.9	5-8.95			
D 51.2 D 111 69.8 70.3	Total PeCDD	44.1								
D 111 70.3	Total HxCDD	51.2				a. Sample specific estimated	detection limit.			
69.8	Total HpCDD	111				b. Estimated maximum possi	ble concentration.			
	Total TCDF	8.69	70.3			c. Method detection limit.				
Total PeCDF 48.3 49.2 d. Lower control limit - upper control limit	Total PcCDF	48.3	49.2			d. Lower control limit - uppe	r control limit			
Total HxCDF 34.9 B e. TEQ based on International Toxic Equivalent Factors (ITEF-1989)	Total HxCDF	34.9			В	e. TEQ based on Internations	al Toxic Equivalent	Factors (ITE	F-1989).	
Total HpCDF 20.5	Total HpCDF	20.5			!					

Analyst JMH

Project 23611

nmental

CERTIFICATE OF ANALYSIS

HK20824 0 21/05/2003

> Sub Batch: Date of Issue:

Batch:

HONG KONG PRODUCTIVITY COUNCIL

Client Reference:

Client:



						SAMPLE IDENTIFICATION	
		Laborat	Laboratory I.D.	1.83	235		
		Date Sa	Date Sampled	03/05/2003	03/05/2003		
				WT0303047	WT0303049		-
METHOD	ANALYSIS DESCRIPTION	FINO	LOR				
EG-020	Lead	ug/L	10	30	15		
EG-020	Tin	ng/L	9	30	~10 ~10		

ALS Technichem (HK) Pty Ltd

ALS Environmental

HONG KONG PRODUCTIVITY COUNCIL

Client Reference:

21/05/2003

Date of Issue: Sub Batch:

Client:

HK20824

Batch:

(STV)	
QUALITY CONTRUL REPORT	SAMPLE IDENTIFICATION

CHECKS AND SPIKES

LCS % REC

BLANK

LOR

UNIT

ANALYSIS DESCRIPTION

METHOD

201

200

Laboratory I.D. Date Sampled 94% 91%

\$ \$

5 5

ug/L ug/L

Lead

EG-020 EG-020