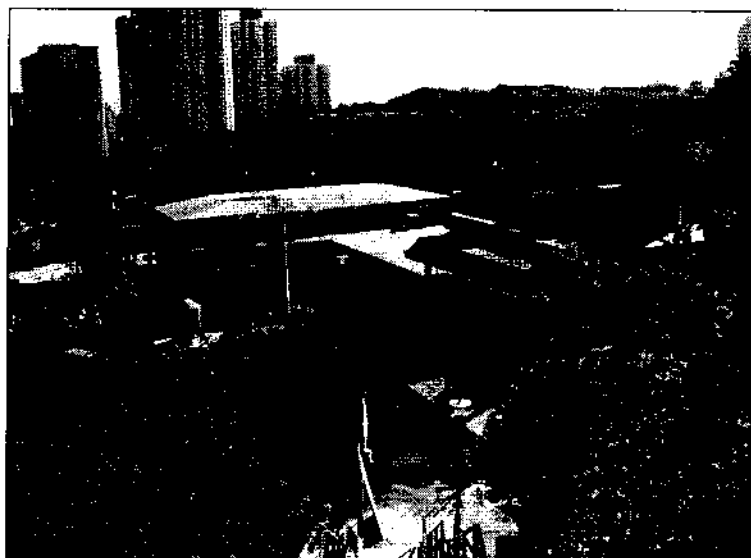




Hong Kong
Productivity Council
香港生產力促進局

偉
信

Scot+
Wilson



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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Figure 1: Location of Exploratory Holes

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Appendix A – Logs of Exploratory Holes

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1. 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; and
- Determine the requirement for any remedial works;
- Specify the extent and nature of remedial works.

2. 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 tank	DH1 (7m)	4.5m; 5.5m; 7m	Petroleum hydrocarbons (TPH)
	DH2 (7m)	4.5m; 5.5m; 7m	Polyaromatic Hydrocarbon (PAH)
	TP1	0.5m; 1.5m; 3m	
Dangerous Goods store	TP2 (3m)	0.5m; 1.5m; 3m	TPH PAH
West of stack	S1 (0.1m)	0.1m	Metals PAH Dioxins
	S2 (0.1m)	0.1m	
	S3 (0.1m)	0.1m	
North of stack	S4 (0.1m)	0.1m	
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
Copper	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
Zinc	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
Polycyclic Aromatic Hydrocarbons (total)	20	Dutch "B" Level, as quoted in ProPECC PN 3/94 for total PAH
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, Ti, 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 $0.5 \times 5 \times 5 \times 3.14 =$ approximately 40 m^3 in each location, giving a total of 80 m^3 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: (soil samples) During Phase I	Polychlorinated biphenyls (PCBs) TPH
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

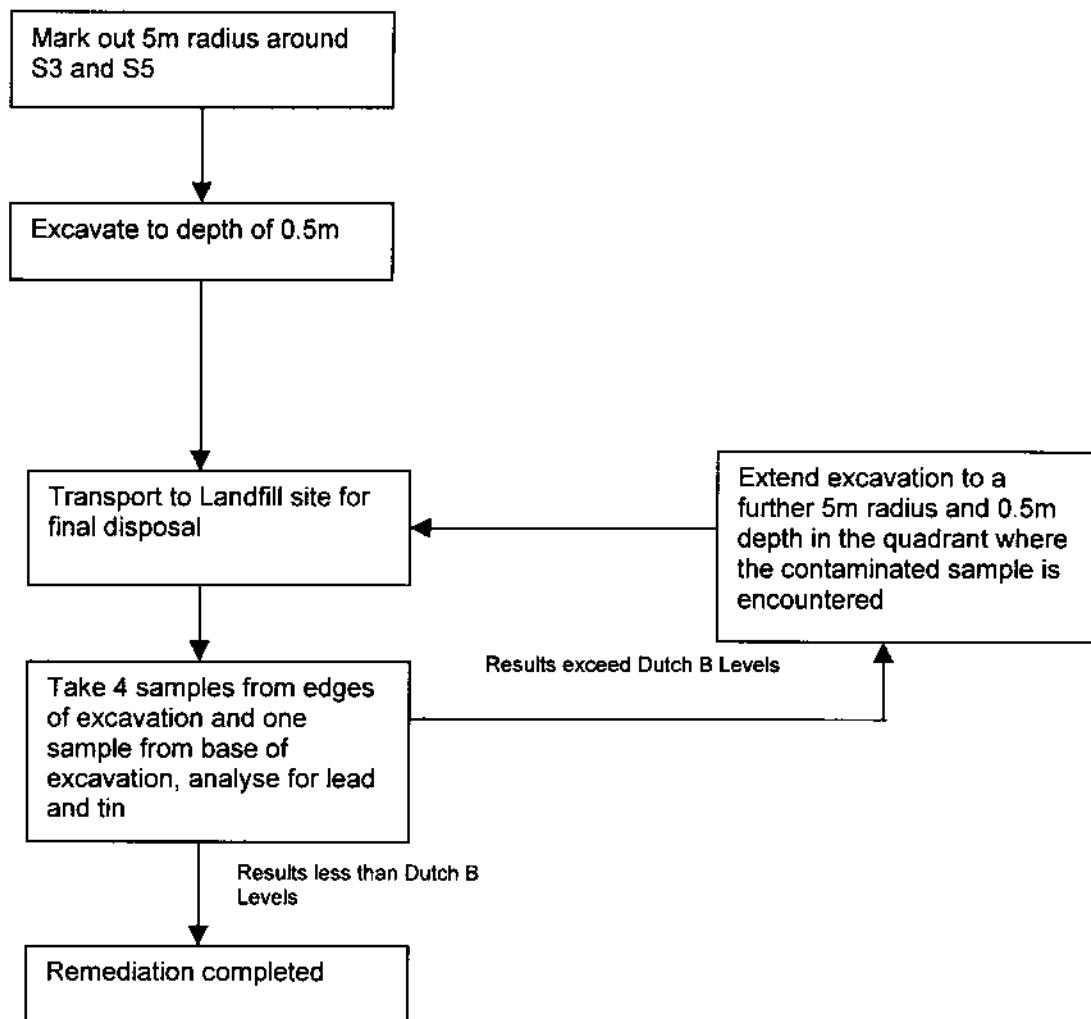
4.4 Objectives of Remediation Works

- 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 Crematorium.
- 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 sub-station, 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 occurring. 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.

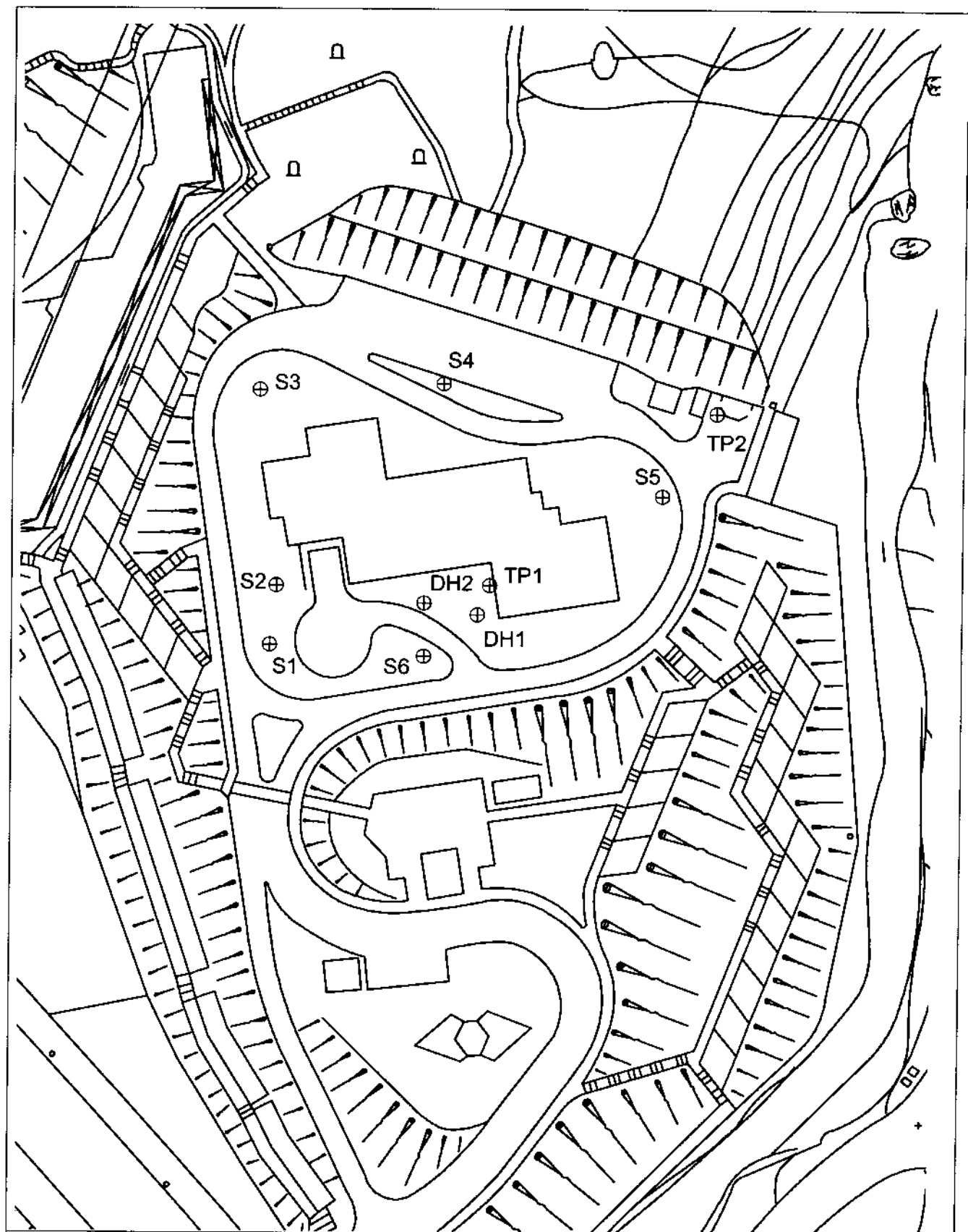
Waste Disposal Requirements

- 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.

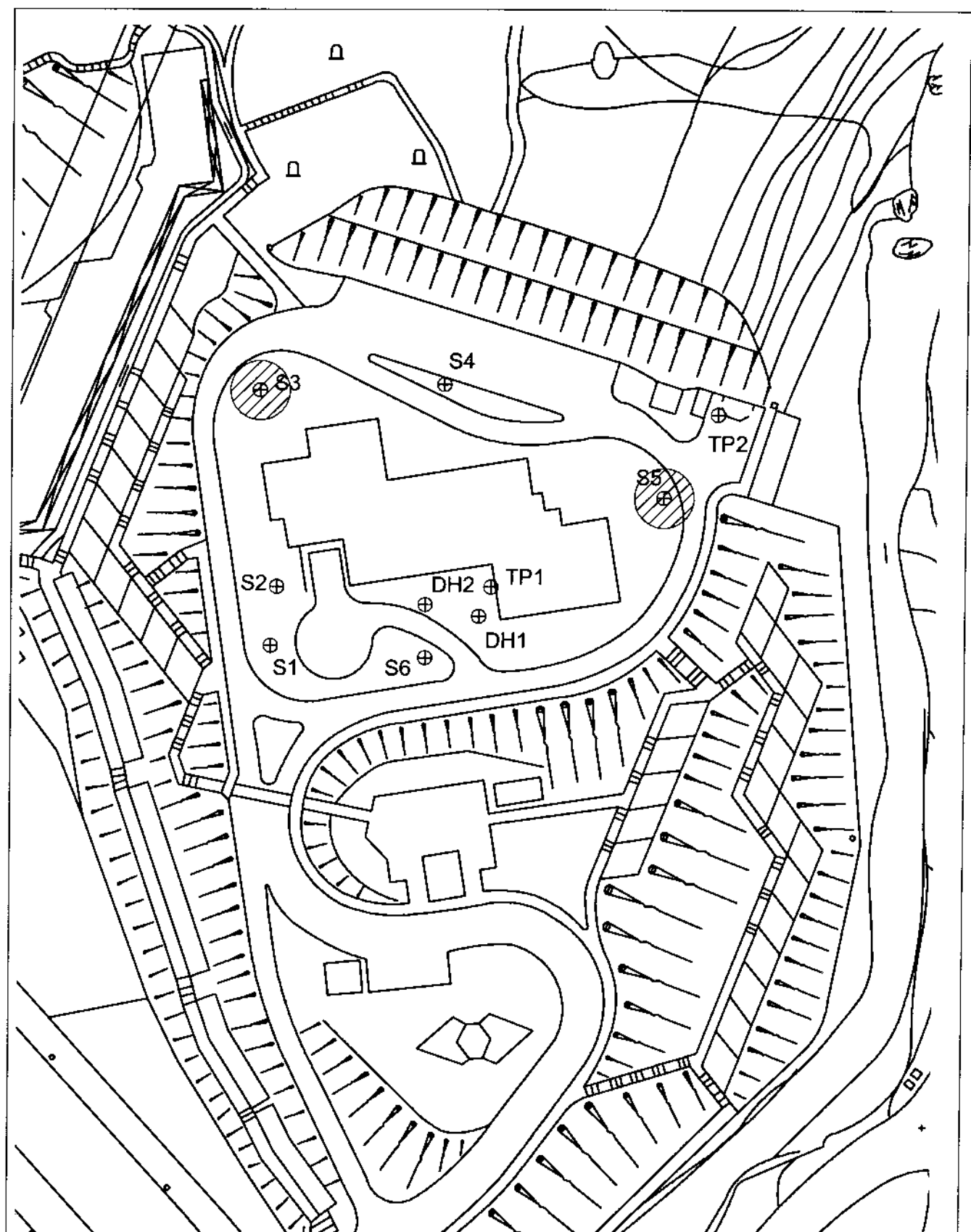
FIGURES



Reprovisioning of Diamond
Hill Crematorium
Contamination Assessment Plan

Figure 1:
Locations of
Exploratory Holes

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Reprovisioning of Diamond
Hill Crematorium
Contamination Assessment Plan

Figure 2:
Areas Requiring
Excavation of Contamination

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偉信 Wilson

APPENDIX A DRILLHOLE AND TRIAL PIT LOGS



GEOTECHNICS & CONCRETE ENGG. (H.K.) LTD.
GROUND INVESTIGATION DEPARTMENT

HOLE NO. DH1

SHEET 1 of 1

DRILLHOLE RECORD

CONTRACT NO. TC L322

PROJECT Re-provisioning of Diamond Pile Caisson/Column Ground Investigation Works for SA Study

METHOD Rotary Cored

CO-ORDINATES

Works Order No. ASD 007844

MACHINE & No. DR126

E 838441.33
N 822938.95

DATE from 07/03/2003 to 07/03/2003

FLUSHING MEDIUM Water

ORIENTATION Vertical

GROUND LEVEL 80.08 mPD

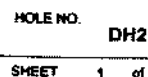
Drilling Progress	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.O.D.	Fracture Index	Tests	Samples	Reduced Level (m)	Depth (m)	Legend	Grade	Description
	150								79.98	0.00			CONCRETE SURFACE
									79.98	1.50			Light red (2.5YR 7/6) dappled reddish brown, slightly clayey, silty fine to coarse SAND with some angular to subangular fine to medium gravel sized quartz and rock fragments. (FILL)
									79.98	2.00			Extremely weak, reddish brown (2.5YR 5/4) dappled pink, white and yellow, completely decomposed, medium grained GRANITE. (Silty fine to coarse SAND with occasional angular to subangular fine gravel sized quartz fragments)
									79.98	2.00			Extremely weak, pink (10R 8/3) spotted white and dappled brown, completely decomposed, medium grained GRANITE. (Silty fine to coarse SAND with much angular to subangular fine gravel sized quartz fragments)
									79.98	4.00			
									79.98	5.00			
									79.98	5.70			
									79.98	7.00			
									79.98	8.10			Hole completed at 8.10m

● SMALL DISTURBED SAMPLE
■ LARGE DISTURBED SAMPLE
□ UNDISTURBED SAMPLE
□ UNDISTURBED SAMPLE
□ UNDISTURBED SAMPLE
□ UNDISTURBED SAMPLE
□ UNDISTURBED SAMPLE
□ UNDISTURBED SAMPLE

△ WATER SAMPLE
○ PRESSURE TIE
□ R.P. PIPE
□ STANDARD PENETRATION TEST
□ PENETRATION TEST
□ WATERSHED PACHA TEST
□ IN SITU VANE SHEAR TEST
□ RACHA TEST

LOGGED H.S. Tsang
DATE 08/03/2003
CHECKED V.C. Yung
DATE 10/03/2003

REMARKS



CONTRACT NO. TC-1322

GROUND LEVEL 80.08 mPD

Drilling Program	Casing size	Water level (m) & Time	Total core Recovery %	Solid core Recovery %	R.O.D.	Fracture Rock	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
REMARKS	PX	Dry at 0800						A • B • C • D •	76.94 76.09 75.58 75.51	0.50 1.00 1.50 2.00	[Pattern]		Yellowish brown (10YR 5/4) dappled brown, silty fine to coarse SAND with some subangular fine to medium gravel sized quartz and rock fragments. (FILL) Brown (10YR 4/3) dappled yellow and grey, slightly clayey, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL) Yellowish brown (10YR 5/4) mottled white, silty fine to coarse SAND with some subangular fine to coarse gravel sized moderately decomposed granite fragments. (FILL) Yellowish brown (10YR 5/4) dotted white and dark brown, slightly silty, slightly sandy angular to subangular fine to coarse GRAVEL sized moderately decomposed granite fragments. (FILL) Extremely weak, pink (10R 5/3) spotted white and dappled light grey, completely decomposed, medium grained GRANITE. (Silty fine to coarse SAND with some angular to subangular fine gravel sized quartz fragments)
								1 [Pattern] 2 [Pattern] 3 [Pattern] 4 [Pattern] 5 [Pattern]		4.50 5.00 6.25 7.00			
	PX	4.12m @ 1230						E • F •	71.98	8.50			Hole completed at 8.10m
LOGGED	H.S. Taang	DATE	07/03/2003	CHECKED	V.C. Yung	DATE	08/03/2003	REMARKS					

APPENDIX B

CHEMICAL TEST RESULTS

		Dioxin ng/g, TEQ	Silver mg/kg	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Cadmium mg/kg	Cobalt mg/kg	Chromium mg/kg	Copper mg/kg	Mercury mg/kg
	Assessment Criteria	1	NA	30	400	NA	5	50	250	100	2
	Sample ID										
	Surface Samples	Depth									
	S1	0.1m		2.7	23		<0.05	1	11	7	0.2
	S2	0.1m		2.2	32		<0.05	2	7	29	0.5
	S3	0.1m		4.3	17		<0.05	2	2	7	<0.05
	S4	0.1m		1.7	50		0.09	3	6	6	0.07
	S5	0.1m		5.9	5.7		<0.05	1	5	11	0.06
	S6	0.1m		1.8	25		<0.05	2	6	8	0.09
	Trial Pits										
	TP1	0.5m	<1	1.6	26	<1	<0.05	<1	4	<1	<0.05
	TP1	0.9m									
	TP2	0.5m									
	TP2	1.5m	<1	1.4	6	<1	<0.05	0.8	0.5	0.5	<0.5
	TP2	3.0m									
	Drillholes										
	DH1	4.5-5.0m									
	DH1	5.6-6.1m									
	DH1	7.0-7.5m									
	DH2	4.5-5.0m									
	DH2	5.6-6.1m									
	DH2	7.0-7.5m									

TCLP Results			
		Tin	Lead
		ug/L	ug/L
S3	0.1m	<10	30
S5	0.1m	<10	15

[illegible]

			C10-C28 TPH	C28-C36 TPH	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene
	Assessment Criteria		mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Sample ID	Depth	1000	1000	NA	NA	10000	NA
Surface Samples								
	S1	0.1m			<5	<5	<5	<5
	S2	0.1m			<5	5.4	<5	17
	S3	0.1m			<5	<5	<5	5.6
	S4	0.1m			<5	<5	<5	33
	S5	0.1m			<5	<5	<5	7.7
	S6	0.1m			<5	<5	<5	<5
Trial Pits								
	TP1	0.5m	<25	<25	<5	<5	<5	<5
	TP1	0.9m	<25	<25	<5	<5	<5	<5
	TP2	0.5m	<25	<25	<5	<5	<5	<5
	TP2	1.5m	<25	<25	<5	<5	<5	<5
	TP2	3.0m	<25	<25	<5	<5	<5	<5
Drillholes								
	DH1	4.5-5.0m	<25	<25	<5	<5	<5	<5
	DH1	5.6-6.1m	<25	<25	<5	<5	<5	<5
	DH1	7.0-7.5m	<25	<25	<5	<5	<5	<5
	DH2	4.5-5.0m	<25	<25	<5	<5	<5	<5
	DH2	5.6-6.1m	<25	<25	<5	<5	<5	<5
	DH2	7.0-7.5m	<25	<25	<5	<5	<5	<5

			Benzo(a)pyrene ug/kg 1000	Benzo(b)fluoranthene ug/kg NA	Benzo(g,h,i)perylene ug/kg NA	Benzo(k)fluoranthene ug/kg NA	Chrysene ug/kg NA
	Assessment Criteria	Depth					
Sample ID	Surface Samples						
S1	0.1m		<5	<5	<5	<5	<5
S2	0.1m		30	34	47	16	17
S3	0.1m		<5	<5	<5	<5	5.4
S4	0.1m		33	37	24	21	32
S5	0.1m		6.6	12	13	<5	12
S6	0.1m		<5	<5	<5	<5	<5
TP1	0.5m		<5	<5	<5	<5	<5
TP1	0.9m		<5	<5	<5	<5	<5
TP2	0.5m		<5	<5	<5	<5	<5
TP2	1.5m		<5	<5	<5	<5	<5
TP2	3.0m		<5	<5	<5	<5	<5
Drillholes							
DH1	4.5-5.0m		<5	<5	<5	<5	<5
DH1	5.6-6.1m		<5	<5	<5	<5	<5
DH1	7.0-7.5m		<5	<5	<5	<5	<5
DH2	4.5-5.0m		<5	<5	<5	<5	<5
DH2	5.6-6.1m		<5	<5	<5	<5	<5
DH2	7.0-7.5m		<5	<5	<5	<5	<5

		Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeni(1,2,3-cd)pyrene	Napthalene	Phenanthrene
		ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Assessment Criteria	Depth	NA	10000	NA	NA	5000	10000
Sample ID							
Surface Samples							
S1	0.1m	<5	10	<5	<5	<50	7.5
S2	0.1m	8.9	24	<5	36	<50	11
S3	0.1m	<5	12	<5	<5	<50	6.8
S4	0.1m	9.2	39	<5	23	<50	11
S5	0.1m	<5	23	<5	9.6	<50	22
S6	0.1m	<5	<5	<5	<5	<50	<5
Trial Pits							
TP1	0.5m	<5	<5	<5	<5	<50	<5
TP1	0.9m	<5	<5	<5	<5	<50	<5
TP2	0.5m	<5	<5	<5	<5	<50	<5
TP2	1.5m	<5	<5	<5	<5	<50	<5
TP2	3.0m	<5	<5	<5	<5	<50	<5
Drillholes							
DH1	4.5-5.0m	<5	<5	<5	<5	<50	<5
DH1	5.6-6.1m	<5	<5	<5	<5	<50	<5
DH1	7.0-7.5m	<5	<5	<5	<5	<50	<5
DH2	4.5-5.0m	<5	<5	<5	<5	<50	<5
DH2	5.6-6.1m	<5	<5	<5	<5	<50	<5
DH2	7.0-7.5m	<5	<5	<5	<5	<50	<5

			Pyrene ug/kg	Total PAH mg/kg
	Assessment Criteria		10000	20
Sample ID	Depth			
Surface Samples				
S1	0.1m	8.4	0.0259	
S2	0.1m	24	0.2703	
S3	0.1m	12	0.0418	
S4	0.1m	42	0.3042	
S5	0.1m	19	0.1249	
S6	0.1m	<5	<DL	
Trial Pits				
TP1	0.5m	<5	<DL	
TP1	0.9m	<5	<DL	
TP2	0.5m	<5	<DL	
TP2	1.5m	<5	<DL	
TP2	3.0m	<5	<DL	
Drillholes				
DH1	4.5-5.0m	<5	<DL	
DH1	5.6-6.1m	<5	<DL	
DH1	7.0-7.5m	<5	<DL	
DH2	4.5-5.0m	<5	<DL	
DH2	5.6-6.1m	<5	<DL	
DH2	7.0-7.5m	<5	<DL	



TEST REPORT

Test Report No. : T013101
Page No. : 1 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Silver (mg/kg)	Total Arsenic (mg/Kg)	Total Barium (mg/kg)	Total Be (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-2	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	20/03/2003	10/03/2003	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

Test Report No. : T013101
Page No. : 2 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Silver (mg/kg)	Total Arsenic (mg/Kg)	Total Barium (mg/kg)	Total Be (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-2	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	20/03/2003	10/03/2003	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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TEST REPORT

Test Report No. : T013101
Page No. : 3 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Cadmium (mg/kg)	Total Cobalt (mg/kg)	Total Chromium (mg/kg)	Total Copper (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	10/03/2003	10/03/2003	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

Test Report No. : T013101
Page No. : 4 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Cadmium (mg/kg)	Total Cobalt (mg/kg)	Total Chromium (mg/kg)	Total Copper (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	10/03/2003	10/03/2003	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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TEST REPORT

Test Report No. : T013101
Page No. : 5 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Mercury (mg/kg)	Total Mo (mg/kg)	Total Nickel (mg/kg)	Total Lead (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	10/03/2003	10/03/2003	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

Test Report No. : T013101
Page No. : 6 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Mercury (mg/kg)	Total Mo (mg/kg)	Total Nickel (mg/kg)	Total Lead (mg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	10/03/2003	10/03/2003	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

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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Antimony (mg/kg)	Total Selenium (mg/kg)	Total Tin (mg/kg)	Total Thallium (mg/kg)
Method Code	SEDIMENT-METAL-3	Sediment-Metal-3	SEDIMENT-METAL-3	SEDIMENT-METAL-3
Analysis Date	10/03/2003	10/03/2003	10/03/2003	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

Test Report No. : T013101
Page No. : 8 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 :

Test Completed Date : 31/03/2003

Analytical Results:

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

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Vanadium (mg/kg)	Total Zinc (mg/kg)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-TPH-1	SEDIMENT-PAH-1
Analysis Date	10/03/2003	10/03/2003	12/03/2003	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

Client : EMD
Address :

Sample Description : Eight soil samples delivered by the client

Sample Received Date : 05/03/2003
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Total Vanadium (mg/kg)	Total Zinc (mg/kg)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)
Method Code	SEDIMENT-METAL-3	SEDIMENT-METAL-3	SEDIMENT-TPH-1	SEDIMENT-PAH-1
Analysis Date	10/03/2003	10/03/2003	12/03/2003	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

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TEST REPORT

Test Report No. : T013101
Page No. : 11 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Acenaphthylene ($\mu\text{g/kg}$)	Anthracene ($\mu\text{g/kg}$)	Benzo(a) anthra- cene ($\mu\text{g/kg}$)	Benzo(a)pyrene ($\mu\text{g/kg}$)
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
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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Acenaphthylene ($\mu\text{g/kg}$)	Anthracene ($\mu\text{g/kg}$)	Benzo(a)anthra- cene ($\mu\text{g/kg}$)	Benzo(a)pyrene ($\mu\text{g/kg}$)
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
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

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TEST REPORT

Test Report No. : T013101
Page No. : 13 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(b)fluoranthene (µg/kg)	Benzo(g,h,i)- perylene (µg/kg)	Benzo(k)fluoranthene (µg/kg)	Chrysene (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
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	47	16	17
S3 (0.10m) (WT0303047)	< 5	< 5	< 5	5.4

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TEST REPORT

Test Report No. : T013101
Page No. : 14 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 :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(b)fluoranthene (µg/kg)	Benzo(g,h,i)- perylene(µg/kg)	Benzo(k)fluoranthene (µg/kg)	Chrysene (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
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 :

Test Completed Date : 31/03/2003

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	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
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

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TEST REPORT

Test Report No. : T013101
Page No. : 16 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 :

Test Completed Date : 31/03/2003

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	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
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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Naphthalene (µg/kg)	Phenanthrene (µg/kg)	Pyrene (µg/kg)
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	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

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TEST REPORT

Test Report No. : T013101
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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 31/03/2003

Analytical Results:

Sample Name (Sample No.)	Naphthalene ($\mu\text{g/kg}$)	Phenanthrene ($\mu\text{g/kg}$)	Pyrene ($\mu\text{g/kg}$)
Method Code	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003
S4 (0.10m) (WT0303048)	< 50	11	42
S5 (0.10m) (WT0303049)	< 50	22	19
S6 (0.10m) (WT0303050)	< 50	< 5	< 5

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TEST REPORT

Test Report No. : T013115
Page No. : 1 of 6
Date of Issue : 04/04/2003

Client : EMD
Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 07/03/2003
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 30/03/2003

Analytical Results:

Sample Name (Sample No.)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)
Method Code	SEDIMENT-TPH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003	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

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TEST REPORT

Test Report No. : T013115
Page No. : 2 of 6
Date of Issue : 04/04/2003

Client : EMD
Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 07/03/2003
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 30/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(a)anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)	Benzo(b)floura- nthere (µg/kg)	Benzo(g,h,i)- 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
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

Test Report No. : T013115
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 : 07/03/2003
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 30/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(k)fluoranthene (µg/kg)	Chrysene (µg/kg)	Dibenzo(a,h)anthracene (µg/kg)	Fluoranthene (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
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

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TEST REPORT

Test Report No. : T013115

Page No. : 4 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 07/03/2003

Test Completed Date : 30/03/2003

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	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
DH1 (4.50-5.00m) (WT0303079)	< 5	< 5	< 50	< 5
DH1 (5.60-6.10m) (WT0303080)	< 5	< 5	< 50	< 5
DH1 (7.00-7.50m) (WT0303081)	< 5	< 5	< 50	< 5

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Environmental Management Division Laboratory

TEST REPORT

Test Report No. : T013115

Page No. : 5 of 6

Date of Issue : 04/04/2003

Client : EMD

Address :

Sample Description : Three soil samples delivered by the client

Sample Received Date : 07/03/2003

Test Completed Date : 30/03/2003

Approved Signatory : Grace Ting

Remarks :

Analytical Results:

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

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

DH1 (4.50-5.00m) (WT0303079)	< 5
---------------------------------	-----

DH1 (5.60-6.10m) (WT0303080)	< 5
---------------------------------	-----

DH1 (7.00-7.50m) (WT0303081)	< 5
---------------------------------	-----

Approval Signatory:

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TEST REPORT

Test Report No. : T013106

Page No. : 1 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 : Grace Ting

Remarks :

Analytical Results:

Sample Name (Sample No.)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)
Method Code	SEDIMENT-TPH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1	SEDIMENT-PAH-1
Analysis Date	12/03/2003	12/03/2003	12/03/2003	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

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TEST REPORT

Test Report No. : T013106
Page No. : 2 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 : Grace Ting

Remarks :

Analytical Results:

Sample Name (Sample No.)	Benzo(a)anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)	Benzo(b)floura- nthere (µg/kg)	Benzo(g,h,i)- 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
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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 29/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(k) fluora- nthenene (µg/kg)	Chrysene (µg/kg)	Dibenzo(a,h) an- thracene (µg/kg)	Fluoranthene (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
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. : 4 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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 29/03/2003

Analytical Results:

Sample Name (Sample No.)	Fluorene ($\mu\text{g/kg}$)	Indeno(1,2,3-cd) pyrene ($\mu\text{g/kg}$)	Naphthalene ($\mu\text{g/kg}$)	Phenanthrene ($\mu\text{g/kg}$)
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
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

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TEST REPORT

Test Report No. : T013106
Page No. : 5 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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 29/03/2003

Analytical Results:

Sample Name (Sample No.)	Pyrene ($\mu\text{g/kg}$)
-----------------------------	--------------------------------

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

DH2 (4.50-5.00)m (WT0303057)	< 5
---------------------------------	-----

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

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

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TEST REPORT

Test Report No. : T013118
Page No. : 1 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 (Sample No.)	C6-C36 TPH mg/kg	Acenaphthene (µg/kg)	Acenaphthylene (µg/kg)	Anthracene (µg/kg)
Method Code	SEDIMENT-TPH-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)	< 50	< 5	< 5	< 5

Approval Signatory:

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TEST REPORT

Test Report No. : T013118
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
Approved Signatory : Grace Ting
Remarks :

Test Completed Date : 28/03/2003

Analytical Results:

Sample Name (Sample No.)	Benzo(a) anthra- cene (µg/kg)	Benzo(a)pyrene (µg/kg)	Benzo(b)floura- nthere (µg/kg)	Benzo(g,h,i)- 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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TEST REPORT

Test Report No. : T013118
Page No. : 3 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 (Sample No.)	Benzo(k)fluoranthene (µg/kg)	Chrysene (µg/kg)	Dibenzo(a,h)anthracene (µg/kg)	Fluoranthene (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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TEST REPORT

Test Report No. : T013118
Page No. : 4 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 (Sample No.)	Fluorene (µg/kg)	Indeno(1,2,3-cd) pyrene (µg/kg)	Naphthalene (µg/kg)	Phenanthrene (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

Approval Signatory:

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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 (Sample No.)	Pyrene ($\mu\text{g}/\text{kg}$)
-----------------------------	---------------------------------------

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

TP2 (0.5m) (WT0303085)	< 5
---------------------------	-----

Approval Signatory:

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TEST REPORT

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

Test Completed Date : 02/04/2003

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	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

Approval Signatory:

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Environmental Management Division Laboratory

TEST REPORT

Test Report No. : T013119
Page No. : 2 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 (Sample No.)	Total Cadmium (mg/Kg)	Total Cobalt (mg/kg)	Total Chromium (mg/Kg)	Total Copper (mg/Kg)
Method Code	SEDIMENT-METAL-2	SEDIMENT-METAL-3	SEDIMENT-METAL-2	SEDIMENT-METAL-2
Analysis Date	25/03/2003	02/04/2003	25/03/2003	25/03/2003
TP2 (1.50)m (WT0303086)	< 0.05	0.8	0.5	0.5

Approval Signatory:

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TEST REPORT

Test Report No. : T013119
Page No. : 3 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

Test Completed Date : 02/04/2003

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	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

Approval Signatory:

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TEST REPORT

Test Report No. : T013119
Page No. : 4 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 (Sample No.)	Total Antimony (mg/Kg)	Total Selenium (mg/kg)	Total Tin (mg/Kg)	Total Thallium (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

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 (Sample No.)	Total Vanadium (mg/kg)	Total Zinc (mg/Kg)	C6-C36 TPH mg/kg	Acenaphthene (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.	N.R.	< 50	< 5

Approval Signatory:

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TEST REPORT

Test Report No. : T013119
Page No. : 6 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 (Sample No.)	Acenaphthylene ($\mu\text{g/kg}$)	Anthracene ($\mu\text{g/kg}$)	Benzo(a)anthra- cene ($\mu\text{g/kg}$)	Benzo(a)pyrene ($\mu\text{g/kg}$)
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

Approval Signatory:

Notes: (1) This report may not be reproduced except with prior written approval from the issuing laboratory.
(2) Testing Conditions and Testing Methods are shown at the back of this report and in Annex 1 respectively.
(3) N.R. refers to test not required by the Client Company.



TEST REPORT

Test Report No. : T013119
Page No. : 7 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 (Sample No.)	Benzo(b)floura- nthane (µg/kg)	Benzo(g,h,i)- perylene(ug/kg)	Benzo(k)fluora- nthane (µg/kg)	Chrysene (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

Approval Signatory:

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TEST REPORT

Test Report No. : T013119
Page No. : 8 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 (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	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

Approval Signatory:

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TEST REPORT

Test Report No. : T013119
Page No. : 9 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

Test Completed Date : 02/04/2003

Approved Signatory : Grace Ting

Remarks :

Analytical Results:

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

Approval Signatory:

Notes: (1) This report may not be reproduced except with prior written approval from the issuing laboratory.
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TESTING METHODS – INORGANICS

Parameter	Method	Reference	Parameter	Method	Reference
I Water/Wastewater					
pH	WTM-PH-1	APHA 17ed 4500-H ⁺ B	Gold	WTM-AU-1	In House Method ¹
Conductivity	WTM-COND-1	APHA 18ed 2510B	Calcium	WTM-CA-1	Flame Photometry
Acidity	WTM-ACID-1	APHA 18ed 2310B		WTM-CA-2	APHA 18ed 3500-Ca D
Alkalinity (as CaCO ₃)	WTM-ALKA-1	APHA 17ed 2320B		WTM-CA-3	APHA 18ed 3111
Alkalinity (as NaOH)	WTM-ALKA-1	In House Method	Sodium	WTM-IC-2	Ion Chromatography
Total Hardness	WTM-HARD-1	APHA 17ed 2340C		WTM-NA-1	APHA 17ed 3500-Na D
Total Dissolved Solids	WTM-TDS-1	APHA 17ed 2540C	Potassium	WTM-IC-2	Ion Chromatography
Total Suspended Solids	WTM-SS-1	APHA 17ed 2540D		WTM-K-1	APHA 17ed 3500-K D
Total Solids	WTM-TS-1	APHA 17ed 2540B		WTM-IC-2	Ion Chromatography
VSS (Volatile Suspended Solids)	WTM-VSS-1	APHA 17ed 2540E	Hexavalent Chromium	WTM-CR6-1	APHA 18ed 3500-Cr D
Settleable Solids	WTM-SETT-1	APHA 17ed 2540F	Boron (total)	WTM-TB-1	APHA 19ed 4500-B B
Moisture Content	WTM-MOIST-1	In House Method		WTM-ICP-1	APHA 19ed 3120B
Dry Solid Content	WTM-DS-1	In House Method	Turbidity	WTM-TURB-1	APHA 18ed 2310B
S.V.I. (Sludge Volume Index)	WTM-SVI-1	APHA 18ed 2710D	Total Cyanide	WTM-CN-1	APHA 17ed 4500-CN C&D
Colour	WTM-COLOR-1	Lovibond Tintometer 25mm cell		WTM-CN-2	APHA 18ed 4500-CN C&F
Carbonate	WTM-CO3-1	APHA 18ed 2320B	Standard Plate Count	MTM-SPC-1	APHA 20ed 9215A&B
Bicarbonate	WTM-HCO3-1	APHA 18ed 2320B	Total Coliform	MTM-COLI-1	DoE 7.8 & 7.9
Oil & Grease	WTM-O&G-2	APHA 20ed 5520B	Fecal Coliform	MTM-FECO-1	APHA 18ed 9222D
Dissolved Oxygen	WTM-DO-1	APHA 18ed 4500C	E.Coli	MTM-ECOLI-1	DoE 7.8 & 7.9 plus in-situ urease test
	WTM-DO-2	BS6068:Section2.15:1986	Legionellae pneumophila	MTM-LEG-1	AS/NZS 3896:1998
BOD ₅ (5 days Biochemical Oxygen Demand)	WTM-BOD-1	APHA 17ed 5210B&4500-O C	Residual Chlorine	WTM-CL2-1	APHA 18ed 4500-Cl B
	WTM-BOD-2	APHA 17ed 5210 B & BS6068:Section2.15:1986	Total Residual Chlorine	WTM-CL2-2	"HACH" DR/3000 Procedure C.2
	WTM-BOD-3*	BS6068:Section 2.14:1990	Salinity	WTM-SALI-2	Refractometer
Sample preparation for settled COD		TES Scheme S.S. No.5 to Gazette Ext. No. 9/1995	Total Surfactant (Sum of Anionic and nonionic surfactant)		
COD (Chemical Oxygen Demand)	WTM-COD-1	APHA 17ed 5220B	A. Surfactant (Anionic)	WTM-MBAS-1	In house method
	WTM-COD-2	APHA 18ed 5220D	N. Surfactant (Nonionic)	WTM-CTAS-1	(MBAS calculated as Aerosol OT, mol. Wt. At 444)
	WTM-COD-3	In House Method	Oxygen Absorbed Value	WTM-OAV-1	BS6068:Section2.24:1986
	WTM-COD-4	ASTM D 1252-88 Method B 1992			Water Treatment Handbook Degremont, 1973 P.603
Chloride	WTM-CL-1	APHA 17ed 4500-ClB	Fluoride	WTM-F-1	APHA 18ed 4500-F C
Ammonia-N	WTM-IC-1	Ion Chromatography		WTM-IC-1	Ion Chromatography
	WTM-NH3-1	APHA 17ed 4500-NH ₃ B,C	Sulphite	WTM-SO3-1	APHA 18ed 4500-SO ₃ ²⁻ B
	WTM-NH3-2	APHA 17ed 4500-NH ₃ B,E	Titration curve	WTM-TIC-1	Potentiometric Titration Method
Total Nitrogen (Sum of K-N, NO ₂ -N & NO ₃ -N)	WTM-KN-1	APHA 17ed 4500NorgB & NH ₃ E	Silica	WTM-SIO4-1	Test Kit Method
Total Kjeldahl Nitrogen	WTM-NO2-1	APHA 18ed 4500-NO ₂ B	Phenols	WTM-PHEN-1	APHA 18ed 5530 A,B&C
Nitrite-N	WTM-IC-1	Ion Chromatography		WTM-PHEN-2	APHA 18ed 5530 A,B&D
	WTM-NO3-2	APHA 18ed 4500-NO ₃ D	Total Organic Carbon	WTM-TOC-1	ISO8245:1987
	WTM-NO3-3	APHA 18ed 4500-NO ₃ E	Volatile Acids	WTM-VA-1	APHA 18ed 5560C
	WTM-IC-1	Ion Chromatography	Chlorophyll	WTM-CHLO-1	APHA 19ed 10200H
Oxidized-N (Sum of NO ₂ -N & NO ₃ -N)	WTM-NO3-3	APHA 18ed 4500-NO ₃ E			
Phosphorus (soluble)	WTM-P-1	APHA 18ed 4500-P C	II Sediment		
Total Reactive Phosphorus	WTM-IC-1	Ion Chromatography	Total Nitrogen	SEDIMENT-TN-1	APHA 17ed 4500NorgB & NH ₃ E
Total Phosphorus	WTM-P-2	APHA 18ed 4500-P E	Sulphate	SEDIMENT-SO4-1	Extraction : 0.01M CaCl ₂
	WTM-TP-1	APHA 18ed 4500-P B&C			Analysis : APHA 18ed 4500-SO ₄ ²⁻ C
	WTM-TP-2	APHA 19ed 4500-P B&E	Metals	SEDIMENT-METAL-1	Digestion : Aqua Regia
Sulphate	WTM-SO4-1	In-house method			Analysis : AAS/GFAAS
	WTM-IC-1	Ion Chromatography	Mercury	WTM-ICPMS-2	Digestion : Aqua Regia
Sulphide	WTM-S-1	APHA 18ed 4500-S ²⁻ C&E			Analysis : In-house method
	WTM-S-2	"HACH" DR/3000 Procedure S.5	TOC, TC	SEDIMENT-HQ-1	Cold Vapour Atomic Absorption
Pretreatment for soluble metals		APHA 18ed 3030B	SEDIMENT-HG-2		Cold Vapour Atomic Absorption
Pretreatment for total metals		APHA 17ed 3030E	SEDIMENT-TOC-1		Oxidation by Combustion
		APHA 18ed 3030A, E&F.3b	SEDIMENT-DS-1		Gravimetric method
		APHA 19ed 3030F			
Metals (for ppm level)	WTM-METAL-1	APHA 17ed 3111	III Biological Tissues		
		(Digestion: APHA 17ed 3030E)	Metals		Digestion : USEPA method 200.3
(for ppb level)	WTM-METAL-2	APHA 18ed 3113	Mercury		Analysis : AAS/GFAAS
		(Digestion: APHA 17ed 3030E)			Cold Vapour Atomic Absorption
	WTM-METAL-4	In House Method	IV Saline Water		
		(Digestion: APHA 17ed 3030E)	Metals (Cd,Cu,Pb,Ni&Mn.)	WTM-SEAWATER-2	In House Method
Magnesium	WTM-IC-2	Ion Chromatography		WTM-METAL-4	In House Method
Selenium	WTM-METAL-3	HydrideGeneration	Cobalt and Zinc	WTM-SEAWATER-2	In House Method
		(Digestion: APHA 18ed 3030F 3b)		WTM-METAL-1	In House Method
Mercury	WTM-HG-2	Cold Vapour Atomic Absorption	Arsenic & Chromium	WTM-METAL-5	In House Method
Antimony	WTM-METAL-6	In House Method	Mercury	WTM-HG-2	Cold Vapour Atomic Absorption
		(Digestion: APHA 18ed 3030F 3a)	Ammonia-N	WTM-NH3-3	APHA 20ed 4500-NH ₃ F

*Remarks for BOD (WTM-BOD-3)

- (1) Method of storage of sample : 4°C
- (2) Type of Seed : Polysed
- (3) Number of days of incubation : 5

Total Organic Carbon (TOC)
WTM-TOC-1

- (1) Method of storage of sample : 4°C
- (2) Preservation method of sample : Add H₃PO₄ to pH 2

Reference Notes: APHA American Public Health Association "Standard Methods for Examination of Water and Wastewater" Annual Book of American Society for Testing and Materials Standard, Vol. 11.01 & 11.02
 ASTM British Standard Institution
 BS International Organization for Standardization
 ISO United States Environmental Protection Agency
 USEPA Department of the Environment, Department of Health & Social Security, Public Health Laboratory Service (1983). The Bacteriological Examination of Drinking Water Supplies 1982.
 DoE A.P. Dufour & V.J. Cabelli, Applied Microbiology, June 1975, p.826-833.
 In-situ urease test



TESTING METHODS – ORGANICS

Parameter	Method	Reference	Parameter	Method	Reference
I. Water/Wastewater			II. Sediment/Soil		
BTEX	WTM-BTEX-1	USEPA 8260B	BTEX	SEDIMENT-BTEX-1	USEPA 8260B
Petroleum Hydrocarbons			Petroleum Hydrocarbons		
C ₇ -C ₁₀ Gasoline range organics (GRO)*	WTM-GRO-1	USEPA 8015B	C ₇ -C ₁₀ 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 ₂₄ Diesel range organics (DRO) ^	SEDIMENT-DRO-1	USEPA 8015B
Organochlorine Pesticides (OCP)	WTM-OCP-1	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 8260B
Volatile Organic Compounds (VOCs)	WTM-VOC-1	USEPA 8260B	Volatile Organic Compounds (VOCs)	WTM-VOC-1	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 <i>et al</i>	Total PCBs	SEDIMENT-TPCB-1	USEPA 8082
Phenols	WTM-HENOL-1	USEPA 8270C	TriButyl Tin (TBT)	SEDIMENT-TBT-1	Krone <i>et al</i>
			Phenols	SEDIMENT-PHENOL-1	USEPA 8270C
III. Paint					
Volatile Organic Compounds		ASTM D3960			

Remarks: *C₇-C₁₀ Gasoline range organics content is defined as the collective concentration of all organics which elute between 2-methylpentane (C₆) and n0-decane(C₁₀).

^ C₁₀-C₂₄ Diesel range organics content is defined as the collective concentration of all organics which elute between n-decane(C₁₀) and N-octacosane(C₂₈).

Reference Notes: USEPA – United States Environmental Protection Agency
Krone *et al* – Marine Environmental research, 27, 1-18, 1989

Method Blank							EPA METHOD 8290		
Matrix:	Soil	QC Batch No.:	3871	Lab Sample:	0-MB001	Date Analyzed DB-5:	30-Mar-03	Date Analyzed DB-225:	NA
Sample Size:	10 g	Date Extracted:	26-Mar-03						
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers	Labeled Standard	%R	LCL-UCL ^d	Qualifiers
2,3,7,8-TCDD	ND	0.212		0.234		IS 13C-2,3,7,8-TCDD	47.6	40 - 135	
1,2,3,7,8-PeCDD	ND	0.159		0.374		13C-1,2,3,7,8-PeCDD	53.3	40 - 135	
1,2,3,4,7,8-HxCDD	ND	0.307		0.202		13C-1,2,3,4,7,8-HxCDD	47.3	40 - 135	
1,2,3,6,7,8-HxCDD	ND	0.281		0.615		13C-1,2,3,6,7,8-HxCDD	65.3	40 - 135	
1,2,3,7,8,9-HxCDD	ND	0.290		0.253		13C-1,2,3,4,6,7,8-HpCDD	58.8	40 - 135	
1,2,3,4,6,7,8-HpCDD	ND	0.357		0.268		13C-OCDD	65.2	40 - 135	
OCDD	ND	0.426		0.709		13C-2,3,7,8-TCDF	60.1	40 - 135	
2,3,7,8-TCDF	ND	0.183		0.139		13C-1,2,3,7,8-PeCDF	52.9	40 - 135	
1,2,3,7,8-PeCDF	ND	0.285		0.326		13C-2,3,4,7,8-PeCDF	56.9	40 - 135	
2,3,4,7,8-PeCDF	ND	0.235		0.336		13C-1,2,3,4,7,8-HxCDF	37.9	40 - 135	H
1,2,3,4,7,8-HxCDF	ND	0.117		0.336		13C-1,2,3,6,7,8-HxCDF	42.7	40 - 135	
1,2,3,6,7,8-HxCDF	ND	0.115		0.395		13C-2,3,4,6,7,8-HxCDF	52.0	40 - 135	
2,3,4,6,7,8-HxCDF	ND	0.128		0.287		13C-1,2,3,7,8,9-HpCDF	54.1	40 - 135	
1,2,3,7,8,9-HpCDF	ND	0.201		0.380		13C-1,2,3,4,6,7,8-HpCDF	46.4	40 - 135	
1,2,3,4,6,7,8-HpCDF	ND	0.202		0.217		13C-1,2,3,4,7,8,9-HpCDF	59.5	40 - 135	
1,2,3,4,7,8,9-HpCDF	ND	0.228		0.336		13C-OCDF	59.7	40 - 135	
OCDF	ND	0.596		0.641		CRS 37Cl-2,3,7,8-TCDD	57.6	40 - 135	
Totals							Toxic Equivalent Quotient (TEQ) Data ^e		
Total TCDD	ND	0.212				TEQ (Min-Max): 0 - 0.594			
Total PeCDD	ND	0.159				a. Sample specific estimated detection limit.			
Total HxCDD	ND	0.291				b. Estimated maximum possible concentration.			
Total HpCDD	ND	0.357				c. Method detection limit.			
Total TCDF	ND	0.183				d. Lower control limit - upper control limit.			
Total PeCDF	ND	0.258				e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).			
Total HxCDF	ND	0.138							
Total HpCDF	ND	0.216							

Analyst: JMH

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

OPR Results				EPA METHOD 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:	NA
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL	
2,3,7,8-TCDD	10.0	9.24	7 - 13	<u>IS</u> 13C-2,3,7,8-TCDD	102	40 - 135	
1,2,3,7,8-PeCDD	50.0	49.1	35 - 65	13C-1,2,3,7,8-PeCDD	107	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	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-HpCDD	101	40 - 135	
1,2,3,4,6,7,8-HpCDD	50.0	53.3	35 - 65	13C-OCDD	110	40 - 135	
OCDD	100	105	70 - 130	13C-2,3,7,8-TCDF	121	40 - 135	
2,3,7,8-TCDF	10.0	9.06	7 - 13	13C-1,2,3,7,8-PeCDF	106	40 - 135	
1,2,3,7,8-PeCDF	50.0	50.9	35 - 65	13C-2,3,4,7,8-PeCDF	111	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	13C-2,3,4,6,7,8-HxCDF	90.0	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-HpCDF	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-HpCDF	106	40 - 135	
1,2,3,4,7,8,9-HpCDF	50.0	52.6	35 - 65	13C-OCDF	114	40 - 135	
OCDF	100	103	70 - 130	<u>CRS</u> 37Cl-2,3,7,8-TCDD	101	40 - 135	

Analyst: JMH

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

Sample ID: HKPC-S1		EPA METHOD 8290			
Client Data		Sample Data		Laboratory Data	
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23505-001
Project:	Soil Analysis	Sample Size:	11.11 g	QC Batch No:	3871
Date Collected:	NA	%Solids:	89.7	Date Analyzed DB-5:	31-Mar-03
Time Collected:	NA			Date Analyzed DB-225:	1-Apr-03
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers
2,3,7,8-TCDD	ND	0.246		0.234	
1,2,3,7,8-PeCDD	1.28			0.374	A
1,2,3,4,7,8-HxCDD	1.50			0.202	A
1,2,3,6,7,8-HxCDD	2.27			0.615	A
1,2,3,7,8,9-HxCDD	2.41			0.253	A
1,2,3,4,6,7,8-HpCDD	41.2			0.268	
OCDD	3510			0.709	
2,3,7,8-TCDF	1.49			0.139	
1,2,3,7,8-PeCDF	1.83			0.326	A
2,3,4,7,8-PeCDF	3.14			0.336	
1,2,3,4,7,8-HxCDF	2.65			0.336	
1,2,3,6,7,8-HxCDF	2.79			0.395	
2,3,7,8,9-HxCDF	4.39			0.287	
1,2,3,7,8,9-HxCDF	0.886			0.380	A
1,2,3,4,6,7,8-HpCDF	12.8			0.217	
1,2,3,4,7,8,9-HpCDF	1.26			0.336	A
OCDF	6.73			0.641	
Totals					
Total TCDD	22.6				
Total PeCDD	26.6		27.0		
Total HxCDD	39.3				
Total HpCDD	84.8				
Total TCDF	28.4				
Total PeCDF	29.3		29.5		
Total HxCDF	29.1				
Total HpCDF	20.2				
Toxic Equivalent Quotient (TEQ) Data^e					
TEQ (Min-Max): 8.21 - 8.45					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					
e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).					

EPA METHOD 8290

Laboratory Data

Lab Sample: 23505-001 Date Received: 17-Mar-03
QC Batch No: 3871 Date Extracted: 26-Mar-03
Date Analyzed DB-5: 31-Mar-03 Date Analyzed DB-225: 1-Apr-03

Labeled Standard %R LCL-UCL^d Qualifiers

IS 13C-2,3,7,8-TCDD 95.1 40 - 135
13C-1,2,3,7,8-PeCDD 101 40 - 135
13C-1,2,3,4,7,8-HxCDD 87.7 40 - 135
13C-1,2,3,6,7,8-HxCDD 101 40 - 135
13C-1,2,3,4,6,7,8-HpCDD 105 40 - 135
13C-OCDD 125 40 - 135
13C-2,3,7,8-TCDF 121 40 - 135
13C-1,2,3,7,8-PeCDF 105 40 - 135
13C-2,3,4,7,8-PeCDF 109 40 - 135
13C-1,2,3,4,7,8-HxCDF 74.6 40 - 135
13C-1,2,3,6,7,8-HxCDF 76.6 40 - 135
13C-2,3,4,6,7,8-HxCDF 85.6 40 - 135
13C-1,2,3,7,8,9-HxCDF 93.0 40 - 135
13C-1,2,3,4,6,7,8-HpCDF 95.0 40 - 135
13C-1,2,3,4,7,8,9-HpCDF 106 40 - 135
13C-OCDF 121 40 - 135
CRS 37Cl-2,3,7,8-TCDD 96.9 40 - 135

Toxic Equivalent Quotient (TEQ) Data^e

TEQ (Min-Max): 8.21 - 8.45

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.
- e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).

Sample ID: HKPC-S2		EPA METHOD 8290			
Client Data		Sample Data		Laboratory Data	
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23505-002
Project:	Soil Analysis	Sample Size:	11.46 g	QC Batch No.:	3871
Date Collected:	NA	%Solids:	87.9	Date Analyzed DB-5:	31-Mar-03
Time Collected:	NA			Date Analyzed DB-225:	1-Apr-03
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers
2,3,7,8-TCDD	0.262			0.234	A
1,2,3,7,8-PeCDD	0.825			0.374	A
1,2,3,4,7,8-HxCDD	1.06			0.202	A
1,2,3,6,7,8-HxCDD	2.07			0.615	A
1,2,3,7,8,9-HxCDD	1.80			0.253	A
1,2,3,4,6,7,8-HpCDD	45.2			0.268	
OCDD	3070			0.709	
2,3,7,8-TCDF	1.44			0.139	
1,2,3,7,8-PeCDF	1.89			0.326	A
2,3,4,7,8-PeCDF	3.17			0.336	
1,2,3,4,7,8-HxCDF	3.45			0.336	
1,2,3,6,7,8-HxCDF	2.87			0.395	
2,3,4,6,7,8-HxCDF	4.57			0.287	
1,2,3,7,8,9-HxCDF	0.915			0.380	A
1,2,3,4,6,7,8-HpCDF	15.7			0.217	
1,2,3,4,7,8,9-HpCDF	1.26			0.336	A
OCDF	9.59			0.641	
Totals					
Total TCDD	17.9				
Total PeCDD	21.7		22.2		
Total HxCDD	32.3				
Total HpCDD	86.6				
Total TCDF	33.5				
Total PeCDF	34.5		34.9		
Total HxCDF	33.7				
Total HpCDF	24.8				
Toxic Equivalent Quotient (TEQ) Data^e					
TEQ (Min-Max): 7.88 - 7.88					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					
e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).					
Labeled Standard %R LCL-UCL^d Qualifiers					
IS 13C-2,3,7,8-TCDD	96.7	40 - 135			
13C-1,2,3,7,8-PeCDD	101	40 - 135			
13C-1,2,3,4,7,8-HxCDD	89.2	40 - 135			
13C-1,2,3,6,7,8-HxCDD	99.6	40 - 135			
13C-1,2,3,4,6,7,8-HpCDD	105	40 - 135			
13C-OCDD	123	40 - 135			
13C-2,3,7,8-TCDF	118	40 - 135			
13C-1,2,3,7,8-PeCDF	104	40 - 135			
13C-2,3,4,7,8-PeCDF	107	40 - 135			
13C-1,2,3,4,7,8-HxCDF	74.2	40 - 135			
13C-1,2,3,6,7,8-HxCDF	76.9	40 - 135			
13C-2,3,4,6,7,8-HxCDF	84.7	40 - 135			
13C-1,2,3,7,8,9-HxCDF	92.9	40 - 135			
13C-1,2,3,4,6,7,8-HpCDF	96.3	40 - 135			
13C-1,2,3,4,7,8,9-HpCDF	107	40 - 135			
13C-OCDF	119	40 - 135			
CRS 37Cl-2,3,7,8-TCDD	94.9	40 - 135			

Analyst: JMH

Approved By:

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

Analyst: JMH

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

Sample ID: HKPC-S3		EPA METHOD 8290			
Client Data		Sample Data		Laboratory Data	
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23505-003
Project:	Soil Analysis	Sample Size:	12.24 g	QC Batch No:	3871
Date Collected:	NA	%Solids:	80.1	Date Analyzed DB-5:	31-Mar-03
Time Collected:	NA			Date Analyzed DB-225:	1-Apr-03
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers
2,3,7,8-TCDD	ND		0.256	0.234	
1,2,3,7,8-PeCDD	1.23			0.374	A
1,2,3,4,7,8-HxCDD	1.45			0.202	A
1,2,3,6,7,8-HxCDD	1.94			0.615	A
1,2,3,7,8,9-HxCDD	1.90			0.253	A
1,2,3,4,6,7,8-HpCDD	37.2			0.268	
OCDD	1860			0.709	
2,3,7,8-TCDF	1.57			0.139	
1,2,3,7,8-PeCDF	2.06			0.326	A
2,3,4,7,8-PeCDF	3.01			0.336	
1,2,3,4,7,8-HxCDF	2.51			0.336	A
1,2,3,6,7,8-HxCDF	2.60			0.395	
2,3,4,6,7,8-HxCDF	3.89			0.287	
1,2,3,7,8,9-HxCDF	0.861			0.380	A
1,2,3,4,6,7,8-HpCDF	10.8			0.217	
1,2,3,4,7,8,9-HpCDF	1.70			0.336	A
OCDF	6.04			0.641	
Toxic Equivalent Quotient (TEQ) Data ^e					
Totals					
Total TCDD	24.1		24.9		
Total PeCDD	27.0		27.5		
Total HxCDD	34.8				
Total HpCDD	79.4				
Total TCDF	32.0				
Total PeCDF	32.4				
Total HxCDF	27.3				
Total HpCDF	17.1				
a. Sample specific estimated detection limit. b. Estimated maximum possible concentration. c. Method detection limit. d. Lower control limit / upper control limit. e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).					

Sample ID: HKPC-S4		EPA METHOD 8290			
Client Data		Sample Data		Laboratory Data	
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23505-004
Project:	Soil Analysis	Sample Size:	11.48 g	QC Batch No.:	3871
Date Collected:	NA	%Solids:	86.5	Date Analyzed DB-5:	31-Mar-03
Time Collected:	NA			Date Analyzed DB-225:	NA
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers
2,3,7,8-TCDD	0.314			0.234	A
1,2,3,7,8-PeCDD	0.701			0.374	A
1,2,3,4,7,8-HxCDD	0.899			0.202	A
1,2,3,6,7,8-HxCDD	1.39			0.615	A
1,2,3,7,8,9-HxCDD	1.41			0.253	A
1,2,3,4,6,7,8-HpCDD	22.7			0.268	
OCDD	915			0.709	
2,3,7,8-TCDF	0.739			0.139	
1,2,3,7,8-PeCDF	1.14			0.326	A
2,3,4,7,8-PeCDF	1.69			0.336	A
1,2,3,4,7,8-HxCDF	1.29			0.336	A
1,2,3,6,7,8-HxCDF	1.45			0.395	A
2,3,4,6,7,8-HxCDF	2.30			0.287	A
1,2,3,7,8,9-HxCDF	0.427			0.380	A
1,2,3,4,6,7,8-HpCDF	6.60			0.217	
1,2,3,4,7,8,9-HpCDF	0.724			0.336	A
OCDF	4.39			0.641	A
Totals					
Total TCDD	14.5		14.8		
Total PeCDD	14.8		15.8		
Total HxCDD	23.0				
Total HpCDD	42.1				
Total TCDF	13.9		14.2		
Total PeCDF	14.8				
Total HxCDF	14.8				
Total HpCDF	10.9				
Toxic Equivalent Quotient (TEQ) Data ^e					
TEQ (Min-Max): 3.78 - 3.78					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					
e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).					

Analyst: JMH

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

Sample ID: HKPC-S6				EPA METHOD 8290					
Client Data		Sample Data		Laboratory Data					
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23505-006	Date Received:	17-Mar-03		
Project:	Soil Analysis	Sample Size:	11.33 g	QC Batch No.:	3871	Date Extracted:	26-Mar-03		
Date Collected:	NA	%Solids:	89.5	Date Analyzed DB-5:	31-Mar-03	Date Analyzed DB-225:	NA		
Time Collected:	NA								
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers	Labeled Standard	%R	LCL-UCL ^d	Qualifiers
2,3,7,8-TCDD	ND		0.154	0.234		IS 13C-2,3,7,8-TCDD	84.2	40 - 135	
1,2,3,7,8-PeCDD	0.529			0.374	A	13C-1,2,3,7,8-PeCDD	90.9	40 - 135	
1,2,3,4,7,8-HxCDD	0.657			0.202	A	13C-1,2,3,4,7,8-HxCDD	76.6	40 - 135	
1,2,3,6,7,8-HxCDD	0.771			0.615	A	13C-1,2,3,6,7,8-HxCDD	94.6	40 - 135	
1,2,3,7,8,9-HxCDD	0.875			0.253	A	13C-1,2,3,4,6,7,8-HpCDD	95.9	40 - 135	
1,2,3,4,6,7,8-HpCDD	18.9			0.268		13C-OCDD	111	40 - 135	
OCDD	2110			0.709		13C-2,3,7,8-TCDF	104	40 - 135	
2,3,7,8-TCDF	0.887			0.139		13C-1,2,3,7,8-PeCDF	91.0	40 - 135	
1,2,3,7,8-PeCDF	1.11			0.326	A	13C-2,3,4,7,8-PeCDF	95.6	40 - 135	
2,3,4,7,8-PeCDF	2.51			0.336		13C-1,2,3,4,7,8-HxCDF	67.4	40 - 135	
1,2,3,4,7,8-HxCDF	2.23			0.336	A	13C-1,2,3,6,7,8-HxCDF	68.9	40 - 135	
1,2,3,6,7,8-HxCDF	1.88			0.395	A	13C-2,3,4,6,7,8-HxCDF	77.4	40 - 135	
2,3,4,6,7,8-HxCDF	3.08			0.287		13C-1,2,3,7,8,9-HxCDF	83.7	40 - 135	
1,2,3,7,8,9-HxCDF	0.574			0.380	A	13C-1,2,3,4,6,7,8-HpCDF	87.8	40 - 135	
1,2,3,4,6,7,8-HpCDF	8.77			0.217		13C-1,2,3,4,7,8,9-HpCDF	99.7	40 - 135	
1,2,3,4,7,8,9-HpCDF	0.696			0.336	A	13C-OCDF	109	40 - 135	
OCDF	3.14			0.641	A	CRS 37Cl-2,3,7,8-TCDD	97.4	40 - 135	
Toxic Equivalent Quotient (TEQ) Data ^e									
TEQ (Min-Max): 5.06 - 5.22									
Total TCDD	4.43		5.36			a. Sample specific estimated detection limit.			
Total PeCDD	6.53		7.47			b. Estimated maximum possible concentration.			
Total HxCDD	11.9					c. Method detection limit.			
Total HpCDD	36.2					d. Lower control limit - upper control limit.			
Total TCDF	19.0					e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).			
Total PeCDF	22.2								
Total HxCDF	20.6		20.8						
Total HpCDF	12.4								

Analyst: JMH

Approved By:

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

Sample ID: HKPC-S5				EPA METHOD 8290					
Client Data		Sample Data		Laboratory Data					
Name:	Hong Kong Productivity Council	Matrix:	Soil	Lab Sample:	23611-001	Date Received:	11-Apr-03		
Project:		Sample Size:	11.35 g	QC Batch No.:	3957	Date Extracted:	22-Apr-03		
Date Collected:	NA	%Solids:	87.5	Date Analyzed DB-5:	23-Apr-03	Date Analyzed DB-225:	24-Apr-03		
Time Collected:	NA								
Analyte	Conc. (pg/g)	DL ^a	EMPC ^b	MDL ^c	Qualifiers	Labeled Standard	%R	LCL-UCL ^d	Qualifiers
2,3,7,8-TCDD	0.594			0.234		IS 13C-2,3,7,8-TCDD	76.2	40 - 135	
1,2,3,7,8-PeCDD	1.53			0.374	A	13C-1,2,3,7,8-PeCDD	76.1	40 - 135	
1,2,3,4,7,8-HxCDD	1.70			0.202	A	13C-1,2,3,4,7,8-HxCDD	79.6	40 - 135	
1,2,3,6,7,8-HxCDD	2.59			0.615		13C-1,2,3,6,7,8-HxCDD	75.9	40 - 135	
1,2,3,7,8,9-HxCDD	2.51			0.253	A	13C-1,2,3,4,6,7,8-HpCDD	83.6	40 - 135	
1,2,3,4,6,7,8-HpCDD	53.6			0.268		13C-OCDD	72.9	40 - 135	
OCDD	2420			0.709		13C-2,3,7,8-TCDF	77.8	40 - 135	
2,3,7,8-TCDF	3.29			0.139		13C-1,2,3,7,8-PeCDF	82.8	40 - 135	
1,2,3,7,8-PeCDF	2.99			0.326		13C-2,3,4,7,8-PeCDF	79.4	40 - 135	
2,3,4,7,8-PeCDF	4.07			0.336		13C-1,2,3,4,7,8-HxCDF	76.9	40 - 135	
1,2,3,4,7,8-HxCDF	3.24			0.336		13C-1,2,3,6,7,8-HxCDF	78.5	40 - 135	
1,2,3,6,7,8-HxCDF	3.68			0.395		13C-2,3,4,6,7,8-HxCDF	73.3	40 - 135	
2,3,4,6,7,8-HxCDF	4.78			0.287		13C-1,2,3,7,8,9-HxCDF	77.7	40 - 135	
1,2,3,7,8,9-HxCDF	1.14			0.380	A,B	13C-1,2,3,4,6,7,8-HpCDF	75.7	40 - 135	
1,2,3,4,6,7,8-HpCDF	12.6			0.217		13C-1,2,3,4,7,8,9-HpCDF	87.6	40 - 135	
1,2,3,4,7,8,9-HpCDF	1.43			0.336	A	13C-OCDF	70.3	40 - 135	
OCDF	8.17			0.641		CRS 37Cl-2,3,7,8-TCDD	86.6	40 - 135	
Totals				Toxic Equivalent Quotient (TEQ) Data ^e					
Total TCDD	42.4		42.6	TEQ (Min-Max): 8.95 - 8.95					
Total PeCDD	44.1			a. Sample specific estimated detection limit.					
Total HxCDD	51.2			b. Estimated maximum possible concentration.					
Total HpCDD	111			c. Method detection limit.					
Total TCDF	69.8		70.3	d. Lower control limit - upper control limit.					
Total PeCDF	48.3		49.2	e. TEQ based on International Toxic Equivalent Factors (ITEF-1989).					
Total HxCDF	34.9								
Total HpCDF	20.5								

Analyst: JMH

Approved By:

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

Batch: HK20824
 Sub Batch: 0
 Date of Issue: 21/05/2003
 Client: HONG KONG PRODUCTIVITY COUNCIL
 Client Reference:

CERTIFICATE OF ANALYSIS



METHOD		ANALYSIS DESCRIPTION	SAMPLE IDENTIFICATION					
			Laboratory I.D.	1 Sg	2 Sg			
EG-020	Lead		Date Sampled	03/05/2003	03/05/2003			
EG-020	Tin		UNIT	WT0303047	WT0303049			
			ug/L	30	15			
			ug/L	<10	<10			

Batch: HK20824
 Sub Batch: 0
 Date of Issue: 21/05/2003
 Client: HONG KONG PRODUCTIVITY COUNCIL
 Client Reference:

QUALITY CONTROL REPORT



SAMPLE IDENTIFICATION									
METHOD		ANALYSIS DESCRIPTION	Laboratory I.D.		200	201			
			Date Sampled						
			UNIT	LOR	BLANK	LCS % REC			
CHECKS AND SPIKES									
EG-020	Lead		ug/L	10	<10	94%			
EG-020	Tin		ug/L	10	<10	91%			