Table 65

DAM 10: HUMAN RISK ASSESSMENT • DAM WATER • SAMPLE NO. 9S [ORGANICS - PAH's & VOC's]
[ISCOR VANDERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBER: 9S

ORGANIC COMPOUNDS PAH's & VOC's	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN								
			RISK OF DAM WATER AS IS			RISK OF DILUTED DAM WATER IN RIVER			RISK OF DAM WATER FOR GROUNDWATER		
			[8] Conc. in Dam water ppm	[9] PDI Dam water exposure mg/kg/day	[10] Margin of Safety %	[11] Conc. in River water (EEC) ppb	[12] PDI river water exposure mg/kg/day	[10] Margin of Safety %	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Naphthalene	0.02	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acenaphthylene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acenaphthene	0.06	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzofuran	0.004	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fluorene	0.04	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phenanthrene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthracene	0.3	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Di-n-butylphthalate	0.1	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fluoranthene	0.04	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pyrene	0.03	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[a]anthracene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
bis(2-ethylhexyl)phthalate	0.02	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[b]&[k]fluoranthene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo(a)pyrene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeno[1,2,3-cd]pyrene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[g,h,i]perylene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RISK / ACCEPTABLE RISK TO: HUMAN				Dam water	AR		River water	AR		Groundwater	AR

Table 66

DAM 10: HUMAN RISK ASSESSMENT • DAM WATER • SAMPLE NO. 9D [ORGANICS - PAH[4] & VOC[5]]

[ISCOR VANDERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBER: 9D

ORGANIC COMPOUNDS PAH[3] & VOC[3]	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN								
			RISK OF DAM WATER AS IS			RISK OF DILUTED DAM WATER IN RIVER			RISK DF DAM WATER FOR GROUNDWATER		
			[8] Conc. in Dam water ppm	[9] PDI Dam water exposure mg/kg/day	[10] Margin of Safety %	[11] Conc. in River water (EEC) ppb	[12] PDI river water exposure mg/kg/day	[10] Margin of Safety %	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Naphthalene	0.02	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acenaphthylene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acenaphthene	0.06	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzofuran	0.004	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fluorene	0.04	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phenanthrene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anthracene	0.3	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Di-n-butylphthalate	0.1	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fluoranthene	0.04	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pyrene	0.03	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[a]anthracene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
bis(2-ethylhexyl)phthalate	0.02	EPA RfD	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[b]&[k]fluoranthene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo(a)pyrene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indeno[1,2,3-cd]pyrene	0.00002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[g,h,i]perylene	0.0002	WHO GV	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RISK / ACCEPTABLE RISK TO: HUMAN				Dam water	AR		River water	AR		Groundwater	AR

TABLES 67 - 69

DAM 10: SEDIMENTS INORGANIC
ENVIRONMENTAL RISK QUANTIFICATION

Table 67

DAM 10: ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 2, 3 & 4 [INORGANIC - MICRO'S & MACRO'S]

[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NO's: 2, 3 & 4		RISK TO ENVIRONMENT														
		RISK OF SEDIMENTS FOR GROUNDWATER														
		SAMPLE NO. 2					SAMPLE NO. 3					SAMPLE NO. 4				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
INORGANIC COMPOUNDS Micro's and Macro's	[5] Acc. Risk Value (WR&SA) ppb	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR
Aluminium as Al	10000	1500	1237500	R	1.00E+02	R	1600	1320000	R	1.00E+02	R	2600	2145000	R	1.00E+02	R
Arsenic as As	430	< 50	0.00	AR	0.00E+00	AR	< 50	0.00	AR	0.00E+00	AR	< 50	0.00	AR	0.00E+00	AR
Barium as Ba	7600	4.0	3300	AR	4.29E-08	AR	22	18150	R	2.19E-01	R	24	19800	R	3.69E-01	R
Cadmium as Cd	31	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Chromium^{3+} as Cr^{3+}	4700	400	330000	R	1.00E+02	R	200	165000	R	9.93E+01	R	160	132000	R	9.78E+01	R
Cobalt as Co	6900	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Copper as Cu	100	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Iron as Fe	9000	29000	23925000	R	1.00E+02	R	12000	9900000	R	1.00E+02	R	17000	14025000	R	1.00E+02	R
Lead as Pb	100	< 100	0.00	AR	0.00E+00	AR	< 100	0.00	AR	0.00E+00	AR	< 100	0.00	AR	0.00E+00	AR
Manganese as Mn	300	210	173250	R	1.00E+02	R	180	148500	R	1.00E+02	R	330	272250	R	1.00E+02	R
Mercury as Hg	22	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Nickel as Ni	1140	< 10	0.00	AR	0.00E+00	AR	12	9900	R	3.91E+01	R	< 10	0.00	AR	0.00E+00	AR
Selenium as Se	260	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Titanium as Ti	731	78	64350	R	1.00E+02	R	57	47025	R	1.00E+02	R	110	90750	R	1.00E+02	R
Vanadium as V	1300	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Zinc as Zn	700	850	701250	R	1.00E+02	R	1600	1320000	R	1.00E+02	R	3300	2722500	R	1.00E+02	R
Calcium as Ca	150000	4500	3712500	R	9.62E+01	R	140	115500	AR	2.84E-05	AR	280	231000	R	1.28E-02	R
Chloride as Cl	250000	400	330000	R	3.80E-03	R	400	330000	R	3.80E-03	R	400	330000	R	3.80E-03	R
Fluoride as F	1500	1.6	1320	AR	1.05E-04	AR	1.3	1073	AR	1.35E-05	AR	1.4	1155	AR	2.84E-05	AR
Magnesium as Mg	70000	310	255750	R	2.46E+00	R	310	255750	R	2.46E+00	R	500	412500	R	1.51E+01	R
Potassium as K	200000	190	156750	AR	3.39E-05	AR	250	206250	R	4.56E-04	R	350	288750	R	7.78E-03	R
Sodium as Na	100000	330	272250	R	5.50E-01	R	300	247500	R	3.18E-01	R	330	272250	R	5.50E-01	R
Sulphate as SO_4	200000	900	742500	R	2.64E+00	R	550	453750	R	1.87E-01	R	650	536250	R	5.05E-01	R
RISK TO ENVIRONMENT				R		R			R		R			R		R

Table 68

DAM 10: ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 5, 6 & 7 [INORGANIC - MICRO'S & MACRO'S]

[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NO's: 5, 6, & 7		RISK TO ENVIRONMENT														
		RISK OF SEDIMENTS FOR GROUNDWATER														
		SAMPLE NO. 5					SAMPLE NO. 6					SAMPLE NO. 7				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
INORGANIC COMPOUNDS Micro's and Macro's	Acc. Risk Value (MR&SA) ppb	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR
Aluminium as Al	[illegible]	2400	1980000	R	1.00E+02	R	1400	1155000	R	1.00E+02	R	440	363000	R	9.94E+01	R
Arsenic as As	430	< 50	0.00	AR	0.00E+00	AR	< 50	0.00	AR	0.00E+00	AR	< 50	0.00	AR	0.00E+00	AR
Barium as Ba	7800	< 2.0	0.00	AR	0.00E+00	AR	2.3	1898	AR	5.12E-11	AR	4.2	3465	AR	7.55E-08	AR
Cadmium as Cd	31	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Chromium^{3+} as Cr^{3+}	[illegible]	160	132000	R	9.78E+01	R	170	140250	R	9.84E+01	R	240	198000	R	9.98E+01	R
Cobalt as Co	[illegible]	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Copper as Cu	[illegible]	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Iron as Fe	[illegible]	12000	9900000	R	1.00E+02	R	12000	9900000	R	1.00E+02	R	42000	34650000	R	1.00E+02	R
Lead as Pb	[illegible]	< 100	0.00	AR	0.00E+00	AR	< 100	0.00	AR	0.00E+00	AR	< 100	0.00	AR	0.00E+00	AR
Manganese as Mn	[illegible]	190	156750	R	1.00E+02	R	190	156750	R	1.00E+02	R	400	330000	R	1.00E+02	R
Mercury as Hg	[illegible]	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Nickel as Ni	[illegible]	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Selenium as Se	[illegible]	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Titanium as Ti	731	85	70125	R	1.00E+02	R	49	40425	R	1.00E+02	R	41	33825	R	9.99E+01	R
Vanadium as V	[illegible]	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Zinc as Zn	[illegible]	120	99000	R	1.00E+02	R	1200	990000	R	1.00E+02	R	930	767250	R	1.00E+02	R
Calcium as Ca	[illegible]	3700	3052500	R	9.18E+01	R	4500	3712500	R	9.62E+01	R	7100	5857500	R	9.96E+01	R
Chloride as Cl	[illegible]	200	165000	AR	5.88E-06	AR	500	412500	R	2.15E-02	R	450	371250	R	9.69E-03	R
Fluoride as F	[illegible]	1.4	1155	AR	2.84E-05	AR	1.2	990	AR	5.88E-06	AR	1.4	1155	AR	2.84E-05	AR
Magnesium as Mg	[illegible]	280	231000	R	1.51E+00	R	280	231000	R	1.51E+00	R	380	313500	R	5.82E+00	R
Potassium as K	[illegible]	200	165000	AR	5.61E-05	AR	220	181500	AR	1.40E-04	AR	130	107250	AR	6.31E-07	AR
Sodium as Na	[illegible]	250	206250	R	1.02E-01	R	350	288750	R	7.60E-01	R	320	264000	R	4.62E-01	R
Sulphate as SO_4	[illegible]	400	330000	R	2.15E-02	R	800	660000	R	1.51E+00	R	350	288750	R	7.78E-03	R
RISK / ACCEPTABLE RISK TO: ENVIRONMENT		R		R					R		R			R		R

Table 69

DAM 10: ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 8 & 9 [INORGANIC - MICRO'S & MACRO'S]
[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NO's: 8, & 9		RISK TO ENVIRONMENT									
		RISK OF SEDIMENTS FOR GROUNDWATER									
		SAMPLE NO. 8					SAMPLE NO. 9				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
INORGANIC COMPOUNDS Micro's and Macro's	[5] Ave. Risk Value (MR&SA) ppb	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR
Aluminium as Al	10000	1800	1485000	R	1.00E+02	R	2500	2062500	R	1.00E+02	R
Arsenic as As	430	< 50	0.00	AR	0.00E+00	AR	< 50	0.00	AR	0.00E+00	AR
Barium as Ba	7800	8.9	7343	AR	1.98E-04	AR	12	9900	R	2.75E-03	R
Cadmium as Cd	31	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Chromium^{3+} as Cr^{3+}	4700	270	222750	R	9.99E+01	R	200	165000	R	9.93E+01	R
Cobalt as Co	6900	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Copper as Cu	100	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Iron as Fe	9000	20000	16500000	R	1.00E+02	R	21000	17325000	R	1.00E+02	R
Lead as Pb	100	< 100	0.00	AR	0.00E+00	AR	< 100	0.00	AR	0.00E+00	AR
Manganese as Mn	300	340	280500	R	1.00E+02	R	280	231000	R	1.00E+02	R
Mercury as Hg	22	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Nickel as Ni	1140	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Selenium as Se	260	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Titanium as Ti	731	65	53625	R	1.00E+02	R	140	115500	R	1.00E+02	R
Vanadium as V	1300	< 10	0.00	AR	0.00E+00	AR	< 10	0.00	AR	0.00E+00	AR
Zinc as Zn	700	3200	2640000	R	1.00E+02	R	2700	2227500	R	1.00E+02	R
Calcium as Ca	150000	280	231000	R	1.28E-02	R	520	429000	R	7.22E-01	R
Chloride as Cl	250000	300	247500	AR	3.15E-04	AR	600	495000	R	7.75E-02	R
Fluoride as F	1500	1.3	1073	AR	1.35E-05	AR	1.1	908	AR	2.36E-06	AR
Magnesium as Mg	70000	330	272250	R	3.25E+00	R	470	387750	R	1.24E+01	R
Potassium as K	200000	260	214500	R	6.48E-04	R	280	231000	R	1.24E-03	R
Sodium as Na	100000	280	231000	R	2.09E-01	R	300	247500	R	3.18E-01	R
Sulphate as SO_4	200000	950	783750	R	3.36E+00	R	500	412500	R	1.02E-01	R
RISK / ACCEPTABLE RISK TO: ENVIRONMENT				R		R			R		R

NOTES

VOLUME: 1.25 x 10^6 = 1,250,000 kg/ha/m

TABLES 70 – 73

DAM 10: SEDIMENTS INORGANIC
HUMAN RISK ASSESSMENT

Table 70

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 2 & 3 [INORGANIC - MICRO'S & MACRO'S]

[ISCOR VANOERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBERS: 2 & 3

INORGANIC COMPOUNDS Micro's and Macro's	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN							
			SAMPLE NO. 2				SAMPLE NO. 3			
			[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Aluminium as Al	0.005	RSA RfD	1500	1237500	41.3	825000	1600	1320000	44.0	880000
Arsenic as As	0.0003	EPA RfD	< 50	0.00	0.00	0.00	< 50	0.00	0.00	0.00
Barium as Ba	0.07	EPA RfD	4.0	3300	0.110	157	22	18150	0.605	864
Cadmium as Cd	0.0005	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Chromium^{3+} as Cr^{3+}	1.50	EPA RfD	400	330000	11.0	733	200	165000	5.5	367
Cobalt as Co	0.0008	RSA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Copper as Cu	0.04	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Iron as Fe	0.003	RSA RfD	29000	23925000	798	26583333	12000	9900000	330	11000000
Lead as Pb	0.0014	RSA RfD	< 100	0.00	0.00	0.00	< 100	0.00	0.00	0.00
Manganese as Mn	0.046	EPA RfD	210	173250	5.78	12554	180	148500	5.0	10761
Mercury as Hg	0.0003	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nickel as Ni	0.02	EPA RfD	< 10	0.00	0.00	0.00	12	9900	0.330	1650
Selenium as Se	0.005	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Titanium as Ti	0.003	RSA RfD	78	64350	2.15	71500	57	47025	1.57	52250
Vanadium as V	0.009	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Zinc as Zn	0.3	EPA RfD	850	701250	23.4	7792	1600	1320000	44.0	14667
Calcium as Ca	5.0	RSA RfD	4500	3712500	123.8	2475	140	115500	3.85	77
Chloride as Cl	3.3	RSA RfD	400	330000	11.0	132.5	400	330000	11.0	133
Fluoride as F	0.06	EPA RfD	1.6	1320	0.044	73.3	1.3	1073	0.036	60
Magnesium as Mg	2.3	RSA RfD	310	255750	8.53	371	310	255750	8.53	371
Potassium as K	6.7	RSA RfD	190	156750	5.23	78	250	206250	6.88	103
Sodium as Na	3.3	RSA RfD	330	272250	9.08	275	300	247500	8.25	250
Sulphate as SO_4	6.7	RSA RfD	900	742500	24.75	369	550	453750	15.1	226
RISK / ACCEPTABLE RISK TO: HUMAN				Groundwater (PDI)		R		Groundwater (PDI)		R

Table 71

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 4 & 5 [INORGANIC - MICRO'S & MACRO'S]

[ISCOR VANDERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBERS: 4 & 5

INORGANIC COMPOUNDS Micro's and Macro's	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN							
			SAMPLE NO. 4				SAMPLE NO. 5			
			[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Aluminium as Al	0.363	RSA RfD	2600	2145000	71.5	1430000	2400	1980000	66.0	1320000
Arsenic as As	0.0003	EPA RfD	< 50	0.00	0.00	0.00	< 50	0.00	0.00	0.00
Barium as Ba	0.07	EPA RfD	24.0	19800	0.660	943	< 2.0	0.00	0.00	0.00
Cadmium as Cd	0.0005	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Chromium^{3+} as Cr^{3+}	1.5	EPA RfD	160	132000	4.4	293	160	132000	4.4	293
Cobalt as Co	0.009	RSA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Copper as Cu	0.04	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Iron as Fe	0.003	RSA RfD	17000	14025000	468	15583333	12000	9900000	330	11000000
Lead as Pb	0.002	RSA RfD	< 100	0.00	0.00	0.00	< 100	0.00	0.00	0.00
Manganese as Mn	0.046	EPA RfD	330	272250	9.1	19728	190	156750	5.2	11359
Mercury as Hg	0.0003	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nickel as Ni	0.02	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Selenium as Se	0.005	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Titanium as Ti	0.093	RSA RfD	110	90750	3.0	100833	85	70125	2.3	77917
Vanadium as V	0.009	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Zinc as Zn	0.3	EPA RfD	3300	2722500	90.8	30250	120	99000	3.3	1100
Calcium as Ca	5.0	RSA RfD	280	231000	7.7	154	3700	3052500	101.8	2035
Chloride as Cl	8.3	RSA RfD	400	330000	11.0	133	200	165000	5.5	66
Fluoride as F	0.06	EPA RfD	1.4	1155	0.039	64	1.4	1155	0.04	64
Magnesium as Mg	2.3	RSA RfD	500	412500	13.8	598	280	231000	7.7	335
Potassium as K	6.7	RSA RfD	350	288750	9.6	144	200	165000	5.5	82
Sodium as Na	3.3	RSA RfD	330	272250	9.1	275	250	206250	6.9	206
Sulphate as SO_4	6.7	RSA RfD	650	536250	17.9	267	400	330000	11.0	164
RISK / ACCEPTABLE RISK TO: HUMAN				Groundwater		R		Groundwater		R

Table 72

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 6 & 7 [INORGANIC - MICRO'S & MACRO'S]
[ISCOR VANDERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBERS: 6 &7

INORGANIC COMPOUNDS Micro's and Macro's	RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN							
			SAMPLE NO. 6				SAMPLE NO. 7			
			[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Aluminium as Al	0.005	RSA RfD	1400	1155000	38.5	770000	440	363000	12.1	242000
Arsenic as As	0.0003	EPA RfD	< 50	0.00	0.00	0.00	< 50	0.00	0.00	0.00
Barium as Ba	0.07	EPA RfD	2.3	1898	0.063	90	4	3465	0.116	165
Cadmium as Cd	0.0005	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Chromium^{3+} as Cr^{3+}	1.50	EPA RfD	170	140250	4.68	312	240	198000	6.60	440
Cobalt as Co	0.008	RSA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Copper as Cu	0.04	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Iron as Fe	0.003	RSA RfD	12000	9900000	330	11000000	42000	34650000	1155	38500000
Lead as Pb	0.002	RSA RfD	< 100	0.00	0.00	0.00	< 100	0.00	0.00	0.00
Manganese as Mn	0.046	EPA RfD	190	156750	5.23	11359	400	330000	11.0	23913
Mercury as Hg	0.0003	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nickel as Ni	0.02	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Selenium as Se	0.005	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Titanium as Ti	0.003	RSA RfD	49	40425	1.35	44917	41	33825	1.13	37583
Vanadium as V	0.009	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Zinc as Zn	0.3	EPA RfD	1200	990000	33	11000	930	767250	25.6	8525
Calcium as Ca	5.0	RSA RfD	4500	3712500	123.8	2475	7100	5857500	195.3	3906
Chloride as Cl	8.3	RSA RfD	500	412500	13.8	166	450	371250	12.4	149
Fluoride as F	0.06	EPA RfD	1.2	990	0.03	50	1.4	1155	0.04	64
Magnesium as Mg	2.3	RSA RfD	280	231000	7.7	335	380	313500	10.5	454
Potassium as K	6.7	RSA RfD	220	181500	6.1	90	130	107250	3.58	53
Sodium as Na	3.3	RSA RfD	350	288750	9.6	292	320	264000	8.8	267
Sulphate as SO_4	6.7	RSA RfD	800	660000	22	328	350	288750	9.63	144
		RISK / ACCEPTABLE RISK TO: HUMAN		Groundwater		R		Groundwater		R

Table 73

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 8 & 9 [INORGANIC - MICRO'S & MACRO'S]

[ISCOR VANDERBIJLPARK STEEL - MASTER PLAN]

SAMPLE NUMBERS: 8 & 9

INORGANIC COMPOUNDS Micro's and Macro's	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	RISK TO HUMAN							
			SAMPLE NO. 8				SAMPLE NO. 9			
			[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Aluminium as Al	0.005	RSA RfD	1800	1485000	49.5	990000	2500	2062500	68.8	1375000
Arsenic as As	0.0003	EPA RfD	< 50	0.00	0.00	0.00	< 50	0.00	0.00	0.00
Barium as Ba	0.07	EPA RfD	8.9	7343	0.245	350	12	9900	0.330	471
Cadmium as Cd	0.0005	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Chromium^{3+} as Cr^{3+}	1.50	EPA RfD	270	222750	7.43	495	200	165000	5.50	367
Cobalt as Co	0.008	RSA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Copper as Cu	0.04	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Iron as Fe	0.003	RSA RfD	20000	16500000	550	18333333	21000	17325000	578	19250000
Lead as Pb	0.002	RSA RfD	< 100	0.00	0.00	0.00	< 100	0.00	0.00	0.00
Manganese as Mn	0.046	EPA RfD	340	280500	9.35	20326	280	231000	7.70	16739
Mercury as Hg	0.0003	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nickel as Ni	0.02	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Selenium as Se	0.005	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Titanium as Ti	0.003	RSA RfD	65	53625	1.79	59583	140	115500	3.85	128333
Vanadium as V	0.009	EPA RfD	< 10	0.00	0.00	0.00	< 10	0.00	0.00	0.00
Zinc as Zn	0.3	EPA RfD	3200	2640000	88	29333	2700	2227500	74.3	24750
Calcium as Ca	5.0	RSA RfD	280	231000	7.7	154	520	429000	14.3	286
Chloride as Cl	8.3	RSA RfD	300	247500	8.3	99	600	495000	16.5	199
Fluoride as F	0.06	EPA RfD	1.3	1073	0.036	60	1.1	908	0.030	50.4
Magnesium as Mg	2.3	RSA RfD	330	272250	9.1	395	470	387750	12.93	562
Potassium as K	6.7	RSA RfD	260	214500	7.2	107	280	231000	7.7	115
Sodium as Na	3.3	RSA RfD	280	231000	7.7	233	300	247500	8.25	250
Sulphate as SO_4	6.7	RSA RfD	950	783750	26.1	390	500	412500	13.75	205
RISK / ACCEPTABLE RISK TO: HUMAN				Groundwater		R		Groundwater		R

TABLES 74 - 76

DAM 10: SEDIMENTS ORGANIC
ENVIRONMENTAL RISK QUANTIFICATION

Table 74

DAM 1.0: - ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 2, 3 & 4 [ORGANICS - PAH's & VOC's]
[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NUMBERS: 2, 3 & 4

ORGANIC COMPOUNDS Volatile & Semi-Volatile	[5] Acc. Risk Value (MR) ppb	RISK TO ENVIRONMENT - RISK OF SEDIMENTS FOR GROUNDWATER														
		SAMPLE 2					SAMPLE 3					SAMPLE 4				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
		[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification %	[3] Risk R / AR
Benzene	3000	59	48675	R	8.28E+01	R	0.26	215	AR	0.00E+00	AR	8.0	6600	R	1.54E-01	R
Toluene	4500	230	189750	R	9.98E+01	R	0.29	239	AR	0.00E+00	AR	0.68	561	AR	1.11E-14	AR
Ethylbenzene	3570	38	31350	R	4.00E+01	R	0.2	165	AR	0.00E+00	AR	0.58	479	AR	2.22E-14	AR
m,p-Xylene	970	270	222750	R	1.00E+02	R	0.39	322	AR	2.40E-09	AR	1.4	1155	R	1.61E-03	R
o-Xylene	1450	78	64350	R	9.98E+01	R	0.2	165	AR	0.00E+00	AR	1.0	825	AR	1.21E-06	AR
Styrene	4360	130	107250	R	9.61E+01	R	0.14	116	AR	0.00E+00	AR	1.0	825	AR	2.07E-12	AR
Isopropylbenzene	2640	< 5	0.00	AR	0.00E+00	AR	< 0.1	0.00	AR	0.00E+00	AR	< 0.1	0.00	AR	0.00E+00	AR
1,3,5-Trimethylbenzene	1260	36	29700	R	9.53E+01	R	< 0.1	0.00	AR	0.00E+00	AR	0.17	140	AR	0.00E+00	AR
1,2,4-Trimethylbenzene	770	74	61050	R	1.00E+02	R	0.31	256	AR	2.45E-09	AR	0.3	248	AR	1.66E-09	AR
Naphthalene	460	6800	5610000	R	1.00E+02	R	90	74250	R	1.00E+02	R	16	13200	R	9.80E+01	R
Phenol	2690	6.5	5363	R	8.12E-02	R	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
2-Methylphenol	1460	3.8	3135	R	1.32E-01	R	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
4-Methylphenol	1470	1.5	1238	AR	6.86E-05	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
2,4-Dimethylphenol	1270	3.8	3135	R	3.13E-01	R	0.16	132	AR	0.00E+00	AR	0.2	165	AR	1.11E-14	AR
2-Methylnapthalene	150	1400	1155000	R	1.00E+02	R	25	20625	R	1.00E+02	R	8.0	6600	R	9.98E+01	R
Acenaphthylene	0.5	300	247500	R	1.00E+02	R	1.9	1568	R	1.00E+02	R	1.9	1568	R	1.00E+02	R
Acenapthene	170	920	759000	R	1.00E+02	R	28	23100	R	1.00E+02	R	13	10725	R	1.00E+02	R
Dibenzofuran	190	910	750750	R	1.00E+02	R	29	23925	R	1.00E+02	R	14	11550	R	1.00E+02	R
Fluorene	160	790	651750	R	1.00E+02	R	28	23100	R	1.00E+02	R	16	13200	R	1.00E+02	R
Phenanthrene	80	920	759000	R	1.00E+02	R	39	32175	R	1.00E+02	R	32	26400	R	1.00E+02	R
Anthracene	0.5	280	231000	R	1.00E+02	R	11	9075	R	1.00E+02	R	9.4	7755	R	1.00E+02	R
Carbazole	130	560	462000	R	1.00E+02	R	15	12375	R	1.00E+02	R	6.9	5693	R	9.98E+01	R
Fluoranthene	14	480	396000	R	1.00E+02	R	33	27225	R	1.00E+02	R	36	29700	R	1.00E+02	R
Pyrene	200	280	231000	R	1.00E+02	R	21	17325	R	1.00E+02	R	22	18150	R	1.00E+02	R
Benzo[a]anthracene	1	120	99000	R	1.00E+02	R	9.2	7590	R	1.00E+02	R	11	9075	R	1.00E+02	R
Chrysene	100	110	90750	R	1.00E+02	R	9.0	7425	R	1.00E+02	R	11	9075	R	1.00E+02	R
bis(2-Ethylhexyl)phthalate	14400	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.38	314	AR	0.00E+00	AR
Benzo[b]+[k]fluoranthene	0.5	140	115500	R	1.00E+02	R	11	9075	R	1.00E+02	R	14	11550	R	1.00E+02	R
Benzo[a]pyrene	0.5	83	68475	R	1.00E+02	R	6.0	4950	R	1.00E+02	R	7.6	6270	R	1.00E+02	R
Indeno[1,2,3-cd]pyrene	0.5	52	42900	R	1.00E+02	R	3.3	2723	R	1.00E+02	R	5.3	4373	R	1.00E+02	R
Dibenz[a,h]anthracene	100	11	9075	R	1.00E+02	R	8.3	6848	R	1.00E+02	R	1.2	990	R	4.92E+01	R
Benzo[g,h,i]perylene	780	36	29700	R	9.96E+01	R	2.3	1898	R	2.87E-01	R	2.6	2145	R	5.82E-01	R
RISK / ACCEPTABLE RISK TO: ENVIRONMENT		R		R		R		R		R		R		R		R

Table 75

DAM 18 - ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 5, 6 & 7 [ORGANICS - PAH's & VOC's]
[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NUMBERS: 5, 6, & 7

ORGANIC COMPOUNDS Volatile & Semi-Volatile	Acc. Risk Value (AR) ppb	RISK TO ENVIRONMENT - RISK OF SEDIMENTS FOR GROUNDWATER													
		SAMPLE 5					SAMPLE 6					SAMPLE 7				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
		[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification%	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification%	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification%	[3] Risk R / AR
Benzene	3000	350	288750	R	1.00E+02	R	0.25	206	AR	0.00E+00	AR	23	18975	R	1.85E+01	R
Toluene	4500	660	544500	R	1.00E+02	R	0.27	223	AR	0.00E+00	AR	33	27225	R	1.63E+01	R
Ethylbenzene	3570	87	71775	R	9.14E+01	R	0.22	182	AR	0.00E+00	AR	39	32175	R	4.20E+01	R
m,p-Xylene	970	560	462000	R	1.00E+02	R	0.41	338	AR	4.31E-09	AR	89	73425	R	1.00E+02	R
o-Xylene	1450	160	132000	R	1.00E+02	R	0.22	182	AR	1.11E-14	AR	25	20625	R	7.55E+01	R
Styrene	4360	270	222750	R	9.99E+01	R	0.17	140	AR	0.00E+00	AR	< 1.0	0.00	AR	0.00E+00	AR
Isopropylbenzene	2640	< 5	0.00	AR	0.00E+00	AR	< 1.0	0.00	AR	0.00E+00	AR	4.0	3300	R	2.42E-03	R
1,3,5-Trimethylbenzene	1260	56	46200	R	9.94E+01	R	0.16	132	AR	0.00E+00	AR	14	11550	R	4.33E+01	R
1,2,4-Trimethylbenzene	770	120	99000	R	1.00E+02	R	0.43	357	AR	1.23E-07	AR	26	21450	R	9.77E+01	R
Naphthalene	460	3200	2640000	R	1.00E+02	R	420	3481500	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Phenol	2690	75	61875	R	9.48E+01	R	0.00	0.00	AR	0.00E+00	AR	1.0	817	AR	8.11E-10	AR
2-Methylphenol	1460	57	47025	R	9.89E+01	R	0.00	0.00	AR	0.00E+00	AR	0.76	627	AR	5.11E-08	AR
4-Methylphenol	1470	110	90750	R	1.00E+02	R	0.00	0.00	AR	0.00E+00	AR	1.9	1568	R	6.17E-04	R
2,4-Dimethylphenol	1270	67	55275	R	9.98E+01	R	0.41	338	AR	1.58E-10	AR	7.9	6518	R	9.62E+00	R
2-Methylnapthalene	150	> 1642	1354650	R	1.00E+02	R	12	9900	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Acenaphthylene	0.5	400	330000	R	1.00E+02	R	2.9	2393	R	1.00E+02	R	1600	1320000	R	1.00E+02	R
Acenapthene	170	1400	1155000	R	1.00E+02	R	120	99000	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Dibenzofuran	190	1400	1155000	R	1.00E+02	R	120	99000	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Fluorene	160	1200	990000	R	1.00E+02	R	120	99000	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Phenanthrene	80	1400	1155000	R	1.00E+02	R	170	140250	R	1.00E+02	R	> 2800	2310000	R	1.00E+02	R
Anthracene	0.5	430	354750	R	1.00E+02	R	13	10725	R	1.00E+02	R	1300	1072500	R	1.00E+02	R
Carbazole	130	510	420750	R	1.00E+02	R	14	11550	R	1.00E+02	R	910	750750	R	1.00E+02	R
Fluoranthene	14	780	643500	R	1.00E+02	R	33	27225	R	1.00E+02	R	2400	1980000	R	1.00E+02	R
Pyrene	200	470	387750	R	1.00E+02	R	22	18150	R	1.00E+02	R	1500	1237500	R	1.00E+02	R
Benzo[a]anthracene	1	200	165000	R	1.00E+02	R	11.0	9075	R	1.00E+02	R	670	552750	R	1.00E+02	R
Chrysene	100	180	148500	R	1.00E+02	R	10.0	8250	R	1.00E+02	R	600	495000	R	1.00E+02	R
bis(2-Ethylhexyl)phthalate	14400	0.48	396	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR
Benzo[b]+[k]fluoranthene	0.5	230	189750	R	1.00E+02	R	15	12375	R	1.00E+02	R	790	651750	R	1.00E+02	R
Benzo[a]pyrene	0.5	140	115500	R	1.00E+02	R	8.1	6683	R	1.00E+02	R	470	387750	R	1.00E+02	R
Indeno[1,2,3-cd]pyrene	0.5	77	63525	R	1.00E+02	R	4.1	3383	R	1.00E+02	R	300	247500	R	1.00E+02	R
Dibenz[a,h]anthracene	100	24	19800	R	1.00E+02	R	1.0	825	R	3.54E+01	R	85	70125	R	1.00E+02	R
Benzo[g,h,i]perylene	780	53	43725	R	1.00E+02	R	2.9	2393	R	1.05E+00	R	200	165000	R	1.00E+02	R
RISK / ACCEPTABLE RISK TO: ENVIRONMENT		R				R			R		R			R		R

Table 76

DAM 10: - ENVIRONMENTAL RISK QUANTIFICATION • SEDIMENTS • SAMPLE NO's 8 & 9 [ORGANICS - PAH[S] & VOC[S]]

[ISCOR VANDERBIJLPARK STEEL – MASTER PLAN]

SAMPLE NUMBERS: 8 & 9

ORGANIC COMPOUNDS Volatile & Semi-Volatile	[5] Acc. Risk Value (MR) ppb	RISK TO ENVIRONMENT - RISK OF SEDIMENTS FOR GROUNDWATER									NOTES
		SAMPLE 8					SAMPLE 9				
		TOTAL ANALYSIS			[4] PROBIT MODEL		TOTAL ANALYSIS			[4] PROBIT MODEL	
		[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification%	[3] Risk R / AR	[1] Lab Conc. ppm	[2] EEC ppb	[3] Risk R / AR	Risk Quantification%	[3] Risk R / AR	
Benzene	3000	2.7	2228	AR	1.98E-05	AR	3.7	3053	R	4.05E-04	R	
Toluene	4500	1.9	1568	AR	4.31E-09	AR	3.2	2640	AR	1.68E-06	AR	
Ethylbenzene	3570	1.3	1073	AR	7.13E-10	AR	1.8	1485	AR	3.52E-08	AR	
m,p-Xylene	970	4.7	3878	R	3.66E+00	R	2.0	1650	R	2.68E-02	R	
o-Xylene	1450	2.9	2393	R	2.15E-02	R	1.0	825	AR	1.21E-06	AR	
Styrene	4360	2.3	1898	AR	5.97E-08	AR	1.0	825	AR	2.07E-12	AR	
Isopropylbenzene	2640	1.1	908	AR	3.69E-09	AR	< 1.0	0.00	AR	0.00E+00	AR	
1,3,5-Trimethylbenzene	1260	7.6	6270	R	8.63E+00	R	1.9	1568	R	2.34E-03	R	
1,2,4-Trimethylbenzene	770	1.7	1403	R	4.38E-02	R	2.8	2310	R	9.31E-01	R	
Naphthalene	460	40	33000	R	1.00E+02	R	11	9075	R	9.08E+01	R	
Phenol	2690	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	
2-Methylphenol	1460	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	
4-Methylphenol	1470	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	
2,4-Dimethylphenol	1270	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	
2-Methylnapthalene	150	1.9	1568	R	5.35E+01	R	10	8250	R	1.00E+02	R	
Acenaphthylene	0.5	2.6	2145	R	1.00E+02	R	13	10725	R	1.00E+02	R	
Acenapthene	170	13	10725	R	1.00E+02	R	29	23925	R	1.00E+02	R	
Dibenzofuran	190	16	13200	R	1.00E+02	R	38	31350	R	1.00E+02	R	
Fluorene	160	18	14850	R	1.00E+02	R	52	42900	R	1.00E+02	R	
Phenanthrene	80	33	27225	R	1.00E+02	R	140	115500	R	1.00E+02	R	
Anthracene	0.5	8.2	6765	R	1.00E+02	R	42	34650	R	1.00E+02	R	
Carbazole	130	9.5	7838	R	1.00E+02	R	11	9075	R	1.00E+02	R	
Fluoranthene	14	24	19800	R	1.00E+02	R	150	123750	R	1.00E+02	R	
Pyrene	200	8.7	7178	R	9.94E+01	R	95	78375	R	1.00E+02	R	
Benzo[a]anthracene	1	6.7	5528	R	1.00E+02	R	47	38775	R	1.00E+02	R	
Chrysene	100	6.0	4950	R	9.99E+01	R	47	38775	R	1.00E+02	R	
bis(2-Ethylhexyl)phthalate	14400	0.00	0.00	AR	0.00E+00	AR	0.00	0.00	AR	0.00E+00	AR	
Benzo[b]+[k]fluoranthene	0.5	5.4	4455	R	1.00E+02	R	61	50325	R	1.00E+02	R	
Benzo[a]pyrene	0.5	3.3	2723	R	1.00E+02	R	34	28050	R	1.00E+02	R	
Indeno[1,2,3-cd]pyrene	0.5	3.0	2475	R	1.00E+02	R	19	15675	R	1.00E+02	R	
Dibenz[a,h]anthracene	100	9.2	7590	R	1.00E+02	R	1.6	1320	R	7.06E+01	R	
Benzo[g,h,i]perylene	780	2.0	1650	R	1.20E-01	R	14	11550	R	7.79E+01	R	
RISK / ACCEPTABLE RISK TO: ENVIRONMENT		R		R					R		R	

TABLES 77 – 80

DAM 10: SEDIMENTS ORGANIC
HUMAN RISK ASSESSMENT

Table 77

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 2 & 3 [ORGANIC - PAHs & VOCs] - ISCOR VANDERBIJLPARK STEEL - MP

SAMPLE NUMBERS: 2 & 3			RISK TO HUMAN							
			SAMPLE NO. 2				SAMPLE NO. 3			
ORGANIC COMPOUNDS PAH[5] & VOC[5]	RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Toluene	0.2	EPA RfD	230	189750	6.33	3163	0.29	239	0.008	4.0
Ethylbenzene	0.1	EPA RfD	38	31350	1.05	1045	0.2	165	0.006	5.5
m,p-Xylene	0.17	WHO GV	270	222750	7.43	4368	0.39	322	0.011	6.3
o-Xylene	0.17	WHO GV	78	64350	2.1	1262	0.2	165	0.01	5.9
Styrene	0.2	EPA RfD	130	107250	3.58	1788	0.14	116	0.004	1.9
Isopropylbenzene	0.1	EPA RfD	< 5	0.00	0.00	0.00	< 0.1	0.00	0.00	0.0
1,3,5-Trimethylbenzene	0.05	EPA RfD	36	29700	1.0	1980	< 0.1	0.00	0.00	0.0
1,2,4-Trimethylbenzene	0.05	EPA RfD	74	61050	2.04	4070	0.31	256	0.009	17.1
Naphthalene	0.02	EPA RfD	6800	5610000	187	935000	90	74250	2.48	12375
Phenol	0.6	EPA RfD	6.50	5363	0.179	29.8	0.00	0.00	0.00	0.00
2-Methylphenol	0.05	EPA RfD	3.8	3135	0.10	209	0.00	0.00	0.00	0.00
4-Methylphenol	0.005	EPA RfD	1.50	1238	0.041	825	0.00	0.00	0.00	0.00
2,4-Dimethylphenol	0.02	EPA RfD	3.8	3135	0.10	523	0.16	132	0.004	22.0
2-Methylnaphthalene	0.02	EPA RfD	1400	1155000	38.5	192500	25	20625	0.688	3438
Acenaphthylene	0.00002	WHD GV	300	247500	8.3	41250000	1.9	1568	0.052	261333
Acenaphthene	0.1	EPA RfD	920	759000	25.3	42167	28	23100	0.77	1283
Dibenzofuran	0.004	EPA RfD	910	750750	25.0	625625	29	23925	0.80	19938
Fluorene	0.04	EPA RfD	790	651750	21.7	54313	28	23100	0.77	1925
Phenanthrene	0.0002	WHO GV	920	759000	25.3	12650000	39	32175	1.07	536250
Anthracene	0.3	EPA RfD	280	231000	7.7	2567	11	9075	0.303	101
Carbazole	0.005	EPA RfD	560	462000	15.4	256667	15	12375	0.413	6875
Fluoranthene	0.04	EPA RfD	480	396000	13.2	33000	33	27225	0.908	2269
Pyrene	0.03	EPA RfD	280	231000	7.7	25667	21	17325	0.578	1925
Benzo[a]anthracene	0.00002	WHO GV	120	99000	3.3	16500000	9.2	7590	0.253	1265000
Chrysene	0.00002	WHO GV	110	90750	3.0	15125000	9.0	7425	0.248	1237500
bis(2-Ethylhexyl)phthalate	0.02	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[b]+[k]fluoranthene	0.00002	WHO GV	140	115500	3.9	19250000	11	9075	0.303	1512500
Benzo[a]pyrene	0.0002	WHO GV	83	68475	2.3	1141250	6.0	4950	0.165	82500
Indeno[1,2,3-cd]pyrene	0.00002	WHO GV	52	42900	1.43	7150000	3.3	2723	0.091	453833
Dibenz[a,h]anthracene	0.0002	WHO GV	11	9075	0.303	151250	8.3	6848	0.228	114133
Benzo[g,h,i]perylene	0.0002	WHO GV	36	29700	0.990	495000	2.3	1898	0.063	31633
RISK / ACCEPTABLE RISK TO: HUMAN						R				R

Table 78

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 4 & 5 (ORGANIC - PAHs & VOCs) - ISCOR VANDERBIJLPARK STEEL - MP

SAMPLE NUMBERS: 4 & 5			RISK TO HUMAN							
			SAMPLE NO. 4				SAMPLE NO. 5			
ORGANIC COMPOUNDS PAH[5] & VOC[5]	[6] RfD/ TDI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Benzene	0.002	EPA RfD	8.0	6600	0.220	11000	350	288750	9.6	481250
Toluene	0.2	EPA RfD	0.68	561	0.019	9.35	660	544500	18.2	9075
Ethylbenzene	0.1	EPA RfD	0.58	479	0.016	16.0	87	71775	2.39	2393
m,p-Xylene	0.17	WHO GV	1.4	1155	0.04	22.6	560	462000	15.4	9059
o-Xylene	0.17	WHO GV	1.0	825	0.03	16.2	160	132000	4.4	2588
Styrene	0.2	EPA RfD	1.0	825	0.03	13.8	270	222750	7.43	3713
Isopropylbenzene	0.1	EPA RfD	< 0.1	0.00	0.00	0.00	< 5	0.00	0.00	0.00
1,3,5-Trimethylbenzene	0.05	EPA RfD	0.17	140	0.005	9.3	56	46200	1.54	3080
1,2,4-Trimethylbenzene	0.05	EPA RfD	0.3	248	0.01	17	120	99000	3.3	6600
Naphthalene	0.02	EPA RfD	16	13200	0.44	2200	3200	2640000	88	440000
Phenol	0.6	EPA RfD	0.00	0.00	0.00	0.00	75	61875	2.1	344
2-Methylphenol	0.05	EPA RfD	0.00	0.00	0.00	0.00	57	47025	1.57	3135
4-Methylphenol	0.005	EPA RfD	0.00	0.00	0.00	0.00	110	90750	3.03	60500
2,4-Dimethylphenol	0.02	EPA RfD	0.2	165	0.006	27.6	67	55275	1.8	9213
2-Methylnaphthalene	0.02	EPA RfD	8.0	6600	0.22	1100	> 1642	1354650	45.2	225775
Acenaphthylene	0.00002	WHO GV	1.9	1568	0.052	261333	400	330000	11.0	55000000
Acenaphthene	0.1	EPA RfD	13	10725	0.358	596	1400	1155000	38.5	64167
Dibenzofuran	0.004	EPA RfD	14	11550	0.385	9625	1400	1155000	38.5	962500
Fluorene	0.04	EPA RfD	16	13200	0.44	1100	1200	990000	33	82500
Phenanthrene	0.0002	WHO GV	32	26400	0.88	440000	1400	1155000	38.5	19250000
Anthracene	0.3	EPA RfD	9.4	7755	0.259	86.2	430	354750	11.8	3942
Carbazole	0.006	EPA RfD	6.9	5693	0.19	3163	510	420750	14.0	233750
Fluoranthene	0.04	EPA RfD	36	29700	1.0	2475	780	643500	21.5	53625
Pyrene	0.03	EPA RfD	22	18150	0.605	2017	470	387750	12.9	43083
Benzo[a]anthracene	0.00002	WHO GV	11	9075	0.3	1512500	200	165000	5.50	27500000
Chrysene	0.00002	WHO GV	11	9075	0.3	1512500	180	148500	4.95	24750000
bis(2-Ethylhexyl)phthalate	0.02	EPA RfD	0.38	314	0.01	52.3	0.480	396.00	0.013	66.0
Benzo[b]+[k]fluoranthene	0.00002	WHO GV	14	11550	0.385	1925000	230	189750	6.33	31625000
Benzo[a]pyrene	0.0002	WHO GV	7.6	6270	0.209	104500	140	115500	3.85	1925000
Indeno[1,2,3-cd]pyrene	0.00002	WHO GV	5.3	4373	0.146	728833	77	63525	2.12	10587500
Dibenz[a,h]anthracene	0.0002	WHO GV	1.2	990	0.033	16500	24	19800	0.660	330000
Benzo[g,h,i]perylene	0.0002	WHO GV	2.6	2145	0.072	35750	53	43725	1.46	728750
RISK / ACCEPTABLE RISK TO: HUMAN						R				R

Table 79

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 6 & 7 [ORGANIC - PAHs & VOCs] - ISCOR VANDERBIJLPARK STEEL - MP

SAMPLE NUMBERS:6 & 7			RISK TO HUMAN							
			SAMPLE NO. 6				SAMPLE NO. 7			
ORGANIC COMPOUNDS PAH[5] & VOC[5]	[6] RfD/ ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Benzene	0.002	EPA RfD	0.25	206	0.007	343	23	18975	0.633	31625
Toluene	0.2	EPA RfD	0.27	223	0.007	3.72	33	27225	0.908	454
Ethylbenzene	0.1	EPA RfD	0.22	182	0.006	6.07	39	32175	1.07	1073
m,p-Xylene	0.17	WHO GV	0.41	338	0.011	6.63	89	73425	2.45	1440
o-Xylene	0.17	WHO GV	0.22	182	0.006	3.57	25	20625	0.688	404
Styrene	0.2	EPA RfD	0.17	140	0.005	2.33	< 1.0	0.00	0.00	0.00
Isopropylbenzene	0.1	EPA RfD	< 1.0	0.00	0.00	0.00	4.0	3300	0.11	110
1,3,5-Trimethylbenzene	0.05	EPA RfD	0.16	132	0.004	8.8	14	11550	0.385	770
1,2,4-Trimethylbenzene	0.05	EPA RfD	0.43	357	0.012	24	26	21450	0.715	1430
Naphthalene	0.02	EPA RfD	420	3481500	116	580250	> 2800	2310000	77.0	385000
Phenol	0.6	EPA RfD	0.00	0.00	0.00	0.00	0.99	817	0.03	4.5
2-Methylphenol	0.05	EPA RfD	0.00	0.00	0.00	0.00	0.76	627	0.02	41.8
4-Methylphenol	0.005	EPA RfD	0.00	0.00	0.00	0.00	1.9	1568	0.05	1045
2,4-Dimethylphenol	0.02	EPA RfD	0.41	338	0.011	56	7.9	6518	0.217	1086
2-Methylnaphthalene	0.02	EPA RfD	12	9900	0.33	1650	> 2800	2310000	77	385000
Acenaphthylene	0.00002	WHO GV	2.9	2393	0.08	398833	1600	1320000	44	220000000
Acenaphthene	0.1	EPA RfD	120	99000	3.3	5500	> 2800	2310000	77	128333
Dibenzofuran	0.004	EPA RfD	120	99000	3.3	82500	> 2800	2310000	77	1925000
Fluorene	0.04	EPA RfD	120	99000	3.3	8250	> 2800	2310000	77	192500
Phenanthrene	0.0002	WHO GV	170	140250	4.7	2337500	> 2800	2310000	77	38500000
Anthracene	0.3	EPA RfD	13	10725	0.358	119	1300	1072500	35.8	11917
Carbazole	0.003	EPA RfD	14	11550	0.385	6417	910	750750	25.0	417083
Fluoranthene	0.04	EPA RfD	33	27225	0.91	2269	2400	1980000	66.0	165000
Pyrene	0.03	EPA RfD	22	18150	0.605	2017	1500	1237500	41.3	137500
Benzo[a]anthracene	0.00002	WHO GV	11	9075	0.30	1512500	670	552750	18.4	92125000
Chrysene	0.00002	WHO GV	10	8250	0.28	1375000	600	495000	16.5	82500000
bis(2-Ethylhexyl)phthalate	0.02	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[b]+[k]fluoranthene	0.00002	WHO GV	15	12375	0.413	2062500	790	651750	21.7	108625000
Benzo[a]pyrene	0.0002	WHO GV	8.1	6683	0.223	111383	470	387750	12.9	6462500
Indeno[1,2,3-cd]pyrene	0.00002	WHO GV	4.1	3383	0.113	563833	300	247500	8.25	41250000
Dibenz[a,h]anthracene	0.0002	WHO GV	1.0	825	0.028	13750	85	70125	2.34	1168750
Benzo[g,h,i], erylene	0.00002	WHO GV	2.9	2393	0.080	39883	200	165000	5.5	2750000
RISK / ACCEPTABLE RISK TO: HUMAN						R				R

Table 80

DAM 10: HUMAN RISK ASSESSMENT • SEDIMENTS • SAMPLE NO's 8 & 9 [ORGANIC - PAHs & VOCs] - ISCOR VANDERBIJLPARK STEEL - MP

SAMPLE NUMBERS: 8 & 9			RISK TO HUMAN							
			SAMPLE NO. 8				SAMPLE NO. 9			
ORGANIC COMPOUNDS PAH[5] & VOC[5]	[6] ADI / GV mg/kg/day	[7] EPA RfD/ EPA DWEL/ RSA RfD/ WHO GV	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %	[8] Lab conc. ppm	[13] Conc. in groundwater (EEC) ppb	[14] PDI groundwater exposure mg/kg/day	[10] Margin of Safety %
Benzene	0.002	EPA RfD	2.7	2228	0.07	3713	3.7	3053	0.10	5088
Toluene	0.2	EPA RfD	1.9	1568	0.05	26.1	3.2	2640	0.09	44.0
Ethylbenzene	0.1	EPA RfD	1.3	1073	0.04	35.8	1.8	1485	0.05	49.5
m,p-Xylene	0.17	WHO GV	4.7	3878	0.13	76.0	2.0	1650	0.06	32.4
o-Xylene	0.17	WHO GV	2.9	2393	0.08	46.9	1.0	825	0.03	16.2
Styrene	0.2	EPA RfD	2.3	1898	0.063	31.6	1.00	825	0.028	13.8
Isopropylbenzene	0.1	EPA RfD	1.1	908	0.03	30.27	< 1.0	0.00	0.00	0.00
1,3,5-Trimethylbenzene	0.05	EPA RfD	7.6	6270	0.209	418	1.9	1568	0.05	105
1,2,4-Trimethylbenzene	0.05	EPA RfD	1.7	1403	0.05	93.5	2.80	2310	0.08	154
Naphthalene	0.02	EPA RfD	40	33000	1.1	5500	11	9075	0.303	1513
Phenol	0.6	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Methylphenol	0.05	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4-Methylphenol	0.005	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,4-Dimethylphenol	0.02	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Methylnaphthalene	0.02	EPA RfD	1.9	1568	0.05	261	10	8250	0.275	1375
Acenaphthylene	0.000002	WHO GV	2.6	2145	0.07	357500	13.0	10725	0.358	1787500
Acenaphthene	0.1	EPA RfD	13	10725	0.358	596	29	23925	0.80	1329
Dibenzofuran	0.004	EPA RfD	16	13200	0.440	11000	38	31350	1.05	26125
Fluorene	0.04	EPA RfD	18	14850	0.495	1238	52	42900	1.43	3575
Phenanthrene	0.0002	WHO GV	33	27225	0.908	453750	140	115500	3.85	1925000
Anthracene	0.3	EPA RfD	8.2	6765	0.226	75	42	34650	1.16	385
Carbazole	0.006	EPA RfD	9.5	7838	0.261	4354	11	9075	0.303	5042
Fluoranthene	0.04	EPA RfD	24	19800	0.66	1650	150	123750	4.13	10313
Pyrene	0.03	EPA RfD	8.7	7178	0.239	798	95	78375	2.61	8708
Benzo[a]anthracene	0.000002	WHO GV	6.7	5528	0.184	921333	47	38775	1.29	6462500
Chrysene	0.000002	WHO GV	6.0	4950	0.17	825000	47	38775	1.29	6462500
bis(2-Ethylhexyl)phthalate	0.02	EPA RfD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo[b]+[k]fluoranthene	0.000002	WHO GV	5.4	4455	0.149	742500	61	50325	1.68	8387500
Benzo[a]pyrene	0.0002	WHO GV	3.3	2723	0.09	45383	34	28050	0.94	467500
Indeno[1,2,3-cd]pyrene	0.000002	WHO GV	3.0	2475	0.08	412500	19	15675	0.523	2612500
Dibenz[a,h]anthracene	0.0002	WHO GV	9.2	7590	0.253	126500	1.6	1320	0.044	22000
Benzo[g,h,i]perylene	0.0002	WHO GV	2.0	1650	0.055	27500	14	11550	0.385	192500
RISK / ACCEPTABLE RISK TO: HUMAN						R				R

DAM 10: LABORATORY ANALYSIS

WATERS

LAKEFIELD RESEARCH AFRICA (Pty) LIMITED

Reg. No.1948/28709/07
Directors: South Africa - Heinrich Williams Canada - Larry E. Seely, Christopher A. Fleming, Robin K. MacLean
58 Melvill Street, Booysens, Johannesburg 2091
P.O. Box 82582 Southdale 2135
Phone : +27 (0) 11 680 3466 Fax : +27 (0) 11 433 3654

Ockie Fourie Toxicologists (Pty) Ltd
P.O. Box 73179
Lynnwood Ridge, 0040 - RSA

Attn : Dr H.O. Fourie
Fax : (012) 348 7436

Johannesburg, December 12, 2001

Date Rec. : November 5, 2001
LR. Ref. : **NOV1001.R01**
Reference : LAB/39/2001
Project : Total Analysis

CERTIFICATE OF ANALYSIS

No.	Sample ID	Al g/t	As g/t	Cr g/t	Cd g/t	Ba g/t	Pb g/t	Co g/t	Cu g/t
1	Sample 2	1500	< 50	400	< 10	4.0	< 100	< 10	< 10
2	Sample 3	1600	< 50	200	< 10	22	< 100	< 10	< 10
3	Sample 4	2600	< 50	210	< 10	24	< 100	< 10	17
4	Sample 5	2400	< 50	160	< 10	< 2.0	< 100	< 10	< 10
5	Sample 6	1400	< 50	170	< 10	2.3	< 100	< 10	< 10
6	Sample 7	440	< 50	240	< 10	4.2	< 100	< 10	< 10
7	Sample 8	1800	< 50	270	< 10	8.9	< 100	< 10	10
8	Sample 9	2500	< 50	200	< 10	12	< 100	< 10	10
-- Check --									
9	Sample 2	1300	< 50	410	< 10	7.6	< 100	< 10	10

No.	Sample ID	Fe g/t	V g/t	Mn g/t	Ni g/t	Ti g/t	Zn g/t	* F* mg/L	NH3-N mg/L	* pH	* Cond mS/m
1	Sample 2	29000	< 10	210	< 10	78	850	1.6	0.54	7.9	98.9
2	Sample 3	12000	< 10	180	12	57	1600	1.3	2.0	8.5	65.3
3	Sample 4	17000	< 10	330	< 10	110	3300	1.4	1.7	8.7	74.4
4	Sample 5	12000	< 10	190	< 10	85	120	1.4	0.40	8.1	57.0
5	Sample 6	12000	< 10	190	< 10	49	1200	1.2	3.2	8.4	75.2
6	Sample 7	42000	< 10	400	< 10	41	930	1.4	2.9	7.5	86.0
7	Sample 8	20000	< 10	340	< 10	65	3200	1.3	2.9	8.6	68.0
8	Sample 9	21000	< 10	280	< 10	140	2700	1.1	1.7	8.2	68.5
-- Check --											
9	Sample 2	28000	< 10	230	< 10	82	870	--	--	--	--

No.	Sample ID	* TDS mg/L	* Alk mg/L	Ca g/t	Mg g/t	Na g/t	K g/t	Si %	* Cl mg/L	* SO4 mg/L	* NO3 mg/L
1	Sample 2	650	125	4500	310	330	190	< 0.20	400	900	10
2	Sample 3	450	40	140	310	300	250	< 0.20	400	550	42
3	Sample 4	400	60	280	500	330	350	< 0.20	400	650	22
4	Sample 5	750	90	3700	210	250	200	< 0.20	200	400	0.90
5	Sample 6	900	65	4500	280	350	220	< 0.20	500	800	< 0.50
6	Sample 7	700	190	7100	380	320	130	< 0.20	450	350	< 0.50
7	Sample 8	400	75	280	330	280	260	< 0.20	300	950	< 0.50
8	Sample 9	450	55	520	470	300	280	< 0.20	600	500	13
-- Check --											
9	Sample 2	--	--	730	330	290	180	< 0.20	--	--	--

Corporate Affairs proposed restructuring man power impact

CSR, COMMUNICATIONS, RECEPTION & GOVT RELATIONS

Grading	Before	Proposed	Difference	Percentage Changed	
C	1	1	0	0%	
D	2	1	-1	-50%	
E	4	3	-1	-25%	E role downgraded
F	2	2	0	0%	to F role
H	2	1	-1	-50%	
J	2	1	-1	-50%	
Total	**13**	**9**	**-4**	**-31%**	

REPROGRAPHICS & RECORDS

Grading	Before	Proposed	Difference	Percentage Changed	
F	1	0	-1	-100%	
H	3	0	-3	-100%	
I	3	0	-3	-100%	
J	3	0	-3	-100%	
K	6	1	-5	-83%	
Total	**16**	**1**	**-15**	**-94%**	-125%

Total	29	10	-19	-62.26%

WATERLAB (PTY) LTD

CERTIFICATE OF ANALYSES

DATE RECEIVED: 2001 - 10 - 01 DATE COMPLETED: 2001 - 10 – 24

PROJECT NUMBER: 1244 REPORT NUMBER: 7606

OCKIE FOURIE TOXICOLOGISTS [Dr H.O. Fourie]

ANALYSES in mg/l	SAMPLE NAME				
	1S	2S	2D	3S	3D
SAMPLE NUMBER	2056	2057	2058	2059	2060
pH	7,7	7,7	7,5	7,7	7,6
CONDUCTIVITY in mS/m at 25 °C	592	590	589	591	591
TOTAL DISSOLVED SOLIDS at 180 °C	4180	4218	4350	4252	4374
AMMONIA as N	101	98	101	98	99
NITRATE as N	1,2	1,2	1,1	1,1	1,2
CHLORIDE as Cl	1235	1235	1211	1223	1235
SULPHATE as SO_4	1019	1048	1039	1072	1048
SILICA as Si	8,3	8,0	8,0	8,0	7,8
FLUORIDE as F	8,4	7,7	7,5	7,4	7,5
SODIUM as Na	366	362	366	373	367
POTASSIUM as K	94	94	92	94	93
CALCIUM as Ca	581	579	581	583	583
MAGNESIUM as Mg	80	84	83	81	81
ALUMINIUM as Al	< 0,100	< 0,100	< 0,100	< 0,100	< 0,100
BORON as B	0,95	0,72	0,46	0,58	0,71
CADMIUM as Cd	< 0,010	< 0,010	< 0,010	< 0,010	< 0,010
CHROOM as Cr	0,042	0,049	0,061	0,060	0,063
IRON as Fe	0,737	0,752	0,728	0,674	0,652
COPPER as Cu	< 0,025	< 0,025	< 0,025	< 0,025	< 0,025
MANGANESE as Mn	3,45	3,48	3,43	3,38	3,43
LEAD as Pb	< 0,050	< 0,050	< 0,050	< 0,050	< 0,050
MERCURY as Hg	< 0,002	< 0,002	< 0,002	< 0,002	< 0,002
NICKEL as Ni	0,049	0,046	0,046	0,043	0,041
SELENIUM as Se	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
ZINC as Zn	0,309	0,314	0,316	0,304	0,288
FREE CYANIDE as CN	< 0,05	< 0,05	< 0,05	< 0,05	< 0,05
ARSENIC as As	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
HEXAVALLENT CHROMIUM as Cr^{6+}	< 0,025	< 0,025	< 0,025	< 0,025	< 0,025
BARIUM as Ba	< 0,10	< 0,10	< 0,10	< 0,10	< 0,10
COBALT as Co	0,052	0,051	0,045	0,046	0,046
VANADIUM as V	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03
TITANIUM as Ti	0,22	0,20	0,18	0,21	0,22
% BALANCING	96,5	97,1	96,1	96,9	96,9

ANALYSES in mg/l	SAMPLE NAME				
	4S	4D	5S	5D	6S
SAMPLE NUMBER	2061	2062	2063	2064	2065
pH	7,6	7,6	7,7	7,5	7,7
CONDUCTIVITY in mS/m at 25 °C	588	592	591	589	591
TOTAL DISSOLVED SOLIDS at 180 °C	4170	4232	4368	4384	4256
AMMONIA as N	98	101	98	115	101
NITRATE as N	1,1	1,1	1,2	0,9	1,1
CHLORIDE as Cl	1223	1223	1223	1223	1235
SULPHATE as SO_4	1058	1053	1048	1063	1087
SILICA as Si	7,8	7,0	7,8	7,2	7,8
FLUORIDE as F	7,5	7,1	7,6	7,8	7,1
SODIUM as Na	363	374	359	364	366
POTASSIUM as K	93	92	93	92	92
CALCIUM as Ca	581	583	581	585	585
MAGNESIUM as Mg	80	81	83	78	79
ALUMINIUM as Al	< 0,100	< 0,100	< 0.100	< 0,100	< 0,100
BORON as B	0,75	0,75	0.80	0,69	0,66
CADMIUM as Cd	< 0,010	< 0,010	< 0,010	< 0,010	< 0,010
CHROOM as Cr	0,065	0,068	0,038	0,046	0,058
IRON as Fe	0,664	0,671	0,920	0,679	0,713
COPPER as Cu	< 0,025	< 0,025	< 0,025	< 0,025	< 0,025
MANGANESE as Mn	3,44	3,45	3,22	3,16	3,34
LEAD as Pb	< 0,050	< 0,050	< 0,050	< 0,050	< 0,050
MERCURY as Hg	< 0.002	< 0.002	< 0.002	< 0,002	< 0,002
NICKEL as Ni	0,040	0,046	0,044	0,046	0,039
SELENIUM as Se	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
ZINC as Zn	0,297	0,290	0,341	0,286	0,270
FREE CYANIDE as CN	< 0,05	< 0,05	< 0,05	< 0.05	< 0.05
ARSENIC as As	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
HEXAVALLENT CHROMIUM as Cr^{6+}	< 0,025	< 0,025	< 0,025	< 0,025	< 0,025
BARIUM as Ba	< 0,10	< 0,10	< 0,10	< 0,10	< 0,10
COBALT as Co	0,041	0,039	0,038	0,033	0,030
VANADIUM as V	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03
TITANIUM as Ti	0,19	0,21	0,22	0,23	0,23
% BALANCING	97,2	96,3	96,9	96,2	97,6

ANALYSES in mg/l	SAMPLE NAME				
	6D	7S	7D	8S	8D
SAMPLE NUMBER	2066	2067	2068	2069	2070
pH	7,6	7,7	7,6	7,7	7,6
CONDUCTIVITY in mS/m at 25 °C	590	590	590	590	592
TOTAL DISSOLVED SOLIDS at 180 °C	4342	4120	4346	4324	4246
AMMONIA as N	98	100	104	117	98
NITRATE as N	1,6	4,4	3,9	3,8	0,9
CHLORIDE as Cl	1235	1211	1223	1223	1223
SULPHATE as SO_4	1063	1039	1058	1092	1043
SILICA as Si	7,8	7,8	8,5	7,8	6,8
FLUORIDE as F	7,8	7,4	7,8	7,6	7,6
SODIUM as Na	370	369	390	389	357
POTASSIUM as K	92	91	91	92	93
CALCIUM as Ca	581	581	581	585	583
MAGNESIUM as Mg	83	81	83	78	80
ALUMINIUM as Al	< 0,100	< 0,100	< 0,100	< 0,100	0,594
BORON as B	0,67	0,71	0,38	0,73	0,79
CADMIUM as Cd	< 0,010	< 0,010	< 0,010	< 0,010	< 0,010
CHROOM as Cr	0,084	0,053	0,832	0,055	1,96
IRON as Fe	2,01	0,734	34	0,660	57
COPPER as Cu	< 0,025	< 0,025	< 0,025	< 0,025	0,046
MANGANESE as Mn	3,26	3,36	4,35	3,35	4,87
LEAD as Pb	< 0,050	< 0,050	< 0,050	< 0,050	1,01
MERCURY as Hg	< 0,002	< 0,002	< 0,002	< 0,002	< 0,002
NICKEL as NI	0,038	0,038	0,085	0,048	0,091
SELENIUM as Se	< 0,005	< 0,005	0,006	< 0,005	< 0,005
ZINC as Zn	0,411	0,280	3,08	0,289	18
FREE CYANIDE as CN	< 0,05	< 0,05	< 0,05	< 0,05	< 0,05
ARSENIC as As	< 0,005	< 0,005	< 0,005	< 0,005	< 0,005
HEXAVALLENT CHROMIUM as Cr^{6+}	< 0,025	< 0,025	< 0,025	< 0,025	< 0,025
BARIUM as Ba	< 0,10	< 0,10	< 0,10	< 0,10	< 0,10
COBALT as Co	0,028	0,026	0,054	0,041	0,056
VANADIUM as V	< 0,03	< 0,03	< 0,03	< 0,03	< 0,03
TITANIUM as Ti	0,27	0,23	0,39	0,23	1,7
% BALANCING	97,1	96,4	94,9	95,9	94,8

ANALYSES in mg/l	SAMPLE NAME				
	9S	9D			
SAMPLE NUMBER	2071	2072			
pH	7,6	7,7			
CONDUCTIVITY In mS/m at 25 °C	592	592			
TOTAL DISSOLVED SOLIDS at 180 °C	4300	4328			
AMMONIA as N	101	106			
NITRATE as N	1,2	1,3			
CHLORIDE as Cl	1235	1211			
SULPHATE as SO_4	1159	1058			
SILICA as Si	7,7	7,8			
FLUORIDE as F	7,3	7,1			
SODIUM as Na	364	358			
POTASSIUM as K	93	91			
CALCIUM as Ca	585	581			
MAGNESIUM as Mg	80	83			
ALUMINIUM as Al	< 0,100	< 0,100			
BORON as B	0,81	0,73			
CADMIUM as Cd	< 0,010	< 0,010			
CHROOM as Cr	0,072	0,072			
IRON as Fe	0,580	0,732			
COPPER as Cu	< 0,025	< 0,025			
MANGANESE as Mn	3,37	3,43			
LEAD as Pb	< 0,050	< 0,050			
MERCURY as Hg	< 0,002	< 0,002			
NICKEL as Ni	0,045	0,043			
SELENIUM as Se	0,007	< 0,005			
ZINC as Zn	0,257	0,307			
FREE CYANIDE as CN	< 0,05	0,05			
ARSENIC as As	< 0,005	< 0,005			
HEXAVALLENT CHROMIUM as Cr^{6+}	< 0,025	< 0,025			
BARIUM as Ba	< 0,10	< 0,10			
COBALT as Co	0,028	0,033			
VANADIUM as V	< 0,03	< 0,03			
TITANIUM as Ti	0,21	0,23			
% BALANCING	98,9	96,4			

Ontvang: 2/11/2001

OFT

Final Dam 10

Water (Organic)
Volatile & Semi-
Volatile

From: Bridgit Liebenberg <bliebenberg@csir.co.za>
To: <OFT@global.co.za>
Sent: Friday, November 02, 2001 8:53 AM
Attach: RESULTS 011299compiled.doc
Subject: Report VOCs and SVOCs

Dear Dr Fourie,

Please find attached our revised report for the determination of VOCs and SVOCs in water samples. As discussed, the non-target compound results as well as the results for the sediment of 6D have now been included in the report. The analysis for sample 3D was repeated, but remained unchanged.

I trust the attached will meet with your approval. If you should have any queries, please do not hesitate to contact me.

Regards,

Bridgit

CSIR
BIO/CHEMTEK

Programme for Organic, Biochemical & Environmental Analysis
Private Bag X2
P. O. Modderfontein 1645
Gauteng
South Africa

Pinelands Road
Pinelands Site
Building T5
Modderfontein 1645
Gauteng
South Africa

Your Ref.:

Our Ref.: 01-1299

Enquires: B Cowan

Tel. #: 011-605 2452

Fax #: (011) 605-2537

Date: 1 November 2001

CERTIFICATE OF ANALYSIS

Ockie Fourie Toxicologists
Po Box 73179
Lynnwood Ridge
0040

ATTENTION: Dr O Fourie

Dear Dr Fourie,

SUBJECT: DETERMINATION OF VOLATILE ORGANIC COMPOUNDS AND SEMI-VOLATILE ORGANIC COMPOUNDS IN WATER SAMPLES

1. INTRODUCTION

This report details the results for the analysis of water samples received on 01 October 2001.

2. SAMPLE RECEIPT AND HANDLING

Seventeen water samples for Volatile Organic analysis (VOC) were received in duplicate in 40ml EPA vials. Seventeen water samples for Semi-Volatile Organic analysis (SVOC) were received in 1-litre Schott bottles. The samples were immediately transferred to a refrigerator where they were kept until analysed.

* Not SANAS Accredited

3. ANALYTICAL METHODS

3.1 Volatile organics:

Volatile organics were determined by purge and trap GC-MS using method GC.050 (based on US EPA 8260).

3.2 Semi-Volatile organics:

Semi-Volatile organics* were determined using an in-house GC-MS method based on US EPA 8270.

Sample 6D was filtered and the residue collected. The residue was analysed using an in-house GC-MS method based on US EPA 8270.

Non-target compounds were also identified and quantified semi-quantitatively against the closest internal standard.

4. RESULTS

4.1 Volatile Organics:

The volatile organic results are given in Appendix 1. This is a target compound analysis. A list of the target compounds, together with the method detection limits is given with the results.

4.2 Semi-Volatile Organics:

The semi-volatile organic results are given in Appendix 2. This is a target compound analysis. A list of the target compounds, together with the method detection limits is given with the results.

The result for the analysis of the residue of sample 6D is given in Appendix 3.

The identities and results for the non-target cmpounds are given in Appendix 4. The non-target compounds with MS spectral matches greater than 80% are reported. Theses results should be confirmed using reference materials of the compounds identified. Please note these are semi-quantitative results.

CSIR
BIO/CHEMTEK

We trust these results will meet with your approval. Please let us know if you require any further information.

Yours faithfully,

B G Cowan
Project Manager
PROBE, Bio/Chemtek
CSIR

Not SANAS Accredited

REFERENCE NO: 01-1299

CSIR
BIO/CHEMTEK

Appendix 1

Volatile Organics
by
Purge and Trap GC-MS

		Date Analysed		12/10/01	12/10/01	12/10/01
		Ref no		01-1299	01-1299	01-1299
		Sample I.D.	MDL	1S	2S	2D
Peak	CAS No.:	Units	µg/litre	µg/litre	µg/litre	µg/litre
1	75-71-8	Dichlorodifluoromethane	0.4	-	-	-
2	75-01-4	Vinyl Chloride	0.2	-	-	-
3	74-83-9	Bromomethane	0.3	-	-	-
4	75-69-4	Trichlorofluoromethane	0.2	-	-	-
5	75-35-4	1,1-Dichloroethene	0.3	-	-	-
6	75-09-2	Dichloromethane	0.1	<4	<4	<4
7	156-60-5	trans-1,2-Dichloroethene	0.3	-	-	-
8	75-34-3	1,1-Dichloroethane	0.3	-	-	-
9	156-59-2	cis-1,2-Dichloroethene	0.1	-	-	-
10	594-20-7	2,2-Dichloropropane	0.2	-	-	-
11	74-97-5	Bromochloromethane	0.2	-	-	-
12	67-66-3	Chloroform	0.3	-	-	-
13	71-55-6	1,1,1-Trichloroethane	0.2	-	-	-
14	563-58-6	1,1-Dichloropropene	0.3	-	-	-
15	56-23-5	Carbon Tetrachloride	0.3	-	-	-
16	107-06-2	1,2-Dichloroethane	0.2	-	-	-
17	71-43-2	Benzene	0.2	-	-	-
18	79-01-6	Trichloroethene	0.2	-	-	-
19	78-87-5	1,2-Dichloropropane	0.2	-	-	-
20	74-95-3	Dibromomethane	0.1	-	-	-
21	75-27-4	Bromodichloromethane	0.2	-	-	-
22	108-88-3	Toluene	0.2	-	-	-
23	79-00-5	1,1,2-Trichloroethane	0.3	-	-	-
24	142-28-9	1,3-Dichloropropane	0.2	-	-	-
25	127-18-4	Tetrachloroethene	0.2	-	-	-
26	124-48-1	Dibromochloromethane	0.3	-	-	-
27	106-93-4	1,2-Dibromoethane	0.2	-	-	-
28	108-90-7	Chlorobenzene	0.3	-	-	-
29	630-20-6	1,1,1,2-Tetrachloroethane	0.2	-	-	-

"–" = < Method detection limit (MDL)

CSIR
BIO/CHEMTEK

Appendix 1

Volatile Organics
by
Purge and Trap GC-MS

		Date Analysed		12/10/01	12/10/01	12/10/01
		Ref no		01-1299	01-1299	01-1299
		Sample I.D.	MDL	1S	2S	2D
Peak	CAS No.:	Units	µg/litre	µg/litre	µg/litre	µg/litre
30	100-41-4	Ethylbenzene	0.2	-	-	-
31	108-38-3 106-42-3	m,p-Xylene	0.4	-	-	-
32	95-47-6	o-Xylene	0.1	-	-	-
33	100-42-5	Styrene	0.1	-	-	-
34	75-25-2	Bromoform	0.4	-	-	-
35	98-82-8	Isopropylbenzene	0.2	-	-	-
36	79-34-5	1,1,2,2-Tetrachloroethane	0.4	-	-	-
37	96-18-4	1,2,3-Trichloropropane	0.4	-	-	-
38	108-86-1	Bromobenzene	0.2	-	-	-
39	103-65-1	n-Propylbenzene	0.2	-	-	-
40	95-49-8	2-Chlorotoluene	0.1	-	-	-
41	108-67-8	1,3,5-Trimethylbenzene	0.1	<1	3	-
42	106-43-4	4-Chlorotoluene	0.2	-	-	-
43	98-06-6	tert-Butylbenzene	0.3	-	-	-
44	95-63-6	1,2,4-Trimethylbenzene	0.2	-	-	-
45	135-98-8	sec-Butylbenzene	0.3	-	-	-
46	99-87-6	4-Isopropyltoluene	0.2	-	-	-
47	541-73-1	1,3-Dichlorobenzene	0.4	-	-	-
48	106-46-7	1,4-Dichlorobenzene	0.3	-	-	-
49	104-51-8	n-Butylbenzene	0.5	-	-	-
50	95-50-1	1,2-Dichlorobenzene	0.2	-	-	-
51	96-12-8	1,2-Dibromo-3-chloropropane	0.2	-	-	-
52	120-82-1	1,2,4-Trichlorobenzene	0.4	-	-	-
53	87-68-3	Hexachlorobutadiene	0.7	-	-	-
54	91-20-3	Naphthalene	0.5	<1	-	-
55	87-61-6	1,2,3-Trichlorobenzene	0.7	-	-	-

"–" = < Method detection limit (MDL)

* Not SANAS Accredited

CSIR
BIO/CHEMTEK

Appendix 1

Volatile Organics
by
Purge and Trap GC-MS

		Date Analysed		12/10/01	12/10/01	12/10/01
		Ref no		01-1299	01-1299	01-1299
		Sample I.D.	MDL	3S	3D	4S
Peak	CAS No.:	Units	µg/litre	µg/litre	µg/litre	µg/litre
1	75-71-8	Dichlorodifluoromethane	0.4	-	-	-
2	75-01-4	Vinyl Chloride	0.2	-	-	-
3	74-83-9	Bromomethane	0.3	-	-	-
4	75-69-4	Trichlorofluoromethane	0.2	-	-	-
5	75-35-4	1,1-Dichloroethene	0.3	-	-	-
6	75-09-2	Dichloromethane	0.1	<4	<4	<4
7	156-60-5	trans-1,2-Dichloroethene	0.3	-	-	-
8	75-34-3	1,1-Dichloroethane	0.3	-	-	-
9	156-59-2	cis-1,2-Dichloroethene	0.1	-	-	-
10	594-20-7	2,2-Dichloropropane	0.2	-	-	-
11	74-97-5	Bromochloromethane	0.2	-	-	-
12	67-66-3	Chloroform	0.3	-	-	-
13	71-55-6	1,1,1-Trichloroethane	0.2	-	-	-
14	563-58-6	1,1-Dichloropropene	0.3	-	-	-
15	56-23-5	Carbon Tetrachloride	0.3	-	-	-
16	107-06-2	1,2-Dichloroethane	0.2	-	-	-
17	71-43-2	Benzene	0.2	-	-	-
18	79-01-6	Trichloroethene	0.2	-	-	-
19	78-87-5	1,2-Dichloropropane	0.2	-	-	-
20	74-95-3	Dibromomethane	0.1	-	-	-
21	75-27-4	Bromodichloromethane	0.2	-	-	-
22	108-88-3	Toluene	0.2	-	-	-
23	79-00-5	1,1,2-Trichloroethane	0.3	-	-	-
24	142-28-9	1,3-Dichloropropane	0.2	-	-	-
25	127-18-4	Tetrachloroethene	0.2	-	-	-
26	124-48-1	Dibromochloromethane	0.3	-	-	-
27	106-93-4	1,2-Dibromoethane	0.2	-	-	-
28	108-90-7	Chlorobenzene	0.3	-	-	-
29	630-20-6	1,1,1,2-Tetrachloroethane	0.2	-	-	-

" – " = < Method detection limit (MDL)

* Not SANAS Accredited

Appendix I

Volatile Organics
by
Purge and Trap GC-MS

		Date Analysed		12/10/01	12/10/01	12/10/01
		Ref no		01-1299	01-1299	01-1299
		Sample I.D.	MDL	3S	3D	4S
Peak	CAS No.:	Units	µg/litre	µg/litre	µg/litre	µg/litre
30	100-41-4	Ethylbenzene	0.2	-	-	-
31	108-38-3 106-42-3	m,p-Xylene	0.4	-	-	-
32	95-47-6	o-Xylene	0.1	-	-	-
33	100-42-5	Styrene	0.1	-	-	-
34	75-25-2	Bromoform	0.4	-	-	-
35	98-82-8	Isopropylbenzene	0.2	-	-	-
36	79-34-5	1,1,2,2-Tetrachloroethane	0.4	-	-	-
37	96-18-4	1,2,3-Trichloropropane	0.4	-	-	-
38	108-86-1	Bromobenzene	0.2	-	-	-
39	103-65-1	n-Propylbenzene	0.2	-	-	-
40	95-49-8	2-Chlorotoluene	0.1	-	-	-
41	108-67-8	1,3,5-Trimethylbenzene	0.1	-	-	-
42	106-43-4	4-Chlorotoluene	0.2	-	-	-
43	98-06-6	tert-Butylbenzene	0.3	-	-	-
44	95-63-6	1,2,4-Trimethylbenzene	0.2	-	-	-
45	135-98-8	sec-Butylbenzene	0.3	-	-	-
46	99-87-6	4-Isopropyltoluene	0.2	-	-	-
47	541-73-1	1,3-Dichlorobenzene	0.4	-	-	-
48	106-46-7	1,4-Dichlorobenzene	0.3	-	-	-
49	104-51-8	n-Butylbenzene	0.5	-	-	-
50	95-50-1	1,2-Dichlorobenzene	0.2	-	-	-
51	96-12-8	1,2-Dibromo-3-chloropropane	0.2	-	-	-
52	120-82-1	1,2,4-Trichlorobenzene	0.4	-	-	-
53	87-68-3	Hexachlorobutadiene	0.7	-	-	-
54	91-20-3	Naphthalene	0.5	-	-	-
55	87-61-6	1,2,3-Trichlorobenzene	0.7	-	-	-

"_" = < Method detection limit (MDL)

Not SANAS Accredited