ANNUAL REPORT

SUMMARY OF OPERATING DATA

LIQUID WASTE MANAGEMENT GROUP HSE-7

CALENDAR YEAR, 1988

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15003

CONTENTS

	PAGE
Summary of Operations, TA-50 - Influent	1
Summary of Operations, TA-50 - Effluent	2
Gross Alpha Removal - TA-50	3
Chemical Analyses -TA-50	4
Waste Transferred to TA-50	5
Summary of Operations, TA-21-257 - Influent	6
Chemical Analyses - TA-21-257 - Influent	7
Vacuum Filter Operations - TA-50	8
Room 60 Pretreatment Operations	9
Room 60 Sludge/Cement Paste	10
Vacuum Filter Operations - TA-21-257	11
Summary of Solid Wastes Generated	12
Tank Discharges to Lagoons - TA-53	13
Lagoon Effluent -TA-53	14

SUMMARY OF OPERATIONS
TA-50
INFLUENT

CY 1988

MON	FLOW (Liters)	OPER (Hrs)	TRMT RATE (LPM)	GROSS ALPHA (Curies)	GROSS BETA (Curies)	^{89}Sr (Curies)	^{90}Sr (Curies)	^{137}Cs (Curies)	^{234}U (Curies)	^{238}Pu (Curies)	^{239}Pu (Curies)	^{241}Am (Curies)
JAN	1.769E6	46	698	0.70	0.13	7.25E-3	0	4.25E-3	2.30E-2	5.31E-2	5.84E-1	3.71E-2
FEB	1.916E6	46	770	0.22	0.33	1.84E-3	0	2.11E-2	7.47E-3	5.17E-2	1.23E-1	3.64E-2
MAR	2.700E6	57	790	0.44	0.08	4.48E-3	3.78E-4	4.32E-3	5.94E-2	4.86E-2	1.86E-1	1.24E-1
APR	2.396E6	61	656	0.24	0.04	4.07E-4	0	0	2.40E-2	3.59E-2	1.05E-1	7.19E-2
MAY	2.473E6	62	689	0.17	7.42E-3	7.17E-5	0	0	2.47E-2	4.20E-2	5.93E-2	3.71E-2
JUN	2.004E6	39	933	0.42	0.02	6.81E-5	5.21E-5	0	5.21E-3	6.41E-2	3.01E-1	5.41E-2
JUL	2.249E6	40	944	0.26	0.03	7.65E-4	1.35E-4	0	9.00E-4	8.32E-2	1.28E-1	4.72E-2
AUG	2.402E6	62	690	0.15	0.05	7.93E-3	2.40E-5	7.21E-4	6.00E-3	3.36E-2	6.97E-2	4.08E-2
SEP	2.108E6	46	798	0.11	0.05	2.11E-3	2.74E-5	1.18E-3	2.95E-3	2.32E-2	4.22E-2	4.22E-2
OCT	2.137E6	52	782	0.08	0.20	4.06E-2	4.92E-5	1.26E-3	0	2.99E-2	3.42E-2	1.72E-2
NOV	1.556E6	49	722	1.21	0.31	4.04E-2	0	0	7.78E-3	4.98E-2	1.59E-1	9.96E-1
DEC	1.362E6	32	748	0.04	0.05	2.86E-3	0	0	1.36E-3	8.17E-3	2.04E-2	1.09E-2
TOT	2.507E7	593		4.04	1.30	0.11	6.66E-4	3.28E-2	0.16	0.52	1.81	1.51
MON AVG	2.089E6	49	759	0.34	0.11	9.17E-3	5.55E-5	2.73E-3	1.33E-2	4.33E-2	0.15	0.13

SUMMARY OF OPERATIONS
TA-50
EFFLUENT

CY, 1988

MON	FLOW (Liters)	GROSS ALPHA (Curies)	GROSS BETA (Curies)	TRITIUM (Curies)	^{89}Sr (Curies)	^{90}Sr (Curies)	^{137}Cs (Curies)	^{234}U (Curies)	^{238}Pu (Curies)	^{239}Pu (Curies)	^{241}Am (Curies)
JAN	1.976E6	5.30E-4	2.98E-2	1.03	1.46E-2	6.32E-5	1.48E-3	6.13E-5	2.77E-5	1.23E-4	3.16E-4
FEB	2.119E6	1.05E-3	4.37E-2	0.69	9.54E-3	0	4.03E-3	3.81E-5	8.48E-5	4.73E-4	4.49E-4
MAR	2.885E6	1.18E-3	5.60E-2	7.59	2.94E-3	0	1.15E-2	6.06E-5	1.07E-4	4.90E-4	5.19E-4
APR	2.625E6	9.71E-4	1.44E-2	1.27	1.26E-3	2.62E-6	1.63E-3	4.99E-5	1.47E-4	4.46E-4	3.25E-4
MAY	2.770E6	4.63E-4	6.37E-3	1.91	1.99E-4	0	1.91E-3	6.65E-5	5.82E-5	1.94E-4	1.44E-4
JUN	2.663E6	1.07E-3	5.86E-3	0.53	3.20E-4	0	1.46E-3	6.92E-5	2.66E-4	3.73E-4	3.60E-4
JUL	2.673E6	1.17E-3	6.68E-3	0.28	1.07E-4	1.34E-4	1.95E-3	1.07E-4	2.06E-4	4.81E-4	3.74E-4
AUG	2.981E6	6.58E-4	1.85E-2	0.58	8.94E-3	0	2.98E-3	1.43E-4	8.35E-5	2.68E-4	1.58E-4
SEP	2.750E6	5.54E-4	2.01E-2	1.27	1.35E-3	0	1.40E-3	6.88E-5	6.88E-5	1.82E-4	2.34E-4
OCT	2.330E6	3.47E-4	1.65E-1	4.61	4.57E-3	0	1.21E-3	8.15E-5	2.56E-5	1.09E-4	1.26E-4
NOV	1.857E6	6.45E-4	5.94E-2	0.83	2.41E-2	0	7.80E-4	2.41E-5	3.90E-5	8.36E-5	4.98E-4
DEC	1.702E6	2.18E-4	3.05E-2	0.71	1.31E-2	0	8.68E-4	2.72E-5	0	1.70E-5	1.74E-4
TOT	2.933E7	8.85E-3	0.46	21.30	8.11E-2	1.99E-4	3.12E-2	7.97E-4	1.11E-3	3.24E-3	3.68E-3
MON AVG	2.444E6	7.38E-4	3.83E-2	1.78	6.76E-3	1.66E-5	2.60E-3	6.64E-5	9.25E-5	2.70E-4	3.07E-4

GROSS ALPHA REMOVAL
TA-50

CY, 1988

$$\left(\text{REMOVAL FACTOR} = \frac{\text{INF-EFF}}{\text{INF}} \times 100\right)$$

VOLUME OF FLOW { INFLUENT = 2.507 E+7 LITERS
EFFLUENT = 2.933 E+7 LITERS

MONTH	
JANUARY	99.92
FEBRUARY	99.52
MARCH	99.73
APRIL	99.59
MAY	99.72
JUNE	99.75
JULY	99.55
AUGUST	99.56
SEPTEMBER	99.50
OCTOBER	99.57
NOVEMBER	99.95
DECEMBER	99.47
AVERAGE	99.78

CHEMICAL ANALYSES
TA-50

CY, 1988

CHEMICAL ANALYSIS	INFLUENT AVERAGE (mg/L)	INFLUENT MAXIMUM (mg/L)	INFLUENT MINIMUM (mg/L)	INFLUENT TOTAL (KG)	EFFLUENT AVERAGE (mg/L)	EFFLUENT MAXIMUM (mg/L)	EFFLUENT MINIMUM (mg/L)	EFFLUENT TOTAL (KG)	INF/EFF RATIO
ALK-MO	30	99	0	806	488	570	385	16,000	0.05
ALK-P	3.6	43	0	64	0	0	0	0	-
Be	0.12	0.26	0.025	4	0.13	0.37	0	4	1.0
Cd	3.1E-3	1.0E-2	0	9.0E-2	2.9E-4	5.2E4-	0	9.0E-3	10.0
Ca	17	39	3	510	205	280	140	6700	0.08
Cl^-	7.5E-3	143	38	2140	102	190	44	3250	0.66
Cr+6	9.6E-2	3.0E-2	0	0.22	1.4E-2	4.0E-2	0	0.46	0.48
Total Cr	78	0.17	5.6E-2	3	1.6E-2	3.1E-2	0	0.52	5.8
COD	7.5E-3	124	51	2200	38	68	22	1230	1.8
Conductivity	1980	3090	969	uS/cm	4270	8300	2400	uS/cm	
Cu	0.57	1.6	0.12	17	0.18	0.33	8.8E-2	6	2.8
CN	0.15	0.26	7.6E-2	4	0.26	0.48	9.5E-2	9	0.44
F	6	12	1	188	6	10	2	187	1.0
Pb	0.19	0.51	2.2E-2	6	4.6E-2	0.17	4.1E-3	1	6.0
Mg	3	4	0.27	101	0.37	0.60	0.26	12	8.4
Hg	1.7E-2	5.4E-2	4.8E-4	0.53	4.2E-4	1.5E-3	0	1.5E-2	35.3
NH_3-N	5	7	3	140	7	12	4	235	0.6
Ni	8.8E-2	0.15	0	3	1.9E-2	6.0E-2	0	0.71	4.2
NO_2-N	0.30	0.54	5.0E-2	9	0.98	2	0.14	33	0.27
NO_3-N	192	317	55	5580	384	785	152	13,400	0.42
pH		9.23	2.49			7.91	7.02		
PO_4	3	11	1	72	0.24	0.39	0.10	8	9.0
K	123	270	5	3560	137	190	79	4430	0.8
Ag	2.8E-2	6.2E-2	4.0E-3	0.82	5.4E-3	1.0E-2	0	0.19	4.3
SO_4	23	34	15	671	169	675	20	5730	0.1
Na	246	460	18	7240	693	1900	290	24,200	0.3
T. Cations	17	27	9	meq/L	44	87	23	meq/L	
T. Hardness	21	42	3	611	205	280	140	6710	0.09
TDS	1480	2330	802	42,900	3120	5140	1700	106,000	0.40
TSS	33	95	0	986	-	-	-	-	-
Zn	0.33	0.53	0.21	9	8.1E-2	0.12	6.0E-2	3	3.0
As	2.6E-3	9.4E-3	0	6.8E-2	1.4E-3	6.3E-3	0	49.E-2	1.4
Se	9.8E-4	2.7E-3	0	2.8E-2	1.2E-3	2.8E-3	0	4.1E-2	0.7

WASTE TRANSFERRED TO TA-50

CY, 1988

	FROM OMEGA (Liters)	FROM TA-21-257 (Liters)
JANUARY	8614	120,078
FEBRUARY	0	161,484
MARCH	7570	216,346
APRIL	8377	237,671
MAY	5677	219,452
JUNE	9463	502,049
JULY	9462	359,611
AUGUST	0	573,475
SEPTEMBER	5677	550,908
OCTOBER	0	214,898
NOVEMBER	7570	214,276
DECEMBER	0	136,640
TOTAL	62,410	3,506,888
AVERAGE	5201	292,241

SUMMARY OF OPERATIONS
TA-21-257
INFLUENT

CY, 1988

MON	FLOW (Liters)	OPER (Hrs)	TRMT RATE (LPM)	GROSS ALPHA (Curies)	GROSS BETA (Curies)	TRITIUM (Curies)	^{89}Sr (Curies)	^{90}Sr (Curies)	^{137}Cs (Curies)	^{234}U (Curies)	^{238}Pu (Curies)	^{239}Pu (Curies)	^{241}Am (Curies)
JAN	1.597E5	2.40	586	4.60E-4	1.31E-4	0.12	0	0	0	3.51E-5	3.99E-5	1.76E-4	2.08E-4
FEB	1.517E5	8.45	479	8.17E-4	2.58E-5	0.04	4.10E-6	0	8.95E-5	1.67E-5	7.28E-5	6.52E-4	7.28E-5
MAR	1.995E5	6.59	555	2.12E-4	1.56E-5	2.09	3.39E-6	0	0	4.16E-5	2.79E-5	9.58E-5	4.13E-5
APR	1.895E5	4.50	598	1.27E-4	4.74E-5	0.54	0	0	0	1.42E-5	1.89E-5	6.63E-5	2.73E-5
MAY	2.588E5	10.29	487	7.94E-4	1.29E-4	0.19	0	0	0	2.28E-4	1.58E-4	1.42E-4	2.59E-4
JUN	5.544E5	18.87	497	4.97E-4	2.16E-4	0.17	2.22E-6	0	0	1.16E-4	7.76E-5	1.22E-4	1.77E-4
JUL	4.269E5	13.68	523	2.13E-3	3.17E-4	0.09	1.28E-5	0	0	1.45E-4	2.43E-4	4.10E-4	1.32E-3
AUG	5.074E5	18.37	517	1.01E-3	7.10E-4	0.36	1.01E-5	0	2.84E-4	4.06E-5	9.13E-5	5.58E-4	3.20E-4
SEP	4.930E5	15.56	491	4.22E-4	5.92E-4	0.24	0	0	2.42E-4	2.02E-5	6.41E-5	2.71E-4	6.56E-5
OCT	2.141E5	7.42	474	2.44E-3	3.21E-4	0.07	6.42E-6	0	1.26E-4	2.14E-3	4.71E-5	1.11E-4	2.78E-5
NOV	1.697E5	9.37	372	2.63E-4	1.12E-3	0.47	1.19E-5	0	0	1.31E-4	2.38E-5	5.26E-5	4.92E-5
DEC	1.293E5	5.66	466	2.29E-5	4.40E-4	0.05	1.03E5	0	7.76E-5	1.68E-5	1.42E-6	4.65E-6	0
TOT	3.454E6	121		9.20E-3	4.12E-3	4.43	6.13E-5	0	8.19E-4	2.95E-3	8.66E-4	2.66E-3	2.57E-3
MON AVG	2.878E5	10.10	496	7.67E-4	3.43E-4	0.37	5.11E-6	-	6.83E-5	2.46E-4	7.22E-5	2.22E-4	2.14E-4

CHEMICAL ANALYSES
TA-21-257

CY, 1988

CHEMICAL ANALYSIS	INFLUENT			
	AVERAGE (mg/L)	MAXIMUM (mg/L)	MINIMUM (mg/L)	TOTAL (KG)
ALK-MO	138	246	0	489
ALK-P	7	87	0	19
Ba	4	51	2.9E-2	7
Cd	5.8E-3	1.8E-2	4.8E-4	0.02
Ca	22	89	7	73
Cl	27	49	12	82
Cr+6	1.3E-2	3.0E-2	0	0.05
Total Cr	0.3	0.6	4.5E-2	
COD	201	740	72	685
Conductivity	478	699	286	uS/cm
Cu	0.6	4	7.7E-2	2
CN	0	-	-	0
F	3	5	1	9
Pb	0.2	0.6	3.0E-2	0.7
Mg	1	2	0.7	5
Hg	1.5E-2	4.4E-2	2.2E-3	0.05
NH_3-N	1	6	6.0E-2	6
Ni	0.1	0.8	0	0.3
NO_2-N	5.9E-2	0.2	0	0.2
NO_3-N	7	46	7.4E-2	17
pH		9.82	4.71	
PO_4	1	2	0.8	4
K	10	16	5	33
Ag	3.4E-2	8.0E-2	4.0E-3	0.1
SO_4	41	66	19	133
Na	79	150	33	259
T. Cations	5	7	2	meq/L
T. Hardness	24	91	8	78
TDS	332	460	78	1060
TSS	82	238	4	313
Zn	0.4	0.8	9.3E-2	1
As	1.7E-2	3.5E-2	9.0E-3	0.06
Se	1.0E-3	3.9E-3	0	0.003

VACUUM FILTER OPERATIONS
TA-50-1-ROOM 116B

CY, 1988

MONTH	NO. OF DRUMS	TOTAL VOLUME (Liters)	GROSS WEIGHT (KG)	235 U (Curies)	238 Pu (Curies)	239 Pu (Cureis)	241 Am (Curies)
JAN	45	9360	9734	6.7E-4	0.12	1.2	0.13
FEB	45	9360	9970	1.9E-4	0.16	2.1	0.23
MAR	45	9360	9711	2.0E-5	9.6E-2	1.3	0.17
APR	45	9360	9705	3.1E-4	4.3E-2	0.27	9.5E-2
MAY	18	3744	3581	1.2E-4	1.6E-2	7.7E-2	2.7E-2
JUNE	40	8320	7970	0	2.7E-2	9.9E-2	7.9E-2
JULY	40	8320	8206	1.1E-4	0.13	0.22	8.5E-2
AUG	37	7696	7283	2.6E-4	0.16	0.35	0.11
SEPT	28	5824	5503	7.0E-6	9.0E-3	2.7E-2	6.8E-3
OCT	27	5616	5355	6.0E-5	2.2E-2	7.9E-2	4.1E-2
NOV	6	1248	1126	3.3E-5	4.6E-3	1.7E-2	8.6E-3
DEC	28	5824	5371	0	4.6E-2	0.22	0.74
TOTALS	404	84,032	83,515	1.78E-3	8.34E-1	5.96	1.72

PRETREATMENT OPERATIONS
TA-50-1-ROOM 60

CY, 1988

MONTH	PROCESS CAUSTIC (Liters)	PROCESS ACID (Liters)	TOTAL VOLUME (Liters)	TOTAL Pu (Curies)	TOTAL Am (Curies)	GROSS ALPHA (Curies)
JAN	1378.0	6863.5	8241.5	0.921	0.978	1.899
FEB	3206.5	15,423.0	18,629.5	3.901	6.333	10.234
MAR	4213.5	14,428.7	18,642.2	2.772	5.642	8.414
APR	3021.0	9778.5	12,799.5	1.672	3.212	4.884
MAY	2968.0	12,269.5	15,237.5	2.140	1.174	3.314
JUNE	2676.5	9699.0	12,375.5	1.413	0.660	2.073
JULY	2941.5	13,207.6	16,149.1	1.777	1.239	3.016
AUG	2358.5	15,078.5	17,437.0	2.939	6.446	9.385
SEPT	3021.0	14,124.5	17,145.5	4.908	2.631	7.539
OCT	1272.0	6068.5	7340.5	2.769	1.861	4.629
NOV	2226.0	9248.5	11,474.5	7.932	5.663	13.595
DEC	2173.0	12,720.0	14,893.0	5.718	4.987	10.705
TOTALS	31,455.5	138,909.8	170,365.3	38.862	40.826	79.688

SLUDGE/CEMENT PASTE
TA-50-1-ROOM 60

CY, 1988

MONTH	NO. OF DRUMS	SLUDGE SOLIDIFIED (Liters)	TOTAL VOLUME (Liters)	GROSS WEIGHT (KG)	235 U (Curies)	238 Pu (Curies)	239 Pu (Curies)	241 Am (Curies)
JAN								
FEB	8	1664	666	2166	4.2E-3	3.3E-1	8.5E0	8.2E0
MAR								
APR								
MAY								
JUNE								
JULY								
AUG								
SEPT								
OCT								
NOV								
DEC	13	2704	1083	3541	0	4.4E0	1.6E+1	2.5E+1
TOTALS	21	4368	1749	5707	4.2E-3	4.73	24.50	33.20

VACUUM FILTER OPERATIONS
TA-21-257

CY, 1988

MONTH	NO. OF DRUMS	TOTAL VOLUME (Liters)	GROSS WEIGHT (KG)	235 U (Curies)	238 Pu (Curies)	239 Pu (Curies)	241 Am (Curies)
JAN							
FEB							
MAR							
APR							
MAY							
JUNE	25	5200	4409	5.0E-5	1.9E-3	2.8E-3	7.8E-3
JULY	7	1664	1431	6.0E-6	5.1E-4	8.3E-4	2.2E-3
AUG							
SEPT							
OCT							
NOV							
DEC							
TOTALS	32	6864	5840	5.6E-5	2.4E-3	3.6E-3	1.0E-2

SUMMARY OF SOLID WASTES GENERATED

CY, 1988

	TA-50		TA-21-257	
PLANT SLUDGE	84,032	Liters	6864	Liters
DRUMS OF SLUDGE (RETREIVABLE)	163	bbls	0	bbls
DRUMS OF SLUDGE (NON-RET.)	241	bbls	32	bbls
CEMENT PASTE	4368	Liters		
DRUMS OF CEMENT PASTE (RET.)	21	bbls		
MISC. DRUMS (GRIT, ETC.)(RET.)	0	bbls	0	bbls

PLANT SLUDGE ACTIVITY	TOTAL		MO. AVG.		TOTAL		MO. AVG.	
235 U	1.78E-3	Ci	1.48E-4	Ci	5.6E-5	Ci	4.7E-6	Ci
238 Pu	8.34E-1	Ci	6.95E-2	Ci	2.4E-3	Ci	2.0E-4	Ci
239 Pu	5.96	Ci	4.97E-1	Ci	3.6E-3	Ci	3.0E-4	Ci
241 Am	1.72	Ci	1.43E-1	Ci	1.0E-2	Ci	8.3E-4	Ci

CEMENT PASTE ACTIVITY	TOTAL		MO. AVG.	
235 U	4.2E-3	Ci	3.50E-4	Ci
238 Pu	4.73	Ci	3.94E-1	Ci
239 Pu	24.50	Ci	2.04	Ci
241 Am	33.20	Ci	2.77	Ci

TOTAL PLANT INFLUENT	2.501E7	Liters	3.606E6	Liters
TOTAL PLANT EFFLUENT	2.933E7	Liters		

TANK DISCHARGES TO LAGOONS
TA-53

CY. 1988

MONTH	METER READING	FLOW (Liters)	TRITIUM (Curies)	^{7}Be (Curies)	^{22}Na (Curies)	^{54}Mn (Curies)	^{57}Co (Curies)	^{60}Co (Curies)	^{134}Cs (Curies)
JAN	893270	7.09E3	0.87	0.76	0	2.77E-2	5.67E-2	5.03E-3	2.06E-4
FEB	895142	6.16E3	0.30	0.67	3.08E-3	3.76-E2	5.05E-2	8.01E-3	3.88E-4
MAR	896770	1.53E4	0.26	0.61	2.14E-3	3.67E-2	5.05E-2	1.04E-2	-
APR	900820	2.16E4	0.34	0.32	4.54E-3	4.54E-2	7.78E-2	1.62E-2	-
MAY	906520	1.94E4	0.30	0.29	4.07E-3	4.07E-2	6.98E-2	1.46E-2	-
JUNE	911654	5.80E4	7.48	3.25	1.80E-2	8.70E-2	0.17	2.73E-2	-
JULY	926980	1.23E5	26.20	1.16	6.64E-2	0.36	0.25	4.55E-2	3.08E-3
AUG	959480	2.21E5	18.56	2.01	1.90E-2	0.22	0.12	2.19E-2	1.04E-3
SEPT	1017800	2.20E5	21.56	5.72	1.91E-2	0.29	0.15	2.11E-2	-
OCT	1075940	1.23E5	12.05	3.20	1.07E-2	0.16	8.49E-2	1.18E-2	-
NOV	1108380	2.59E4	8.81E-2	3.11E-2	-	4.01E-3	2.85E-3	4.66E-4	5.44E-5
DEC	1115230 1115231	-	-	-	-	-	-	-	-
TOTAL		8.40E5	88.01	18.02	1.47E-1	1.31E0	1.08E0	1.82E-1	4.77E-3
MONTHLY AVG		7.00E4	7.33	1.50	1.23E-2	1.09E-1	9.03E-2	1.52E-2	3.97E-4

LAGOON EFFLUENT
TA-53

CY, 1988

MONTH	FLOW (Liters)	TRITIUM (Curies)	^{7}Be (Curies)	^{22}Na (Curies)	^{54}Mn (Curies)	^{57}Co (Curies)	^{60}Co (Curies)	^{134}Cs (Curies)
JAN								
FEB								
MAR	7.84E5	1.56	-	-	4.86E-3	6.90E-3	1.18E-3	3.37E-3
APR	1.40E4	0.03	-	-	8.68E-5	1.23E-4	2.10E-5	6.02E-5
MAY	3.22E5	0.64	-	-	2.00E-3	2.83E-3	4.83E-4	1.38E-3
JUNE								
JULY								
AUG								
SEPT								
OCT								
NOV								
DEC	1.24E6	2.70	-	1.86E-2	2.85E-3	6.57E-3	2.23E-3	4.09E-3
TOTAL	2.36E6	4.90	-	1.86E-2	9.80E-3	1.64E-2	3.91E-3	8.90E-3
MONTHLY AVERAGE	1.97E5	4.09E-1	-	1.55E-3	8.16E-4	1.37E-3	3.26E-4	7.42E-4