

ATTACHMENT G-1

~1216288.TXT

Source: C:\MANATE~1\MANATEE.PRM

 =====
 Model Parameters
 =====

Lo : 170.00 m³ / Mg
 k : 0.0500 1/yr
 NMOC : 4000.00 ppmv
 Methane : 50.0000 % volume
 Carbon Dioxide : 50.0000 % volume

 =====
 Landfill Parameters
 =====

Landfill type : No Co-Disposal
 Year Opened : 1978 Current Year : 2002 Closure Year: 2034
 Capacity : 16070000 Mg
 Average Acceptance Rate Required from
 Current Year to Closure Year : 324912.00 Mg/year

 =====
 Model Results
 =====

Year	Refuse In Place (Mg)	Methane Emission Rate	
		(Mg/yr)	(Cubic m/yr)
1979	8.811E+04	4.997E+02	7.489E+05
1980	1.882E+05	1.043E+03	1.563E+06
1981	3.004E+05	1.628E+03	2.441E+06
1982	4.299E+05	2.283E+03	3.422E+06
1983	5.770E+05	3.006E+03	4.506E+06
1984	7.914E+05	4.075E+03	6.108E+06
1985	1.008E+06	5.105E+03	7.652E+06
1986	1.205E+06	5.973E+03	8.953E+06
1987	1.428E+06	6.946E+03	1.041E+07
1988	1.674E+06	8.002E+03	1.200E+07
1989	1.940E+06	9.121E+03	1.367E+07
1990	2.210E+06	1.021E+04	1.530E+07
1991	2.479E+06	1.123E+04	1.684E+07
1992	2.765E+06	1.231E+04	1.845E+07
1993	3.058E+06	1.337E+04	2.004E+07
1994	3.342E+06	1.433E+04	2.148E+07
1995	3.668E+06	1.548E+04	2.320E+07
1996	3.994E+06	1.657E+04	2.484E+07
1997	4.322E+06	1.762E+04	2.642E+07
1998	4.648E+06	1.861E+04	2.790E+07
1999	4.982E+06	1.960E+04	2.938E+07
2000	5.288E+06	2.038E+04	3.055E+07
2001	5.546E+06	2.085E+04	3.125E+07
2002	5.871E+06	2.167E+04	3.249E+07
2003	6.196E+06	2.246E+04	3.366E+07
2004	6.521E+06	2.321E+04	3.478E+07
2005	6.846E+06	2.392E+04	3.585E+07
2006	7.171E+06	2.459E+04	3.686E+07
2007	7.495E+06	2.524E+04	3.783E+07
2008	7.820E+06	2.585E+04	3.874E+07
2009	8.145E+06	2.643E+04	3.962E+07
2010	8.470E+06	2.698E+04	4.045E+07
2011	8.795E+06	2.751E+04	4.123E+07
2012	9.120E+06	2.801E+04	4.199E+07
2013	9.445E+06	2.849E+04	4.270E+07
2014	9.770E+06	2.894E+04	4.338E+07
2015	1.009E+07	2.937E+04	4.402E+07

ATTACHMENT G-1

~1216288.TXT

2016	1.042E+07	2.978E+04	4.464E+07
2017	1.074E+07	3.017E+04	4.522E+07
2018	1.107E+07	3.054E+04	4.578E+07
2019	1.139E+07	3.090E+04	4.631E+07
2020	1.172E+07	3.123E+04	4.681E+07
2021	1.204E+07	3.155E+04	4.729E+07
2022	1.237E+07	3.185E+04	4.775E+07
2023	1.269E+07	3.214E+04	4.818E+07
2024	1.302E+07	3.242E+04	4.859E+07
2025	1.334E+07	3.268E+04	4.898E+07
2026	1.367E+07	3.293E+04	4.936E+07
2027	1.399E+07	3.316E+04	4.971E+07
2028	1.432E+07	3.339E+04	5.005E+07
2029	1.464E+07	3.360E+04	5.037E+07
2030	1.497E+07	3.381E+04	5.067E+07
2031	1.529E+07	3.400E+04	5.096E+07
2032	1.562E+07	3.419E+04	5.124E+07
2033	1.594E+07	3.436E+04	5.150E+07
2034	1.607E+07	3.340E+04	5.007E+07
2035	1.607E+07	3.177E+04	4.763E+07
2036	1.607E+07	3.023E+04	4.530E+07
2037	1.607E+07	2.875E+04	4.310E+07
2038	1.607E+07	2.735E+04	4.099E+07
2039	1.607E+07	2.601E+04	3.899E+07
2040	1.607E+07	2.475E+04	3.709E+07
2041	1.607E+07	2.354E+04	3.528E+07
2042	1.607E+07	2.239E+04	3.356E+07
2043	1.607E+07	2.130E+04	3.193E+07
2044	1.607E+07	2.026E+04	3.037E+07
2045	1.607E+07	1.927E+04	2.889E+07
2046	1.607E+07	1.833E+04	2.748E+07
2047	1.607E+07	1.744E+04	2.614E+07
2048	1.607E+07	1.659E+04	2.486E+07
2049	1.607E+07	1.578E+04	2.365E+07
2050	1.607E+07	1.501E+04	2.250E+07
2051	1.607E+07	1.428E+04	2.140E+07
2052	1.607E+07	1.358E+04	2.036E+07
2053	1.607E+07	1.292E+04	1.936E+07
2054	1.607E+07	1.229E+04	1.842E+07
2055	1.607E+07	1.169E+04	1.752E+07
2056	1.607E+07	1.112E+04	1.667E+07
2057	1.607E+07	1.058E+04	1.585E+07
2058	1.607E+07	1.006E+04	1.508E+07
2059	1.607E+07	9.570E+03	1.435E+07
2060	1.607E+07	9.104E+03	1.365E+07
2061	1.607E+07	8.660E+03	1.298E+07
2062	1.607E+07	8.237E+03	1.235E+07
2063	1.607E+07	7.836E+03	1.174E+07
2064	1.607E+07	7.453E+03	1.117E+07
2065	1.607E+07	7.090E+03	1.063E+07
2066	1.607E+07	6.744E+03	1.011E+07
2067	1.607E+07	6.415E+03	9.616E+06
2068	1.607E+07	6.102E+03	9.147E+06
2069	1.607E+07	5.805E+03	8.701E+06
2070	1.607E+07	5.522E+03	8.276E+06
2071	1.607E+07	5.252E+03	7.873E+06
2072	1.607E+07	4.996E+03	7.489E+06
2073	1.607E+07	4.753E+03	7.124E+06
2074	1.607E+07	4.521E+03	6.776E+06
2075	1.607E+07	4.300E+03	6.446E+06
2076	1.607E+07	4.091E+03	6.131E+06
2077	1.607E+07	3.891E+03	5.832E+06
2078	1.607E+07	3.701E+03	5.548E+06

ATTACHMENT G-1

~1216288.TXT

2079	1.607E+07	3.521E+03	5.277E+06
2080	1.607E+07	3.349E+03	5.020E+06
2081	1.607E+07	3.186E+03	4.775E+06
2082	1.607E+07	3.030E+03	4.542E+06
2083	1.607E+07	2.883E+03	4.321E+06
2084	1.607E+07	2.742E+03	4.110E+06
2085	1.607E+07	2.608E+03	3.910E+06
2086	1.607E+07	2.481E+03	3.719E+06
2087	1.607E+07	2.360E+03	3.537E+06
2088	1.607E+07	2.245E+03	3.365E+06
2089	1.607E+07	2.135E+03	3.201E+06
2090	1.607E+07	2.031E+03	3.045E+06
2091	1.607E+07	1.932E+03	2.896E+06
2092	1.607E+07	1.838E+03	2.755E+06
2093	1.607E+07	1.748E+03	2.621E+06
2094	1.607E+07	1.663E+03	2.493E+06
2095	1.607E+07	1.582E+03	2.371E+06
2096	1.607E+07	1.505E+03	2.256E+06
2097	1.607E+07	1.431E+03	2.146E+06
2098	1.607E+07	1.362E+03	2.041E+06
2099	1.607E+07	1.295E+03	1.941E+06
2100	1.607E+07	1.232E+03	1.847E+06
2101	1.607E+07	1.172E+03	1.757E+06
2102	1.607E+07	1.115E+03	1.671E+06
2103	1.607E+07	1.060E+03	1.589E+06
2104	1.607E+07	1.009E+03	1.512E+06
2105	1.607E+07	9.595E+02	1.438E+06
2106	1.607E+07	9.127E+02	1.368E+06
2107	1.607E+07	8.682E+02	1.301E+06
2108	1.607E+07	8.259E+02	1.238E+06
2109	1.607E+07	7.856E+02	1.178E+06
2110	1.607E+07	7.473E+02	1.120E+06
2111	1.607E+07	7.108E+02	1.065E+06
2112	1.607E+07	6.762E+02	1.014E+06
2113	1.607E+07	6.432E+02	9.641E+05
2114	1.607E+07	6.118E+02	9.171E+05
2115	1.607E+07	5.820E+02	8.723E+05
2116	1.607E+07	5.536E+02	8.298E+05
2117	1.607E+07	5.266E+02	7.893E+05
2118	1.607E+07	5.009E+02	7.508E+05
2119	1.607E+07	4.765E+02	7.142E+05
2120	1.607E+07	4.532E+02	6.794E+05
2121	1.607E+07	4.311E+02	6.462E+05
2122	1.607E+07	4.101E+02	6.147E+05
2123	1.607E+07	3.901E+02	5.847E+05
2124	1.607E+07	3.711E+02	5.562E+05
2125	1.607E+07	3.530E+02	5.291E+05
2126	1.607E+07	3.358E+02	5.033E+05
2127	1.607E+07	3.194E+02	4.787E+05
2128	1.607E+07	3.038E+02	4.554E+05
2129	1.607E+07	2.890E+02	4.332E+05
2130	1.607E+07	2.749E+02	4.121E+05
2131	1.607E+07	2.615E+02	3.920E+05
2132	1.607E+07	2.487E+02	3.728E+05
2133	1.607E+07	2.366E+02	3.547E+05
2134	1.607E+07	2.251E+02	3.374E+05
2135	1.607E+07	2.141E+02	3.209E+05
2136	1.607E+07	2.037E+02	3.053E+05
2137	1.607E+07	1.937E+02	2.904E+05
2138	1.607E+07	1.843E+02	2.762E+05
2139	1.607E+07	1.753E+02	2.627E+05
2140	1.607E+07	1.667E+02	2.499E+05
2141	1.607E+07	1.586E+02	2.377E+05

ATTACHMENT G-1

~1216288.TXT

2142	1.607E+07	1.509E+02	2.261E+05
2143	1.607E+07	1.435E+02	2.151E+05
2144	1.607E+07	1.365E+02	2.046E+05
2145	1.607E+07	1.299E+02	1.946E+05
2146	1.607E+07	1.235E+02	1.852E+05
2147	1.607E+07	1.175E+02	1.761E+05
2148	1.607E+07	1.118E+02	1.675E+05
2149	1.607E+07	1.063E+02	1.594E+05
2150	1.607E+07	1.011E+02	1.516E+05
2151	1.607E+07	9.620E+01	1.442E+05
2152	1.607E+07	9.151E+01	1.372E+05
2153	1.607E+07	8.705E+01	1.305E+05
2154	1.607E+07	8.280E+01	1.241E+05
2155	1.607E+07	7.876E+01	1.181E+05
2156	1.607E+07	7.492E+01	1.123E+05
2157	1.607E+07	7.127E+01	1.068E+05
2158	1.607E+07	6.779E+01	1.016E+05
2159	1.607E+07	6.448E+01	9.666E+04
2160	1.607E+07	6.134E+01	9.194E+04
2161	1.607E+07	5.835E+01	8.746E+04
2162	1.607E+07	5.550E+01	8.319E+04
2163	1.607E+07	5.280E+01	7.914E+04
2164	1.607E+07	5.022E+01	7.528E+04
2165	1.607E+07	4.777E+01	7.161E+04
2166	1.607E+07	4.544E+01	6.811E+04
2167	1.607E+07	4.323E+01	6.479E+04
2168	1.607E+07	4.112E+01	6.163E+04
2169	1.607E+07	3.911E+01	5.863E+04
2170	1.607E+07	3.720E+01	5.577E+04
2171	1.607E+07	3.539E+01	5.305E+04
2172	1.607E+07	3.366E+01	5.046E+04
2173	1.607E+07	3.202E+01	4.800E+04
2174	1.607E+07	3.046E+01	4.566E+04
2175	1.607E+07	2.897E+01	4.343E+04
2176	1.607E+07	2.756E+01	4.131E+04
2177	1.607E+07	2.622E+01	3.930E+04
2178	1.607E+07	2.494E+01	3.738E+04
2179	1.607E+07	2.372E+01	3.556E+04
2180	1.607E+07	2.257E+01	3.382E+04
2181	1.607E+07	2.147E+01	3.217E+04
2182	1.607E+07	2.042E+01	3.061E+04
2183	1.607E+07	1.942E+01	2.911E+04
2184	1.607E+07	1.848E+01	2.769E+04
2185	1.607E+07	1.757E+01	2.634E+04
2186	1.607E+07	1.672E+01	2.506E+04
2187	1.607E+07	1.590E+01	2.384E+04
2188	1.607E+07	1.513E+01	2.267E+04
2189	1.607E+07	1.439E+01	2.157E+04
2190	1.607E+07	1.369E+01	2.052E+04
2191	1.607E+07	1.302E+01	1.951E+04
2192	1.607E+07	1.238E+01	1.856E+04
2193	1.607E+07	1.178E+01	1.766E+04
2194	1.607E+07	1.121E+01	1.680E+04
2195	1.607E+07	1.066E+01	1.598E+04
2196	1.607E+07	1.014E+01	1.520E+04
2197	1.607E+07	9.645E+00	1.446E+04
2198	1.607E+07	9.174E+00	1.375E+04
2199	1.607E+07	8.727E+00	1.308E+04
2200	1.607E+07	8.301E+00	1.244E+04
2201	1.607E+07	7.897E+00	1.184E+04
2202	1.607E+07	7.511E+00	1.126E+04
2203	1.607E+07	7.145E+00	1.071E+04
2204	1.607E+07	6.797E+00	1.019E+04

ATTACHMENT G-1

~1216288.TXT

2205	1.607E+07	6.465E+00	9.691E+03
2206	1.607E+07	6.150E+00	9.218E+03
2207	1.607E+07	5.850E+00	8.769E+03
2208	1.607E+07	5.565E+00	8.341E+03
2209	1.607E+07	5.293E+00	7.934E+03
2210	1.607E+07	5.035E+00	7.547E+03
2211	1.607E+07	4.790E+00	7.179E+03
2212	1.607E+07	4.556E+00	6.829E+03
2213	1.607E+07	4.334E+00	6.496E+03
2214	1.607E+07	4.122E+00	6.179E+03
2215	1.607E+07	3.921E+00	5.878E+03
2216	1.607E+07	3.730E+00	5.591E+03
2217	1.607E+07	3.548E+00	5.318E+03
2218	1.607E+07	3.375E+00	5.059E+03
2219	1.607E+07	3.211E+00	4.812E+03
2220	1.607E+07	3.054E+00	4.578E+03
2221	1.607E+07	2.905E+00	4.354E+03
2222	1.607E+07	2.763E+00	4.142E+03
2223	1.607E+07	2.629E+00	3.940E+03
2224	1.607E+07	2.500E+00	3.748E+03
2225	1.607E+07	2.378E+00	3.565E+03
2226	1.607E+07	2.262E+00	3.391E+03
2227	1.607E+07	2.152E+00	3.226E+03
2228	1.607E+07	2.047E+00	3.068E+03
2229	1.607E+07	1.947E+00	2.919E+03
2230	1.607E+07	1.852E+00	2.776E+03
2231	1.607E+07	1.762E+00	2.641E+03
2232	1.607E+07	1.676E+00	2.512E+03
2233	1.607E+07	1.594E+00	2.390E+03

ATTACHMENT G-4

**Table F-1
Manatee County Solid Waste Management Facility Lena Road Landfill
Lena Road Landfill**

LANDFILL LIFE EXPECTANCY

ASSUMPTIONS:

Landfilled solid waste in pounds/capita/day. (Note 1):	7.07
Landfilled solid waste in tons per capita per year:	1.29
Solid waste compaction density. (Note 3.):	1,800
Soil Cover in percentage of landfill volume (Note 6):	10%

Year	Population (Note 5)	Landfilled Solid Waste Tons per Capita per Year (Note 2)	Initial and Intermediate Soil Cover Cubic Yards	Landfilled Solid Waste Volume Consumed in Cubic Yards @ 1,800/lbs/yd (Note 3)	Landfill Capacity Remaining cubic yards (Note 4)
2003					19,406,403
2004	292,286	377,129	41,903	419,033	18,987,370
2005	299,357	386,253	42,917	429,170	18,558,201
2006	306,428	395,376	43,931	439,307	18,118,893
2007	313,499	404,500	44,944	449,444	17,669,449
2008	320,570	413,623	45,958	459,582	17,209,868
2009	327,641	422,747	46,972	469,719	16,740,149
2010	334,712	431,871	47,986	479,856	16,260,292
2011	341,784	440,995	48,999	489,995	15,770,298
2012	348,856	450,120	50,013	500,134	15,270,164
2013	353,928	456,664	50,740	507,405	14,762,759
2014	363,000	468,370	52,041	520,411	14,242,348
2015	370,072	477,495	53,055	530,550	13,711,799
2016	377,144	486,619	54,069	540,688	13,171,110
2017	384,216	495,744	55,083	550,827	12,620,283
2018	391,288	504,869	56,097	560,966	12,059,318
2019	398,360	513,994	57,110	571,104	11,488,213
2020	405,432	523,119	58,124	581,243	10,906,970
2021	412,504	532,244	59,138	591,382	10,315,588
2022	419,576	541,368	60,152	601,520	9,714,068
2023	426,648	550,493	61,166	611,659	9,102,409
2024	433,720	559,618	62,180	621,798	8,480,611
2025	440,792	568,743	63,194	631,937	7,848,674
2026 (5)	448,065	578,127	64,236	642,364	7,206,311
2027	455,458	587,666	65,296	652,963	6,553,348
2028	462,973	597,363	66,374	663,736	5,889,612
2029	470,612	607,219	67,469	674,688	5,214,924
2030	478,377	617,238	68,582	685,820	4,529,104
2031	486,271	627,423	69,714	697,136	3,831,967
2032	494,294	637,775	70,864	708,639	3,123,328
2033	502,450	648,299	72,033	720,332	2,402,996
2034	510,740	658,995	73,222	732,217	1,670,779
2035	519,168	669,869	74,430	744,299	926,480
2036	527,734	680,922	75,658	756,580	169,901
2037	536,441	692,157	76,906	769,063	(599,163)
2038	545,293	703,578	78,175	781,753	
2039	554,290	715,187	79,465	794,652	
2040	563,436	726,987	80,776	807,763	

Note 1. Landfilled solid waste is based on data determined in 2002.

Note 2. Landfilled solid waste in tons per year = population x Tons per capita per year / 2000 pounds per ton.

Note 3. The solid waste compaction density includes the initial soil cover.

Note 4. Landfill capacity remaining is based on the August 17, 2003 aerial photograph and topographic survey.

Note 5. Assumed rate of population growth after 2025. 1.65%

Note 6. Soil cover is a silty sand. County has on-site soil, and purchases soil cover as needed.

ATTACHMENT G-5

Manatee County Lena Road Landfill REMAINING LANDFILL LIFE ESTIMATE September 8, 2005

Landfill	Estimated Design Capacity Cubic Yards	Estimated Volume Used as of July 26, 2004 Cubic Yards	Estimated Volume Used July 26, 2004 to July 26, 2005 Cubic Yards	Estimated Volume Remaining as of July 26, 2005 Cubic Yards
Stage I	13,179,520	13,158,153	Note 2	-
Stage II	12,705,440	-	-	12,705,440
Stage III	6,751,640	870,200	569,200	5,312,240
Totals	32,636,600	14,028,353	569,200	18,017,680

31.7
2037

36
2041

Remaining Landfill Life in Years Based on Filing Rate for 2005
Estimated Final Year of Landfill Based on Filing Rate for 2005

Remaining Landfill Life in Years Based on Average Annual Filing Rate
Estimated Final Year of Landfill Based on Average Annual Filing Rate

Notes:

1. Landfill volumes were calculated by I.F. Rooks & Associates, Inc. based on an aerial photograph taken on July 26, 2005.
2. Solid waste disposal moved to the Stage III Landfill on January 15, 2004, and ceased in the Stage I Landfill.
3. The annual filling rate from July 26, 2004 to July 26, 2005 is 569,200 cubic yards, or 47,433 cubic yards per month. This annual filling rate was used to estimate the remaining landfill life.
4. The monthly filling rates for the last three years are given with the change in the estimated remaining landfill life.

Year	Summary of Change in Filing Rate and Effect on Landfill Life		
	Annual Monthly Filing Rate As Calculated for the Year	Estimated Final Year of Landfill Using Annual Monthly Filing Rate	Estimated Last Year of Landfill Using Average Filing Rate of 41,735 CY/Month
2003	39,958	2043	2042
2004	37,059	2046	2041
2005	47,433	2037	2041

From Sept. 9, 1991 to January 15, 2004, the Stage I Landfill volume increased by 6,176,800 CY, or over 148 months at an average of 41,735 CY per month.

Year Ending	Summary of Tons Land filled Per Fiscal Year and Change from Previous year		
	Tons Land filled	Change From Previous Year	Percent Change From Previous Year
Sept. 2002	340,693		
Sept. 2003	343,500	2,807	1%
Sept. 2004	363,387	19,887	6%
Sept. 2005 *	389,258	25,871	7%

* Estimated based on tons recorded through the end of July 2005.

QUESTIONS WITH REGARD TO LANDFILL GAS UTILIZATION

- 1. Is it the intention of the County that the receiver of the Landfill Gas should operate the LFG Utilization system?**
- 2. Is it the intention of the County to pay 100% of the Planning and Design costs, in addition to the cost of construction? 3.17, 3.18 & 3.19; page 11**
- 3. Is it the intention of the County to pay 100% of the costs associated with the Consulting Engineer? 3.3; page 8**
- 4. Will the County pay for upgrades to assure LFG is received into the LFG Utilization system as required by the Operator of the LFG Utilization system? 3.2, page 8**
- 5. Will the County share equally with the Operator of the LFG Utilization system costs associated with normal and routine operation and maintenance? 9.1; page 18**
- 6. Has the utilization of an off stream quantity of LFG by the BSD System been taken into account? Has the need for future "scrubbed" gas been considered?**
- 7. Will the County pay a royalty to the operator for any LFG that does not meet the specifications required by the Operator of the LFG Utilization system? 6.3; page 15**
- 8. Will the County accept as a royalty from the operator of the LFG Utilization system an amount equal to a percentage of the monthly avoided cost for natural gas? How will this be calculated and by whom? Article 7; page 16**
- 9. Will the County be willing to pay the operator of the LFG Utilization system for the construction of the system within forty-five (45) days of the actual commencement date? 3.16; page 11**

QUESTIONS WITH REGARD TO LANDFILL GAS UTILIZATION

1. Is it the intention of the County that the receiver of the Landfill Gas should operate the LFG Utilization system?
2. Is it the intention of the County to pay 100% of the Planning and Design costs, in addition to the cost of construction? 3.17, 3.18 & 3.19; page 11
3. Is it the intention of the County to pay 100% of the costs associated with the Consulting Engineer? 3.3; page 8
4. Will the County pay for upgrades to assure LFG is received into the LFG Utilization system as required by the Operator of the LFG Utilization system? 3.2, page 8
5. Will the County share equally with the Operator of the LFG Utilization system costs associated with normal and routine operation and maintenance? 9.1; page 18
6. Has the utilization of an off stream quantity of LFG by the BSD System been taken into account? Has the need for future "scrubbed" gas been considered?
7. Will the County pay a royalty to the operator for any LFG that does not meet the specifications required by the Operator of the LFG Utilization system? 6.3; page 15
8. Will the County accept as a royalty from the operator of the LFG Utilization system an amount equal to a percentage of the monthly avoided cost for natural gas? How will this be calculated and by whom? Article 7; page 16
9. Will the County be willing to pay the operator of the LFG Utilization system for the construction of the system within forty-five (45) days of the actual commencement date? 3.16; page 11