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August 1, 2013

Mr. Mike Gore  
Solid Waste Division Manager  
Utilities Department  
Manatee County Government  
3333 Lena Road  
Bradenton, Florida 34211-9458

Dept. of Environmental Protection

AUG 05 2013

Southwest District

**Re: Monthly Landfill Gas Extraction Well Monitoring Data – July 2013**

Dear Mr. Gore:

The enclosed table summarizes the landfill gas extraction well readings that were recorded on July 15, 16, 17 & 18.

The shaded boxes indicate parameter readings that were outside acceptable ranges. The well parameter criteria are given in the comment section at the bottom of the table. No adjustments were made to wells in compliance. Wells out of compliance were adjusted as required and indicated on the table.

Please review the table, and if you have any questions, please call me at (407) 806-4153.

Sincerely,

Joe Miller, P.E.  
Senior Project Manager

Enclosures

cc: Anthony Detweiler, Manatee County Landfill Operations Supervisor  
Bryan White, Manatee County Landfill Superintendent  
File 120498.94 0100 Manatee

**MANATEE COUNTY -- LENA ROAD LANDFILL  
GAS EXTRACTION WELL -- MONTHLY MONITORING**

**JULY 2013**

Well ID	Date and Time	CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Bal (%)	Temp. (°F)	Static Pressure (inches H <sub>2</sub> O)	Corrective Action	Comments / Damage
1									
2									
3									
4									
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36									
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38									
39									
40									
41									
42									
43									
44	7/15/2013 15:40	39.9	28.5	5.3	26.3	87.8	-2.5	Well Closed	
45									
46	7/15/2013 15:48	52.3	36.3	1.3	10.1	90.9	-1.6		
47									
48	7/15/2013 15:55	53.3	35.3	1.9	9.5	90.4	-4.4		
49	7/15/2013 16:20	53.9	37	1.4	7.7	87.3	-7.6		
50									
51	7/15/2013 16:28	51.5	36.4	2.2	9.9	92.7	-7.2		
52	7/15/2013 16:40	52.5	36.3	2	9.2	92.8	-6.1		
53	7/15/2013 16:47	51.7	33.2	2.7	12.4	86	-7.6		
54									
55	7/16/2013 9:53	42.1	31.3	3.1	23.5	91	-8.1	Well Closed	
56	7/16/2013 10:05	52.4	35.7	2.1	9.8	101.7	-5.4		
57	7/16/2013 10:15	46	30.9	4.2	18.9	93.1	-7.7		
58									
59	7/16/2013 10:28	30.8	21.8	9.3	38.1	93.2	-7.8	Well Closed	
60	7/16/2013 10:36	21.7	15.4	12.3	50.6	92.4	-7.9	Well Closed	
61	7/16/2013 10:47	52.1	36.3	1.9	9.7	102.9	-3.5		
90	7/15/2013 17:35	31.3	26.4	2.4	39.9	87.8	-2.5	Well Closed	
91	7/15/2013 17:23	54.1	37.2	1	7.7	95.5	-2.2	Well Re-opened	
92	7/15/2013 17:15	31.7	27	1.9	39.4	101.3	-1.8	Well Closed	
93	7/15/2013 17:08	51	33.9	2.5	12.6	91.7	-5.8		
94	7/16/2013 9:25	52.3	36.1	2	9.6	103.7	-4		
95	7/16/2013 9:33	45.3	32	4.1	18.6	101.7	-4.9		
96	7/16/2013 9:45	53.6	34.8	2	9.6	101.6	-3.8		
97	7/17/2013 12:19	50.1	33.4	2.8	13.7	107.8	-3.7		
98	7/17/2013 12:16	51.2	35.1	2.2	11.5	106.6	-4.1		
99	7/17/2013 12:14	36.9	26.2	7.1	29.8	98.5	-5.5	Well Closed	
100	7/16/2013 12:05	52.8	36.2	1.9	9.1	108.2	-3.4		
101	7/16/2013 11:53	53.6	38.3	1.4	6.7	112.2	-4.3		
102	7/16/2013 11:45	51.3	35.8	2.1	10.8	100.7	-3.4		

**MANATEE COUNTY -- LENA ROAD LANDFILL  
GAS EXTRACTION WELL -- MONTHLY MONITORING**

**JULY 2013**

Well ID	Date and Time	CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Bal (%)	Temp. (°F)	Static Pressure (Inches H <sub>2</sub> O)	Corrective Action	Comments / Damage
103	7/16/2013 11:39	54.5	38.5	1.2	5.8	107.9	-2.4		
104	7/17/2013 12:56	56	38.4	1.1	4.5	98.4	-2.1		
105	7/17/2013 12:54	52	37.8	1.9	8.3	108.5	-2.2		
106	7/17/2013 12:52	53.2	37.3	1.7	7.8	107.9	-2.3		
107	7/17/2013 12:50	52	37	2	9	96.3	-6.9		
108	7/17/2013 12:47	43	30.2	4.7	22.1	105.2	-5.3	Well Closed	
109	7/17/2013 12:45	44.6	31.9	4.3	19.2	101.1	-6.3		
110	7/17/2013 12:43	54	35	1.3	9.7	100.4	-3		
111	7/17/2013 13:29	49.2	32.1	2.6	16.1	100.4	-3.3		
112	7/17/2013 13:27	55.9	37.6	0.5	6	105.9	-2.8		
113	7/17/2013 13:25	50.1	34.7	2.2	13	109	-4.4		
114	7/17/2013 13:23	53.8	37.8	0.9	7.5	108.1	-3		
115	7/17/2013 13:21	54.7	38.4	0.3	6.6	103.1	-0.9	Well Re-opened	
116	7/17/2013 13:56	57.5	39.1	0.5	2.9	107.6	-1.5		
117	7/17/2013 13:54	53.5	35.9	1.5	9.1	93.2	-4.1		
118	7/17/2013 13:52	52	36.1	1.7	10.2	107.3	-5.3		
119	7/17/2013 13:50	48.6	34.4	2.5	14.5	112.3	-2.8		
120	7/17/2013 13:47	44.2	30	3.9	21.9	102.1	-5.2	Well Closed	
121	7/17/2013 13:44	55.1	34.3	0.4	10.2	95.4	-2.8		
122	7/17/2013 14:22	56.1	37.1	0.9	5.9	100	-3		
123	7/17/2013 14:19	47.4	32.9	3.2	16.5	105.1	-4		
124	7/17/2013 14:17	52.8	36.3	1.7	9.2	104.4	-3.5		
125	7/17/2013 14:15	56.9	39.2	0.6	3.3	106.9	-2.9		
126	7/17/2013 13:59	58.2	40.3	0.3	1.2	102.9	-1.4		
127	7/17/2013 14:37	55.4	38.7	1.1	4.8	102.1	-0.1		
128	7/17/2013 14:35	56.6	38.3	0.9	4.2	101.7	-2.8		
129	7/17/2013 14:32	56.5	36.8	0.9	5.8	101.4	-1.2		
130	7/17/2013 14:29	56.2	37.5	0.9	5.4	104.1	-1.6		
131	7/17/2013 14:27	42	26.7	4.9	26.4	97.4	-3.1	Well Closed	
132									
133									
134	7/18/2013 13:36	58.6	40.7	0.1	0.6	93.6	-0.6		
135	7/17/2013 14:46	49	30.4	3.4	17.2	102.3	-1.5		
136	7/17/2013 14:40	52.9	33.8	1.7	11.6	93.4	-0.9		
137	7/17/2013 14:42	51.3	34.1	1.3	13.3	96.5	-0.6		
138									
139									
140	7/17/2013 13:33	52.6	32.1	2.3	13	95.3	-4	Well Re-opened	
141	7/17/2013 12:40	50.9	34.2	2.6	12.3	98.2	-4.2		
142	7/17/2013 13:35	56	35.7	0.6	7.7	96.7	-1.3		
143	7/17/2013 13:39	46.3	30	3.8	19.9	90.4	-3.1		
144	7/17/2013 14:25	60.2	37.2	0.3	2.3	90.8	-0.2		
145									
146	7/17/2013 12:36	41.5	29.8	5.1	23.6	101	-6.9	Well Closed	
147	7/17/2013 12:21	49.9	34.4	2.7	13	100.4	-4.8		
148	7/17/2013 12:25	50.9	34.8	2.3	12	103.8	-5.5		
149	7/16/2013 9:14	56.8	36.4	0.4	6.4	99.1	-1.4		
150	7/17/2013 12:27	54.1	36.5	1.4	8	98.6	-3.6	Well Re-opened	
151	7/17/2013 12:34	49.2	34.2	2.8	13.8	104.3	-2.2		
152									
153									
154									
155	7/17/2013 12:31	57.1	38.5	0.7	3.7	106.8	-1.3		
156									
157									
158									
159									
160									
161	7/18/2013 13:29	61.8	37.9	0.4	-0.1	96.6	-0.1	Well Re-opened	
162	7/18/2013 13:41	62.5	35.8	0.3	1.4	94.7	-0.8	Well Re-opened	
163									
164	7/18/2013 13:18	57.7	39.9	0.2	2.2	96.7	-0.2		
165	7/17/2013 13:19	53.8	38.4	1	6.8	109.9	-2.2		
166	7/17/2013 13:15	48	34.7	3	14.3	111.4	-2.4		
167	7/17/2013 12:59	51	35.7	2.3	11	114.2	-3.8		
168	7/16/2013 11:34	45.7	32.2	3.8	18.3	109.1	-2		
169	7/16/2013 11:24	48.7	35.3	2.9	13.1	103.1	-2.5		
170	7/16/2013 11:16	54.8	39.5	1.1	4.6	97.3	-0.7	Well Re-opened	
171	7/16/2013 10:55	48.1	33.5	3.4	15	95	-4.4		
172	7/16/2013 11:07	45.8	30	4.4	19.8	91.9	-7.3		
173									
174	7/17/2013 13:02	53.8	38.2	0.5	7.5	90.4	-0.5		
175	7/17/2013 13:11	46	32.7	3.5	17.8	106.2	-2.7		
176	7/18/2013 13:22	57.3	39.5	0.2	3	96	-0.3		
177	7/18/2013 10:51	55.6	39.5	0.8	4.1	109.4	-2.8		
178	7/18/2013 10:47	57.6	37.4	0.9	4.1	78.7	-2		

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**JULY 2013**

Well ID	Date and Time	CH <sub>4</sub> (%)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	Bal (%)	Temp. (°F)	Static Pressure (inches H <sub>2</sub> O)	Corrective Action	Comments / Damage
179	7/18/2013 10:38	57.3	39.9	0.5	2.3	101.1	-1.1		
180	7/18/2013 10:43	59.2	37.9	0.5	2.4	97.6	-5.5		
181	7/18/2013 13:05	58.9	41	0.1	0	97.2	-0.3		
182									
183	7/17/2013 13:07	57.3	38.3	0.9	3.5	92.9	-3.8		
184	7/17/2013 13:05	56.2	30.9	2.4	10.5	89.3	-7.6		
185									
186	7/18/2013 10:25	49	32.8	3.6	14.6	89.7	-2.8		
187									
188									
189									
190	7/18/2013 10:35	53.4	36.2	1.9	8.5	91.4	-3.9		
191	7/18/2013 10:31	58.3	38.3	0.6	2.8	90.7	-1.5		
192									
193									
194									
195									
196									
197									
198									
300	7/18/2013 16:19	54.2	37.6	1.5	6.7	101.3	-4.1		
301	7/18/2013 16:22	57.5	40.2	0.5	1.8	104.1	-4.6		
302	7/18/2013 16:24	58	40.8	0.3	0.9	91.3	-2.5		
303	7/18/2013 16:26	58.8	40.1	0.2	0.9	91.5	-2.5		
304	7/18/2013 16:28	58.6	39.1	0.4	1.9	91.7	-3.8		
305	7/18/2013 16:30	57.8	38.5	0.4	3.3	90.9	-2.8		
306	7/18/2013 16:32	53.4	37.5	0.3	8.8	94	-1.1		
307	7/18/2013 16:34	59.1	38.1	0.1	2.7	94.6	-0.5		
308	7/18/2013 16:35	60.4	38.8	0.1	0.7	93.3	-0.2		
309	7/18/2013 16:40	58.3	39.6	0.1	2	92.5	-0.1		
310	7/18/2013 16:41	59.1	39.4	0.4	1.1	90.5	-0.6		
311	7/18/2013 16:43	59.3	39.1	0.7	0.9	90	-0.1		
312	7/18/2013 16:45	59.9	39.9	0.1	0.1	90.4	-0.1		
313	7/18/2013 16:47	58.7	40	0.1	1.2	93.3	-0.1		
314	7/18/2013 16:49	54.6	37.3	1.4	6.7	90.6	-1.7		
315	7/18/2013 16:51	53.3	38.1	0.5	8.1	92.6	-0.6		
316	7/18/2013 16:54	58.9	40.3	0.2	0.6	90.6	-0.1		
317	7/18/2013 16:56	55.3	39.2	0.1	5.4	90.4	-0.1		
318	7/18/2013 16:58	57.6	38.8	0.3	3.3	99.1	-1.4		
319	7/18/2013 17:00	48.9	36.4	0.2	14.5	89.4	-0.1		
320	7/18/2013 17:02	59.8	39.1	0.2	0.9	89.3	-1.2		
321	7/18/2013 17:04	60	39.3	0.2	0.5	90.2	0		
322	7/18/2013 17:06	57.2	37.4	0.9	4.5	89.1	-1.2		
323	7/18/2013 17:08	58.5	40.5	0.1	0.9	87.4	-0.1		
324	7/18/2013 17:10	53.7	38.3	1.3	6.7	91.9	-1.8		
325	7/18/2013 17:13	57.7	39.6	0.7	2	93.1	-1.4		
326	7/18/2013 17:15	58.6	41.2	0.2	0	88.3	-1.1		
336	7/18/2013 17:19	54.7	37.6	1.5	6.2	91.6	-2.7		
337	7/18/2013 17:21	58.7	40.2	0.2	0.9	107.1	-0.6		
338	7/18/2013 17:25	56.8	38.5	0.7	4	107.5	-2.3		
339	7/18/2013 17:27	55.1	37.5	1.2	6.2	105	-1.6		
340	7/18/2013 17:29	56.5	39.1	0.7	3.7	91.9	-0.6		
341	7/18/2013 17:31	58.1	39.9	0.4	1.6	108.4	-1.7		
342	7/18/2013 17:33	58.9	40.1	0.3	0.7	108	-0.2		
343	7/18/2013 17:35	58.5	39.1	0.5	1.9	88.6	-0.6		
344	7/18/2013 17:37	59.7	39.7	0.2	0.4	101.6	-0.5		
345	7/18/2013 17:39	58.9	39.8	0.2	1.1	105	-0.8		
346	7/18/2013 17:42	57.1	39.3	0.5	3.1	103.6	-1.2		
347	7/18/2013 17:44	59	39.7	0.3	1	103.7	-1.7		
348	7/18/2013 17:45	58.8	39.9	0.4	0.9	99.8	-1.2		
360	7/18/2013 17:48	58.1	40.1	0.4	1.4	116.9	-3.2		
361	7/18/2013 17:50	59.6	39.9	0.3	0.2	116.9	-0.5		
362	7/18/2013 17:52	59.2	40.1	0.3	0.4	118.6	-0.9		
367	7/18/2013 17:55	53.6	38.4	1.5	6.5	121.7	-2.3		
368	7/18/2013 17:58	57	40.4	0.5	2.1	122.4	-3.3		
0000FLAR	7/18/2013 18:26	57.7	39.4	0.3	2.6	128	31.6		

**Comments**

Well ID's 80 through 89, V1A, V1B, V2A, V2B, FLARE are sample ports. No pressure, flow or temperature data available. Shaded box indicates well not in acceptable range. Acceptable Range: O<sub>2</sub> < 5%, Balance Gases (typically Nitrogen) < 20%, Well under vacuum (i.e. Static Pressure < 0) and Temperature < 131 Degrees F.