

LENA ROAD CLASS I LANDFILL -- HYDRAULIC GRADIENT DATA

Gradient Pair		2004											
(Interior)	(Exterior)	6-Jan	11-Feb	10-Mar	1-Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
STAGE I													
PZ-1	MW-5					-2.04	-2.21	-1.88	-3.46		-2.52	-2.17	
PZ-2	MW-2					-1.57	-0.95	-1.46	-3.76			-1.83	
PZ-3	MW-1	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-3A	MW-1					-3.31	-2.95	-4.32	-5.51		-4.14	-3.93	
PZ-4A	CW-4					-4.3	-3.78	-4.26	-5.3		-5.13	-5.13	
PZ-5	CW-5A					-7.42	-3.41	-4.72	-7.85		-8.47	-8.29	
PZ-6	SG-1					-2.37	-3.56	-2.66	-2.43		-2.43	-1.83	
PZ-7	MW-6					-3.05	-3.19	-2.26	-5.73		-3.57	-2.88	
PZ-19	PZ-11					-4.95	-4.47	-4.03	-5.85		-5.09	-4.8	
STAGE II													
PZ-8	LR11-5	4.38	4.44	3.5	3.89	4.25	5.74	4.3	2.07		2.12	2.97	
PZ-9	LR11-4	7.37	7.56	6.78	7.31	7.59	8.23	7.27	5.67		4.96	5.82	
PZ-10	LR11-2	4.48	4.84	4.09	4.54	5.01	5.74	4.73	2.24		2.54	3.13	
PZ-11	LR11-1	1.86	1.92	0.57	1.56	1.32	0.43	0.13	0.19		0.97	1.47	
STAGE III													
PZ-12	GC-2	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-12A	GC-2					-2.86	-3.57	-3.82	-3.86		-2.95	-3.86	
PZ-13	GC-3					-1.23	-1.48	-1.46	-2.18		-0.92	-1.97	
PZ-14	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4A					-8.75	-7.41	-8.37	-6.01		-4.75	-8.57	
PZ-15B	PZ-15A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-15C	PZ-15A					-11.3	-11.78	-11.13	-8.26		-7.81	-11.24	
PZ-16	PZ-16A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-16B	PZ-16A					-8.47	-7.85	-7.93	-2.89		-3.6	-7.62	
PZ-17	SG-2					-1.89	-1.63	-0.57	-1.45		-0.63	-0.99	
PZ-18	SG-3				SG-3 dry	SG-3 dry	-5.18	-4.56	-4.34		-4.58	-4.5	

Notes: 1.75 = outward gradient in feet as reported for the referenced gradient pair

 = elevations within 0.05 feet across the slurry wall

Gradient monitoring pairs changed in minor modification

No. 39884-009-SO, issued 12/16/02

Manatee County Lena Road Landfill
Groundwater Gradient
November 2004

Inside Slurry Wall

Outside Slurry Wall

Piezometer	Riser Elevation	Groundwater Elevation	Gradient Flow	Monitoring Well	Riser Elevation	Groundwater Elevation
STAGE I						
PZ-1	42.55	29.15	<i>inward</i>	MW-5	39.88	31.32
PZ-2	42.47	29.97	<i>inward</i>	MW-2	41.13	31.80
PZ-3A	44.90	29.40	<i>inward</i>	MW-1	42.58	33.33
PZ-4A	47.73	29.95	<i>inward</i>	CW-4	37.48	35.08
PZ-5	43.94	30.30	<i>inward</i>	CW-5A	41.18	38.59
PZ-6	44.73	30.97	<i>inward</i>	SG-1		32.80
PZ-7	47.76	30.10	<i>inward</i>	MW-6	39.29	32.98
PZ-19	45.87	28.64	<i>inward</i>	PZ-11	38.94	33.44

Dry 32.80

STAGE II						
PZ-8	37.63	33.36	<i>outward</i>	LRII-5	36.75	30.39
PZ-9	39.20	33.45	<i>outward</i>	LRII-4	33.85	27.63
PZ-10	37.05	33.34	<i>outward</i>	LRII-2	36.48	30.21
PZ-11	38.94	33.44	<i>outward</i>	LRII-1	37.97	31.97

STAGE III						
PZ-12A	38.48	28.69	<i>inward</i>	GC-2	38.15	32.55
PZ-13	35.36	27.35	<i>inward</i>	GC-3	35.02	29.32
PZ-14A	34.58	21.18	<i>inward</i>	GC-4A	34.96	29.75
PZ-15C	40.46	20.82	<i>inward</i>	PZ-15A	39.79	32.06
PZ-16B	40.22	21.21	<i>inward</i>	PZ-16A	39.05	28.83
PZ-17	40.57	28.54	<i>inward</i>	SG-2		29.53
PZ-18	40.16	28.82	<i>inward</i>	SG-3		33.32

Dry 28.90

Dry 33.50

Additional In-House Monitoring Data						
Stage I						
PZ-2	42.47	29.97	<i>inward</i>	MW-3	42.32	32.98
Stage II						
PZ-9	39.20	33.45	<i>outward</i>	LRII-3	33.47	26.97
Stage III						
PZ-15C	40.46	20.82	<i>inward</i>	GC-1A	31.75	27.04
PZ-16B	40.22	21.21	<i>inward</i>	GC-5	36.46	28.88
PZ-17	40.57	28.54	<i>inward</i>	GC-6	39.02	30.61

Notes: The table is arranged so any piezometer can be compared to its corresponding monitoring point. For example, PZ-1 is located on the opposite side of the slurry wall from MW-5. Thus data from PZ-1 are compared to data from MW-5.

Report includes riser elevations determined by certified survey conducted by County Staff (Aug. 10, 1999).
Riser elevations for MW-1, MW-3, PZ-9, PZ-11 and PZ-19 were resurveyed on November 13, 2002.
PZ-12A and GC-4A were resurveyed in April 2003.

Data Collection: November 5, 2004

LENA ROAD CLASS I LANDFILL -- HYDRAULIC GRADIENT DATA

Gradient Pair		2004											
(Interior)	(Exterior)	6-Jan	11-Feb	10-Mar	1-Apr	May	Jun.	Jul.	Aug.	Sept	Oct.	Nov	Dec
STAGE I													
PZ-1	MW-5					-2.04	-2.21	-1.88	-3.46		-2.52		
PZ-2	MW-2					-1.57	-0.95	-1.46	-3.76				
PZ-3	MW-1	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-3A	MW-1					-3.31	-2.95	-4.32	-5.51		-4.14		
PZ-4A	CW-4					-4.3	-3.78	-4.26	-5.3		-5.13		
PZ-5	CW-5A					-7.42	-3.41	-4.72	-7.85		-8.47		
PZ-6	SG-1					-2.37	-3.56	-2.66	-2.43		-2.43		
PZ-7	MW-6					-3.05	-3.19	-2.26	-5.73		-3.57		
PZ-19	PZ-11					-4.95	-4.47	-4.03	-5.85		-5.09		
STAGE II													
PZ-8	LRII-5	4.38	4.44	3.5	3.89	4.25	5.74	4.3	2.07		2.12		
PZ-9	LRII-4	7.37	7.56	6.78	7.31	7.59	8.23	7.27	5.67		4.96		
PZ-10	LRII-2	4.48	4.84	4.09	4.54	5.01	5.74	4.73	2.24		2.54		
PZ-11	LRII-1	1.86	1.92	0.57	1.56	1.32	0.43	0.13	0.19		0.97		
STAGE III													
PZ-12	GC-2	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-12A	GC-2					-2.86	-3.57	-3.82	-3.86		-2.95		
PZ-13	GC-3					-1.23	-1.48	-1.46	-2.18		-0.92		
PZ-14	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4A					-8.75	-7.41	-8.37	-6.01		-4.75		
PZ-15B	PZ-15A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-15C	PZ-15A					-11.3	-11.78	-11.13	-8.26		-7.81		
PZ-16	PZ-16A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-16B	PZ-16A					-8.47	-7.85	-7.93	-2.89		-3.6		
PZ-17	SG-2					-1.89	-1.63	-0.57	-1.45		-0.63		
PZ-18	SG-3				SG-3 dry	SG-3 dry	-5.18	-4.56	-4.34		-4.58		

Notes: 1.75 = outward gradient in feet as reported for the referenced gradient pair

 = elevations within 0.05 feet across the slurry wall

Gradient monitoring pairs changed in minor modification

No. 39884-009-SO, issued 12/16/02

LENA ROAD CLASS I LANDFILL -- HYDRAULIC GRADIENT DATA

Gradient Pair		2004											
(Interior)	(Exterior)	6-Jan	11-Feb	10-Mar	1-Apr	May	Jun.	Jul.	Aug.	9-Sep	Oct.	Nov	Dec
STAGE I													
PZ-1	MW-5												
PZ-2	MW-2												
PZ-3	MW-1	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-3A	MW-1												
PZ-4A	CW-4												
PZ-5	CW-5A												
PZ-6	SG-1												
PZ-7	MW-6												
PZ-19	PZ-11												
STAGE II													
PZ-8	LRII-5	4.38	4.44	3.5	3.89								
PZ-9	LRII-4	7.37	7.56	6.78	7.31								
PZ-10	LRII-2	4.48	4.84	4.09	4.54								
PZ-11	LRII-1	1.86	1.92	0.57	1.56								
STAGE III													
PZ-12	GC-2	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-12A	GC-2												
PZ-13	GC-3												
PZ-14	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4A												
PZ-15B	PZ-15A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-15C	PZ-15A												
PZ-16	PZ-16A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-16B	PZ-16A												
PZ-17	SG-2												
PZ-18	SG-3				SG-3 dry								

Notes: 1.75 = outward gradient in feet as reported for the referenced gradient pair

☐ = elevations within 0.05 feet across the slurry wall

Gradient monitoring pairs changed in minor modification

No. 39884-009-SO, issued 12/16/02

LENA ROAD CLASS I LANDFILL -- HYDRAULIC GRADIENT DATA

2003

Gradient Pair		9-Jan	11-Feb	13-Mar	11-Apr	12-May	9-Jun	9-Jul	6-Aug	9-Sep	14-Oct	13-Nov	11-Dec
(Interior)	(Exterior)												
STAGE I													
PZ-1	MW-5												
PZ-2	MW-2												
PZ-3	MW-1	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-3A	MW-1												
PZ-4A	CW-4												
PZ-5	CW-5A												
PZ-6	SG-1												
PZ-7	MW-6												
PZ-19	PZ-11												
STAGE II													
PZ-8	LRII-5	1.75	2.57		1.5	0.44	0.7	1.24	0.93	1.8	3.32	4.09	4.43
PZ-9	LRII-4	4.47	5.44		4.66	3.86	3.85	4.2	3.76	4.63	6.12	6.86	7.17
PZ-10	LRII-2	2.49	2.79	0.7	2.06	0.82	1.11	2.01	1.35	2.63	3.49	4.37	4.51
PZ-11	LRII-1	0.18	0.8		0.03					0.63	1.95	2.08	2.23
STAGE III													
PZ-12	GC-2	PZ-12 dmgd	PZ-12 dmgd	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-12A	GC-2	Not inst	Not inst	Not surveyed									
PZ-13	GC-3							1.49					
PZ-14	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4A												
PZ-15B	PZ-15A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-15C	PZ-15A												
PZ-16	PZ-16A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-16B	PZ-16A												
PZ-17	SG-2												
PZ-18	SG-3				SG-3 dry	SG-3 dry	SG-3 dry						

Notes: 1.75 = outward gradient in feet as reported for the referenced gradient pair

= elevations within 0.05 feet across the slurry wall

Gradient monitoring pairs changed in minor modification

No. 39884-009-SO, issued 12/16/02

LENA ROAD CLASS I LANDFILL -- HYDRAULIC GRADIENT DATA

Gradient Pair		2002											
(Interior)	(Exterior)	9-Jan	15-Feb	11-Mar	9-Apr	8-May	1-Jun	5-Jul	5-Aug	5-Sep	1-Oct	7-Nov	10-Dec
STAGE I													
PZ-1	MW-5												
PZ-2	MW-2												
PZ-3	MW-1		Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-3A	MW-1	Not inst											
PZ-4A	CW-4												
PZ-5	CW-5A							PZ-5 dmgd					
PZ-6	SG-1												
PZ-7	MW-6												
PZ-19	PZ-11												
STAGE II													
PZ-8	LRII-5	5.1	5.07	4.34	4.97	4.96	4.46	3.07	0.29			0.02	
PZ-9	LRII-4	7.42	7.7	7.24	7.67	7.68	7.48	7.12	4.54			2.45	1.42
PZ-10	LRII-2	5.29	5.53	4.02	5.7	5.38	5.12	5.36	2.46	0.06	0.28	0.61	
PZ-11	LRII-1	2.88	2.54	2.23	3.12	1.97	2.31	3.13	1.57				0.05
STAGE III													
PZ-12	GC-2												PZ-12 dmgd
PZ-13	GC-3												
PZ-14	GC-4	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-14A	GC-4											Replaced	Replaced
PZ-14A	GC-4A	Not inst	Not inst	Not inst	Not inst	Not inst	Not inst	Not inst	Not inst	Not inst	Not inst		
PZ-15B	PZ-15A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-15C	PZ-15A												
PZ-16	PZ-16A	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced	Replaced
PZ-16B	PZ-16A												
PZ-17	SG-2												
PZ-18	SG-3	SG-3 dry	SG-3 dry	SG-3 dry	SG-3 dry	SG-3 dry	SG-3 dry						

Notes: 5.1 = outward gradient in feet as reported for the referenced gradient pair

 = elevations within 0.05 feet across the slurry wall

Gradient monitoring pairs changed in minor modification
No. 39884-009-SO, issued 12/6/02