TABLES

TABLE 3-1
BORING SUMMARY
NEWBY ISLAND LANDFILL

Boring	Sta.	Elev.	GW Elev. @ time=CPT	GW Elev. @ time=EQ	Total Depth	Tip Elev.	Approximte Northing	Approximte Easting	Comments
CPT-1	163+13	23.5	5	0	100.2	-76.7	± 351,950	± 1,584,315	Offset Boring RB-3 (Aborted)
CPT-2	151+00	24	5	0	100.4	-76.4	± 352,780	± 1,583,900	
CPT-3	20+00	14	2	-6	100.2	-86.2	± 350,995	± 1,583,250	
CPT-4	30+00	14	3	-6	100.2	-86.2	± 351,450	± 1,582,420	Offset Borings RB-2 & RB-2A
CPT-5	40+00	11	-5	-6	100.6	-89.6	± 351,050	± 1,581,540	Offset Borings RB-13V, RB-13Va
CPT-6	50+00	15.5	-2.4	-6	100.4	-84.9	± 351,100	± 1,580,550	Offset Boring RB-1
CPT-7	60+00	15	-12	-4	100.2	-85.2	± 351,680	± 1,579,745	Offset Boring RB-8
CPT-8	65+00	14.5	-12	-4	100.4	-85.9	± 351,935	± 1,579,325	
CPT-9	90+00	18	-6	-6	100.2	-82.2	± 353,230	± 1,579,765	Offset Boring RB-5
CPT-10	96+00	19.5	-1	-1	100.7	-81.2	± 353,400	± 1,580,280	
CPT-11	103+00	22	3	0	100.2	-78.2	± 354,015	± 1,580,605	
CPT-12	120+00	21	2	0	100.1	-79.1	± 354,505	± 1,581,560	Offset Boring RB-6
CPT-13	130+00	20.5	8	0	100.2	-79.7	± 353,845	± 1,582,255	
CPT-14	140+00	19.5	8	0	100.2	-80.7	± 353,395	± 1,583,095	Offset Boring RB-4
CPT-15	85+00	17	-3	-3	75.1	-58.1	± 353,185	± 1,579,275	
CPT-16		16	-10	-10	75.1	-59.1	± 352,510	± 1,579,240	
CPT-17	55+00	14	-17	-6	75.1	-61.1	± 351,395	± 1,580,150	
CPT-18	45+00	12	-3	-6	75.5	-63.5	± 351,030	± 1,581,040	
CPT-19	35+00	15.5	-5	-6	75.1	-59.6	± 351,350	± 1,581,940	
CPT-20	25+00	15	2	-6	75.1	-60.1	± 351,330	± 1,582,880	
CPT-21	70+00	14	-8	0	75.1	-61.1	± 352,365	± 1,579,065	
CPT-22		0	-15	-38	75.3	-75.3	± 351,845	± 1,581,960	Offset Boring RB-7
CPT-23		4	-6	-22	100.4	-96.4	± 351,830	± 1,582,490	
CPT-24		4	2	-32	100.2	-96.2	± 351,600	± 1,582,870	
CPT-25		7	2	-4	100.4	-93.4	± 351,370	± 1,583,250	
CPT-26	62+50	15	-14	-4	75.1	-60.1	± 351,780	± 1,579,515	
CPT-27	78+00	17	-4	0	75.1	-58.1	± 353,060	± 1,578,670	
CPT-28	113+00	24	2	0	75.3	-51.3	± 354,865	± 1,580,970	
CPT-29	125+00	18	2	0	75.1	-57.1	± 354,270	± 1,582,000	
CPT-30	145+00	19	4	0	75.1	-56.1	± 353,225	± 1,583,565	
CPT-31	52+50	15.5	-8.5	-6	75.1	-59.6	± 351,240	± 1,580,350	
CPT-32		-18.5	-25	-37	75.1	-93.6	± 351,765	± 1,581,375	
CPT-33		-27.5	-33	-35	100.1	-127.6	± 351,935	± 1,580,945	
CPT-34		-32.5	-42	-37.5	100.1	-132.6	± 352,165	± 1,580,440	
CPT-35	57+50	13.5	-15	-6	75.1	-61.6	± 351,565	± 1,579,965	
CPT-36	74+00	18	-6	0	75.1	-57.1	± 352,705	± 1,578,855	
CPT-37		8	2	-39	100.1	-92.1	± 350,955	± 1,583,640	Offset Boring RB-9 (Aborted)
CPT-38		0	-13	-42	100.1	-100.1	± 351,625	± 1,582,145	
CPT-39		-22.5	-38	-42	100.1	-122.6	± 351,630	± 1,580,525	
CPT-40		-7	-15	-44	100.1	-107.1	± 351,280	± 1,581,440	
CPT-41		-9.5	-20	-47	100.1	-109.6	± 351,250	± 1,580,935	
CPT-42		6.19	-6	-6	100.2	-94.01	± 351,207	± 1,580,557	Grout Area CPT
CPT-43	51+32	13.56	-8	-8	99.9	-86.34	± 351,191	± 1,580,451	Grout Area CPT
CPT-44	50+72	13.8	-6.6	-6.6	99.9	-86.1	± 351,157	± 1,580,502	Grout Area CPT
CPT-45	51+95	13.81	-8	-8	80.2	-66.39	± 351,221	± 1,580,396	Grout Area CPT
CPT-46	51+95	13.86	-8	-8	80.2	-66.34	± 351,226	± 1,580,399	Grout Area CPT
CPT-47	51+64	13.67	-7.8	-7.8	80.2	-66.53	± 351,206	± 1,580,423	Grout Area CPT
CPT-48	51+01	13.64	-7	-7	80.2	-66.56	± 351,174	± 1,580,478	Grout Area CPT
CPT-49		9.54	-6.3	-6.3	85.3	-75.76	± 351,182	± 1,580,531	Grout Area CPT
CPT-50		11.87	-6.5	-6.5	85.1	-73.23	± 351,169	± 1,580,517	Grout Area CPT
CPT-51	50+40	14.27	-5	-6	100.1	-85.83	± 351,134	± 1,580,524	Grout Area CPT
CPT-52		13.5	-5.6	-6	100.2	-86.7	± 351,163	± 1,580,553	Grout Area CPT
CPT-53	50+09	15	-5.2	-6	85.1	-70.1	± 351,130	± 1,580,563	Grout Area CPT
CPT-54		12.5	-6.25	-6.25	100.4	-87.9	± 351,159	± 1,580,528	Grout Area CPT

TABLE 3-1 (continued)
BORING SUMMARY
NEWBY ISLAND LANDFILL

Boring	Sta.	Elev.	GW Elev. @ time=CPT	GW Elev. @ time=EQ	Total Depth	Tip Elev.	Approximte Northing	Approximte Easting	Comments
CPT-55		6.68	-6	-6	85.1	-78.42	± 351,214	± 1,580,516	Grout Area CPT
CPT-56		6.42	-6.1	-6.1	85.1	-78.68	± 351,210	± 1,580,539	Grout Area CPT
CPT-57		9.92	-6.2	-6.2	85.1	-75.18	± 351,197	± 1,580,501	Grout Area CPT
CPT-58	48+76	14.5	-4.1	-6	85.1	-70.6	± 351,062	± 1,580,664	
CPT-59	47+43	14.5	-2.9	-6	80.2	-65.7	± 351,047	± 1,580,796	
CPT-60	43+53	12	-4	-6	80.2	-68.2	± 351,039	± 1,581,185	
CPT-61	39+23	12	-4.4	-6	100.2	-88.2	± 351,100	± 1,581,599	
CPT-62	41+36	12	-4.5	-6	80.2	-68.2	± 351,042	± 1,581,400	
CPT-63	37+97	12.5	-5	-6	100.2	-87.7	± 351,178	± 1,581,698	
CPT-64	36+66	14	-5	-6	85.3	-71.3	± 351,256	± 1,581,802	
CPT-65	35+48	14.5	-5	-6	85.1	-70.6	± 351,328	± 1,581,895	
CPT-66	50+48	13.25	-6.25	-6.25	80.2	-66.95	± 351,148	± 1,580,526	Grout Area CPT
CPT-67		7.82	-6	-6	80.2	-72.38	± 351,193	± 1,580,539	Grout Area CPT
CPT-68		9.87	-6	-6	60.5	-50.63	± 351,175	± 1,580,540	Grout Area CPT
CPT-69	33+15	15.5	0.6	-6	85.3	-69.8	± 351,424	± 1,582,108	
CPT-70	31+85	15	1.6	-6	85.1	-70.1	± 351,452	± 1,582,235	
CPT-71	30+75	15	1.6	-6	85.3	-70.3	± 351,457	± 1,582,344	
CPT-72	28+18	14	2	-6	85.3	-71.3	± 351,444	± 1,582,601	
CPT-73	27+14	14	2	-6	100.2	-86.2	± 351,440	± 1,582,704	
CPT-74		8.54	-6.1	-6.1	59.2	-50.66	± 351,186	± 1,580,537	Grout Area CPT
CPT-75		8.54	-6.2	-6.2	58.2	-49.66	± 351,200	± 1,580,513	Grout Area CPT
CPT-76		7.57	-6.2	-6.2	58.2	-50.63	± 351,210	± 1,580,512	Grout Area CPT
CPT-77	25+76	14.5	1.9	-6	85.1	-70.6	± 351,378	± 1,582,826	
CPT-78		-12	-21.5	-38.5	80.2	-92.2	± 351,544	± 1,581,351	
CPT-79		-17	-27.3	-39	80.2	-97.2	± 351,492	± 1,580,885	
CPT-80		-19	-28.9	-39	80.2	-99.2	± 351,600	± 1,581,059	
CPT-81		-10	-18	-45	80.2	-90.2	± 351,259	± 1,581,269	
CPT-82		-10	-15	-46	80.2	-90.2	± 351,274	± 1,581,113	
CPT-83		-10	-20	-47	80.2	-90.2	± 351,262	± 1,580,964	
CPT-84		-21	-29	-36	80.2	-101.2	± 351,638	± 1,580,913	
CPT-85		-23	-30	-35	80.2	-103.2	± 351,780	± 1,580,990	
CPT-86		-24.5	-35.9	-36	80.2	-104.7	± 351,858	± 1,581,111	
CPT-87		-23	-30	-37.5	80.1	-103.1	± 351,801	± 1,581,257	
CPT-88	24+46	14.5	2	-6	80.2	-65.7	± 351,302	± 1,582,931	
CPT-89	23+13	14.5	1.9	-6	80.2	-65.7	± 351,215	± 1,583,031	
CPT-90	21+54	14	2	-6	80.2	-66.2	± 351,105	± 1,583,146	
CPT-91	18+54	13.5	2	-6	80.2	-66.7	± 350,901	± 1,583,366	
CPT-92		-19.5	-30.1	-38.5	80.2	-99.7	± 351,660	± 1,581,099	
CPT-93		-14	-20	-42	80.2	-94.2	± 351,420	± 1,581,191	
CPT-94		-16	-17.4	-39	80.2	-96.2	± 351,559	± 1,581,264	
CPT-95		-17	-28	-40	80.2	-97.2	± 351,488	± 1,581,016	
CPT-96		8.2	-6.25	-6.25	63.8	-55.6	± 351,204	± 1,580,509	Grout Area CPT
CPT-97		9.5	-6	-6	85.1	-75.6	± 351,176	± 1,580,538	Grout Area CPT
CPT-98		9.3	-6	-6	85.3	-76	± 351,180	± 1,580,540	Grout Area CPT
CPT-99		7.4	-6	-6	56.8	-49.4	± 351,208	± 1,580,516	Grout Area CPT
CPT-100		7.8	-6	-6	57.3	-49.5	± 351,205	± 1,580,516	Grout Area CPT
CPT-101		7.8	-6	-6	75.1	-67.3	± 351,203	± 1,580,520	Grout Area CPT
CPT-102		6	2	-11	80.2	-74.2	± 351,170	± 1,583,437	
CPT-103		6	2	-12	85.1	-79.1	± 351,388	± 1,583,192	
CPT-104		5	2	-32	80.1	-75.1	± 351,550	± 1,582,945	
CPT-105		4	2	-43	71.2	-67.2	± 351,638	± 1,582,714	
CPT-106		9.3	-6	-6	85.1	-75.8	± 351,179	± 1,580,540	Grout Area CPT
CPT-107		9.5	-6	-6	85.1	-75.6	± 351,178	± 1,580,542	Grout Area CPT
CPT-108		9	-6	-6	85.1	-76.1	± 351,183	± 1,580,536	Grout Area CPT
CPT-109		8	-6.25	-6.25	58.2	-50.2	± 351,206	± 1,580,510	Grout Area CPT

TABLE 3-1 (continued)
BORING SUMMARY
NEWBY ISLAND LANDFILL

Boring	Sta.	Elev.	Total Depth	Tip Elev.	Approximte Northing	Approximte Easting	Comments
RB-1	50+00	15.5	78	-62.5	± 351,100	± 1,580,550	Offset Boring CPT-6
RB-2	30+00	14	96.5	-82.5	± 351,450	± 1,582,420	Offset Boring CPT-4
RB-2A	30+00	14	25.5	-11.5	± 351,450	± 1,582,420	Offset Boring CPT-4
RB-3	163+00	23	10	13	± 351,950	± 1,584,315	Offset Boring CPT-1; RB-3 Aborted
RB-4	140+00	19.5	101.5	-82	± 353,395	± 1,583,095	Offset Boring CPT-14
RB-5	90+00	18	100.5	-82.5	± 353,230	± 1,579,765	Offset Boring CPT-9
RB-6	120+00	21	98.5	-77.5	± 354,505	± 1,581,560	Offset Boring CPT-12
RB-7	33+71	0	95.5	-95.5	± 351,845	± 1,581,960	Offset Boring CPT-22
RB-8	60+00	15	35.5	-20.5	± 351,935	± 1,579,325	Offset Boring CPT-7
RB-9	N/A	8	6	2	± 350,955	± 1,583,640	Offset Boring CPT-37; RB-9 Aborted
RB-10	30+00	14	55.5	-41.5	± 351,450	± 1,582,420	Offset Boring CPT-4, RB-2, RB-2A
RB-10V	30+00	14	41.5	-27.5	± 351,450	± 1,582,420	Offset Boring CPT-4, RB-2, RB-2A
RB-10Va	30+00	14	120	-106	± 351,450	± 1,582,420	Offset Boring CPT-4, RB-2, RB-2A
RB-11V	60+00	15	87.5	-72.5	± 351,935	± 1,579,325	Offset Boring CPT-7, RB-8
RB-12V	125+00	18	127	-109	± 354,270	± 1,582,000	Offset Boring CPT-29, RB-12
RB-12Va	125+00	18	53.5	-35.5	± 354,270	± 1,582,000	Offset Boring CPT-29, RB-12V
RB-13V	40+00	11	48.5	-37.5	± 351,050	± 1,581,540	Offset Boring CPT-5
RB-13Va	40+00	11	71	-60	± 351,050	± 1,581,540	Offset Boring CPT-5
NB-1		8.5	59.5	-51	± 351,195	± 1,580,520	
NB-2		9.5	65	-55.5	± 351,200	± 1,580,505	
NB-3		9	64	-55	± 351,180	± 1,580,545	
NB-4		9.5	64	-54.5	± 351,180	± 1,580,535	
NB-5		9.5	72	-62.5	± 351,190	± 1,580,515	
PZ-1	57+81	-39.86	61	-100.86	352217.7	1580348.1	VW Piezo in OBA @ 40' (PZ-1-2) and 60' (PZ-1-3)
PZ-1A	57+81	-39.68	20.7	-60.38	352217.9	1580350.4	VW Piezo in OBA @ 20' (PZ-1-1)
PZ-2	58+06	-41.94	71	-112.94	351997.0	1580160.1	VW Piezo in OBA @ 25' (PZ-2-1), 45' (PZ-2-2), and 70' (PZ-2-3)
LPZ-1	106+50	80	97	-17	± 1,581,070	± 354,275	
LPZ-2	129+30	106	122.5	-16.5	± 1,581,920	± 353,645	
LPZ-3	134+28	130	142.1	-12.1	± 1,582,240	± 352,930	VW Piezo in OBA Subgrade
LPZ-4	148+97	110	122.5	-12.5	± 1,583,480	± 352,610	
LPZ-5	167+51	95	112.3	-17.3	± 1,583,735	± 351,705	

TABLE 4-1
SOIL CHARACTERIZATION SUMMARY
NEWBY ISLAND LANDFILL

YOUNG BAY MUD

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity	Organic Content (%)
RB-2	5	26.5	30+00	13.5	-13.0	YBM												113.5	81.9	38.6						
RB-2A	1	23	30+00	13.5	-9.5	YBM	CLAY, gray fat (bay mud)	CH				6.7	6.7	48.9	44.4	93.3	100.0	**115.3**	**84.1**	**37.2**	51	23	28	0.51	2.75	
RB-5	1	24	90+00	18.5	-5.5	YBM/OBA?	CLAY, gray fat	CH	1.2		0.4	0.9	1.3	38.3	59.2	97.5	100.0	**122.5**	**95.0**	**29.0**	55	22	33	0.21		
RB-6	1	31	120+00	21	-10.0	YBM	CLAY, gray lean	CL	0.1	0.5	1.4	11.3	13.2	58.7	28.0	86.7	100.0	130.6	107.5	21.5	37	20	17	0.09		
RB-7	3	24.5	N/A	0.5	-24.0	YBM/fill?	CLAY, brown fat	CH			1.0	7.4	8.4	32.8	58.8	91.6	100.0	127.8	102.8	24.4	53	21	32	0.11		
RB-8	4	20	60+00	14.5	-5.5	YBM	CLAY, dark gray fat	CH			0.2	11.7	11.9	59.1	29.0	88.1	100.0	**110.7**	**76.5**	**44.6**	50	24	26	0.79	2.76	
RB-12Va	1	29	125+00	18	-11.0	YBM	CLAY, gray fat	CH			0.2	3.3	3.5	48.6	47.9	96.5	100.0	**101.7**	**64.2**	**58.4**	71	29	42	0.70	2.77	3.7
RB-12Va	2	31.5	125+00	18	-13.5	YBM	CLAY, gray fat with glass and debris	CH					3.6			96.4	100.0	**103.1**	**65.1**	**58.4**	60	25	35	0.95		
RB-12Va	3	33	125+00	18	-15.0	YBM	CLAY, gray, trace sand						5.8			94.2	100.0	104.5	67.8	54.2						
RB-13V	1	22.5	40+00	11	-11.5	YBM	CLAY, gray fat	CH					7.4			92.6	100.0	**112.4**	**78.9**	**42.5**	51	23	28	0.70	2.75	2.5
								Average			0.6	6.9	**6.9**	47.7	44.6	**93.0**		**114.2**	**82.4**	**40.9**	**54**	**23**	**30**	**0.51**	**2.76**	**3.10**

OLDER BAY ALLUVIUM

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity	Organic Content (%)
RB-1	10	33	50+00	15.5	-17.5	OBA	CLAY, brown sandy lean, trace nodules	--										126.2	101.3	24.6	27	16	11			
RB-1	14	44.5	50+00	15.5	-29.0	OBA	CLAY, brown lean	CL			0.4	3.5	3.9	58.8	37.3	96.1	100.0	129.1	107.4	20.2	44	21	23	-0.03		
RB-1	15	57.5	50+00	15.5	-42.0	OBA	CLAY, brown sandy silty	CL-ML			6.7	24.2	30.9	55.2	13.9	69.1	100.0	**125.5**	**100.5**	**24.9**	25	20	5	0.97		
RB-1	20	76.5	50+00	15.5	-61.0	OBA												121.1	92.1	31.4						
RB-2	8	35	30+00	13.5	-21.5	OBA	CLAY, brown lean w/ sand	CL			0.2	25.3	25.5	44.6	29.9	74.5	100.0	**127.6**	**104.2**	**22.4**	35	16	19	0.34	2.74	
RB-2	9	45	30+00	13.5	-31.5	OBA	CLAY, brown sandy lean	--										128.1	104.0	23.3	34	16	18			
RB-2	10	52	30+00	13.5	-38.5	OBA												128.6	104.0	23.6						
RB-2	11	59	30+00	13.5	-45.5	OBA	SILT, brown sandy	ML			0.2	44.3	44.5	38.5	17.0	55.5	100.0	130.9	107.6	21.7	22	19	3	0.89		
RB-2	12	67	30+00	13.5	-53.5	OBA												124.2	97.1	27.9						
RB-2	13	75	30+00	13.5	-61.5	OBA	CLAY, olive brown lean	CL			0.2	2.9	3.1	58.7	38.2	96.9	100.0	**121.7**	**94.3**	**29.0**	43	23	20	0.30	2.74	
RB-2	14	82	30+00	13.5	-68.5	OBA												127.5	102.3	24.6						
RB-2	15	88	30+00	13.5	-74.5	OBA	CLAY, olive gray lean	CL			2.6	8.1	10.7	60.6	28.7	89.3	100.0	131.6	109.1	20.6	32	18	14	0.19		
RB-4	1	30	140+00	19	-11.0	OBA	CLAY, brown fat	CH			0.7	1.5	2.2	46.4	51.4	97.8	100.0	123.0	95.1	29.3	55	23	32	0.20		
RB-4	2	35	140+00	19	-16.0	OBA												132.6	110.7	19.8						
RB-4	3b	40	140+00	19	-21.0	OBA	CLAY, brown lean w/ sand	CL			0.2	17.4	17.6	49.7	32.7	82.4	100.0	132.5	110.0	20.4	34	16	18	0.25		
RB-4	4a	45	140+00	19	-26.0	OBA												126.0	99.8	26.2						
RB-4	5	48	140+00	19	-29.0	OBA	CLAY, brown lean	CL			0.6	4.4	5.0	42.7	52.3	95.0	100.0	127.1	101.6	25.1	48	21	27	0.15		
RB-4	11	62.5	140+00	19	-43.5	OBA	CLAY, brown silty	CH			0.4	4.8	5.2	43.3	51.5	94.8	100.0			27.5	50	21	29	0.22		
RB-4	13	75	140+00	19	-56.0	OBA	CLAY, brown silty w/ sand	--			0.2	25.8	26.0	55.3	18.7	74.0	100.0	131.1	108.5	20.9						
RB-4	15	85	140+00	19	-66.0	OBA	CLAY, brown lean	CL			0.2	1.8	2.0	63.9	34.1	98.0	100.0	125.9	99.6	26.4	40	22	18	0.24		
RB-4	16	90	140+00	19	-71.0	OBA												129.1	105.9	21.9						
RB-4	18	100	140+00	19	-81.0	OBA												129.2	105.0	23.1						
RB-5	3	35.5	90+00	18.5	-17.0	OBA	CLAY, brown lean	CL			0.6	6.0	6.6	57.4	36.0	93.4	100.0	126.4	100.7	25.5	37	20	17	0.33		
RB-5	5	45.5	90+00	18.5	-27.0	OBA												118.2	87.7	34.8						
RB-5	7	55.5	90+00	18.5	-37.0	OBA	CLAY, brown lean	CL			0.4	9.3	9.7	48.3	42.0	90.3	100.0	127.9	103.9	23.1	40	18	22	0.23		
RB-5	16	80.5	90+00	18.5	-62.0	OBA												130.7	108.1	21.0						
RB-5	18	90.5	90+00	18.5	-72.0	OBA	CLAY, olive gray lean	CL			0.6	2.9	3.5	51.6	44.9	96.5	100.0	125.5	99.2	26.5	45	20	25	0.26		
RB-5	20	100.5	90+00	18.5	-82.0	OBA												127.8	102.7	24.4						
RB-6	4	43.5	120+00	21	-22.5	OBA	CLAY, brown lean w/ sand	CL			0.9	19.3	20.2	44.0	35.8	79.8	100.0	124.2	98.4	26.2	36	16	20	0.51		
RB-6	5	50.5	120+00	21	-29.5	OBA	CLAY, brown	--			0.2	2.0	2.2	43.1	54.7	97.8	100.0	128.6	104.3	23.3						
RB-6	7	59	120+00	21	-38.0	OBA												124.7	98.0	27.2						

YBM = Young Bay Mud
OBA = Older Bay Alluvium

TABLE 4-1 (CONT'D)
SOIL CHARACTERIZATION SUMMARY
NEWBY ISLAND LANDFILL

OLDER BAY ALLUVIUM (CONT'D)

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity	Organic Content (%)
RB-6	9	69	120+00	21	-48.0	OBA	CLAY, brown lean	CL			0.2	1.7	1.9	65.5	32.6	98.1	100.0	126.8	101.5	24.9	36	22	14	0.21		
RB-6	11	80.5	120+00	21	-59.5	OBA	SILT, brown w/ sand	--			0.2	17.1	17.3	66.5	16.2	82.7	100.0	128.8	104.3	23.5						
RB-6	13	89	120+00	21	-68.0	OBA												127.5	102.6	24.3						
RB-7	8	48	N/A	0.5	-47.5	OBA												132.3	109.8	20.5						
RB-7	9	59	N/A	0.5	-58.5	OBA	CLAY, olive gray lean	CL				0.4	0.4	74.5	25.1	99.6	100.0	123.6	96.3	28.4	40	25	15	0.23		
RB-7	11	79	N/A	0.5	-78.5	OBA												130.6	107.2	21.9						
RB-7	13	89	N/A	0.5	-88.5	OBA												129.2	105.6	22.4						
RB-8	8	35.5	60+00	14.5	-21.0	OBA	CLAY, brown lean	CL			0.4	5.0	5.4	44.1	50.5	94.6	100.0	130.2	107.0	21.7	46	18	28	0.13		
RB-10	3	33	30+00	13.5	-19.5	OBA	CLAY, brown lean	CL			0.2	1.8	2.0	48.1	49.9	98.0	100.0	**124.8**	**98.3**	**27.0**	47	23	24	0.17		2.7
RB-10	4	44	30+00	13.5	-30.5	OBA	CLAY, brown lean	CL					14.8			85.2	100.0	**116.9**	**89.0**	**31.3**	44	17	27	0.53		
RB-10	5	53	30+00	13.5	-39.5	OBA	CLAY, brown lean	CL	0.1				2.7			97.2	100.0	**123.7**	**98.9**	**25.1**	48	23	25	0.08		
RB-10Va	1	61	30+00	13.5	-47.5	OBA	CLAY, brown lean w/ sand	CL					16.9			83.1	100.0	**128.0**	**104.8**	**22.1**	30	17	13	0.39		
RB-10Va	2	95	30+00	13.5	-81.5	OBA	CLAY, greenish gray lean	CL					1.9			98.1	100.0	**126.9**	**101.9**	**24.5**	45	22	23	0.11		
RB-11V	1	45	60+00	15	-30.0	OBA	CLAY, brown lean (w/ claystone)	CL	4.2				8.6			87.2	100.0	**127.7**	**104.5**	**22.2**	44	21	23	0.05		
RB-11V	2	71.5	60+00	15	-56.5	OBA	CLAY, brown lean	CL			0.4	0.3	0.7	78.3	21.0	99.3	100.0	**121.5**	**92.8**	**30.9**	45	25	20	0.30	2.74	2.5
RB-11V	3	85	60+00	15	-70.0	OBA	CLAY, gray lean	CL					5.0			95.0	100.0	**120.9**	**92.7**	**30.4**	45	23	22	0.34		
RB-12V	1	70	125+00	18	-52.0	OBA	CLAY, brown silty	CL-ML					13.8			86.2	100.0	**127.8**	**102.7**	**24.4**	25	21	4	0.85		
RB-12V	2	88	125+00	18	-70.0	OBA	SILT, brown	ML					11.3			88.7	100.0	**127.1**	**102.8**	**23.6**	24	23	1	0.60		
RB-12Va	4	38.5	125+00	18	-20.5	OBA	CLAY, brown sandy lean	CL					30.4			69.6	100.0	**126.0**	**102.5**	**22.9**	29	17	12	0.49		
RB-12Va	5	50	125+00	18	-32.0	OBA	CLAY, brown lean	CL					9.8			90.2	100.0	**123.8**	**98.8**	**25.3**	42	19	23	0.27		
RB-13V	2	31	40+00	11	-20.0	OBA	CLAY, brown, trace sand						13.2			86.8	100.0	**132.6**	**111.8**	**18.6**						
RB-13V	3	45	40+00	11	-34.0	OBA	CLAY, brown and gray lean w/ sand	CL	0.4				18.7			80.9	100.0	128.5	105.6	21.7	36	17	19	0.25		
LPZ-1	1	94.5	106+50	80	-14.5	OBA	CLAY, brown fat	CH					4.3			95.7	100.0	**128.7**	**104.7**	**22.9**	53	20	33	0.09		
LPZ-2	1	120	129+30	106	-14.0	OBA	CLAY, brown lean	CL			1.2	4.6	5.8	58.7	35.5	94.2	100.0	**129.8**	**105.9**	**22.6**	43	21	22	0.07	2.80	2.1
								Average			0.8	9.8	**10.9**	54.1	35.4	**89.0**		**127.0**	**102.1**	**24.5**	**39**	**20**	**19**	**0.31**	**2.76**	**2.4**

SAND/SILTY SAND

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity
RB-1	5	23	50+00	15.5	-7.5	SAND	SAND, gray silty, sl. plastic near clayey sand	--	1.9				79.4			18.7	100.0								
RB-1	6	24.5	50+00	15.5	-9.0	SAND	SAND, gray silty, sl. plastic	--			4.9	75.7	80.6	10.6	8.8	19.4	100.0			29.8					
RB-1	7	26	50+00	15.5	-10.5	SAND	SAND, gray clayey	--					60.4			39.6	100.0								
RB-1	8	27.5	50+00	15.5	-12.0	SAND														27.6					
RB-1	8	27.5	50+00	15.5	-12.0	SAND	SAND, gray poorly graded w/ silt				18.1	71.0	89.1	7.3	3.6	10.9	100.0								
RB-1	9	29	50+00	15.5	-13.5	SAND	SAND, gray clayey, trace shells	--	0.6				59.9			39.5	100.0								
RB-1	11	40	50+00	15.5	-24.5	SAND	SAND, brown poorly graded w/ silt	--					92.3			7.7	100.0								
RB-1	12	41.5	50+00	15.5	-26.0	SAND	SAND, brown poorly graded w/ silt	--	1.1	0.3	46.6	40.4	87.3	9.2	2.4	11.6	100.0			22.1					
RB-1	16	63.5	50+00	15.5	-48.0	SAND	SAND, brown silty	--					73.8			26.2	100.0								
RB-1	17	65	50+00	15.5	-49.5	SAND	SAND, brown silty	--			0.4	79.3	79.7	13.4	6.9	20.3	100.0								
RB-1	18	66.5	50+00	15.5	-51.0	SAND	SAND, brown silty	--	1.5				86.4			12.1	100.0								
RB-2	6	29	30+00	13.5	-15.5	SAND	SAND, gray silty w/ shells	--	6.9	6.7	29.7	35.0	71.4	12.5	9.2	21.7	100.0			22.1					
RB-2	7	31.5	30+00	13.5	-18.0	SAND	SAND, gray silty w/ shell frags. and clay lense	--	5.2				77.3			17.5	100.0	131.9	109.2	20.9					
RB-4	6	55	140+00	19	-36.0	SAND	SAND, brown silty	--					59.3			40.7	100.0	133.8	112.1	19.3					
RB-4	7	56.5	140+00	19	-37.5	SAND	SAND, brown silty	--					52.9			47.1	100.0								
RB-4	9	59.5	140+00	19	-40.5	SAND	SAND, brown silty	--					75.8			24.2	100.0								

YBM = Young Bay Mud
OBA = Older Bay Alluvium

TABLE 4-1 (CONT'D)
SOIL CHARACTERIZATION SUMMARY
NEWBY ISLAND LANDFILL

SAND/SILTY SAND (CONT'D)

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity
RB-5	9	60.5	90+00	18.5	-42.0	sand	SAND, brown silty	--					54.1			45.9	100.0								
RB-5	10	62	90+00	18.5	-43.5	sand	SAND, olive brown silty	SM					58.7			41.3	100.0								
RB-5	12	65	90+00	18.5	-46.5	sand	SAND, brown silty	--			0.2	75.3	75.5	17.3	7.2	24.5	100.0			21.1					
RB-5	14	68	90+00	18.5	-49.5	sand	SAND, brown silty	--					87.6			12.4	100.0								
RB-6	3	36.5	120+00	21	-15.5	sand	SAND, brown poorly graded w/ silt	--	1.5				87.2			11.3	100.0								
RB-6	15	97	120+00	21	-76.0	sand	SAND, brown poorly graded	--					95.3			4.7	100.0								
RB-7	5	36.5	N/A	0.5	-36.0	sand	SAND, grayish brown poorly graded w/ silt & grav.	--	15.0				77.3			7.7	100.0								
RB-7	7	39.5	N/A	0.5	-39.0	sand	SAND, grayish brown poorly graded w/ silt	--	0.5				93.5			6.0	100.0								
RB-8	5	25	60+00	14.5	-10.5	sand	SAND, gray silty, sl. plastic near clayey sand	--					71.0			29.0	100.0								
RB-8	6	28	60+00	14.5	-13.5	sand	SAND, gray silty	--					87.2			12.8	100.0			21.2					
RB-8	7	29.5	60+00	14.5	-15.0	sand	SAND, gray clayey w/ glass	--	2.6	1.7	10.1	49.1	60.9	25.9	10.6	36.5	100.0								
							Average		**4.9**	1.7	5.2	62.2	**81.7**	21.6	8.9	16.1		132.9	110.7	23.0					

DIKE (PERIMETER LEVEE)

Boring	Sample	Depth	Station	Boring Elev.	Sample Elev.	Material	Description	USCS	Gravel	Sand: Coarse	Sand: Medium	Sand: Fine	Total Sand	Fines: Silt	Fines: Clay	Total Fines	Check 100%	Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index	Specific Gravity
RB-2	2	6.5	30+00	13.5	7.0	dike	CLAY, brown lean	CL		0.3	1.1	11.9	13.3	51.6	35.1	86.7	100.0	132.0	110.3	19.7	38	19	19	0.03	
RB-8	1	5	60+00	14.5	9.5	dike	CLAY, brown lean	CL	0.6	0.5	0.6	5.8	6.9	41.9	50.6	92.5	100.0	125.5	103.2	21.6	47	23	24	-0.06	
RB-8	2	10	60+00	14.5	4.5	dike	CLAY, dark gray lean	CL				4.2	4.2	64.5	31.3	95.8	100.0	**116.5**	**87.9**	**32.6**	47	24	23	0.37	
RB-8	3	15	60+00	14.5	-0.5	dike												112.2	78.3	43.4					
							Average		0.6	0.4	0.9	7.3	**8.1**	52.7	39.0	**91.7**	100.0	**121.5**	**94.9**	**29.3**	**44**	**22**	**22**	**0.12**	

Note:
Bold unit weight and water content values represent an average of several tests (e.g. from a triaxial compression and/or consolidation test).

YBM = Young Bay Mud
OBA = Older Bay Alluvium

TABLE 5-1
RADIOCARBON AGE DATES FROM BORING NB-5
NEWBY ISLAND SANITARY LANDFILL

Depth (Avg.)	Elevation	Formation	Material	Average Calibrated Age
18.75	-8.75	YBM	clay	**3,155**
18.75	-8.75	YBM	wood	**385**
23.75	-13.75	Sand	sand	**12,865**
26.25	-16.25	YBM	clay	**3,585**
26.75	-16.75	YBM	clay	**3,855**
32.75	-22.75	OBA	clay	**19,530**
34.75	-24.75	OBA	sand	**15,635**
40.75	-30.75	OBA	clay	**22,270**
56.75	-46.75	OBA	clay	**24,530**
59.75	-49.75	OBA	sand	**25,970**
68.25	-58.25	OBA	sand	**27,730**

TABLE 5-2
SOIL CONSOLIDATION SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Boring	Sample	Sample Depth (ft)	Station Location	Boring Elevation (ft)	Sample Elevation (ft)	Material	Preconsol-idation Pressure P_p (psf)	Virgin Compr. Index C_c	Recompr. Index C_r	Mod. Cam-Clay $\Lambda = 1-C_r/C_c$	In-Situ Condition: Eff. Stress P_o (psf)	In-Situ Condition: Void Ratio e_o	In-Situ Condition: Overcon-solidation Ratio OCR	Stress Condition
LPZ-1	1	94.5	106+50	80	-14.5	OBA	11,700	0.230	0.070	0.70	5,700	0.627	2.1	full
LPZ-2	1	120	129+30	106	-14	OBA	9,100	0.217	0.074	0.66	7,800	0.659	1.2	full
RB-1	10	33	50+00	15.5	-17.5	OBA	4,600	0.244	0.029	0.88	3,080	0.644	1.5	dike
RB-10	3	33	30+00	13.5	-19.5	OBA	9,500	0.308	0.072	0.77	2,440	0.761	3.9	dike
RB-10	4	44	30+00	13.5	-30.5	OBA	7,700	0.382	0.071	0.81	2,860	0.828	2.7	dike
RB-10	5	53	30+00	13.5	-39.5	OBA	15,600	0.431	0.056	0.87	3,220	0.779	4.8	dike
RB-10Va	1	61	30+00	13.5	-47.5	OBA	7,600	0.268	0.024	0.91	3,600	0.662	2.1	dike
RB-10Va	2	95	30+00	13.5	-81.5	OBA	11,600	0.282	0.060	0.79	5,340	0.714	2.2	dike
RB-11V	1	45	60+00	15	-30	OBA	6,500	0.226	0.065	0.71	3,900	0.683	1.7	dike
RB-11V	2	71.5	60+00	15	-56.5	OBA	8,600	0.395	0.085	0.78	5,100	0.942	1.7	dike
RB-11V	3	85	60+00	15	-70	OBA	8,700	0.363	0.072	0.80	5,840	0.889	1.5	dike
RB-12V	1	70	125+00	18	-52	OBA	10,900	0.223	0.029	0.87	5,260	0.682	2.1	full
RB-12V	2	88	125+00	18	-70	OBA	23,300	0.313	0.030	0.90	5,920	0.66	3.9	full
RB-12Va	4	38.5	125+00	18	-20.5	OBA	5,400	0.216	0.034	0.84	2,800	0.689	1.9	full
RB-12Va	5	50	125+00	18	-32	OBA	4,300	0.270	0.066	0.76	3,540	0.767	1.2	full
RB-13V	2	31	40+00	11	-20	OBA	13,300	0.166	0.035	0.79	2,560	0.538	5.2	dike
RB-2	8	35	30+00	13.5	-21.5	OBA	6,500	0.238	0.054	0.77	2,500	0.717	2.6	dike
RB-2	9	45	30+00	13.5	-31.5	OBA	3,900	0.225	0.050	0.78	2,960	0.673	1.3	dike
RB-2	13	75	30+00	13.5	-61.5	OBA	8,600	0.318	0.059	0.81	4,520	0.752	1.9	dike
RB-4	5	48	140+00	19	-29.0	OBA	7,250	0.230	0.052	0.77	3,940	0.690	1.8	full
RB-6	4	41	120+00	21	-20.0	OBA	4,400	0.249	0.044	0.82	3,680	0.738	1.2	full
RB-6	9	69	120+00	21	-48.0	OBA	14,000	0.279	0.046	0.84	5,480	0.691	2.6	full
RB-7	9	59	33+71	0.5	-58.5	OBA	15,700	0.298	0.036	0.88	4,660	0.778	3.4	terrace
							Average	**0.277**	**0.053**	**0.805**			**2.4**	
							Std. Dev.	**0.066**	**0.018**	**0.065**			**1.1**	
							Max	**0.431**	**0.085**	**0.910**			**5.2**	
							Min	**0.166**	**0.024**	**0.659**			**1.2**	
RB-8	4	20	60+00	15	-5	YBM	2,400	0.437	0.063	0.856	2,160	1.174	1.1	dike
RB-2A	1	23	30+00	13.5	-9.5	YBM	1,700	0.407	0.057	0.860	1,640	1.162	1.0	dike
RB-12Va	1	29	125+00	18	-11	YBM	2,260	0.983	0.155	0.84	2,260	1.837	1.0	full
RB-12Va	2	31.5	125+00	18	-13.5	YBM	2,380	0.841	0.141	0.83	2,380	1.691	1.0	full
RB-13V	1	22.5	40+00	11	-11.5	YBM	3,400	0.440	0.094	0.79	2,200	1.100	1.5	dike
							Average	**0.622**	**0.102**	**0.835**			**1.1**	
							Std. Dev.	**0.270**	**0.045**	**0.030**			**0.2**	
							Max	**0.983**	**0.155**	**0.860**			**1.5**	
							Min	**0.407**	**0.057**	**0.786**			**1.0**	
RB-5	1	24	90+00	18.5	-5.5	YBM/MSW Fill?	7,100	0.255	0.079	0.690	3,000	0.776	2.4	full

TABLE 5-3
SOIL TIME CONSOLIDATION SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Boring	Sample	Sample Depth (ft)	Station Location	Boring Elevation (ft)	Sample Elevation (ft)	Material	Precon-solida-tion Pressure P_p (psf)	In-Situ Eff. Stress P_o (psf)	Load Increment (psf) 2,200 C_v (ft^2/yr)	4,400 C_v (ft^2/yr)	8,800 C_v (ft^2/yr)	17,600 C_v (ft^2/yr)
LPZ-2	1	120	129+30	106	-14	OBA	9,100	7,800	22.5	15.0	12.8	11.2
LPZ-1	1	94.5	106+50	80	-14.5	OBA	11,700	5,700	99.9	21.4	8.2	5.0
RB-1	10	33		15.5	-17.5	OBA	11,700	5,700	2767.4	2193.7	899.4	1058.1
RB-10	3	33	30+00	13.5	-19.5	OBA	9,500	2,440	81.8	54.5	50.0	30.0
RB-13V	2	31	40+00	11	-20	OBA	13,300	2,560	209.2	128.5	99.9	75.0
RB-6	4	41		21	-20.0	OBA	9,100	7,800	75.0	51.4	31.6	25.3
RB-12Va	4	38.5	125+00	18	-20.5	OBA	5,400	2,800	1199.2	946.7	666.2	285.5
RB-2	8	35		13.5	-21.5	OBA	4,600	3,080	54.5	21.4	14.5	9.0
RB-4	5	48		19	-29.0	OBA	9,500	2,440	78.2	75.0	33.9	16.8
RB-11V	1	45	60+00	15	-30	OBA	6,500	3,900	359.8	163.5	199.9	66.6
RB-10	4	44	30+00	13.5	-30.5	OBA	7,700	2,860	105.8	39.1	20.0	10.6
RB-2	9	45		13.5	-31.5	OBA	7,700	2,860	179.9	99.9	56.2	27.3
RB-12Va	5	50	125+00	18	-32	OBA	4,300	3,540	257.0	138.4	69.2	23.7
RB-10	5	53	30+00	13.5	-39.5	OBA	15,600	3,220	163.5	112.4	119.9	138.4
RB-10Va	1	61	30+00	13.5	-47.5	OBA	7,600	3,600	1199.2	817.6	749.5	461.2
RB-6	9	69		21	-48.0	OBA	15,600	3,220	185.4	272.5	304.9	149.9
RB-12V	1	70	125+00	18	-52	OBA	10,900	5,260	5290.6	4733.7	5290.6	4497.0
RB-11V	2	71.5	60+00	15	-56.5	OBA	8,600	5,100	499.7	391.0	281.1	179.9
RB-7	9	59		0.5	-58.5	OBA	7,600	3,600				
RB-2	13	75		13.5	-61.5	OBA	15,700	4,660	128.5	310.1	149.9	62.0
RB-11V	3	85	60+00	15	-70	OBA	8,700	5,840	272.5	206.8	128.5	81.8
RB-12V	2	88	125+00	18	-70	OBA	23,300	5,920				
RB-10Va	2	95	30+00	13.5	-81.5	OBA	11,600	5,340	119.9	39.4	29.6	45.0

Boring	Sample	Sample Depth (ft)	Station Location	Boring Elevation (ft)	Sample Elevation (ft)	Material	Precon-solida-tion Pressure P_p (psf)	In-Situ Eff. Stress P_o (psf)	Load Increment (psf) 1,600 C_v (ft^2/yr)	2,200 C_v (ft^2/yr)	3,000 C_v (ft^2/yr)	4,400 C_v (ft^2/yr)	8,800 C_v (ft^2/yr)
RB-8	4	20		15	-5	YBM	2,400	2,160				119.9	138.4
RB-2A	1	23		13.5	-9.5	YBM	1,700	1,640	5.1	4.3		12.4	13.1
RB-12Va	1	29	125+00	18	-11	YBM	2,260	2,260	4.3	6.4		8.2	8.2
RB-13V	1	22.5	40+00	11	-11.5	YBM	3,400	2,200	45.0	89.9	72.0	24.6	17.1
RB-12Va	2	31.5	125+00	18	-13.5	YBM	2,380	2,380				9.0	10.0

TABLE 5-4
MATERIAL PROPERTIES SUMMARY
NEWBY ISLAND SANITARY LANDFILL

SLOPE/W Material Number	Description	OCR	Layer Top Elev.	(Layer Avg.) Min. S_u (psf)	(S_u/P')	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
1	YBM above GW	3.0	8 & var.	200	0.751	113		
2	YBM below GW	3.0	5 & var.	350	0.751	113		
3	YBM below GW	2.9	0	440	0.730	113		
4	YBM below GW	2.7	-1	440	0.688	113		
5	YBM below GW	2.5	-2	440	0.645	113		
6	YBM below GW	2.3	-3	440	0.601	113		
7	YBM below GW	2.1	-4	430	0.557	113		
8	YBM below GW	1.9	-5	420	0.513	113		
9	YBM below GW	1.7	-6	400	0.467	113		
10	YBM below GW	1.5	-7	380	0.421	113		
11	YBM below GW	1.3	-8	350	0.373	113		
12	YBM below GW	1.1	-9	330	0.325	113		
13	YBM beneath dike above GW	1	-3	600	0.300	113		
14	YBM beneath dike below GW	1	-3	600	0.300	113		
	YBM Sand (non-liquefied)		various			125	50	32
15	YBM Sand (liquefied)		various		0.08 to 0.10	125		
16	OBA	1.5	-17	810	0.416	127		
17	OBA	1.5	-25	1050	0.416	127		
18	OBA	1.5	-35	1320	0.416	127		
19	OBA	1.5	-45	1550	0.416	127		
20	OBA	1.5	-52	2200	0.416	127		
21	OBA	1.5	-100	3600	0.416	127		
22	Dike					120	240	27.6
23	Compacted Subgrade					120	240	27.6
24	Smooth HDPE Slope Liner (Residual Strength)					10	0	8*
25	Textured HDPE Base Liner (Residual)					10	0	14
26	MSW (Near Face)					80	Shear-Normal Function **	
27	MSW (Older-existing)					90	Shear-Normal Function **	
28	MSW (Oldest)					105	Shear-Normal Function **	
	OBA Sand (non-liquefied)		various			125	200	28
						125	800 to 2000	0
29	OBA Sand (liquefied)		various	800-2000		125	Tau/Sigma ratio=0.2	
30	Organic Layer beneath Dike		-2			100	100	20
31	Old Bay Alluvium	1.5	-150	4950	0.416	127		
32	Old Bay Alluvium	1.5	-200	6290	0.416	127		
33	Old Bay Alluvium	1.5	-250	7630	0.416	127		
34	Old Bay Alluvium	1.5	-300	8970	0.416	127		
35	Old Bay Alluvium	1.5	-350	10320	0.416	127		
36	Young Bay Mud	1.0	-10	360	0.300	113		
37	MSW (New)					80	Shear-Normal Function **	
38	MSW (New-Deeper)					90	Shear-Normal Function **	
39	Bedrock (defined as an impenetrable model boundary)							

* Textured HDPE liner will be used on both the base and slopes for future cells adjacent to perimeter levee Station 30+00 and below

** See Figure 5-31

TABLE 5-5
UNCONSOLIDATED-UNDRAINED TRIAXIAL TEST SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Boring	Sample	Station Location	Sample Depth (ft)	Boring Elevation (ft)	Sample Elevation (ft)	Material	Undrained Shear Strength, Su (ksf)	Failure Strain (%)	Comments
RB-13V	1	40+00	22.5	11	-11.5	*YBM*	0.729	11.1%	
RB-12Va	2	125+00	31.5	18	-13.5	*YBM*	0.505	8.1%	
LPZ-2	1	129+30	120	106	-14	OBA	1.558	15.0%	
LPZ-1	1	106+50	94.5	80	-14.5	OBA	3.288	11.5%	
RB-12Va	3	125+00	33	18	-15	*YBM*	0.605	8.4%	
RB-1	10	50+00	33	15.5	-17.5	OBA	0.702	12.9%	
RB-10	3	30+00	33	13.5	-19.5	OBA	1.614	15.0%	
RB-13V	2	40+00	31	11	-20	OBA	2.285	15.1%	
RB-12Va	4	125+00	38.5	18	-20.5	OBA	0.933	14.9%	
RB-11V	1	60+00	45	15	-30	OBA	3.020	15.1%	
RB-10	4	30+00	44	13.5	-30.5	OBA	0.360	14.5%	Void length of sample; possibly disturbed; not considered for analyses
RB-2	9	30+00	45	13.5	-31.5	OBA	1.457	14.9%	
RB-12Va	5	125+00	50	18	-32	OBA	1.116	14.9%	
RB-13V	3	40+00	45	11	-34	OBA	1.918	15.1%	
RB-10	5	30+00	53	13.5	-39.5	OBA	2.310	15.2%	
RB-10Va	1	30+00	61	13.5	-47.5	OBA	0.751	15.3%	Void length of sample; possibly disturbed; not considered for analyses
RB-12V	1	125+00	70	18	-52	OBA	1.355	15.3%	
RB-12V	2	125+00	88	18	-70	OBA	3.016	15.1%	
RB-11V	3	60+00	85	15	-70	OBA	2.056	14.9%	
RB-10Va	2	30+00	95	13.5	-81.5	OBA	2.396	15.1%	

Table 6-1
SUMMARY OF HISTORIC EARTHQUAKES
NEWBY ISLAND SANITARY LANDFILL

Latidude	Longitude	Date	Magnitude (M_w)	Site Accel. (g)	Site Mod. Mercalli Intensity	Approximate Distance (miles)	Approximate Distance (km)
37.3	121.9	5/28/1927	5	0.088	VII	11.2	18
37.198	122.105	10/18/1989	5.1	0.0500	VI	20.1	32.3
37.13	121.952	8/8/1989	5.3	0.053	VI	22.7	36.5
37.6	122.1	05/21/1864	5.3	0.096	VII	13.1	21
37.76	121.73	1/27/1980	5.4	0.055	VI	23.8	38.3
37.385	121.772	6/13/1988	5.4	0.129	VIII	10.6	17
37.6	121.8	6/11/1903	5.5	0.1190	VII	12.5	20.1
37.3	121.8	8/3/1903	5.5	0.111	VII	13.4	21.6
37.17	122	11/9/1914	5.5	0.073	VII	20.2	32.4
37.37	121.78	9/5/1955	5.5	0.1380	VIII	10.8	17.3
37.434	121.774	10/31/2007	5.5	0.1570	VIII	9.3	15
37.3	121.8	01/02/1891	5.5	0.111	VII	13.4	21.6
37.5	122.3	02/15/1856	5.5	0.074	VII	19.8	31.9
37.1	121.8	05/24/1865	5.5	0.055	VI	25.9	41.7
37.8	122	07/04/1861	5.6	0.067	VI	23.8	38.3
37.483	121.69	3/31/1986	5.7	0.13	VIII	13.9	22.4
37.13	121.878	6/27/1988	5.7	0.077	VII	22.9	36.9
37.7	122	03/05/1864	5.7	0.1040	VII	17	27.3
37.67	122.5	11/23/1852	5.7	0.051	VI	33.9	54.5
37.1	121.5	8/6/1979	5.8	0.0550	VI	34.6	55.8
37.83	121.81	1/24/1980	5.8	0.0720	VII	26.7	42.9
37.2	122.1	02/17/1870	5.8	0.0980	VII	19.8	31.9
37.2	121.5	07/06/1899	5.8	0.0640	VI	30.1	48.4
37.5	121.3	07/15/1866	5.8	0.0540	VI	35.3	56.8
37.1	121.7	02/26/1864	5.9	0.072	VI	28.1	45.2
37.1	122.2	03/26/1884	5.9	0.071	VI	28.5	45.9
37.4	121.4	04/10/1881	5.9	0.0670	VI	30	48.2
38	121.9	05/19/1889	6.0	0.0560	VI	37.5	60.3
37.5	121.9	11/26/1858	6.1	0.45	X	3.7	5.9
37.32	121.698	4/24/1984	6.2	0.1380	VIII	16.4	26.4
37	121.5	06/20/1897	6.2	0.059	VI	39.9	64.2
37.8	122.5	06/21/1808	6.3	0.0640	VI	38.6	62.1
37.3	121.9	10/08/1865	6.3	0.2550	IX	11.2	18
37.25	121.75	7/1/1911	6.6	0.149	VIII	17.8	28.7
37.8	122.2	06/10/1836	6.8	0.1100	VII	27.5	44.2
37.7	122.1	10/21/1868	6.8	0.1530	VIII	18.8	30.3
37.036	121.883	10/18/1989	7	0.113	VII	29.3	47.2
37.6	122.4	06/01/1838	7	0.122	VII	26.9	43.3
36.83	121.57	10/18/1800	7	0.074	VII	48	77.2
37.7	122.5	4/18/1906	8.25	0.17	VIII	34.8	56

EQ search peformed with EQSEARCH software (Thomas F. Blake, 2007) and USGS Earthquake Data Base System
Site Coordinates: Lat: 37.4583; Long:-121.9417
Search Dates: Start: 1800; End: 2007
Search Radius: 62.0 miles (99.8 km)
Attenuation Relationship: Abrahamson & Silva (1995b/1997) Horiz.- Soil
Site accel. based on "Soil Site" and median attenuation relationship
Only events with Site Accel. > 0.05 g shown in this table; events sorted by Site Accel.

Table 6-2
SUMMARY OF DETERMINISTIC EARTHQUAKE SOURCE PARAMETERS
NEWBY ISLAND SANITARY LANDFILL

Fault[5]	Source-to-Site Distance[1] (miles)	Source-to-Site Distance[1] (km)	Magnitude (M_w)	PGA[3,4] (g)
Hayward (HS+HN)	3.7	6.0	6.9	0.391
Hayward (HS+HN+RC)	3.7	6.0	7.3	0.415
Hayward (FLOATING)	3.7	6.0	6.9	0.390
Hayward (HS)	3.7	6.0	6.7	0.376
Calaveras (FLOATING)	6.8	10.9	6.2	0.215
Calaveras (CS+CC+CN)	6.8	10.9	6.9	0.281
Calaveras (CN)	6.8	10.9	6.8	0.272
Calaveras (CC+CN)	6.8	10.9	6.2	0.220
Calaveras (CS+CC)	7.5	12.0	6.4	0.226
Calaveras (CC)	7.5	12.0	6.2	0.205
Calaveras (CS+CC FLOATING)	7.5	12.0	6.2	0.200
Monte Vista - Shannon	12.4	19.9	6.7	0.209
San Andreas (SAS+SAP)	15.5	24.9	7.4	0.178
San Andreas (SAS+SAP+SAN)	15.5	24.9	7.8	0.199
San Andreas (SAP+SAN+SAO)	15.5	24.9	7.8	0.204
San Andreas (SAS+SAP+SAN+SAO)	15.5	24.9	7.9	0.208
San Andreas (FLOATING)	15.5	24.9	6.9	0.150
San Andreas (SAP+SAN)	15.5	24.9	7.7	0.192
San Andreas (SAP)	15.5	24.9	7.2	0.163
San Andreas (SAS)	19.8	31.8	7.0	0.129
Mount Diablo (MTD)	20.5	33.0	6.7	0.134
Greenville (FLOATING)	20.8	33.4	6.2	0.081
Greenville (GS+GN)	20.8	33.4	6.9	0.120
Greenville (GS)	20.8	33.4	6.6	0.105
Greenville (GN)	21.9	35.2	6.7	0.103
Great Valley 7	24.5	39.5	6.7	0.117
Zayante-Vergeles	25.6	41.2	7.0	0.103
San gregorio (SGN)	27.3	43.9	7.2	0.107
San Gregorio (FLOATING)	27.3	43.9	6.9	0.093
San Gregorio (SGS+SGN)	27.3	43.9	7.4	0.117
Hayward (HN+RC)	29.5	47.5	7.1	0.095
Hayward (HN)	29.5	47.5	6.5	0.073
Concord/Green Valley (FLOATING)	30.6	49.3	6.2	0.055
Concord/Green Valley (CON+GVS)	30.6	49.3	6.6	0.073
Concord/Green Valley (CON)	30.6	49.3	6.3	0.058
Concord/Green Valley (CON+GVS+GVN)	30.6	49.3	6.7	0.078
Great Valley 8	38.0	61.2	6.6	0.075
Monterey Bay - Tularcitos	38.4	61.8	7.3	0.103
Ortigalita	38.5	62.0	7.1	0.076
Concord/Green Valley (GVS)	40.8	65.6	6.2	0.043
Concord/Green Valley (GVS+GVN)	40.8	65.6	6.5	0.053
Great Valley 5	40.9	65.9	6.5	0.067
San Andreas (SAN)	41.4	66.6	7.5	0.084
San Andreas (SAN+SAO)	41.4	66.6	7.7	0.095
Calaveras (CS)	41.5	66.8	5.8	0.026
San Gregorio (SGS)	43.4	69.9	7.0	0.064
Quien Sabe	48.5	78.1	6.4	0.043
Hayward (RC)	51.2	82.4	7.0	0.056
West Napa	51.5	82.9	6.5	0.043
San Andreas (Creeping)	51.6	83.1	6.2	0.032
Rinconada	55.1	88.6	7.5	0.069
Great Valley 9	55.2	88.8	6.6	0.053
Great Valley 4	56.2	90.5	6.6	0.052
Concord/Green Valley (GVN)	56.4	90.8	6.0	0.024
Point Reyes	59.3	95.4	7.0	0.062

1) Site Coordinates:
Lat: 37.4583; Long:-121.9417

2) Search Radius: 62.0 miles (99.8 km)

3) PGA's based on "Soil Site" and median attenuation relationship

4) Attenuation Relationship: Abrahamson & Silva (1997) Horiz.- Soil

5) Acronyms in parentheses, where applicable, refer to individual fault segements of a multi-segment fault rupture scenario

TABLE 6-3
ACCELERATION TIME HISTORY RECORD SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Hayward Earthquake Scenario

Earthquake	Event Magnitude M_w	Earthquake Record	Record PGA (g)	T_m (sec)	D_{5-95} (s)	PGV (cm/s)	Arias Intensity (m/s)
Coronado Bridge Evaluation	7.0	Synthetic, Strike-Normal	0.50	0.51	10.5	36.4	2.30
1999 Kocaeli, Turkey	7.4	Gebze (270)	0.21	0.59	7.7	44.5	0.72
1979 Imperial Valley	6.5	Sahop Casa Flores (270)	0.61	0.33	7.5	37.2	3.94
1989 Loma Prieta	6.9	Hayward City Hall (334)	0.19	0.37	15.4	21.0	0.55
1999 Kocaeli, Turkey	7.4	Izmit (180)	0.30	0.62	15.0	45.2	2.25
1992 Landers	7.3	Lucerne (260)	0.58	0.33	13.1	117.2	4.46
1994 Northridge	6.7	Pacoima Dam (194)	0.51	0.44	6.0	41.4	1.38
		Average	*0.41*	*0.46*	*10.7*	*49.0*	*2.23*

PGA = Peak Ground Acceleration
PGV = Peak Ground Velocity
T_m = Mean Period (Rathje et al., 1998)
D_{5-95} = Significant Duration of Shaking (Trifunac and Brady, 1975)

TABLE 6-4A
SHAKE SITE RESPONSE ANALYSIS: "FREE FIELD" SOIL PROFILE #1
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	5.0								
1	3.0	2.0	YBM	4	1.5	3.0	440	113	Clay PI=30	Clay PI=30
2	7.0	-2.0	YBM	4	5.0	4.0	440	113	Clay PI=30	Clay PI=30
3	12.0	-7.0	YBM	4	9.5	5.0	440	113	Clay PI=30	Clay PI=30
4	17.0	-12.0	YBM	4	14.5	5.0	475	113	Clay PI=30	Clay PI=30
5	20.0	-15.0	sand	13	18.5	3.0	550	125	**	***
6	25.0	-20.0	YBM	4	22.5	5.0	600	113	Clay PI=30	Clay PI=30
7	33.0	-28.0	sand	12	29.0	8.0	800	125	S&I 1970 UB	S&I 1970 LB
8	38.0	-33.0	OBA	2	35.5	5.0	700	127	Clay PI=19	Clay PI=19
9	43.0	-38.0	OBA	2	40.5	5.0	728	127	Clay PI=19	Clay PI=19
10	48.0	-43.0	OBA	2	45.5	5.0	735	127	Clay PI=19	Clay PI=19
11	53.0	-48.0	OBA	2	50.5	5.0	775	127	Clay PI=19	Clay PI=19
12	60.0	-55.0	sand	7	56.5	7.0	850	125	EPRI 51'-120'	EPRI 51'-120'
13	65.0	-60.0	OBA	2	62.5	5.0	775	127	Clay PI=19	Clay PI=19
14	70.0	-65.0	OBA	2	67.5	5.0	815	127	Clay PI=19	Clay PI=19
15	75.0	-70.0	OBA	2	72.5	5.0	825	127	Clay PI=19	Clay PI=19
16	80.0	-75.0	OBA	2	77.5	5.0	825	127	Clay PI=19	Clay PI=19
17	85.0	-80.0	OBA	2	82.5	5.0	850	127	Clay PI=19	Clay PI=19
18	90.0	-85.0	OBA	2	87.5	5.0	850	127	Clay PI=19	Clay PI=19
19	95.0	-90.0	OBA	2	92.5	5.0	850	127	Clay PI=19	Clay PI=19
20	100.0	-95.0	OBA	2	97.5	5.0	850	127	Clay PI=19	Clay PI=19
21	105.0	-100.0	OBA	2	102.5	5.0	946	127	Clay PI=19	Clay PI=19
22	110.0	-105.0	OBA	7	107.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
23	115.0	-110.0	OBA	7	112.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
24	120.0	-115.0	OBA	7	117.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
25	125.0	-120.0	OBA	7	122.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
26	135.0	-130.0	OBA	8	130.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
27	145.0	-140.0	OBA	8	140.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
28	155.0	-150.0	OBA	8	150.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
29	165.0	-160.0	OBA	8	160.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
30	175.0	-170.0	OBA	8	170.0	10.0	1122	127	EPRI 121'-250'	EPRI 121'-250'
31	185.0	-180.0	OBA	8	180.0	10.0	1160	127	EPRI 121'-250'	EPRI 121'-250'
32	205.0	-200.0	OBA	8	195.0	20.0	1160	127	EPRI 121'-250'	EPRI 121'-250'
33	225.0	-220.0	OBA	8	215.0	20.0	1160	128	EPRI 121'-250'	EPRI 121'-250'
34	245.0	-240.0	OBA	8	235.0	20.0	1210	128	EPRI 121'-250'	EPRI 121'-250'
35	265.0	-260.0	Sand	9	255.0	20.0	1850	128	EPRI 251'-500'	EPRI 251'-500'
36	315.0	-310.0	OBA	9	290.0	50.0	1360	128	EPRI 251'-500'	EPRI 251'-500'
37	375.0	-370.0	OBA	9	345.0	60.0	1433	129	EPRI 251'-500'	EPRI 251'-500'
38	450.0	-445.0	OBA	9	412.5	75.0	1560	130	EPRI 251'-500'	EPRI 251'-500'
39	550.0	-545.0	OBA	10	500.0	100.0	1692	131	EPRI 501'-1000'	EPRI 501'-1000'
40	670.0	-665.0	OBA	10	610.0	120.0	1775	132	EPRI 501'-1000'	EPRI 501'-1000'
41	805.0	-800.0	OBA	10	737.5	135.0	1860	133	EPRI 501'-1000'	EPRI 501'-1000'
42	1005.0	-1000.0	OBA	10	905.0	200.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
43			Rock	11			2950	150	Rock	Rock

** Between S&I 1970 UB & V&D PI=22 *** Between S&I 1970 LB & V&D PI=22 See Figure 6-5

TABLE 6-4B
SHAKE SITE RESPONSE ANALYSIS: "DIKE" SOIL PROFILE #2
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	14.0								
1	4.0	10.0	dike	3	2.0	4.0	700	120	Clay PI=22	Clay PI=22
2	9.0	5.0	dike	3	6.5	5.0	450	120	Clay PI=22	Clay PI=22
3	14.0	0.0	dike	3	11.5	5.0	450	120	Clay PI=22	Clay PI=22
4	18.0	-4.0	YBM	4	16.0	4.0	440	113	Clay PI=30	Clay PI=30
5	22.0	-8.0	YBM	4	20.0	4.0	440	113	Clay PI=30	Clay PI=30
6	26.0	-12.0	YBM	4	24.0	4.0	500	113	Clay PI=30	Clay PI=30
7	29.0	-15.0	sand	13	27.5	3.0	550	125	**	***
8	34.0	-20.0	YBM	4	31.5	5.0	600	113	Clay PI=30	Clay PI=30
9	42.0	-28.0	sand	12	38.0	8.0	800	125	S&I 1970 UB	S&I 1970 LB
10	47.0	-33.0	OBA	2	44.5	5.0	700	127	Clay PI=19	Clay PI=19
11	52.0	-38.0	OBA	2	49.5	5.0	700	127	Clay PI=19	Clay PI=19
12	57.0	-43.0	OBA	2	54.5	5.0	700	127	Clay PI=19	Clay PI=19
13	62.0	-48.0	OBA	2	59.5	5.0	735	127	Clay PI=19	Clay PI=19
14	69.0	-55.0	sand	7	65.5	7.0	850	125	EPRI 51'-120'	EPRI 51'-120'
15	74.0	-60.0	OBA	2	71.5	5.0	775	127	Clay PI=19	Clay PI=19
16	79.0	-65.0	OBA	2	76.5	5.0	815	127	Clay PI=19	Clay PI=19
17	84.0	-70.0	OBA	2	81.5	5.0	825	127	Clay PI=19	Clay PI=19
18	89.0	-75.0	OBA	2	86.5	5.0	825	127	Clay PI=19	Clay PI=19
19	94.0	-80.0	OBA	2	91.5	5.0	850	127	Clay PI=19	Clay PI=19
20	99.0	-85.0	OBA	2	96.5	5.0	850	127	Clay PI=19	Clay PI=19
21	104.0	-90.0	OBA	2	101.5	5.0	850	127	Clay PI=19	Clay PI=19
22	109.0	-95.0	OBA	2	106.5	5.0	850	127	Clay PI=19	Clay PI=19
23	114.0	-100.0	OBA	2	111.5	5.0	946	127	Clay PI=19	Clay PI=19
24	119.0	-105.0	OBA	7	116.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
25	124.0	-110.0	OBA	7	121.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
26	129.0	-115.0	OBA	7	126.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
27	134.0	-120.0	OBA	7	131.5	5.0	970	127	EPRI 51'-120'	EPRI 51'-120'
28	144.0	-130.0	OBA	8	139.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
29	154.0	-140.0	OBA	8	149.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
30	164.0	-150.0	OBA	8	159.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
31	174.0	-160.0	OBA	8	169.0	10.0	970	127	EPRI 121'-250'	EPRI 121'-250'
32	184.0	-170.0	OBA	8	179.0	10.0	1122	127	EPRI 121'-250'	EPRI 121'-250'
33	194.0	-180.0	OBA	8	189.0	10.0	1160	127	EPRI 121'-250'	EPRI 121'-250'
34	214.0	-200.0	OBA	8	204.0	20.0	1160	127	EPRI 121'-250'	EPRI 121'-250'
35	234.0	-220.0	OBA	8	224.0	20.0	1160	128	EPRI 121'-250'	EPRI 121'-250'
36	254.0	-240.0	OBA	8	244.0	20.0	1210	128	EPRI 121'-250'	EPRI 121'-250'
37	274.0	-260.0	Sand	9	264.0	20.0	1850	128	EPRI 251'-500'	EPRI 251'-500'
38	324.0	-310.0	OBA	9	299.0	50.0	1360	128	EPRI 251'-500'	EPRI 251'-500'
39	384.0	-370.0	OBA	9	354.0	60.0	1433	129	EPRI 251'-500'	EPRI 251'-500'
40	459.0	-445.0	OBA	9	421.5	75.0	1560	130	EPRI 251'-500'	EPRI 251'-500'
41	559.0	-545.0	OBA	10	509.0	100.0	1692	131	EPRI 501'-1000'	EPRI 501'-1000'
42	679.0	-665.0	OBA	10	619.0	120.0	1775	132	EPRI 501'-1000'	EPRI 501'-1000'
43	814.0	-800.0	OBA	10	746.5	135.0	1860	133	EPRI 501'-1000'	EPRI 501'-1000'
44	1014.0	-1000.0	OBA	10	914.0	200.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
45			Rock	11			2950	150	Rock	Rock

** Between S&I 1970 UB & V&D PI=22 *** Between S&I 1970 LB & V&D PI=22 See Figure 6-5

TABLE 6-4C
SHAKE SITE RESPONSE ANALYSIS: "34 FEET MSW" SOIL PROFILE #3
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	32.0								
1	5.0	27.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	22.0	MSW	1	7.5	5.0	460	80	Waste (K&M)	Waste (K&M)
3	16.0	16.0	MSW	1	13.0	6.0	480	80	Waste (K&M)	Waste (K&M)
4	22.0	10.0	MSW	1	19.0	6.0	510	80	Waste (K&M)	Waste (K&M)
5	28.0	4.0	MSW	1	25.0	6.0	540	80	Waste (K&M)	Waste (K&M)
6	34.0	-2.0	MSW	1	31.0	6.0	570	80	Waste (K&M)	Waste (K&M)
7	37.0	-5.0	Comp. Clay	3	35.5	3.0	750	120	Clay PI=22	Clay PI=22
8	44.0	-12.0	YBM	4	40.5	7.0	550	113	Clay PI=30	Clay PI=30
9	47.0	-15.0	sand	12	45.5	3.0	560	125	S&I 1970 UB	S&I 1970 LB
10	52.0	-20.0	YBM	4	49.5	5.0	650	113	Clay PI=30	Clay PI=30
11	60.0	-28.0	sand	12	56.0	8.0	850	125	S&I 1970 UB	S&I 1970 LB
12	65.0	-33.0	OBA	2	62.5	5.0	740	127	Clay PI=19	Clay PI=19
13	70.0	-38.0	OBA	2	67.5	5.0	740	127	Clay PI=19	Clay PI=19
14	75.0	-43.0	OBA	2	72.5	5.0	740	127	Clay PI=19	Clay PI=19
15	80.0	-48.0	OBA	2	77.5	5.0	770	127	Clay PI=19	Clay PI=19
16	87.0	-55.0	sand	7	83.5	7.0	890	125	EPRI 51'-120'	EPRI 51'-120'
17	92.0	-60.0	OBA	2	89.5	5.0	810	127	Clay PI=19	Clay PI=19
18	97.0	-65.0	OBA	2	94.5	5.0	850	127	Clay PI=19	Clay PI=19
19	102.0	-70.0	OBA	2	99.5	5.0	860	127	Clay PI=19	Clay PI=19
20	107.0	-75.0	OBA	2	104.5	5.0	860	127	Clay PI=19	Clay PI=19
21	112.0	-80.0	OBA	2	109.5	5.0	880	127	Clay PI=19	Clay PI=19
22	117.0	-85.0	OBA	2	114.5	5.0	880	127	Clay PI=19	Clay PI=19
23	122.0	-90.0	OBA	2	119.5	5.0	880	127	Clay PI=19	Clay PI=19
24	127.0	-95.0	OBA	2	124.5	5.0	880	127	Clay PI=19	Clay PI=19
25	132.0	-100.0	OBA	2	129.5	5.0	970	127	Clay PI=19	Clay PI=19
26	137.0	-105.0	OBA	7	134.5	5.0	1000	127	EPRI 51'-120'	EPRI 51'-120'
27	142.0	-110.0	OBA	7	139.5	5.0	1000	127	EPRI 51'-120'	EPRI 51'-120'
28	147.0	-115.0	OBA	7	144.5	5.0	1000	127	EPRI 51'-120'	EPRI 51'-120'
29	152.0	-120.0	OBA	7	149.5	5.0	1000	127	EPRI 51'-120'	EPRI 51'-120'
30	162.0	-130.0	OBA	8	157.0	10.0	1000	127	EPRI 121'-250'	EPRI 121'-250'
31	172.0	-140.0	OBA	8	167.0	10.0	1000	127	EPRI 121'-250'	EPRI 121'-250'
32	182.0	-150.0	OBA	8	177.0	10.0	1000	127	EPRI 121'-250'	EPRI 121'-250'
33	192.0	-160.0	OBA	8	187.0	10.0	1000	127	EPRI 121'-250'	EPRI 121'-250'
34	202.0	-170.0	OBA	8	197.0	10.0	1140	127	EPRI 121'-250'	EPRI 121'-250'
35	212.0	-180.0	OBA	8	207.0	10.0	1180	127	EPRI 121'-250'	EPRI 121'-250'
36	232.0	-200.0	OBA	8	222.0	20.0	1180	127	EPRI 121'-250'	EPRI 121'-250'
37	252.0	-220.0	OBA	8	242.0	20.0	1180	128	EPRI 121'-250'	EPRI 121'-250'
38	272.0	-240.0	OBA	8	262.0	20.0	1230	128	EPRI 121'-250'	EPRI 121'-250'
39	292.0	-260.0	Sand	9	282.0	20.0	1880	128	EPRI 251'-500'	EPRI 251'-500'
40	342.0	-310.0	OBA	9	317.0	50.0	1380	129	EPRI 251'-500'	EPRI 251'-500'
41	402.0	-370.0	OBA	9	372.0	60.0	1450	129	EPRI 251'-500'	EPRI 251'-500'
42	477.0	-445.0	OBA	9	439.5	75.0	1570	130	EPRI 251'-500'	EPRI 251'-500'
43	577.0	-545.0	OBA	10	527.0	100.0	1700	131	EPRI 501'-1000'	EPRI 501'-1000'
44	697.0	-665.0	OBA	10	637.0	120.0	1790	132	EPRI 501'-1000'	EPRI 501'-1000'
45	832.0	-800.0	OBA	10	764.5	135.0	1870	133	EPRI 501'-1000'	EPRI 501'-1000'
46	1032.0	-1000.0	OBA	10	932.0	200.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
47			Rock	11			2950	150	Rock	Rock

TABLE 6-4D
SHAKE SITE RESPONSE ANALYSIS: "65 FEET MSW" SOIL PROFILE #4
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	49.0								
1	5.0	44.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	39.0	MSW	1	7.5	5.0	450	80	Waste (K&M)	Waste (K&M)
3	15.0	34.0	MSW	1	12.5	5.0	480	80	Waste (K&M)	Waste (K&M)
4	20.0	29.0	MSW	1	17.5	5.0	510	80	Waste (K&M)	Waste (K&M)
5	25.0	24.0	MSW	1	22.5	5.0	530	80	Waste (K&M)	Waste (K&M)
6	31.0	18.0	MSW	1	28.0	6.0	560	80	Waste (K&M)	Waste (K&M)
7	37.0	12.0	MSW	1	34.0	6.0	580	80	Waste (K&M)	Waste (K&M)
8	43.0	6.0	MSW	1	40.0	6.0	610	80	Waste (K&M)	Waste (K&M)
9	49.0	0.0	MSW	1	46.0	6.0	630	80	Waste (K&M)	Waste (K&M)
10	55.0	-6.0	MSW	1	52.0	6.0	650	80	Waste (K&M)	Waste (K&M)
11	61.0	-12.0	MSW	1	58.0	6.0	670	90	Waste (K&M)	Waste (K&M)
12	65.0	-16.0	Comp. Clay	3	63.0	4.0	800	120	Clay PI=22	Clay PI=22
13	70.0	-21.0	Comp. Clay	3	67.5	5.0	800	120	Clay PI=22	Clay PI=22
14	77.0	-28.0	sand	12	73.5	7.0	800	125	S&I 1970 UB	S&I 1970 LB
15	82.0	-33.0	OBA	2	79.5	5.0	760	127	Clay PI=19	Clay PI=19
16	87.0	-38.0	OBA	2	84.5	5.0	760	127	Clay PI=19	Clay PI=19
17	92.0	-43.0	OBA	2	89.5	5.0	760	127	Clay PI=19	Clay PI=19
18	97.0	-48.0	OBA	2	94.5	5.0	790	127	Clay PI=19	Clay PI=19
19	104.0	-55.0	sand	7	100.5	7.0	910	125	EPRI 51'-120'	EPRI 51'-120'
20	109.0	-60.0	OBA	2	106.5	5.0	820	127	Clay PI=19	Clay PI=19
21	114.0	-65.0	OBA	2	111.5	5.0	860	127	Clay PI=19	Clay PI=19
22	119.0	-70.0	OBA	2	116.5	5.0	870	127	Clay PI=19	Clay PI=19
23	124.0	-75.0	OBA	2	121.5	5.0	870	127	Clay PI=19	Clay PI=19
24	129.0	-80.0	OBA	2	126.5	5.0	890	127	Clay PI=19	Clay PI=19
25	134.0	-85.0	OBA	2	131.5	5.0	890	127	Clay PI=19	Clay PI=19
26	139.0	-90.0	OBA	2	136.5	5.0	890	127	Clay PI=19	Clay PI=19
27	144.0	-95.0	OBA	2	141.5	5.0	890	127	Clay PI=19	Clay PI=19
28	149.0	-100.0	OBA	2	146.5	5.0	990	127	Clay PI=19	Clay PI=19
29	154.0	-105.0	OBA	7	151.5	5.0	1010	127	EPRI 51'-120'	EPRI 51'-120'
30	159.0	-110.0	OBA	7	156.5	5.0	1010	127	EPRI 51'-120'	EPRI 51'-120'
31	164.0	-115.0	OBA	7	161.5	5.0	1010	127	EPRI 51'-120'	EPRI 51'-120'
32	169.0	-120.0	OBA	7	166.5	5.0	1010	127	EPRI 51'-120'	EPRI 51'-120'
33	179.0	-130.0	OBA	8	174.0	10.0	1010	127	EPRI 121'-250'	EPRI 121'-250'
34	189.0	-140.0	OBA	8	184.0	10.0	1010	127	EPRI 121'-250'	EPRI 121'-250'
35	199.0	-150.0	OBA	8	194.0	10.0	1010	127	EPRI 121'-250'	EPRI 121'-250'
36	209.0	-160.0	OBA	8	204.0	10.0	1010	127	EPRI 121'-250'	EPRI 121'-250'
37	219.0	-170.0	OBA	8	214.0	10.0	1160	128	EPRI 121'-250'	EPRI 121'-250'
38	229.0	-180.0	OBA	8	224.0	10.0	1190	128	EPRI 121'-250'	EPRI 121'-250'
39	249.0	-200.0	OBA	8	239.0	20.0	1190	128	EPRI 121'-250'	EPRI 121'-250'
40	269.0	-220.0	OBA	8	259.0	20.0	1190	128	EPRI 121'-250'	EPRI 121'-250'
41	289.0	-240.0	OBA	8	279.0	20.0	1240	128	EPRI 121'-250'	EPRI 121'-250'
42	309.0	-260.0	Sand	9	299.0	20.0	1890	128	EPRI 251'-500'	EPRI 251'-500'
43	359.0	-310.0	OBA	9	334.0	50.0	1390	128	EPRI 251'-500'	EPRI 251'-500'
44	419.0	-370.0	OBA	9	389.0	60.0	1460	129	EPRI 251'-500'	EPRI 251'-500'
45	494.0	-445.0	OBA	9	456.5	75.0	1580	130	EPRI 251'-500'	EPRI 251'-500'
46	594.0	-545.0	OBA	10	544.0	100.0	1710	131	EPRI 501'-1000'	EPRI 501'-1000'
47	714.0	-665.0	OBA	10	654.0	120.0	1790	132	EPRI 501'-1000'	EPRI 501'-1000'
48	849.0	-800.0	OBA	10	781.5	135.0	1880	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1049.0	-1000.0	OBA	10	949.0	200.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-4E
SHAKE SITE RESPONSE ANALYSIS: "95 FEET MSW" SOIL PROFILE #5
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	63.0								
1	5.0	58.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	11.0	52.0	MSW	1	8.0	6.0	460	80	Waste (K&M)	Waste (K&M)
3	17.0	46.0	MSW	1	14.0	6.0	490	80	Waste (K&M)	Waste (K&M)
4	23.0	40.0	MSW	1	20.0	6.0	520	80	Waste (K&M)	Waste (K&M)
5	29.0	34.0	MSW	1	26.0	6.0	550	80	Waste (K&M)	Waste (K&M)
6	35.0	28.0	MSW	1	32.0	6.0	570	80	Waste (K&M)	Waste (K&M)
7	41.0	22.0	MSW	1	38.0	6.0	600	80	Waste (K&M)	Waste (K&M)
8	47.0	16.0	MSW	1	44.0	6.0	620	80	Waste (K&M)	Waste (K&M)
9	53.0	10.0	MSW	1	50.0	6.0	650	90	Waste (K&M)	Waste (K&M)
10	59.0	4.0	MSW	1	56.0	6.0	670	90	Waste (K&M)	Waste (K&M)
11	65.0	-2.0	MSW	1	62.0	6.0	690	90	Waste (K&M)	Waste (K&M)
12	71.0	-8.0	MSW	1	68.0	6.0	710	90	Waste (K&M)	Waste (K&M)
13	77.0	-14.0	MSW	1	74.0	6.0	730	90	Waste (K&M)	Waste (K&M)
14	83.0	-20.0	MSW	1	80.0	6.0	750	90	Waste (K&M)	Waste (K&M)
15	89.0	-26.0	MSW	1	86.0	6.0	770	90	Waste (K&M)	Waste (K&M)
16	95.0	-32.0	MSW	1	92.0	6.0	790	90	Waste (K&M)	Waste (K&M)
17	104.0	-41.0	Comp. Clay	3	99.5	9.0	800	120	Clay PI=22	Clay PI=22
18	111.0	-48.0	OBA	2	107.5	7.0	750	127	Clay PI=19	Clay PI=19
19	118.0	-55.0	sand	7	114.5	7.0	870	125	EPRI 51'-120'	EPRI 51'-120'
20	123.0	-60.0	OBA	2	120.5	5.0	790	127	Clay PI=19	Clay PI=19
21	128.0	-65.0	OBA	2	125.5	5.0	830	127	Clay PI=19	Clay PI=19
22	133.0	-70.0	OBA	2	130.5	5.0	840	127	Clay PI=19	Clay PI=19
23	138.0	-75.0	OBA	2	135.5	5.0	840	127	Clay PI=19	Clay PI=19
24	143.0	-80.0	OBA	2	140.5	5.0	860	127	Clay PI=19	Clay PI=19
25	148.0	-85.0	OBA	2	145.5	5.0	860	127	Clay PI=19	Clay PI=19
26	153.0	-90.0	OBA	2	150.5	5.0	860	127	Clay PI=19	Clay PI=19
27	158.0	-95.0	OBA	2	155.5	5.0	860	127	Clay PI=19	Clay PI=19
28	163.0	-100.0	OBA	2	160.5	5.0	960	127	Clay PI=19	Clay PI=19
29	168.0	-105.0	OBA	7	165.5	5.0	980	127	EPRI 51'-120'	EPRI 51'-120'
30	173.0	-110.0	OBA	7	170.5	5.0	980	127	EPRI 51'-120'	EPRI 51'-120'
31	178.0	-115.0	OBA	7	175.5	5.0	980	127	EPRI 51'-120'	EPRI 51'-120'
32	183.0	-120.0	OBA	7	180.5	5.0	980	127	EPRI 51'-120'	EPRI 51'-120'
33	193.0	-130.0	OBA	8	188.0	10.0	980	127	EPRI 121'-250'	EPRI 121'-250'
34	203.0	-140.0	OBA	8	198.0	10.0	980	127	EPRI 121'-250'	EPRI 121'-250'
35	213.0	-150.0	OBA	8	208.0	10.0	980	127	EPRI 121'-250'	EPRI 121'-250'
36	223.0	-160.0	OBA	8	218.0	10.0	980	127	EPRI 121'-250'	EPRI 121'-250'
37	233.0	-170.0	OBA	8	228.0	10.0	1130	127	EPRI 121'-250'	EPRI 121'-250'
38	243.0	-180.0	OBA	8	238.0	10.0	1170	127	EPRI 121'-250'	EPRI 121'-250'
39	263.0	-200.0	OBA	8	253.0	20.0	1170	127	EPRI 121'-250'	EPRI 121'-250'
40	283.0	-220.0	OBA	8	273.0	20.0	1170	128	EPRI 121'-250'	EPRI 121'-250'
41	303.0	-240.0	OBA	8	293.0	20.0	1220	128	EPRI 121'-250'	EPRI 121'-250'
42	323.0	-260.0	Sand	9	313.0	20.0	1860	128	EPRI 251'-500'	EPRI 251'-500'
43	373.0	-310.0	OBA	9	348.0	50.0	1370	129	EPRI 251'-500'	EPRI 251'-500'
44	433.0	-370.0	OBA	9	403.0	60.0	1440	129	EPRI 251'-500'	EPRI 251'-500'
45	508.0	-445.0	OBA	9	470.5	75.0	1570	130	EPRI 251'-500'	EPRI 251'-500'
46	608.0	-545.0	OBA	10	558.0	100.0	1700	131	EPRI 501'-1000'	EPRI 501'-1000'
47	728.0	-665.0	OBA	10	668.0	120.0	1780	132	EPRI 501'-1000'	EPRI 501'-1000'
48	863.0	-800.0	OBA	10	795.5	135.0	1860	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1063.0	-1000.0	OBA	10	963.0	200.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-4F
SHAKE SITE RESPONSE ANALYSIS: "150 FEET MSW" SOIL PROFILE #6
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	110.0								
1	5.0	105.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	100.0	MSW	1	7.5	5.0	450	80	Waste (K&M)	Waste (K&M)
3	15.0	95.0	MSW	1	12.5	5.0	480	80	Waste (K&M)	Waste (K&M)
4	20.0	90.0	MSW	1	17.5	5.0	510	80	Waste (K&M)	Waste (K&M)
5	25.0	85.0	MSW	1	22.5	5.0	530	80	Waste (K&M)	Waste (K&M)
6	30.0	80.0	MSW	1	27.5	5.0	560	80	Waste (K&M)	Waste (K&M)
7	35.0	75.0	MSW	1	32.5	5.0	580	80	Waste (K&M)	Waste (K&M)
8	40.0	70.0	MSW	1	37.5	5.0	600	80	Waste (K&M)	Waste (K&M)
9	45.0	65.0	MSW	1	42.5	5.0	620	80	Waste (K&M)	Waste (K&M)
10	50.0	60.0	MSW	1	47.5	5.0	640	90	Waste (K&M)	Waste (K&M)
11	55.0	55.0	MSW	1	52.5	5.0	660	90	Waste (K&M)	Waste (K&M)
12	60.0	50.0	MSW	1	57.5	5.0	670	90	Waste (K&M)	Waste (K&M)
13	65.0	45.0	MSW	1	62.5	5.0	690	90	Waste (K&M)	Waste (K&M)
14	70.0	40.0	MSW	1	67.5	5.0	710	90	Waste (K&M)	Waste (K&M)
15	75.0	35.0	MSW	1	72.5	5.0	730	90	Waste (K&M)	Waste (K&M)
16	80.0	30.0	MSW	1	77.5	5.0	740	90	Waste (K&M)	Waste (K&M)
17	85.0	25.0	MSW	1	82.5	5.0	760	90	Waste (K&M)	Waste (K&M)
18	90.0	20.0	MSW	1	87.5	5.0	770	90	Waste (K&M)	Waste (K&M)
19	96.0	14.0	MSW	1	93.0	6.0	790	90	Waste (K&M)	Waste (K&M)
20	102.0	8.0	MSW	1	99.0	6.0	810	90	Waste (K&M)	Waste (K&M)
21	108.0	2.0	MSW	1	105.0	6.0	830	90	Waste (K&M)	Waste (K&M)
22	114.0	-4.0	MSW	1	111.0	6.0	840	90	Waste (K&M)	Waste (K&M)
23	120.0	-10.0	MSW	1	117.0	6.0	860	90	Waste (K&M)	Waste (K&M)
24	126.0	-16.0	MSW	1	123.0	6.0	880	90	Waste (K&M)	Waste (K&M)
25	134.0	-24.0	MSW	1	130.0	8.0	890	90	Waste (K&M)	Waste (K&M)
26	142.0	-32.0	MSW	1	138.0	8.0	910	90	Waste (K&M)	Waste (K&M)
27	150.0	-40.0	MSW	1	146.0	8.0	930	90	Waste (K&M)	Waste (K&M)
28	158.0	-48.0	Comp. Clay	3	154.0	8.0	850	120	Clay PI=22	Clay PI=22
29	165.0	-55.0	sand	7	161.5	7.0	830	125	EPRI 51'-120'	EPRI 51'-120'
30	175.0	-65.0	OBA	2	170.0	10.0	820	127	Clay PI=19	Clay PI=19
31	185.0	-75.0	OBA	2	180.0	10.0	850	127	Clay PI=19	Clay PI=19
32	195.0	-85.0	OBA	2	190.0	10.0	870	127	Clay PI=19	Clay PI=19
33	205.0	-95.0	OBA	2	200.0	10.0	870	127	Clay PI=19	Clay PI=19
34	215.0	-105.0	OBA	7	210.0	10.0	980	127	EPRI 51'-120'	EPRI 51'-120'
35	225.0	-115.0	OBA	7	220.0	10.0	990	127	EPRI 51'-120'	EPRI 51'-120'
36	235.0	-125.0	OBA	7	230.0	10.0	990	127	EPRI 51'-120'	EPRI 51'-120'
37	260.0	-150.0	OBA	8	247.5	25.0	990	127	EPRI 121'-250'	EPRI 121'-250'
38	290.0	-180.0	OBA	8	275.0	30.0	1100	127	EPRI 121'-250'	EPRI 121'-250'
39	320.0	-210.0	OBA	8	305.0	30.0	1180	128	EPRI 121'-250'	EPRI 121'-250'
40	350.0	-240.0	OBA	8	335.0	30.0	1210	128	EPRI 121'-250'	EPRI 121'-250'
41	370.0	-260.0	Sand	9	360.0	20.0	1870	128	EPRI 251'-500'	EPRI 251'-500'
42	410.0	-300.0	OBA	9	390.0	40.0	1370	128	EPRI 251'-500'	EPRI 251'-500'
43	460.0	-350.0	OBA	9	435.0	50.0	1380	129	EPRI 251'-500'	EPRI 251'-500'
44	520.0	-410.0	OBA	9	490.0	60.0	1570	129	EPRI 251'-500'	EPRI 251'-500'
45	605.0	-495.0	OBA	9	562.5	85.0	1600	130	EPRI 251'-500'	EPRI 251'-500'
46	705.0	-595.0	OBA	10	655.0	100.0	1730	131	EPRI 501'-1000'	EPRI 501'-1000'
47	825.0	-715.0	OBA	10	765.0	120.0	1830	132	EPRI 501'-1000'	EPRI 501'-1000'
48	960.0	-850.0	OBA	10	892.5	135.0	1900	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1110.0	-1000.0	OBA	10	1035.0	150.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-4G
SHAKE SITE RESPONSE ANALYSIS: "180 FEET MSW" SOIL PROFILE #7
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	140.0								
1	5.0	135.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	130.0	MSW	1	7.5	5.0	450	80	Waste (K&M)	Waste (K&M)
3	15.0	125.0	MSW	1	12.5	5.0	480	80	Waste (K&M)	Waste (K&M)
4	20.0	120.0	MSW	1	17.5	5.0	510	80	Waste (K&M)	Waste (K&M)
5	25.0	115.0	MSW	1	22.5	5.0	530	80	Waste (K&M)	Waste (K&M)
6	30.0	110.0	MSW	1	27.5	5.0	560	80	Waste (K&M)	Waste (K&M)
7	35.0	105.0	MSW	1	32.5	5.0	580	80	Waste (K&M)	Waste (K&M)
8	40.0	100.0	MSW	1	37.5	5.0	600	80	Waste (K&M)	Waste (K&M)
9	45.0	95.0	MSW	1	42.5	5.0	620	80	Waste (K&M)	Waste (K&M)
10	50.0	90.0	MSW	1	47.5	5.0	640	90	Waste (K&M)	Waste (K&M)
11	55.0	85.0	MSW	1	52.5	5.0	660	90	Waste (K&M)	Waste (K&M)
12	60.0	80.0	MSW	1	57.5	5.0	680	90	Waste (K&M)	Waste (K&M)
13	65.0	75.0	MSW	1	62.5	5.0	690	90	Waste (K&M)	Waste (K&M)
14	70.0	70.0	MSW	1	67.5	5.0	710	90	Waste (K&M)	Waste (K&M)
15	75.0	65.0	MSW	1	72.5	5.0	720	90	Waste (K&M)	Waste (K&M)
16	80.0	60.0	MSW	1	77.5	5.0	740	90	Waste (K&M)	Waste (K&M)
17	85.0	55.0	MSW	1	82.5	5.0	760	90	Waste (K&M)	Waste (K&M)
18	90.0	50.0	MSW	1	87.5	5.0	770	90	Waste (K&M)	Waste (K&M)
19	100.0	40.0	MSW	1	95.0	10.0	790	90	Waste (K&M)	Waste (K&M)
20	110.0	30.0	MSW	1	105.0	10.0	820	90	Waste (K&M)	Waste (K&M)
21	120.0	20.0	MSW	1	115.0	10.0	850	90	Waste (K&M)	Waste (K&M)
22	130.0	10.0	MSW	1	125.0	10.0	880	90	Waste (K&M)	Waste (K&M)
23	140.0	0.0	MSW	1	135.0	10.0	900	105	Waste (K&M)	Waste (K&M)
24	150.0	-10.0	MSW	1	145.0	10.0	930	105	Waste (K&M)	Waste (K&M)
25	160.0	-20.0	MSW	1	155.0	10.0	950	105	Waste (K&M)	Waste (K&M)
26	170.0	-30.0	MSW	1	165.0	10.0	980	105	Waste (K&M)	Waste (K&M)
27	180.0	-40.0	MSW	1	175.0	10.0	1010	105	Waste (K&M)	Waste (K&M)
28	188.0	-48.0	Comp. Clay	3	184.0	8.0	900	120	Clay PI=22	Clay PI=22
29	195.0	-55.0	sand	7	191.5	7.0	890	125	EPRI 51'-120'	EPRI 51'-120'
30	205.0	-65.0	OBA	2	200.0	10.0	880	127	Clay PI=19	Clay PI=19
31	215.0	-75.0	OBA	2	210.0	10.0	900	127	Clay PI=19	Clay PI=19
32	225.0	-85.0	OBA	2	220.0	10.0	930	127	Clay PI=19	Clay PI=19
33	235.0	-95.0	OBA	2	230.0	10.0	930	127	Clay PI=19	Clay PI=19
34	245.0	-105.0	OBA	7	240.0	10.0	1030	127	EPRI 51'-120'	EPRI 51'-120'
35	255.0	-115.0	OBA	7	250.0	10.0	1040	127	EPRI 51'-120'	EPRI 51'-120'
36	265.0	-125.0	OBA	7	260.0	10.0	1040	127	EPRI 51'-120'	EPRI 51'-120'
37	290.0	-150.0	OBA	8	277.5	25.0	1040	127	EPRI 121'-250'	EPRI 121'-250'
38	320.0	-180.0	OBA	8	305.0	30.0	1150	127	EPRI 121'-250'	EPRI 121'-250'
39	350.0	-210.0	OBA	8	335.0	30.0	1220	128	EPRI 121'-250'	EPRI 121'-250'
40	380.0	-240.0	OBA	8	365.0	30.0	1250	128	EPRI 121'-250'	EPRI 121'-250'
41	400.0	-260.0	Sand	9	390.0	20.0	1930	128	EPRI 251'-500'	EPRI 251'-500'
42	440.0	-300.0	OBA	9	420.0	40.0	1410	128	EPRI 251'-500'	EPRI 251'-500'
43	490.0	-350.0	OBA	9	465.0	50.0	1410	129	EPRI 251'-500'	EPRI 251'-500'
44	550.0	-410.0	OBA	9	520.0	60.0	1610	129	EPRI 251'-500'	EPRI 251'-500'
45	635.0	-495.0	OBA	9	592.5	85.0	1630	130	EPRI 251'-500'	EPRI 251'-500'
46	735.0	-595.0	OBA	10	685.0	100.0	1760	131	EPRI 501'-1000'	EPRI 501'-1000'
47	855.0	-715.0	OBA	10	795.0	120.0	1860	132	EPRI 501'-1000'	EPRI 501'-1000'
48	990.0	-850.0	OBA	10	922.5	135.0	1920	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1140.0	-1000.0	OBA	10	1065.0	150.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-4H
SHAKE SITE RESPONSE ANALYSIS: "220 FEET MSW" SOIL PROFILE #8
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	180.0								
1	5.0	175.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	170.0	MSW	1	7.5	5.0	450	80	Waste (K&M)	Waste (K&M)
3	15.0	165.0	MSW	1	12.5	5.0	480	80	Waste (K&M)	Waste (K&M)
4	20.0	160.0	MSW	1	17.5	5.0	510	80	Waste (K&M)	Waste (K&M)
5	25.0	155.0	MSW	1	22.5	5.0	530	80	Waste (K&M)	Waste (K&M)
6	30.0	150.0	MSW	1	27.5	5.0	560	80	Waste (K&M)	Waste (K&M)
7	35.0	145.0	MSW	1	32.5	5.0	580	80	Waste (K&M)	Waste (K&M)
8	40.0	140.0	MSW	1	37.5	5.0	600	80	Waste (K&M)	Waste (K&M)
9	45.0	135.0	MSW	1	42.5	5.0	620	90	Waste (K&M)	Waste (K&M)
10	50.0	130.0	MSW	1	47.5	5.0	640	90	Waste (K&M)	Waste (K&M)
11	60.0	120.0	MSW	1	55.0	10.0	660	90	Waste (K&M)	Waste (K&M)
12	70.0	110.0	MSW	1	65.0	10.0	690	90	Waste (K&M)	Waste (K&M)
13	80.0	100.0	MSW	1	75.0	10.0	730	90	Waste (K&M)	Waste (K&M)
14	90.0	90.0	MSW	1	85.0	10.0	760	90	Waste (K&M)	Waste (K&M)
15	100.0	80.0	MSW	1	95.0	10.0	790	90	Waste (K&M)	Waste (K&M)
16	110.0	70.0	MSW	1	105.0	10.0	820	90	Waste (K&M)	Waste (K&M)
17	120.0	60.0	MSW	1	115.0	10.0	850	90	Waste (K&M)	Waste (K&M)
18	130.0	50.0	MSW	1	125.0	10.0	880	90	Waste (K&M)	Waste (K&M)
19	140.0	40.0	MSW	1	135.0	10.0	900	105	Waste (K&M)	Waste (K&M)
20	150.0	30.0	MSW	1	145.0	10.0	930	105	Waste (K&M)	Waste (K&M)
21	160.0	20.0	MSW	1	155.0	10.0	950	105	Waste (K&M)	Waste (K&M)
22	170.0	10.0	MSW	1	165.0	10.0	980	105	Waste (K&M)	Waste (K&M)
23	180.0	0.0	MSW	1	175.0	10.0	1010	105	Waste (K&M)	Waste (K&M)
24	190.0	-10.0	MSW	1	185.0	10.0	1030	105	Waste (K&M)	Waste (K&M)
25	200.0	-20.0	MSW	1	195.0	10.0	1050	105	Waste (K&M)	Waste (K&M)
26	210.0	-30.0	MSW	1	205.0	10.0	1080	105	Waste (K&M)	Waste (K&M)
27	220.0	-40.0	MSW	1	215.0	10.0	1100	105	Waste (K&M)	Waste (K&M)
28	228.0	-48.0	Comp. Clay	3	224.0	8.0	950	120	Clay PI=22	Clay PI=22
29	235.0	-55.0	sand	7	231.5	7.0	930	125	EPRI 51'-120'	EPRI 51'-120'
30	245.0	-65.0	OBA	2	240.0	10.0	910	127	Clay PI=19	Clay PI=19
31	255.0	-75.0	OBA	2	250.0	10.0	940	127	Clay PI=19	Clay PI=19
32	265.0	-85.0	OBA	2	260.0	10.0	960	127	Clay PI=19	Clay PI=19
33	275.0	-95.0	OBA	2	270.0	10.0	960	127	Clay PI=19	Clay PI=19
34	285.0	-105.0	OBA	7	280.0	10.0	1070	127	EPRI 51'-120'	EPRI 51'-120'
35	295.0	-115.0	OBA	7	290.0	10.0	1070	127	EPRI 51'-120'	EPRI 51'-120'
36	305.0	-125.0	OBA	7	300.0	10.0	1070	127	EPRI 51'-120'	EPRI 51'-120'
37	330.0	-150.0	OBA	8	317.5	25.0	1070	127	EPRI 121'-250'	EPRI 121'-250'
38	360.0	-180.0	OBA	8	345.0	30.0	1170	127	EPRI 121'-250'	EPRI 121'-250'
39	390.0	-210.0	OBA	8	375.0	30.0	1250	128	EPRI 121'-250'	EPRI 121'-250'
40	420.0	-240.0	OBA	8	405.0	30.0	1270	128	EPRI 121'-250'	EPRI 121'-250'
41	440.0	-260.0	Sand	9	430.0	20.0	1970	128	EPRI 251'-500'	EPRI 251'-500'
42	480.0	-300.0	OBA	9	460.0	40.0	1440	128	EPRI 251'-500'	EPRI 251'-500'
43	530.0	-350.0	OBA	9	505.0	50.0	1440	129	EPRI 251'-500'	EPRI 251'-500'
44	590.0	-410.0	OBA	9	560.0	60.0	1630	129	EPRI 251'-500'	EPRI 251'-500'
45	675.0	-495.0	OBA	9	632.5	85.0	1650	130	EPRI 251'-500'	EPRI 251'-500'
46	775.0	-595.0	OBA	10	725.0	100.0	1780	131	EPRI 501'-1000'	EPRI 501'-1000'
47	895.0	-715.0	OBA	10	835.0	120.0	1870	132	EPRI 501'-1000'	EPRI 501'-1000'
48	1030.0	-850.0	OBA	10	962.5	135.0	1940	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1180.0	-1000.0	OBA	10	1105.0	150.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-4I
SHAKE SITE RESPONSE ANALYSIS: "275 FEET MSW" SOIL PROFILE #9
NEWBY ISLAND SANITARY LANDFILL
Run 202

Layer No.	Depth @ Layer Bottom (ft)	Elevation @ Layer Bottom (ft)	Material	Shake Soil Type	Depth to Middle of Layer (ft)	Thickness (ft)	Avg. Vs (ft/s)	Unit Weight (pcf)	G/Gmax Curve	Damping Curve
	0.0	235.0								
1	5.0	230.0	MSW	1	2.5	5.0	430	80	Waste (K&M)	Waste (K&M)
2	10.0	225.0	MSW	1	7.5	5.0	450	80	Waste (K&M)	Waste (K&M)
3	20.0	215.0	MSW	1	15.0	10.0	490	80	Waste (K&M)	Waste (K&M)
4	30.0	205.0	MSW	1	25.0	10.0	530	80	Waste (K&M)	Waste (K&M)
5	40.0	195.0	MSW	1	35.0	10.0	580	80	Waste (K&M)	Waste (K&M)
6	50.0	185.0	MSW	1	45.0	10.0	620	80	Waste (K&M)	Waste (K&M)
7	60.0	175.0	MSW	1	55.0	10.0	660	80	Waste (K&M)	Waste (K&M)
8	70.0	165.0	MSW	1	65.0	10.0	690	80	Waste (K&M)	Waste (K&M)
9	80.0	155.0	MSW	1	75.0	10.0	730	80	Waste (K&M)	Waste (K&M)
10	90.0	145.0	MSW	1	85.0	10.0	760	90	Waste (K&M)	Waste (K&M)
11	100.0	135.0	MSW	1	95.0	10.0	790	90	Waste (K&M)	Waste (K&M)
12	110.0	125.0	MSW	1	105.0	10.0	820	90	Waste (K&M)	Waste (K&M)
13	120.0	115.0	MSW	1	115.0	10.0	850	90	Waste (K&M)	Waste (K&M)
14	130.0	105.0	MSW	1	125.0	10.0	880	90	Waste (K&M)	Waste (K&M)
15	140.0	95.0	MSW	1	135.0	10.0	900	90	Waste (K&M)	Waste (K&M)
16	150.0	85.0	MSW	1	145.0	10.0	930	90	Waste (K&M)	Waste (K&M)
17	160.0	75.0	MSW	1	155.0	10.0	950	90	Waste (K&M)	Waste (K&M)
18	170.0	65.0	MSW	1	165.0	10.0	980	90	Waste (K&M)	Waste (K&M)
19	180.0	55.0	MSW	1	175.0	10.0	1010	90	Waste (K&M)	Waste (K&M)
20	190.0	45.0	MSW	1	185.0	10.0	1030	105	Waste (K&M)	Waste (K&M)
21	200.0	35.0	MSW	1	195.0	10.0	1050	105	Waste (K&M)	Waste (K&M)
22	210.0	25.0	MSW	1	205.0	10.0	1080	105	Waste (K&M)	Waste (K&M)
23	220.0	15.0	MSW	1	215.0	10.0	1100	105	Waste (K&M)	Waste (K&M)
24	230.0	5.0	MSW	1	225.0	10.0	1120	105	Waste (K&M)	Waste (K&M)
25	245.0	-10.0	MSW	1	237.5	15.0	1150	105	Waste (K&M)	Waste (K&M)
26	260.0	-25.0	MSW	1	252.5	15.0	1180	105	Waste (K&M)	Waste (K&M)
27	275.0	-40.0	MSW	1	267.5	15.0	1210	105	Waste (K&M)	Waste (K&M)
28	283.0	-48.0	Comp. Clay	3	279.0	8.0	1000	120	Clay PI=22	Clay PI=22
29	290.0	-55.0	sand	7	286.5	7.0	950	125	EPRI 51'-120'	EPRI 51'-120'
30	300.0	-65.0	OBA	2	295.0	10.0	930	127	Clay PI=19	Clay PI=19
31	310.0	-75.0	OBA	2	305.0	10.0	960	127	Clay PI=19	Clay PI=19
32	320.0	-85.0	OBA	2	315.0	10.0	980	127	Clay PI=19	Clay PI=19
33	330.0	-95.0	OBA	2	325.0	10.0	980	127	Clay PI=19	Clay PI=19
34	340.0	-105.0	OBA	7	335.0	10.0	1090	127	EPRI 51'-120'	EPRI 51'-120'
35	350.0	-115.0	OBA	7	345.0	10.0	1090	127	EPRI 51'-120'	EPRI 51'-120'
36	360.0	-125.0	OBA	7	355.0	10.0	1090	127	EPRI 51'-120'	EPRI 51'-120'
37	385.0	-150.0	OBA	8	372.5	25.0	1090	127	EPRI 121'-250'	EPRI 121'-250'
38	415.0	-180.0	OBA	8	400.0	30.0	1190	127	EPRI 121'-250'	EPRI 121'-250'
39	445.0	-210.0	OBA	8	430.0	30.0	1260	128	EPRI 121'-250'	EPRI 121'-250'
40	475.0	-240.0	OBA	8	460.0	30.0	1290	128	EPRI 121'-250'	EPRI 121'-250'
41	495.0	-260.0	Sand	9	485.0	20.0	1990	128	EPRI 251'-500'	EPRI 251'-500'
42	535.0	-300.0	OBA	9	515.0	40.0	1450	128	EPRI 251'-500'	EPRI 251'-500'
43	585.0	-350.0	OBA	9	560.0	50.0	1450	129	EPRI 251'-500'	EPRI 251'-500'
44	645.0	-410.0	OBA	9	615.0	60.0	1640	129	EPRI 251'-500'	EPRI 251'-500'
45	730.0	-495.0	OBA	9	687.5	85.0	1660	130	EPRI 251'-500'	EPRI 251'-500'
46	830.0	-595.0	OBA	10	780.0	100.0	1790	131	EPRI 501'-1000'	EPRI 501'-1000'
47	950.0	-715.0	OBA	10	890.0	120.0	1880	132	EPRI 501'-1000'	EPRI 501'-1000'
48	1085.0	-850.0	OBA	10	1017.5	135.0	1950	133	EPRI 501'-1000'	EPRI 501'-1000'
49	1235.0	-1000.0	OBA	10	1160.0	150.0	2460	135	EPRI 501'-1000'	EPRI 501'-1000'
50			Rock	11			2950	150	Rock	Rock

TABLE 6-5
SHAKE SUMMARY FOR FREE FIELD AND DIKE
NEWBY ISLAND SANITARY LANDFILL

SHAKE2000 GRF File - EN
No of Analyses: 9
SHAKE2000 Flags: 1 2 3 4 5 6 7 8 9

Soil Profile Identification: Free Field (no MSW)

Soil Deposit Number: 1

Period for Soil Column: 2.77 sec
Average Shear Wave Velocity for Soil Column: 1451 ft/sec

Avg. PGA for Free Field & Dike = .414 g

No. of Soil Layers 43
No. of Peak Acceleration Values: 43

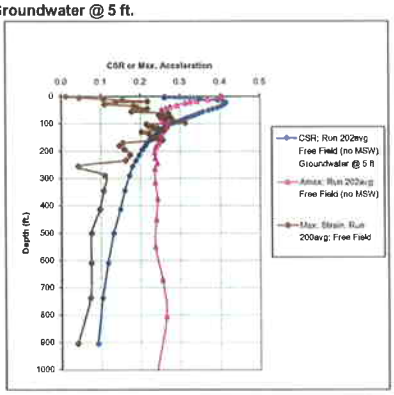
Layer	Depth (ft)	Unit Weight (kcf)	Damping (%)	Shear Modulus (ksf)	Max Strain (%)	Max Stress (psf)	Shear Wave Vel. (fps)	Depth Max Acc (ft)	Max Acc (g)	G/Gmax Curve	Damping Curve
1	1.5	0.113	3.2	629.7	0.0109	68.2	423.6	0	0.404	Clay PI=30	Clay PI=30
2	5	0.113	5.8	516.8	0.0454	226.7	383.4	3	0.402	Clay PI=30	Clay PI=30
3	9.5	0.113	7.8	420.2	0.1073	425.5	345.3	7	0.393	Clay PI=30	Clay PI=30
4	14.5	0.113	8.8	440.9	0.1541	633.8	353.4	12	0.369	Clay PI=30	Clay PI=30
5	18.5	0.12	23.7	416.1	0.2180	793.6	331.4	17	0.342	S&I 1970/V&D PI=	S&I 1970/V&D PI=22
6	22.5	0.113	8.7	728.4	0.1376	939.9	454.4	20	0.325	Clay PI=30	Clay PI=30
7	29	0.125	17.2	1221.6	0.1095	1167.0	556.3	25	0.312	S&I 1970	S&I 1970
8	35.5	0.127	12.1	852.5	0.1824	1399.7	481.9	33	0.292	Clay PI=19	Clay PI=19
9	40.5	0.127	12.5	901.5	0.1924	1561.9	474.9	38	0.275	Clay PI=19	Clay PI=19
10	45.5	0.127	13.1	873.5	0.2181	1707.6	467.3	43	0.264	Clay PI=19	Clay PI=19
11	50.5	0.127	13.1	991.2	0.2071	1843.4	497.9	48	0.253	Clay PI=19	Clay PI=19
12	58.5	0.125	13	1260.2	0.1773	1981.6	565.4	53	0.252	EPRI 51'-120'	EPRI 51'-120'
13	62.5	0.127	14.4	895.4	0.2708	2130.1	472.3	60	0.251	Clay PI=19	Clay PI=19
14	67.5	0.127	14.2	1027.9	0.2468	2239.5	506.3	65	0.251	Clay PI=19	Clay PI=19
15	72.5	0.127	14.5	1037.2	0.2563	2340.2	508.5	70	0.251	Clay PI=19	Clay PI=19
16	77.5	0.127	14.8	1006.8	0.2762	2429.8	500.7	75	0.251	Clay PI=19	Clay PI=19
17	82.5	0.127	14.8	1090.8	0.2642	2514.6	521.3	80	0.253	Clay PI=19	Clay PI=19
18	87.5	0.127	15.1	1066.2	0.2815	2592.3	515.1	85	0.257	Clay PI=19	Clay PI=19
19	92.5	0.127	15.4	1045.4	0.2976	2660.2	509.7	90	0.263	Clay PI=19	Clay PI=19
20	97.5	0.127	15.7	1027.8	0.3125	2717.6	505.0	95	0.267	Clay PI=19	Clay PI=19
21	102.5	0.127	14.4	1473.5	0.2166	2767.1	606.2	100	0.269	Clay PI=19	Clay PI=19
22	107.5	0.127	15.8	1564.6	0.2202	2822.8	622.5	105	0.269	EPRI 51'-120'	EPRI 51'-120'
23	112.5	0.127	16.2	1533.1	0.2319	2892.5	616.0	110	0.267	EPRI 51'-120'	EPRI 51'-120'
24	117.5	0.127	16.6	1502.9	0.2442	2969.2	609.8	115	0.263	EPRI 51'-120'	EPRI 51'-120'
25	122.5	0.127	17	1471.1	0.2578	3048.3	603.1	120	0.261	EPRI 51'-120'	EPRI 51'-120'
26	130	0.127	13.9	1798.7	0.2034	3159.1	670.3	125	0.269	EPRI 121-250	EPRI 121-250
27	140	0.127	14.5	1742.1	0.2227	3305.8	659.2	135	0.264	EPRI 121-250	EPRI 121-250
28	150	0.127	15.1	1607.5	0.2400	3429.2	650.3	145	0.251	EPRI 121-250	EPRI 121-250
29	160	0.127	15.6	1658.3	0.2568	3543.2	642.3	155	0.249	EPRI 121-250	EPRI 121-250
30	170	0.127	12.7	2659.7	0.1558	3643.2	816.3	165	0.248	EPRI 121-250	EPRI 121-250
31	180	0.127	12.4	2899.0	0.1470	3774.3	852.5	175	0.244	EPRI 121-250	EPRI 121-250
32	195	0.127	12.8	2817.5	0.1600	3961.3	839.9	185	0.238	EPRI 121-250	EPRI 121-250
33	215	0.128	13.3	2762.2	0.1746	4199.1	826.3	205	0.235	EPRI 121-250	EPRI 121-250
34	235	0.128	12.8	3057.7	0.1624	4405.4	871.6	225	0.237	EPRI 121-250	EPRI 121-250
35	255	0.128	5	11034.7	0.0425	4556.2	1665.0	245	0.243	EPRI 251-500	EPRI 251-500
36	290	0.128	8.6	4802.8	0.1098	4979.4	1098.6	265	0.236	EPRI 251-500	EPRI 251-500
37	345	0.129	8.4	5404.7	0.1073	5512.4	1159.2	315	0.237	EPRI 251-500	EPRI 251-500
38	412.5	0.13	7.8	8626.9	0.0977	6179.4	1279.0	375	0.243	EPRI 251-500	EPRI 251-500
39	500	0.131	5	9110.1	0.0759	6684.9	1495.1	450	0.240	EPRI501-1000	EPRI501-1000
40	610	0.132	5.1	10165.4	0.0749	7321.1	1572.4	550	0.237	EPRI501-1000	EPRI501-1000
41	737.5	0.133	5.1	11352.9	0.0721	7822.9	1656.0	670	0.255	EPRI501-1000	EPRI501-1000
42	905	0.135	5.1	22099.3	0.0400	8601.6	2294.9	805	0.204	EPRI501-1000	EPRI501-1000
43	Base							1005	0.241		

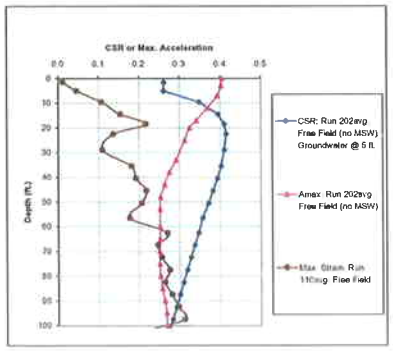
U. Wt. of Water = 62.4 pcf

Run 202avg; Free Field (no MSW); Groundwater @ 5 ft.

Groundwater Depth =	5.0 ft.
Avg. PGA =	.404 g
Avg. Amax =	.404 g
Avg. CSR Max =	0.415
Avg. CSR Min =	0.081

Depth @ Layer Bottom (ft)	Vert. Eff. Str. (psf)	CSR
3	180.5	0.262
7	565.0	0.261
12	792.7	0.349
17	1,045.7	0.394
20	1,258.6	0.410
25	1,471.5	0.415
33	1,848.4	0.410
38	2,260.3	0.403
43	2,563.3	0.393
48	2,906.3	0.382
53	3,229.3	0.371
60	3,609.9	0.357
65	3,960.5	0.347
70	4,313.5	0.337
75	4,636.5	0.328
80	4,959.5	0.318
85	5,282.5	0.309
90	5,605.5	0.301
95	5,928.5	0.292
100	6,251.5	0.283
105	6,574.5	0.274
110	6,897.5	0.266
115	7,220.5	0.260
120	7,543.5	0.256
125	7,866.5	0.252
135	8,351.0	0.246
145	8,997.0	0.239
155	9,643.0	0.231
165	10,289.0	0.224
175	10,935.0	0.217
185	11,581.0	0.212
205	12,550.0	0.205
225	13,852.0	0.197
245	15,154.0	0.189
265	16,476.0	0.180
315	18,772.0	0.172
375	22,410.0	0.160
450	26,943.0	0.149
550	32,908.0	0.132
670	40,514.0	0.117
805	49,455.5	0.103
1005	61,481.0	0.091





Soil Profile Identification: Dike (no MSW)
Soil Deposit Number: 2
Period for Soil Column: 2.81 sec
Average Shear Wave Velocity for Soil Column: 1442 ft/sec

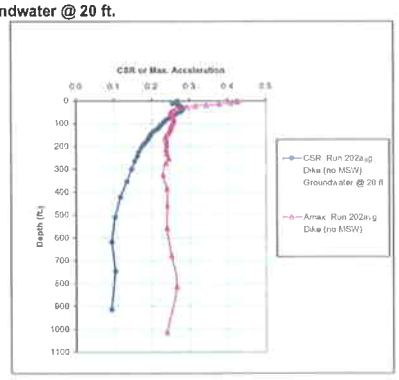
No. of Soil Layers: 45
No. of Peak Acceleration Values: 45

Layer	Depth (ft)	Unit Weight (kcf)	Damping (%)	Shear Modulus (ksf)	Max Strain (%)	Max Stress (psf)	Shear Wave Vel. (fps)	Depth Max Acc (ft)	Max Acc (g)	G/Gmax Curve	Damping Curve
1	2	0.12	2.7	1716.9	0.0060	101.3	678.7	0	0.424	Clay PI=22	Clay PI=22
2	6.5	0.12	8	471.4	0.0741	326.6	354.8	4	0.423	Clay PI=22	Clay PI=22
3	11.5	0.12	10.7	356.1	0.1790	568.7	307.3	9	0.409	Clay PI=22	Clay PI=22
4	16	0.113	10.4	318.1	0.2673	765.6	299.4	14	0.377	Clay PI=30	Clay PI=30
5	20	0.113	11.6	283.9	0.3668	921.1	282.4	18	0.343	Clay PI=30	Clay PI=30
6	24	0.113	11.1	396.7	0.2965	1055.4	333.8	22	0.315	Clay PI=30	Clay PI=30
7	27.5	0.12	28.3	301.2	0.4747	1167.7	279.7	26	0.291	S&I 1970/V&D PI=	S&I 1970/V&D PI=22
8	31.5	0.113	10.5	628.6	0.2195	1268.5	421.4	29	0.277	Clay PI=30	Clay PI=30
9	38	0.125	20.9	1020.5	0.1669	1435.7	506.3	34	0.266	S&I 1970	S&I 1970
10	44.5	0.127	13.8	768.0	0.2394	1618.9	437.6	42	0.258	Clay PI=19	Clay PI=19
11	49.5	0.127	14.5	724.2	0.2755	1748.0	424.6	47	0.252	Clay PI=19	Clay PI=19
12	54.5	0.127	15	687.7	0.3113	1862.8	413.6	52	0.249	Clay PI=19	Clay PI=19
13	59.5	0.127	14.9	785.1	0.2856	1960.0	442.2	57	0.252	Clay PI=19	Clay PI=19
14	65.5	0.125	14.5	1210.4	0.1969	2063.1	553.5	62	0.256	EPRI 51'-120'	EPRI 51'-120'
15	71.5	0.127	15.2	869.8	0.2905	2187.2	465.3	69	0.257	Clay PI=19	Clay PI=19
16	76.5	0.127	14.9	1010.9	0.2587	2270.0	501.9	74	0.257	Clay PI=19	Clay PI=19
17	81.5	0.127	15.1	1029.3	0.2642	2345.2	506.3	79	0.259	Clay PI=19	Clay PI=19
18	86.5	0.127	15.3	1006.7	0.2810	2413.6	500.3	84	0.259	Clay PI=19	Clay PI=19
19	91.5	0.127	15.2	1098.1	0.2656	2486.2	522.2	89	0.258	Clay PI=19	Clay PI=19
20	96.5	0.127	15.5	1070.1	0.2821	2568.8	515.9	94	0.255	Clay PI=19	Clay PI=19
21	101.5	0.127	15.8	1044.9	0.2992	2651.8	509.7	99	0.253	Clay PI=19	Clay PI=19
22	106.5	0.127	16	1019.1	0.3179	2737.5	503.3	104	0.252	Clay PI=19	Clay PI=19
23	111.5	0.127	14.7	1455.2	0.2219	2815.7	603.0	109	0.251	Clay PI=19	Clay PI=19
24	116.5	0.127	16.3	1533.7	0.2315	2894.3	616.7	114	0.251	EPRI 51'-120'	EPRI 51'-120'
25	121.5	0.127	16.8	1500.1	0.2452	2975.7	609.6	119	0.249	EPRI 51'-120'	EPRI 51'-120'
26	126.5	0.127	17.2	1468.8	0.2594	3052.6	602.8	124	0.247	EPRI 51'-120'	EPRI 51'-120'
27	131.5	0.127	17.5	1440.5	0.2727	3123.7	596.7	129	0.247	EPRI 51'-120'	EPRI 51'-120'
28	139	0.127	14.2	1774.3	0.2128	3210.3	665.3	134	0.246	EPRI 121-250	EPRI 121-250
29	149	0.127	14.6	1732.3	0.2289	3328.1	656.9	144	0.242	EPRI 121-250	EPRI 121-250
30	159	0.127	15.1	1689.8	0.2457	3456.3	648.3	154	0.237	EPRI 121-250	EPRI 121-250
31	169	0.127	15.5	1651.7	0.2616	3574.0	640.5	164	0.235	EPRI 121-250	EPRI 121-250
32	179	0.127	12.6	2643.1	0.1582	3681.4	813.5	174	0.239	EPRI 121-250	EPRI 121-250
33	189	0.127	12.2	2877.5	0.1485	3808.2	849.4	184	0.239	EPRI 121-250	EPRI 121-250
34	204	0.127	12.5	2793.6	0.1605	3993.4	836.6	194	0.239	EPRI 121-250	EPRI 121-250
35	224	0.128	13	2734.0	0.1740	4222.3	824.0	214	0.238	EPRI 121-250	EPRI 121-250
36	244	0.128	12.6	3054.1	0.1614	4406.6	871.3	234	0.240	EPRI 121-250	EPRI 121-250
37	264	0.128	5	11042.2	0.0423	4549.6	1665.6	254	0.245	EPRI 251-500	EPRI 251-500
38	299	0.128	8.4	4799.3	0.1097	4998.2	1098.5	274	0.238	EPRI 251-500	EPRI 251-500
39	354	0.129	8.299999	5382.8	0.1091	5589.2	1166.9	324	0.230	EPRI 251-500	EPRI 251-500
40	421.5	0.13	7.7	6644.5	0.0969	6125.1	1280.5	384	0.240	EPRI 251-500	EPRI 251-500
41	500	0.131	5	9135.2	0.0752	6628.6	1497.1	459	0.241	EPRI501-1000	EPRI501-1000
42	619	0.132	5.1	10188.0	0.0739	7238.7	1574.9	559	0.240	EPRI501-1000	EPRI501-1000
43	746.5	0.133	5.1	11368.7	0.0717	7799.1	1657.3	679	0.252	EPRI501-1000	EPRI501-1000
44	914	0.135	5.1	22091.1	0.0402	8650.5	2294.5	814	0.265	EPRI501-1000	EPRI501-1000
45	Base							1014	0.239		

Run 202avg; Dike (no MSW); Groundwater @ 20 ft.

Groundwater Depth =	20.0 ft.
PGA =	.424 g
Amax =	.424 g
CSR Max =	0.282
CSR Min =	0.093

Depth @ Layer Bottom (ft)	Vert. Eff. Str. (psf)	CSR
4	240.0	0.267
9	780.0	0.262
14	1,380.0	0.255
18	1,906.0	0.266
22	2,358.0	0.272
26	2,590.4	0.277
29	2,748.0	0.280
34	2,960.9	0.282
42	3,337.8	0.281
47	3,740.7	0.278
52	4,072.7	0.273
57	4,395.7	0.266
62	4,718.7	0.262
69	5,099.3	0.256
74	5,479.9	0.251
79	5,802.9	0.245
84	6,125.9	0.240
89	6,448.9	0.236
94	6,771.9	0.232
99	7,094.9	0.229
104	7,417.9	0.227
109	7,740.9	0.224
114	8,063.9	0.222
119	8,386.9	0.219
124	8,709.9	0.217
129	9,032.9	0.212
134	9,355.9	0.206
144	9,840.4	0.202
154	10,486.4	0.197
164	11,132.4	0.193
174	11,778.4	0.190
184	12,424.4	0.185
194	13,070.4	0.180
214	14,039.4	0.173
234	15,341.4	0.166
254	16,653.4	0.162
274	17,965.4	0.155
324	20,261.4	0.146
384	23,899.4	0.134
459	28,432.4	0.117
559	34,397.4	0.103
679	42,003.4	0.093
814	50,944.9	0.103
1014	62,970.4	0.093



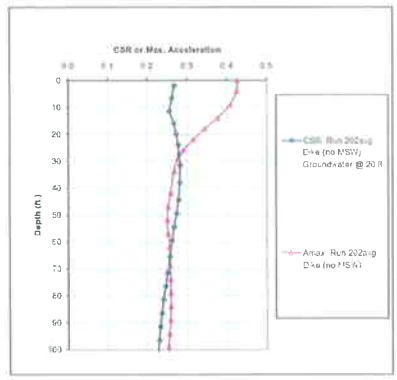


TABLE 8-1
SLOPE STABILITY SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Location	Potential Waste Mass Failure Mode																						
	OBA Foundation			MSW, Liner, & OBA			MSW & YBM			Liner			El. -15 Liquefaction [1]				El. -25 Liquefaction [1]				El. -45 Liquefaction [1]	
													Pre-Mitigation		Post-Mitigation[2]		Pre-Mitigation		Post-Mitigation[2]		Existing; Mitigation Unnecessary	
	FS	k_y	D	FS	k_y	D	FS	k_y	D	FS	k_y	D	k_y	D	k_y	D_M	k_y	D	k_y	D_M	k_y	D
22+00	1.68	0.146	2 "	1.97	0.244	3 "	1.99	0.180	6 "	2.23	0.327	0 "										
25+93 (TS-2A)	1.93	0.162	1/2 "	1.96	0.218	2 "	2.68	0.260	2 "	1.85	0.180	4 "	0.100	20 "			0.150	9 "			0.160	5 "
33+00	2.07	0.151	1 "	2.12	0.200	1-1/2 "	2.18	0.184	6 "	2.12	0.217	3/4 "										
45+00 (TS-3)	2.09	0.160	1 "	2.41	0.227	3-1/2 "	2.27	0.182	6 "	2.48	0.244	1/4 "	0.143	11 "			0.267	1-1/2 "			0.157	5 "
50+46 (TS-1)	2.16	0.156	1/2 "	2.20	0.235	1-1/2 "	2.35	0.180	6 "	2.12	0.237	1-1/2 "	0.092	23 "	0.230	3-1/2 "	0.098	18 "	>0.54	0"	0.174	4-1/2 "
65+00	2.53	0.173	1/2 "	2.54	0.220	1/2 "	3.36	0.230	3 "	2.40	0.233	1/2 "										
96+00	2.27	0.154	1-1/2 "	2.33	0.207	2 "	2.69	0.225	3-1/2 "													
120+00	1.96	0.150	2 "	2.28	0.260	1 "	2.06	0.190	5-1/2 "													
132+56	1.87	0.139	2 "	2.78	0.325	0 "	2.94	0.233	3 "													
140+00	2.08	0.148	1-1/2 "	2.56	0.296	0 "	2.89	0.226	3-1/2 "													
150+00 (TS-2B)	2.10	0.162	1/2 "	3.65	0.480	0 "	2.81	0.259	2-1/2 "				0.138	12 "								
163+13	2.20	0.160	1 "	3.15	0.359	0 "	2.66	0.220	4 "													

Notes: 1. Static factors of safety not calculated for liquefaction *Type Sections*; see other failure modes.
2. Post-mitigation results shown only for most critical *Type Section* TS-1 (Station 50+46); k_y and seismic displacement shown for minimum required soil-cement slurry unconfined comprssive strength (UCS); actual slurry UCS likely to be higher, resulting in negligible seismic displacements.

Final Cover Stability			
Cover Design	FS	k_y	D
Perscriptive Cover	1.55	0.285	< 1"
Alternative Cover	3.20	0.61	negligible

65+00 perimeter levee station (typ.)
(TS-1) liquefaction *Type Section*, where applicable
FS = static factor of safety
k_y = pseudo-static yield acceleration (g)
D = estimated seismically-induced permanent displacement (inches)
D_M = estimated post-remediation seismically-induced permanent displacement (inches), where applicable
NA = not applicable

TABLE 8-2
NEWMARK DISPLACEMENT ANALYSES SUMMARY
NEWBY ISLAND SANITARY LANDFILL

Type Section TS-1 El. -15 Liquefaction

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	75.6	48.2	31.3	20.0	14.0	9.6	6.4	3.9	2.3	1.4	0.8
1999 Kocaeli - Gebze	0.21	35.2	15.2	7.1	3.5	1.9	0.9	0.6	0.4	0.2	0.1	0.0
1979 Imp. Valley - Sahop	0.61	54.0	37.8	26.9	18.5	13.7	10.6	8.3	6.5	5.0	3.7	2.7
1989 Loma Prieta -C. Hall	0.19	10.3	4.3	1.7	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	98.3	59.4	39.1	25.0	16.5	11.2	7.9	5.5	3.7	2.3	1.4
1992 Landers -Lucerne	0.58	131.9	96.1	72.7	56.1	44.5	35.6	28.5	22.7	18.0	14.0	10.7
1994 Northridge -Pacoima	0.51	34.0	24.1	19.3	15.9	13.2	10.9	9.1	7.6	6.4	5.4	4.4
Average Displacement		**62.8**	**40.7**	**28.3**	**19.9**	**14.8**	**11.3**	**8.7**	**6.7**	**5.1**	**3.8**	**2.9**

Type Section TS-1 El. -25 Liquefaction

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	70.6	44.3	28.0	17.2	11.8	7.8	4.9	3.0	1.7	0.9	0.4
1999 Kocaeli - Gebze	0.21	33.2	13.6	6.1	2.8	1.4	0.7	0.5	0.3	0.1	0.0	0.0
1979 Imp. Valley - Sahop	0.61	47.3	32.2	21.9	14.2	10.7	8.2	6.2	4.6	3.3	2.3	1.5
1989 Loma Prieta -C. Hall	0.19	8.9	3.5	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	91.3	54.4	35.6	22.2	14.7	10.0	7.1	4.8	3.1	1.8	1.1
1992 Landers -Lucerne	0.58	131.6	96.0	72.6	55.9	44.0	34.9	27.8	22.0	17.3	13.3	10.0
1994 Northridge -Pacoima	0.51	30.3	21.7	17.3	14.0	11.4	9.3	7.7	6.3	5.2	4.2	3.4
Average Displacement		**59.0**	**38.0**	**26.1**	**18.1**	**13.4**	**10.1**	**7.7**	**5.9**	**4.4**	**3.2**	**2.3**

Type Section TS-1 El. -45 Liquefaction

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	57.1	33.9	19.9	12.2	6.8	3.9	2.0	0.9	0.3	0.1	0.0
1999 Kocaeli - Gebze	0.21	29.1	10.4	4.0	1.3	0.6	0.3	0.1	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	32.5	20.2	12.4	7.7	5.3	3.5	2.2	1.3	0.8	0.4	0.1
1989 Loma Prieta -C. Hall	0.19	6.5	2.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	74.5	44.0	27.7	16.2	10.9	7.1	4.5	2.7	1.6	0.9	0.5
1992 Landers -Lucerne	0.58	128.0	93.0	70.1	53.4	41.3	32.1	25.0	19.2	14.5	10.8	7.7
1994 Northridge -Pacoima	0.51	21.8	15.9	12.2	9.4	7.3	5.6	4.3	3.3	2.4	1.7	1.1
Average Displacement		**49.9**	**31.4**	**21.0**	**14.3**	**10.3**	**7.5**	**5.4**	**3.9**	**2.8**	**2.0**	**1.3**

Type Section TS-1 MSW & YBM

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	73.2	46.1	29.5	18.6	12.9	8.7	5.6	3.4	2.0	1.2	0.6
1999 Kocaeli - Gebze	0.21	34.3	14.4	6.5	3.2	1.6	0.9	0.6	0.3	0.2	0.1	0.0
1979 Imp. Valley - Sahop	0.61	51.2	35.4	24.8	16.7	12.9	10.0	7.8	6.0	4.5	3.4	2.4
1989 Loma Prieta -C. Hall	0.19	9.7	3.9	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	94.6	56.8	37.3	23.5	15.6	10.6	7.5	5.2	3.4	2.1	1.2
1992 Landers -Lucerne	0.58	131.8	96.0	72.5	55.9	44.1	35.1	28.0	22.2	17.5	13.5	10.1
1994 Northridge -Pacoima	0.51	32.7	23.2	18.6	15.1	12.5	10.3	8.5	7.1	5.9	4.9	4.0
Average Displacement		**61.1**	**39.4**	**27.2**	**19.0**	**14.2**	**10.8**	**8.3**	**6.3**	**4.8**	**3.6**	**2.6**

Type Section TS-2A Liner

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	55.3	31.7	18.0	10.9	5.8	3.2	1.6	0.8	0.3	0.1	0.0
1999 Kocaeli - Gebze	0.21	30.1	10.3	3.6	1.3	0.7	0.4	0.1	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	30.4	18.5	11.1	7.9	5.6	3.8	2.5	1.6	0.9	0.5	0.2
1989 Loma Prieta -C. Hall	0.19	6.5	2.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	72.3	40.5	25.2	14.9	10.0	6.6	4.2	2.5	1.5	0.9	0.4
1992 Landers -Lucerne	0.58	136.5	98.5	74.4	56.8	43.5	33.3	25.4	19.0	13.9	9.9	6.8
1994 Northridge -Pacoima	0.51	22.0	15.7	11.8	9.0	7.0	5.4	4.1	3.1	2.3	1.6	1.0
Average Displacement		**50.4**	**31.0**	**20.7**	**14.4**	**10.4**	**7.5**	**5.4**	**3.9**	**2.7**	**1.9**	**1.2**

Sta. 45+00 MSW & Liner & OBA

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	33.9	17.4	8.8	4.1	2.0	1.0	0.4	0.1	0.0	0.0	0.0
1999 Kocaeli - Gebze	0.21	24.9	7.5	2.1	0.9	0.4	0.1	0.0	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	14.1	7.2	4.0	2.2	1.2	0.6	0.2	0.0	0.0	0.0	0.0
1989 Loma Prieta -C. Hall	0.19	2.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	52.2	26.4	14.7	8.0	4.7	2.6	1.4	0.6	0.2	0.0	0.0
1992 Landers -Lucerne	0.58	134.2	96.3	71.6	52.4	37.6	26.4	18.1	11.8	7.3	4.0	1.8
1994 Northridge -Pacoima	0.51	12.2	7.9	5.1	3.2	2.0	1.1	0.5	0.2	0.0	0.0	0.0
Average Displacement		**39.1**	**23.3**	**15.2**	**10.1**	**6.8**	**4.5**	**2.9**	**1.8**	**1.1**	**0.6**	**0.3**

Sta. 55+00 Deep OBA (base @ El. -247)

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	14.2	6.3	2.8	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Gebze	0.21	16.5	4.5	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	3.7	1.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989 Loma Prieta -C. Hall	0.19	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	23.6	9.4	3.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992 Landers -Lucerne	0.58	97.3	66.4	43.8	27.1	15.4	7.7	3.1	0.7	0.0	0.0	0.0
1994 Northridge -Pacoima	0.51	2.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Displacement		**22.5**	**12.6**	**7.3**	**4.2**	**2.2**	**1.1**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**

Sta. 55+00 Liner

Earthquake	Record PGA	Yield Acceleration, k_y (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	32.8	16.7	8.3	3.9	2.0	1.0	0.3	0.0	0.0	0.0	0.0
1999 Kocaeli - Gebze	0.21	25.1	7.4	2.0	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	13.1	6.4	3.5	1.9	1.0	0.4	0.1	0.0	0.0	0.0	0.0
1989 Loma Prieta -C. Hall	0.19	2.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	52.3	25.8	14.1	7.6	4.4	2.4	1.2	0.5	0.1	0.0	0.0
1992 Landers -Lucerne	0.58	134.9	96.5	71.6	52.4	37.6	26.4	18.0	11.7	7.1	3.9	1.7
1994 Northridge -Pacoima	0.51	11.2	7.0	4.4	2.6	1.5	0.7	0.2	0.0	0.0	0.0	0.0
Average Displacement		**38.8**	**22.9**	**14.8**	**9.9**	**6.7**	**4.4**	**2.8**	**1.8**	**1.0**	**0.6**	**0.2**

Sta. 65+00 Shallow OBA (base @ El. -186)

Earthquake	Record PGA	Yield Acceleration, ky (g)										
		0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.2	0.22	0.24
		Displacement (in.)										
Coronado Br Eval Synth.	0.50	22.1	10.7	5.6	2.9	1.3	0.4	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Gebze	0.21	19.6	5.0	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979 Imp. Valley - Sahop	0.61	6.9	3.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989 Loma Prieta -C. Hall	0.19	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999 Kocaeli - Izmit	0.30	40.5	19.2	9.2	4.1	2.0	0.7	0.1	0.0	0.0	0.0	0.0
1992 Landers -Lucerne	0.58	107.7	75.7	53.6	37.0	24.9	16.1	9.8	5.4	2.5	0.8	0.1
1994 Northridge -Pacoima	0.51	5.5	2.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Displacement		**29.1**	**16.6**	**10.2**	**6.4**	**4.0**	**2.5**	**1.4**	**0.8**	**0.4**	**0.1**	**0.0**