Table 1 - Material Going to Kelly Island

Boring I.D.	Approx. Channel STA.	Date	Location (NJ State Plane NAD 83) Northing	Easting	Top Elevation (ft MLLW)	Sample Above -47 ft MLLW (ft)	Sample Above -46 ft MLLW (ft)	Sample Depth (ft BGS)	Soil Type for Material Above -46 ft MLLW	% Fines	% Sand	Avg. Grainsize d-50 (mm)	Sub-Reach I.D.	Sub-Reach General Soil Type	Sub-Reach Dredge Quantity (cy)	Sub-Reach % of Total to K.I. (%)	Notes
DRV-14	329100	7/29/1991	228968.33	188423.49	-42.9	4.1	3.1	5.0	SM-SC	36	64	0.3	N/A	N/A			Outside borrow limit for Kelly Island fill.
WC-28	329100	8/30/1995															
	351200																--- Borrow Limit for Kelly Island Fill at 351+200
DRV-85	353100	8/16/2004	244497.07	170028.99	-48.4	Below	Below	5.0	Below; SM	14	86	0.1					Even though DRV-85 is below -47' MLLW, it was assumed representative of Sub-reach E-1.
	353300								**Sub-reach Avg.**	**14**	**86**	**0.1**	**E-1**	**SM**	**13,864**	**1**	
	353300																--- 353+300 is approx. dividing line between Sub-reaches E-1 and E-2.
DRV-58	353500	3/17/1999	244365.1	169317.1	-44.3	2.7	1.7	3.7	SW	2	98	2.0					
DRV-86	354100	8/16/2004	244653.08	168799.79	-44.8	2.2	1.2	2.0	GP	2	98	9.0					Ignored outlier DRV-86 gravel data so sub-reach avgs. were more representative.
DRV-59	354500	3/17/1999	245433.7	168911.8	-44.7	2.3	1.3	4.4	SW	2	98	1.2					
DRV-15	355200	7/29/1991	245360.35	168004.65	-44.2	2.8	1.8	3.4	SP	2	98	0.5					
DRV-87	355600	8/16/2004	246212.69	168166.53	-45.0	2.0	1.0	1.1	SP	1	99	3.4					
DRV-60	356300	3/17/1999	246321.0	167364.6	-42.2	4.8	3.8	4.8	SW	3	97	2.0					
DRV-88	356800	8/16/2004	246981.23	167315.34	-45.9	1.1	0.1	5.0	SP	2	98	1.0					
DRV-61	357200	3/17/1999	246753.6	166456.8	-43.4	3.6	2.6	4.0	SP	5	96	0.5					
DRV-62	358000	3/17/1999	247704.1	166290.9	-45.5	1.5	0.5	3.3	SP	3	97	0.7					
DRV-63	358500	3/17/1999	247580.1	165526.1	-44.2	2.8	1.8	4.5	SP	1	99	0.7					
DRV-64	359500	3/17/1999	248482.6	165037.4	-42.2	4.8	3.8	4.8	SP	1	99	0.7					
DRV-68-R2	376400	4/27/2001	260020.89	152617.28	-45.9	1.1	0.1	4.5	SP	3	98	0.5					
DRV-69	380400	4/27/2001	262635.19	149544.77	-48.2	Below	Below	5.0	Below; SP-SM	6	94	0.3					Even though DRV-69 is below -47' MLLW, it was assumed representative.
DRV-70	390200	4/27/2001	267384.25	141101.48	-44.8	2.2	1.2	2.5	SP-SM	6	94	0.3					
	390200								**Sub-reach Avg.**	**3**	**97**	**1.0**	**E-2**	**SP**	**468,443**	**19**	
	390200																--- 390+200 is approx. dividing line between Sub-reaches E-2 and E-3.
DRV-17*	390200	7/19/1991	267028.53	140862.51	-43.5	3.5	2.5	2.4	SM-SC	24	76	1.0					DRV-17* data shown is weighted average of S-1 (0'-1.1) and S-2 (1.1'-2.4).
DRV-71	403300	4/27/2001	272958.36	129134.81	-44.9	2.1	1.1	4.3	SP-SM	6	94	0.3					
DRV-72	406600	4/27/2001	273824.08	125867.14	-45.9	1.1	0.1	5.0	SM	17	83	0.2					
DRV-18	407200	7/18/1991	274783.04	125863.19	-43.6	3.4	2.4	4.1	SP	3	97	0.3					
DRV-73	419300	4/29/2001	281652.66	115856.99	-44.9	2.1	1.1	3.0	SP-SM	8	92	0.5					
DRV-19	420200	7/18/1991	281772.02	114886.32	-46.6	0.4	-0.6	2.1	SM-SC	15	85	0.2					
	421700								**Sub-reach Avg.**	**12**	**88**	**0.4**	**E-3**	**SP-SM**	**580,243**	**23**	
	421700																--- 421+700 is approx. dividing line between Sub-reaches E-3 and E-4.
DRV-74	423100	4/29/2001	283487.05	112490.32	-42.6	4.4	3.4	5.0	ML	87	14	0.01					DRV-74 grainsize curve was extrapolated to estimate d-50.
DRV-75	432200	4/29/2001	289014.55	105208.27	-44.0	3.0	2.0	5.0	ML	94	6	0.01					DRV-75 grainsize curve was extrapolated to estimate d-50; data is avg of S-1 and S-2.
	432200								**Sub-reach Avg.**	**90**	**10**	**0.01**	**E-4**	**ML**	**252,064**	**10**	
	432200																--- 432+200 is approx. dividing line between Sub-reaches E-4 and E-5.
DRV-20	432200	7/18/1991	288375.65	104846.38	-46.1	0.9	Below	5.0	Below; SP	4	96	0.4					Even though DRV-20 is below -46' MLLW, it was assumed representative.
DRV-65	434500	3/14/1999	290222.3	103339.3	-44.5	2.5	1.5	5.0	SP	2	98	0.3					
DRV-66	438500	3/13/1999	292506.5	100010.5	-45.6	1.4	0.4	0.5	SP	4	96	0.4					
DRV-21	440100	7/18/1991	293282.86	98560.63	-45.6	1.4	0.4	5.0	SP	2	98	0.6					
DRV-67	441400	3/13/1999	294196.4	97506.5	-45.0	2.0	1.0	5.1	SP	4	96	0.4					
DRV-76**	446600	4/29/2001	296732.81	93100.24	-42.2	4.8	3.8	5.0	SM	25	75	0.2					DRV-76** data shown is weighted average of S-1 (0'-2.5) and S-2 (2.5'-5.0).
DRV-22	448200	7/18/1991	297853.97	91929.37	-45.7	1.3	0.3	1.6	SP	1	99	3.3					
DRV-77-R1***	449300	4/29/2001	297984.99	90759.06	-42.4	4.6	3.6	5.6	SP	2	98	0.8					DRV-77*** data shown is weighted average of S-1 (0'-1.0), S-2 (1.0'-3.5), and S-3 (3.5'-5.6').
DRV-78^	456100	4/29/2001	300727.30	84547.37	-41.3	5.7	4.7	5.0	SM	37	63	0.7					DRV-78^ data shown is weighted average of S-1 (0'-1.0) and S-2 (2.0'-5.0).
DRV-23	460200	7/17/1991	302212.81	80670.96	-48.7	Below	Below	3.7	Below; SP	6	94	0.3					Even though DRV-23 is below -47' MLLW, it was assumed representative.
DRV-79	461100	4/26/2001	302929.33	80027.07	-46.4	0.6	Below	1.3	Below; SP	3	97	0.1					Even though DRV-79 is below -46' MLLW, it was assumed representative.
	461300								**Sub-reach Avg.**	**8**	**92**	**0.7**	**E-5**	**SP-SM**	**1,168,313**	**47**	--- Borrow Limit for Kelly Island Fill at 461+300

USCS SOIL SYMBOLS: (based on ASTM D 2487)	
SW	Sand, well-graded, less than 5% fines.
SP	Sand, poorly-graded, less than 5% fines.
SP-SM	Sand with little silt, fines from 5% to 12%.
SM	Silty Sand, fines from 12% to 50%.
ML	Silt, low-plasticity, fines greater than 50%.
SM-SC	Silty or Clayey Sand, fines from 12% to 50%.

SUB-REACH AVERAGE DATA SUMMARY:

Sub-Reach Limits	% Fines	% Sand	d-50	Sub-reach I.D.	USCS Symbol	Volume (cy)	% Total Volume	Proposed Placement Scenario
E-1: 351+200 to 353+300	**14**	**86**	**0.1**	**E-1**	**SM**	**13,864**	**1**	Use for initial capping of E-4 (ML) material.
E-2: 353+300 to 390+200	**3**	**97**	**1.0**	**E-2**	**SP**	**468,443**	**19**	Use for outer (seaward) portion of containment berm.
E-3: 390+200 to 421+700	**12**	**88**	**0.4**	**E-3**	**SP-SM**	**580,243**	**23**	Use for final capping of E-1 (SM) material.
E-4: 421+700 to 432+200	**90**	**10**	**0.01**	**E-4**	**ML**	**252,064**	**10**	Use for intial pumping into CDF.
E-5: 432+200 to 461+300	**8**	**92**	**0.7**	**E-5**	**SP-SM**	**1,168,313**	**47**	Use for inner portion of containment berm.

Weighted Average of Granular Borrow Material: **8.1** **91.9** **0.7**
(does not include E-4 ML material)

Total Borrow Vol: **2,482,927** **cy**
Kelly Island

GENERAL NOTES - TABLE 1:

1. Borrow Area Limits for Kelly Island Fill: STA. 351+200 to 461+300.
2. Sub-reach limits were based on the geotechnical data shown herein. These limits represent the approximate line where notable changes in soil composition occur.
3. Channel is 1000' wide in Reach E.
4. Dredging quantities within sub-reaches were calculated from Gahagan & Bryant Assoc.'s "Dredging Quantity QA/QC Memo Report, Nov. 2008".
5. Dredging quantities shown include the volume to the project depth (-45' MLLW) + the additional volume for 1' allowable overdepth (-46' MLLW).
6. DRV-16 (not listed) is located outside Main Channel (1959' W of CL) and is therefore not included in Kelly Island borrow area summary table.
7. " % Fines" is short for the percent passing the No. 200 sieve (0.075mm), which is the dividing line between sand and silt per the Unified Soil Classification System (USCS) per ASTM D 2487.
8. "d-50" is the average grain size by weight of the soil sample. 50% of the sample is coarser than the d-50, and the other 50% of the sample is finer than the d-50.

Table 2 - Material Going to Broadkill Beach

Boring I.D.	Approx. Channel STA.	Date	Location (NJ State Plane NAD 83) Northing	Easting	Top Elevation (ft MLLW)	Sample Above -47 ft MLLW (ft)	Sample Above -46 ft MLLW (ft)	Sample Depth (ft BGS)	Soil Type for Material Above -46 ft MLLW	% Fines	% Sand	Avg. Grainsize d-50 (mm)	Sub-Reach I.D.	Sub-Reach General Soil Type	Sub-Reach Dredge Quantity (cy)	Sub-Reach % of Total to B.B. (%)	Notes
	461300																--- Borrow Limit for Broadkill Beach at 461+300.
DRV-80	465000	4/26/2001	303843.29	76192.38	-47.1	Below	Below	5.0	Below; SP	4	96	0.28					Even though DRV-80 is below -47' MLLW, it was assumed representative.
DRV-24	470200	7/17/1991	306058.54	71483.00	-48.2	Below	Below	3.0	Below; SP	2	98	0.30					Even though DRV-24 is below -47' MLLW, it was assumed representative.
DRV-81	477200	4/26/2001	308486.80	64884.20	-45.2	1.8	0.8	1.8	SP-SM	7	93	0.30					
DRV-25	480200	7/17/1991	310070.76	62333.99	-44.7	2.3	1.3	5.0	SP	3	98	0.57					
DRV-82*	481200	4/26/2001	310253.10	61346.63	-42.8	4.2	3.2	5.0	SP	5	95	0.38					DRV-82* data shown is weighted average of S-1 (0'-2.5) and S-2 (2.5'-5.0).
DRV-26	500200	7/16/1991	317838.97	43872.89	-47.2	Below	Below	5.0	Below; SP	5	95	0.24					Even though DRV-26 is below -47' MLLW, it was assumed representative.
DRV-83	508700	4/25/2001	320563.29	35764.50	-46.7	0.3	Below	0.8	Below; SP	3	97	0.25					Even though DRV-83 is below -46' MLLW, it was assumed representative.
DRV-27	510200	6/14/1991	321138.24	34468.63	-47.7	Below	Below	0.8	Below; SP	3	97	0.28					Even though DRV-27 is below -47' MLLW, it was assumed representative.
	510300								**Sub-reach Avg.**	**4**	**96**	**0.3**	**E-6**	**SP**	**1,567,281**	**98**	
	510300																--- 510+300 is approx. dividing line between Sub-reaches E-6 and E-7.
DRV-84	510400	4/25/2001	321289.97	34273.33	-47.4	Below	Below	5.0	Below; SM	17	83	0.11					Even though DRV-69 is below -47' MLLW, it was assumed representative.
	512000								**Sub-reach Avg.**	**17**	**83**	**0.1**	**E-7**	**SM**	**31,289**	**2**	--- Borrow Limit for Broadkill Beach at 512+000.
DRV-28	520000	7/15/1991	327674.35	26489.85	-44.7	2.3	1.3	5.0	SP	2	99	0.18					Outside borrow limit for Broadkill Beach fill.
DRV-29	535000	6/14/1991	331698.37	11712.65	-44.7	2.3	1.3	1.8	SP-SM	8	92	0.17					

USCS SOIL SYMBOLS: (based on ASTM D 2487)	
SW	Sand, well-graded, less than 5% fines.
SP	Sand, poorly-graded, less than 5% fines.
SP-SM	Sand with little silt, fines from 5% to 12%.
SM	Silty Sand, fines from 12% to 50%.
ML	Silt, low-plasticity, fines greater than 50%.
SM-SC	Silty or Clayey Sand, fines from 12% to 50%.

SUB-REACH AVERAGE DATA SUMMARY:

Sub-Reach Limits	% Fines	% Sand	d-50	Sub-reach I.D.	USCS Symbol	Volume (cy)	% Total Volume	Notes
E-6: 461+300 to 510+300	**4**	**96**	**0.3**	**E-6**	**SP**	**1,567,281**	**98**	Use for beachfill.
E-7: 510+300 to 512+000	**17**	**83**	**0.1**	**E-7**	**SM**	**31,289**	**2**	Use for intial pumping onto beach; pump E-6 material overtop.

Weighted Average of E-6 and E-7: **4** **96** **0.3**

Total Borrow Vol: **1,598,570** **cy**
Broadkill Beach

GENERAL NOTES - TABLE 2:

1. Borrow Area Limits for Broadkill Beach: STA. 461+300 to 512+000.
2. Sub-reach limits were based on the geotechnical data shown herein. These limits represent the approximate line where notable changes in soil composition occur.
3. Channel is 1000' wide in Reach E.
4. Dredging quantities within sub-reaches were calculated from Gahagan & Bryant Assoc.'s "Dredging Quantity QA/QC Memo Report, Nov. 2008".
5. Dredging quantities shown include the volume to the project depth (-45' MLLW) + the additional volume for 1' allowable overdepth (-46' MLLW).

Total Reach E Volume: **4,081,497** cy