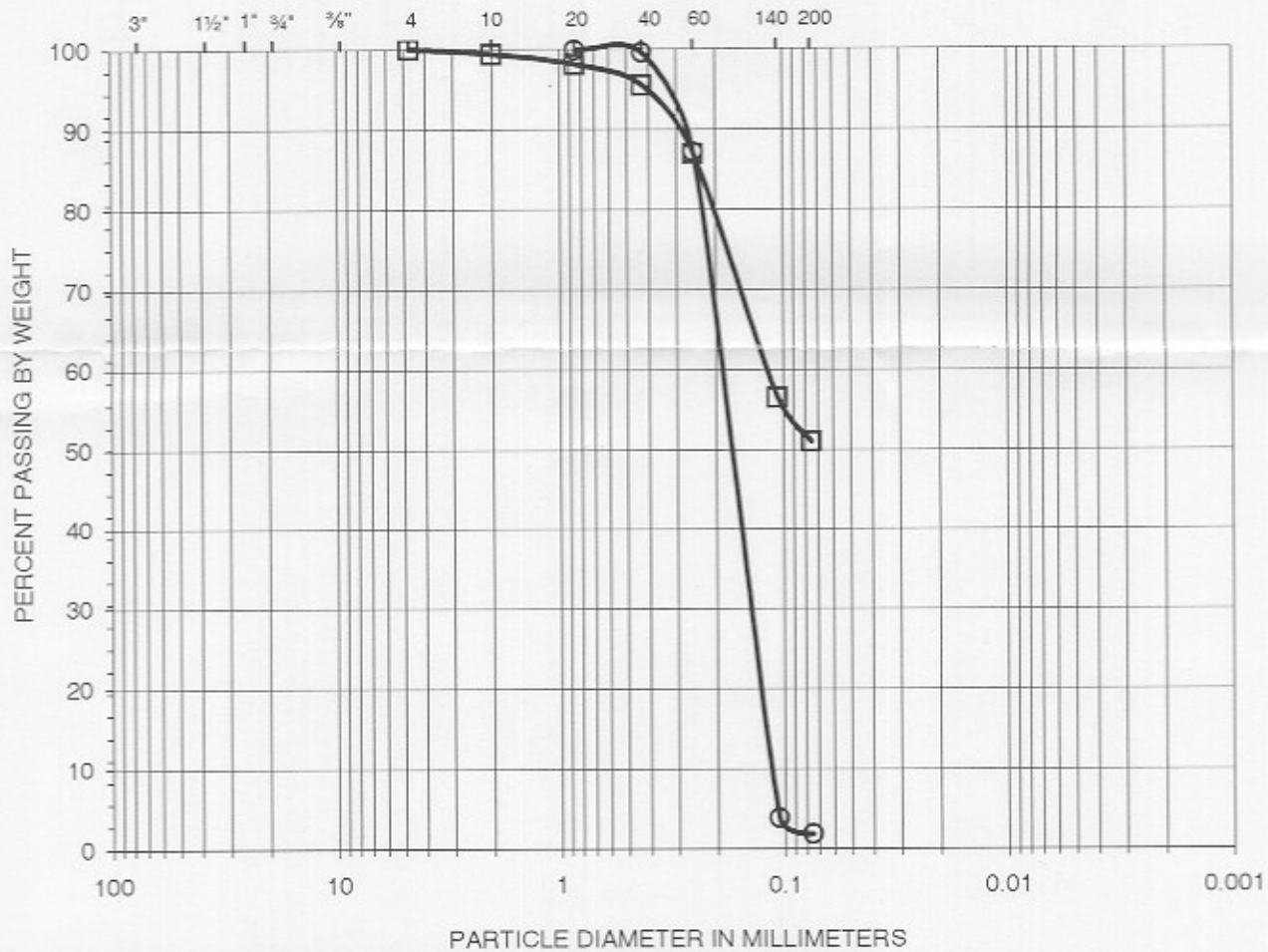


ATTACHMENT A

SEDIMENT GRAIN SIZE ANALYSES RESULTS

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	
SIEVE OPENING		SIEVE NUMBER			HYDROMETER

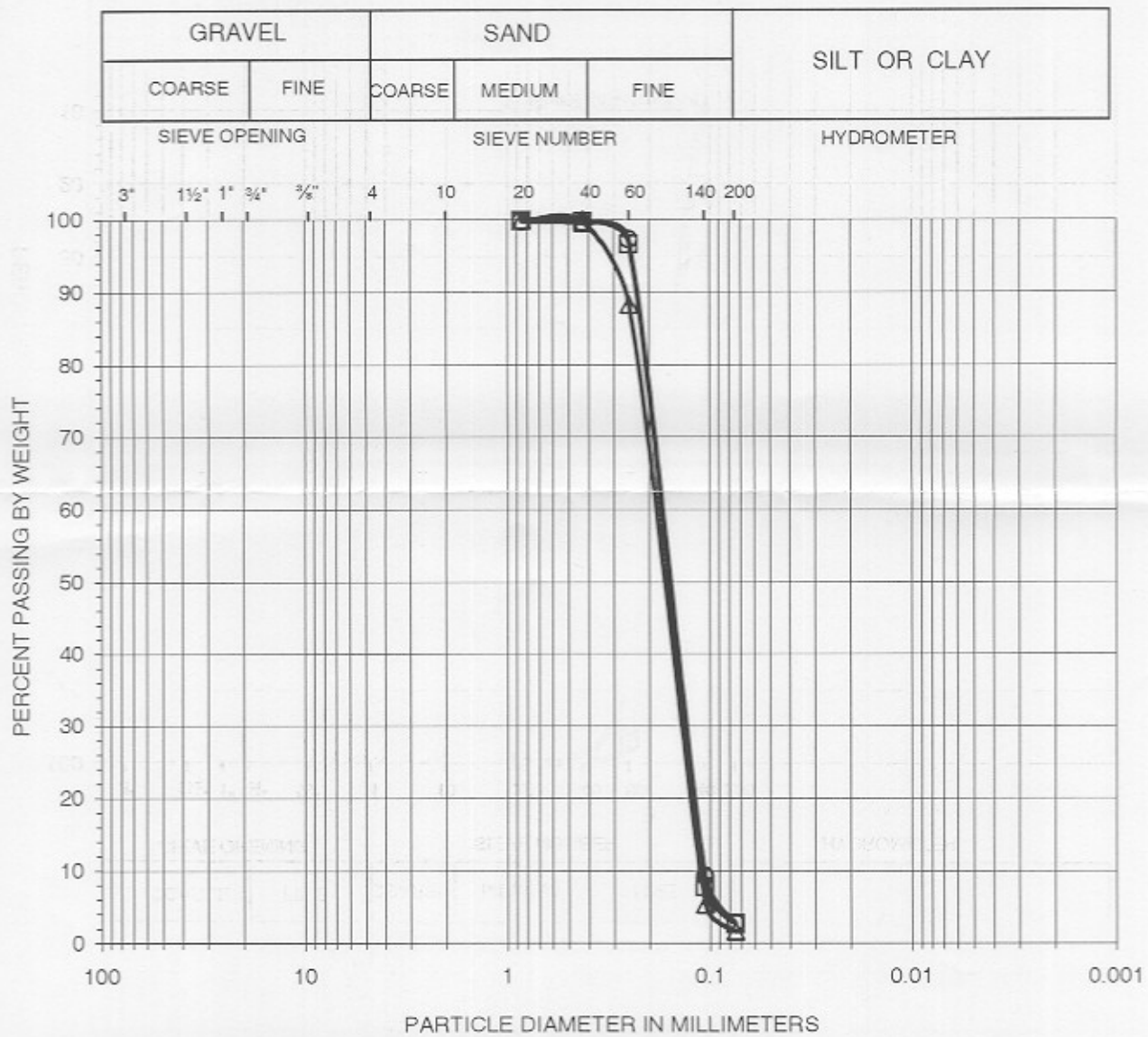


Symbol	Sample Identification	Sample Depth (feet)	Percent Passing No. 200 Sieve	Soil Type
○	4, 1	0"	1.9	SP
□	4, 2	18"	51.0	CL

GRAIN SIZE DISTRIBUTION CURVE

ASTM D 422

Project Name: H.B. Wetland Restoration
 Project No.: 47726
 Date: 8/11/2004
 AP No: 24-0828



Symbol	Sample Identification	Sample Depth	Percent Passing No. 200 Sieve	Soil Type
○	1, 2	18"	2.8	SP
□	2, 2	12"	2.8	SP
△	3, 2	16"	1.7	SP

GRAIN SIZE DISTRIBUTION CURVE

ASTM D 422

Project Name: H.B. Wetland Restoration
 Project No.: 47726
 Date: 8/11/2004
 AP No: 24-0828

Sieve #	1, 2 @ 18"		2, 2 @ 12"		3, 2 @ 16"		4, 1 @ 0"		4, 2 @ 18"	
	Part. Size	Percent Passing	Part. Size	Percent Passing	Part. Size	Percent Passing	Part. Size	Percent Passing	Part. Size	Percent Passing
3"	76.2	100.00	76.2	100.00	76.2	100.00	76.2	100.00	76.2	100.00
1 1/2"	38.1	100.00	38.1	100.00	38.1	100.00	38.1	100.00	38.1	100.00
1"	25.4	100.00	25.4	100.00	25.4	100.00	25.4	100.00	25.4	100.00
3/4"	19	100.00	19	100.00	19	100.00	19	100.00	19	100.00
3/8"	9.5	100.00	9.5	100.00	9.5	100.00	9.5	100.00	9.5	100.00
No. 4	4.75	99.95	4.75	99.96	4.75	100.00	4.7	100.00	4.7	100.00
No. 10	2	99.89	2	99.93	2	100.00	2	100.00	2	99.36
No. 20	0.85	99.68	0.85	99.86	0.85	99.95	0.85	99.83	0.85	98.14
No. 40	0.425	99.42	0.425	99.66	0.425	99.60	0.425	99.56	0.425	95.48
No. 60	0.25	97.27	0.25	96.59	0.25	88.29	0.25	87.18	0.25	87.03
No. 140	0.106	9.31	0.106	7.82	0.106	5.43	0.106	3.84	0.106	56.48
No. 200	0.075	2.80	0.075	2.76	0.075	1.73	0.075	1.85	0.075	50.97
Hydrometer	0.03100		0.03129		0.03171		0.03100		0.03129	
	0.02014		0.02049		0.02031		0.02014		0.02049	
	0.01173		0.01183		0.01183		0.01173		0.01183	
	0.00854		0.00857		0.00857		0.00854		0.00857	
	0.00597		0.00604		0.00601		0.00597		0.00604	
	0.00432		0.00435		0.00435		0.00432		0.00435	
	0.00305		0.00306		0.00306		0.00305		0.00306	
	0.00131		0.00132		0.00132		0.00131		0.00132	

Sand Equivalent - GRADATION

JOB NO. 14324 DATE SAMPLED 8.27.04

SOURCE Huntington Beach -

NO.

LOCATION SAMPLED Dry Beach near Talbert Channel

Sample No.	Trial No.	Sand Reading	Clay Reading	S.E. %	Set-Up Time	Reading Time	Remarks
	1						
	2						
	3						
TOTAL-						N/A	
AVERAGE-							

SIEVE ANALYSIS

SIEVE	Cum. Wt. Retained	Per. Cent Retained	Per Cent Passing	Specified Limits
8	0	0	100	
10	0	0	100	
16	0	0	100	
30	Vis, 0	0	100	
40	3	1.2	98.8	
50	37	15.2	84.8	
60	88	36.1	63.9	
100	221	90.6	9.4	
200	242	99.2	.8	
PAN	1			
Σ	<u>244</u>			

ATTACHMENT B

SEDIMENT BACTERIA SAMPLING RESULTS



County of Orange, Health Care Agency
 Water Quality Laboratory
 700 Shellmaker Rd.
 Newport Beach, CA 92660 ELAP #1275
 Phone:(949)219-0423 FAX:(949)219-0426

STUDY: Tabert Marsh Bacteriological Survey

Water Flow _____

Weather _____

FIELD DATA			LABORATORY REPORT							
Date Collected 8/26/04			Sand Present	Date Received 8/26/04		Received by MG		Report Date		
Sampler Marty G/ Kim Garvey				Time In 1:15 PM		Time Run: 1:30 PM			Time Read: 2:00PM	
Field Bottle #	Time	Station Number / Location	Vol.	Total Coliforms		Fecal Coliforms		Enterococcus		
				CFU's	CFU/10gm	CFU's	CFU/10gm	CFU's		
					CFU/100ml		CFU/100ml	CFU's		
								CFU/100ml		
1T	12:52	Site #1 Top 1cm	0						8/27/04	
			1	10.0						Micro Initial
			2	5.0	0		0			MB
			3	1.0	0		0			
			3	0.1	0	<20	0	<20	0	20
Laboratory No. 04.WB.00124			0.01							
			0.001							
1B	12:53	Site #1 25cm below surface	0						8/27/04	
			1	10.0						Micro Initial
			2	5.0	0		0			MB
			3	1.0	0		0			
			3	0.1	0	<20	0	<20	0	<20
Laboratory No. 04.WB.00125			0.01							
			0.001							
2T	1:00	Site #2 Top 1cm	0						8/27/04	
			1	10.0						Micro Initial
			2	5.0	1		1			MB
			3	1.0	1		0		14	
			3	0.1	0	30	0	20	0	330
Laboratory No. 04.WB.00126			0.01							
			0.001							
2B	1:01	Site #2 25cm below surface	0						8/27/04	
			1	10.0	0		0			Micro Initial
			2	5.0	0		0			MB
			3	1.0	0		0			
			3	0.1	0	<9	0	<9	0	<9
Laboratory No. 04.WB.00127			0.01							
			0.001							
3T	1:10	Site #3 Top 1cm	0						8/27/04	
			1	10.0	43		60		TNT	Micro Initial
			2	5.0						
			3	1.0	11		0		48	4800
			3	0.1	1	430	0	600	6	
Laboratory No. 04.WB.00128			0.01							
			0.001							

SUBMITTER INFORMATION / SUBMITTER NUMBER
 Moffatt and Nichols
 250 W. Wardlow Road P.O. Box 7707
 Long Beach, CA 90807
 Fax (562) 424-7489 Attn: Kimberly Garvey

Field or Lab Remarks:



County of Orange, Health Care Agency
 Water Quality Laboratory
 700 Shellmaker Rd.
 Newport Beach, CA 92660 ELAP #1275
 Phone:(949)219-0423 FAX:(949)219-0426

STUDY: Talbert Marsh Bacteriological Survey

Water Flow _____

Weather _____

FIELD DATA

Date Collected 8/28/04

Sampler Marty G/ Kim Garvey

Field Bottle #	Time	Station Number / Location
3B	1:11	Site #3 25cm Below surface

Marine Water
 Fresh Water
 Sediment

Laboratory No: 04.WB.00129

LABORATORY REPORT

Date Received 8/26/04

Received by MG

Time In 1:15 PM

Time Run: 1:30 PM

Time Read: 2:00PM

Sand Present

Vol.	Total Coliforms		Fecal Coliforms		Enterococcus		Report Date
	m-Endo Agar LES		m-FC Agar		m-EI Agar		
	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	
10.0	0		0		0		8/27/04 MAK
5.0	0		0		0		
1.0	0	<20	0	<20	0	<20	
0.5	0		0		0		
0.1	0		0		0		
0.01							
0.001							

Field Bottle #	Time	Station Number / Location
4T	1:13	Site #4 Top 1cm

Marine Water
 Fresh Water
 Sediment

Laboratory No: 04.WB.00130

Vol.	m-Endo Agar LES		m-FC Agar		m-EI Agar		Report Date
	m-Endo Agar LES		m-FC Agar		m-EI Agar		
	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	
10.0	0		0		2		8/27/04 MAK
5.0	0		0		0		
1.0	0	<9	0	<9	0	20	
0.5	0		0		0		
0.1	0		0		0		
0.01							
0.001							

Field Bottle #	Time	Station Number / Location
4B	1:14	Site #4 25cm below surface

Marine Water
 Fresh Water
 Sediment

Laboratory No: 04.WB.00131

Vol.	m-Endo Agar LES		m-FC Agar		m-EI Agar		Report Date
	m-Endo Agar LES		m-FC Agar		m-EI Agar		
	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	
10.0	15		8		1		8/27/04 MAK
5.0	0		0		0		
1.0	0	140	4	100	0	20	
0.5	0		0		0		
0.1	0		0		0		
0.01							
0.001							

Field Bottle #	Time	Station Number / Location

Marine Water
 Fresh Water
 Sediment

Laboratory No: _____

Vol.	m-Endo Agar LES		m-FC Agar		m-EI Agar		Report Date
	m-Endo Agar LES		m-FC Agar		m-EI Agar		
	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	
10.0							
5.0							
1.0							
0.5							
0.1							
0.01							
0.001							

Field Bottle #	Time	Station Number / Location

Marine Water
 Fresh Water
 Sediment

Laboratory No: _____

Vol.	m-Endo Agar LES		m-FC Agar		m-EI Agar		Report Date
	m-Endo Agar LES		m-FC Agar		m-EI Agar		
	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	CFU's	CFU/10gm CFU/100ml	
10.0							
5.0							
1.0							
0.5							
0.1							
0.01							
0.001							

SUBMITTER INFORMATION / SUBMITTER NUMBER

Moffatt and Nichols
 250 W. Wardlow Road P.O. Box 7707
 Long Beach, CA 90807
 Fax (562) 424-7489 Attn: Kimberly Garvey

Field or Lab Remarks:

ATTACHMENT C

**CONSTRUCTION COST ESTIMATES FOR
SEDIMENT DISPOSAL OPTIONS**

**HUNTINGTON WETLANDS MATERIAL DISPOSAL ANALYSES
CONSTRUCTION COST ESTIMATE
SCENARIO 1
RE-USE TALBERT MARSH SAND FOR BERMS, ISLANDS, AND
MOUNDS WITHIN MARSH AREAS TO BE RESTORED**



ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
1	Mobilization & Demobilization	1	LS.	\$40,000.00	\$40,000
2	Dewater Talbert Marsh	1	LS.	\$20,000.00	\$20,000
3	Excavate With Bulldozers to Feed the Clamshell Dredge	10,000	CY	\$5.00	\$50,000
4	Excavate With Clamshell Dredge and Place in Trucks	10,000	CY	\$4.00	\$40,000
5	Haul the Material to the Wetland for On-Site Reuse	20,000	CY	\$8.00	\$160,000
6	Re-Use Material On-Site for Berms, Islands, Mounds, etc.	20,000	CY	\$6.00	\$120,000
	Subtotal Items				\$430,000
	Contingency (25%)				\$107,500
	Engineering, Design, Supervision, and Administration (15%)				\$64,500
	Permitting (10%)				\$43,000
	TOTAL				\$645,000

Assumptions:

1. Talbert Marsh is diked off at the ocean and at Brookhurst Street Bridge, and dewatered to allow excavation of the marsh in the dry.
2. The Talbert Marsh main flood channel is excavated using a clamshell dredge reaching from the pedestrian path on the north levee.
3. The Talbert Marsh flood bar is excavated in the dry condition using bulldozers to push material into mounds for dredging by a clamshell bucket.
4. The material is trucked in a rig with a capacity of 8 cubic yards per load for a transport time of 30 minutes round-trip to other wetland areas.
5. The construction period is two months.

**HUNTINGTON WETLANDS MATERIAL DISPOSAL ANALYSES
CONSTRUCTION COST ESTIMATE
SCENARIO 2
RE-USE TALBERT MARSH SAND FOR BEACH NOURISHMENT**



ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
1	Mobilization & Demobilization	1	LS.	\$40,000.00	\$40,000
2	Dewater Talbert Marsh	1	LS.	\$20,000.00	\$20,000
3	Excavate With Bulldozers to Feed the Clamshell Dredge	10,000	CY	\$5.00	\$50,000
4	Excavate With Clamshell Dredge and Place in Trucks	10,000	CY	\$4.00	\$40,000
5	Haul the Material to the Beach for Nourishment	20,000	CY	\$6.00	\$120,000
6	Demolish and Reconstruct the Beach Bike Path, Retaining Wall, Bollards and Curbing	1	LS.	\$50,000.00	\$50,000
	Subtotal Items				\$320,000
	Contingency (25%)				\$80,000
	Engineering, Design, Supervision, and Administration (15%)				\$48,000
	Permitting (15%)				\$48,000
	TOTAL				\$496,000

Assumptions:

1. Talbert Marsh is diked off at the ocean and at Brookhurst Street Bridge, and dewatered to allow excavation of the marsh in the dry.
2. The Talbert Marsh main flood channel is excavated using a clamshell dredge reaching from the pedestrian path on the north levee.
3. The Talbert Marsh flood bar is excavated in the dry condition using bulldozers to push material into mounds for dredging by a clamshell bucket.
4. The material is trucked in a rig with a capacity of 8 cubic yards per load for a transport time of 20 minutes round-trip to the beach.
5. The construction period is two months.

**HUNTINGTON WETLANDS MATERIAL DISPOSAL ANALYSES
CONSTRUCTION COST ESTIMATE
SCENARIO 3
RE-USE TALBERT MARSH SAND FOR NEARSHORE NOURISHMENT**



ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
1	Mobilization & Demobilization	1	LS.	\$150,000.00	\$150,000
2	Dredge Marsh Sand	20,000	CY	\$4.00	\$80,000
3	Booster Pump Sand to Barge Downpipe in the Nearshore	20,000	CY	\$3.00	\$60,000
4	Crane and Generator Services	1	LS.	\$25,000.00	\$25,000
	Subtotal Items				\$315,000
	Contingency (25%)				\$78,750
	Engineering, Design, Supervision, and Administration (15%)				\$47,250
	Permitting (15%)				\$47,250
	TOTAL				\$488,250

Assumptions:

1. Talbert Marsh is dredged using a high volume-density pump mounted on a crane arm and powered by a generator.
2. Water level control is not required.
3. A booster pump is used to pump the material to a barge and downpipe at the nearshore.
4. The construction period is two months.

**HUNTINGTON WETLANDS MATERIAL DISPOSAL ANALYSES
CONSTRUCTION COST ESTIMATE
SCENARIO 4
DISPOSE OF TALBERT MARSH SAND OFFSHORE**



ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
1	Mobilization & Demobilization	1	LS.	\$175,000.00	\$175,000
2	Dredge Marsh Sand	20,000	CY	\$4.00	\$80,000
3	Booster Pump Sand to Offshore Barge	20,000	CY	\$3.00	\$60,000
4	Crane and Generator Services	1	LS.	\$25,000.00	\$25,000
5	Barge Transport to Offshore Dump Site	20,000	CY	\$25.00	\$500,000
	Subtotal Items				\$840,000
	Contingency (25%)				\$210,000
	Engineering, Design, Supervision, and Administration (15%)				\$126,000
	Permitting (5%)				\$42,000
	TOTAL				\$1,218,000

Assumptions:

1. Talbert Marsh is dredged using a high volume-density pump mounted on a crane arm and powered by a generator.
2. Water level control is not required.
3. A booster pump is used to pump the material to an offshore barge, that transports the material to the LA-3 offshore dump site.
4. The construction period is two months.

**HUNTINGTON WETLANDS MATERIAL DISPOSAL ANALYSES
CONSTRUCTION COST ESTIMATE
SCENARIO 5**



DISPOSE OF TALBERT MARSH SAND AT CONVENTIONAL LANDFILL

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SUBTOTAL
1	Mobilization & Demobilization	1	LS.	\$40,000.00	\$40,000
2	Dewater Talbert Marsh	1	LS.	\$20,000.00	\$20,000
3	Excavate With Bulldozers to Feed the Clamshell Dredge	10,000	CY	\$5.00	\$50,000
4	Excavate With Clamshell Dredge and Place in Trucks	10,000	CY	\$4.00	\$40,000
5	Haul the Material to Landfill	20,000	CY	\$25.00	\$500,000
	Subtotal Items				\$650,000
	Contingency (25%)				\$162,500
	Engineering, Design, Supervision, and Administration (15%)				\$97,500
	Permitting (5%)				\$32,500
	TOTAL				\$942,500

Assumptions:

1. Talbert Marsh is diked off at the ocean and at Brookhurst Street Bridge, and dewatered to allow excavation of the marsh in the dry.
2. The Talbert Marsh main flood channel is excavated using a clamshell dredge reaching from the pedestrian path on the north levee.
3. The Talbert Marsh flood bar is excavated in the dry condition using bulldozers to push material into mounds for dredging by a clamshell bucket.
4. The material is trucked in a rig with a capacity of 8 cubic yards per load for a transport time of 2 hour round-trip to the Bee Canyon Landfill.
5. Trucking costs are \$40 per hour to Bee Canyon.
6. Tipping fees at the landfills are \$50 per truck at Bee Canyon (to be verified).