

**Salton Sea Restoration Quantity Estimate
Worksheets
(Alternative No. 1 through Alternative No. 5)**

Concentric Rings (with columns) Totals

No.	Item	Unit	Totals	Totals plus 10%
1	Dredge of Sea Floor Deposits	CY	73,970,000	81,367,000
2	Dredge of Soft Lacustrine Deposits	CY	43,526,000	47,878,600
3	Sand/Gravel Fill Type A in Core	CY	77,880,000	85,668,000
4	Sand/Gravel Shell Type A in Shell	CY	32,018,000	35,219,800
5	Sand/Gravel Shell Type B	CY	2,518,000	2,769,800
6	Rip Rap	CY	29,155,000	32,070,500
7	Stone Column*	FT	24,841,000	27,325,100
8	Installation of SCB Wall/per foot of dam alignment	SF	90,299,000	99,328,900
9	Coarse Blanket Drain	CY	7,303,560	8,033,916
10	Wick Drains	FT	79,675,200	87,642,720

120,887,800

Concentric Rings (no columns) Totals

No.	Item	Unit	Totals	Totals plus 10%
1	Dredge of Sea Floor Deposits	CY	73,970,000	81,367,000
2	Dredge of Soft Lacustrine Deposits	CY	43,526,000	47,878,600
3	Sand/Gravel Fill Type A in Core	CY	77,880,000	85,668,000
5	Sand/Gravel Shell Type B	CY	16,053,000	17,658,300
6	Rip Rap	CY	28,899,000	31,788,900
8	Installation of SCB Wall/per foot of dam alignment	SF	90,299,000	99,328,900
9	Coarse Blanket Drain	CY	3,320,000	3,652,000
10	Wick Drains	FT	79,675,000	87,642,500

SECTION A Concentric Rings

Crest Elevation=10' above seafloor: Crest Width=20'

H_e(Embankment Height)(feet): 18

H_f(Foundation Height)(feet): 15

H_s(Seafloor Deposits Height)(feet): 8

N₁: Number of Stone Column at Upstream Slope 2

Length of Embankment (feet) 1327920

Structural Height (feet) 33

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			1504	CY	73,970,062	73,970,000
2	Dredge of Soft Lacustrine Deposits	SF			885	CY	43,526,267	43,526,000
3	Sand/Gravel Fill Type A in Core	SF	699	885	1584	CY	77,880,049	77,880,000
4	Sand/Gravel Shell Type A in Shell	SF			651	CY	32,017,627	32,018,000
5	Sand/Gravel Shell Type B	SF			51	CY	2,518,130	2,518,000
6	Rip Rap	SF			593	CY	29,155,221	29,155,000
7	Stone Column*	FT/Row			162	FT	24,840,998	24,841,000
8	Installation of SCB Wall/per foot of dam alignment	FT			68	SF	90,298,560	90,299,000
9	Coarse Blanket Drain	SF			149	CY	7,303,560	7,304,000
10	Wick Drains	FT			300	FT	79,675,200	79,675,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION B Concentric Rings

Crest Elevation=10' above seafloor: Crest Width=20'

H_e(Embankment Height)(feet): 18

H_f(Foundation Height)(feet): 15

H_s(Seafloor Deposits Height)(feet): 8

Length of Embankment (feet) 1327920

Structural Height (feet) 33

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			1504	CY	73970062	73,970,000
2	Dredge of Soft Lacustrine Deposits	SF			885	CY	43526267	43,526,000
3	Sand/Gravel Fill Type A in Core	SF	699	885	1584	CY	77880049	77,880,000
5	Sand/Gravel Shell Type B	SF			326	CY	16053077	16,053,000
6	Rip Rap	SF			588	CY	28899474	28,899,000
8	Installation of SCB Wall/per foot of dam alignment	FT			68	SF	90298560	90,299,000
9	Coarse Blanket Drain	SF			68	CY	3319800	3,320,000
10	Wick Drains	FT			300	FT	79675200	79,675,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

MidSea Dam Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	14,273,000	15,700,300
1	Dredge of Soft Lacustrine Deposits	CY	11,002,000	12,102,200
2	Sand/Gravel Fill Type A in Core	CY	24,008,000	26,408,800
2	Sand/Gravel Fill Type A in Shell	CY	16,261,000	17,887,100
3	Sand/Gravel Shell Type B	CY	8,493,000	9,342,300
5	Rip Rap	CY	4,116,000	4,527,600
6	Stone Column	FT	7,052,000	7,757,200
7	Installation of SCB Wall/per foot of dam alignment	SF	4,505,000	4,955,500
4	Sand Blanket Drain	CY	1,109,000	1,219,900
3	Coarse Blanket Drain	CY	1,305,000	1,435,500
8	Wick Drains	FT	17187000	18,905,700

44,295,900

SECTION A **Mid Sea Dam (Seafloor Elevation -270)**

Crest Elevation=-225; Crest Width=30'

H_e(Embankment Height)(feet): 60.8

H_f(Foundation Height)(feet): 22.7

H_s(Seafloor Deposits Height)(feet): 15.8

N₁: Number of Stone Column at Upstream Slope 18

Length of Embankment (feet) 17672

Structural Height (feet) 83.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			16593	CY	10860531	10,861,000
1	Dredge of Soft Lacustrine Deposits	SF			9477	CY	6203036	6,203,000
2	Sand/Gravel Fill Type A in Core	SF	12278	9477	21756	CY	14239489	14,239,000
2	Sand/Gravel Fill Type A in Shell	SF			15864	CY	10383138	10,383,000
3	Sand/Gravel Shell Type B	SF			8846	CY	5790185	5,790,000
5	Rip Rap	SF			3453	CY	2260288	2,260,000
6	Stone Column*	Ft/Row			2079	FT	4241688	4,242,000
7	Installation of SCB Wall/per foot of dam alignment	FT			124	SF	2182492	2,182,000
4	Sand Blanket Drain	SF			912	CY	596921	597,000
3	Coarse Blanket Drain	SF			1133	CY	741569	742,000
8	Wick Drains	FT			2806	FT	9916537	9,917,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION B Mid Sea Dam (Seafloor Elevation -260 to -270 west, with average elevation -265)

Crest Elevation=-225; Crest Width=30'

H_e(Embankment Height)(feet): 46.9

H_f(Foundation Height)(feet): 23.2

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 14

Length of Embankment (feet) 8664

Structural Height (feet) 70.1

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			5528	CY	1773742	1,774,000
1	Dredge of Soft Lacustrine Deposits	SF			7763	CY	2490971	2,491,000
2	Sand/Gravel Fill Type A in Core	SF	7579	7763	15342	CY	4922933	4,923,000
2	Sand/Gravel Fill Type A in Shell	SF			9294	CY	2982324	2,982,000
3	Sand/Gravel Shell Type B	SF			4604	CY	1477214	1,477,000
5	Rip Rap	SF			2603	CY	835171	835,000
6	Stone Column*	FT/Row			1446	FT	1447068	1,447,000
7	Installation of SCB Wall/per foot of dam alignment	FT			110	SF	953906	954,000
4	Sand Blanket Drain	SF			704	CY	225745	226,000
3	Coarse Blanket Drain	SF			820	CY	263209	263,000
8	Wick Drains	FT			2223	FT	3851252	3,851,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION C Mid Sea Dam (Seafloor Elevation -260 to -270 east, with average elevation -265)

Crest Elevation=-225; Crest Width=30'

H_e(Embankment Height)(feet): 46.9

H_f(Foundation Height)(feet): 12.4

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 14

Length of Embankment (feet) 4854

Structural Height (feet) 59.3

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			5528	CY	993738	994,000
1	Dredge of Soft Lacustrine Deposits	SF			4015	CY	721829	722,000
2	Sand/Gravel Fill Type A in Core	SF	7579	4015	11594	CY	2084335	2,084,000
2	Sand/Gravel Fill Type A in Shell	SF			9294	CY	1670845	1,671,000
3	Sand/Gravel Shell Type B	SF			4604	CY	827608	828,000
5	Rip Rap	SF			2603	CY	467904	468,000
6	Stone Column*	FT/Row			1122	FT	629114	629,000
7	Installation of SCB Wall/per foot of dam alignment	FT			99	SF	482002	482,000
4	Sand Blanket Drain	SF			704	CY	126474	126,000
3	Course Blanket Drain	SF			820	CY	147463	147,000
8	Wick Drains	FT			1188	FT	1153233	1,153,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION D Mid Sea Dam (Seafloor Elevation -240 to -260 west, with average elevation -250)

Crest Elevation=-225; Crest Width=30'

H_e(Embankment Height)(feet): 28.3

H_f(Foundation Height)(feet): 23

H_s(Seafloor Deposits Height)(feet): 3.3

N₁: Number of Stone Column at Upstream Slope 8

Length of Embankment (feet) 7841

Structural Height (feet) 51.3

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			1626	CY	472176	472,000
1	Dredge of Soft Lacustrine Deposits	SF			5124	CY	1488164	1,488,000
2	Sand/Gravel Fill Type A in Core	SF	3104	5124	8228	CY	2389492	2,389,000
2	Sand/Gravel Fill Type A in Shell	SF			3223	CY	935955	936,000
3	Sand/Gravel Shell Type B	SF			1042	CY	302490	302,000
5	Rip Rap	SF			1464	CY	425261	425,000
6	Stone Column*	FT/Row			697	FT	631083	631,000
7	Installation of SCB Wall/per foot of dam alignment	FT			91	SF	715883	716,000
4	Sand Blanket Drain	SF			425	CY	123278	123,000
3	Coarse Blanket Drain	SF			402	CY	116671	117,000
8	Wick Drains	FT			1348	FT	2113620	2,114,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION E Mid Sea Dam (Seafloor Elevation -240 to -260 east, with average elevation -250)

Crest Elevation=-225; Crest Width=30'

H_e(Embankment Height)(feet): 29

H_f(Foundation Height)(feet): 5.5

H_s(Seafloor Deposits Height)(feet): 4

N₁: Number of Stone Column at Upstream Slope 8

Length of Embankment (feet) 2297

Structural Height (feet) 34.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			2024	CY	172190	172,000
1	Dredge of Soft Lacustrine Deposits	SF			1152	CY	98027	98,000
2	Sand/Gravel Fill Type A in Core	SF	3235	1152	4387	CY	373199	373,000
2	Sand/Gravel Fill Type A in Shell	SF			3395	CY	288826	289,000
3	Sand/Gravel Shell Type B	SF			1132	CY	96287	96,000
5	Rip Rap	SF			1507	CY	128224	128,000
6	Stone Column*	FT/Row			389	FT	103179	103,000
7	Installation of SCB Wall/per foot of dam alignment	FT			75	SF	171127	171,000
4	Sand Blanket Drain	SF			435	CY	37007	37,000
3	Coarse Blanket Drain	SF			418	CY	35518	36,000
8	Wick Drains	FT			330	FT	151602	152,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

North Sea Dam Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	16,236,000	17,859,600
1	Dredge of Soft Lacustrine Deposits	CY	21,878,000	24,065,800
2	Sand/Gravel Fill Type A in Core	CY	49,949,000	54,943,900
2	Sand/Gravel Fill Type A in Shell	CY	33,479,000	36,826,900
3	Sand/Gravel Shell Type B	CY	15,535,000	17,088,500
5	Rip Rap	CY	10,429,000	11,471,900
6	Stone Column*	FT	14,250,000	15,675,000
7	Installation of SCB Wall/per foot of dam alignment	SF	12,008,000	13,208,800
4	Sand Blanket Drain	CY	2,853,000	3,138,300
3	Coarse Blanket Drain	CY	3,215,000	3,536,500
8	Wick Drains	FT	34,071,000	37,478,100

91,770,800

SECTION A North Sea Dam (Seafloor Elevation -260)

Crest Elevation=-223; Crest Width=30'

H_e(Embankment Height)(feet): 42

H_f(Foundation Height)(feet): 16.2

H_s(Seafloor Deposits Height)(feet): 5

N₁: Number of Stone Column at Upstream Slope 12

Length of Embankment (feet) 122277

Structural Height (feet) 58.2

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			3585	CY	16235642	16,236,000
1	Dredge of Soft Lacustrine Deposits	SF			4831	CY	21877765	21,878,000
2	Sand/Gravel Fill Type A in Core	SF	6199	4831	11029	CY	49949348	49,949,000
2	Sand/Gravel Fill Type A in Shell	SF			7393	CY	33478935	33,479,000
3	Sand/Gravel Shell Type B	SF			3430	CY	15534588	15,535,000
5	Rip Rap	SF			2303	CY	10428852	10,429,000
6	Stone Column*	Ft/Row			1009	FT	14249624	14,250,000
7	Installation of SCB Wall/per foot of dam alignment	FT			98	SF	12007582	12,008,000
4	Sand Blanket Drain	SF			630	CY	2853125	2,853,000
3	Coarse Blanket Drain	SF			710	CY	3215427	3,215,000
8	Wick Drains	FT			1393	FT	34071208	34,071,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

Perimeter Dike Totals

No.	Item	Unit	Totals	Totals plus 10%
1	Dredge of Sea Floor Deposits	CY	2,154,000	2,369,400
1	Dredge of Soft Lacustrine Deposits	CY	2,822,000	3,104,200
2	Sand/Gravel Fill Type A in Core	CY	5,332,000	5,865,200
2	Sand/Gravel Shell Type A in Shell	CY	2,389,000	2,627,900
3	Sand/Gravel Shell Type B	CY	202,000	222,200
5	Rip Rap	CY	2,083,000	2,291,300
6	Stone Column*	FT	1,690,000	1,859,000
5	Crest Armoring (Additional 3 feet thick Rip Rap Cover)	CY	104,000	114,400
7	Installation of SCB Wall/per foot of dam alignment	SF	6,233,000	6,856,300
3	Coarse Blanket Drain	CY	523,000	575,300
8	Wick Drains	FT	5,305,000	5,835,500

8,493,100

SECTION A Perimeter Dike (Sea Floor Elevation=-240, west)

Crest Elevation=-225: Crest Width=20'

H_e(Embankment Height)(feet): 18.3

H_f(Foundation Height)(feet): 18.2

H_s(Seafloor Deposits Height)(feet): 3.3

N₁: Number of Stone Column at Upstream Slope 2

Length of Embankment (feet) 62555

Structural Height (feet) 36.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			582	CY	1,347,921	1,348,000
1	Dredge of Soft Lacustrine Deposits	SF			1032	CY	2,390,852	2,391,000
2	Sand/Gravel Fill Type A in Core	SF	719	1032	1751	CY	4,057,792	4,058,000
2	Sand/Gravel Shell Type A in Shell	SF			679	CY	1,572,494	1,572,000
3	Sand/Gravel Shell Type B	SF			56	CY	128,840	129,000
5	Rip Rap	SF			603	CY	1,396,784	1,397,000
6	Stone Column*	FT/Row			182	FT	1,317,556	1,318,000
5	Crest Armoring (Additional 3 feet thick Rip Rap Cover)	SF			60	CY	104,258	104,000
7	Installation of SCB Wall/per foot of dam alignment	FT			72	SF	4,472,683	4,473,000
3	Coarse Blanket Drain	SF			151	CY	350,308	350,000
8	Wick Drains	FT			369	FT	4,622,314	4,622,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION B Perimeter Dike (Sea Floor Elevation=-240, east)
Crest Elevation=-225: Crest Width=20'

H _e (Embankment Height)(feet):	19
H _f (Foundation Height)(feet):	5.5
H _s (Seafloor Deposits Height)(feet):	4
N ₁ : Number of Stone Column at Upstream Slope	2
Length of Embankment (feet)	29586
Structural Height (feet)	24.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			736	CY	806492	806,000
1	Dredge of Soft Lacustrine Deposits	SF			393	CY	430915	431,000
2	Sand/Gravel Fill Type A in Core	SF	770	393	1163	CY	1274116	1,274,000
2	Sand/Gravel Shell Type A in Shell	SF			746	CY	816902	817,000
3	Sand/Gravel Shell Type B	SF			67	CY	72979	73,000
5	Rip Rap	SF			626	CY	686395	686,000
6	Stone Column*	FT/Row			109	FT	372387	372,000
7	Installation of SCB Wall/per foot of dam alignment	FT			60	SF	1760367	1,760,000
3	Coarse Blanket Drain	SF			158	CY	172585	173,000
8	Wick Drains	FT			116	FT	683437	683,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

South Sea Dam Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	1,637,000	1,800,700
1	Dredge of Soft Lacustrine Deposits	CY	3,530,000	3,883,000
2	Sand/Gravel Fill Type A in Core	CY	8,517,000	9,368,700
2	Sand/Gravel Fill Type A in Shell	CY	5,732,000	6,305,200
3	Sand/Gravel Shell Type B in Shell	CY	1,684,000	1,852,400
5	Rip Rap	CY	3,323,000	3,655,300
6	Stone Column	FT	2,615,000	2,876,500
4	Fine Rock Fill	CY	1,391,000	1,530,100
7	Installation of SCB Wall/per foot of dam alignment(Section A)	SF	2,693,000	2,962,300
7	Installation of SCB Wall/per foot of dam alignment(Section B)	SF	3,410,000	3,751,000
3	Coarse Blanket Drain	CY	805,000	885,500
8	Wick Drains	FT	7,332,000	8,065,200

15,673,900

SECTION A **South Sea Dam-Fault Resistance (Sea Floor Elevation -250)**

Crest Elevation=-220: Crest Width=30'

H_e(Embankment Height)(feet):	32
H_f(Foundation Height)(feet):	13
H_s(Seafloor Deposits Height)(feet):	2
N₁: Number of Stone Column at Upstream Slope	4
Length of Embankment (feet)	31680
Structural Height (feet)	45

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			744	CY	872,960	873,000
1	Dredge of Soft Lacustrine Deposits	SF			1469	CY	1,723,627	1,724,000
2	Sand/Gravel Fill Type A in Core	SF	2319	1469	3788	CY	4,444,000	4,444,000
2	Sand/Gravel Fill Type A in Shell	SF			2832	CY	3,322,880	3,323,000
3	Sand/Gravel Shell Type B in Shell	SF			1280	CY	1,501,867	1,502,000
5	Rip Rap	SF			1118	CY	1,312,256	1,312,000
6	Stone Column*	FT/Row			322	FT	1,177,940	1,178,000
	Fine Rock Fill	SF			1186	CY	1,391,104	1,391,000
7	Installation of SCB Wall/per foot of dam alignment	FT			85	SF	2,692,800	2,693,000
3	Coarse Blanket Drain	SF			418	CY	489,867	490,000
8	Wick Drains	FT			650	FT	4,118,400	4,118,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION B South Sea Dam (Sea Floor Elevation -250)

Crest Elevation=-225: Crest Width=20'

H_e(Embankment Height)(feet): 27

H_f(Foundation Height)(feet): 13

H_s(Seafloor Deposits Height)(feet): 2

N₁: Number of Stone Column at Upstream Slope 4

Length of Embankment (feet) 42630

Structural Height (feet) 40

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			484	CY	764,182	764,000
1	Dredge of Soft Lacustrine Deposits	SF			1144	CY	1,806,249	1,806,000
2	Sand/Gravel Fill Type A in Core	SF	1436	1144	2580	CY	4,072,744	4,073,000
2	Sand/Gravel Fill Type A in Shell	SF			1526	CY	2,408,595	2,409,000
3	Sand/Gravel Shell Type B in Shell	SF			115	CY	181,888	182,000
5	Rip Rap	SF			1274	CY	2,011,189	2,011,000
6	Stone Column*	FT/Row			292	FT	1,437,409	1,437,000
7	Installation of SCB Wall/per foot of dam alignment	FT			80	SF	3,410,000	3,410,000
3	Coarse Blanket Drain	SF			200	CY	314,988	315,000
8	Wick Drains	FT			377	FT	3,214,302	3,214,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

Habitat Pond Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	418,000	459,800
2	Embankment Fill	CY	585,000	643,500
3	Filter/Drain Blanket	CY	28,550	31,405
4	Geogrid/Geotextile	SF	1,593,000	1,752,300

SECTION A Habitat Pond (500-Acre)

Crest Width=15'

 H_e (Embankment Height)(feet): 7.5 H_f (Foundation Height)(feet): 10

Length of Embankment (feet) 18,800

Structural Height (feet) 17.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			600	CY	417,777.8	418,000
2	Embankment Fill	SF	240	600	840	CY	585,063	585,000
3	Filter/Drain Blanket	SF			41	CY	28,548	28,550
4	Geogrid/Geotextile	FT			85	SF	1,592,762	1,593,000

MidSea Barrier-Seismic Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	6,262,000	6,888,200
1	Dredge of Soft Lacustrine Deposits	CY	3,828,000	4,210,800
2	Sand/Gravel Fill Type A in Core	CY	7,695,000	8,464,500
2	Sand/Gravel Fill Type A in Shell	CY	4,157,000	4,572,700
3	Sand/Gravel Shell Type B	CY	928,000	1,020,800
5	Rip Rap	CY	2,633,000	2,896,300
6	Stone Column	FT	2,410,000	2,651,000
7	Installation of SCB Wall/per foot of dam alignment	SF	3,447,000	3,791,700
8	Wick Drains	FT	6,124,000	6,736,400

13,037,200

SECTION A Mid Sea Barrier-Seismic (Sea Floor Elevation=-270)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 40.8

H_f(Foundation Height)(feet): 22.7

H_s(Seafloor Deposits Height)(feet): 15.8

N₁: Number of Stone Column at Upstream Slope 8

Length of Embankment (feet) 17969

Structural Height (feet) 63.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			7669	CY	5104074	5,104,000
1	Dredge of Soft Lacustrine Deposits	SF			3870	CY	2575790	2,576,000
2	Sand/Gravel Fill Type A in Core	SF	4301	3870	8172	CY	5438371	5,438,000
2	Sand/Gravel Fill Type A in Shell	SF			4865	CY	3237774	3,238,000
3	Sand/Gravel Shell Type B	SF			1186	CY	789278	789,000
5	Rip Rap	SF			2524	CY	1679902	1,680,000
6	Stone Column*	FT/Row			817	FT	1694398	1,694,000
7	Installation of SCB Wall/per foot of dam alignment	FT			104	SF	1859792	1,860,000
8	Wick Drains	FT			1157	FT	4157279	4,157,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION B Mid Sea Barrier-Seismic (Sea Floor Elevation: -260 to -270 west, with average elevation -265)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 26.9

H_f(Foundation Height)(feet): 23.3

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 5

Length of Embankment (feet) 6761

Structural Height (feet) 50.2

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			2206	CY	552381	552,000
1	Dredge of Soft Lacustrine Deposits	SF			2663	CY	666883	667,000
2	Sand/Gravel Fill Type A in Core	SF	2002	2663	4665	CY	1168253	1,168,000
2	Sand/Gravel Fill Type A in Shell	SF			1905	CY	477035	477,000
3	Sand/Gravel Shell Type B	SF			303	CY	75777	76,000
5	Rip Rap	SF			1662	CY	416277	416,000
6	Stone Column*	FT/Row			468	FT	365297	365,000
7	Installation of SCB Wall/per foot of dam alignment	FT			90	SF	609842	610,000
8	Wick Drains	FT			799	FT	1080035	1,080,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION C Mid Sea Barrier-Seismic (Sea Floor Elevation: -260 to -270 east, with average elevation -265)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 26.9

H_f(Foundation Height)(feet): 12.4

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 5

Length of Embankment (feet) 5534

Structural Height (feet) 39.3

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			2206	CY	452134	452,000
1	Dredge of Soft Lacustrine Deposits	SF			1552	CY	318201	318,000
2	Sand/Gravel Fill Type A in Core	SF	2002	1552	3555	CY	728582	729,000
2	Sand/Gravel Fill Type A in Shell	SF			1905	CY	390462	390,000
3	Sand/Gravel Shell Type B	SF			303	CY	62025	62,000
5	Rip Rap	SF			1662	CY	340730	341,000
6	Stone Column*	FT/Row			337	FT	215417	215,000
7	Installation of SCB Wall/per foot of dam alignment	FT			79	SF	438846	439,000
8	Wick Drains	FT			425	FT	470470	470,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION D Mid Sea Barrier-Seismic (Sea Floor Elevation -245 to -260 west, with average elevation: -252.5)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 10.8

H_f(Foundation Height)(feet): 23

H_s(Seafloor Deposits Height)(feet): 3.3

N₁: Number of Stone Column at Upstream Slope 2

Length of Embankment (feet) 5460

Structural Height (feet) 33.8

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			488	CY	98699	99,000
1	Dredge of Soft Lacustrine Deposits	SF			1155	CY	233486	233,000
2	Sand/Gravel Fill Type A in Core	SF	305	1155	1460	CY	295220	295,000
2	Sand/Gravel Fill Type A in Shell	SF			167	CY	33779	34,000
3	Sand/Gravel Shell Type B	SF			4	CY	801	1,000
5	Rip Rap	SF			664	CY	134316	134,000
6	Stone Column*	FT/Row			181	FT	114244	114,000
7	Installation of SCB Wall/per foot of dam alignment	FT			74	SF	402948	403,000
8	Wick Drains	FT			344	FT	375735	376,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

SECTION E Mid Sea Barrier-Seismic (Sea Floor Elevation -245 to -260 east, with average elevation -252.5)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 11.5

H_f(Foundation Height)(feet): 5.5

H_s(Seafloor Deposits Height)(feet): 4

N₁: Number of Stone Column at Upstream Slope 2

Length of Embankment (feet) 2366

Structural Height (feet) 17

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			628	CY	55031	55,000
1	Dredge of Soft Lacustrine Deposits	SF			388	CY	33978	34,000
2	Sand/Gravel Fill Type A in Core	SF	358	388	745	CY	65306	65,000
2	Sand/Gravel Fill Type A in Shell	SF			205	CY	17953	18,000
3	Sand/Gravel Shell Type B	SF			1	CY	68	0
5	Rip Rap	SF			708	CY	62007	62,000
6	Stone Column*	FT/Row			79	FT	21584	22,000
7	Installation of SCB Wall/per foot of dam alignment	FT			57	SF	134862	135,000
8	Wick Drains	FT			87	FT	41121	41,000

*It is currently planned that one row of stone columns will be constructed per 8.66 feet of dam alignment.

*Estimated stone column diameter is 3 feet.

MidSea Barrier-Non Seismic Totals

No.	Item	Unit	Total	Total plus 10%
1	Dredge of Sea Floor Deposits	CY	6,262,000	6,888,200
1	Dredge of Soft Lacustrine Deposits	CY	2,930,000	3,223,000
2	Sand/Gravel Fill Type A in Core	CY	6,088,000	6,696,800
2	Sand/Gravel Fill Type A in Shell	CY	0	0
3	Sand/Gravel Shell Type B	CY	2,925,000	3,217,500
5	Rip Rap	CY	2,560,000	2,816,000
6	Stone Column	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	SF	3,447,000	3,791,700
8	Wick Drains	FT	7,094,000	7,803,400

SECTION A Mid Sea Barrier-Non Seismic (Sea Floor Elevation=-270)
Crest Elevation=-245: Crest Width=30'

H _e (Embankment Height)(feet):	40.8
H _f (Foundation Height)(feet):	22.7
H _s (Seafloor Deposits Height)(feet):	15.8
N ₁ : Number of Stone Column at Upstream Slope	0
Length of Embankment (feet)	17969
Structural Height (feet)	63.5

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			7669	CY	5104074	5,104,000
1	Dredge of Soft Lacustrine Deposits	SF			2944	CY	1959413	1,959,000
2	Sand/Gravel Fill Type A in Core	SF	3487	2944	6431	CY	4280049	4,280,000
2	Sand/Gravel Fill Type A in Shell	SF			0	CY	0	0
3	Sand/Gravel Shell Type B	SF			3597	CY	2393790	2,394,000
5	Rip Rap	SF			2463	CY	1639412	1,639,000
6	Stone Column	FT/Row			0	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	FT			104	SF	1859792	1,860,000
8	Wick Drains	FT			1342.02	FT	4822966	4,823,000

SECTION B Mid Sea Barrier-Non Seismic (Sea Floor Elevation: -260 to -270 west, with average elevation -265)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 26.9

H_f(Foundation Height)(feet): 23.3

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 0

Length of Embankment (feet) 6761

Structural Height (feet) 50.2

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			2206	CY	552381	552,000
1	Dredge of Soft Lacustrine Deposits	SF			2036	CY	509935	510,000
2	Sand/Gravel Fill Type A in Core	SF	1658	2036	3695	CY	925214	925,000
2	Sand/Gravel Fill Type A in Shell	SF			0	CY	0	0
3	Sand/Gravel Shell Type B	SF			1154	CY	288959	289,000
5	Rip Rap	SF			1613	CY	403827	404,000
6	Stone Column	FT/Row			0	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	FT			90	SF	609842	610,000
8	Wick Drains	FT			924	FT	1249538	1,250,000

SECTION C Mid Sea Barrier-Non Seismic (Sea Floor Elevation: -260 to -270 east, with average elevation -265)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 26.9

H_f(Foundation Height)(feet): 12.4

H_s(Seafloor Deposits Height)(feet): 6.9

N₁: Number of Stone Column at Upstream Slope 0

Length of Embankment (feet) 5534

Structural Height (feet) 39.3

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			2206	CY	452134	452,000
1	Dredge of Soft Lacustrine Deposits	SF			1219	CY	249833	250,000
2	Sand/Gravel Fill Type A in Core	SF	1658	1219	2877	CY	589747	590,000
2	Sand/Gravel Fill Type A in Shell	SF			0	CY	0	0
3	Sand/Gravel Shell Type B	SF			1154	CY	236518	237,000
5	Rip Rap	SF			1613	CY	330540	331,000
6	Stone Column	FT/Row			0	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	FT			79	SF	438846	439,000
8	Wick Drains	FT			492	FT	544307	544,000

SECTION D Mid Sea Barrier-Non Seismic (Sea Floor Elevation -245 to -260 west, with average elevation: -252.5)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 10.8

H_f(Foundation Height)(feet): 23

H_s(Seafloor Deposits Height)(feet): 3.3

N₁: Number of Stone Column at Upstream Slope 0

Length of Embankment (feet) 5460

Structural Height (feet) 33.8

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			488	CY	98699	99,000
1	Dredge of Soft Lacustrine Deposits	SF			906	CY	183254	183,000
2	Sand/Gravel Fill Type A in Core	SF	265	906	1171	CY	236835	237,000
2	Sand/Gravel Fill Type A in Shell	SF			0	CY	0	0
3	Sand/Gravel Shell Type B	SF			15	CY	3009	3,000
5	Rip Rap	SF			627	CY	126866	127,000
6	Stone Column	FT/Row			0	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	FT			74	SF	402948	403,000
8	Wick Drains	FT			394	FT	429986	430,000

SECTION E Mid Sea Barrier-Non Seismic (Sea Floor Elevation -245 to -260 east, with average elevation -252.5)

Crest Elevation=-245: Crest Width=30'

H_e(Embankment Height)(feet): 11.5

H_f(Foundation Height)(feet): 5.5

H_s(Seafloor Deposits Height)(feet): 4

N₁: Number of Stone Column at Upstream Slope 0

Length of Embankment (feet) 2366

Structural Height (feet) 17

No.	Item	Unit	Embankment	Foundation	Total	Unit	Total	Total
1	Dredge of Sea Floor Deposits	SF			628	CY	55031	55,000
1	Dredge of Soft Lacustrine Deposits	SF			325	CY	28436	28,000
2	Sand/Gravel Fill Type A in Core	SF	309	325	634	CY	55546	56,000
2	Sand/Gravel Fill Type A in Shell	SF			0	CY	0	0
3	Sand/Gravel Shell Type B	SF			27	CY	2338	2,000
5	Rip Rap	SF			670	CY	58729	59,000
6	Stone Column	FT/Row			0	FT	0	0
7	Installation of SCB Wall/per foot of dam alignment	FT			57	SF	134862	135,000
8	Wick Drains	FT			100	FT	47107	47,000