

Appendix F.

Construction Schedules and Equipment Lists

Alternative No. 1 - Port Development and Environmental Enhancement

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs.(1)
Demolition - NW Slip Fill (5 acres)								
5 Acres								
Main Hoist - Clamshell Dredge	1,200	0.5	1	600	30.6	12	35	252,000
Main Generator - Clamshell Dredge	900	0.5	1	450	23	12	35	189,000
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	4	35	20,160
Backhoe	80	0.5	3	120	2	12	35	50,400
Front End Loader	80	0.5	2	80	18.8	16	35	44,800
Haul Truck (2)	N/A	N/A	12	N/A	N/A	10	35	4,200
Tug Boat	800	0.2	1	160	8	12	35	3,360
Demolition - Berth 243-245 (2 acres)								
2 Acres								
Main Hoist - Clamshell Dredge	1,200	0.5	1	600	30.6	12	77	554,400
Main Generator - Clamshell Dredge	900	0.5	1	450	23	12	77	415,800
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	4	77	44,352
Backhoe	80	0.5	3	120	2	12	77	110,880
Front End Loader	80	0.5	2	80	18.8	16	77	98,560
Haul Truck (2)	N/A	N/A	12	N/A	N/A	5	77	4,620
Tug Boat	800	0.2	1	160	8	12	77	7,392

Alternative No. 1 - Port Development and Environmental Enhancement

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs.(1)
NW Slip Fill Dike Construction (5 Acres)								
Quarry Run Placement - Total 350,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	148	346,320
Derrick Barge Crane	180	0.5	1	90	5	12	148	159,840
Tugboat - Derrick Barge Crane	800	0.25	1	200	11.2	12	148	19,891
Tugboat - Q.R. Transport to site	2,200	0.5	2	2200	110	3	148	48,840
Berth 243-245 Dike Construction (8 Acres)								
Quarry Run Placement - Total 270,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	115	269,100
Derrick Barge Crane	180	0.5	1	90	5	12	115	124,200
Tugboat - Derrick Barge Crane	800	0.25	1	200	11.2	12	115	15,456
Tugboat - Q.R. Transport to site	2,200	0.5	2	2200	110	2	115	25,300
Cabrillo SWH Dike Construction (50 Acres)								
Quarry Run Placement - Total 550,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	206	482,040
Derrick Barge Crane	180	0.5	1	90	5	12	206	222,480
Tugboat - Derrick Barge Crane	800	0.25	1	200	11.2	12	206	27,686
Tugboat - Q.R. Transport to site	2,200	0.5	2	2200	110	2	206	45,320
Quarry Run Dike Summary: Total 1,170,000 Tons, Crew Needed: 11 Persons/Vehicles per Rig, 12 hour Workday								

Notes: (1) For vessel sources, represents total gallons of fuel use.
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NW Slip Dike Construction (5 Acres)								
Armor Stone Placement- Total 25,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	12	28,080
Derrick Barge Crane	180	0.5	1	90	5	12	12	12,960
Tugboat - Derrick Barge Crane	800	0.25	1	200	11.2	12	12	1,613
Tugboat - Armor Transport to site	2,200	0.5	2	2200	110	3	12	3,960
Berth 243-245 Dike Construction (8 Acres)								
Armor Stone Placement- Total 20,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	10	23,400
Derrick Barge Crane	180	0.5	1	90	5	12	10	10,800
Tugboat - Derrick Barge Crane	800	0.25	1	200	11.2	12	10	1,344
Tugboat - Armor Transport to site	2,200	0.5	2	2200	110	3	10	3,300
Armor Rock Dike Summary: Total 45,000 Tons, Crew Needed: 11 Persons/Vehicles per Rig, 12 hour Workday								

Alternative No. 1 - Port Development and Environmental Enhancement

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs.(1)
NW Slip Trench Excavation (5 Acres)								
Sidecast Excavation - Total 50,000 CY								
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	7.0	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	7.0	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	7.0	5,040
Tug Boat	800	0.2	1	160	8	4	7.0	224
Berth 243-245 Trench Excavation (8 Acres)								
Sidecast Excavation - Total 90,000 CY								
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	13.0	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	13.0	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	13.0	9,360
Tug Boat	800	0.2	1	160	8	4	13.0	416
Cabrillo SWH Trench Excavation (50 Acres)								
Sidecast Excavation - Total 40,000 CY								
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	6.0	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	6.0	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	6.0	4,320
Tug Boat	800	0.2	1	160	8	4	6.0	192
Trench Excavation Summary: Total 180,000 CY, Crew Needed: 14 Persons/Vehicles per Rig, 24 hour Workday								

Notes: (1) For vessel sources, represents total gallons of fuel use.
 (2) # Active" are miles/round trip, "Hours/Day" are the daily trips and "Total HP-Hrs." are annual miles.

Alternative No. 1 - Port Development and Environmental Enhancement

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs.(1)
S.W. Slip A#1 Surcharge Removal - Loading								
Load - Total 815,000 CY								
Scrapper			5			12	109	
Backhoe	80	0.5	2	80	2	12	109	104,640
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	12	109	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	12	109	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	109	78,480
Dozer	335	0.5	2	335	18.8	12	109	438,180
Off-Road Truck			4				109	
Water Truck	325	0.5	1	162.5	8.3	12	109	212,550
Grader	180	0.5	1	90	4.6	8	109	78,480
S.W. Slip A#1 Surcharge Removal - Transport								
Transport - Total 815,000 CY								
Scows	N/A	N/A	2	N/A	N/A	12	109	N/A
Tug Boat	800	0.2	1	160	8	4	109	3,488
S.W. Slip A#1 Surcharge Removal - Unload CSWH								
Unload - Total 815,000								
Main Hoist - Clamshell Dredge	1,200	0.5	1	600	30.6	16	109	1,046,400
Main Generator - Clamshell Dredge	900	0.5	1	450	23	16	109	784,800
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	109	78,480
Scows	N/A	N/A	2	N/A	N/A	12	109	N/A
SW Slip Surcharge Summary: Total 815,000 CY, Crew Needed: 33 Persons/Vehicles per Rig, 12 hrs. Workday Loading, 16 hrs Unloading Workday								

Alternative No. 1 - Port Development and Environmental Enhancement

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs.(1)
Clamshell Dredging - Contaminated								
Contaminated Dredge Excavation - Total 85,000								
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	26	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	26	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	26	18,720
Scows	N/A	N/A	2	N/A	N/A	24	26	N/A
Tug Boat	800	0.2	1	160	8	8	26	1,664
Electric Pump	N/A	N/A	1	N/A	N/A	24	26	N/A
Skiff			1			4	26	
Contaminated Dredge Summary: Total 85,000 CY, Crew Needed: 30 Persons/Vehicles, 24 hrs. Workday								

Notes: (1) For vessel sources, represents total gallons of fuel use.
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Hydraulic Dredging - CSWH (50 Acres)								
Dredge/Transport/Unload - Total 845,000								
Electric - Hydraulic Dredge	N/A	N/A	1	N/A	N/A	24	38	N/A
Derrick Hoist	240	0.7	1	168	8.6	4	38	25,536
Derrick Winch	87	0.7	1	60.9	3.1	1	38	2,314
Anchor Barge Winch	180	0.7	1	126	6.4	4	38	19,152
Generator	350	0.6	1	210	10.5	4	38	31,920
Survey Boat			1	0		5	38	-
Crew Boat			1	0		5	38	-
Tug Boat	850	0.5	1	425	21.3	18	38	14,569
Electric Pump	N/A	N/A	1	N/A	N/A	24	38	N/A
Clamshell Dredging - Berth 243/245								
Dredge/Transport/Unload - Total 193,000								
Electric - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	26	N/A
Main Generator - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	26	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	26	18,720
Reel Barge			1	0			26	-
Survey Boat			1	0		5	26	-
Crew Boat			1	0		5	26	-
Scows	N/A	N/A	2	N/A	N/A	24	26	N/A
Tug Boat	800	0.2	1	160	8	8	26	1,664
Electric Pump	N/A	N/A	1	N/A	N/A	24	26	N/A
Clamshell Dredging - NW Slip								
Dredge/Transport/Unload - Total 78,000								
Electric - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	11	N/A
Main Generator - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	11	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	11	7,920
Reel Barge			1	0			11	-
Survey Boat			1	0		5	11	-
Crew Boat			1	0		5	11	-
Scows	N/A	N/A	2	N/A	N/A	24	11	N/A
Tug Boat	800	0.2	1	160	8	8	11	704
Electric Pump	N/A	N/A	1	N/A	N/A	24	11	N/A
Clamshell Dredging - Open Water Disposal at LA 2								
Dredge/Transport/Unload - Total 799,000								
Electric - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	200	N/A
Main Generator - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	200	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	200	144,000
Tugboat*	2,200	0.6	4	5,280	264	10	200	528,000
Dredge Summary: Total 1,915,000 CY, Crew Needed: 30 Persons/Vehicles, 24 hrs. Workday								

* Dredge slurry assumed to be 40% water, resulting in a daily water bulked disposal volume to LA-3 of 8,000 cy. At a barge capacity of 2,000 cy, this requires 4 daily barge trips. At a distance of 25 nautical miles and a speed of 5 knots, each round trip would take 10 hours.

- Notes: (1) For vessel sources, represents total gallons of fuel use.
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Alternative No. 2 - Environmental Enhancement and Ocean Disposal

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs. (1)
Cabrillo SWH Dike Construction (50 Acres)								
Quarry Run Placement - Total 550,000 Tons								
Barge Equipment	195	0.5	2	195	10.9	12	206	482,040
Demick Barge Crane	180	0.5	1	90	5	12	206	222,480
Tugboat - Demick Barge Crane	800	0.25	1	200	11.2	12	206	27,686
Tugboat - Q.R. Transport to site	2,200	0.5	2	2,200	110	2	206	45,320
Quarry Run Dike Summary: Total 550,000 Tons, Crew Needed: 11 Persons/Vehicles per Rig, 12 hour Workday								

Alternative No. 2 - Environmental Enhancement and Ocean Disposal

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs. (1)
Cabrillo SWH Trench Excavation (50 Acres)								
Sidecast Excavation - Total 40,000 CY								
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	6.0	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	24	6.0	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	6.0	4,320
Tug Boat	800	0.2	1	160	8	4	6.0	192
Trench Excavation Summary: Total 40,000 CY, Crew Needed: 14 Persons/Vehicles per Rig, 24 hour Workday								

Alternative No. 2 - Environmental Enhancement and Ocean Disposal

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs. (1)
S.W. Slip A#1 Surcharge Removal - Loading								
Load - Total 815,000 CY								
Scraper			5			12	109	
Backhoe	80	0.5	2	80	2	12	109	104,640
Main Hoist - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	12	109	N/A
Main Generator - Clamshell Dredge (Electric)	N/A	N/A	1	N/A	N/A	12	109	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	109	78,480
Dozer	335	0.5	2	335	18.8	12	109	438,180
Off-Road Truck			4				109	
Water Truck	325	0.5	1	162.5	8.3	12	109	212,550
Grader	180	0.5	1	90	4.6	8	109	78,480
S.W. Slip A#1 Surcharge Removal - Transport								
Transport - Total 815,000 CY								
Scows	N/A	N/A	2	N/A	N/A	12	109	N/A
Tug Boat	800	0.2	1	160	8	4	109	3,488
S.W. Slip A#1 Surcharge Removal - Unload CSWH								
Unload - Total 815,000								
Main Hoist - Clamshell Dredge	1,200	0.5	1	600	30.6	16	109	1,046,400
Main Generator - Clamshell Dredge	900	0.5	1	450	23	16	109	784,800
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	109	78,480
Scows	N/A	N/A	2	N/A	N/A	12	109	N/A
SW Slip Surcharge Summary: Total 815,000 CY, Crew Needed: 33 Persons/Vehicles per Rig, 12 hrs. Workday Loading, 16 hrs Unloading Workday								

Notes: (1) For vessel sources, represents total gallons of fuel use.
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Alternative No. 2 - Environmental Enhancement and Ocean Disposal

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs. (1)
Contaminated Dredge Excavation - Total 85,000								
Clamshell Dredging - Contaminated								
Main Hoist - Clamshell Dredge with environmental bucket	N/A	N/A	1	N/A	N/A	24	26	N/A
Main Generator - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	26	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	26	18,720
Scows	N/A	N/A	2	N/A	N/A	24	26	N/A
Tug Boat	800	0.2	1	160	8	8	26	1,664
Electric Pump	N/A	N/A	1	N/A	N/A	24	26	N/A
Skiff			1			4	26	
Dozer	335	0.5	2	335	17.1	8	26	69,680
Grader	180	0.5	2	180	9.2	8	26	37,440
Compactor	250	0.33	2	165	8.4	8	26	34,320
Water Truck	240	0.5	1	120	6.1	8	26	24,960
Contaminated Dredge Summary: Total 85,000 CY, Crew Needed: 30 Persons/Vehicles, 24 hrs. Workday								

Alternative No. 2 - Environmental Enhancement and Ocean Disposal

Construction Activity/Equipment Type	Power Rating (HP)	Load Factor	# Active	Hourly HP-Hrs.	Fuel Use (Gal/Hr.)	Hours Per Day	Total Work Days	Total HP-Hrs. (1)
Dredge/Transport/Unload - Total 845,000								
Hydraulic Dredging - CSWH (50 Acres)								
Electric - Hydraulic Dredge	N/A	N/A	1	N/A	N/A	24	38	N/A
Demick Hoist	240	0.7	1	168	8.6	4	38	25,536
Demick Winch	87	0.7	1	60.9	3.1	1	38	2,314
Anchor Barge Winch	180	0.7	1	126	6.4	4	38	19,152
Generator	350	0.6	1	210	10.5	4	38	31,920
Survey Boat			1	0		5	38	-
Crew Boat			1	0		5	38	-
Tug Boat	850	0.5	1	425	21.3	18	38	14,569
Electric Pump	N/A	N/A	1	N/A	N/A	24	38	N/A
Dredge/Transport/Unload - Total 1,215,000 CY								
Clamshell Dredging - Open Water Disposal at LA 2/3								
Electric - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	304	N/A
Main Generator - Clamshell Dredge	N/A	N/A	1	N/A	N/A	24	304	N/A
Deck Generator - Clamshell Dredge	240	0.6	1	144	7.3	5	304	218,880
Tugboat*	2,200	0.6	4	5,280	264	10	304	802,560
Dredge Summary: Total 2,060,000 CY, Crew Needed: 30 Persons/Vehicles, 24 hrs. Workday								

* Dredge slurry assumed to be 40% water, resulting in a daily water bulked disposal volume to LA-3 of 8,000 cy. At a barge capacity of 2,000 cy, this requires 4 daily barge trips. At a distance of 25 nautical miles and a speed of 5 knots, each round trip would take 10 hours.

Notes: (1) For vessel sources, represents total gallons of fuel use.
 (2) *# Active" are miles/round trip, "Hours/Day" are the daily trips and "Total HP-Hrs." are annual miles.

ID	Alternative 1 Activity	WD	CD	
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640				
C Cabildo S.W.H. 50 Acres				
101	Quarry run 550,000 ton	206	240	120 240 Derrick Barge "LB"
102	Dike Trench Dredging 40,000 cy	6	7	30 37 7 Clanshell Dredging
103	Channel 845,000 cy	38	44	172 241 251 295 Fabricate + Lay 44 Hydraulic Dredging Submerged Line
104	A1 Surcharge - Bottom Dump 815,000 cy	109	127	513 640 127
Berths 243/245 8 Acres				
201	Demolish 2 acre conc wharf	77	89.3	89
202	Quarry run dike 270,000 tons	115	133	127 216 260 304 89 Derrick Barge "LA" 44 Derrick Barge "LA" Rock to -15' Rock -15' to +11'
203	Trench for dike 90,000 cy	13	15	96 111 15 Clanshell Dredging
204	Place Contaminated From Berths 85,000 cy	26	30	223 253 30 Clanshell Dredging
205	from berths 193,000 cy	26	30	311 341 30 Clanshell Dredging
206	A-500 Stone 20,000 tons	10	12	348 360 12 Derrick Barge "LA"
NW Slip 5 acres				
301	Demolish 5 acre conc wharf	35	41	89 130 41
302	Quarry run dike / A-500 350,000 / 25,000 ton	148 12	172 14	250 365 422 436 115 57 14 Rock to -15' Rock -15' to +11' A-500 Derrick Barge "LB"
303	Dike Trench (sidecast) 50,000	7	8	137 145 8 Clanshell Dredging
304	from Berths 78,000 cy	11	12	443 456 13 Clanshell Dredging
Open Water				
401	Berth to LA2 444,000 cy	111	128	461 589 128
402	Channel to LA2 355,000 cy	89	102	365 467 102

Alternative 1
Port Development and Environmental Enhancement
SEIS Base Rev 1 12/05/08

Production Rates
Quarry Run below -15' = 2,286 tons/CD
Quarry Run above -15' = 1,522 tons/CD
Armour Stone = 1,714 tons/CD
Hydraulic Dredging = 19,286 cy/CD
Clanshell Dredging = 6,426 cy/CD
Dredging contaminated material = 2,857 cy/CD
Offshore disposal = 4,000 cy/WD

0 40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640

ID	Alternative 2 Activity	WD	CD	
/Cabillo S.W.H. 50 Acres/				
101	Quarry run 550,000 ton	206	240	120 240 Derrick Barge "LB"
102	Dike Trench Dredging 40,000 cy	6	7	30 37 7
103	Channel 845,000 cy	38	44	172 241 251 295 Fabricate + Lay 44 Hydraulic Dredging Submerged Line
104	A1 Surcharge - Bottom Dump 815,000 cy	109	127	513 640 127
/Anchorage Road/				
501	Site Preparation	26	30	30
502	Contaminated from Berth 85,000 cy	26	30	258 288 30 Clamshell Dredging
/Open Water/				
601	Channel to LA2 355,000 cy	89	102	162 286 102
602	Berth to LA2 445,000 cy	111	128	128
603	Berth to LA3 416,000 cy	104	120	128 248 68

Alternative 2
SEIS Base Rev 1 12/05/08
Environmental Enhancement and Ocean Disposal

Production Rates
 Quarry Run below -15' = 2,286 tons/CD
 Quarry Run above -15' = 1,522 tons/CD
 Armour Stone = 1,714 tons/CD
 Hydraulic Dredging = 19,286 cy/CD
 Clamshell Dredging = 6,426 cy/CD
 Dredging contaminated material = 2,857 cy/CD
 Offshore disposal = 4,000 cy/WD