

- 2.677 Yolo County. Yolo County has a slightly higher percentage of total family income than the State (85.3 percent to 84.7 percent) and a correspondingly lower percentage of total income for unrelated individuals (14.7 percent to 15.3 percent).
- 2.678 For wage and salary earners Yolo County has a slightly higher percentage than the State (80.7 percent to 78.4 percent). The percentage of non-farm self employment is lower (7.3 percent to 9.0 percent) and farm self employment is higher than the State average (2.3 percent to .6 percent).
- 2.679 Social Security income is lower than the State average (2.1 percent to 2.4 percent) and welfare and public assistance in the county is .1 percent higher than that of the State (.9 percent).
- 2.680 Those deriving income from "other" is 2.1 percent lower than the State average of 8.7 percent.
- 2.681 The mean income for families and unrelated individuals in Yolo County (\$7,481) is much lower than the State average (\$9,848).
- 2.682 In a percentage breakdown of income by class for the county the figures can be summarized as follows:
- | | %
Yolo County | %
California |
|----------------------|------------------|-----------------|
| \$ 9,999 or less | 53.5 | 45.2 |
| \$10,000 to \$14,999 | 25.8 | 28.0 |
| \$15,000 or more | 20.7 | 26.8 |
- 2.683 In Yolo County the largest segment of the population (79.3 percent) earns less than \$14,999 per annum of which 53.5 percent earns less than \$9,999. The State percentage for this same income group is 45.2 percent or 8.3 percent less. For those earning \$15,000 or more the State average is higher by 6.1 percent.
- 2.684 The percentage of all persons with income less than the poverty level is 15.8 percent as compared to the State average of 11.1 percent. Table II-66 and II-67 present the above income data for Yolo County and California.
- 2.685 (6) Assessed Valuation. The gross total assessed valuation for Sacramento County for the Fiscal Year 1974-1975 is \$1,742,962,419. Land is assessed at \$462,365,673 improvements on lands at \$1,038,868,411. In Yolo County, the gross total assessed valuation was \$358,763,414 with land assessed at \$119,223,211 and improvements on land at \$170,434,085.

TABLE II-66

TOTAL INCOME

YOLO COUNTY AND STATE OF CALIFORNIA

TYPE	TOTAL FOR COUNTY \$	% OF TOTAL	TOTAL FOR CALIFORNIA \$	% OF TOTAL
TOTAL FOR FAMILIES AND UNRELATED INDIVIDUALS	\$273,153,753	100.0	\$72,173,380,149	100.0
TOTAL FOR FAMILIES	\$232,920,849	85.3	\$61,150,344,885	84.7
TOTAL FOR UNRELATED INDIVIDUALS	\$ 40,245,248	14.7	\$11,023,035,264	15.3

FAMILY INCOME

YOLO COUNTY AND STATE OF CALIFORNIA

TYPE	TOTAL FOR COUNTY \$	% OF TOTAL	TOTAL FOR CALIFORNIA \$	% OF TOTAL
TOTAL FOR FAMILIES	\$232,920,849	100.0	\$61,150,344,885	100.0
WAGE OR SALARY	\$187,939,388	80.7	\$47,977,558,524	78.4
NON-FARM SELF EMPLOYED	\$ 17,000,226	7.3	\$ 5,482,083,524	9.0
FARM SELF EMPLOYED	\$ 5,441,415	2.3	\$ 337,425,483	.6
SOCIAL SECURITY	\$ 4,934,105	2.1	\$ 1,444,373,738	2.4
PUBLIC ASSISTANCE OR PUBLIC WELFARE	\$ 2,393,624	1.0	\$ 581,594,745	.9
OTHER	\$ 15,208,025	6.6	\$ 5,338,090,580	8.7

Source: U.S. Department of Commerce, Bureau of the Census. 1970.
General Social and Economic Characteristics of California.

TABLE II-67

DISTRIBUTION OF INCOME
YOLO COUNTY

1970

	County	% of Total	California	% of Total
All families and unrelated indi- viduals	36,513		7,328,754	
Median Income	\$ 5,973		8,279	
Mean Income	\$ 7,481		9,848	
<u>All families</u>	<u>21,889</u>	<u>100.0</u>	<u>5,001,255</u>	<u>100.0</u>
Less than \$1,000	549	2.5	111,268	2.2
\$1,000 to \$1,999	721	3.3	116,312	2.3
\$2,000 to \$2,999	951	4.3	176,746	3.5
\$3,000 to \$3,999	1,136	5.2	215,158	4.3
\$4,000 to \$4,999	1,035	4.7	222,202	4.3
\$5,000 to \$5,999	1,125	5.1	242,986	4.9
\$6,000 to \$6,999	1,480	6.8	264,960	5.3
\$7,000 to \$7,999	1,591	7.3	293,660	5.9
\$8,000 to \$8,999	1,648	7.5	312,881	6.3
\$9,000 to \$9,999	1,469	6.7	311,639	6.2
\$10,000 to \$11,999	2,762	12.6	635,825	12.7
\$12,000 to \$14,999	2,894	13.2	763,148	15.3
\$15,000 to \$24,999	3,561	16.3	1,029,394	20.6
\$25,000 to \$49,999	913	4.2	257,628	5.2
\$50,000 or more	54	.2	47,448	1.0
Median Income	\$ 9,482		\$ 10,732	
Mean Income	\$ 10,641		\$ 12,227	
Families with female head	2,074		574,936	
Mean Income	\$ 5,887		\$ 6,527	
All unrelated individuals	14,624			
Median Income	\$ 1,695		N/A	
Mean Income	\$ 2,752			
Female unrelated individuals	7,166			
Mean Income	\$ 2,247		N/A	
Per capita income of all persons	\$ 2,990		\$ 3,632	
All persons with income less than poverty level	13,863		2,152,716	
% of all persons	15.8		11.1	

Source: U.S. Department of Commerce, Bureau of the Census. 1970.
General Social and Economic Characteristics of California.

E. PORT AND TERMINAL CHARACTERISTICS

1. Region

2.686 a. History. The San Francisco Bay Area complex of harbors and terminals developed over a period exceeding 100 years. In gold rush days, they were initially used to bring in the miners, then supplies and equipment. Next, they became great grain exporting ports, and this was followed by lumber. Later crude petroleum was discovered in the southern San Joaquin Valley and pipelines were built to refineries in the Bay Area, primarily Richmond. This crude, in conjunction with substantial quantities of coastwise crude, became the base for large exports of refined petroleum products. As the area grew, the need for petroleum products in the local area developed and resulted in a slowing down of this export trade. During this period, general cargo trade developed to meet the needs of the area, and to supply domestic and foreign markets as well. While many special terminals developed to meet the specific needs, others, such as Alviso at the southern end of San Francisco Bay, Port Costa, South Vallejo, and important grain terminals along Carquinez Strait, declined in importance. San Francisco developed into a high value general port. Redwood City specialized in bulk cargo of local origin. Oakland continued as a general cargo port for the most part, and now leads the way in the handling of containerized cargo. Richmond developed a port for general cargo as well as bulk cargo facilities. A major oil terminal was also built at Richmond. San Pablo Bay and Mare Island Strait, Carquinez Strait, and Suisun Bay saw the development of many private terminals for handling petroleum, metals, ores, scrap, chemicals, pulp, and other products. The inland ports at Stockton and Sacramento developed into bulk and general cargo ports, each specializing in handling the needs and products of its own areas.

2.687 The San Francisco Bay Area is now one of the major West Coast port systems in the United States. In 1973 the total net tonnage shipped in the Bay Area was about 56 million short tons, as shown in Table II-68. By comparison, the next three largest West Coast port systems shipped the following quantities during 1973:

Los Angeles - Long Beach Harbors	53 million short tons
Puget Sound Area	52 million short tons
Columbia River Basin	27 million short tons

It can be seen that the Bay Area has an active port system. During 1973 the Bay Area handled 3.2 percent of the nationwide total of 1.76 billion short tons. The nationwide total represents all waterborne commerce on United States waterways (198).

TABLE II-68

WATERBORNE COMMERCE SAN FRANCISCO BAY AREA

CALENDAR YEAR 1973

(SHORT TONS)

LOCALITY	FOREIGN		DOMESTIC				TOTAL	PERCENT	THROUGH TRAFFIC*
	IMPORTS	EXPORTS	COASTWISE		INTERNAL RECEIPTS AND SHIPMENTS	LOCAL			
			RECEIPTS	SHIPMENTS					
SAN RAFAEL CREEK, CALIF.,-----	-----	-----	-----	-----	20,344	-----	20,344	.03	-----
Petaluma River, Calif.,-----	-----	-----	-----	-----	251,253	-----	251,253	.37	-----
Napa River, Calif.,-----	-----	-----	-----	-----	2,453,512	73,051	15,264,035	24.16	7,315,584
CARQUINEZ STRAIT, CALIF.,-----	4,983,392	604,431	5,165,039	1,984,610	808,214	-----	2,319,229	3.68	5,582,004
SUISUN BAY CHANNEL, CALIF.,-----	84,209	245,333	468,374	713,099	60,148	-----	60,148	.10	-----
SUISUN CHANNEL, CALIF.,-----	-----	-----	-----	-----	611,977	1,003	2,444,519	3.24	-----
SACRAMENTO RIVER, CALIF.,-----	75,804	1,227,178	-----	128,557	86,864	1,205,155	3,720,593	5.90	59,322
SAN JOAQUIN RIVER, CALIF., AND TRIB., **	351,898	1,165,511	866,765	-----	-----	-----	-----	-----	-----
SAN PABLO BAY AND MARE ISLAND STRAIT, CALIF.,-----	1,235,019	-----	1,587,378	2,020,198	471,669	2,193	5,116,457	8.43	21,659,872
RICHMOND HARBOR, CALIF.,-----	5,243,870	615,582	5,598,698	4,514,655	1,819,151	467,880	18,259,836	28.94	-----
OAKLAND HARBOR, CALIF.,-----	1,481,028	1,689,894	1,273,658	1,741,910	1,223,057	5,132	7,414,679	11.75	-----
NE-ARK SLOUGH, CALIF.,-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
COYOTE HILL SLOUGH, CALIF.,-----	-----	-----	-----	-----	1	-----	1	.01	-----
ALVISO SLOUGH, CALIF.,-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
REDWOOD CITY, CALIF.,-----	66,684	155,915	18,947	9,000	217,421	-----	467,967	.74	-----
SAN FRANCISCO HARBOR, CALIF.,-----	1,595,886	1,195,289	105,793	77,734	1,509,604	1,439	4,485,745	7.11	-----
SAN FRANCISCO BAY, OTHER PORTS, CALIF.,-----	42,304	-----	13,007	139,317	3,272,935	22,851	3,490,409	5.53	-----
BERKELEY, CALIF.,-----	-----	-----	-----	-----	1,058	-----	1,058	.01	-----
TOTAL (UNADJUSTED)-----	15,160,094	6,899,133	15,097,659	11,415,944	13,905,494	617,949	63,096,273	-----	34,816,782
PERCENT (UNADJUSTED)-----	24.03	10.93	23.93	18.09	22.04	.98	-----	100.00	-----
NET VOLUME OF TONNAGE FOR THE AREA***-----	15,160,094	6,899,133	15,097,659	11,415,944	6,955,704	617,949	56,146,483	-----	-----
PERCENT (ADJUSTED)-----	27.00	12.29	26.89	20.33	12.39	1.10	-----	100.00	-----

* NOT INCLUDED IN THE TOTAL TONNAGE OF THE BAY AND DELTA AREA.

** TRIBUTARIES TO SAN JOAQUIN RIVER INCLUDE KOKELUMNE, MIDDLE, AND OLD RIVERS.

*** ADJUSTED TO NET VOLUME BY EXCLUDING ONE-HALF OF INTERNAL TRAFFIC MOVED BETWEEN PORTS AND WATERWAYS OF THE SAN FRANCISCO BAY AND DELTA AREAS.

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.

2.688 Within the Bay Area, the predominant commodity shipped is petroleum, representing over 70 percent of all shipping. The importance of this resource and other energy resources is evident nationwide. Petroleum products, coal and coke represented 55 percent of all 1973 shipping on United States waterways.

2.689 International trade is also an important aspect of Bay Area shipping. Foreign commerce accounts for about one-fourth of the total tonnage. Most of the foreign commerce is with the Far East, with Japan being the major trading partner. Over half of all exports go to Japan, an indication of the importance of Japanese trade to the Bay Area economy.

2.690 Total shipping tonnage for the Bay Area grew at a compounded rate of about 2.1 percent per year from 1950 to 1970, for a total increase of about 52 percent over the two decades (9). Based on this historic rate of increase, total shipping in 1975 will be an estimated 58.6 million short tons.

2.691 b. Main Ship Channel. A peculiar physical aspect of San Francisco Bay is its narrow ocean entrance known as the Golden Gate. Outside this entrance is an arc-shaped sandbar called the San Francisco Bar, which presents a barrier to deep-draft vessels. The Main Ship Channel is the only deepwater passage through the Bar.

2.692 As the only ocean entrance to San Francisco Bay, the Main Ship Channel (shown on Plate I-3) is used by nearly all oceangoing shippers in the Bay Area, transporting a large variety of commodities. Listed below in Table II-69 are historic shipping statistics for a 10-year period for this area:

TABLE II-69
WATERBORNE COMMERCE
SAN FRANCISCO BAY ENTRANCE

SECTION INCLUDED: BONITA, MAIN SHIP AND SOUTH CHANNELS. CONTROLLING DEPTHS: BONITA CHANNEL, 39 FEET; SOUTH CHANNEL, 33 FEET; MAIN SHIP CHANNEL, 52.6 FEET. PROJECT DEPTHS: MAIN SHIP CHANNEL, 55 FEET, BONITA AND SOUTH CHANNELS, NO FEDERAL PROJECT.

COMPARATIVE STATEMENT OF TRAFFIC
(SHORT TONS)

YEAR	FOREIGN THROUGH		DOMESTIC THROUGH		TOTAL	YEAR	FOREIGN THROUGH		DOMESTIC THROUGH		TOTAL
	UPBOUND	DOWNBOUND	UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND	UPBOUND	DOWNBOUND	
1964-----	7,204,529	5,749,024	10,635,089	7,518,650	31,107,292	1969-----	6,961,358	6,267,655	17,264,288	9,335,419	39,834,720
1965-----	7,035,371	5,874,523	12,084,895	8,125,984	33,120,773	1970-----	6,252,670	6,588,681	16,799,111	10,009,977	39,650,439
1966-----	6,361,841	5,584,940	13,208,717	8,420,987	33,576,485	1971-----	9,185,632	5,367,765	15,505,348	10,311,471	40,373,263
1967-----	5,944,067	5,616,000	12,787,653	8,257,355	32,605,075	1972-----	11,456,932	5,145,827	16,458,868	11,499,272	44,560,899
1968-----	6,116,563	5,897,782	15,339,572	8,317,053	35,670,970	1973-----	15,160,094	6,899,133	19,103,573	11,415,944	48,578,744

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.

Commerce tonnage through the Bay entrance has increased at a compounded rate of approximately 5.1 percent per year since 1964, for a total increase of 69 percent over the last decade. Approximately 78 percent of all Bay Area shipping passes through the Main Ship Channel.

2. Commercial Ports.

a. Port of San Francisco.

2.693 (1) General. The Port of San Francisco has 42 deepwater piers extending along the city's waterfront for seven miles. Finger piers are still utilized on the northern waterfront, but on the southern waterfront modern terminals have been built in the Islais Creek area. The port has approximately 650 acres of cargo-handling area, which accommodates more than 200 ships a month, and terminals that handle specialized cargo. The Port of San Francisco handles nearly every type of cargo shipment: breakbulk, containerized, unitized, liquid and dry bulk, LASH, and Roll On-Roll Off (Ro-Ro). Millions of tons of high-value cargo cross the docks annually (Table II-70).

2.694 (2) Islais Creek Entrance Channel. The present Islais Creek Entrance Channel has a depth of 35 feet and is used by most shipping traffic entering Islais Creek or using the Army Street Terminal. Once through the approach area, ships are either maneuvered to the left or right along a lateral channel of 40-foot depth or they continue up Islais Creek Channel (Plate I-4).

2.695 Pier 80 on the north of Islais Creek is a \$27 million containerized cargo facility opened in 1967. This nine-berth deepwater terminal includes four 200,000 square-foot cargo sheds, a 30-acre container depot, and a 35-ton PACECO container crane to load and discharge container vessels. States Steamship Company is the major tenant of this facility. Upstream from the Third Street Bridge is a copra-handling dock operated at Pier 84 by Cargill, Inc., adjacent to their copra processing plant. Texaco Company also uses Pier 84 for petroleum shipping and storage. At Pier 86 the Shell Oil Company also has a petroleum shipping and receiving wharf. Pier 88, opposite Pier 84, is not in use at this time.

2.696 Downstream from the bridge on the south side of Islais Creek is the Port of San Francisco's Grain Terminal at Pier 90. This facility is leased to Stockton Elevators for the receiving and shipping of bulk and sacked grain, feed, chemicals, and fertilizers. A recent \$6 million rebuilding program has doubled capacities of the elevators to two million bushels and more than tripled the rate of loading. Automated facilities for this terminal can now load a bulk carrier at up to 1,500 tons per hour. This facility handles more than 600,000 tons of grain per year. Of this amount, the sorghum grain shipped from the Port of Stockton for the period 1965-1970 averaged about 125,000 short tons annually. Stockton Elevators is moving its entire vessel-loading operation from Stockton to Islais Creek. Annual shipments of sorghum are expected to increase to 275,000 short tons by 1975.

TABLE II-70

WATERBORNE COMMERCE
SAN FRANCISCO HARBOR, CALIF.

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	PASSENGERS	ADDITIONAL TRAFFIC CAR FERRY-RAILROAD CARS			YEAR	TONS	PASSENGERS	ADDITIONAL TRAFFIC CAR FERRY-RAILROAD CARS		
			EMPTY	LOADED	TOTAL				EMPTY	LOADED	TOTAL
1964--	4,500,607	50,829	-----	-----	-----	1969--	4,263,710	35,530	27,201	34,015	61,216
1965--	4,989,705	42,917	-----	-----	-----	1970--	3,739,008	27,890	23,736	31,839	55,575
1966--	4,961,489	46,882	-----	-----	-----	1971--	2,099,729	24,193	21,375	26,274	47,649
1967--	3,973,919	33,889	-----	-----	-----	1972--	2,589,746	23,626	21,199	24,323	45,522
1968--	4,402,902	37,284	16,791	20,645	37,436	1973--	4,489,745	27,630	16,758	20,917	37,675

FREIGHT TRAFFIC, 1973

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		COASTWISE		DOMESTIC		LOCAL
		IMPORTS	EXPORTS	RECEIPTS	SHIPMENTS	INTERNAL		
						RECEIPTS	SHIPMENTS	
TOTAL-----	4,485,745	1,595,886	1,195,289	105,793	77,734	407,533	1,102,071	1,439
0101 COTTON, RAW-----	27,754	114	26,798	-----	-----	842	-----	-----
0102 BARLEY AND RYE-----	143	-----	143	-----	-----	-----	-----	-----
0103 CORN-----	1,246	29	440	-----	777	-----	-----	-----
0104 OATS-----	11,818	-----	9,854	-----	-----	5,964	-----	-----
0105 RICE-----	82,560	2	63,863	-----	3,565	15,130	-----	-----
0106 SORGHUM GRAINS-----	27,617	-----	26,803	-----	-----	814	-----	-----
0107 WHEAT-----	189,276	-----	188,462	-----	-----	814	-----	-----
0111 SOYBEANS-----	3	-----	3	-----	-----	-----	-----	-----
0119 OILSEEDS, NEC-----	183,673	163,821	11,034	-----	-----	8,818	-----	-----
0121 TOBACCO, LEAF-----	105	74	31	-----	-----	-----	-----	-----
0122 HAY AND FODDER-----	9,459	2	8,087	-----	-----	1,370	-----	-----
0129 FIELD CROPS, NEC-----	2,561	326	2,229	-----	6	-----	-----	-----
0131 FRESH FRUITS AND TREE NUTS-----	44,614	361	42,857	-----	1,055	-----	341	-----
0133 COFFEE-----	142,387	138,874	1,259	2,254	-----	-----	-----	-----
0134 COCOA BEANS-----	25,572	25,128	-----	444	-----	-----	-----	-----
0141 FRESH AND FROZEN VEGETABLES-----	9,321	880	7,237	-----	1,195	-----	9	-----
0151 LIVE ANIMALS-----	39	-----	27	-----	-----	12	-----	-----
0161 ANIMALS AND PRODUCTS, NEC-----	1,325	832	443	-----	50	-----	-----	-----
0191 MISCELLANEOUS FARM PRODUCTS-----	368	340	28	-----	-----	-----	-----	-----
0841 CRUDE RUBBER AND ALLIED GUMS-----	4,003	3,945	58	-----	-----	-----	-----	-----
0861 FOREST PRODUCTS, NEC-----	970	715	170	7	-----	-----	78	-----
0911 FRESH FISH, EXCEPT SHELLFISH-----	6,789	2,088	315	327	129	3,930	-----	-----
0912 SHELLFISH, EXCEPT PREPARED-----	87	-----	-----	-----	22	65	-----	-----
1011 IRON ORE AND CONCENTRATES-----	32	32	-----	-----	-----	-----	-----	-----
1021 COPPER ORE AND CONCENTRATES-----	1,421	-----	1,421	-----	-----	-----	-----	-----
1051 ALUMINUM ORES, CONCENTRATES-----	2,933	2,933	-----	-----	-----	-----	-----	-----
1091 NONFERROUS ORES, CONCENT, NEC-----	982	980	2	-----	-----	-----	-----	-----
1121 COAL AND LIGNITE-----	29	-----	29	-----	-----	-----	-----	-----
1311 CRUDE PETROLEUM-----	633,173	601,869	-----	31,304	-----	-----	-----	-----
1411 LIMESTONE-----	36,909	36,879	30	-----	-----	-----	-----	-----
1412 BUILDING STONE, UNWORKED-----	94	94	-----	-----	-----	-----	-----	-----
1442 SAND, GRAVEL, CRUSHED ROCK-----	2,597	-----	2,363	-----	234	-----	-----	-----
1451 CLAY-----	15,720	-----	11,699	-----	-----	4,025	-----	-----
1479 NATURAL FERTILIZER MATS, NEC-----	23	23	-----	-----	-----	-----	-----	-----
1491 SALT-----	1,713	21	1,283	-----	409	-----	-----	-----
1492 SULPHUR, DRY-----	82	-----	82	-----	-----	-----	-----	-----
1494 GYPSUM, CRUDE AND PLASTERS-----	63	-----	-----	-----	63	-----	-----	-----
1499 NONMETALLIC MINERALS, NEC-----	26,295	2,059	23,026	-----	-----	1,210	-----	-----
1911 ORDNANCE AND ACCESSORIES-----	90	8	82	-----	-----	-----	-----	-----
2011 MEAT, FRESH, CHILLED, FROZEN-----	25,517	17,971	5,190	-----	2,356	-----	-----	-----
2012 MEAT AND PRODUCTS, NEC-----	8,665	6,858	1,694	-----	113	-----	-----	-----
2014 TALLOW, ANIMAL FATS AND OILS-----	63,079	-----	63,079	-----	-----	-----	-----	-----
2015 ANIMAL BY-PRODUCTS, NEC-----	5,187	59	5,128	-----	-----	-----	-----	-----
2021 DAIRY PRODUCTS, NEC-----	5,335	487	2,618	-----	271	1,728	-----	31
2022 DRIED MILK AND CREAM-----	4,475	176	3,530	-----	-----	769	-----	-----
2031 FISH AND SHELLFISH, PREPARED-----	6,080	3,326	2,745	-----	5	-----	-----	4
2034 VEGETABLES AND PREP, NEC-----	46,079	13,874	24,180	4,867	1,397	126	1,635	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	86,819	42,545	30,046	12,790	-----	388	-----	750
2041 WHEAT FLOUR AND SEMOLINA-----	4,879	97	4,094	-----	-----	688	-----	-----
2042 PREPARED ANIMAL FEEDS-----	82,995	638	42,590	-----	1,444	38,323	-----	-----
2049 GRAIN MILL PRODUCTS, NEC-----	8,594	753	6,543	-----	499	799	-----	-----
2061 SUGAR-----	1,685	812	334	-----	109	-----	430	-----
2081 ALCOHOLIC BEVERAGES-----	14,718	6,993	4,175	-----	3,562	-----	28	-----
2091 VEGETABLE OILS, MARG, SHORT-----	19,519	9,583	9,857	-----	79	-----	-----	-----
2094 GROCERIES-----	5,713	-----	-----	-----	5,713	-----	-----	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	85,374	27,881	53,336	1,400	2,184	-----	572	-----
2111 TOBACCO MANUFACTURES-----	631	12	428	-----	191	-----	-----	-----
2111 BASIC TEXTILE PRODUCTS-----	9,285	7,799	1,410	2	39	-----	35	-----
2212 TEXTILE FIBERS, NEC-----	3,559	1,093	2,466	-----	-----	-----	-----	-----
2311 APPAREL-----	11,554	10,411	1,006	7	16	-----	114	-----
2411 LOGS-----	458	12	444	2	-----	-----	-----	-----
2413 FUEL WOOD, CHARCOAL, WASTES-----	208	1	122	-----	85	-----	-----	-----
2414 TIMBER, POSTS, POLES, PILING-----	3,073	7	2,984	-----	82	-----	-----	-----
2416 WOOD CHIPS, STAVES, MOLDINGS-----	986	942	44	-----	-----	-----	-----	-----
2421 LUMBER-----	19,946	6,144	11,021	-----	1,362	598	821	-----
2431 VENEER, PLYWOOD, WORKED WOOD-----	7,524	2,901	2,157	-----	505	-----	1,961	-----
2491 WOOD MANUFACTURES, NEC-----	13,003	3,556	9,204	-----	212	7	24	-----

TABLE II-70 (Cont'd)

SAN FRANCISCO HARBOR, CALIF.--CONTINUED

FREIGHT TRAFFIC, 1973--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		COASTWISE		DOMESTIC		LOCAL
		IMPORTS	EXPORTS	RECEIPTS	SHIPMENTS	RECEIPTS	SHIPMENTS	
2511 FURNITURE AND FIXTURES-----	3,791	2,189	433	146	623	4	396	
2611 PULP-----	23,460	21,385	2,075					
2621 STANDARD NEWSPRINT PAPER-----	225,004	224,683	7		314			
2631 PAPER AND PAPERBOARD-----	17,850	4,300	11,785		1,749	16		
2691 PULP AND PAPER PRODUCTS, NEC-----	6,533	1,792	3,814	5	770		152	
2711 PRINTED MATTER-----	2,932	581	2,351					
2811 CRUDE TAR, OIL, GAS PRODUCTS-----	22		22					
2812 DYES, PIGMENT, TANNING MATS-----	1,118	971	147					
2813 ALCOHOLS-----	2				5			
2816 RADIOACTIVE MATERIALS, WASTES-----	80,285	9,755	49,698	27	402	20,403		
2819 BASIC CHEMICALS AND PROD, NEC-----	11,063	992	10,011					
2821 PLASTIC MATERIALS-----	491	2	479					
2822 SYNTHETIC RUBBER-----	656	18	638					
2823 SYNTHETIC (MAN-MADE) FIBERS-----	3,043	31	2,968		19		25	
2831 DRUGS-----	5,835	166	4,740		929			
2841 SOAP-----	2,982	23	2,456		498	5		
2851 PAINTS-----	152	57	95					
2861 GUM AND WOOD CHEMICALS-----	5,389		101		326	4,962		
2871 NITROGENOUS CHEM FERTILIZERS-----	22,803		22,803					
2872 POTASSIC CHEM FERTILIZERS-----	38		38					
2873 PHOSPHATIC CHEM FERTILIZERS-----	3,465	37	3,371		57			
2876 INSECTICIDES, DISINFECTANTS-----	1,486	25	1,461					
2879 FERTILIZER AND MATERIALS, NEC-----	24,655	1,687	16,929		24	6,015		
2891 MISCELLANEOUS CHEMICAL PROD-----	1,033		32			435	566	
2911 GASOLINE-----	14,640		133			14,640		
2912 JET FUEL-----	133							
2913 KEROSENE-----	39,446	19,783	122			19,541		
2914 DISTILLATE FUEL OIL-----	262,638	188	23,481		4,036	229,214	4,280	1,439
2915 RESIDUAL FUEL OIL-----	22,610	2	22,517		80	11		
2916 LUBRICATING OILS AND GREASES-----	1				1			
2917 NAPHTHA, PETROLEUM SOLVENTS-----	160				160			
2918 ASPHALT, TAR, AND PITCHES-----	617		152		465			
2921 LIQUEFIED GASES-----	967		890		117			
2951 ASPHALT BUILDING MATERIALS-----	416	170	246					
2991 PETROLEUM AND COAL PROD, NEC-----	9,444	5,295	3,897	26	187		79	
3011 RUBBER AND MISC PLASTICS PROD-----	10,157	9,655	477				25	
3111 LEATHER AND LEATHER PRODUCTS-----	16,314	8,787	3,862	2	122		3,541	
3211 GLASS AND GLASS PRODUCTS-----	1,234	27	1,114		93			
3241 BUILDING CEMENT-----	5,237	1,293	3,446	7	491			
3251 STRUCTURAL CLAY PRODUCTS-----	93		40		53			
3271 LIME-----	749							
3281 CUT STONE AND STONE PRODUCTS-----	6,699	4,809	1,688		224		10	
3291 MISC NONMETALLIC MINERAL PROD-----	7		7					
3312 SLAG-----	49,054		49,054					
3313 COKE, PET ASPHALTS, SOLVENTS-----	516	51	442				23	
3314 IRON AND STEEL PRIMARY FORMS-----	8,990	1,793	7,120		77			
3315 IRON, STEEL SHAPES, EXC SHEET-----	34,443	4,010	30,030		398		45	
3316 IRON AND STEEL PLATES, SHEETS-----	14,238	5,681	4,894		2,452	25	1,186	
3317 IRON AND STEEL PIPE AND TUBE-----	5,141	4,422	161				558	
3318 FERROALLOYS-----	12,760	3,839	6,659		36	2,147	79	
3319 IRON AND STEEL PRODUCTS, NEC-----	4,950	3,659	1,261		20		10	
3321 NONFERROUS METALS, NEC-----	1,512	200	1,121	12	189		40	
3322 COPPER ALLOYS, UNWORKED-----	5,057	4,795	227		35			
3323 LEAD AND ZINC, UNWORKED-----	3,872	43	3,754		75			
3324 ALUMINUM AND ALLOYS, UNWORKED-----	29,617	11,642	8,284	325	4,257	960	4,149	
3411 FABRICATED METAL PRODUCTS-----	78,180	11,354	61,501	1,040	3,185	622	478	
3511 MACHINERY, EXCEPT ELECTRICAL-----	39,998	23,456	15,808	17	591		126	
3611 ELECTRICAL MACH AND EQUIP-----	59,346	39,258	19,746	30	3,068	1,244		
3711 MOTOR VEHICLES, PARTS, EQUIP-----	655	3	622	20		10		
3721 AIRCRAFT AND PARTS-----	50,248	735	78	49,427	7		1	
3731 SHIPS AND BOATS-----	5,717	3,925	1,497	5	2		328	
3791 MISC TRANSPORTATION EQUIPMENT-----	3,557	1,179	2,321	2	38	12	5	
3811 INSTR, TIME, PHOTO, OPT GOODS-----	13,685	8,747	4,587	2	57		292	
3911 MISC MANUFACTURED PRODUCTS-----	58,444		45,962	16		12,466		
4011 IRON AND STEEL SCRAP-----	5,787	24	5,745		18			
4012 NONFERROUS METAL SCRAP-----	700	93	607					
4022 TEXTILE WASTE, SCRAP, SWEEP-----	4,574		4,574					
4024 PAPER WASTE AND SCRAP-----	1,078,420						1,078,420	
4029 WASTE AND SCRAP, NEC-----	38,263	4,209	475	1,009	20,180	11,966	424	
4112 COMMODITIES, NEC-----	3,600		3,600					
9999 DEPARTMENT OF DEFENSE AND SCI-----								

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.

2.697 Pier 92, on the south side of Islais Creek, is leased to ABC Automotive, Baker Commodities, and Royal Tallow. It is used for receiving automobiles and receiving bulk animal and vegetable oils.

2.698 Immediately south of Islais Creek at Pier 96 is the LASH (Lighter-Aboard-Ship) Container Terminal, opened at the beginning of May 1972. This facility, operated by Pacific Far East Line, covers a 50-acre site and has two container cranes, five barge-loading cranes, a 2,000 container storage yard, a 300,000 square-foot transit shed, a 10-acre lighter storage basin and two large berths with prestressed concrete wharves.

2.699 As part of its overall LASH and container terminal plan, the Port of San Francisco is also constructing Pier 94, located between Pier 96 and Islais Creek, and is designing future Pier 98 in India Basin. The Pier 94 project was approved by the Corps under Permit 73-73 and consists of:

(a) dredging 550,000 cubic yards in Islais Creek Channel;

(b) excavation of 1,650,000 cubic yards of bay mud beneath the proposed concrete apron and replacement of it by sand;

(c) placement of 550,000 cubic yards of fill over eight acres;

(d) placement of 200,000 cubic yards of rock fill as facing surface on the sand-retaining structure;

(e) dredging 2,200,000 cubic yards of sand from Alcatraz, Presidio, Telegraph, and West Richmond shoal borrow areas for the above-mentioned sand-retaining structure; and

(f) construction of six acres of pile-supported concrete aprons along Islais Creek Channel.

2.700 The excavation and fill phases are nearing completion and placement of pilings has commenced. When completed, Pier 94 will be a 114 acre, four-berth containerized cargo terminal. The India Basin (Pier 98) project, as described in Corps Public Notice 74-142-111, consists of:

(a) dredging 1,840,000 cubic yards to create a 400-foot wide channel in India Basin, and depositing the sediments at sea;

(b) excavation of 881,000 cubic yards of sand from Alcatraz, Presidio, and Telegraph shoal borrow areas;

(c) placement of 3,000,000 cubic yards of fill, including the above-mentioned sand, over 43 acres;

(d) construction of an embankment near the present PG&E plant;

(e) construction of pile-supported concrete platform; and

(f) eventual construction of several port-oriented buildings on the fill area.

2.701 When Piers 94, 96 and 98 are completed, they will form a two-part containerized cargo operation. The first part will involve 20-30 ton containers which are brought in by trucks or loaded at a dockside container freight station and stored in the container storage yard. Later, they are loaded by a dockside crane onto the ship. This system is already in practice at Piers 80 and 96. The second part of the operation will involve 500-ton containers, called lighters (barges), which are towed from various inland waterways or Bay area points and moored in the lighter basin at future Pier 98 until needed for loading or discharging. Later, they are loaded into the LASH ship's hold by a gantry crane which runs on rails the length of the ship. This two-part operation - small containers and larger LASH containers - is much more efficient than conventional loading and discharging, and is critical to the future of the Port of San Francisco.

2.702 b. Port of Oakland. The importance of the federal channels in Inner and Outer Harbors is shown by the overall level of waterborne commerce and military activity in this area of the Bay (Plate I-10).

2.703 The Port of Oakland, the major user of the harbor, is the largest seaport for general cargo on the Bay, ranks among the two largest container ports in the world and is the largest container port on the West Coast. Occupying 300 acres and 19 miles of shorefront, the Port terminal facilities include 12 deep-draft, container ship berths, 13 general cargo ship berths, 14 container cranes, two mobile cranes, and 1.1 million square feet of transit shed and container freight station space. There are four major marine terminal areas along the Port's waterfront: Outer Harbor, Middle Harbor, Inner Harbor and the Seventh Street Terminal.

- 2.704 In cargo tonnage, the Port has grown from 2.5 million tons in 1962 to over seven million in 1973, with container tonnage about 70 percent of the total. The 1973 tonnage was carried by about 1,200 ships from all parts of the world by more than 40 different steamship lines. The large variety of commodities and tonnages in 1973 that flowed through Oakland Harbor are listed in Table II-71.
- 2.705 c. Port of Richmond. In terms of tonnages handled, the Port of Richmond (Plate I-9) manages the most waterborne commerce of any harbor in San Francisco Bay, and that includes the Ports of San Francisco and Oakland. In 1973, the tonnage traffic was 18,259,836 short tons, up by about 2-1/2 million tons over 1972. The waterborne commerce handled by Richmond Harbor for the last ten years is summarized in Table II-72, which breaks down the 1973 total into foreign and domestic traffic and major commodities handled. About 46 percent of the total consisted of crude petroleum, and of this, almost 55 percent were foreign imports. Other important commodities handled are gasoline, distillate and residual fuel oil, lubricating oils and greases, iron and steel scrap, basic chemicals and chemical products, jet fuel, and kerosene.
- 2.706 Richmond Long Wharf, owned and operated by Standard Oil Company of California, handles the largest traffic tonnage in Richmond Harbor, which is approximately two-thirds of the crude petroleum that moves through the harbor. The four marine terminals under Richmond Port Commission's authority are operated by the City of Richmond. Terminal 1 is located on Garrard Boulevard on Point Richmond South and primarily handles bulk liquids. Petromark is the principal occupant of this facility. Terminals 2 and 3, located on the east side of the inner harbor channel, handle a variety of cargo. Terminal 4, situated at Point San Pablo and served by the Point Orient approach channel, is the transfer point for bulk liquids (primarily molasses, animal oils, and vegetable oils), and petroleum products. The principal operators at this terminal are Pacific Molasses, and Dorward and Sons Company.
- 2.707 In addition to the above facilities, Shipyard 3 and Parr Terminal 5 are important ship cargo transfer points. Shipyard 3 at Point Potrero is leased by the Port Commission to three firms. This facility provides ship repair and modification, foreign auto imports and scrap metal export. Parr Terminal 5, also known as the Ore Dock, is located on the east side of the Lauritzen Channel. Scrap metal and grain are transferred from this terminal. Most types of bulk cargo are also stockpiled here.
- 2.708 Several other terminals and facilities use Richmond Harbor, including 15 petroleum berths (in addition to the Long Wharf) used by Texaco and Union Oil, and Atlantic Richfield Oil.

TABLE II-71

WATERBORNE COMMERCE
OAKLAND HARBOR, CALIF.

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	ADDITIONAL TRAFFIC			YEAR	TONS	ADDITIONAL TRAFFIC		
		CAR FERRY-RAILROAD CARS					CAR FERRY-RAILROAD CARS		
		EMPTY	LOADED	TOTAL			EMPTY	LOADED	TOTAL
1964-----	4,429,562	-----	-----	-----	1969-----	5,879,565	15,133	18,042	33,175
1965-----	5,030,512	-----	-----	-----	1970-----	6,559,745	11,944	15,995	27,939
1966-----	5,187,886	-----	-----	-----	1971-----	9,339,859	8,905	11,345	20,250
1967-----	4,540,029	-----	-----	-----	1972-----	5,907,709	9,163	11,032	20,195
1968-----	4,550,624	2,024	2,956	4,980	1973-----	7,414,679	7,239	8,448	15,687

* PASSENGERS--735.

FREIGHT TRAFFIC, 1973

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		COASTWISE		DOMESTIC		LOCAL
		IMPORTS	EXPORTS	RECEIPTS	SHIPMENTS	INTERNAL		
						RECEIPTS	SHIPMENTS	
TOTAL-----	7,414,679	1,481,028	1,689,894	1,273,658	1,741,910	1,089,981	133,076	5,132
0101 COTTON, RAW-----	90,136	-----	84,834	2,613	2,689	-----	-----	-----
0102 BARLEY AND RYE-----	23	-----	-----	23	-----	-----	-----	-----
0103 CORN-----	2,118	-----	2,007	45	66	-----	-----	-----
0104 OATS-----	4,239	-----	4,239	-----	-----	-----	-----	-----
0105 RICE-----	46,593	3	2,768	228	43,594	-----	-----	-----
0106 SORGHUM GRAINS-----	3,343	-----	53	-----	3,290	-----	-----	-----
0107 WHEAT-----	4,341	-----	30	-----	720	3,591	-----	-----
0111 SOYBEANS-----	4,066	1	4,065	-----	-----	-----	-----	-----
0112 FLAXSEED-----	6	-----	-----	6	-----	-----	-----	-----
0119 OILSEEDS, NEC-----	3,798	782	3,015	-----	1	-----	-----	-----
0121 TOBACCO, LEAF-----	2,886	1,390	199	53	1,244	-----	-----	-----
0122 HAY AND FODDER-----	18,579	110	18,259	105	105	-----	-----	-----
0129 FIELD CROPS, NEC-----	3,720	268	2,883	253	316	-----	-----	-----
0131 FRESH FRUITS AND TREE NUTS-----	63,802	17	21,983	26,658	15,068	76	-----	-----
0132 BANANAS AND PLANTAINS-----	18	16	2	-----	-----	-----	-----	-----
0133 COFFEE-----	42,090	34,505	932	2,826	3,827	-----	-----	-----
0134 COCOA BEANS-----	1,674	1,557	115	-----	2	-----	-----	-----
0141 FRESH AND FROZEN VEGETABLES-----	40,241	1,568	10,894	1,410	26,369	-----	-----	-----
0151 LIVE ANIMALS-----	867	-----	249	70	548	-----	-----	-----
0161 ANIMALS AND PRODUCTS, NEC-----	4,563	511	2,233	344	1,475	-----	-----	-----
0191 MISCELLANEOUS FARM PRODUCTS-----	1,254	802	120	-----	332	-----	-----	-----
0841 CRUDE RUBBER AND ALLIED GUMS-----	2,073	2,014	21	37	1	-----	-----	-----
0861 FOREST PRODUCTS, NEC-----	1,980	1,800	602	188	275	25	-----	-----
0911 FRESH FISH, EXCEPT SHELLFISH-----	12,474	8,411	2,701	564	65	533	-----	-----
0912 SHELLFISH, EXCEPT PREPARED-----	1,806	-----	-----	642	1,162	2	-----	-----
1091 NONFERREROUS ORES, CONCENT, NEC-----	1,882	981	183	42	676	-----	-----	-----
1121 COAL AND LIGNITE-----	330	-----	218	112	-----	-----	-----	-----
1311 CRUDE PETROLEUM-----	335,358	334,928	830	-----	-----	-----	-----	-----
1411 LIMESTONE-----	206	-----	206	-----	-----	-----	-----	-----
1412 BUILDING STONE, UNWORKED-----	144	34	90	20	-----	-----	-----	-----
1442 SAND, GRAVEL, CRUSHED ROCK-----	286,260	17	567	81	1,043	284,592	-----	-----
1451 CLAY-----	26,065	122	25,102	37	804	-----	-----	-----
1479 NATURAL FERTILIZER MATS, NEC-----	103	88	15	-----	-----	-----	-----	-----
1491 SALT-----	4,995	9	547	-----	4,439	-----	-----	-----
1494 GYPSUM, CRUDE AND PLASTERS-----	2,934	-----	-----	142	2,792	-----	-----	-----
1499 NONMETALLIC MINERALS, NEC-----	27,926	1,724	25,144	442	616	-----	-----	-----
1911 ORDNANCE AND ACCESSORIES-----	2,027	13	1	50	1,963	-----	-----	-----
2011 MEAT, FRESH, CHILLED, FROZEN-----	88,967	9,125	44,064	3,965	31,813	-----	-----	-----
2012 MEAT AND PRODUCTS, NEC-----	6,377	4,021	1,441	42	873	-----	-----	-----
2014 TALLOW, ANIMAL FATS AND OILS-----	40,285	-----	39,959	326	-----	-----	-----	-----
2015 ANIMAL BY-PRODUCTS, NEC-----	62,924	566	59,455	2,575	328	-----	-----	-----
2021 DAIRY PRODUCTS, NEC-----	9,226	2,382	1,702	13	5,106	23	-----	-----
2022 DRIED MILK AND CREAM-----	8,093	-----	4,194	225	3,674	-----	-----	-----
2031 FISH AND SHELLFISH, PREPARED-----	10,853	6,635	992	1,944	1,282	-----	-----	-----
2034 VEGETABLES AND PREP, NEC-----	136,063	4,930	44,658	7,159	79,035	155	126	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	654,440	35,776	179,123	409,729	29,688	124	-----	-----
2041 WHEAT FLOUR AND SEMOLINA-----	27,884	20	1,477	24,031	2,356	-----	-----	-----
2042 PREPARED ANIMAL FEEDS-----	118,267	507	59,731	367	57,662	-----	-----	-----
2049 GRAIN MILL PRODUCTS, NEC-----	15,888	574	9,251	1,769	3,495	-----	799	-----
2061 SUGAR-----	123,312	-----	170	4,480	116,164	-----	-----	-----
2062 MOLASSES-----	129,131	1	-----	66,404	3,457	-----	59,287	-----
2081 ALCOHOLIC BEVERAGES-----	105,366	47,958	3,242	2,574	51,564	28	-----	-----
2091 VEGETABLE OILS, MARG, SHORT-----	36,037	7,796	24,571	609	3,065	-----	-----	-----
2092 ANIMAL OILS AND FATS, NEC-----	116	46	4	-----	66	-----	-----	-----
2094 GROCERIES-----	37,710	-----	-----	144	37,566	-----	-----	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	193,283	20,381	52,416	11,897	108,024	569	-----	-----
2111 TOBACCO MANUFACTURES-----	2,956	73	1,162	1,003	718	-----	-----	-----
2211 BASIC TEXTILE PRODUCTS-----	35,062	8,427	12,365	9,336	8,930	4	-----	-----
2212 TEXTILE FIBERS, NEC-----	12,435	192	11,661	3	579	-----	-----	-----
2311 APPAREL-----	36,952	24,326	979	780	10,814	53	-----	-----

TABLE II-71 (Cont'd)

FREIGHT TRAFFIC, 1973--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		COASTWISE		DOMESTIC		LOCAL
		IMPORTS	EXPORTS	RECEIPTS	SHIPMENTS	INTERNAL		
						RECEIPTS	SHIPMENTS	
2411 LUMBS	6,522		6,473	16	33			
2413 FUEL WOOD, CHARCOAL, WASTES	1,053	353	139	29	532			
2414 TIMBER, POSTS, POLES, PILING	3,060		2,764	107	189			
2415 PULPHWOOD, LOGS	14			14				
2416 WOOD CHIPS, STAVES, MOLDINGS	1,207	1,007	197		3			
2421 LUMBER	33,722	4,948	7,468	1,889	18,002	817	598	
2431 VENEER, PLYWOOD, WORKED WOOD	45,369	16,353	1,672	10,484	15,534	1,326		
2491 WOOD MANUFACTURES, NEC	25,338	5,309	8,263	1,630	10,113	16	7	
2511 FURNITURE AND FIXTURES	45,646	8,646	530	17,935	18,196	335	4	
2611 PULP	24,104		3,482	10,431	10,191			
2621 STANDARD NEWSPRINT PAPER	13,346	13,266	13		67			
2631 PAPER AND PAPERBOARD	38,886	7,267	11,062	9,221	11,320		16	
2691 PULP AND PAPER PRODUCTS, NEC	41,616	3,060	1,965	2,652	33,936	3		
2711 PRINTED MATTER	8,693	1,346	2,045	607	4,655			
2810 SODIUM HYDROXIDE	10,117			10,117				
2811 CRUDE TAR, OIL, GAS PRODUCTS	3,603		3,408	170	25			
2812 DYES, PIGMENT, TANNING MATS	1,434	209	714	466	45			
2813 ALCOHOLS	18,182			18,135	47			
2816 RADIOACTIVE MATERIALS, WASTES	77		53	22	2			
2817 BENZENE AND TOLUENE	41			41				
2818 SULPHURIC ACID	82			82				
2819 BASIC CHEMICALS AND PROD, NEC	95,121	13,487	48,161	24,317	8,682		474	
2821 PLASTIC MATERIALS	101,334	3,356	47,417	46,905	3,656			
2822 SYNTHETIC RUBBER	4,355	1,607	1,082	866				
2823 SYNTHETIC (MAN-MADE) FIBERS	3,469	78	1,163	471	1,757			
2831 DRUGS	4,988	389	1,165	2,720	714			
2841 SOAP	25,433	284	4,743	6,534	13,872			
2851 PAINTS	11,636	153	2,343	462	8,673		5	
2861 GUM AND WOOD CHEMICALS	1,172	398	455	260	59			
2871 NITROGENOUS CHEM FERTILIZERS	8,489		13		8,476			
2873 PHOSPHATIC CHEM FERTILIZERS	163		163					
2876 INSECTICIDES, DISINFECTANTS	44,397	459	2,788	2,632	2,794		35,684	
2879 FERTILIZER AND MATERIALS, NEC	1,330	25	607	122	576			
2891 MISCELLANEOUS CHEMICAL PROD	24,997	4,467	12,116	3,957	4,301	38	76	
2911 GASOLINE	71,082		8	17,395	3,371	49,041	1,267	
2912 JET FUEL	195,254			98,741		92,130	4,383	
2913 KEROSENE	135		91	44				
2914 DISTILLATE FUEL OIL	65,891	3,387		5,664	1,701	49,386	5,630	123
2915 RESIDUAL FUEL OIL	891,771	20,878	114	169,547	210,036	476,394	9,987	4,815
2916 LUBRICATING OILS AND GREASES	61,913	3	7,293	49,670	4,976		11	
2917 NAPHTHA, PETROLEUM SOLVENTS	5,273			5,050	223			
2918 ASPHALT, TAR, AND PITCHES	509			198	311			
2951 ASPHALT BUILDING MATERIALS	11,901	680	110	22	11,089			
2991 PETROLEUM AND COAL PROD, NEC	21,396	121	3,578	1,264	15,314		1,119	
3011 RUBBER AND MISC PLASTICS PROD	32,010	19,231	4,388	1,474	6,917			
3111 LEATHER AND LEATHER PRODUCTS	28,364	20,843	2,433	3,488	1,588	12		
3211 GLASS AND GLASS PRODUCTS	33,271	17,976	5,766	2,156	3,878	3,495		
3241 BUILDING CEMENT	1,870	336	392	386	756			
3251 STRUCTURAL CLAY PRODUCTS	21,706	5,490	10,994	954	4,268			
3281 CUT STONE AND STONE PRODUCTS	1,446	419		41	986			
3291 MISC NONMETALLIC MINERAL PROD	59,670	9,037	2,088	338	46,007	2,200		
3311 PIG IRON	5				5			
3312 SLAG	51		51					
3313 COKE, PET ASPHALTS, SOLVENTS	41,850	10	41,840					
3314 IRON AND STEEL PRIMARY FORMS	12,420	3,685	379	21	8,312	23		
3315 IRON, STEEL SHAPES, EXC SHEET	106,723	99,569	2,509	678	3,967			
3316 IRON AND STEEL PLATES, SHEETS	267,721	248,232	9,080	1,433	8,931	45		
3317 IRON AND STEEL PIPE AND TUBE	119,537	94,752	11,329	1,651	10,901	879	25	
3318 FERROALLOYS	2,699	1,795	346			558		
3319 IRON AND STEEL PRODUCTS, NEC	37,014	19,531	3,708	780	12,796	23	176	
3321 NONFERROUS METALS, NEC	15,117	3,752	1,731	4,757	4,877			
3322 COPPER ALLOYS, UNWORKED	7,043	1,397	2,531	2,420	655	40		
3323 LEAD AND ZINC, UNWORKED	3,110	1,036	1,089	629	356			
3324 ALUMINUM AND ALLOYS, UNWORKED	6,659	968	2,694	2,535	462			
3411 FABRICATED METAL PRODUCTS	98,406	61,766	5,244	7,057	21,867	2,422	50	
3511 MACHINERY, EXCEPT ELECTRICAL	145,980	75,654	48,810	8,115	13,098	281	22	
3611 ELECTRICAL MACH AND EQUIP	93,183	37,204	16,748	7,935	31,210	86		
3711 MOTOR VEHICLES, PARTS, EQUIP	104,622	40,131	15,524	6,184	41,539		1,244	
3721 AIRCRAFT AND PARTS	1,686	24	252	12	14	1,258	126	
3731 SHIPS AND BOATS	4,318	1,313	52	5	148	2,800		
3791 MISC TRANSPORTATION EQUIPMENT	10,323	7,278	527	85	2,427	6		
3811 INSTR, TIME, PHOTO, OPT GOODS	6,372	2,024	3,327	566	443		12	
3911 MISC MANUFACTURED PRODUCTS	63,011	24,166	3,468	5,563	29,754	60		
4011 IRON AND STEEL SCRAP	431,376	25	429,546	57				
4012 NONFERROUS METAL SCRAP	40,704	146	33,827	6,255	476			
4022 TEXTILE WASTE, SCRAP, SWEEP	464		349	35	80			
4024 PAPER WASTE AND SCRAP	72,073		69,690	2,264	119			
4029 WASTE AND SCRAP, NEC	198			167	31			
4112 COMMODITIES, NEC	622,721	7,403	630	96,675	505,439	412	11,966	194
9999 DEPARTMENT OF DEFENSE AND SCI	10,408		10,408					

SOURCE: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar Year 1973.

TABLE II-72

WATERBORNE COMMERCE
RICHMOND HARBOR, CALIF.

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	ADDITIONAL TRAFFIC			YEAR	TONS	ADDITIONAL TRAFFIC			
		CAR FERRY-RAILROAD CARS					CAR FERRY-RAILROAD CARS			
		EMPTY	LOADED	TOTAL			EMPTY	LOADED	TOTAL	
1964-----	14,596,370				1969-----	17,438,107	16,833	21,029	37,862	
1965-----	15,449,556				1970-----	14,291,752	13,243	16,545	29,788	
1966-----	15,149,011				1971-----	13,084,809	11,747	13,404	25,151	
1967-----	15,808,606				1972-----	15,650,278	11,365	11,908	23,273	
1968-----	16,230,003	17,482	21,342	38,824	1973-----	18,259,838	8,661	11,935	20,196	

FREIGHT TRAFFIC, 1973

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		DOMESTIC				LOCAL
		IMPORTS	EXPORTS	COASTWISE		INTERNAL		
				RECEIPTS	SHIPMENTS	RECEIPTS	SHIPMENTS	
TOTAL-----	18,259,836	5,243,870	615,582	5,598,698	4,514,655	947,356	871,795	467,880
0101 COTTON, RAW-----	257	-----	257	-----	-----	-----	-----	-----
0103 CORN-----	4	-----	4	-----	-----	-----	-----	-----
0119 OILSEEDS, NEC-----	37,011	-----	-----	-----	-----	37,011	-----	-----
0129 FIELD CROPS, NEC-----	1	-----	1	-----	-----	-----	-----	-----
0141 FRESH AND FROZEN VEGETABLES-----	18	-----	18	-----	-----	-----	-----	-----
0161 ANIMALS AND PRODUCTS, NEC-----	45	-----	45	-----	-----	-----	-----	-----
0191 MISCELLANEOUS FARM PRODUCTS-----	2	2	-----	-----	-----	-----	-----	-----
0861 FOREST PRODUCTS, NEC-----	13	-----	13	-----	-----	-----	-----	-----
0911 FRESH FISH, EXCEPT SHELLFISH-----	24	-----	-----	-----	-----	24	-----	-----
1051 ALUMINUM ORES, CONCENTRATES-----	19,064	19,064	-----	-----	-----	-----	-----	-----
1091 NONFERROUS ORES, CONCENT, NEC-----	18,979	18,979	-----	-----	-----	-----	-----	-----
1311 CRUDE PETROLEUM-----	8,384,680	4,991,647	26,880	3,444,903	174,405	116,522	-----	30,323
1411 LIMESTONE-----	132,363	132,363	-----	-----	-----	-----	-----	-----
1442 SAND, GRAVEL, CRUSHED ROCK-----	27,602	2	-----	-----	-----	27,600	-----	-----
1451 CLAY-----	115	-----	115	-----	-----	-----	-----	-----
1499 NONMETALLIC MINERALS, NEC-----	70	11	99	-----	-----	-----	-----	-----
2011 MEAT, FRESH, CHILLED, FROZEN-----	147	18	129	-----	-----	-----	-----	-----
2014 TALLOW, ANIMAL FATS AND OILS-----	9,040	-----	9,040	-----	-----	-----	-----	-----
2015 ANIMAL BY-PRODUCTS, NEC-----	657	-----	657	-----	-----	-----	-----	-----
2034 VEGETABLES AND PREP, NEC-----	62	-----	62	-----	-----	-----	-----	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	446	24	422	-----	-----	-----	-----	-----
2049 GRAIN MILL PRODUCTS, NEC-----	48	-----	48	-----	-----	-----	-----	-----
2061 SUGAR-----	168,982	-----	-----	-----	-----	168,982	-----	-----
2062 MOLASSES-----	32,738	28,226	-----	-----	-----	4,512	-----	-----
2081 ALCOHOLIC BEVERAGES-----	69	69	-----	-----	-----	-----	-----	-----
2091 VEGETABLE OILS, MARG, SHORT-----	64,971	55,640	6,835	-----	2,496	-----	-----	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	16	12	4	-----	-----	-----	-----	-----
2211 BASIC TEXTILE PRODUCTS-----	35	17	18	-----	-----	-----	-----	-----
2421 LUMBER-----	374	331	43	-----	-----	-----	-----	-----
2431 VENEER, PLYWOOD, WORKED WOOD-----	2,377	2,377	-----	-----	-----	-----	-----	-----
2491 WOOD MANUFACTURES, NEC-----	21	1	20	-----	-----	-----	-----	-----
2511 FURNITURE AND FIXTURES-----	152	96	-----	-----	-----	96	-----	-----
2611 PULP-----	8,653	8,653	-----	-----	-----	-----	-----	-----
2631 PAPER AND PAPERBOARD-----	60	60	-----	-----	-----	-----	-----	-----
2691 PULP AND PAPER PRODUCTS, NEC-----	33	-----	2	31	-----	-----	-----	-----
2711 PRINTED MATTER-----	9	9	-----	-----	-----	-----	-----	-----
2810 SODIUM HYDROXIDE-----	1,400	-----	-----	1,400	-----	-----	-----	-----
2811 CRUDE TAR, OIL, GAS PRODUCTS-----	53,134	-----	48,916	-----	4,218	-----	-----	-----
2813 ALCOHOLS-----	27,702	-----	-----	26,539	1,163	-----	-----	-----
2817 BENZENE AND TOLUENE-----	5,455	-----	-----	2,266	3,189	-----	-----	-----
2819 BASIC CHEMICALS AND PROD, NEC-----	242,610	34,162	72,888	124,379	11,181	-----	-----	-----
2821 PLASTIC MATERIALS-----	6,384	-----	4	1,545	4,835	-----	-----	-----
2841 SOAP-----	111	-----	24	87	-----	-----	-----	-----

TABLE II-72 (Cont'd)

FREIGHT TRAFFIC, 1973--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		COASTWISE		DOMESTIC		LOCAL
		IMPORTS	EXPORTS	INTERNAL				
				RECEIPTS	SHIPMENTS	RECEIPTS	SHIPMENTS	
2851 PAINTS-----	27	27						
2861 GUM AND WOOD CHEMICALS-----	5,584			5,584				
2871 NITROGENOUS CHEM FERTILIZERS-----	33,665			33,665				
2876 INSECTICIDES, DISINFECTANTS-----	2,084			2,084				
2879 FERTILIZER AND MATERIALS, NEC-----	7,268			7,268				
2891 MISCELLANEOUS CHEMICAL PROD-----	989		989					
2911 GASOLINE-----	1,363,028	6,467		499,692	569,960	192,579	31,767	62,963
2912 JET FUEL-----	210,074			32,947	6,680	66,207	97,526	6,714
2913 KEROSENE-----	258,923	162,817		19,254	76,319		133	
2914 DISTILLATE FUEL OIL-----	2,089,475			971,051	976,098	117,697	117,118	307,511
2915 RESIDUAL FUEL OIL-----	3,715,029	103,475	115,774	436,791	2,220,667	159,964	623,509	58,849
2916 LUBRICATING OILS AND GREASES-----	373,433		4,366	65,214	262,851	41,002		
2917 NAPHTHA, PETROLEUM SOLVENTS-----	91,084			56,297	30,641	4,146		
2918 ASPHALT, TAR, AND PITCHES-----	177,908			9,017	168,891			
2921 LIQUEFIED GASES-----	2,802	2,802						
2991 PETROLEUM AND COAL PROD, NEC-----	23,859			6,250	927	15,049	13	1,620
3011 RUBBER AND MISC PLASTICS PROD-----	15	15						
3111 LEATHER AND LEATHER PRODUCTS-----	35	35						
3211 GLASS AND GLASS PRODUCTS-----	137	137						
3251 STRUCTURAL CLAY PRODUCTS-----	55	33	22					
3291 MISC NONMETALLIC MINERAL PROD-----	8	3	1			4		
3313 COKE, PET ASPHALTS, SOLVENTS-----	3,635		3,635					
3314 IRON AND STEEL PRIMARY FORMS-----	119,545			119,549				
3315 IRON, STEEL SHAPES, EXC SHEET-----	3,795	852		2,943				
3316 IRON AND STEEL PLATES, SHEETS-----	83,969	6,142	142	77,685				
3317 IRON AND STEEL PIPE AND TUBE-----	13,258	6,150	1	7,107				
3318 FERROALLOYS-----	12,125	12,125						
3319 IRON AND STEEL PRODUCTS, NEC-----	8,239	37		8,202				
3324 ALUMINUM AND ALLOYS, UNWORKED-----	4		4					
3411 FABRICATED METAL PRODUCTS-----	36,794	14		36,780				
3511 MACHINERY, EXCEPT ELECTRICAL-----	2,212	976	114	172			650	300
3611 ELECTRICAL MACH AND EQUIP-----	12	5	7					
3711 MOTOR VEHICLES, PARTS, EQUIP-----	54,171	49,826	4,345					
3721 AIRCRAFT AND PARTS-----	5		5					
3791 MISC TRANSPORTATION EQUIPMENT-----	152	152						
3811 INSTR, TIME, PHOTO, OPT GOODS-----	5	1	4					
3911 MISC MANUFACTURED PRODUCTS-----	18	16	1			1		
4011 IRON AND STEEL SCRAP-----	320,586		319,507				1,079	
4012 NONFERROUS METAL SCRAP-----	20		20					
4024 PAPER WASTE AND SCRAP-----	141		141					
4112 COMMODITIES, NEC-----	134				134			

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.

Non-petroleum facilities include: the AT&SF ferry slip for barging freight cars to and from San Francisco, C&H Sugar Dock and National Gypsum's dock.

2.709 The City of Richmond is studying modernization of its port facilities. A 964-acre site called "Project Area II-A," which surrounds the Inner Harbor Basin, is being planned for redevelopment as a four-berth container port, commercial and recreation center. The details along with potential environmental impacts are described in the City's Port Area and Marina Master Plan (14).

2.710 d. Port of Redwood City. Redwood City Harbor, the South Bay's only deepwater port, is located on the west side of San Francisco Bay near its southern end, approximately 17 miles from the city of San Francisco (Plate I-14). Port facilities consist of nine piers, wharves and docks. Commercial shipping in this area has declined considerably in recent years, as shown in the table below (Table II-73):

TABLE II-73
WATERBORNE COMMERCE
REDWOOD CITY HARBOR, CALIFORNIA

COMPARATIVE STATEMENT OF TRAFFIC			
YEAR	TONS	YEAR	TONS
1964	3,411,663	1969	2,685,070
1965	3,484,105	1970	2,182,219
1966	3,168,467	1971	919,938
1967	3,022,127	1972	959,443
1968	2,959,781	1973	467,967

FREIGHT TRAFFIC, 1973
(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		DOMESTIC			
		IMPORTS	EXPORTS	COASTWISE		INTERNAL	
				RECEIPTS	SHIPMENTS	RECEIPTS	SHIPMENTS
TOTAL	467,967	66,684	155,915	18,947	9,000	197,136	20,285
0931 MARINE SHELLS, UNMANUFACTURED	7,200						7,200
1411 LIMESTONE	18,096	18,096					
1442 SAND, GRAVEL, CRUSHED ROCK	16,000					16,000	
1479 NATURAL FERTILIZER MATS, NEC	6,063		6,063				
1491 SALT	158,852		149,852		9,000		
2311 APPAREL	17	17					
2911 GASOLINE	167,578			12,880		154,698	
2912 JET FUEL	24,374					24,374	
2913 KEROSENE	48,537	48,537					
2915 RESIDUAL FUEL OIL	2,064					2,064	
3111 LEATHER AND LEATHER PRODUCTS	29	25					
3241 BUILDING CEMENT	6,067			6,067			
3319 IRON AND STEEL PRODUCTS, NEC	1,971						1,971
3911 MISC MANUFACTURED PRODUCTS	9	9					
4011 IRON AND STEEL SCRAP	11,114						11,114
TOTAL TON-MILES	1,412,701						

SOURCE: U.S. Army Corps of Engineers, Waterborne Commerce of the United States, Calendar Year 1973.

- 2.711 Movements of vessels within Redwood City Harbor have similarly shown a marked decrease, declining from 5,205 vessels of all sizes in 1968, to 329 vessels in 1972 (197). Historically, the major commodities shipped have been cement, gypsum, lumber, logs, marine shells, salt and petroleum. Shipments of all these commodities except petroleum and salt are now almost negligible. Ideal Cement Company ended its marine shell and cement shipping operations in 1971, and Hubbard and Johnson Lumber Company and Kaiser Gypsum Company are phasing out their operations. The main 30-foot channel and turning basin is presently required by deep-draft vessels shipping salt and petroleum products. Of the total commerce tons shipped in 1973, 34 percent was salt and 52 percent was petroleum products (calculated from Table II-73). Wharf No. 5, located on the east side of the inner basin, is designed to accommodate large oil tankers and freighters. At the southern end of the inner basin are the storage and bulk loading facilities of Leslie Salt Company. Leslie Salt is phasing out its shipping operation; however, petroleum receipts by the last remaining oil company tenant at the port have remained strong. A new tenant, Markovits and Fox, exports scrap iron and steel. Since their lease with the port runs through 1977, iron and steel scrap may become one of the principal commodities shipped (259).
- 2.712 A Master Plan and Development Program for the Port was completed in August 1974 (259). The plan points out the projected increase in total volume of cargo expected in the Bay System and the Port's continuing requirement for warehouse and other water-oriented land areas. Since the Port has very limited land available for lease and what exists is in small, poorly organized, unmanageable parcels, the Plan recommends considerable expansion.
- 2.713 It is proposed in the Master Plan that the Port acquire and develop the salt production pond southeast of the Harbor Boulevard for warehouses and storage as well as the 50-60 acres of Leslie Salt property for a bulk loading terminal. This development is said to be justified by demand from new establishments, expanding firms and relocation of industry from other Port areas.
- 2.714 Recommended for development in a 10-15 year time frame are: office space, commercial development, marina expansion, public recreation, a commuter ferry terminal and controlled commercial fishing.
- 2.715 It is noted that land for expansion north of the channel is unusable due to soil conditions and costly access problems.
- 2.716 Short and long-range action programs are detailed with financial estimates and a 15-step implementation procedure is given in the Master Plan.

TABLE II-74

WATERBORNE COMMERCE
SAN PABLO BAY AND MARE ISLAND STRAIT, CALIFORNIA

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	YEAR	TONS
1964-----	19,744,630	1969-----	22,360,251
1965-----	20,394,297	1970-----	25,578,739
1966-----	19,960,565	1971-----	26,447,549
1967-----	19,235,744	1972-----	27,061,485
1968-----	21,631,441	1973-----	27,176,329

FREIGHT TRAFFIC, 1973

OCEANGOING

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN		DOMESTIC COASTWISE				
		IMPORTS	THROUGH		RECEIPTS	SHIPMENTS	THROUGH	
			UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND
TOTAL-----	22,993,659	1,235,019	5,495,303	3,242,453	1,587,378	2,020,198	6,500,178	2,913,130
0101 COTTON, RAW-----	193	-----	-----	193	-----	-----	-----	-----
0102 BARLEY AND RYE-----	15,680	-----	-----	15,680	-----	-----	-----	-----
0103 CORN-----	75,690	-----	-----	75,690	-----	-----	-----	-----
0105 RICE-----	411,012	-----	-----	293,123	-----	-----	-----	117,889
0106 SORGHUM GRAINS-----	109,349	-----	-----	109,349	-----	-----	-----	-----
0107 WHEAT-----	271,279	-----	-----	271,293	-----	-----	-----	-----
0119 OILSEEDS, NEC-----	56,279	-----	2,480	53,799	-----	-----	-----	-----
0122 HAY AND FODDER-----	1,702	-----	-----	1,702	-----	-----	-----	-----
0129 FIELD CROPS, NEC-----	374	-----	-----	374	-----	-----	-----	-----
0131 FRESH FRUITS AND TREE NUTS-----	2	-----	2	-----	-----	-----	-----	-----
0141 FRESH AND FROZEN VEGETABLES-----	2	-----	2	-----	-----	-----	-----	-----
0161 ANIMALS AND PRODUCTS, NEC-----	2	-----	2	-----	-----	-----	-----	-----
0861 FOREST PRODUCTS, NEC-----	51	-----	51	-----	-----	-----	-----	-----
0911 FRESH FISH, EXCEPT SHELLFISH-----	7	-----	7	-----	-----	-----	-----	-----
1091 NONFERROUS ORES, CONCENT, NEC-----	3,144	-----	3,144	-----	-----	-----	-----	-----
1311 CRUDE PETROLEUM-----	11,193,682	1,205,469	4,798,232	257,368	1,294,418	-----	3,605,281	32,918
1411 LIMESTONE-----	170,427	-----	170,427	-----	-----	-----	-----	-----
1451 CLAY-----	69,516	-----	-----	69,516	-----	-----	-----	-----
1471 PHOSPHATE ROCK-----	107,008	-----	13,999	-----	-----	-----	93,009	-----
1491 SALT-----	16,400	-----	-----	16,400	-----	-----	-----	-----
1499 NONMETALLIC MINERALS, NEC-----	10,615	-----	2,010	8,605	-----	-----	-----	-----
2011 MEAT, FRESH, CHILLED, FROZEN-----	89	-----	89	-----	-----	-----	-----	-----
2015 ANIMAL BY-PRODUCTS, NEC-----	6	-----	-----	6	-----	-----	-----	-----
2021 DAIRY PRODUCTS, NEC-----	4	-----	4	-----	-----	-----	-----	-----
2022 DRIED MILK AND CREAM-----	2,207	-----	-----	2,207	-----	-----	-----	-----
2031 FISH AND SHELLFISH, PREPARED-----	30	-----	30	-----	-----	-----	-----	-----
2034 VEGETABLES AND PREP, NEC-----	167	-----	167	-----	-----	-----	-----	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	2,590	-----	95	2,106	-----	-----	389	-----
2041 WHEAT FLOUR AND SEMOLINA-----	7,841	-----	1	7,840	-----	-----	-----	-----
2042 PREPARED ANIMAL FEEDS-----	231,129	-----	9,251	221,878	-----	-----	-----	-----
2049 GRAIN MILL PRODUCTS, NEC-----	7	-----	7	-----	-----	-----	-----	-----
2061 SUGAR-----	781,610	-----	28,000	-----	-----	-----	753,610	-----
2062 MOLASSES-----	123,295	-----	26,274	-----	-----	-----	97,021	-----
2081 ALCOHOLIC BEVERAGES-----	26,256	-----	65	-----	-----	-----	483	25,708
2091 VEGETABLE OILS, MARG, SHORT-----	1,120	-----	1,120	-----	-----	-----	-----	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	5,492	-----	159	5,333	-----	-----	-----	-----
2211 BASIC TEXTILE PRODUCTS-----	68	-----	68	-----	-----	-----	-----	-----
2311 APPAREL-----	450	-----	450	-----	-----	-----	-----	-----
2411 LOGS-----	162,937	-----	-----	162,937	-----	-----	-----	-----
2416 WOOD CHIPS, STAVES, MOLDINGS-----	573,680	-----	30	562,982	-----	-----	-----	10,668
2421 LUMBER-----	333	-----	333	-----	-----	-----	-----	-----
2431 VENEER, PLYWOOD, WORKED WOOD-----	546	-----	546	-----	-----	-----	-----	-----
2491 WOOD MANUFACTURES, NEC-----	70	-----	70	-----	-----	-----	-----	-----
2511 FURNITURE AND FIXTURES-----	64	-----	64	-----	-----	-----	-----	-----
2611 PULP-----	61,260	-----	61,260	-----	-----	-----	-----	-----
2621 STANDARD NEWSPRINT PAPER-----	2,669	-----	2,669	-----	-----	-----	-----	-----
2691 PULP AND PAPER PRODUCTS, NEC-----	5	-----	5	-----	-----	-----	-----	-----
2711 PRINTED MATTER-----	1	-----	1	-----	-----	-----	-----	-----
2810 SODIUM HYDROXIDE-----	102,437	-----	-----	-----	-----	-----	50,936	51,501
2811 CRUDE TAR, OIL, GAS PRODUCTS-----	33,072	-----	-----	-----	-----	-----	31,744	1,328
2813 ALCOHOLS-----	4,797	-----	-----	4,797	-----	-----	-----	-----
2819 BASIC CHEMICALS AND PROD, NEC-----	219,125	-----	1,575	-----	186,033	-----	24,190	7,327
2821 PLASTIC MATERIALS-----	10	-----	10	-----	-----	-----	-----	-----
2841 SOAP-----	6	-----	6	-----	-----	-----	-----	-----
2871 NITROGENOUS CHEM FERTILIZERS-----	17,950	-----	-----	-----	-----	-----	17,950	-----
2872 POTASSIC CHEM FERTILIZERS-----	33,197	-----	-----	33,197	-----	-----	-----	-----
2879 FERTILIZER AND MATERIALS, NEC-----	70,670	-----	70,670	-----	-----	-----	-----	-----

TABLE II-74 (Cont'd)

FREIGHT TRAFFIC, 1973--CONTINUED

OCEANGOING--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN			DOMESTIC COASTWISE			
		IMPORTS	THROUGH		RECEIPTS	SHIPMENTS	THROUGH	
			UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND
2071 MISCELLANEOUS CHEMICAL PROD-----	126		126					
2911 GASOLINE-----	1,656,899				29,385	563,265	157,764	906,485
2912 JET FUEL-----	358,657				58,018		213,397	87,242
2913 KEROSENE-----	363,760	29,554	253,486			22,549	21,249	36,922
2914 DISTILLATE FUEL OIL-----	2,278,064					1,243,254	512,858	521,952
2915 RESIDUAL FUEL OIL-----	1,477,904			151,476	661	27,721	457,394	840,652
2916 LUBRICATING OILS AND GREASES-----	543,458				18,863	135,460	258,672	130,463
2917 NAPHTHA, PETROLEUM SOLVENTS-----	62,444						46,568	15,876
2918 ASPHALT, TAR, AND PITCHES-----	134,795					27,949		106,846
2991 PETROLEUM AND COAL PROD, NEC-----	17,202						7,504	9,698
3011 RUBBER AND MISC PLASTICS PROD-----	96							
3111 LEATHER AND LEATHER PRODUCTS-----	126		126					
3211 GLASS AND GLASS PRODUCTS-----	297		297					
3251 STRUCTURAL CLAY PRODUCTS-----	10		10					
3291 MISC NONMETALLIC MINERAL PROD-----	102		102					
3313 COKE, PET ASPHALTS, SOLVENTS-----	772,111			772,111				
3314 IRON AND STEEL PRIMARY FORMS-----	93,463			148			89,369	3,946
3315 IRON, STEEL SHAPES, EXC SHEET-----	55,333		2,678				48,545	4,110
3316 IRON AND STEEL PLATES, SHEETS-----	29,925		2,848	25,567				1,510
3317 IRON AND STEEL PIPE AND TUBE-----	7,978		885				7,093	
3319 IRON AND STEEL PRODUCTS, NEC-----	299		18				281	
3321 NONFERROUS METALS, NEC-----	57		14				43	
3323 LEAD AND ZINC, UNWORKED-----	164		164					
3411 FABRICATED METAL PRODUCTS-----	341		341					
3511 MACHINERY, EXCEPT ELECTRICAL-----	3,617		3,588	15				14
3611 ELECTRICAL MACH AND EQUIP-----	236		228	5			3	
3711 MOTOR VEHICLES, PARTS, EQUIP-----	35,464		35,263	201				
3731 SHIPS AND BOATS-----	112		9				28	75
3791 MISC TRANSPORTATION EQUIPMENT-----	477		477					
3811 INSTR, TIME, PHOTO, OPT GOODS-----	15		14					
3911 MISC MANUFACTURED PRODUCTS-----	160		160	1				
4011 IRON AND STEEL SCRAP-----	118,877			118,877				
4112 COMMODITIES, NEC-----	999		998	1				
9999 DEPARTMENT OF DEFENSE AND SCI-----	2,473			2,473				
TON-MILES, OCEANGOING,-----	289,216,363,							

INTERNAL

(SHORT TONS)

COMMODITY	TOTAL	INBOUND	OUTBOUND	UPBOUND	THROUGH	
					UPBOUND	DOWNBOUND
TOTAL-----	4,182,670	77,516	394,153	2,193	1,902,383	1,806,425
0101 COTTON, RAW-----	842					842
0104 OATS-----	5,964					5,964
0105 RICE-----	15,130					15,130
0106 SORGHUM GRAINS-----	814					814
0107 WHEAT-----	4,405					4,405
0119 OILSEEDS, NEC-----	45,829					45,829
0122 HAY AND FODDER-----	1,370					1,370
0131 FRESH FRUITS AND TREE NUTS-----	265					265
0141 FRESH AND FROZEN VEGETABLES-----	9					9
0861 FOREST PRODUCTS, NEC-----	53					53
0931 MARINE SHELLS, UNMANUFACTURED-----	7,650					7,650
1311 CRUDE PETROLEUM-----	1,044,937	1,843			1,043,094	
1442 SAND, GRAVEL, CRUSHED ROCK-----	593,983	6,000			474,817	113,166
1451 CLAY-----	4,025					4,025
1491 SALT-----	204,000					204,000
1499 NONMETALLIC MINERALS, NEC-----	1,210					1,210
2021 DAIRY PRODUCTS, NEC-----	8					8
2031 FISH AND SHELLFISH, PREPARED-----	4					4
2034 VEGETABLES AND PREP, NEC-----	1,480				1,480	
2039 PREP FRUIT AND VEG JUICE, NEC-----	626					626
2042 PREPARED ANIMAL FEEDS-----	38,323					38,323
2061 SUGAR-----	284,716					284,716
2062 MOLASSES-----	54,755				54,755	
2099 MISCELLANEOUS FOOD PRODUCTS-----	7					7
2211 BASIC TEXTILE PRODUCTS-----	31					31
2311 APPAREL-----	61					61
2421 LUMBER-----	4					4
2431 VENEER, PLYWOOD, WORKED WOOD-----	635					635
2491 WOOD MANUFACTURES, NEC-----	8					8
2511 FURNITURE AND FIXTURES-----	5					5
2691 PULP AND PAPER PRODUCTS, NEC-----	149					149
2819 BASIC CHEMICALS AND PROD, NEC-----	19,929					19,929
2831 DRUGS-----	25					25
2871 NITROGENOUS CHEM FERTILIZERS-----	4,962					4,962
2876 INSECTICIDES, DISINFECTANTS-----	35,684				35,684	
2891 MISCELLANEOUS CHEMICAL PROD-----	5,975					5,975
2911 GASOLINE-----	484,091		101,490			9,246
2912 JET FUEL-----	246,931		38,864			10,407
2913 KEROSENE-----	133					133
2914 DISTILLATE FUEL OIL-----	255,359		5,673			63,333
2915 RESIDUAL FUEL OIL-----	754,257		25,123		2,193	188,815

TABLE II-74 (Cont'd)

INTERNAL
(SHORT TONS)

COMMODITY	TOTAL	INBOUND	OUTBOUND	UPBOUND	THROUGH	
					UPBOUND	DOWNBOUND
2916 LUBRICATING OILS AND GREASES-----	44,110	-----	10,276	-----	3,108	30,726
2917 NAPHTHA, PETROLEUM SOLVENTS-----	4,146	-----	-----	-----	-----	4,146
2921 LIQUEFIED GASES-----	1,192	-----	-----	-----	1,192	-----
2991 PETROLEUM AND COAL PROD, NEC-----	1,132	13	-----	-----	1,119	-----
3011 RUBBER AND MISC PLASTICS PROD-----	79	-----	-----	-----	79	-----
3111 LEATHER AND LEATHER PRODUCTS-----	13	-----	-----	-----	13	-----
3211 GLASS AND GLASS PRODUCTS-----	46	-----	-----	-----	46	-----
3291 MISC NONMETALLIC MINERAL PROD-----	4,295	-----	-----	-----	2,101	2,194
3317 IRON AND STEEL PIPE AND TUBE-----	307	-----	-----	-----	307	-----
3319 IRON AND STEEL PRODUCTS, NEC-----	56	-----	-----	-----	56	-----
3321 NONFERROUS METALS, NEC-----	10	-----	-----	-----	10	-----
3411 FABRICATED METAL PRODUCTS-----	3,335	-----	-----	-----	2,076	1,259
3511 MACHINERY, EXCEPT ELECTRICAL-----	247	-----	-----	-----	247	-----
3611 ELECTRICAL MACH AND EQUIP-----	40	-----	-----	-----	40	-----
3721 AIRCRAFT AND PARTS-----	1,374	-----	-----	-----	116	1,258
3731 SHIPS AND BOATS-----	2,801	-----	-----	-----	1	2,800
3791 MISC TRANSPORTATION EQUIPMENT-----	322	-----	-----	-----	322	-----
3811 INSTR, TIME, PHOTO, OPT GOODS-----	5	-----	-----	-----	5	-----
3911 MISC MANUFACTURED PRODUCTS-----	231	-----	-----	-----	231	-----
4011 IRON AND STEEL SCRAP-----	273	-----	-----	-----	-----	273
4112 COMMODITIES, NEC-----	12	-----	-----	-----	12	-----
TON-MILES, INTERNAL, 50,668,320,						
TONS, ALL TRAFFIC, 27,176,329,						
TON-MILES, ALL TRAFFIC, 339,884,691,						

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.

2.718 f. Carquinez Strait. Carquinez Strait is a 6-mile long stretch of water connecting San Pablo and Suisun Bays. For the first 3-1/2 miles, the strait is less than one-half mile wide, and for the remaining distance approximately one mile. With the exception of certain small flats on both the northern and southern shores, the strait is sufficient throughout in depths to accommodate ocean-going vessels. The principal ports on the strait are those that service the oil industry. Exxon U.S.A. has a refinery at Benicia, Shell Oil Company and Phillips Petroleum Company at Martinez (Avon refinery). The total traffic using Carquinez Strait in 1973 was 22,579,619 short tons. Crude oil and petroleum products completely dominate in this reach with 70 percent of the traffic. Other commodities of significance are iron and steel products, including scrap, as well as wood chips, sugar and molasses, and grains. Types of commodities are listed in Table II-75.

TABLE II-75

WATERBORNE COMMERCE CARQUINEZ STRAIT

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	YEAR	TONS
1964-----	18,552,922	1969-----	17,086,498
1965-----	18,869,396	1970-----	20,996,531
1966-----	18,239,649	1971-----	21,382,167
1967-----	16,499,100	1972-----	22,402,080
1968-----	16,467,002	1973*-----	22,579,619

* PASSENGERS--8,

FREIGHT TRAFFIC, 1973

OCEANGOING

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN				DOMESTIC COASTWISE			
		IMPORTS	EXPORTS	THROUGH		RECEIPTS	SHIPMENTS	THROUGH	
				UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND
TOTAL-----	18,151,064	4,983,392	604,431	511,911	2,438,022	5,165,039	1,984,610	1,335,139	928,520
0101 COTTON, RAW-----	193				193				
0102 BARLEY AND RYE-----	15,680				15,680				
0103 CORN-----	75,690				75,690				
0105 RICE-----	411,012				293,123				117,889
0106 SORGHUM GRAINS-----	109,349				109,349				
0107 WHEAT-----	271,293				271,293				
0119 DILSEEDS, NEC-----	56,279			2,480	53,799				
0122 HAY AND FODDER-----	1,702				1,702				
0129 FIELD CROPS, NEC-----	374				374				
0131 FRESH FRUITS AND TREE NUTS-----	2			2					
0141 FRESH AND FROZEN VEGETABLES-----	2			2					
0161 ANIMALS AND PRODUCTS, NEC-----	2								
0861 FOREST PRODUCTS, NEC-----	51			51					
0911 FRESH FISH, EXCEPT SHELLFISH-----	7								
1091 NONFERROUS ORES, CONCENT, NEC-----	3,144			3,144					
1311 CRUDE PETROLEUM-----	8,693,799	4,714,023	12,053	64,209	245,315	3,181,613	32,918	423,668	
1411 LIMESTONE-----	170,427			170,427					
1451 CLAY-----	69,516				69,516				
1471 PHOSPHATE ROCK-----	107,008	13,999						93,009	
1491 SALT-----	16,400				16,400				
1499 NONMETALLIC MINERALS, NEC-----	10,615			2,010	8,605				
2011 MEAT, FRESH, CHILLED, FROZEN-----	89			89					
2015 ANIMAL BY-PRODUCTS, NEC-----	6				6				
2021 DAIRY PRODUCTS, NEC-----	4			4					
2022 DRIED MILK AND CREAM-----	2,207				2,207				
2031 FISH AND SHELLFISH, PREPARED-----	30			30					
2034 VEGETABLES AND PREP, NEC-----	167			167					
2039 PREP FRUIT AND VEG JUICE, NEC-----	2,590			95	2,106			389	
2041 WHEAT FLOUR AND SEMOLINA-----	7,841				7,841				
2042 PREPARED ANIMAL FEEDS-----	231,129			9,251	221,878				
2049 GRAIN MILL PRODUCTS, NEC-----	7			7					
2061 SUGAR-----	781,610	28,000				753,610			
2062 MOLASSES-----	123,295			26,274		97,021			
2081 ALCOHOLIC BEVERAGES-----	26,256			65				483	25,708
2091 VEGETABLE OILS, MARG, SHORT-----	1,120			1,120					
2099 MISCELLANEOUS FOOD PRODUCTS-----	5,492			159	5,333				
2211 BASIC TEXTILE PRODUCTS-----	68			68					
2311 APPAREL-----	450			450					
2411 LOGS-----	162,937				162,937				
2416 WOOD CHIPS, STAVES, MOLDINGS-----	573,680			30	562,982				10,668
2421 LUMBER-----	333			333					
2431 VENEER, PLYWOOD, WORKED WOOD-----	546			546					
2491 WOOD MANUFACTURES, NEC-----	70			70					
2511 FURNITURE AND FIXTURES-----	64			64					
2611 PULP-----	61,260			61,260					
2621 STANDARD NEWSPRINT PAPER-----	2,669			2,669					
2691 PULP AND PAPER PRODUCTS, NEC-----	5								
2711 PRINTED MATTER-----	1			1					
2810 SODIUM HYDROXIDE-----	102,437							50,936	51,501
2811 CRUDE TAR, OIL, GAS PRODUCTS-----	33,072					31,744	1,328		
2813 ALCOHOLS-----	4,797					874		3,923	
2819 BASIC CHEMICALS AND PROD, NEC-----	33,092	1,575					7,327	24,190	
2821 PLASTIC MATERIALS-----	10			10					
2841 SOAP-----	6			6					
2871 NITROGENOUS CHEM FERTILIZERS-----	17,950							17,950	
2872 POTASSIC CHEM FERTILIZERS-----	33,197				33,197				
2879 FERTILIZER AND MATERIALS, NEC-----	70,670			70,670					
2891 MISCELLANEOUS CHEMICAL PROD-----	126			126					
2911 GASOLINE-----	1,064,249					123,740	518,429	34,024	388,056
2912 JET FUEL-----	300,639					66,578	74,134	146,819	13,108
2913 KEROSENE-----	311,657	190,871		62,619		21,249	36,922		
2914 DISTILLATE FUEL OIL-----	1,034,810					143,418	272,353	369,440	249,599
2915 RESIDUAL FUEL OIL-----	1,449,922		151,476			439,235	778,316	18,159	62,336
2916 LUBRICATING OILS AND GREASES-----	389,135					297,933	130,463	719	
2917 NAPHTHA, PETROLEUM SOLVENTS-----	62,444					40,497	15,876	6,071	
2918 ASPHALT, TAR, AND PITCHES-----	106,846						106,846		
2991 PETROLEUM AND COAL PROD, NEC-----	17,202					7,504	9,698		
3011 RUBBER AND MISC PLASTICS PROD-----	96			96					
3111 LEATHER AND LEATHER PRODUCTS-----	126			126					

TABLE II-75 (Cont'd)

CARQUINEZ STRAIT, CALIF.--CONTINUED

FREIGHT TRAFFIC, 1973--CONTINUED

OCEANGOING--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	FOREIGN				DOMESTIC COASTWISE			
		IMPORTS	EXPORTS	THROUGH		RECEIPTS	SHIPMENTS	THROUGH	
				UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND
3211 GLASS AND GLASS PRODUCTS-----	297	-----	-----	297	-----	-----	-----	-----	-----
3291 STRUCTURAL CLAY PRODUCTS-----	10	-----	-----	10	-----	-----	-----	-----	-----
3291 MISC NONMETALLIC MINERAL PROD-----	102	-----	-----	102	-----	-----	-----	-----	-----
3313 COKE, PET ASPHALTS, SOLVENTS-----	772,111	-----	438,245	-----	333,866	-----	-----	-----	-----
3314 IRON AND STEEL PRIMARY FORMS-----	93,463	-----	-----	-----	148	-----	-----	89,369	3,946
3315 IRON, STEEL SHAPES, EXC SHEET-----	55,333	-----	-----	2,678	-----	-----	-----	48,545	4,110
3316 IRON AND STEEL PLATES, SHEETS-----	29,925	-----	-----	2,848	25,567	-----	-----	-----	1,510
3317 IRON AND STEEL PIPE AND TUBE-----	7,978	-----	-----	885	-----	-----	-----	7,093	-----
3319 IRON AND STEEL PRODUCTS, NEC-----	299	-----	-----	18	-----	-----	-----	281	-----
3321 NONFERROUS METALS, NEC-----	57	-----	-----	14	-----	-----	-----	43	-----
3323 LEAD AND ZINC, UNWORKED-----	164	-----	-----	164	-----	-----	-----	-----	-----
3411 FABRICATED METAL PRODUCTS-----	341	-----	-----	341	-----	-----	-----	-----	-----
3511 MACHINERY, EXCEPT ELECTRICAL-----	3,617	365	-----	3,223	15	-----	-----	-----	14
3611 ELECTRICAL MACH AND EQUIP-----	236	-----	-----	228	5	3	-----	-----	-----
3711 MOTOR VEHICLES, PARTS, EQUIP-----	35,464	33,558	201	1,705	-----	-----	-----	-----	-----
3731 SHIPS AND BOATS-----	112	7	-----	2	-----	-----	-----	28	75
3791 MISC TRANSPORTATION EQUIPMENT-----	477	-----	-----	477	-----	-----	-----	-----	-----
3811 INSTR, TIME, PHOTO, OPT GOODS-----	15	-----	-----	-----	-----	-----	-----	-----	-----
3911 MISC MANUFACTURED PRODUCTS-----	160	-----	-----	14	1	-----	-----	-----	-----
4011 IRON AND STEEL SCRAP-----	118,077	-----	-----	160	-----	-----	-----	-----	-----
4112 COMMODITIES, NEC-----	999	994	-----	4	118,877	-----	-----	-----	-----
9999 DEPARTMENT OF DEFENSE AND SCI-----	2,473	-----	2,456	-----	17	-----	-----	-----	-----
TON-MILES, OCEANGOING, 122,432,218,									

INTERNAL

(SHORT TONS)

COMMODITY	TOTAL	INBOUND	OUTBOUND	UPBOUND	DOWNBOUND	THROUGH	
						UPBOUND	DOWNBOUND
TOTAL-----	4,428,555	769,212	1,684,300	40,503	32,548	1,594,329	307,663
0101 COTTON, RAW-----	842	-----	-----	-----	-----	-----	842
0104 OATS-----	3,964	-----	-----	-----	-----	-----	3,964
0105 RICE-----	18,402	3,272	-----	-----	-----	-----	15,130
0106 SORGHUM GRAINS-----	814	-----	-----	-----	-----	-----	814
0107 WHEAT-----	4,405	-----	-----	-----	-----	-----	4,405
0119 OILSEEDS, NEC-----	45,829	-----	-----	-----	-----	-----	45,829
0122 HAY AND FODDER-----	1,370	-----	-----	-----	-----	-----	1,370
0131 FRESH FRUITS AND TREE NUTS-----	265	-----	-----	-----	-----	265	-----
0141 FRESH AND FROZEN VEGETABLES-----	9	-----	-----	-----	-----	9	-----
0861 FOREST PRODUCTS, NEC-----	53	-----	-----	-----	-----	53	-----
1311 CRUDE PETROLEUM-----	1,043,094	570,393	-----	-----	-----	472,701	-----
1442 SAND, GRAVEL, CRUSHED ROCK-----	572,417	-----	-----	-----	-----	474,817	97,600
1451 CLAY-----	4,025	-----	-----	-----	-----	-----	4,025
1491 SALT-----	204,000	-----	-----	-----	-----	204,000	-----
1499 NONMETALLIC MINERALS, NEC-----	1,210	-----	-----	-----	-----	-----	1,210
2021 DAIRY PRODUCTS, NEC-----	8	-----	-----	-----	-----	8	-----
2031 FISH AND SHELLFISH, PREPARED-----	4	-----	-----	-----	-----	4	-----
2034 VEGETABLES AND PREP, NEC-----	1,480	-----	-----	-----	-----	1,480	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	626	-----	-----	-----	-----	626	-----
2042 PREPARED ANIMAL FEEDS-----	38,323	-----	-----	-----	-----	-----	38,323
2061 SUGAR-----	284,716	-----	284,716	-----	-----	-----	-----
2062 MOLASSES-----	108,272	-----	53,517	-----	-----	54,755	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	7	-----	-----	-----	-----	7	-----
2211 BASIC TEXTILE PRODUCTS-----	31	-----	-----	-----	-----	31	-----
2311 APPAREL-----	61	-----	-----	-----	-----	61	-----
2421 LUMBER-----	4	-----	-----	-----	-----	4	-----
2431 VENEER, PLYWOOD, WORKED WOOD-----	635	-----	-----	-----	-----	635	-----
2491 WOOD MANUFACTURES, NEC-----	8	-----	-----	-----	-----	8	-----
2511 FURNITURE AND FIXTURES-----	5	-----	-----	-----	-----	5	-----
2691 PULP AND PAPER PRODUCTS, NEC-----	149	-----	-----	-----	-----	149	-----
2819 BASIC CHEMICALS AND PROD, NEC-----	19,929	-----	-----	-----	-----	-----	19,929
2831 DRUGS-----	25	-----	-----	-----	-----	-----	25
2871 NITROGENOUS CHEM FERTILIZERS-----	4,962	-----	-----	-----	-----	-----	4,962
2876 INSECTICIDES, DISINFECTANTS-----	35,684	-----	-----	-----	-----	35,684	-----
2891 MISCELLANEOUS CHEMICAL PROD-----	5,975	-----	-----	-----	-----	5,975	-----
2911 GASOLINE-----	567,572	3,537	432,566	-----	-----	99,912	31,557
2912 JET FUEL-----	227,045	2,113	216,638	-----	-----	8,294	-----
2913 KEROSENE-----	133	133	-----	-----	-----	-----	-----
2914 DISTILLATE FUEL OIL-----	245,886	61,904	75,356	6,575	-----	91,793	10,298
2915 RESIDUAL FUEL OIL-----	934,479	121,230	586,635	33,928	32,548	142,199	17,939
2916 LUBRICATING OILS AND GREASES-----	33,834	3,108	30,726	-----	-----	-----	-----
2917 NAPHTHA, PETROLEUM SOLVENTS-----	4,146	-----	4,146	-----	-----	-----	-----
2921 LIQUEFIED GASES-----	1,192	-----	-----	-----	-----	1,192	-----
2991 PETROLEUM AND COAL PROD, NEC-----	3,522	3,522	-----	-----	-----	-----	-----
3011 RUBBER AND MISC PLASTICS PROD-----	79	-----	-----	-----	-----	79	-----
3111 LEATHER AND LEATHER PRODUCTS-----	13	-----	-----	-----	-----	13	-----
3211 GLASS AND GLASS PRODUCTS-----	46	-----	-----	-----	-----	46	-----
3291 MISC NONMETALLIC MINERAL PROD-----	2,101	-----	-----	-----	-----	2,101	-----
3317 IRON AND STEEL PIPE AND TUBE-----	307	-----	-----	-----	-----	-----	307
3319 IRON AND STEEL PRODUCTS, NEC-----	56	-----	-----	-----	-----	-----	56
3321 NONFERROUS METALS, NEC-----	10	-----	-----	-----	-----	-----	10
3411 FABRICATED METAL PRODUCTS-----	2,076	-----	-----	-----	-----	2,076	-----
3511 MACHINERY, EXCEPT ELECTRICAL-----	197	-----	-----	-----	-----	197	-----

TABLE II-75 (Cont'd)

CARQUINEZ STRAIT, CALIF.--CONTINUED

INTERNAL
(SHORT TONS)

COMMODITY	TOTAL	INBOUND	OUTBOUND	UPBOUND	DOWNBOUND	THROUGH	
						UPBOUND	DOWNBOUND
3611 ELECTRICAL MACH AND EQUIP-----	40	-----	-----	-----	-----	40	-----
3721 AIRCRAFT AND PARTS-----	1,374	-----	-----	-----	-----	116	1,258
3731 SHIPS AND BOATS-----	1	-----	-----	-----	-----	1	-----
3791 MISC TRANSPORTATION EQUIPMENT-----	322	-----	-----	-----	-----	322	-----
3811 INSTR, TIME, PHOTO, OPT GOODS-----	9	-----	-----	-----	-----	9	-----
3911 MISC MANUFACTURED PRODUCTS-----	231	-----	-----	-----	-----	231	-----
4011 IRON AND STEEL SCRAP-----	273	-----	-----	-----	-----	-----	273
4112 COMMODITIES, NEC-----	12	-----	-----	-----	-----	12	-----
TON-MILES, INTERNAL, 26,715,941,							
TONS, ALL TRAFFIC, 22,579,619,							
TON-MILES, ALL TRAFFIC, 149,148,159,							

SOURCE: U. S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year, 1973.

g. Suisun Bay Channel. This channel is located in the southern portion of Suisun Bay and provides for safe navigation of commercial and military traffic enroute to and from Carquinez Strait and the port facilities at Concord, Pittsburg, Antioch, Stockton and Sacramento (Plate I-18). Total commercial traffic through Suisun Bay Channel in 1973 shipped 7.9 million short tons of commodities. Types of commodities are listed on Table II-76. Grain and wood exports from Stockton and Sacramento involve nearly a fourth of the commerce, indicating the importance of this channel to the farm and logging industries. Here, as elsewhere in the Bay Area, petroleum shipping remains dominant, involving nearly half of the commerce through the channel. The rest of the commerce involves a wide variety of commodities, including large amounts of chemicals and fertilizers.

TABLE II-76

WATERBORNE COMMERCE
SUISUN BAY CHANNEL, CALIF.

COMPARATIVE STATEMENT OF TRAFFIC

YEAR	TONS	YEAR	TONS
1964-----	10,579,808	1969-----	6,904,427
1965-----	9,718,757	1970-----	7,555,483
1966-----	9,501,681	1971-----	7,177,925
1967-----	8,869,091	1972-----	7,218,513
1968-----	7,702,002	1973-----	7,901,233

FREIGHT TRAFFIC, 1973

FOREIGN

(SHORT TONS)

COMMODITY	TOTAL	IMPORTS	EXPORTS	THROUGH	
				UPBOUND	DOWNBOUND
TOTAL-----	3,149,933	84,209	245,333	427,702	2,392,689
0101 COTTON, RAW-----	193				193
0102 BARLEY AND RYE-----	15,680				15,680
0103 CORN-----	75,690				75,690
0105 RICE-----	293,123				293,123
0106 SORGHUM GRAINS-----	109,349				109,349
0107 WHEAT-----	271,293				271,293
0119 DILSEEDS, NEC-----	56,279			2,480	53,799
0122 HAY AND FODDER-----	1,702				1,702
0131 FIELD CROPS, NEC-----	374				374
0141 FRESH FRUITS AND TREE NUTS-----	2			2	
0141 FRESH AND FROZEN VEGETABLES-----	2			2	
0161 ANIMALS AND PRODUCTS, NEC-----	2			2	
0861 FOREST PRODUCTS, NEC-----	51			51	
0911 FRESH FISH, EXCEPT SHELLFISH-----	7			7	
1091 NONFERROUS ORES, CONCENT, NEC-----	3,144			3,144	
1311 CRUDE PETROLEUM-----	329,524	84,209	245,319		
1411 LIMESTONE-----	170,427			170,427	
1451 CLAY-----	69,516				69,516
1491 SALT-----	16,400				16,400
1499 NONMETALLIC MINERALS, NEC-----	10,615			2,010	8,605
2011 MEAT, FRESH, CHILLED, FROZEN-----	89			89	
2015 ANIMAL BY-PRODUCTS, NEC-----	6				6
2021 DAIRY PRODUCTS, NEC-----	4			4	
2022 DRIED MILK AND CREAM-----	2,207				2,207
2031 FISH AND SHELLFISH, PREPARED-----	30			30	
2034 VEGETABLES AND PREP, NEC-----	167			167	
2039 PREP FRUIT AND VEG JUICE, NEC-----	2,201			95	2,106
2041 WHEAT FLOUR AND SEMOLINA-----	7,841			1	7,840
2042 PREPARED ANIMAL FEEDS-----	231,129			9,251	221,878
2049 GRAIN MILL PRODUCTS, NEC-----	7			7	
2062 MOLASSES-----	26,274			26,274	
2081 ALCOHOLIC BEVERAGES-----	65			65	
2091 VEGETABLE OILS, HARG, SHORT-----	1,120			1,120	
2099 MISCELLANEOUS FOOD PRODUCTS-----	5,492			159	5,333
2211 BASIC TEXTILE PRODUCTS-----	68			68	
2311 APPAREL-----	450			450	
2411 LOGS-----	162,937				162,937
2416 WOOD CHIPS, STAVES, HOLDINGS-----	563,012			30	562,982
2421 LUMBER-----	333			333	
2431 VENEER, PLYWOOD, WORKED WOOD-----	546			546	
2491 WOOD MANUFACTURES, NEC-----	70			70	
2511 FURNITURE AND FIXTURES-----	64			64	
2611 PULP-----	61,260			61,260	
2621 STANDARD NEWSPRINT PAPER-----	2,669			2,669	
2691 PULP AND PAPER PRODUCTS, NEC-----	5			5	
2711 PRINTED MATTER-----	1			1	
2821 PLASTIC MATERIALS-----	10			10	
2841 SOAP-----	6			6	
2872 POTASSIC CHEM FERTILIZERS-----	33,197				33,197
2879 FERTILIZER AND MATERIALS, NEC-----	70,670			70,670	
2891 MISCELLANEOUS CHEMICAL PROD-----	126			126	
2913 KEROSENE-----	62,615			62,615	
3011 RUBBER AND MISC PLASTICS PROD-----	96			96	
3111 LEATHER AND LEATHER PRODUCTS-----	126			126	
3211 GLASS AND GLASS PRODUCTS-----	297			297	
3251 STRUCTURAL CLAY PRODUCTS-----	10			10	
3291 MISC NONMETALLIC MINERAL PROD-----	102			102	
3313 COKE, PET ASPHALTS, SOLVENTS-----	333,866				333,866
3314 IRON AND STEEL PRIMARY FORMS-----	148				148
3315 IRON, STEEL SHAPES, EXC SHEET-----	2,678			2,678	
3316 IRON AND STEEL PLATES, SHEETS-----	28,415			2,848	25,567
3317 IRON AND STEEL PIPE AND TUBE-----	885			885	
3319 IRON AND STEEL PRODUCTS, NEC-----	18			18	
3321 NONFERROUS METALS, NEC-----	14			14	
3323 LEAD AND ZINC, UNWORKED-----	164			164	
3411 FABRICATED METAL PRODUCTS-----	341			341	
3511 MACHINERY, EXCEPT ELECTRICAL-----	3,238			3,223	15
3611 ELECTRICAL MACH AND EQUIP-----	233			228	5
3711 MOTOR VEHICLES, PARTS, EQUIP-----	1,705			1,705	
3731 SHIPS AND BOATS-----	2			2	
3791 MISC TRANSPORTATION EQUIPMENT-----	477			477	
3811 INSTR, TIME, PHOTO, OPT GOODS-----	19			14	5
3911 MISC MANUFACTURED PRODUCTS-----	160			160	

TABLE II-76 (Cont'd)

FOREIGN--CONTINUED

(SHORT TONS)

COMMODITY	TOTAL	IMPORTS	EXPORTS	THROUGH	
				UPBOUND	DOWNBOUND
4011 IRON AND STEEL SCRAP-----	118,877	-----	-----	-----	118,877
4112 COMMODITIES, NEC-----	5	-----	-----	-----	-----
9999 DEPARTMENT OF DEFENSE AND SCI-----	17	-----	17	4	1
TON-MILES, FOREIGN, 37,324,167,					

DOMESTIC

(SHORT TONS)

COMMODITY	TOTAL	COASTWISE				INTERNAL			
		RECEIPTS	SHIPMENTS	THROUGH		INBOUND	OUTBOUND	THROUGH	
				UPBOUND	DOWNBOUND			UPBOUND	DOWNBOUND
TOTAL-----	4,751,300	468,374	713,099	866,765	215,421	495,806	312,408	1,480,646	198,781
0101 COTTON, RAW-----	842	-----	-----	-----	-----	-----	-----	-----	842
0104 OATS-----	5,964	-----	-----	-----	-----	-----	-----	-----	5,964
0105 RICE-----	136,291	-----	-----	-----	117,889	-----	-----	-----	18,402
0106 SORGHUM GRAINS-----	814	-----	-----	-----	-----	-----	-----	-----	814
0107 WHEAT-----	4,405	-----	-----	-----	-----	-----	-----	-----	4,405
0119 OILSEEDS, NEC-----	45,829	-----	-----	-----	-----	-----	-----	-----	45,829
0122 HAY AND FODDER-----	1,370	-----	-----	-----	-----	-----	-----	-----	1,370
0131 FRESH FRUITS AND TREE NUTS-----	265	-----	-----	-----	-----	-----	-----	265	-----
0141 FRESH AND FROZEN VEGETABLES-----	9	-----	-----	-----	-----	-----	-----	9	-----
0861 FOREST PRODUCTS, NEC-----	53	-----	-----	-----	-----	-----	-----	53	-----
1311 CRUDE PETROLEUM-----	896,369	423,668	-----	-----	-----	472,701	-----	-----	-----
1442 SAND, GRAVEL, CRUSHED ROCK-----	572,417	-----	-----	-----	-----	3,101	52,400	471,716	45,200
1451 CLAY-----	4,025	-----	-----	-----	-----	-----	-----	-----	4,025
1471 PHOSPHATE ROCK-----	93,009	-----	-----	93,009	-----	-----	-----	-----	-----
1491 SALT-----	204,000	-----	-----	-----	-----	-----	-----	204,000	-----
1499 NONMETALLIC MINERALS, NEC-----	1,210	-----	-----	-----	-----	-----	-----	-----	1,210
2021 DAIRY PRODUCTS, NEC-----	8	-----	-----	-----	-----	-----	-----	-----	8
2031 FISH AND SHELLFISH, PREPARED-----	4	-----	-----	-----	-----	-----	-----	-----	4
2034 VEGETABLES AND PREP, NEC-----	1,480	-----	-----	-----	-----	-----	-----	1,480	-----
2039 PREP FRUIT AND VEG JUICE, NEC-----	1,015	-----	-----	389	-----	-----	-----	-----	626
2042 PREPARED ANIMAL FEEDS-----	38,323	-----	-----	-----	-----	-----	-----	-----	38,323
2062 MOLASSES-----	108,272	-----	-----	-----	-----	-----	-----	108,272	-----
2081 ALCOHOLIC BEVERAGES-----	26,191	-----	-----	483	25,708	-----	-----	-----	-----
2099 MISCELLANEOUS FOOD PRODUCTS-----	7	-----	-----	-----	-----	-----	-----	-----	7
2211 BASIC TEXTILE PRODUCTS-----	31	-----	-----	-----	-----	-----	-----	31	-----
2311 APPAREL-----	61	-----	-----	-----	-----	-----	-----	61	-----
2416 WOOD CHIPS, STAVES, HOLDINGS-----	10,668	-----	-----	-----	10,668	-----	-----	-----	-----
2421 LUMBER-----	4	-----	-----	-----	-----	-----	-----	-----	4
2431 VENEER, PLYWOOD, WORKED WOOD-----	635	-----	-----	-----	-----	-----	-----	635	-----
2491 WOOD MANUFACTURES, NEC-----	8	-----	-----	-----	-----	-----	-----	-----	8
2511 FURNITURE AND FIXTURES-----	5	-----	-----	-----	-----	-----	-----	-----	5
2691 PULP AND PAPER PRODUCTS, NEC-----	149	-----	-----	-----	-----	-----	-----	-----	149
2810 SODIUM HYDROXIDE-----	102,437	-----	-----	50,936	51,501	-----	-----	-----	-----
2813 ALCOHOLS-----	3,923	-----	-----	3,923	-----	-----	-----	-----	-----
2819 BASIC CHEMICALS AND PROD, NEC-----	44,119	-----	-----	24,190	-----	-----	-----	-----	19,929
2831 DRUGS-----	25	-----	-----	-----	-----	-----	-----	25	-----
2871 NITROGENOUS CHEM FERTILIZERS-----	22,912	-----	-----	17,950	-----	-----	-----	-----	4,962
2876 INSECTICIDES, DISINFECTANTS-----	35,684	-----	-----	-----	-----	-----	-----	35,684	-----
2891 MISCELLANEOUS CHEMICAL PROD-----	5,975	-----	-----	-----	-----	-----	-----	-----	5,975
2911 GASOLINE-----	737,818	34,024	388,056	146,819	-----	-----	125,058	190,680	-----
2912 JET FUEL-----	171,130	-----	13,108	-----	-----	-----	2,909	8,294	-----
2913 KEROSENE-----	2,118	-----	-----	-----	-----	-----	2,118	-----	-----
2914 DISTILLATE FUEL OIL-----	781,580	4,611	249,599	364,829	-----	-----	43,728	118,813	-----
2915 RESIDUAL FUEL OIL-----	517,304	-----	62,336	18,159	-----	18,812	83,792	334,205	-----
2916 LUBRICATING OILS AND GREASES-----	719	-----	-----	719	-----	-----	-----	-----	-----
2917 NAPHTHA, PETROLEUM SOLVENTS-----	6,071	6,071	-----	-----	-----	-----	-----	-----	-----
2921 LIQUEFIED GASES-----	1,192	-----	-----	-----	-----	1,192	-----	-----	-----
2991 PETROLEUM AND COAL PROD, NEC-----	2,403	-----	-----	-----	-----	-----	2,403	-----	-----
3011 RUBBER AND MISC PLASTICS PROD-----	79	-----	-----	-----	-----	-----	-----	79	-----
3111 LEATHER AND LEATHER PRODUCTS-----	13	-----	-----	-----	-----	-----	-----	13	-----
3211 GLASS AND GLASS PRODUCTS-----	46	-----	-----	-----	-----	-----	-----	46	-----
3291 MISC NONMETALLIC MINERAL PROD-----	2,101	-----	-----	-----	-----	-----	-----	2,101	-----
3314 IRON AND STEEL PRIMARY FORMS-----	93,315	-----	-----	89,369	3,946	-----	-----	-----	-----
3315 IRON, STEEL SHAPES, EXC SHEET-----	52,655	-----	-----	48,545	4,110	-----	-----	-----	-----
3316 IRON AND STEEL PLATES, SHEETS-----	1,510	-----	-----	-----	1,510	-----	-----	-----	-----
3317 IRON AND STEEL PIPE AND TUBE-----	7,400	-----	-----	7,093	-----	-----	-----	307	-----
3319 IRON AND STEEL PRODUCTS, NEC-----	337	-----	-----	281	-----	-----	-----	56	-----
3321 NONFERROUS METALS, NEC-----	53	-----	-----	43	-----	-----	-----	10	-----
3411 FABRICATED METAL PRODUCTS-----	2,076	-----	-----	-----	-----	-----	-----	2,076	-----
3511 MACHINERY, EXCEPT ELECTRICAL-----	211	-----	-----	-----	14	-----	-----	197	-----
3611 ELECTRICAL MACH AND EQUIP-----	40	-----	-----	-----	-----	-----	-----	40	-----
3721 AIRCRAFT AND PARTS-----	1,374	-----	-----	-----	-----	-----	-----	116	1,258
3731 SHIPS AND BOATS-----	104	-----	-----	-----	-----	-----	-----	-----	-----
3791 MISC TRANSPORTATION EQUIPMENT-----	322	-----	-----	28	75	-----	-----	322	-----
3811 INSTR, TIME, PHOTO, OPT GOODS-----	5	-----	-----	-----	-----	-----	-----	5	-----
3911 MISC MANUFACTURED PRODUCTS-----	231	-----	-----	-----	-----	-----	-----	231	-----
4011 IRON AND STEEL SCRAP-----	273	-----	-----	-----	-----	-----	-----	-----	273
4112 COMMODITIES, NEC-----	12	-----	-----	-----	-----	-----	-----	12	-----
TON-MILES, DOMESTIC, 40,749,169,									
TONS, ALL TRAFFIC, 7,901,233,									
TON-MILES, ALL TRAFFIC, 78,073,336,									

SOURCE: U.S. Army Corps of Engineers. Waterborne Commerce of the United States, Calendar Year 1973.