STRATEGIC ASSESSMENT FOR THE 1994 UPDATE OF THE SAN FRANCISCO BAY AREA SEAPORT PLAN

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INTRODUCTION

This paper discusses the development of the 1994 update of the San Francisco Bay Area Seaport Plan, whose primary purpose is to designate adequate sites to meet marine freight forecasts up to 2020. Strong pressures always exist to develop nonmaritime uses along the waterfront, and unless curbed, there might not be enough flat land available with good road and rail access and that is adjacent to deep water. This technical analysis is leading up to the presentation of recommendations to an advisory group, the Seaport Planning Advisory Committee, which will hear testimony and make recommendations to both the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Conservation and Development Commission (BCDC). BCDC may include the recommendations in a plan that is used to manage all development in San Francisco Bay. MTC's use of the seaport plan is primarily related to intermodal tasks. The update's results will help MTC make fund allocation decisions for port access projects. This update will be the second update since the original plan was approved in 1982.

The Bay Area Seaport Plan focuses on seaport facilities available for the handling of public cargo. Included are facilities that handle containerized, break-bulk, neo-bulk, dry-bulk, and nonpetroleum liquid-bulk freight. The San Francisco Bay, it should be noted, handles a significant volume of waterborne petroleum products to serve oil refineries and distribution facilities of major oil companies. However, these facilities are private and have not been included as part of the seaport plan analysis. Also, all marine freight going in and out of Sacramento and Stockton ports must pass through San Francisco Bay, but these ports lie outside of MTC's 9-county region and, thus, are not analyzed as part of the plan. These two ports account for only a tiny fraction of the vessel traffic that passes under the Golden Gate Bridge.

Many issues addressed in the technical analysis leading to preliminary recommendations of site designations occur in other U.S. ports, but several are unique to the Bay Area. This paper will discuss each of the major issues individually, how they were addressed during the technical analysis, and interactions with local governments.

BACKGROUND OF BAY AREA SEAPORT DEVELOPMENT

Maritime shipping has been a major contributor to the San Francisco Bay area economy since the mid-1800s. San Francisco was the first major seaport on the West Coast. The Gold Rush, which began in 1848, was followed by the completion of the first transcontinental rail link in 1869. Development of good regional and intercontinental rail connections continued to favor the area as a major seaport area. San Francisco remains the major break-bulk terminal in the Bay Area, but the demand for this category of freight has significantly declined in recent years, and many area facilities are currently underutilized.

Shipbuilding and naval supply activities during World War II further contributed to both civilian and military seaport development in the Bay Area. Rapid population growth, the development of deep-water vessels, and the need for significant backland area enabled the Long Beach/Los Angeles port complex to overtake and surpass Bay Area ports. The Port of Oakland solidified its role as a major West Coast port with the advent of containerized cargo in the 1960s and now has virtually the same tonnage as the Port of Seattle in a battle to claim the runner-up spot to Long Beach/Los Angeles. Oakland has far surpassed all other Bay Area ports in container handling to the point where San Francisco's current total annual container handling is less than the capacity of a single-large container ship.

Bay Area ports currently are maintaining their share of West Coast marine freight traffic (approximately 20 percent), but they lost share to both Pacific Northwest and Southern California ports in the late 1980s when the Port of Oakland experienced difficulty in obtaining dredging permits for deepening its approach channel. That problem continues to the present day but is now close to resolution.

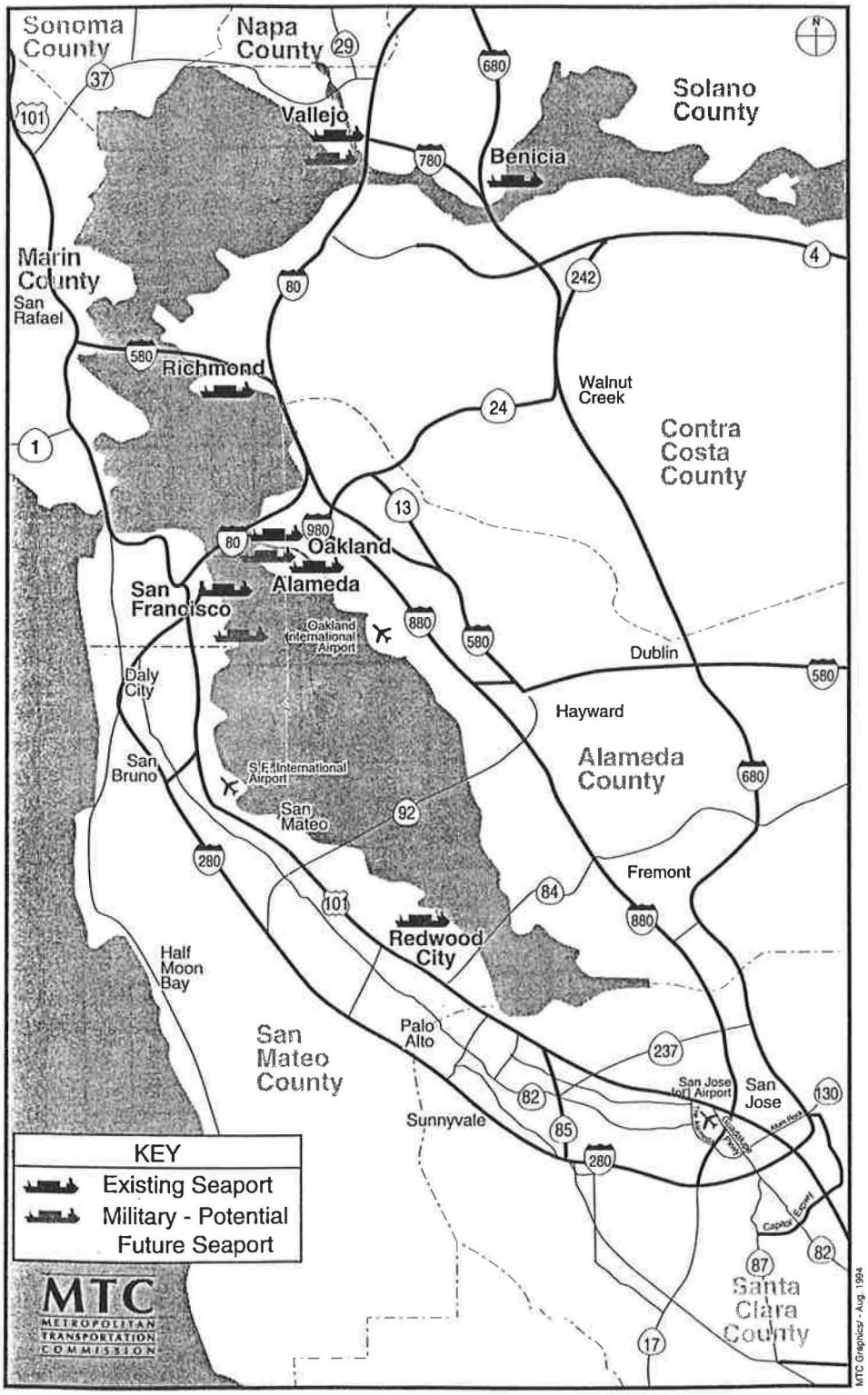

FIGURE 1 San Francisco Bay Area seaports.

Figure 1 presents the locations of existing seaport facilities in the Bay Area. In addition to Oakland and San Francisco, which historically have been the major seaports in the area, four additional seaports have

handled dry cargo. Richmond was converted from a navy shipbuilding facility into a port that handles a combination of liquid-bulk, break-bulk, and neo-bulk cargo. The Port of Benicia, also a former military base, is now totally managed by the private sector, and handles car shipments and petroleum products. The Port of Redwood City primarily handles dry-bulk products and has only a 9.1 m channel. Encinal Terminal, located on Alameda Island, a small, long-time facility, ceased operations in 1993.

The approach channel to the Port of Oakland currently has a depth of 11.6-m mean low water, but approval recently has been given to increase it to 12.8 m. Current channel depths for the ports of Richmond, Benicia, and Redwood City, are 10.7 m, 10.7 m, and 9.1 m, respectively.

INSTITUTIONAL FRAMEWORK

All seaport activities in the Bay Area are constructed and implemented at the local level, either by local governments or private companies. Thus, even though planning is performed at the regional level, a local commitment is required to implement the various projects in a plan to provide the capacity to meet future needs. Of the seaports that were active in 1993, all were owned by local governments except for two that were privately owned—the Benicia and Encinal terminals. The latter ceased its maritime operations in 1993 because it lacks the deep-water access and good rail connections to compete effectively for container freight and because of excess capacity for break-bulk cargo.

At the regional level, it was recognized in the 1960s that a need existed for regulatory control of shoreline development if the bay's natural resources were to be adequately protected. At the same time, it was recognized that additional water-related development was required to maintain the region's economic vitality, jobs, and the quality of life for its residents. BCDC was established by the state of California to develop a comprehensive bay plan in 1965. In 1969, the state legislature passed the McAteer-Petris Act, which gave BCDC the authority to regulate all bay dredging and filling and all development within 30.5 m of the shoreline. Through the San Francisco Bay Area Seaport Plan, BCDC, in conjunction with MTC, the regional transportation planning organization, designates sites and ground access to meet predicted long-term freight demand.

A two-step process ensures that port development minimizes the amount of bay fill, which is one of BCDC's key objectives. First, the site designations must minimize the amount of bay fill to meet predicted demand. Second, projects must be designed and constructed to avoid unnecessary fill. The process was designed to ensure that the long-term needs of the marine shipping industry will be met, while minimizing the impact on the bay's natural environment.

The balancing of supply and demand has differed for the development of each of the three seaport plan planning efforts. For the initial plan in 1982, resources were devoted to both the demand and supply aspects of port planning, although the emphasis was on screening a large number of alternative sites based on multiple criteria and developing a recommended plan to meet predicted demand. In 1988 the emphasis was on revising the demand forecasts. Only minor adjustments were made to site designations, mostly at the request of local governments. In 1994 the emphasis switched back to site designations. Difficulty now exists in providing the desired capacity, given the industry need for an economy of scale in containerized port operations, even though berth requirements are less than in previous plans and military sites are becoming available for civilian uses.

DESCRIPTION AND EVALUATION OF ISSUES

A strategic assessment was made early in the process to ensure that all major issues were identified. Seven issues were identified: (A) assessing the validity of traffic forecasts; (B) identifying the trends in the operation and management of the maritime industry; (C) establishing capacity assumptions for facilities; (D) identifying the future role of current civilian seaports; (E) establishing the potential for military bases to meet future civilian seaport needs; (F) addressing the need for interim uses for undeveloped sites for a possible 20-year period before they are needed for marine terminals; and (G) addressing intermodal regulations based on the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA).

Validity of Overall Bay Area Traffic Forecasts

The latest regional forecasts were made in 1986 as part of the first update of the seaport plan in 1988. MTC developed the forecasts using a two-part process. First, a global econometric model from Wharton Econometric Forecasting Associates determined how much and which commodities shippers would import to and export from North American Pacific Rim ports. Second, a team of international trade and transportation experts from Manalytics determined which cargoes would be in containers, and for each commodity type, established the market share Bay Area ports would attract. Subsequent traffic data indicate that the traffic forecast for the same

TABLE 1 SAN FRANCISCO BAY AREA FREIGHT FORECASTS BY COMMUNITY TYPE

Freight Category	Freight Throughput (1,000 metric tons)		Growth 1990–2020(%)	Total Freight (%)		Total Growth 1990–2020 (%)
	1990[a]	2020		1990	2020	
Container	7,824	32,567	316	64	76	81
Break bulk	387	1,146	196	3	3	2
Neo-bulk (iron and steel, automobiles, and newsprint)	1,138	2,217	95	9	5	4
Dry bulk	2,406	5,988	149	20	14	12
Liquid bulk	522	983	88	4	2	2
Totals						

[a]Actual, except for liquid bulk, which is from 1986 forecast.
[b]1990 and 2020 liquid-bulk figures are from Manalytics, "San Francisco Bay Area Cargo Forecasts to 2020," 1986.

period was accurate. The conclusion reached early in the process of the second update was that the existing forecasts are adequate for the development of the update. The forecast does, however, lead to some concern about the ability of the area to maintain its current share of traffic until 2020.

Both the Southern California and subsidized Pacific Northwest ports have ambitious development plans under way and do not face several of the constraints facing long-term, seaport development in the bay, especially land availability and the need for significant dredging to accommodate the largest vessels when fully loaded. On the other hand worsening traffic congestion in Southern California and the resulting air-quality problems and mitigation measures could result in diversion of some intermodal cargo from there to the Bay Area.

The Environmental Protection Agency's planned Federal Implementation Program (FIP) for attaining air-quality standards imposes stiff charges and major regulation of vessel, locomotive, and truck movements. Expert testimony at public hearings held in the summer of 1994 helped delay the FIP's implementation, but the air-quality enforcement impact on potential marine cargo movements still lingers as a future issue. Future trends will be watched closely to establish whether any deviations occur from predicted trends.

Another aspect of freight forecasts is imbalance between import and export cargo. Bay ports currently have larger export tonnage than import tonnage, based on agricultural products and scrap materials, smaller channel depths, a larger population base in Southern California, and smaller drafts for vessels traveling from the West Coast to the Far East.

Table 1 presents a summary of the year 2020 forecasts used for both the 1988 and 1994 updates. Of the 249 percent overall increase in tonnage, 81 percent is forecast to be containerized, which will quadruple during the planning period with increased market share from 64 percent in 1990 to 76 percent in 2020. The percent increase for break-bulk freight will have the same order of magnitude as containerized freight but will be easy to accommodate because it will only increase its share of overall freight to 3 percent.

Given these figures, the emphasis in the 1994 update was to identify sites for handling containerized freights, because there is more demand for this type of freight than for other handling categories and because its land requirements and development costs are higher.

Trends in the Operation and Management of the Maritime Industry

The maritime industry is highly competitive, based on costs and overall door-to-door travel time from shipper to consignee. The continuing emphasis is on changes in operations that can reduce overall costs. The past

decade has observed major changes in operations, including the following: (A) implementation of costly equipment to improve the speed of moving containers between vessels and landside vehicles; (B) larger vessel dimensions (draft, breadth, and length) to increase capacity and thus, productivity; and (C) improvements in monitoring the management of containers from origin to destination, primarily through the use of computers to help reduce overall travel time and best meet the needs of customers, many of whom have adopted just-in-time freight delivery programs. Each of these improvements has required significant capital investments, including dredging and vessel and shoreside equipment purchases. They require an increased economy of scale for port operations to be most cost-effective. Ideally, new facilities to increase capacity should be adjacent to existing facilities to contribute to this economy of scale. Otherwise, site designations may be unattractive to maritime, stevedoring, and warehousing companies and remain undeveloped.

From 1980 to 1993, the number of shipping companies serving the San Francisco Bay decreased from 68 to 55. Larger companies that operate vessels in transpacific trade and possibly beyond are able to implement operational strategies and capital investments that lead to cost reductions. Smaller carriers that can implement such strategies are limited to those that specialize in transportation to and from smaller markets, such as Latin America, or in specific commodities that require special handling, such as cars, liquid bulk, and newsprint. This consolidation of marine carriers is contributing to the trend to consolidation of port operations.

Although it has been relatively easy to document changes in the maritime industry in the past 12 years, trying to forecast additional changes is more difficult. We fully expect that current trends will continue, but certainly the gains in productivity will be more limited. Many possible changes that would increase throughput tonnage at a port would also increase overall operating costs and thus, are unlikely to be implemented.

Establishing Overall Seaport Supply Assumptions

As in any long-range transportation planning study, our goal has been to develop a feasible supply scenario to meet predicted demand. The demand side of the equation was relatively simple to address, given agreement that the most recent forecasts continue to be valid for long-range planning purposes. Even those who do not believe that containerizable cargo volumes will quadruple in the next 30 years admit that there has been robust growth in transpacific trade and that it will continue. Even skeptics agree that we need to make plans for substantial future capacity, although we may not know for what year. For example, a lower growth rate might mean that the predicted 2020 levels will not be reached until 2050, but there will be continual growth between 1994 and 2050.

The supply side, which focuses on the individual and collective capacities of seaport facilities and their ability to attract future freight, has been more difficult to address, partly because of the uncertainty of changes in maritime operations and investments. For the initial seaport plan in 1982, the methodology used was as follows: establish an average throughput per berth for each handling category, based on existing operations, and establish future needs in terms of vessel berths by dividing the throughput forecast by the average throughput per berth. This approach was appropriate given the need for a simple methodology for quickly analyzing a large number of alternative sites and developing initial recommendations. Also, it was assumed that no major constraints would exist in the development of new sites; thus, the use of existing capabilities was considered a conservative approach. In the 1988 update, both the forecasts and throughput capability figures were updated, but the methodology used was essentially the same.

For the 1994 update, the initial needs assessment was still based on average capabilities of active seaport facilities. However, the capabilities used no longer were based on existing throughput tonnage but instead on capacities. Capacities first were calculated using techniques developed for the U.S. Maritime Administration. The process involves calculating the capacities of each component in the overall process of transferring and moving freight within a cargo terminal. Back-land storage proved to be the critical constraint for all container berths in the San Francisco Bay, except for one terminal. Even at this terminal, however, it was a close second to gate processing. Table 2 shows the area for each current container terminal. For the Port of Oakland the average is 12 ha berth. Overall, land would have to be increased by approximately 64 percent at the port to eliminate back land as a constraint at all of the port's container terminals (Table 2). The difficulty of adding new bay fill poses significant constraints on increasing the capacity of existing seaport facilities, although both the regulators and the environmentalists prefer that if there must be any fill, it should occur at existing ports instead of in outlying, lesser developed areas.

A utilization factor of 80 percent was applied to the capacities to account for the fact that facilities are

TABLE 2 ANALYSIS OF BACK-LAND CONSTRAINT AT EXISTING BAY AREA CONTAINER TERMINALS

Port	Terminal Berths	Berths	Hectares	Hectares/ Berth	Land Capacity (Metric Tons)	Increase to Eliminate Constraint	
						Percent	Acres
Oakland	20–22[a]	2	29	14.5	170,400	62.9	22.3
	23	1	17	17.0	100,800	11.6	4.9
	24	1	15	15.0	91,200	128.2	48.7
	25, 26	1	13	13.0	74,400	51.2	15.9
	30	1	12	12.0	72,000	4.2	1.3
	32–34	2	27	13.5	158,400	31.4	10.4
	35	1	8	8.0	48,000	56.3	11.3
	37, 38	2	15	7.5	86,400	160.4	28.9
	60–63	3	33	11.0	196,800	76.3	20.8
	67–69	2	21	10.5	127,200	32.7	8.7
	Total	16	190	11.9	112,560[b]	64.1 [b]	173.0
Richmond	3	2	6	3.0	38,400	858.1	68.7
San Francisco	94–96	3	30	10.0	180,000	58.8	14.7
	80	5	28	5.6	155,664	36.0	5.0
	Total	8	58	7.3	167,832[b]	45.3[b]	19.7
Grand Totals		26	255	9.8	115,359[b]	74.6[b]	261.3

[a] Gate processing is current constraint but is only 5 percent below back-land storage constraint.
[b] Weighted average.

Source: Bay Conservation and Development Commission, 1994.

TABLE 3A BERTH CAPACITY AVERAGES BY YEAR OF SEAPORT PLAN DEVELOPMENT (THOUSANDS OF METRIC TONS)

Freight Category	1982	1988	1994
Container	381	455	519
Break bulk	60	52	58
Neo-bulk	118	124	175
Dry bulk	680	772	930
Liquid bulk	73	82	90
Source: San Francisco Bay Conservation and Development Commission, 1982, 1988, and 1994.			

TABLE 3B COMPARISON OF THROUGHPUT CAPACITIES USED IN THE 1982, 1988, AND 1994 SEAPORT PLANS [THROUGHPUT INCREASES (%)]

Freight Category	1982–1988	1988–1994	1982–1994	1982–1994 Annual Average Throughput Growth
Container	19.4	14.1	36.3	2.6
Break bulk	-13.1	12.3	-2.4	-0.2
Neo-bulk	5.2	41.3	48.6	3.4
Dry bulk	13.5	20.5	36.8	2.6
Liquid bulk	13.0	9.3	23.5	1.8
Source: San Francisco Bay Conservation and Development Commission, 1994.				

unable to operate at capacity throughout the year. The need for this factor, unfortunately, was not well understood because it was not required in past plans, which focused on existing operations instead of capacities. The resulting capacities for 1994 are shown in Table 3A as well as corresponding figures used in the 1982 and 1988 plans. The average capacity per container berth in the Bay Area increased 36 percent from 1982 to 1994, which represents a 2.6 percent annual average increase in capacity for the 12-year period. It is predicted that there will be a 1 percent annual increase in capacity until 2020, which equates to an additional 29.5 percent in capacity. It is uncertain whether this level of improvement can be achieved, given current practices in port planning and operations. The increase in capacity achieved during the past decade reduced overall costs, but no clear consensus exists as to what extent increases in capacity, with decreases in costs, can be achieved. If it is true that increases in capacity can only be achieved by increasing unit handling costs, it will be difficult for an individual port on the West Coast to implement these changes without losing market share,

TABLE 4 COMPARISON OF EXISTING BERTHS AND PREDICTED BERTH REQUIREMENTS FOR THE THREE BAY AREA SEAPORT PLANS

Freight Category	1982 Seaport Plan			1988 Seaport Plan			1994 Seaport Plan		
	Baseline	Year 2020	Additiona 1	Baseline	Year 2020	Additiona 1	Baseline	Year 2020	Additional
Container	27	103	76	24	68	44	25	49	24
Break bulk	32	20	-12	14	13	-1	12	13	1
Neo-bulk	13	24	11	15	13	-2	11	11	0
Dry bulk	4	4	0	5	8	3	4	6	2
Liquid bulk	N/A	N/A	N/A	5	11	6	4	10	6

N OTE: N/A = not available.
Sources: 1982 and 1988 San Francisco Bay Area Seaport Plans and 1994 Seaport Plan Working Papers.

TABLE 5 CHANGE IN NUMBER OF EXISTING AND PREDICTED BAY AREA MARINE FREIGHT BERTHS FOR VARIOUS TIME PERIODS AMONG SEAPORT PLANS

Freight Category	1982–1988		1988–1994		1982–1994	
	Changes in Existing Berths	2020 Needs	Changes in Existing Berths	2020 Needs	Changes in Existing Berths	2020 Needs
Container	-3	-35	1	-19	-2	-54
Break bulk	-18	-7	-2	0	-20	-7
Neo-bulk	2	-11	-4	-2	-2	-13
Dry bulk	1	4	-1	-2	0	2
Liquid bulk	N/A	N/A	-1	-1	N/A	N/A

NOTE: N/A = not available.
Sources: 1982 and 1988 San Francisco Bay Area Seaport Plans, and 1994 Seaport Plan Working Papers.

TABLE 6 BAY AREA VESSEL CALL AND FREIGHT TRENDS, 1988–1993

Bay Area Port	Vessel Calls			Market Share (%)		
	1988	1993	Change (%)	1988	1993	Change
Port of Oakland	1,457	1,466	0.6	56.1	63.8	7.7
Port of San Francisco	654	443	-32.3	25.2	19.3	-5.9
Port of Richmond	204	129	-36.8	7.9	5.6	-2.2
Port of Benicia	215	226	5.1	8.3	9.8	1.6
Port of Redwood City	10	19	90.0	0.4	0.8	0.4
Encinal Terminal	57	16	-71.9	2.2	0.7	-1.5
Total	2,597	2,299	-11.5	100	100.0	
Total Bay Area freight (million metric tons)	16	20	25			

Sources: Pacific Maritime association annual reports, 1988-1993, and Marine Exchange "Golden Gate Ship Traffic Report," 1988-1993.

because a significant percentage of containerized freight is discretionary and because labor costs are relatively the same for all ports.

As in the 1982 and 1988 plans, the average capacities per berth were used to establish the number of total berths required to meet predicted needs. Because the Port of Oakland handles most of the Bay Area's containerized freight, its statistics closely approximate those for the Bay Area. Tables 4 and 5 summarize existing and predicted berth requirements by handling category for the three Bay Area seaport plans. Between 1982 and 1994, there was a decrease in existing berths for three of the four handling categories (container, break bulk, and neo-bulk) and no change in the other category (dry bulk). In fact, 20 of the 32 break-bulk berths active in 1982 are no longer active. In addition, container handling, which experienced a significant growth in traffic, saw a decrease in active berths, but only two. This contradiction between growth in cargo and decrease in facilities points out that new facilities must meet the needs of marine shipping companies or they will not be used, regardless of overall freight trends. One container terminal in the Bay Area, built on municipal speculation, was used about 1 year only and, thereafter, remained largely dormant for a decade except for brief use as a passenger ferry terminal with on site parking following the collapse of the San Francisco–Oakland Bay Bridge in the 1989 Loma Prieta earthquake.

It is predicted that Bay Area seaports will need only 24 new berths by 2020, a 68-percent decrease from the 1982 prediction. This need assumes that all new berths on average will handle 80 percent of the current average capacity of container facilities, taking into account that the average back land is at least 12 ha.

Future Role of Existing Civilian Seaports

The seaport planning process had to assess the extent to which existing seaport facilities can meet predicted needs. These needs can be met in one or more of the following ways: (A) converting noncontainer berths to container berths; (B) adding new berths on vacant land or land used intermittently; and (C) increasing the capacity of existing container berths by eliminating current critical capacity constraints (Tables 3, 4, and 5). The difficulty in this process is to perform the required balancing act between regional and local needs. At the ports of Richmond and San Francisco, which, along with

the Port of Oakland, are the only Bay Area ports handling containerized freight, there are local pressures to reclaim for other uses land that has been or could be reserved for future seaport development. The Port of San Francisco, within the past year, has lost container terminal tenants to both the Port of Oakland and the Port of Richmond. Uncertainty exists whenever the downward trend in tonnage passing through a port can be or is reversed. Yet in the long term, the Port of San Francisco remains critical if the region is to handle the predicted cargo demand. The port has the advantages of adequate deep water and a history of maritime use, even though it has the disadvantages of poor rail access and competing uses. Between now and the time additional capacity will be required, the Port of San Francisco must rely on revenue generated by nonmaritime activities in the port areas to remain financially stable.

The number of vessel calls made to Bay Area ports in 1988 and 1993 and the percent increase or decrease in vessel calls from 1988 to 1993 are presented in Table 6. The overall number of vessel calls to the area actually decreased, but the throughput tonnage increased because the size of ships calling in the Bay Area increased significantly. Based only on vessel calls, the Port of Oakland significantly increased its share of traffic (7.7 percent) and much of this increase came at the expense of the Port of San Francisco. On a tonnage basis, the Oakland share is even larger. Shares for the other ports remained relatively constant.

Potential for Military Bases to Meet Future Civilian Seaport Needs

The possibility that Bay Area military bases can be used as civilian seaport facilities has been recognized. Until 1993 there was no indication when such uses would be feasible. It had been assumed that, if made available, military bases would be transferred to the inventory of designated seaport sites to meet long-term freight forecasts. The policy statement in the original seaport plan as well as in the 1988 revision regarding military bases states, "Once the federal government makes a military site available, the site shall be included among the near-term sites unless the conditions under which it has been made available make it unreasonable to do so." The actual process for deciding which military bases can be used as civilian seaports has proved to be considerably more complicated and could emerge as the most controversial element in the 1994 seaport plan. Despite the opportunity to reserve potential seaport capacity to meet long-term needs, the number of military sites that will be used for civilian purposes will be significantly less than the total sites that have been found to be technically feasible for such purposes.

In the future, a significant number of military bases with either seaport facilities or the potential for seaport facilities will be transferred to civilian control either through leases or base closures. Included are the Naval Air Station Alameda, Treasure Island Naval Station, Hunter's Point Naval Shipyard, Mare Island Naval Shipyard, Naval Supply Center Oakland and Naval Supply Center Annex Alameda. The closing of these bases represents a loss of approximately 52,000 civilian and military jobs in the region. Local communities developing reuse plans for these facilities have focused on job-creation strategies in the short term and mixed-use developments in the long term that will generate revenue as well as provide housing and job opportunities. Unfortunately, port development usually does not emerge as a priority in such circumstances because short-term development is unlikely, and job creation from port development is more limited than job creation from other uses of the same acreage. Regional needs are likely conflict with local desires in the creation and implementation of long-term development strategies (Table 6).

Initially, it was possible to divide the bases as follows: (A) the Naval Supply Center Oakland which can be developed immediately because it adjoins the Port of Oakland and was owned by the port before being leased to the military during World War II; (B) Treasure Island Naval Station, which was eliminated from consideration early in the screening process because of its poor land access and lack of existing deep-water access; and (C) the remaining sites, which have a mixture of opportunities and constraints. For the sites not eliminated, areas that have adequate back land, good land access, and access to deep water were identified.

Conceptual layout plans were developed for container terminals on four bases with a total of 32 berths. Then additional factors were considered, including adjacent and current land uses, environmental constraints, the natural rate of siltation before mitigation, the status of reuse planning, institutional issues, and the extent of needs that cannot not be met at existing facilities.

Interim Uses for Undeveloped Sites

The 1994 seaport plan allows interim use of designated sites on which seaport development is not economically feasible. Because interim developments must be readily displaceable when the need for seaport facilities arises, local governments have had little success in attracting

revenue-generating activities to under-used lands within areas given a seaport priority. Consequently local governments, seeking developments that both generate revenue and create jobs, are viewing seaport designations more as burdens instead of opportunities, even though these governments recognize that there is a good chance of attracting future maritime cargoes to seaport destinations. BCDC recognizes that it needs to provide more flexibility in land uses to promote local interest in seaport designations.

One option might be to allow a variety of commercial or light industrial uses of seaport designations as long as users make a legally enforceable commitment to vacate a site when it is needed for maritime development. The actual legal mechanisms to implement and enforce this concept, unfortunately, were not in place during the development of BCDC's recommendations. It would have been advisable, in retrospect, to have had new policies on interim uses in place at the beginning of this project, because the "carrot" of increased flexibility probably would have considerably eased negotiations with local governments regarding seaport designations.

ISTEA

MTC, which is developing an intermodal management plan, views the 1994 seaport plan as providing important input on preparing the freight element of its intermodal management plan. Connections between marine and rail terminals have become increasingly important because of the rise in long-distance tonnage passing through West Coast ports. The Port of Oakland estimates that the increase in the number of marine containers transported by rail to and from Bay Area ports increased from 15 to 30–40 percent. The percentages differ significantly among competing West Coast ports. We estimate that 45 percent of Los Angeles and 70 percent of Pacific Northwest port traffic movements are previously or subsequently moved by rail. The Bay Area has the good fortune of having more unused rail capacity into and out of itself than does the Los Angeles area.

Almost all containers that leave a port area by truck have local regional origins or destinations. It is estimated that only 10 percent of port traffic goes by truck over the mountains beyond California. Road congestion exists during p.m. peak hours on regional freeways near the ports of Oakland and San Francisco and on major regional freeway sections leading to the north and to the east (I-80 and I-580). The region's biggest bottleneck is the San Francisco–Oakland Bay Bridge. In the peak direction, the bridge has a volume to capacity ratio of 1.43 during the peak hour, which creates significant delays. Because the local market of San Francisco and the San Francisco Bay Peninsula is much smaller than the total Bay Area region, approximately 40 to 60 percent of intermodal containers moving through the Port of San Francisco have a previous or subsequent movement over the Bay Bridge. The toll for trucks is $7. Another major issue is the increasing amount of truck traffic on the major north-south freeway (I-880), which is adjacent to the Port of Oakland and operates at capacity during peak periods. The daily percentage of truck traffic has doubled from approximately 8 to 15 percent during the past decade, and the percentage of traffic from trucks that have five or more axles has increased by approximately 10 percent. A contributing factor is a parallel freeway that passes through largely residential areas and has been closed to truck traffic as a condition of its construction.

Development of Preliminary Recommendations

At the beginning of the 1994 update process, participants believed that development and approval of a recommended plan would be relatively straightforward. It was anticipated that the need for future berths would decrease because of increased capabilities of berths and the opportunity to add a significant number of military sites to the inventory of available seaport sites. The only issue, it seemed, would be to decide which sites should be dropped. However, this scenario did not emerge. The recognized need for additional capacity in and adjacent to existing port developments, especially for containerized freight, and the staunch opposition of local governments to accept new site designations and in some cases, to retain current site designations except where there is active seaport activity made it difficult to provide the capacity to meet future needs.

These issues were analyzed during preparation of a preliminary set of site designations that met the requirement for 49 container berths by 2020. A total of 24 new berths were needed to meet this requirement. The amount of new berths needed, however, was reduced to 13, based on conversion of three bulk berths to container berths at Oakland berths and conversion of eight berths at Richmond. The need for the remaining new berths will be partially met by a recommendation for five new container berths at the Oakland Naval Supply Center and five to six new container berths at the Naval Air Station Alameda.

The recommendations will be reviewed on several levels. First, some fine-tuning of the technical analysis is indicated, but it may not happen because of time constraints and political expediency. It has become

apparent that the capacities of new sites will differ significantly from the average berth capacities used to develop the preliminary recommendations. Several berth conversions will have less-than-average back land in some cases substantially less, whereas the military sites will have greater-than-average landside acreage. The concept plans included 40 acres per berth at the Naval Supply Center Oakland and 35 acres per berth at the Naval Air Station Alameda, which was exceed the current average back-land acreage for the region. The need exists to go beyond the use of average capacities per berth, which carried over from the initial planning a dozen years ago, and to calculate capacities in 2020 individually for all sites, based on the recommended handling category. In other cases, increased vessel sizes may preclude the development of some berths included in the preliminary plan. The refined analysis also must consider that an allowance needs to be made for the high probability that, because of environmental, political, or other issues, not all designated sites will be developed. For example, the Naval Air Station Alameda site will be an important element of the strategy to meet long-term needs, but the Seaport Advisory Planning Committee has agreed to review the site's status after the locally developed reuse plan is prepared.

Second, an assessment will be prepared to identify the impact of the proposed site designations on the natural environment. Potential problems exist with toxic contamination, wetlands, and endangered species; however, environmental issues are not expected to be a fatal flaw in the development of seaport facilities on sites that have been recommended for development. In fact, for toxic contaminants, seaport development actually can be a remedial action that helps isolate contaminants and prevents them from spreading. Public review and comments on the environmental assessment and the draft plan could help the project team refine the technical analysis even further. An interesting question now facing the team is the sequence of detailed environmental analysis in relation to policy considerations of alternative land-use decisions. Given the limited budget for environmental analysis (less than $20,000), the initial thought was to have the policy committee select a plan from among alternatives presented to it and have the environmental analysis performed. However, the environmental community insists that an environmental analysis of all alternatives be performed before a preliminary narrowing of alternatives to help decision makers make a totally informed choice, with full knowledge of the consequences of their actions. The parties are still negotiating this issue, which has further delayed completion of the process.

Finally, an institutional assessment that considers the local willingness to have land designated for port development will be made. As noted, the San Francisco Bay Area does not have a regional port authority. Ports operated in Oakland and Alameda, for example, are separated only by the Oakland shipping channel and turning basin but are totally independent. Even though seaport sites take into account regional needs and are adopted by regional agencies, there is no regional authority to implement the elements of the 1994 seaport plan. It is expected that market forces will develop the need for facilities, maritime companies will choose to be located in or adjacent to port areas that currently have substantial infrastructure capabilities, the facilities will be economically feasible to develop and operate, and local governments will provide the institutional leadership in the development of the ports. The Seaport Planning Advisory Committee tried diligently to ensure that designated sites fill the needs of the maritime industry, especially the need to create an economy of scale within the constraints set by labor relations or union agreements.

As California continues to struggle with a lackluster economy and taxpayer revolts, local governments understandably are placing an emphasis on short-term economic development activities that generate revenue and create jobs. These goals are particularly important in communities that must replace thousands of jobs and associated revenue that will be lost when military bases are closed in the next 2 to 3 years. These communities realize that port development does not generate a large number of jobs, port development may not be needed for 10 to 15 years, and interim uses on designated seaport sites are unlikely. The communities need to be shown that the long-term regional need for additional seaport capacity outweighs local needs and that the communities needs are being considered, and that no community will be asked to provide more than its fair share of seaport sites.

Thus, as the process enters the decision making phase, it appears that the major challenge facing implementation of the 1994 seaport plan will be to obtain consensus that balances regional and local needs. This issue now eclipses the significant environmental issues regarding bay fill and dredging that have been considered in the current and previous versions of the San Francisco Bay Area Seaport Plan.