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# PRESERVATION OF WETLANDS: THE CASE OF SAN FRANCISCO BAY\*

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A new problem emerging in the field of environmental management is the control of the land-water interface or shoreline zone.<sup>1</sup> Public dissatisfaction arises not only from a misallocation of existing shoreline land among several competing alternatives, such as using vacant sites for non-water related activities and inhibiting virtually all public access, but also from a literal transformation of a non-market priced water resource into a land resource subject to an irrational pattern of development.

While regulation of the shoreline zone has been a problem for many years, the actual transformation of wetlands into fastlands has only recently emerged as a distinct aspect of shoreline management as a result of the corresponding increase in societal concern for the sale of wetlands as productive or important habitat and, as unique ecosystems, and as a result of the accelerating demand for shoreline frontage.<sup>2</sup> Wetlands in several urban or recreation areas of the United States are being filled to create land for industrial parks, residential developments, highways and other human uses, and to dispose of solid "residuals." Local communities view converted wetlands as essential for economic development. Even where public ownership of wetlands is clear, and potential exists for establishing use priorities, a pattern of development emerges similar to the existing chaotic allocation of shoreline.<sup>3</sup> The societal rationale for allowing the conversion of wetlands loses much of its basis, if the newly created shoreline land is allocated to human activity which is non-water related and which perpetuates an unaesthetic pattern of development.

## Case studies of Chesapeake Bay, the Great Lakes and San

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1. The shoreline zone is defined as shoreline water subject to diking, dredging, and/or filling and shoreline land within a shoreline band 1000 feet deep from the landward limit. This definition is based on the original legislative proposal of the San Francisco Bay Conservation and Development Commission.

2. Wetlands include swamps, marshes, and lands subject to tidal variation. Wetland transformation or reclamation requires diking and/or filling to create diked land and fastland.

Fastlands are either those reclaimed wetlands now suitable for development or existing solid land acceptable for settlement.

3. For example, the recent sale of state-owned wetlands in Ocean City, Maryland, permitted the conversion of one of the most ecologically productive and diverse areas in the state into additional land for a trailer court.

Francisco Bay reveal that this new aspect of the shoreline management problem, wetland transformation, is occurring most extensively in the smallest area, San Francisco Bay. Conversion of wetlands in San Francisco Bay has reduced the size of the bay subject to reclamation from 570 square miles to a little over 327 square miles, a reduction of approximately 40 percent. Wetland losses in the Maryland portion of Chesapeake Bay (517 square miles) have been only 37 square miles or about 7.2 percent of the total. Losses have been negligible in the Great Lakes. The total shoreline of San Francisco Bay is only 270 miles, the shoreline of Chesapeake Bay is over 4500 miles, and that of the Great Lakes is approximately 10,000 miles.

Pressure for development of the San Francisco Bay has been intensified by the fact that several private parties and local governments own a significant amount of the bay bottom which is the most susceptible to reclamation (Table 1).

TABLE I. Present Ownership Pattern

Party	Percent Ownership of Bay Bottom	Area (sq. mi.)
Private	22%	149
Cities & Counties	23%	156
State	50%	320
Federal	5%	55
Total	100%	680

The original private property owners received their land titles between 1855 and 1909. Initially, California sold swamp lands for \$1 per acre under the authority of the Arkansas Swamp Lands Grant Act. In 1868 the California legislature created a Board of Tideland Commissioners, which sold at auction tide and swamp lands. Other parties, including the surveyors of San Mateo and Alameda counties, transferred title to submerged land on the basis of questionable authority. At the present time, private parties own over 2,000 parcels (95,000 acres) in the bay. While most parties own a small number of plots, three corporations have substantial holdings, 52,000 acres by Leslie Salt Company, 20,000 acres by Ideal Cement Corporation and 3,400 acres by the Atchison, Topeka and Santa Fe Railway. Thus, these corporations have a strong interest in future management plans for the bay. Many cities and counties received grants between 1911 and 1915 to encourage a shipping boom and in the late forties and early fifties to promote specific activities such as airports, small boat

harbors, commerce and industry. These local governmental units find few incentives rewarding preservation, but readily realize that conversion of wetland into shoreline land brings potential economic expansion.

While the failure of one owner or one community to evaluate shoreline development in view of ecological and regional priorities may not be significant, the failure of many owners and communities to compare the values of preservation and economic development may significantly reduce the environmental quality of the bay area and the overall net regional product or welfare. The sum of the present reclamation efforts has resulted in diking or filling approximately 40 percent of the original bay subject to conversion, and may claim an additional area as extensive as 200 square miles. Significant reduction of the water resource might alter the bay's ecology, eliminate scenic amenities, prevent some types of recreation opportunities and reduce waste assimilation capacity. It might even modify the regional weather pattern. The aggregation of individual decisions could produce in the next twenty to thirty years an environment which no one intended to create. This kind of situation is not uncommon and has been referred to as the "tyranny of small decisions."

Recognition of the vulnerability of the bay to development and the problem of organizing numerous entities of government for joint or coordinated action aroused citizen concern in the mid-sixties.<sup>4</sup> Their action resulted in the creation by the California legislature of the San Francisco Bay Conservation and Development Commission (BCDC) in 1965 and its permanent enabling legislation in 1969. The 1969 amendments to the McAteer-Petris Act (1965) established BCDC's powers to regulate areas subject to dredging, diking and filling in the Bay, and to control zoning within a shoreline band 100 feet deep from the landward limit of San Francisco Bay. BCDC's mandate limits shoreline development to so-called "priority uses," such as ports, marinas, airports, water related industry, parks and wildlife refuges; it encourages the establishment of maximum feasible public access to the shoreline and waters of the bay.<sup>5</sup>

The argument of this paper is that BCDC's regulatory mandate is not the only condition necessary for implementation of the master plan for the bay.<sup>6</sup> The legislative mandate gives BCDC regulatory

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4. For a history of the movement, see H. Gilligan, *The Devil and the Deep Blue Bay* (1969).

5. Cal. Gov't Code §66605 (West 1966).

6. Also, BCDC's organizational structure might not be sufficient to deal with two institutional realities which could undermine its mandate. First, the passage of BCDC legislation depended upon strong, broad-based political support, such as the Save San Francisco Bay Association. These political forces may shift to other interests with the successful passage of

powers, but it does not provide mechanisms for dealing with income transfers resulting from regulatory decisions entirely prohibiting some uses or assigning uses only to certain areas. For example, prohibition of non-water related commercial and industrial activities on reclaimed land would transfer rental gains associated with development from one set of private property owners and cities with potentially reclaimable wetlands to other property owners and cities. Economic gains would shift if BCDC allowed Oakland International Airport to expand into the bay, while the expansion of San Francisco International Airport was prevented. It is naive to assume that private property owners and communities as well as priority users will willingly allow this income transfer. Most likely they will attempt to subvert BCDC legislation. They will continue to push for development of wetlands by either gaining control over the BCDC commission, or by receiving special exemptions, as the city of Emeryville has already done, from the state legislature. The efforts of San Francisco to commercially develop its waterfront and the efforts of private property owners in Richardson Bay to obtain fill permits are current examples of the pressure for development.

Another necessary condition for plan implementation is the public support of parties influenced by BCDC decisions.<sup>7</sup> BCDC will be unable to implement in the long run its master plan without the public mandate. Regulation alone is not sufficient. BCDC must maintain the support of specific "publics," primarily those who are adversely affected.

One strategy for insuring their support is for BCDC to take into account, in an effective and equitable manner, the income transfers resulting from its regulatory decisions. The remainder of this paper will document the magnitude of economic loss generally assigned to the most adversely affected parties, and outline several intervention strategies for eliminating or compensating for potential income

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BCDC legislation. BCDC must now depend upon public hearings and newspapers rather than specially organized groups, and consequently, may be without a large public base to call upon in a time of crisis. Second, a politically appointed commission decides the final resolution of bay fill issues. The composition of the commission might shift under strong pressure to members who would allow development. The recent trend in the Santa Clara and Marin County Boards of Supervisors, who each appoint a member of the Commission, towards development is an indication of the possibility of a developmentally oriented Commission. The combination of parties with substantial financial stakes in wetland development and the inherent weakness in BCDC's organizational structure has the potential of undermining BCDC's regulatory power. [Mancur Olson *The Logic of Collective Action: Public Goods and The Theory of Group* (1965) makes a similar point about the ability of small groups with a substantial stake in an issue to prevail over the collective interest in the long run.]

7. The importance of public support for the final authorization of BCDC is stressed in an article about BCDC by E. Schoop and J. Herten, *The San Francisco Bay Plan: Combining Policy with Police Power*, 37 J. Am. Institute of Planners 6-7 (1971).

changes.<sup>8</sup> Adoption of these strategies will enhance the probability of the successful implementation of the bay plan.

#### MEASUREMENT OF INCOME TRANSFER

Income transfers associated with pursuing public goals through a new mix of preservation and development primarily affect private property owners and individual communities. Other affected parties are the owners of commercial and industrial establishments and individuals who might live in housing on reclaimed wetlands. However, these latter activities are not severely affected by alternative location patterns as long as there exist other comparable options elsewhere in the region. Alternative locations are not an all or nothing situation as they are for a property owner or city which is deprived of the opportunity to develop wetlands. Restrictions on reclamation result in transferring rental income from an owner of wetland property to an owner of fastland as development can now only occur on the latter. Similarly, curtailing development activity in cities with jurisdiction over wetlands will shift settlement activity and the associated gains to cities with available fastland. Thus, regulation involves transfers both within the private sector and within the public sector.

The magnitude of the income transfers associated with private property owners can be illustrated by a demand and supply diagram. A private property owner could face  $D_2$  for his land as a potential development site and could reasonably expect \$60,000 per acre ( $P_1$  in Figure 1.). BCDC's mandate eliminates  $D_2$ , the demand for land for non-priority activities, and leaves the private property owner with a value of \$1000 per acre realized under  $D_2$  associated with only priority uses. The wetland owner loses  $P_1P_2BA$ . Assuming that development occurs elsewhere in the region, a fastland owner could capture that loss in rent.

The overall result is a significant loss for the private wetland owner and a significant gain for a fastland owner.<sup>9</sup>

The actual magnitude of the gross potential loss in rent, because of preservation or limited uses permitted, can be established by examining recent or potential transactions involving wetlands (Table II). The

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8. This analysis focuses on the rents associated with the change in the mix between priority and non-priority uses. The same devices could also be utilized to influence the mix within the priority uses. For example, the rate of a development tax upon marine development might vary with how closely the marina location corresponds to BCDC's plans. Or transfer payments among the different port facilities might bribe the jurisdictions controlling the port facilities into following BCDC recommendations.

9. The analysis of gains and losses would be more complex if it took into account the gains of the preservationists.

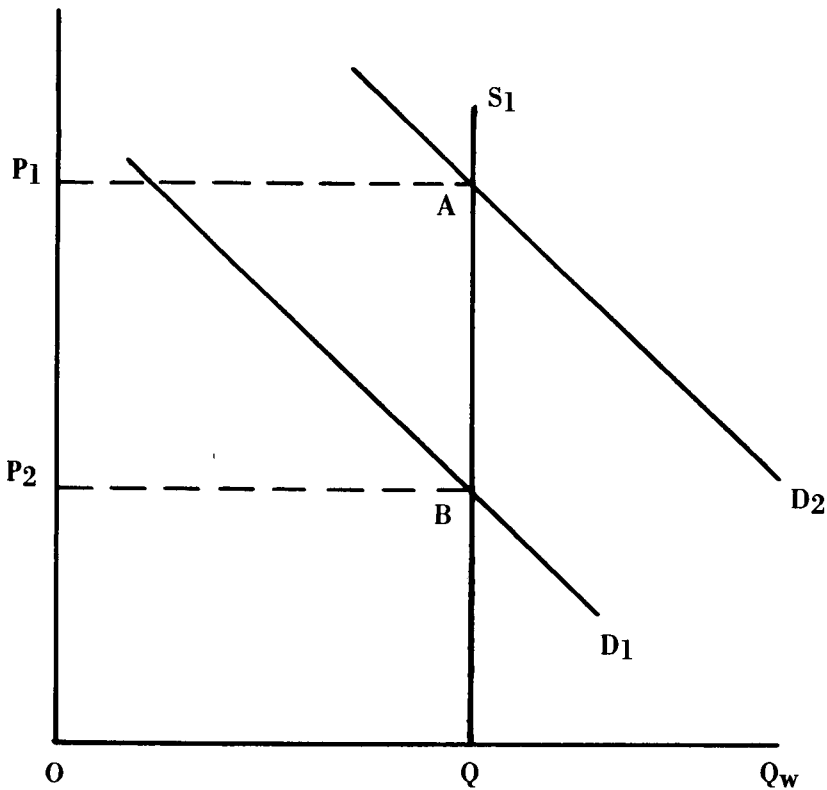


Figure 1. Demand and Supply of Wetland

TABLE II. Potential Rental Loss

Area	Fair Market Value as Wetland	Fair Market Value as Shoreline Land	Gross Difference
Emeryville	\$ 1,000/A	\$ 75,250/A	\$ 74,250/A
Redwood Shores	1,200/A	48,000/A	46,800/A
Richardson Bay	10,000/A	120,000/A	110,000/A

potential gross loss is the difference between shoreline land and wetland market value.<sup>10</sup> While the value varies depending on the projected settlement activity (highest for intense commercial, next for

10. The potential loss is stated as a gross rather than net figure because of the difficulty of generalizing about reclamation costs. In the case of Emeryville the cost of reclamation was minimal because the fill was free; in the case of Redwood Shore it was approximately \$15,000/A and in the case of Richardson Bay, depending on the type of commercial activity, might vary from \$15,000 to \$60,000/A.

high density residential, and lowest for medium density residential) and reclamation cost, the gain is substantial in all situations. Prohibition of reclamation of wetlands will deprive these property owners of the rental gain associated with changing human settlement and will transfer it to other private property owners whose lands will be developed.<sup>11</sup>

The other parties deprived of economic rent or pecuniary gains are those communities with potential for non-water related development on reclaimed wetlands. Regulating this type of development shifts the anticipated revenue associated with economic development to other communities in the region. There are thirty communities around the bay which could expand their settlement area into the bay and consequently increase their revenue bases.<sup>12</sup>

However, determination of the magnitude of the *net* community gain from expanded human activity is not a simple calculation. The net gain depends primarily on the composition of the settlement pattern, i.e., the combination of industrial, commercial and residential activities. Each type of development generates both additional revenue in the form of taxes, licenses and permits, fines and penalties, transfer payments from other agencies and current service charges and additional costs in the form of current expenses and capital outlays for services. The difference between increased revenue and increased cost is the net gain and can be identified as the potential rent flowing into a community.

A review of economic literature, both theoretical and empirical, leaves unresolved the question of which type of activity pattern results in a net gain and which in a net loss of revenue, or whether all three types of activity are similar.<sup>13</sup> The conclusions depend upon the initial assumptions in the studies. Nor are there any state-wide studies of California cities which indicate the proper attribution of costs and revenues.<sup>14</sup>

An investigation, undertaken for this paper, of twenty-five communities surrounding the bay reveals that industrial and commercial activities result in net gains of revenue and residential activity results

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11. This statement assumes that development will occur somewhere within the region.

12. They, like private property owners, also control potentially reclaimable wetlands. However, they will not gain additional land rental income associated with wetland conversion because state law requires that additional revenues go to the state.

13. R. Mace, *Municipal Cost-Revenue Research in the United States*, (Mimeographed Report, Institute of Government, U. of N.C., 1961).

14. There are analyses of Stockton, California, R. Mace & W. Wicher, *Do Single Family Homes Pay Their Way? A Comparative Analysis of Costs and Revenues for Public Services*, (Research Monograph 15, Urban Land Institute, 1968); and San Leandro, California, P. Lund, *Municipal Costs Arising from Business and Industry: A Case Study of San Leandro, California* (Unpublished, University of California, Berkeley, 1967).



in net losses for most communities.<sup>15</sup> Tables III, IV, and V illustrate this point for the fiscal year 1965-1966.<sup>16</sup>

TABLE III. Revenue Derived by Type of Activity for the City of Albany—1956-66

Revenue	Industrial	Commercial	Residential
Property Tax	\$ 18,600	\$ 65,200	\$ 382,000
General	11,600	25,800	249,500
Sales	32,500	217,800	-----
Franchise & License	-----	57,700	-----
From other Agencies	-----	-----	312,800
Library	-----	-----	2,200
Parks & Recreation	-----	-----	8,000
School Revenue Tax	40,200	-----	1,513,400
	\$102,900	\$507,100	\$2,468,000

TABLE IV. Costs of Providing Service By Type of Activity

Costs	Industrial	Commercial	Residential
General	\$ 38,600	\$ 86,900	\$ 839,700
Health	-----	-----	22,600
Library	-----	-----	35,300
Parks & Recreation	-----	-----	112,200
School	-----	-----	1,694,000
	\$ 38,600	\$ 86,900	\$2,703,800

TABLE V. Total Net Difference and Difference by Acre by Type

Sum	Industrial	Commercial	Residential
Total Difference	+\$ 64,300	+\$420,200	-\$ 235,800
Difference/Acre	+\$ 2,100	+\$ 5,900	-\$ 300

Commercial activity on a per acre basis gains \$5,900 and industrial \$2,100 and residential loses \$300. If the assumptions upon which this analysis is based hold, then a community which anticipates industrial and commercial activities on reclaimed wetlands will actively campaign for bay fill.

15. This conclusion depends on the following assumptions: (1) property tax assessments and rates are uniform for all types of activities; (2) sales tax revenue is generated by commercial activity; (3) other revenue sources can be identified with appropriate activities or assigned equally to all types of activities; (4) equal cost per acre per type of activity for the usual city services; and (5) only residential activity generates health, library, and school costs.

16. State of California, Annual Report of Financial Transactions Concerning Cities of California, Fiscal Year 1965-1966 and Annual Report of Financial Transactions Concerning School Districts of California, Fiscal Year 1965-1966.

Two parties, individual property owners and cities, will experience income transfers resulting from BCDC regulation. Since BCDC legislation does not deal with the transfers within the private or public sectors, the losers will probably continue their efforts to subvert BCDC, because its action deprives them of significant rental gains.

### INTERVENTION STRATEGIES

In view of the significant, potential economic losses, a necessary condition for plan implementation is elimination of the possibility of loss and/or compensation for loss. Regulation alone is not enough. The demands of affected interest groups must be acknowledged and resolved, if BCDC is to achieve long run success. The remainder of the article reviews several institutional devices for dealing with these groups in order to insure their support or the elimination of their opposition to the BCDC master plan.

Institutional devices for eliminating rental gains fall into four general categories, legal, acquisition, taxation and transfer payments. Legal devices are judicial decisions which would resolve once and for all the validity of title claims and development rights on private lands. Acquisition control, probably administered by BCDC, assumes the legitimacy of title claims and compensates the loser of potential rental gain. Taxation control under the possible direction of several local or state agencies taxes the rental gain for the state or shares it among several governmental parties. Transfer payment, usually administered by a consortium of cities, either shares the developmental gain and/or rewards cities for preservation.

Techniques within each category will be evaluated on the basis of three criteria:<sup>17</sup>

1. Is the technique effective for according higher priority to "public" non-market values? Each technique should be able to eliminate the incentive for wetland conversion, and thus insure a closer approximation of the socially determined combination of priority and non-priority uses.

2. Is the technique equitable? Each technique should compensate a loser, if BCDC intervention gains a benefit for the public rather than preventing any harm. Zoning land use does not require compensation, because it prevents harm (negative externalities) rather than capturing benefits for the public. However, if the land

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17. The usual economic criteria for evaluating intervention strategies are neutrality and equity. Neutrality is an irrelevant criterion in this case because the purpose of intervention is to change resource allocation. Equity is one of the three criteria of evaluation.

resource generates public benefits or a community provides a service, intervention should compensate the relevant party or parties.<sup>18</sup>

3. Is the technique efficient in the sense that it minimizes public investment, both initial capital outlay and continuing costs necessary for achieving the BCDC plan? The shortage of funds available for local, state and regional government and the general unwillingness of the public to support bond issues suggest that the least cost alternative is preferable.

The category of legal control eliminates rental gains by resolving the legitimacy of title claims and by clearly defining the developmental rights of private property owners.<sup>19</sup> The laws determining sale conditions between 1850 and 1910 did specify (1) that no submerged lands would ever be sold and no tidelands sold until 1860; (2) limits on geographic areas of sale; and (3) limits on the acreage sold to a private party.<sup>20</sup> Numerous private sales transferred title to tidelands which were in reality submerged land or tidelands in navigable sloughs and legally should never have been sold by the state. A court resolution of the legitimacy of title in favor of the state would take part of the supply of wetlands from private ownership and eliminate any possibility for rental gain. A legal resolution of the rights associated with privately held wetlands might not eliminate all rental gain, but might severely limit it. Private owners might hold their land subjects to the rights of the state to regulate commerce, navigation and fishing. A resolution of the trust issue in favor of BCDC would severely limit the uses of wetlands, and thus reduce the potential rent.

Legal controls receive a good rating on the basis of the three criteria. Legal controls are effective in eliminating rental potential, because they either deny title (no rental gain) or curtail the number of uses (only allow a small rental gain). Legal controls should be equitable, because courts have consistently defended property rights.<sup>21</sup> They should minimize public expense, because a favorable court resolution would transfer title or development rights to the state without cost. The reservation about using legal controls is the possibility of an unfavorable court decision. BCDC would then have

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18. For a thorough discussion of the harm-benefit doctrine, see Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundation of "Just Compensation Law"* 80 Harv. L. Rev. 1165-1258 (1967).

19. A more thorough review of the legal issues is available in, 1 Bay Conservation and Development Commission, Ownership and Powers (1968). (Bay Conservation and Development Commission, hereinafter BCDC).

20. *Id.* at 22, 23.

21. See, e.g., *Morris County Land Improvement Co. v. Township of Parsipanny-Troy Hills*, 40 N.J. 539, 193 A.2d 233 (1963); *Dooley v. Town Plan and Zoning Comm. of the Town of Fairfield*, 197 A.2d 770 (Conn. 1964); and *Commissioner of Natural Resources v. S. Volpe and Co.*, 349 Mass. 104, 206 N.E. 2d 666 (1965).

to purchase fee simple title or development rights to achieve the desired land use allocation, and the resultant public outlay would be immense.<sup>22</sup>

Acquisition controls cover a broad spectrum of techniques. First, BCDC could acquire fee interests of privately held wetlands in several ways. It could directly purchase the land, if property owners were willing to sell them. Or it might use eminent domain to implement schemes of advanced acquisition, similar to the situation in Stockholm,<sup>23</sup> or excess condemnation which involves buying more land than needed for the immediate purpose. The most radical scheme of this nature was the English development charge scheme of 1947, where the state acquired all developmental rights and compensated the owners on a one-time basis.<sup>24</sup> BCDC might acquire fee ownership in a more gradual fashion by purchasing options or by requiring wetland owners to inform BCDC of an impending sale. Second, BCDC could acquire less-than-fee interests by purchasing development rights or conservation easements.<sup>25</sup> These place a broad range of restrictions on the rights associated with development.

Evaluation of acquisition controls on the basis of the three criteria results in a mixed verdict. By their very nature acquisition controls are effective in capturing the potential rental gain. Purchase of fee interests or less-than-fee interests will transfer control of the rental gain from the private owner to the state. However, the equity of acquisition, which depends on the purchase price, will be difficult to establish in this situation. If BCDC considers that it is acquiring a set of benefits rather than preventing harm, then the purchase price should approximate the fair market value. However, the fair market value is difficult to estimate in an area where there are few comparative sales or sites. Determination of the value of development rights or conservation easements is an even more subjective procedure, and most likely will leave several dissatisfied parties. While acquisition fails to minimize public investment, it does offer a range of investment costs. Acquisition of fee interests would have cost approximately \$28.5 million at \$500 per acre and \$285 million at \$5,000 per acre in 1967.<sup>26</sup> Purchase of less-than-fee interests will not

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22. While the legal consultant to BCDC recommended taking the legality of ownership and development to courts, the BCDC staff rejected the suggestion.

23. J. Reys, *Requiem for Zoning*, Proceedings, Annual Conference of American Society of Planning Officials (1964).

24. D. Nandelher, *Controlling Land Values in Areas of Rapid Urban Expansion*, 12 U.C.L.A. Rev. 734, 739 (1965).

25. Kranowecki & Paul, *Preservation of Open Space in Metropolitan Areas*, 110 U. Pa. L. Rev. 179 (1961).

26. BCDC, *supra*, note 19, at Supplement, 464 (1969).

significantly minimize costs, because most private owners are aware of the value of their development rights. BCDC might reduce purchase costs by offering private owners only their investment value which is the sum of the initial costs, taxes and interest costs for the period of ownership, or by zoning areas non-developmental on the basis of preventing harm (air or water pollution, congestion, etc.), and then purchasing the lands on the basis of their reduced value. An overall assessment of acquisition controls indicates that they would eliminate rental incentives for development, but would involve considerable controversy over the equity of acquisition and the large public investment.

Taxation control is the third major set of strategies for eliminating rental incentives.<sup>27</sup> Taxation, as it applies to controlling private property owners, is some form of development charge.<sup>28</sup> A development tax would be a charge for the privilege of converting wetlands into fastlands, and it should equal the increment in rent attributable to a change in land use. One option is a value added tax which could exactly capture the increase in rent as measured by the value before and after fill. The other option is a fill fee which would value the amount per acre filled or the cubic yards of fill. Either option could be used as a revenue source for compensating wetland owners who are not permitted to fill in the bay.

Taxation control scores fairly well on two of the three criteria. First, taxation could eliminate all the rental incentive by transferring potential income transfers to the state. Second, the development charge is an attractive strategy from the point of view of public investment. Not only does it not require any capital outlay, but also it generates revenue for state acquisition of wetlands. However, taxation is questionable on equity grounds, because the state is discriminating, particularly with the value added tax, against a particular set of property owners. The courts would have to rule on the legitimacy of a development charge. The outstanding effectiveness and cost minimization features of a development charge strongly recommend that BCDC test its equity in the courts.

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27. There also exists a category of taxation techniques for delaying development rather than eliminating rental incentives; these techniques deserve mention. One procedure is to assess all wetland property at lower value uses rather than in "its highest and best use" or fair market value as long as it remains wetlands. As now practiced in California with golf courses, this treatment is a windfall to an owner holding land for development and only shifts the burden of taxes to other property owners. More importantly, it fails because it is no permanent guarantee of open space. Stringent regulations are needed to insure just compensation for the public. A more equitable option is tax deferral where taxes are paid on present use rather than fair market value until the time of conversion when all fair market value taxes for all years are owed on the property.

28. BCDC, *supra* note 19, at Powers, 69-70 (1968).

The fourth set of controls is transfer payments, and it applies to communities rather than private property owners. Communities receive by converting wetlands into industrial and commercial acreage rental gains in the form of net tax revenues, and any successful modification of community behavior must eliminate that development incentive. One option for eliminating the rental income to cities is to shift the tax jurisdiction over all wetlands from communities to a regional organization. The regional organization would collect the taxes, redistribute monies to communities to pay for services provided, and possibly allocate the remainder for wetland acquisition. The region rather than any one city would receive the rental gain from development. Another option is in-lieu payments to communities if they forego development. They would receive compensation for the foregone rental income. A more comprehensive option would be the elimination of property taxes as a major source of community income and replacement of them by state income taxes.

Evaluation of transfer payments indicates they are very satisfactory, based on a simplistic view of community behavior. They eliminate rental incentives either by sharing the rental gain or by compensating for the rental loss.<sup>29</sup> Second, redistribution of rental gains is equitable: (1) if the redistributive mechanism applies to all communities, and (2) if it maintains a regional asset, the quality of the bay. In-lieu payments are certainly fair to communities in that they are compensated for any loss. Third, redistribution payments are a gain in revenue for the state, and in-lieu payments would require reimbursement only for a loss in net rather than gross revenue. If the concept of transfer payments is satisfactory both to local and state governments, it should eliminate the rental incentive for community expansion.

### CONCLUSION

Based upon the level of community dissatisfaction with past decisions, the market-local government mechanism did not efficiently allocate wetlands in San Francisco Bay. California responded to the issue by creating the San Francisco Bay Conservation and Development Commission, which determined broad guidelines for efficient allocation. The permanent authorization of BCDC as a state agency was heralded as sufficient for preserving the quality of San Francisco

29. The efficacy of the technique is based on the questionable assumption that revenue gain is the only motivation for community expansion. While revenue sharing would redistribute the rental gain and in-lieu payments would free a community from viewing wetland conversion as a source of revenue, their success probably cannot modify the other incentives motivating community expansion. However, they do eliminate a predominant motive for community growth.

Bay. However, successful implementation of the BCDC master plan or guidelines requires fulfillment of several conditions. While the legislature provided BCDC with one necessary condition, regulatory power, it did not establish another necessary condition, a mechanism for insuring long run public support for BCDC. This paper argues that institutional devices which deal with parties adversely affected by BCDC regulatory powers are necessary to insure sustained public support. It identifies those parties adversely affected and evaluates several techniques which might sustain the support of interest groups.

The two parties which are most economically disadvantaged by BCDC decisions are private property owners and local communities. Private property owners lose rental gains, and communities lose tax revenue depending upon the configuration of new development. Three categories of intervention strategies deal with the rental income of private property owners. Only one category addresses itself to community gain. On the basis of effectiveness, equity and efficiency, specific legal and taxation techniques minimize public expense while promising a high degree of effectiveness and equity. The use of transfer payments is the best technique for nulifying community proclivity for development.