

**AGRICULTURAL VALUES of  
DIKED HISTORIC BAYLANDS**

By  
Staff of the  
San Francisco Bay Conservation  
and Development Commission

APRIL 1982

A Technical Report Prepared for  
**SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION**



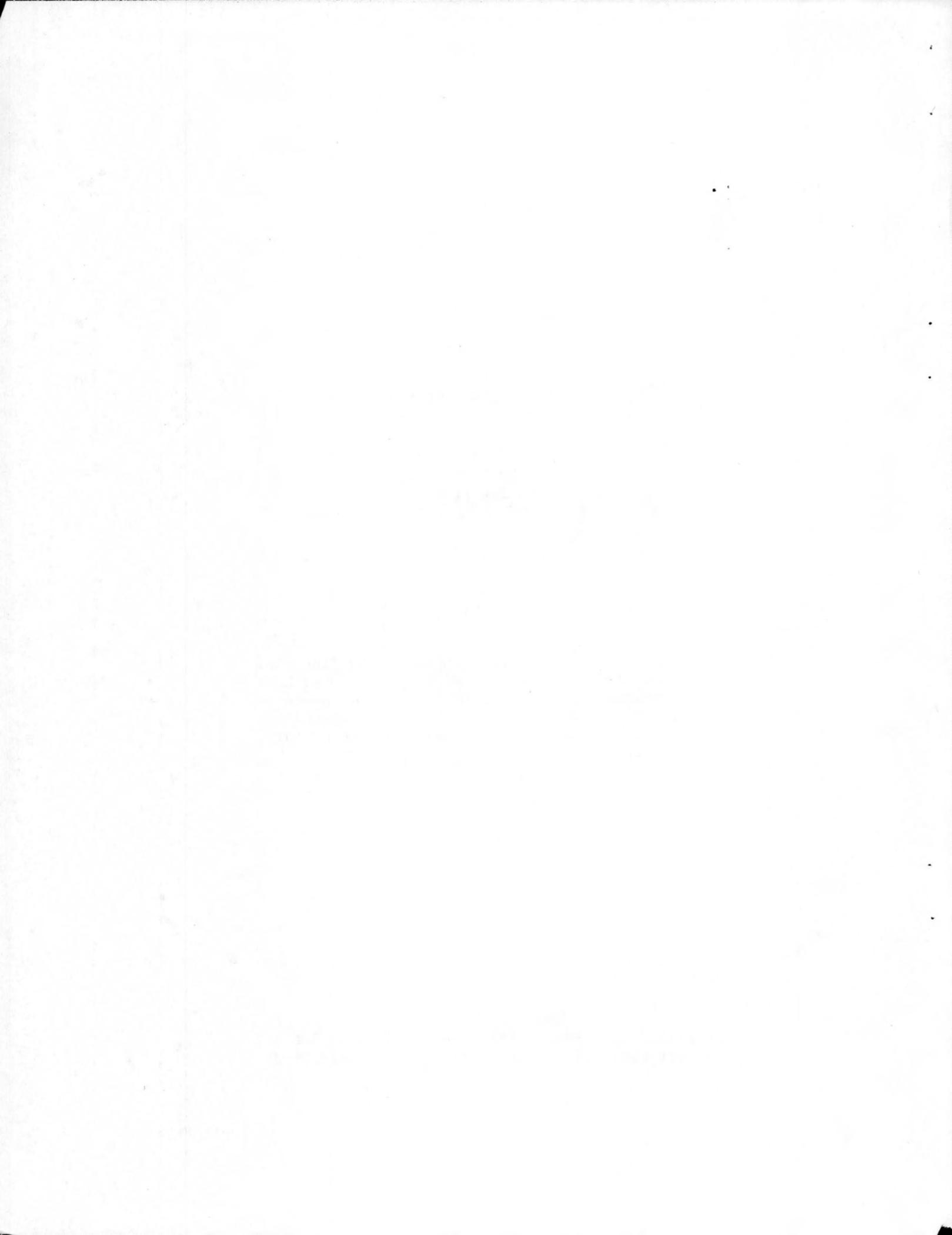
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This technical report, by the staff of the San Francisco Bay Conservation and Development Commission, was prepared as part of the Diked Historic Baylands Study. The purpose of this report is to document the agricultural values of diked baylands. This technical report should be read in conjunction with the staff report entitled "Diked Historic Baylands of San Francisco Bay."



## Introduction

Almost 32,000 acres of land, once part of the Bay, are now used for agriculture. Diked off from the Bay over the years since 1850, they are now used mainly for the cultivation of hay and oats. These forage crops are important not only to the economies of Marin, Napa, Sonoma, and Solano Counties where most of the agricultural lands are located but also to the economy of the entire Bay Area. North Bay dairymen in particular rely on the forage produced on diked baylands for feed for their cows. The dairies in turn provide half the fresh milk and milk products consumed in the Bay Area. Jobs are provided both on the farms and in the milk products industry.

This report will discuss (1) the factors that make diked baylands suitable for growing forage crops, (2) the economics of hay and oat growing, (3) the relationship between forage crops and the dairy industry, (4) the importance of the dairy industry to the Bay Area economy, and (5) the threats to North Bay agriculture, primarily from urbanization.

The staff relied on published studies by People for Open Space and McDonald and Grefe Incorporated, and on county agricultural reports. The staff also interviewed farmers, dairymen, and farm advisors. General Plans, zoning ordinances, assessors' records, and environmental impact reports supplied additional information on the future of agricultural use on the diked baylands. During the summer of 1979, the staff also inspected many of the properties.

## Location of Diked Agricultural Lands

Thirty-one thousand nine hundred and eighty-two acres (62%) of the 51,632 acres diked off from San Francisco Bay are now used for agriculture. All but 745 acres are located in Marin, Napa, Solano, and Sonoma Counties. About 26,536 acres (83%) of the North Bay diked agricultural lands are used for growing forage crops, mostly hay and oats; 5,343 acres (17%) are used as pasture. One hundred and three acres (.004%) are in other crops. Table I shows the agricultural use of diked historic baylands by county.\*

## Physical Factors Influencing Crops Grown on Diked Baylands

Climate and soil conditions are the major physical factors that determine what crops can be cultivated on diked baylands, particularly in the North Bay where most of these lands are located. The climate is mild with cool temperatures and frequent summer fog. The soils are poorly drained and consist of silty clays with acidic subsoils a few inches below the surface. The water table is also usually near the surface. Because of poor drainage, the low-lying baylands are frequently flooded during the winter rainy season; between November and April standing water is often present. This means that only crops that can be planted in the late spring for harvesting in the early fall are successful.

\* No diked baylands are used for agricultural purposes in the City and County of San Francisco or Santa Clara County.



Table I  
 Agricultural Use of Diked Historic Baylands<sup>a/</sup>  
 (acres)

<u>County</u>	<u>Forage Crops<sup>b/</sup> on Historic Baylands</u>	<u>Pasture on Historic Baylands</u>	<u>Other Crops on Historic Baylands</u>	<u>Total Historic Baylands in Agricultural Use</u>
Alameda	180	-	18 row crops	198
Contra Costa	187	360	-	547
Marin	5,174	878	-	6,052
Napa	684	1,926	-	2,610
Solano	1,600	-	-	1,600
Sonoma	18,711	2,179	48 orchards 37 vineyards	20,975
TOTAL	26,536	5,343	103	31,982

<sup>a/</sup> Source: BCDC Diked Wetlands Inventory, 1979.

<sup>b/</sup> Includes alfalfa, oats, barley, and grain grown for hay or silage.



The most successful crops on baylands are forage crops consisting of alfalfa and grains such as oats grown for hay. They are shallow rooted so that acidic subsoil and a high water table does not affect them. There are also varieties of hay and oats available that mature quickly.

### Value of Agriculture to the Regional Economy

#### 1. Economics of Hay and Oat Farming

The major economic factors affecting crop selection are the cost of production, yield per acre, and selling price.

In the North Bay, oat and hay operations produce one crop per year, which with normal rainfall will yield about 2 1/2 to 3 tons of forage per acre. The cost of producing that crop at the present time is a little over \$100 per acre. The price of forage varies from year to year but between 1972 and 1977 ranged from \$29 to \$78\* per ton in Sonoma County.<sup>1/</sup> Prices this year are \$50 to \$55 per ton. As a result with the best yield a North Bay farmer will earn at most about \$65 per acre. These figures are consistent with a 1978 analysis of profitability that determined returns per acre for hay and oats in Sonoma County ranged up to \$51.<sup>2/</sup> A farm of 200 acres could thus yield about \$13,000 net profit.

#### 2. Interdependence of Locally Grown Feed and the North Bay Dairy Industry

The North Bay oat and hay farmer is fortunate in having a ready market for his crops. The dairymen of Marin and Sonoma Counties are his major customers.

The dairy industry is extremely important to the North Bay and the entire Bay Area. For example, the yield in 1980 from Sonoma County dairies alone was \$60 million.<sup>3/</sup> That was the highest value for any agricultural use in the County and almost double the value of the next most valuable crop, grapes.

Dairy operations, however, have been faced with rapidly increasing costs. Feed costs represent 55 to 60% of the operating costs of a dairy farm.<sup>4/</sup> The continued availability of attractively priced forage for cows is thus essential.

One way dairymen attempt to keep forage costs down is by leasing diked baylands for pasture. But pasture alone cannot feed the North Bay dairy herds and farmers must seek other relatively inexpensive feed.

The diked wetlands are also a major source of this feed. Roughly 40% of the North Bay counties' forage crops for dairies are produced on diked historic baylands. Local production is particularly important because it minimizes transportation costs. Conversion of these forage crop lands to other uses would sharply reduce the total forage crop land available. Supplies of forage would decrease. Forage would have to be trucked in from great distances. Unless imports could readily replace the lost forage, prices for feed could be expected to rise significantly. Cost increases would undoubtedly have a profound impact on North Bay dairies. And feed purchased outside of the Bay region represents local revenue lost.

\* These figures in 1977 dollars.

A 1980 report on agriculture in the Bay Area also showed that most of the milk produced in Sonoma and Marin Counties is retailed in the Bay Area.<sup>5/</sup> Most milk is distributed by the Petaluma Cooperative Creamery, jointly owned by 160 of the 200 dairy producers in the two counties. Half is sold to such Bay Area milk product distributors as Clover-Stornetta Dairies, Dreyer's Ice Cream, Lucky Stores, and Marin French Cheese Company; half is sold as fresh milk and cheese by Lucky Stores, Carnation, and other retailers. The remaining forty Sonoma and Marin County dairy farmers sell directly to Foremost and Safeway. Local milk satisfies about one-half the regional demand; the balance must be met by milk from San Joaquin County.

The loss of Bay Area dairies would adversely affect the economy of the Bay Area in another way. The farms provide jobs for seasonal workers and members of farm families. Agriculture also provides work for semi-skilled workers employed in processing milk, transporting milk and milk products, providing farm supplies and services, and operating dairy-dependent businesses such as grocery stores.

Diked lands in agricultural use, therefore, help the regional economy by contributing to local agricultural profits, by supplying milk products inexpensively, and by providing local jobs.

#### Compatibility with Other Bay Values

Few other productive uses of baylands are as compatible with natural values as is agriculture. Song birds, small mammals, reptiles, and amphibians can be found in pasture land, and raptors find ample prey in these areas. Diked agricultural lands are also used by water dependent birds for feeding and resting. Where these lands surround tidal marshes, they provide refuge areas when normally exposed marshes and mudflats are inundated by high tides or rain runoff. Many species of birds and great numbers of amphibians breed in these agricultural lands when freshwater ponds form following the rains. Wildlife use is particularly compatible where the land is unplowed pasture.

Farms on diked baylands also buffer more intensely used urban areas from marshes, mudflats, and open water areas, providing insulation for wildlife from human activities.

A recent report on San Francisco Bay wetlands <sup>6/</sup> stated that lands used for forage crops would increase in wildlife value if they were returned to tidal action. Although restoration would be beneficial to wildlife, it would also result in the loss of economically productive farm land.

#### Pressures on Continued Agricultural Use

Agricultural land has been disappearing at a rate of 23,000 acres per year in the Bay area. About 75% of the land use change occurs as a result of urbanization.<sup>7/</sup> North Bay agricultural lands are particularly threatened with conversion because hay and oat farms are not very profitable, urban areas are nearby, and there is little regulatory protection to assure continued agriculture.

1. Low Profitability. As noted earlier in this report, the farmer cannot expect high earnings from hay and oat farming. One way to increase earnings from agricultural land is to increase land holdings. But this can only be done where land values reflect agricultural use. Most agricultural lands in the North Bay, however, are located between urban areas of north Marin County and Vallejo. Parcels on the urban fringe are attractive for conversion to residential and commercial uses. The land prices reflect those uses, not the value of the land for continued hay and oat farming. High interest rates also make land purchases difficult.

Another way to increase earnings is to grow more profitable crops. In many areas in the state a farmer can change low profit crops to other crops. This is not possible in the baylands. Crops like apples and grapes, commonly grown in North Bay counties, have extremely high yields per acre, with values of up to \$600 per acre in some cases.<sup>8/</sup> But these crops cannot be grown on the baylands because they are deep rooted perennial crops that would not do well or in bayland soils where there is a high ground water table or in bayland soils.

In sum, since the farmer cannot increase his earnings by changing crops or expanding his holdings, urban development becomes an ever more attractive option.

2. Urban Encroachment. Pressures to convert agricultural land to other uses are particularly great for lands within commute distances of urban centers. The agricultural lands of Marin and Sonoma Counties are within a 30-minute commute from San Francisco. Agricultural areas in Napa and Solano Counties are within a 20-minute drive from Vallejo.

Extension of service district boundaries or of services themselves often precedes conversion to urban uses. Municipal services are now available adjacent to large agricultural parcels in western Sonoma and Marin Counties. Moreover, services need only cross the Napa River to be available in eastern Sonoma County.

Ownership often indicates potential changes of use. Banks, trusts, and real estate companies own 3,054 acres of the baylands and many of these areas are leased on a short term basis to farmers. Such institutions usually do not hold lands indefinitely for agricultural purposes. Within recent months, the Commission staff has received several environmental impact reports (EIR's) for residential development on agricultural lands controlled by similar types of owners in Marin and Sonoma Counties. An EIR for conversion of 1,600 acres to residential development is being prepared for a parcel across the Napa River from Vallejo.

2. Lack of Regulatory Controls. Local jurisdictions can use police power to protect agricultural use. Some have adopted General Plan policies to continue these uses. In addition, the purpose of some zoning districts is to prevent urban uses from expanding into agricultural lands. The Agricultural District (A-W) in Napa County is an example. The language states the purpose of the district is to "provide open space for the preservation and managed production of natural resources and outdoor recreation, prevent the overcrowding of land, assure that urban development be limited to locations in existing urban areas, to conserve and protect the

natural environment including fish and wildlife habitat."<sup>9/</sup> However, no jurisdiction has an agricultural zoning district whose minimum lot size would be equal to or greater than 150 acres, the unit that is viable for a hay operation. Minimum lot sizes range from 6 to 60 acres. Therefore, although designations in some general plans show an intent to maintain agriculture, existing zoning does not reflect parcel sizes needed to produce hay and oats.

The state has attempted to provide some protection for agriculture through the California Land Conservation Act of 1965 (the Williamson Act). The Act allows a farmer to enter into a contract with the local jurisdiction. The farmer promises to keep the land in agricultural use for 10 years. The local government agrees to tax the land on the basis of agricultural value, not the "highest and best use," a considerably higher tax basis. The Williamson contracts are automatically renewed unless the landowner files a notice of non-renewal. After a notice is filed, his taxes slowly increase. After nine years the contract is terminated.

Even after Proposition 13, the tax savings from Williamson Act contracts are substantial.<sup>10/</sup> About half of the diked agricultural lands remain under Williamson Act contracts. It appears that many of the Sonoma County contracts, which were entered into at various times, will continue to run; however, the owners of about 1,000 acres of diked baylands under contract in Marin County have filed non-renewal notices. Those contracts will run out in 1984, and to the extent the non-renewals reflect the impacts of pressures for urban development, they are not auspicious signs for continued agricultural uses.

Federal and state government could protect agricultural land but no strong policies exist at this time. Recently the Legislature considered several agricultural land bills that would have provided further incentives for farmers to continue agricultural uses. One bill would have created an agency in the Bay Area to regulate agricultural lands and prevent conversion to urban uses. However, the measure did not pass the Legislature.

Farmers themselves are concerned about encroaching urban uses because they believe they lead to the loss of agricultural uses. They feel that introduction of residences into an agricultural area causes a conflict between their operation and the new residents. Sometimes farm operations are noisy and sometimes they attract bothersome insects. Dogs from nearby neighborhoods may harass cows and other farm animals.

Continued agricultural operations in the North Bay will depend upon the strength of development pressures, the strength of legal protection for agricultural land by state and local agencies, and on the farmers themselves. Without greater state protection many farms will probably be converted to urban uses in the next few years.

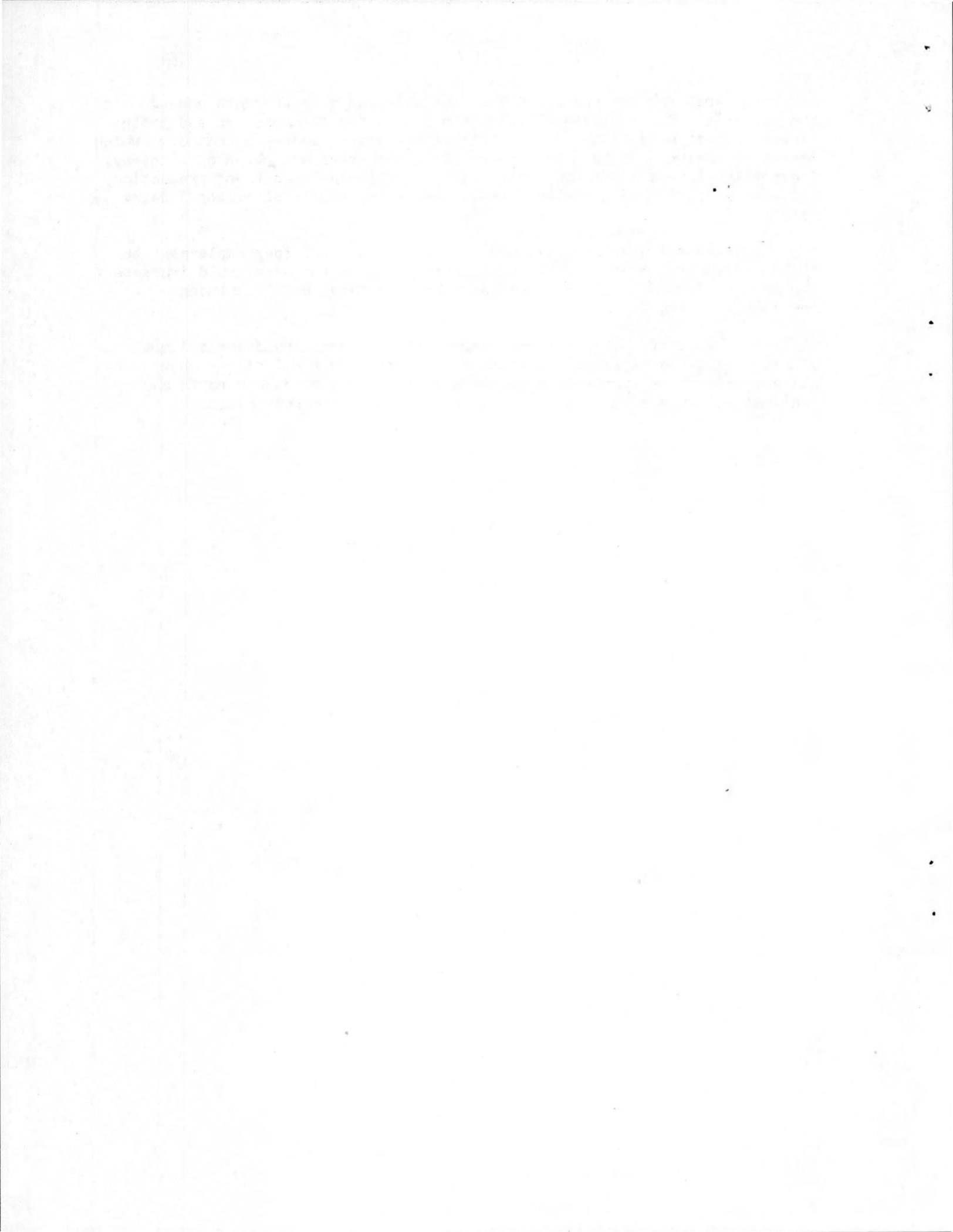
### Conclusion

Diked historic baylands in agricultural production should be maintained because they provide important social and economic benefits to the region and because, to a great extent, they also provide wildlife habitat.

Bay Area dairies provide 50% of the milk and milk products consumed in the Bay Area. Diked historic baylands now used for forage crops and pasture provide almost half of the land available for dairy feed -- a commodity which represents between 55 to 60% of dairy operating expenses. Loss of a nearby, inexpensive source of forage would raise the dairyman's costs of production, decrease profits, and ultimately could reduce the amount of regional dairy farming.

Using diked historic baylands for agriculture provides employment to both skilled and non-skilled workers. Loss of this resource could increase the loss of farm jobs directly and of jobs throughout dairy-dependent industries in the Bay Area.

Many wildlife activities are compatible with continued agricultural use of diked historic baylands. Restoring farm lands to tidal action should be allowed only where significant wildlife benefits can be demonstrated and regional economic viability of agriculture is not adversely affected.



NOTES

- 1/ Sonoma County. Department of Community and Environmental Services. The Impact of the Sonoma County General Plan on Agriculture and Land Value. Prepared by McDonald and Grefe, Western Farm Management Company, and Sedway/Cooke, 1978.
- 2/ Ibid.
- 3/ Sonoma County. Department of Agriculture. Sonoma County Agricultural Crop Report, 1980.
- 4/ Ralph Grossi, personal communication.
- 5/ People for Open Space. Endangered Harvest--The Future of Bay Area Farmland, 1980.
- 6/ United States Fish and Wildlife Service and State of California, Department of Fish and Game. Protection and Restoration of San Francisco Bay Fish and Wildlife Habitat, 1979.
- 7/ People for Open Space. Endangered Harvest--The Future of Bay Area Farmland.
- 8/ Marin, Nap, Solano, and Sonoma Counties. Departments of Agriculture. Annual Crop Report, 1979.
- 9/ Napa County. Ordinance 538, Section 12000, et sec.
- 10/ People for Open Space. The Effects of Proposition 13 on the Williamson Act, Special Report #1, 1981.

