

Delta Vision

## **Context Memorandum: Agriculture in the Delta**

This context memorandum provides critical information about agriculture in the Delta to support policy making. As they are developed, the context memos will create a common understanding and language about the critical factors in establishing a Delta Vision.

This is an iterative process and this document represents the beginning of a dialogue with you about how best to understand agriculture in the Delta and to inform recommendations by the Delta Vision Blue Ribbon Task Force. You have two weeks to submit comments that may be incorporated into the next iteration.

You may submit your comments in two ways: either online at [dv\\_context@calwater.ca.gov](mailto:dv_context@calwater.ca.gov) or by mail. If you are using mail, please send your comments to: Delta Vision Context Memo Agriculture in the Delta, 650 Capitol Mall, 5<sup>th</sup> Floor, Sacramento, CA 95814.

Your attributed comment will be posted on the Delta Vision web site (<http://www.deltavision.ca.gov>). Please cite page and line number with specific comments; general comments may be keyed to sections.

Your participation in this iterative process is valuable and important and is greatly appreciated. Thank you for your comments.

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## 1 *Section 1. General Policy*

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Agriculture is the dominant land use of the Delta, comprising three-quarters of the region's landscape. It was for agriculture that reclamation of the Delta's lowlands began in the 1850s with the support of state funding and policies. Because of the fertile peat soils and the moderating marine influence, Delta agriculture's per acre yields are almost 50 percent higher than the state's average. This unique growing region supports a diverse array of crops from such high value commodities as pears, wine grapes, asparagus, turf-grass, cherries, tomatoes and blueberries, to lower risk and value field crops as corn, hay, small grains and pasture.

Today, the Delta Protection Act recognizes agriculture as an important resource to the Delta. The Delta Protection Commission's Land Use and Resource Management Plan for the Primary Zone contains ten discrete policies for the protection of Delta agriculture, not only for its food production value, but because of its importance for wildlife habitat, recreation, scenic open space, and the contributions of farmers to the maintenance of Delta levees.

However, Delta agriculture faces an uncertain future. The agricultural cultivation of the Delta's peat soils has, over time, contributed to the subsidence of most Delta islands, particularly in the West and Central Delta. Subsidence increases the urgency for improvements of levees protecting the affected islands. Failure of levees protecting deeply subsided islands would not only damage or destroy agriculture and infrastructure on these islands, but also alter the salinity balance in the Delta, threatening water conveyance to agricultural and urban water users in the Bay Area, San Joaquin Valley and Southern California. At the same time, upstream diversions, municipal waste and agricultural drainage discharges have diminished flows and lowered the water quality of the San Joaquin River in the South Delta. This, in turn, threatens agricultural uses in the South Delta, where alternative sources of suitable water are limited. The alternative conveyance of an isolated facility potentially threatens adequate fresh water flows through the Delta, threatening all of Delta agriculture.

While agricultural reclamation district fees constitute a primary source of funding for non-Project levees in the Delta, this funding has not been sufficient for serious levee improvements needed to meet current standards, let alone prepare for the exacerbating effects of climate change. Along with sufficient quality and quantity of fresh water flows through the Delta, Delta agricultural

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1 interests and experts have listed the need for additional funding to improve and  
2 maintain levees as the top issue for a sustainable Delta agriculture.

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4 Perhaps the third most serious threat to Delta agriculture is land use  
5 change. The pressures of urbanization on the fringes of the Delta, the  
6 proliferation of rural ranchette developments, and the loss of agricultural land to  
7 public and nonprofit open space uses, threaten the sustainability of agriculture  
8 in the Delta as the critical mass of agricultural land necessary to support  
9 agricultural services and infrastructure is approached. The conversion of  
10 additional agricultural land if flooded islands are abandoned, or to new wildlife  
11 habitat restoration, will contribute to the trend towards an increasingly fragile  
12 agricultural region and its communities.

13

14 Opportunities exist to maintain an economically viable agricultural  
15 landscape in the Delta, but deliberate action is required. An improved  
16 understanding of the critical mass necessary to support the communities,  
17 industries and infrastructure that supports agriculture is needed, as well as  
18 investment in research on new crops and crop management systems that can  
19 sustain Delta soils, water quality and profitability. Investment in incentives that  
20 encourage and reward agriculture for producing multiple public benefits – e.g.,  
21 compatible wildlife habitat, recreation, subsidence reversal, carbon  
22 sequestration, etc. – without sacrificing food, fiber and energy production, is  
23 also needed. Finally, certainty with respect to levee maintenance, and water  
24 quality and quantity, is needed in order for farmers and ranchers to invest with  
25 confidence in a sustainable Delta agricultural future.

26

27 Four policy questions regarding agriculture that are pertinent to a Delta  
28 vision are:

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- 30 1. Do the values of agriculture in the Delta out-weigh the values of  
31 competing land and water uses and the cost of levee maintenance?
- 32 2. If Delta agriculture is determined to have a role in the Delta's future,  
33 what is the critical mass of agricultural land and uses necessary to  
34 sustain it economically?
- 35 3. If agriculture is to continue in the Delta, what kind of agriculture will it  
36 be?
- 37 4. If agriculture is to be part of the Delta Vision, how will market value be  
38 given to the full array of Delta services that are, or could be provided for  
39 an environmentally, socially and economically sustainable Delta?

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## 2 *Section 2. Delta Agriculture*

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4 **State Context.** California is America's number one agricultural state. On  
5 its 29 million acres of agricultural land, a third of which is in cultivation,  
6 California produces nearly \$32 billion in agricultural sales. This is more than  
7 double the output value of the next closest agricultural state, Texas. California's  
8 per farm output approaches four times that of the national average on 77,000  
9 farms and ranches that are, on average, 25 percent smaller than the national  
10 average. California produces a bounty of approximately 400 different  
11 agricultural commodities, supplying about half of the fresh fruits, vegetables and  
12 nuts consumed by Americans. The state is also prominent on the international  
13 market, accounting for 15 percent of the nation's total agricultural export, an  
14 agricultural export trade volume greater than many leading agricultural nations.

15

16 Two-thirds of California's \$32 billion in agricultural farmgate sales, or nearly  
17 10 percent of the nation's total agricultural production value, comes from the  
18 Central Valley, including the Delta, from farmland that comprises only one-half  
19 of one percent of America's total farmland.

20

21 **Delta Agricultural Land Use.** A diverse agriculture is the principal land  
22 use in the Delta, involving approximately 553,687 acres of actively farmed,  
23 fallowed and related lands, or more than 80 percent of the Delta's total land  
24 area in 2004. (See Table 1 and Figure 1) A preponderance of this agricultural  
25 land -- 75 percent -- is classified as Prime Farmland, land with the best physical  
26 and chemical characteristics and reliable irrigation water. By comparison, only  
27 18 percent of the state's agricultural land is classified as Prime Farmland. Urban  
28 uses make up nine percent of the legal Delta's area. Water and non-agricultural  
29 open space uses balance out the Delta's landscape.

30

31 **Table 1. Delta and Suisun Marsh Land Use – 2004<sup>\*</sup>**

Land Use	Acreage	Percent of Total
Urban and Built-up Land	74,098	9
Agricultural Land	557,896	67
Other Land	120,535	14
Water	85,065	10
Total acreage	837,594	100

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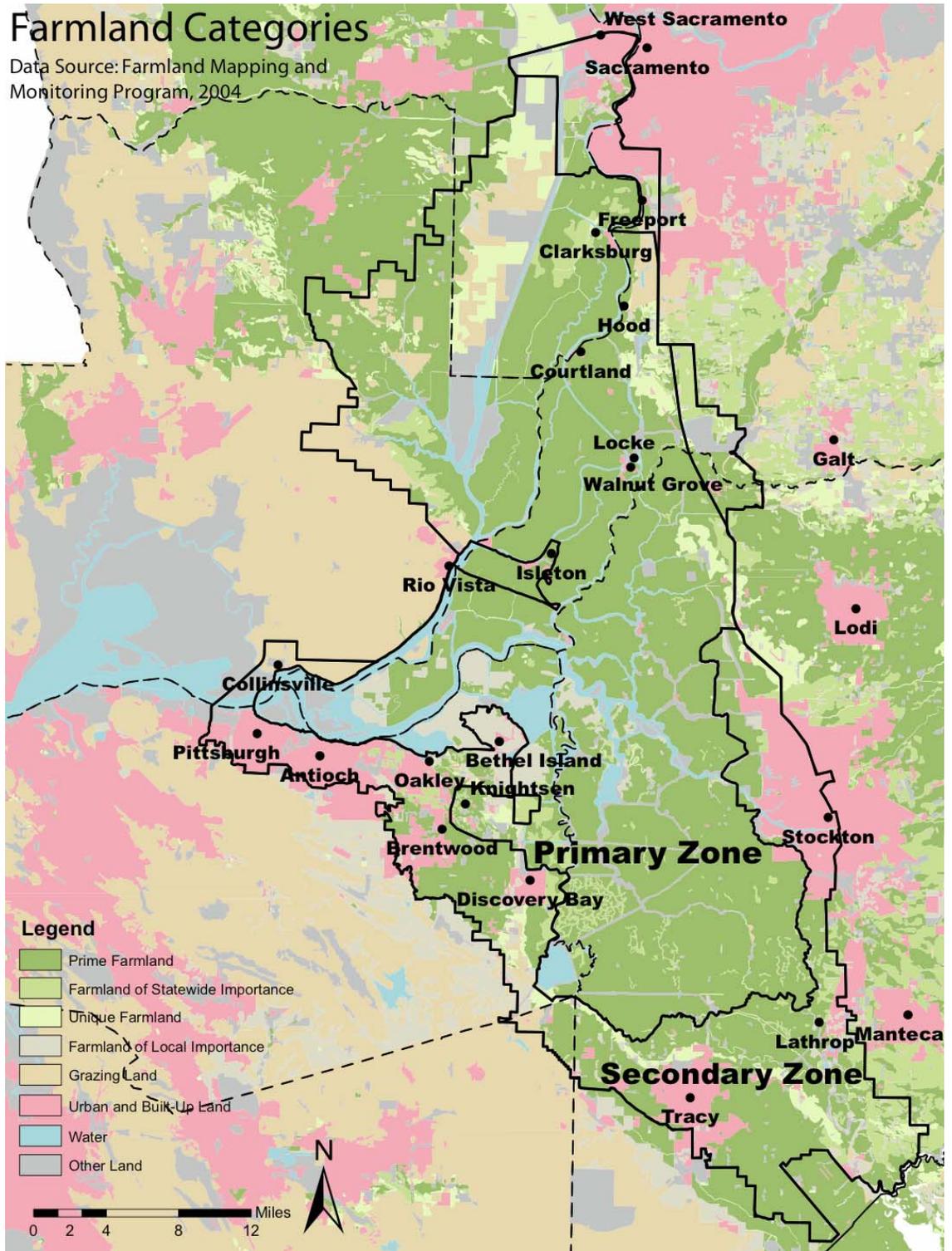
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<sup>\*</sup> CA Department of Conservation, Farmland Mapping and Monitoring Program

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Figure 1. Farmland Categories of the Primary and Secondary Zones of the Delta.

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1 The productivity of Delta lands finds its basis in: (1) the fertile and easy to work  
2 organic peat soils that are found on most Delta islands; (2) good quality and  
3 plentiful water; (3) a warm, but marine moderated climate; and adaptable,  
4 innovative farmers with long experience and expertise with this unique growing  
5 environment.

6  
7 San Joaquin County makes up the largest portion of the Delta's agricultural  
8 land base, at 55 percent. Sacramento County follows with 20 percent. Solano  
9 and Yolo Counties contribute eight to ten percent, respectively, and Contra  
10 Costa County rounds out the Delta agricultural land base at seven percent.

11  
12 **Delta Crops.** The 2006 county agricultural commissioners' annual crop  
13 reports list more than 90 different plant and animal products produced by one or  
14 more of the Delta's five counties. Table 2 and Figures 2 and 3 show Delta  
15 agriculture's average farmgate sales values and acreages, broken down by  
16 broad crop groupings. Truck crops, such as asparagus, tomatoes and  
17 potatoes, make up nearly a third of the Delta's production by value, followed  
18 closely by tree and vine crops. Together, truck, tree and vine crops contribute  
19 nearly 60 percent of the Delta's agricultural production value.

20  
21 Conversely, field crops, including hay and pastureland account for 70  
22 percent of the Delta's agricultural landscape.

23  
24 **Table 2. Crop Categories by Delta Portions of Counties and Delta Total, 2004 --**  
25 **Percent of Total Delta Agricultural Land and Percent Gross Value**  
26

Crop Group	Contra Costa	Sacramento	San Joaquin	Solano	Yolo	Delta Total
<u>Field Crops</u>						
% Acreage	68	72	67	89	70	70
% Value	16	21	22	31	26	22
<u>Tree &amp; Vine Crops</u>						
% Acreage	11	19	7	6	19	11
% Value	24	52	13	24	58	26
<u>Truck Crops</u>						
% Acreage	20	8	26	4	11	19
% Value	41	14	41	12	11	31
<u>Nursery/Seed Crops</u>						
% Acreage	1	1	1	1	0	0
% Value	15	11	5	21	3	8
<u>Animal/Dairy</u>						
% Value	4	2	19	12	2	13

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\* CA Department of Water Resources  
*Agriculture in the Delta*

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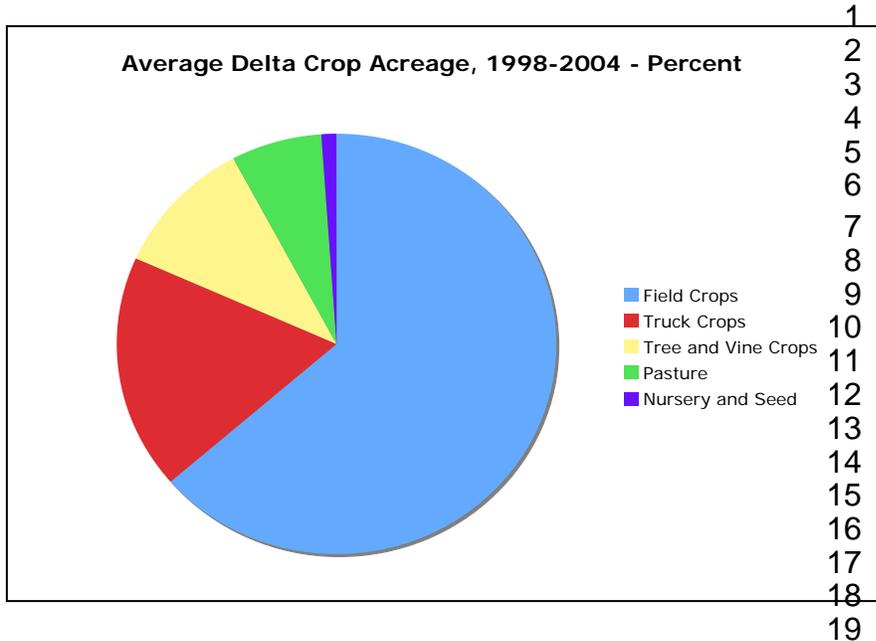


Figure 2. Average Delta Crop Values, 1996-2004—Gross Revenues

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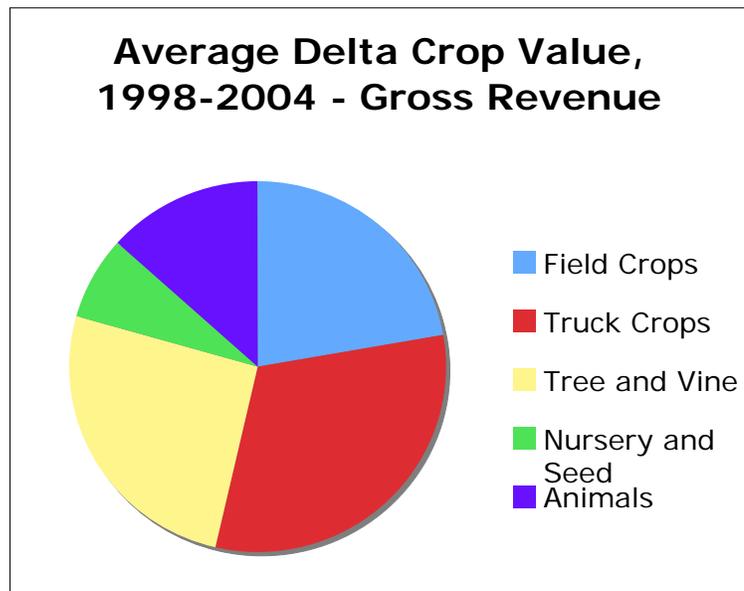
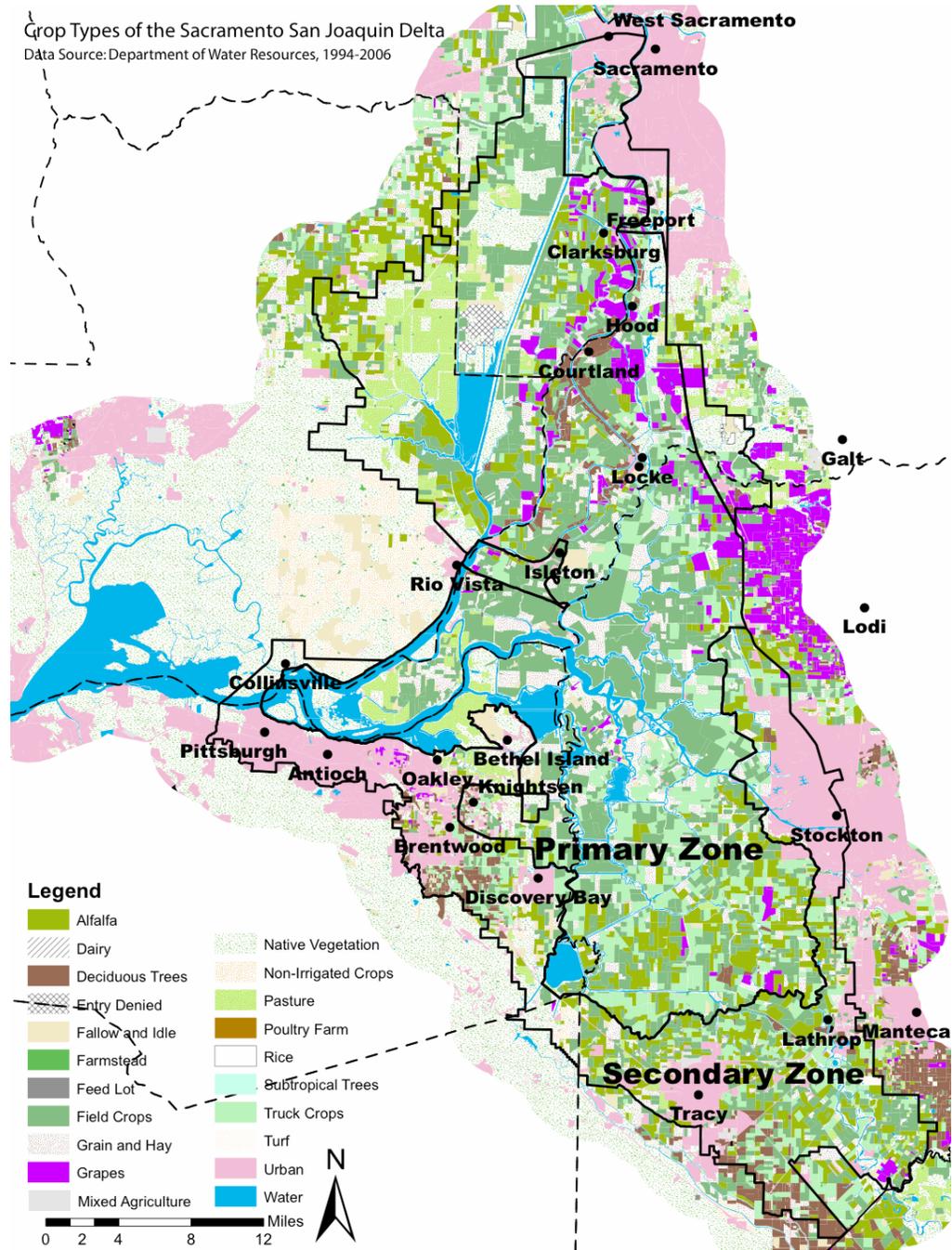


Figure 3. Average Delta Crop Acreage, 1998-2004—percent.

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- 1 Crop production varies within the Delta (Figure 4). In dollar value, tree and
- 2 vines crops are the major commodities in the North Delta, which includes Yolo,
- 3 Sacramento and Solano Counties.
- 4



5  
6 **Figure 4. Crop Types of the Sacramento-San Joaquin Delta**

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1 Truck crop  
2 production  
3 predominates in the  
4 South Delta, made up  
5 mostly of San Joaquin  
6 County. The West  
7 Delta is comprised of  
8 southwestern  
9 Sacramento and  
10 eastern Contra Costa.  
11 Agriculture in this  
12 region occurs on the  
13 most subsided and  
14 salt-affect islands and  
15 is comprised mainly of  
16 field crops, pasture and  
17 livestock. The Central  
18 Delta of San Joaquin  
19 County includes a mix  
20 of field and truck crops.  
21 Figure 5 illustrates the  
22 relative value of  
23 agricultural production  
24 in each of the Delta  
25 regions. The map  
26 dramatizes the affect

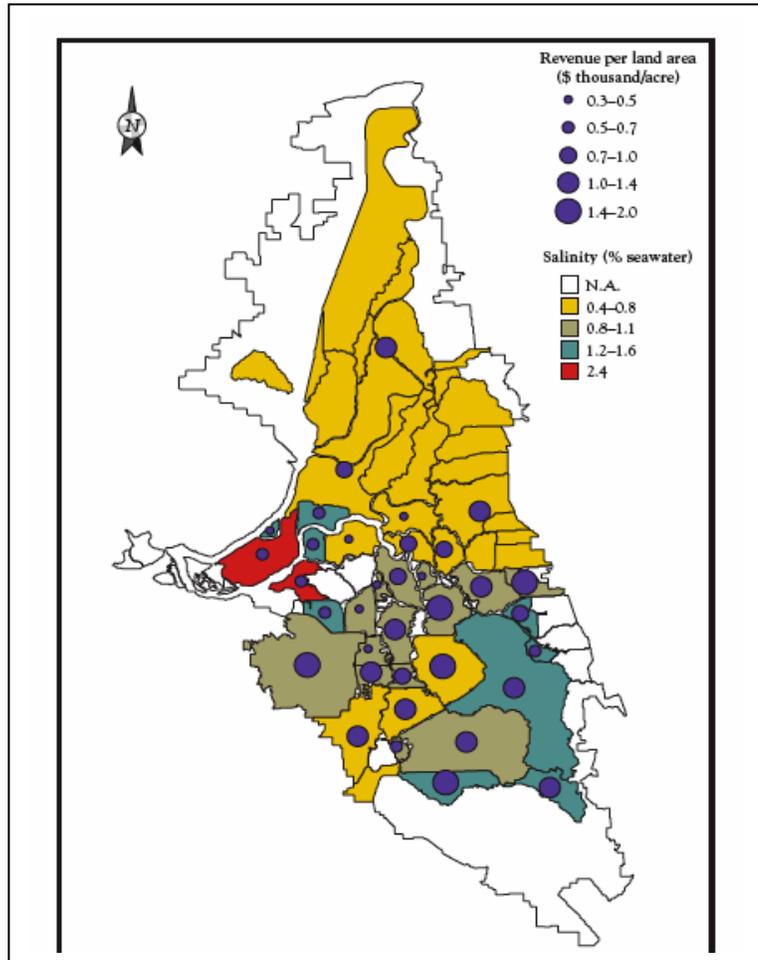


Figure 5. Relative value of agricultural production in each of the Delta regions

27 that subsidence,  
28 previous island flooding and salinity have had on crop patterns. The West and  
29 parts of the Central Delta with the most affected islands have switched over time to  
30 lower risk crops that tolerate the higher surface and groundwater salinities.

31  
32 Table 3 lists the specific major crops by 2006 gross dollar value being  
33 produced in the Delta. Between 1998-2004, the average gross agricultural  
34 output from the six Delta counties was calculated by the Department of Water  
35 Resources to be \$654,766,017 (2004 dollars). This compares to a total  
36 statewide farmgate sales of nearly \$32 billion in the same time period, or about  
37 two percent of the state's total production value. This is a small percentage, but  
38 if the Delta were a county, it would rank 15<sup>th</sup> out of the state's 58 counties in  
39 agricultural production value, just behind Santa Barbara County, and ahead of  
40 Sonoma County.

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**Table 3. Top 10 Delta Agricultural Products by Estimated Gross Farm Revenue - 1998-2004**

Crop	Value (\$)	Crop	Value (\$)
Wine Grapes	113,495,060	Alfalfa Hay	55,942,042
Animal Agriculture	87,129,085	Nursery Products	43,057,204
Tomatoes – Fresh & Proc.	82,853,260	Pears	29,040,872
Corn-Silage/Grain/Sweet	64,561,381	Misc. Vegetables	21,222,922
Asparagus	58,872,675	Potatoes	10,922,375

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Because of the unique growing conditions in the Delta, on a per acre basis, Delta agriculture is more productive than agriculture for the state as a whole. Using the average net land actually in production during the 1994-2004 DWR survey period, the average per acre production value of Delta agriculture is \$1,613; the average per acre production for the state is \$1,111.

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However, the farmgate sales do not measure the total economic impact of agriculture on state, regional and local economies. To measure agriculture's full economic impact, economists use multipliers to account for the ripple effect of agricultural production throughout the economy, including shipping, processing, packaging, value added products, and personal income. The Department of Water Resources applies an economic multiplier of 3 to estimate the total economic value of Delta agriculture. Using this factor, DWR estimated that in 2004 Delta agriculture contributed \$1.96 billion to the regional and state economy. Given the larger multipliers for animal agriculture and fruit and vegetable crops, this value is likely higher. In addition, agriculture contributes 7.3 percent of all state jobs, a fraction that is likely higher in the Delta given the labor intensity of many of its crops.

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**South-of-Delta Agriculture.** In-Delta agriculture is only part of the Delta agricultural picture. Water that flows through the Delta is pumped to agricultural lands in the San Joaquin Valley, as well as to smaller acreages in the Santa Clara Valley, Santa Barbara County and Southern California. Average annual diversion of Delta water for all agricultural uses between 1995-2005 was 4,550,000 acre-feet. Of that amount, diversions of 3,781,000 acre-feet, or more than 80 percent, were for agricultural uses south of the Delta. In 2000, the federal Central Valley Project, and to a lesser extent, the State Water Project, provided irrigation water to 3,083,000 acres agricultural land in the San Joaquin Valley and Tulare Lake Basin regions. In 2006 dollars, the gross agricultural production value from these lands was nearly six billion dollars.

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1 Another dimension of San Joaquin Valley and Tulare Basin agriculture's  
2 reliance on Delta water is the so-called "hardening" of demand. Urbanization of  
3 the Valley presents one form of demand hardening; i.e., the consequence of a  
4 loss of water is in terms of human health, safety and quality of life. It is much  
5 more difficult to deny water delivery to communities in a time of water shortage  
6 than it is to a field of alfalfa, for example. Agriculture in the Valley is undergoing  
7 a similar hardening of demand as crop production shifts increasingly from  
8 annual row and field crops to permanent tree and vine crops, the latter which  
9 involve greater investment in dollars and years. The economic consequences  
10 of a loss of water for permanent crops are much greater than for annual crops in  
11 terms of jobs, income, communities, and options for state and federal water  
12 managers.

13  
14 The public value of Delta agricultural land is more than food production.  
15 Following are other values provided by Delta agriculture.

16  
17 **Community Values.** A University of California-Davis researcher doing  
18 agricultural economics work in the Delta observed that "there is something  
19 going on out in the Delta with agriculture that is a greater value than the sum of  
20 crop agricultural values." Agriculture provides a myriad of less quantifiable  
21 values to the Delta and the state. The business of agriculture supports the rural  
22 communities of the Delta. The historically and culturally rich communities, such  
23 as Walnut Grove, Isleton, and Clarksburg rely in part on the business of  
24 agriculture for their survival as vital communities linked to place and history.  
25 Though many who now live in the Delta are commuters from outside of the  
26 Delta who seek a more rural lifestyle, the Delta's historical and cultural setting  
27 continues to set the Delta apart as a unique California place.

28  
29 **Environmental Values.** Delta agricultural also provides environmental  
30 services. One such benefit is the wildlife – including many Endangered Species  
31 Act listed species -- that depends on Delta cropland and its management for  
32 habitat. For example, the cultivation of field crops is suitable habitat for the  
33 Sandhill Crane and other waterfowl. Further, many Delta growers leave areas  
34 of their fields in wetland or riparian habitat for the benefit of wildlife. Another  
35 environmental service, depending on the crop, is the sequestration of carbon, a  
36 greenhouse gas that contributes to global warming. Agriculture, particularly  
37 annual crops, provides a more suitable floodplain land use than do urban uses.  
38 Finally, agriculture provides green open space and clean air for the growing  
39 metropolitan areas surrounding the Delta.

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1           **Recreational Values.** The Delta is well-known for its hunting, fishing and  
2 boating opportunities. Delta agriculture, by maintaining an undeveloped  
3 landscape, makes much of this activity possible. Increasingly, agricultural and  
4 environmental tourism is finding a niche in California, including the Delta.  
5 Perhaps the best examples of this kind of recreation are Staten Island and the  
6 Yolo Bypass. Staten Island is managed for wildlife friendly agriculture and  
7 hosts regular opportunities for wildlife viewing. The Yolo Bypass Wildlife Area is  
8 managed by the state Department of Fish and Game for wildlife conservation,  
9 wildlife compatible agriculture, and public recreation for wildlife viewing and  
10 hunting. In addition, direct marketing through wineries and farm road stands  
11 offer opportunities for agricultural tourism.

12

13           **Infrastructure.** Through the payment of property taxes, and water and  
14 reclamation district fees, agricultural land uses support the maintenance of  
15 critical Delta infrastructure, including roads, levees, and water conveyance. The  
16 open space provided by agriculture also accommodates important right-of-ways  
17 for vital energy and communications transmission facilities.

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## 20 *Section 3. Trends*

21

22           **Crop Patterns.** Table 4 shows the acreage in agricultural use and the  
23 value of the crop production from these lands for each of the Delta's five  
24 primary counties. These statistics are from the county-wide County Agricultural  
25 Commissioner Crop Reports, and, thus, are not limited to the Delta areas of the  
26 counties. Nevertheless, they document a trend of declining acreages devoted  
27 to agriculture after an initial surge after World War II. Similarly, since 1946, the  
28 adjusted gross crop value has increased, probably reflecting increases in  
29 production and irrigation technology and shifts to higher value crops. However,  
30 since 1966, all counties but San Joaquin have experienced only modest  
31 increases or declines in adjusted production value. San Joaquin County's  
32 agricultural production value increased by 47 percent between 1966 and 2005.

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Year	Contra Costa	Sacramento	San Joaquin	Solano	Yolo	Total	Index*
<b>2005</b> Acres Value	201 86,938	211 348,885	695 1,749,113	342 238,690	440 332,720	1,889 2,756,346	1.0
<b>1996</b> Acres Value	214 102,748	263 293,299	556 1,621,836	392 253,957	476 375,230	1,901 2,647,070	1.2
<b>1986</b> Acres Values	215 98,866	250 290,267	659 1,055,734	368 214,325	443 274,427	1,935 1,933,619	1.6
<b>1976</b> Acres Values	220 133,438	380 329,075	858 1,203,268	326 221,235	534 374,148	2,318 2,261,163	2.5
<b>1966</b> Acres Values	265 176,979	406 356,631	870 1,183,657	348 236,927	619 448,676	2,508 2,402,870	4.7
<b>1956</b> Acres Values	82** 133,843	210 298,366	815 940,456	393 165,110	645 367,401	2,063 1,905,176	5.2
<b>1946</b> Acres Values	108** 159,140	189 319,463	724 1,121,623	412 161,096	254 322,740	1,579 2,084,062	7.3

\*Producer Price Index (all commodities), U.S. Department of Labor: Bureau of Labor Statistics  
 \*\* Contra Costa County crop acreages for these two years do not include rangeland acres; all other values include rangeland acres.

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3           Like California agriculture, generally, Delta agriculture is a dynamic system  
 4 with new crop introductions, markets, and technologies. Delta county  
 5 agricultural commissioners report a number of shifts in crop patterns in the  
 6 Delta due to these and other forces. The acreage of some traditional Delta  
 7 crops, such as pears and asparagus are declining as developing countries bring  
 8 these crops to the American market at lower prices. At the same time, because  
 9 of new varieties and the unique growing season of the Delta, the plantings of  
 10 blueberries and cherries are increasing. In the western and central Delta, water  
 11 salinity and subsidence on some Delta Islands have led to a shift from cultivated  
 12 agriculture to pasture and livestock. Rice is now being grown on four Delta  
 13 islands and, as new cool climate varieties are developed, could expand  
 14 elsewhere in the Delta. Sugar beets, once a crop grown throughout northern  
 15 California and in the Delta has all but disappeared in recent years as sugar mills  
 16 serving the Delta in Clarksburg, Woodland and Tracy have closed. The limited  
 17 number of processors of tomatoes poses a similar threat to the future of tomato  
 18 production. Increases in land prices, and the emergence of new markets have  
 19 led growers to shift to higher value crops, many of which are perennial crops

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1 such as, orchards and vineyards. The increasing proximity of a large urban  
2 market has made turf-grass a profitable crop in the Delta since the mid-1970s.

3

4 Urbanization in Southern California has forced dairies north. With the  
5 growth of the dairy industry in the Central Valley have come new markets for  
6 hay, feed grains and silage, crops that account for an increasingly significant  
7 portion of agricultural production in the Delta. With the increase in corn prices  
8 driven by the ethanol market, feed prices have also risen, providing profitable  
9 opportunities for Delta growers.

10

11 **Land Ownership.** The Agricultural Census has documented little change  
12 in the concentration of agricultural land ownership and production. However,  
13 interviews with growers in the Delta indicate that there are fewer landowners  
14 owning more of the agricultural land. A number of growers reported the need to  
15 increase farming scale in order to secure market contracts with the fewer and  
16 larger grocery outlets that require large and predictable supplies of produce.  
17 Another driving force for consolidation is escalating land value. A relatively  
18 small Delta grower recently interviewed reported that increasing land prices  
19 have made it difficult to purchase or lease more land to improve his economies  
20 of scale. (Throughout this memorandum the results of interviews with growers  
21 in the Delta will be referenced; these interviews were done for a separate report  
22 on the thoughts from Delta growers about the Delta's future.)

23

24 Another trend in land ownership in the Delta is the increase in public or  
25 quasi-public land ownership. In 2005, the Delta Protection Commission  
26 received a staff report on land acquisition by public and non-profit entities in the  
27 Primary Zone of the Delta. As of 2004, it was reported that 83,823 acres (over  
28 17 percent) of the Delta's Primary Zone were in either public or nonprofit  
29 ownership. This figure represents a 137 percent increase over the 35,324 acres  
30 (7 percent of the Primary Zone) that the Commission reported in public or  
31 nonprofit ownership in 1993 when these records were first compiled. Table 5  
32 lists a few of the larger acquisitions.

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1     **Table 5. Selected Public and Nonprofit Delta Land Acquisitions**  
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Organization	Acquisition	Date	Acreage
CA Department of Water Resources	Sherman Island	1993	8,146
CA Department of Water Resources	Twitchell Island	1993	2,965
CALFED/The Nature Conservancy	McCormick-Williamson Tract	1999	1,654
CALFED/The Nature Conservancy	Staten Island	2002	9,200
U.S. Bureau of Reclamation	Prospect Island	1995	1,600
U.S. Army Corps of Engineers	Little Holland Tract	1999	1,640
Trust for Public Lands/CA Department of Fish and Game	Liberty Island	1999	4,760
CA Department of Fish and Game	Yolo Bypass	1997/2002	16,500

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4           Many of these lands continue in some level of agricultural production, at  
5 least as an interim use. Nevertheless, agricultural commissioners, bankers, and  
6 agricultural support industry representatives who serve the Delta express  
7 concerns over the loss of a critical mass of agricultural land needed to support  
8 agricultural infrastructure, including agricultural support industries.

9

10           Besides the impacts of public and nonprofit landownership on agricultural  
11 land use, the shift has implications on the local tax base and reclamation and  
12 water district revenues, diminishing public funds available to maintain Delta  
13 agricultural and community services and infrastructure, including levees.

14

15           A further stressor that comes from the public acquisition of private lands is  
16 when the acquisition occurs in the absence of a management plan for the land.  
17 Often state acquisition for public open space uses, such as habitat restoration,  
18 are funded by voter-approved bonds. However, the long-term management of  
19 the land must come from General Fund budgets, which may be insufficient not  
20 only for the development of a management plan, but for the management itself.  
21 When this occurs, the land may lie idle for many years, becoming a host of  
22 noxious weeds and pests, which can impair agricultural productivity. The Yolo  
23 Bypass Wildlife Area offers an alternative approach where much of the Wildlife  
24 Area is leased back for agricultural use, which helps to pay for the development  
25 of an overall management plan, as well as for the restoration and long-term  
26 management of the remaining lands.

27

28           **Farmland Conversion.** California is losing its farmland at a rapid rate.  
29 Between 2002 and 2004, the Department of Conservation tracked the  
30 conversion of 138,644 acres of irrigated land statewide. Urbanization  
31 accounted for much of this loss, but land idling for water transfers or because of  
32 salinity, and conversion for public open space uses such as ecosystem  
33 restoration, also contribute significantly to the loss of agricultural land. The

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1 trend is one of acceleration. Loss of Farmland to urban uses has increased by  
2 10 percent over the 2000-2002 Department of Conservation farmland  
3 conversion reporting period.

4  
5 The Delta region reflects the statewide farmland conversion trends.  
6 According to the Department of Conservation, over the past 15 years the Delta  
7 has lost nearly 40,000 acres of agricultural land to non-agricultural uses, a six  
8 percent decline in the legal Delta's agricultural land base (Table 6). Some of  
9 this loss was to urbanization, but more was lost to other uses, including  
10 ranchette development and public open space uses. Some of the highest rates  
11 of farmland conversion statewide are taking place in two main counties: San  
12 Joaquin (rank 4) and Sacramento (rank 6).

13  
14 Most of the urbanization of agricultural land in the legal Delta is occurring in  
15 the Secondary Zone. Intended to be a land-use buffer for the Primary Zone,  
16 Secondary Zone agricultural land is being consumed by rapid urbanization.  
17 As one North Delta farmer observed, "the outer lands of the Primary Zone are  
18 becoming this Zone's own buffer." As of 2004, nearly 28 percent of the  
19 Secondary Zone was urbanized.

20  
21 **Table 6. Land Use Change within the Delta and Suisun Marsh – 1990-2004**  
22

			Percentage	Acreage	Percent
			of total	change	change
Land Use	Acres 1990	Acres 2004	2004	1990-2004	1990-2004
Urban and Built-up Land	57,351	74,098	9	16,747	29
Agricultural	596,603	557,896	67	-38,707	-6
Other Land	100,090	120,535	14	20,445	20
Water	83,170	85,065	10	1,895	2
Total*	837,214	837,594	100		
*Discrepancy in acreage may be due to refined mapping techniques or changes in land use definition between 1990 and 2004. Note: the mapping area used in this report is about one percent larger than the total acreage in the table.					
Based on California Department of Conservation Farmland Mapping and Monitoring Program data, 2004.					

23  
24 In the Primary Zone, urban sprawl is not a significant factor in the loss of  
25 agricultural land. However, the Department of Conservation recently conducted  
26 a pilot study on the effect of rural subdivision of agricultural land conversion and  
27 found that ranchette development was a significant cause of non-urban  
28 agricultural land loss between 2002-2004. These parcels, typically 10 to 40-  
29 acres, are often "too small to farm and too large to mow." The resultant  
30 scattered homesites create a number of problems for agriculture, including  
31 increased traffic, nuisance complaints, trespass, weed and pest abatement, and

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1 higher land values that make land sales for agricultural expansion difficult. A  
2 further complication is that most counties lack requirements for where dwellings  
3 are located on the parcel. According to interviews with county agricultural  
4 commissioners and Delta growers, ranchette development is a significant direct  
5 and indirect cause of lost agricultural productivity in the Delta. The Delta  
6 Protection Commission's Land Use and Resource Management Plan includes  
7 several policies that call for, among other actions larger agricultural minimum  
8 parcel sizes, the transfer of development credits, and the location or clustering  
9 of homesites on ranchette parcels in a manner that avoids impacts on  
10 neighboring agricultural lands.

11

12 However, the Primary Zone is not free from urban development pressures.  
13 In 2007, the Delta Protection Commission sent a Clarksburg development  
14 proposal – the Old Sugar Mill Project – back to Yolo County for reconsideration.  
15 The Commission found that the project was inconsistent with several policies of  
16 its Land Use and Resource Management Plan for the Primary Zone of the  
17 Delta, including policies addressing impacts on agriculture. Anecdotal  
18 information following the Commission's upholding of the appeal of the Old  
19 Sugar Mill Project indicates that other potential development projects are in the  
20 wings in the North Delta.

21

## 22 *Section 4. Policy Context*

23

24 **The Delta Protection Commission.** In 1992, the Delta Protection Act was  
25 enacted creating the Delta Protection Commission, whose three-pronged  
26 mission includes the protection and preservation of agricultural viability  
27 (recreation and wildlife include the other two Commission objectives). In 1995,  
28 in response to the Act's mandate, the Commission adopted the Land Use and  
29 Resource Management Plan for the Primary Zone of the Delta (Management  
30 Plan). The Management Plan contains findings, policies and recommendations  
31 in the areas of environment, utilities and infrastructure, land use, water,  
32 recreation and access, levees, boating and agriculture. Among these,  
33 agriculture is addressed most prominently by the Plan. Agricultural Policy-1 of  
34 the Plan states, "[c]ommercial agriculture in the Delta shall be supported and  
35 encouraged as a key element in the State's economy and in providing the food  
36 supply needed to sustain the increasing population of the State, Nation and the  
37 world." This is one of 10 agricultural policies of the Management Plan. In  
38 addition, many other Plan sections include policies intended to "preserve and  
39 protect [the] agricultural viability" of the Delta. For example, the Land Use

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1 Section's Policy-2 states, "Local general plans...shall continue to strongly  
2 promote agriculture as the primary land use in the Primary zone...."

3  
4 The Commission implements its agricultural resource policies in a number  
5 of ways. These include: (1) coordinating with Delta counties to ensure that  
6 county general plans are consistent with the Commission's Management Plan;  
7 (2) education; (3) developing and promoting land use strategies that conserve  
8 agricultural land; and, (4) reviewing the consistency of local land use decisions  
9 within the Commission's Management Plan. Currently, all Delta counties and  
10 have incorporated the Management plan into the Delta components of their  
11 general plans.

12  
13 Interested parties may appeal land use decisions that are deemed not  
14 consistent with the Management Plan. If the Commission finds that the  
15 decisions are not consistent with policies of its Plan, including its agricultural  
16 protection and viability policies, it is to remand the decision to the local  
17 government for reconsideration. Local entities whose decisions have been  
18 remanded must respond to the Commission's findings prior to proceeding with  
19 the decision. The Old Sugar Mill project, which proposed 160+ residential units,  
20 is a recent, but rare example of a locally approved project appealed to the  
21 Commission and subsequently remanded back to the local government for  
22 reconsideration.

23  
24 Among the agricultural land conservation policy tools to be addressed by  
25 the Commission's Land Use and Resource Management Plan is the purchase  
26 or transfer of agricultural land conservation easements/development rights as a  
27 strategic protection of agricultural land on its own merits, or as a tool to mitigate  
28 the loss of agricultural land in the Secondary Zone (Public Resource Code  
29 section 29760; Agricultural Policy-7; Land Use Policy-2 and -8).

30  
31 In 2006, AB 797 was signed into law. AB 797 authorizes the use of  
32 agricultural conservation easements in the Primary or Secondary Zone as a  
33 requirement for the rescission of a Williamson Act contract in the Secondary  
34 Zone. This liberalization of the Williamson Act for the sake of agricultural land  
35 conservation in the Delta, in part, has prompted the Commission to begin work  
36 with the Delta region's land trusts to explore a strategy for the funding and  
37 application of agricultural land easements to protect important agricultural lands  
38 from non-agricultural uses in both the Primary and Secondary Zones. This  
39 Commission-led group has hired a geographic information system specialist to

# Context Memorandum: Agriculture in the Delta

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1 generate or compile maps of key resource information layers that will be used to  
2 help guide a strategy for agricultural land protection.

3

4 Another Commission activity that targets the protection of agricultural land  
5 in the Delta has been launched by funds from a CALFED grant. The three-year  
6 demonstration project seeks to assist farmers create a multi-functional  
7 agricultural “working landscape” in the Delta whereby growers can increase  
8 their economic sustainability through the provision of environmental and  
9 recreational services, and value-added agricultural enterprises.

10

11 **Delta Resource Conservation and Development Council (RC&D).** An  
12 RC&D is a U.S. Department of Agriculture (USDA) program whose purpose is  
13 to “accelerate the conservation, development and utilization of natural  
14 resources, improve the general level of economic activity, and to enhance the  
15 environment and standard of living in designated RC&D areas.” The Delta  
16 RC&D was established via a local coalition led by the Delta Protection  
17 Commission, involving local resource conservation districts, state agencies,  
18 Delta cities and counties and others. In 2003, the USDA approved the  
19 coalition’s application to establish the RC&D. An application for \$100,000 in  
20 USDA funding for support staff is pending. The RC&D’s work plan targets land  
21 resources, addressing agricultural land protection and subsidence; community  
22 economic development, including recreational opportunities and tourism;  
23 renewable energy development; water resources; and, wildlife habitat  
24 conservation. The Council’s membership includes representatives from  
25 agricultural, business, conservation and other interests. Ex Officio members  
26 include state, regional and local agencies.

27

28 **Other State Agricultural Land Use Policies.** In September 2007, the  
29 State Food and Agriculture Board will hold a hearing to consider the preparation  
30 of a state agricultural plan. Notwithstanding this initiative, the state does not  
31 currently have an overarching plan or strategy for the conservation of its  
32 agricultural resources. However, it does have an abundance of policies  
33 supporting the protection and promotion of California agriculture, including its  
34 land and water resources. Beyond the Delta Protection Act, these include  
35 policies sprinkled throughout state statutes concerning the importance of  
36 protecting the state’s agricultural lands, particularly its prime agricultural lands.  
37 The protection of agricultural land is the primary goal of the California Land  
38 Conservation (Williamson) Act. It is also an important goal of the Subdivision  
39 Map Act; California Environmental Quality Act; state general planning and open  
40 space laws; Local Government Reorganization Act; Coastal Act; authorizing

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1 legislation for the State Coastal Conservancy; the California Farmland  
2 Conservancy Act; and, the state Food and Agricultural Code.

3  
4 The state's role in agricultural land conservation is limited to providing  
5 guidance and tools to local government. Prominent among such state  
6 programs is the 1965 California Land Conservation (Williamson) Act. The Act

7 authorizes  
8 counties to  
9 sign 10 to  
10 20-year  
11 contracts  
12 with farmers  
13 and ranchers  
14 under which  
15 landowners  
16 are granted  
17 preferential  
18 tax treatment  
19 in return for a  
20 legal  
21 commitment  
22 to keep in  
23 agricultural  
24 and related  
25 open space  
26 uses.

27 Currently,  
28 about 16  
29 million acres,  
30 or more than  
31 half of the  
32 state's  
33 agricultural  
34 lands are  
35 protected  
36 by the Act.

37 The Williamson Act protects a preponderance of the Primary Zone for  
38 agricultural use for at least 10 to 20 years ( Figure 6).

39  
40

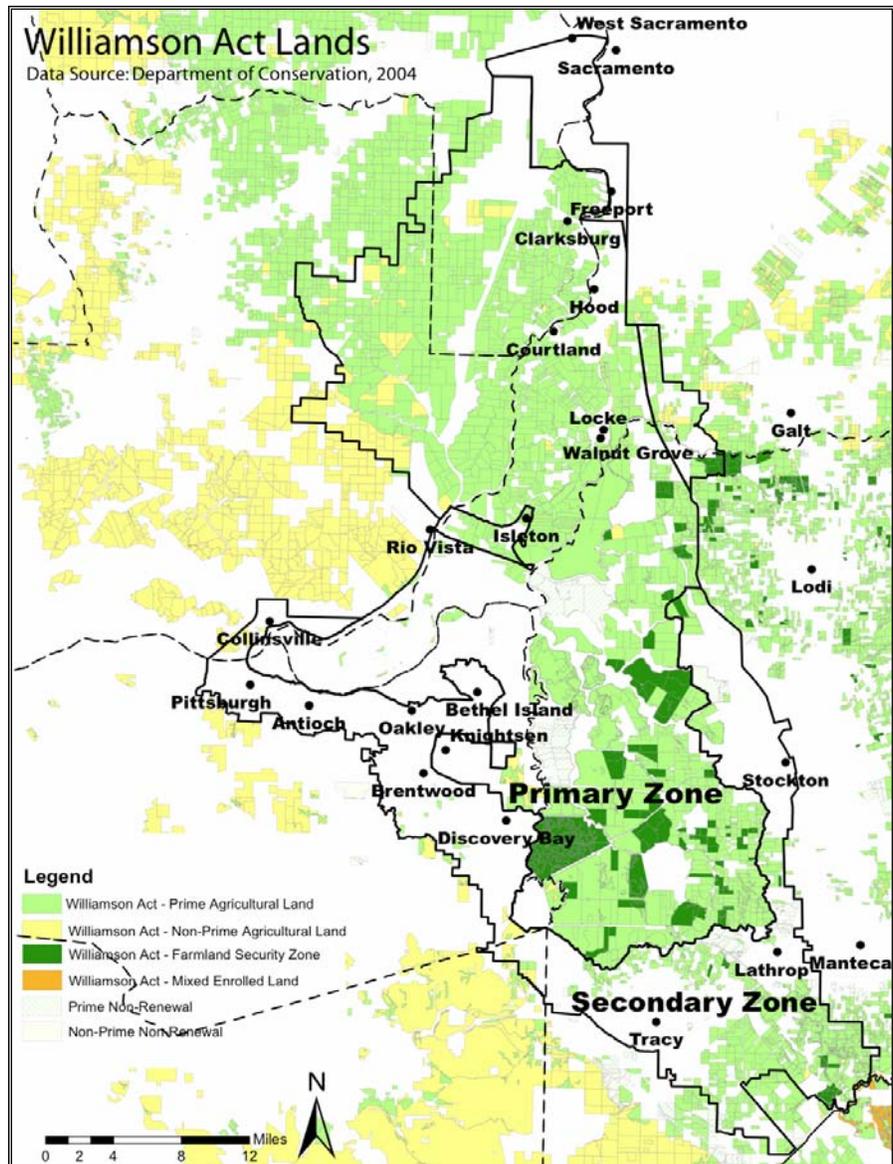


Figure 6. Williamson Act Contracts in the Sacramento-San Joaquin Delta

# Context Memorandum: Agriculture in the Delta

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1           In addition to the temporary protection of the Williamson Act, state and  
2 federal agencies offer grants to local agencies and conservation organizations  
3 for the permanent protection of agricultural land under agricultural conservation  
4 easements. The most significant such program at the state level is the  
5 California Farmland Conservancy. At the federal level, the Farm and Ranch  
6 Land Protection Program also funds the purchase by state and local  
7 governments, and nonprofit conservation organizations of agricultural land  
8 conservation easements. Funding for both programs has been relatively small  
9 compared to need as gauged by the state's rapid loss of agricultural lands.

10

11           **County Policies.** As described above, the Delta Protection Act mandates  
12 that the general plans of the Delta's local governments must be consistent with  
13 the Delta Protection Commission's Land Use and Resource Management Plan  
14 for the Primary Zone of the Delta. Under the broad policy guidance of the  
15 Management Plan, however, the primary land use planning authority in the  
16 Delta belongs with its cities and counties, who exercise their authority over land  
17 use through their general plans and implementing zoning, subdivision and  
18 related policies. All five Delta counties are currently undergoing updates of their  
19 general plans, including, in all cases, the general plan agricultural and/or open  
20 space elements. Also, all five of the Delta counties have agricultural advisory  
21 commissions that are appointed by their respective county boards of  
22 supervisors, and are typically staffed by the county agricultural commissioners  
23 and, occasionally, planning department staff. These commissions, among other  
24 duties, provide advice on the promotion and protection of county agricultural  
25 economics and land use, often including county land conservation programs,  
26 such as the Williamson Act.

27

28           A brief summary of current policies and activities related to agricultural land  
29 use of each of the five main Delta counties follows.

30

31           *Contra Costa:* The agricultural portions of the County are largely  
32 designated for agricultural uses by the County's general plan and its  
33 implementing zoning ordinance. The County has adopted an urban limit line to  
34 restrict urbanization of these agricultural lands. In addition, two land trusts – the  
35 Brentwood Land Trust and the Land Trust of Contra Costa County -- are  
36 dedicated to the protection of agricultural land through the promotion and  
37 marketing of local agriculture, "smart growth" land use policies, public  
38 education, and agricultural land conservation easements. Further, the County  
39 is reworking its regulations governing roadside produce stands and value-added

# Context Memorandum: Agriculture in the Delta

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1 agricultural activities in order to support the economics of local agricultural  
2 operations.

3

4 *Sacramento County:* Sacramento County has also adopted an urban limit  
5 line, in part to protect agricultural and open space lands. The Delta is outside of  
6 the urban limit line; however, the County's general plan designates lands within  
7 the Primary Zone for agriculture and compatible natural resource uses only.

8 The planning boundaries and zoning that were in place at the time that the  
9 Delta Protection Act took effect in 1992, limit development within the County's  
10 unincorporated communities (as is the case in all Delta counties).

11

12 The County has a mitigation fee policy for the loss of agricultural land and  
13 habitat, with a goal of placing one acre of resource lands under the permanent  
14 protection of conservation easements for each acre converted out of agricultural  
15 or habitat uses. The County's general plan update is addressing policies and  
16 programs that promote more efficient forms of development; shore up the  
17 implementation of the Williamson Act; provide incentives for developers to  
18 continue farming on transition lands; support agro-tourism and other forms of  
19 market assistance; encourage the development of agricultural infrastructure,  
20 such as water, agricultural processing, and transportation; and, provide  
21 incentives for schools and other institutions to buy locally grown agricultural  
22 products.

23

24 The Central Valley Farmland Trust works within Sacramento County to  
25 protect and promote agriculture and agricultural resources.

26

27 *San Joaquin County:* San Joaquin County's general plan does not include  
28 urban limit lines, but directs future growth to take place within existing city  
29 boundaries. The County recently adopted an agricultural land mitigation  
30 program, which requires developers to dedicate agricultural conservation  
31 easements over equal quality and quantity agricultural land as that being  
32 converted by their projects. A number of cities on the edge of the Delta, though  
33 not yet including Stockton, have adopted similar mitigation policies. The County  
34 has launched an agricultural promotion program, "Select San Joaquin," which  
35 includes public and school education about agriculture; agricultural marketing  
36 assistance; support for direct marketing; grocery outlet support for locally grown  
37 products; and, promotion of fresh fruits and vegetables to improve nutritional  
38 habits. The County is building a new \$31 million agricultural service center that  
39 will provide a one-stop shop to farmers and related businesses for assistance  
40 from local, state and federal agencies.

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The Central Valley Farmland Trust also works within San Joaquin County to protect and promote agriculture and agricultural resources.

The County is participating in Governor Schwarzenegger’s San Joaquin Valley Blue Print project, which includes among its issues the protection of the Valley’s agricultural resources.

*Solano County.* The County has had a voter-approved urban growth policy – the Orderly Growth Initiative – since 1984 (renewed by popular vote in 1995). The policy prohibits the conversion of agricultural and open space lands to urban uses outside of urban growth boundaries without the approval of voters. The policy expires in 2010 unless an update is approved by voters. The cities of Benicia, Vacaville and Fairfield all have urban growth boundaries and have, or are creating, agricultural greenbelts as separators to maintain community identity. An update of the Solano County general plan is in progress, which includes an analysis of agricultural protection and promotion needs. In partnership with the University of California’s Agricultural Issues Center, the County is conducting economic studies, agricultural landowner focus groups, and grower interviews to determine the need for policies to promote and sustain county agriculture into the future. Solano County is home to the Solano Land Trust, which is dedicated to the protection of agricultural and open space lands largely through education, and the use of agricultural conservation easements.

*Yolo County:* The County has a long history of agricultural land protection through its general plan and Local Agency Formation Commission annexation policies, including more recently, agricultural land mitigation programs under the California Environmental Quality Act (CEA). The Cities of Davis and Woodland also rely on collaboration with the Yolo County Land Trust to require the dedication of agricultural conservation easements as mitigation for the loss of agricultural land. The County’s proposed general plan update is likely to continue the County’s strong agricultural land protection policies with new emphasis on agricultural economic development policies. The County is hiring an agricultural ombudsman to assist farmers and ranchers with navigating permit processes for the development of value-added agricultural enterprises and products, including agro-tourism.

The County, through its agricultural commissioner, is participating in a community-building and planning exercise established and facilitated with the support of the non-profit organization, Ag Innovations Network. The Network

# Context Memorandum: Agriculture in the Delta

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1 has worked with Yolo County agricultural, environmental and other community  
2 stakeholders since 2004 to establish an Agricultural Futures Alliance (AFA).  
3 The purpose of an AFA is “to ensure that agriculture, community, and the  
4 environment will thrive indefinitely.” Like other AFAs (e.g. Ventura County), the  
5 Yolo AFA has been working on building trust among the diverse stakeholders  
6 and identifying actions where there is agreement. So far, the AFA has adopted  
7 a vision for the County’s agriculture, developed farmland mitigation principles,  
8 and formulated an agricultural conservation easement ordinance.  
9

10 With respect to the Delta, specifically, Yolo County, through its general plan  
11 update, is contemplating the creation of at least three “agricultural districts” to  
12 promote and enhance agricultural land use and economics. One of the  
13 agricultural districts being considered would target the Clarksburg winegrape  
14 growing region. A specific definition of an agricultural district has not yet been  
15 presented to the County’s Board of Supervisors, but similar concepts in other  
16 counties have included: regulatory assistance to ease the creation of new  
17 agricultural support industries and value-added enterprises, such as agro-tourism;  
18 marketing, branding and other promotional events and programs to help sell the  
19 district’s agricultural products; and, targeting the application of land protection  
20 programs, such as the Farmland Security Zone program of the Williamson Act  
21 and agricultural conservation easements.  
22

23 **Resource Conservation Districts (RCDs).** RCDs are local special  
24 districts created under state authority to promote and support natural resource  
25 conservation at the county level by working primarily with agricultural  
26 landowners, schools, local governments, and others. They work closely with  
27 state and federal conservation agencies. The RCDs are governed by an  
28 elected or locally appointed board of directors. The USDA Natural Resources  
29 Conservaton Service, provides technical and financial assistance to landowners  
30 in partnership with RCDs through standard Memordanda of Understanding with  
31 each District. In California, the Department of Conservation is the state liaison  
32 with RCDs. Increasingly, a number of Resources Agency departments and  
33 other federal resource agencies have found that working through the RCDs is  
34 an effective avenue for coordinating their work with landowners. All five Delta  
35 counties have RCDs, which are also represented on the Delta RC&D,  
36 discussed previously.  
37

38 **Habitat Conservation Plans (HCPs).** All five of the Delta counties have,  
39 or are in the process of, developing Habitat or Natural Communities  
40 Conservation plans. These plans, along with the Bay Delta [ecosystem]

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1 Conservation Plan, that is also in the process of development, will have impacts  
2 on agricultural resources and uses. These conservation plans could benefit  
3 agriculture by providing regulatory assurances for the take of listed species  
4 while in the conduct of normal farming practices. Further, because many  
5 agricultural landscapes also serve as good wildlife habitat, these habitat plans  
6 typically include the use of agricultural land conservation easements to  
7 simultaneously protect agricultural lands and their associated habitat values.  
8 On the other hand, mitigation of habitat impacts from land or water use projects  
9 in the Delta could come at the expense of the Delta's agricultural land base or  
10 uses.

11

12

## 13 *Section 5. Drivers of Change*

14

15 **Global Drivers.** Agriculture faces the usual stressors and drivers of  
16 change faced by all of California and American agriculture. These include:

17

- 18 • Rising costs of inputs, such as labor, fertilizer, land and transportation;
- 19 • Increasing foreign competition with the liberalization of trade, resulting in  
20 depressed and volatile crop prices;
- 21 • Growing federal, state and local environmental and land use regulations that  
22 place growers at a competitive disadvantage with other states and countries  
23 for market shares;
- 24 • A growing urban population that drives agricultural land conversion, rising  
25 land prices, land use conflicts, competition for infrastructure (such as roads)  
26 competition for water, and demand for public open space, often at the  
27 expense of agricultural land uses;
- 28 • Increasing salinity of land and water;
- 29 • Climate change, with its attendant changes in water availability, flood  
30 threats, and growing seasons;
- 31 • Loss of research and technical assistance, particularly from the Cooperative  
32 Extension Service;
- 33 • Aging of farmers and the lack of a next generation to take over the  
34 operations; and,
- 35 • New plant and animal pests, invasive species and diseases.

36

37 **Delta Drivers.** In the Delta, there a unique set of drivers of change and  
38 stressors.

39

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- 1 • **Levee improvements**, maintenance and repair. Currently, most of the  
2 levees that protect Delta agricultural lands are maintained by individual  
3 landowners, local reclamation districts (supported by fees on landowners),  
4 and, to the extent funding and authority is available, state levee  
5 subventions. Farmers recently interviewed do not see a future for  
6 agriculture in the Delta without continued and new outside support for Delta  
7 levees.
- 8 • **Land Subsidence** due to the erosion, oxidation and compaction of the  
9 Delta's organic soils. As these soils continue to subside below sea level,  
10 increased pressure is placed on the surrounding levees, increasing the cost  
11 of levee maintenance, water table management, and land loss from  
12 seepage and increasing salinity.
- 13 • **Salinity** of irrigation water. A catastrophic loss of islands to levee failure,  
14 increase in water pumping for south-of-Delta users, and reduction in flows  
15 into the Delta all pose risks to Delta farmers and ranchers. The risk is that  
16 seawater moves further up the Delta and replaces fresh irrigation water with  
17 unusable saline water. Once this occurs, irrigated agriculture on affected  
18 islands will cease. Saline water moving into the Delta can also penetrate  
19 groundwater aquifers adjacent to the Delta that supply drinking water to  
20 surrounding residents and communities. In the West and Central Delta, a  
21 number of islands have shifted from row and field crops to irrigated pasture  
22 or more salt-tolerant field crops. In the South Delta, export pumping and low  
23 San Joaquin River flows degrade water quality and quantity for irrigation.
- 24 • **Ecosystem Restoration**. Growers in the Delta see this driver of change as  
25 both a threat and opportunity. With the development of a habitat restoration  
26 plan for the Delta, land may be removed from agricultural use for terrestrial  
27 or aquatic habitat restoration. The Public Policy Institute's "*Envisioning*  
28 *Futures for the Sacramento-San Joaquin Delta*" report has recommended  
29 consideration of Delta alternatives that increase the fluctuation salinity up  
30 the Delta to improve conditions for aquatic ecosystems. As already noted,  
31 this could adversely affect agriculture in the Delta. Growers are concerned  
32 that the state or federal endangered Act could impinge on their ability to  
33 dredge their drainage and irrigation ditches if deemed to be navigable  
34 waters by new regulations. Conversely, growers see opportunities for  
35 income to integrate habitat restoration into their farming operations.
- 36 • **Island Flooding**. The failure to reclaim islands after a levee failure, or  
37 intentionally flood islands for environmental purposes, concerns growers not  
38 only because of the potential salt water intrusion up the Delta, but because  
39 of the impacts of open water wave action-induced erosion of neighboring

# Context Memorandum: Agriculture in the Delta

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- 1 island levees and an increase in island seepage that weakens levees, and  
2 contributes to the loss of farmable land.
- 3 • **Recreation.** With increasing urban growth surrounding the Delta, urbanites  
4 are turning to the Delta for recreation, sightseeing and open space. Again,  
5 this presents both threats and opportunities for Delta agriculture. Increased  
6 non-agricultural populations in the Delta present challenges for farmers and  
7 ranchers, including theft, trespass, vandalism, trash, levee erosion, traffic  
8 that interferes with equipment movement, and limitations on farm operations  
9 such as spraying. On the other hand, some growers see managed  
10 recreation as a benefit to agriculture, providing opportunities for such value-  
11 added activities as agro-tourism, direct marketing, public education, and  
12 hunting. And fishing.
  - 13 • **Conjunctive and Value-added Agricultural Uses.** Many growers  
14 interviewed about Delta Vision mentioned the future opportunities for Delta  
15 agriculture in the production of energy crops, particularly for cellulosic  
16 ethanol once that technology develops. Corn prices have increased  
17 because of the surging ethanol market, giving growers optimism for the  
18 future of agriculture in the Delta, including for other energy crops. Wetland  
19 crops, as well as semi-permanent crops, such as switchgrass, are seen as  
20 future energy crop and also to help to stabilize or reverse Delta land  
21 subsidence. (The Department of Water Resources and the U.S. Geological  
22 Survey are currently experimenting with rice and wetland vegetation to  
23 manage water quality and land subsidence.) Growers and others working in  
24 the Delta also see potential for new markets for a carbon “crop;” i.e.,  
25 payments for carbon sequestration to reduce greenhouse gases.
  - 26 • **Urbanization.** Urbanization, as noted above, is a threat to agriculture as an  
27 incompatible and competing user of lands. Urbanization around the Delta  
28 also creates a nearby market for agricultural products. For example, nearby  
29 urbanization has made turf a viable crop in the Delta.
  - 30 • **Water conveyance.** Perhaps the most significant driver of change affecting  
31 agriculture in the Delta is one that is behind many of those listed above; i.e.,  
32 how water will be moved through or around the Delta. An isolated  
33 conveyance facility will lessen the importance of large public expenditures in  
34 the Delta for levees and water quality management. In-Delta water users,  
35 including agriculture, as well as the recreation interests, sports fishers, and  
36 environmental restoration interests, all fear that a diminished water  
37 conveyance role for the Delta will lead to diminishing public investment in  
38 levees, and the eventual loss of these Delta uses.
- 39

# Context Memorandum: Agriculture in the Delta

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## 1 *Section 6. Conceptual Model*

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The 2007 Public Policy Institute of California report, *“Envisioning Futures for the Sacramento-San Joaquin Delta,”* suggests viewing the Delta not as a single management unit, but as an aggregate of different regions that should function, and are managed, under different constraints to provide different economic and environmental services. This model takes a similar approach with respect to agriculture.

In a 1999 article on the Delta, U.S. Geological Society scientists set forth strategies for managing Delta islands to address subsidence. They suggested that these strategies be implemented to create a mosaic of land use patterns throughout the Delta that also benefits wildlife. As part of recent interviews, Delta growers were asked to visualize their desirable Delta of the future. To a person, the interviewed Delta growers saw a similar future for Delta agriculture. They saw a Delta mosaic that includes wildlife habitat, flood management, carbon sequestration, recreation, and subsidence management, all integrated with, not supplanting, agricultural uses.

Consistent with these “mosaic” visions, this proposed conceptual model would, in part, reinvent Delta agriculture as an economic land use that provides multiple public services. This would be an environmental and economic “working landscape” where farmers and ranchers are rewarded in the marketplace for not only the production of food, energy and fiber, but for wildlife abundance and diversity; the reduction or reversal of subsidence that, in turn, reduces the public and private costs of levee maintenance; the sequestration of greenhouse gases; recreation; the sustenance of rural Delta communities; and, the provision of scenic green open space in the midst of the urbanization that surrounds the Delta.

**West Delta and Central Delta.** In the western and central Delta where subsidence is most pronounced, the Department of Water Resources and the US Geological Survey have been experimenting with a variety of ways to stop or reverse Delta island subsidence due to peat oxidation. Some of these include developing wetland agricultural uses of the islands that keep the lands wet for all or most of the year. Four potential “crops” are rice, fish, fish food and carbon (i.e., growing wetland vegetation to sequester carbon dioxide in return for carbon credit payments as part of a carbon “cap and trade” program being considered by the Governor’s Climate Action Team pursuant to AB 32 (2006)). Preliminary results indicate that these agricultural uses could dramatically slow,

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1 stop or reverse peat oxidation and island subsidence. The production of  
2 biomass for renewable energy would be another potential crop from wetland  
3 agriculture. For example, it has been proposed that wetland algae farms could  
4 not only sequester carbon, but also generate biodiesel. Besides managing  
5 subsidence and levee vulnerability, and producing potential “crops” for  
6 economic benefit, these strategies would also have benefits for water quality,  
7 wildlife habitat restoration, climate change management and compatible  
8 recreation, while maintaining flexibility for salt water management.

9

10 *Needs:* Economic, agronomic and biologic research support.

11

12 **North, East, South, and parts of the Central Delta.** On less subsidized  
13 islands in the Delta, regulatory, technical and financial incentives would be  
14 provided to landowners to grow crops and manage their lands in ways that  
15 continue agricultural production while also slowing or stopping subsidence,  
16 enhancing wildlife benefits, and offering managed recreational opportunities via  
17 agro-tourism and hunting and fishing. Management strategies would include:  
18 crop rotations that include soil-building crops or fallowing; integrated pest  
19 management to reduce pesticides; cover crops; the strategic use of permanent  
20 crops, such pasture, to reduce soil disturbance and oxidation; and, a form of  
21 conservation tillage for field and row crops that reduces energy inputs, lessens  
22 soil disturbance and oxidation, and minimizes soil compaction by reducing farm  
23 machinery field passes. Regulatory assurances, permit assistance, and  
24 technical and financial assistance, would be provided to growers as needed for  
25 the creation of new on-farm wildlife habitat. Practices could include wetlands on  
26 low or otherwise marginal soils; hedgerows; growing wildlife friendly crops;  
27 flooding lands for wildlife during critical parts of the season; and, improving  
28 riparian vegetation along levees. The wildlife friendly farm management being  
29 conducted by The Nature Conservancy on Staten Island, and the floodplain and  
30 wildlife compatible farm and ranch management being used by the California  
31 Department of Fish and Game in partnership with lessee farmers and ranchers  
32 in the Yolo By-pass, could be models for such an Delta agricultural model.

33

34 Incentives for growers to provide floodplain management services on Delta  
35 Islands would be another role for a reinvented Delta agriculture. The North  
36 Delta Improvement Project considers the use of setback levees within islands  
37 that would enable the temporary capture of floodwaters during high flows to  
38 reduce downstream pressures on levees. During most years, the lands  
39 between rim and setback levees would be farmed under a flowage easement.  
40 Once the flooded portion of an island were drained after flows had receded,

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1 planned emergency assistance would be provided to restore the land for  
2 agricultural and habitat uses. The Yolo By-pass offers an example of another  
3 kind of flood-compatible agriculture that could be modified for other parts of the  
4 Delta, including along the San Joaquin River.

5  
6 *Needs:* Research on the adaptation of common conservation strategies to  
7 Delta peat soils; funding for technical and financial assistance; ESA regulatory  
8 assurances for habitat improvements integrated into farming operations;  
9 increased presence of law enforcement to mitigate the impacts of an increased  
10 population of non-agricultural recreational visitors to the Delta; augmented or  
11 redirected funding for the acquisition of floodplain easements; transportation  
12 strategies to manage existing agriculture-impairing commuter and recreational  
13 traffic in the Delta.

## 14 15 16 *Tools and Strategies to Implement the Model*

17  
18 **Regulatory Barriers:** New approaches to existing federal, state and local  
19 environmental and land use regulations will be needed to support agro-tourism,  
20 wildlife friendly agriculture, and value-added agriculture. For example, many  
21 growers fear that creating wildlife habitat and attracting listed species may  
22 trigger restrictive ESA regulations. Also, Solano County growers have reported  
23 to UC researchers that local planning and building regulations largely intended  
24 for urban land use applications, make agricultural direct marketing (e.g., farm  
25 stands), on-farm recreation or tourism, and vertical integration, difficult.

26  
27 **Tools:** (1) Planning grants to local agencies to develop new, and adapt  
28 existing ordinances and planning strategies to facilitate recreational and value-  
29 added agricultural enterprises. (2) One-stop regulatory assistance and  
30 compliance and for growers making positive changes for agriculture and the  
31 environment. (3) Encourage the use of safe harbor and similar agreements  
32 under state and federal Endangered Species Acts. (4) Support a voluntary third  
33 party certification for environmental regulatory compliance, especially for air and  
34 water quality regulations. Many of these tools are currently being developed or  
35 in use by counties and state and federal agencies around the Delta and  
36 elsewhere in the state. For example, the non-governmental California  
37 Roundtable on Agriculture and the Environment, made up of established  
38 agricultural and environmental stakeholders, is currently considering the use of  
39 environmental certification as a regulatory approach.

40

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1        **Stakeholder Collaboration:** Trust, or a lack of it, is seen by many of the  
2 Delta growers recently interviewed, as a significant barrier to solutions in the  
3 Delta. In addition, a lack of public understanding about the nature and  
4 challenges of agriculture is viewed by these growers as a cause for inflexible  
5 local and state regulations.  
6

7        **Tools:** (1) Public education campaigns to heighten public understanding of  
8 agricultural production requirements, as well as to shine the light on agricultural  
9 management that benefits the public in the form of wildlife habitat, flood  
10 protection, recreation and carbon sequestration. (2) Support of local  
11 collaborative efforts such as the Agricultural Futures Alliance initiative in Yolo  
12 County, perhaps expanding this approach Delta-wide with the support of the  
13 Delta Protection Commission. (3) Support local economic development,  
14 regulatory and land use reforms that support value-added agricultural activities,  
15 the location and operation of agricultural support industries, and new marketing  
16 opportunities. Yolo County is considering the establishment of an agricultural  
17 enterprise district in its part of the Delta to promote the growing wine industry  
18 there, and to create value-added agro-tourism opportunities. Other counties are  
19 considering similar initiatives. The Department of Conservation's agricultural  
20 conservation planning grants of the California Farmland Conservancy Program  
21 could be a vehicle to support the formation of agricultural enterprise districts.  
22

23        **Technical Assistance:** When asked about what they need for a  
24 sustainable future in the Delta, growers often mention a re-constituted  
25 Cooperative Extension Service to support applied research for new and  
26 improved crops and management practices, as well as technical assistance to  
27 use the new crops and practices. Similarly, resource conservation districts  
28 have not received state support to carryout priority conservation work with  
29 landowners since the 1970s, and the USDA Natural Resources Conservation  
30 Service cadre of field staff has steadily declined since the 1980s.  
31

32        **Tools:** (1) Expanded support for "on-the-ground" technical assistance to  
33 achieve the agricultural stewardship goals of the Delta Vision strategy through  
34 Cooperative Extension Service and state-authorized, county-level resource  
35 conservation districts (Division 9 of the Public Resources Code). (2) Support  
36 the Governor's effort to shape the 2007 Farm Bill to expand conservation, rural  
37 development, energy, research, and specialty crop provisions to address  
38 California's agricultural and environmental needs.  
39

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1        **Financial Assistance:** To reinvent agriculture in the Delta, growers and  
2 their conservation partners will need transitional assistance, market rewards for  
3 environmental services, and incentives where markets do not exist for the  
4 desired environmental services. For example, the use of conservation tillage to  
5 reduce soil oxidation and erosion requires different kinds of (costly) farm  
6 equipment that most growers currently use.

7  
8        **Tools:** (1) The Conservation Title of the Farm Bill offers environmental set-  
9 aside, technical assistance and cost-share programs to help growers implement  
10 soil, water, air and wildlife stewardship. The President's Farm Bill proposal  
11 provides new emphasis for regional approaches to managing high priority  
12 resource issues. The Delta has been designated a USDA Conservation Priority  
13 Area. The 2007 Farm Bill could provide new opportunities for the application of  
14 financial incentives and rewards for a Delta-wide conservation strategy. A  
15 relatively new USDA conservation program, intended to wean growers from  
16 WTO-violating crop subsidies -- but not yet fully funded -- is the Conservation  
17 Security Program, which makes annual payments to growers who provide  
18 environmental services as part of their agricultural operations. (2) The recent  
19 environmental and water bonds passed by voters set aside funds that could be  
20 used for leveraging Farm Bill conservation assistance for cropping systems that  
21 assist growers in farming to meet multiple resource objectives. (3) Encourage  
22 the use of mitigation banking under a Delta-wide Habitat Conservation Plan or  
23 its state equivalent to support the integration of habitat improvements on  
24 working agricultural lands. (4) A transfer of development rights/credits program  
25 can be challenging to set up and operate, but may be a good fit for the Delta  
26 where development in designated Delta communities and other areas of the  
27 Secondary Zone is required to transfer pre-existing development entitlements  
28 (e.g. from ranchette-potential parcels). Such TDR programs could be targeted  
29 for use in designated agricultural districts or enterprise zones. This is a tool that  
30 has been identified in the Delta Protection Commission's Management Plan. It  
31 also provides an equitable way for landowners to be compensated for their  
32 vested property rights. (5) Capitalize on carbon markets to create opportunities  
33 for Delta growers to receive income from providing carbon sequestration  
34 services through strategic cropping and crop management. (5) Use boat and  
35 vehicle sticker, and recreational use fees to support levee and road  
36 maintenance, law enforcement, on-farm environmental enhancements, and the  
37 development of value-added recreational and tourism opportunities.

38  
39        **Economic Development.** In 2005, the Tri-Valley Business Council  
40 headquartered in Pleasanton produced a Working Landscape Plan for the non-

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1 developed lands of the Tri-Valley area of Contra Costa and Alameda Counties.  
2 The Plan is based on three fundamental strategies: (1) agricultural land  
3 protection; (2) a strong local market for agricultural products; and, (3) increased  
4 community involvement on farms and ranches through selected agro-tourism.  
5 The Tri-Valley Business Council recognized an important tenant of agricultural  
6 land conservation; i.e., for agricultural land to truly be conserved, not only must  
7 the land be protected, but the ability of the landowner to make a living on the  
8 land needs to be preserved and enhanced, as well. As noted previously, a  
9 number of Delta counties are taking steps to enhance the economic  
10 environment for agriculture, including marketing assistance, local branding,  
11 promotional activities and regulatory assistance.  
12

13 **Tools.** (1) Loans and grants can be offered to assist growers with  
14 marketing, agronomic advances, and new farmers with start-up costs, etc. In  
15 San Diego County, the California Coastal Conservancy has worked with local  
16 governments and agricultural groups to establish the Carlsbad Agricultural  
17 Grant Program to help local farmers increase productivity, funded, in part, by  
18 agricultural land conversion mitigation fees. The Tri-Valley Business Council  
19 Working Landscapes Plan recommends an agricultural enterprise incubation  
20 support program and calls for the development of a revolving loan fund to  
21 implement it. (2) Permit assistance or simplification, such as the use of a one-  
22 stop permit clearinghouse for agricultural value-added or support enterprises, is  
23 an important economic development incentive. For example, local resource  
24 conservation districts, working with the non-profit organization, Sustainable  
25 Conservation, and the US Department of Agriculture's Natural Resource  
26 Conservation Service have established, or are establishing, county-level permit  
27 coordination programs to facilitate the application of conservation practices on  
28 working landscapes. (3) Create a "Farmbudsperson" position within key  
29 agencies to assist growers not only with navigating the regulatory permit maze,  
30 but also in finding financial and technical assistance to support agricultural  
31 production and conservation. It was noted previously that Yolo County is  
32 establishing such a position. In a recent interview of Delta growers, this kind of  
33 centralized, knowledgeable assistance was mentioned as a need for the multi-  
34 county Delta. (4) The formation of economic enterprise zones, economic  
35 development joint power authorities or agricultural economic districts can focus  
36 a number of economic development strategies. The Five Cities Economic  
37 Development Authority in Fresno County was formed to expand the region's  
38 economic development opportunities, including for agriculture. (5) Flexible  
39 zoning to encourage the location of critical agricultural support industries and  
40 the development of value-added agricultural enterprises. Many of these tools

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1 are described in the publication, *Farmland Protection Action Guide: 24*  
2 *Strategies for California.*

3  
4 **Land Conservation:** Growers, when asked to list the major threats to the  
5 sustainability of Delta agriculture almost always include urban encroachment.  
6 In addition, landowners frequently mentioned the public acquisition of lands as  
7 an erosion of the fee and tax base necessary to support Delta levees and other  
8 infrastructure, as well as Delta communities. They also fear the loss of a critical  
9 mass of private agricultural lands necessary to support the services that support  
10 agriculture, such as fertilizer and seed companies, processors, bankers and  
11 shippers.

12  
13 **Tools:** (1) Increase or redirect funding to Delta agricultural, floodplain and  
14 habitat conservation easements that keep land in private ownership, that are  
15 structured to encourage continuing agriculture that is compatible with the  
16 purposes of the easement, and that prevent incompatible urban development in  
17 the Primary Zone. (2) A Delta Protection Commission farmland conversion  
18 mitigation program that relies on transfer or purchase of development rights on  
19 land within the Primary Zone whenever land within the Secondary Zone is  
20 developed. Currently, the Commission staff has convened representatives from  
21 land trusts (the Delta Agricultural Easement Discussion Group) in the Delta  
22 region to explore options and strategies for the protection of Delta agricultural  
23 lands. (3) Planning grants to local land trusts and county planners to develop  
24 land use and economic development strategies that shield agricultural lands  
25 from development pressures and create a supportive local economic  
26 environment for agriculture. For example, alternative land use strategies for  
27 Delta lands already fragmented by parcelization, include reasonable  
28 accommodation through the use of agricultural clustering or transfer of  
29 development rights ordinances (see Delta Protection Commission's Agricultural  
30 Policy-10), or restrictive minimum parcel size requirements and buffers to  
31 discourage ranchette development or at least ameliorate its adverse impacts on  
32 agricultural operations. (4) Both strengthening of, and increased flexibility  
33 under, the Williamson Act to not only protect agricultural land, but to also  
34 encourage value-added products and compatible processing and recreational  
35 uses that enhance agricultural profitability should be considered by Delta  
36 counties, particularly in designated agricultural district or enterprise zones.

37  
38 **Research and Education:** Delta growers and wildlife managers recently  
39 interviewed believe that a fundamental problem with agriculture and the Delta  
40 generally, is a lack of public understanding of the values that the Delta and

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1 Delta agriculture provide to the state in the form of water conveyance,  
2 recreation, wildlife habitat, open space, and food production. They believe that  
3 with a better understanding of these services on the part of voters there will be  
4 a greater willingness to support stewardship of the Delta and its resources, both  
5 in their use and financial support of Delta resources.

6  
7 Also, as alternate futures of the Delta are considered, growers and their  
8 technical advisors have identified research needs to help pave the way to the  
9 conceptual model presented above. Research is needed in the development of  
10 new crops and crop management systems that will enable agriculture to not  
11 only remain in the Delta, but to do so in a way that is environmentally  
12 sustainable with respect to organic soil management, wildlife habitat enhance,  
13 recreation, and other conjunctive uses. For example, research is needed to  
14 better understand the potential of wetland forms of agriculture to sequester  
15 carbon, produced renewable energy crops and reverse subsidence.

16  
17 **Tools and Needs.** (1) The California Department of Parks and Recreation  
18 is developing a Central Valley Vision to guide the provision of new parks and  
19 recreational opportunities for Californian's. The strategies and resources that  
20 could be brought to bear to integrate well-managed recreational opportunities in  
21 the Delta could be an important tool to inform the Delta Vision on how to create  
22 synergies between recreation and agriculture. (2) The Yolo Basin Foundation  
23 and California Department of Fish and Game have a shared vision that the Yolo  
24 Bypass Wildlife Area along I-80 could become an important visitor gateway to  
25 the Delta, which could serve to educate visitors of the values of the Delta. A  
26 recent visioning exercise conducted by UC Berkeley included the development  
27 of one vision which proposed a similar gateway to the Delta on the western  
28 point of Sherman Island in the form of a Delta national monument. (3) The  
29 Delta Resource Conservation and Development Council was recently  
30 established. The Council has applied to U.S.D.A for funding to support  
31 foundational staff. State support for the application, as well as matching  
32 contributions, could create an entity with Delta focus that would coordinate with  
33 local governments, landowners, resource conservation districts, foundations  
34 and state and federal agencies to identify public outreach and research needs  
35 for the Delta, and implement them.

36  
37  
38

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