

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.

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

## 1 *Section 1. General Policy*

2  
3 Agriculture is the dominant land use of the Delta, comprising three-quarters of the  
4 region's landscape. It was for agriculture that reclamation of the Delta's lowlands began  
5 in the 1850s with the support of state funding and policies. Because of the fertile peat  
6 soils and the moderating marine influence, Delta agriculture's per acre yields are almost  
7 50 percent higher than the state's average. This unique growing region supports a  
8 diverse array of crops from such high value commodities as pears, wine grapes,  
9 asparagus, sod turf, cherries, tomatoes and blueberries, to lower risk and value field  
10 crops as corn, hay, small grains and pasture.

11  
12 Today, the Delta Protection Act recognizes agriculture as an important resource to  
13 the Delta. The Delta Protection Commission's Land Use and Resource Management  
14 Plan for the Primary Zone contains ten discrete policies for the protection of Delta  
15 agriculture, not only for its food production value, but because of its importance for  
16 wildlife habitat, recreation, scenic open space, and the contributions of farmers to the  
17 maintenance of Delta levees.

18  
19 However, Delta agriculture faces an uncertain future. The agricultural cultivation of  
20 the Delta's peat soils has, over time, contributed to the subsidence of most Delta islands,  
21 mostly significantly in the West and Central Delta. Subsidence places added stress on  
22 Delta levees whose failures would not only damage or destroy agriculture on these  
23 islands, but also alter the salinity balance in the Delta, threatening water conveyance to  
24 agricultural and urban water users in the San Joaquin Valley and Southern California. At  
25 the same time, these exports have lowered water quality in the South Delta, threatening  
26 agricultural uses there. The alternative conveyance of an isolated facility potentially  
27 threatens adequate fresh water flows through the Delta, in turn threatening all of Delta  
28 agriculture.

29  
30 While agricultural reclamation district fees constitute a primary source of funding for  
31 non-Project levees in the Delta, this funding has not been sufficient for serious levee  
32 improvements needed to meet current standards, let alone prepare for the exacerbating  
33 effects of climate change. Along with sufficient quality and quantity of fresh water flows  
34 through the Delta, the need for additional funding to improve and maintain levees is  
35 listed by Delta agricultural interests and experts and the top issues for a sustainable  
36 Delta agriculture.

37  
38 Perhaps the third most serious threat to Delta agriculture is land use change. The  
39 pressures of urbanization on the fringes of the Delta, the proliferation of rural ranchette  
40 developments, and the loss of agricultural land to public and nonprofit open space uses,  
41 threaten the sustainability of agriculture in the Delta as the critical mass of agricultural  
42 land necessary to support agricultural services and infrastructure is approached. The

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 conversion of additional agricultural land if flooded islands are abandoned, or to new  
2 wildlife habitat restoration, will contribute to the trend towards an increasingly fragile  
3 agricultural region and its communities.

4  
5 Opportunities exist to maintain an economically viable agricultural landscape in the  
6 Delta, but deliberate action is required. An improved understanding of the critical mass  
7 necessary to support the communities, industries and infrastructure that supports  
8 agriculture is needed, as well as investment in research on new crops and crop  
9 management systems that can sustain Delta soils, water quality and profitability.  
10 Investment in incentives that encourage and reward agriculture for producing multiple  
11 public benefits – e.g., compatible wildlife habitat, recreation, subsidence reversal, carbon  
12 sequestration, etc. – without sacrificing food, fiber and energy production, is also  
13 needed. Finally, certainty with respect to levee maintenance, and water quality and  
14 quantity, is needed in order for farmers and ranchers to invest with confidence in a  
15 sustainable Delta agricultural future.

16  
17 Four policy questions regarding agriculture that are pertinent to a Delta vision are:

- 18  
19 1. Do the values of agriculture in the Delta out-weigh the values of competing land  
20 and water uses and the cost of levee maintenance?  
21 2. If Delta agriculture is determined to have a role in the Delta's future, what is the  
22 critical mass of agricultural land and uses necessary to sustain it economically?  
23 3. If agriculture is to continue in the Delta, what kind of agriculture will it be?  
24 4. If agriculture is to be part of the Delta Vision, how will market value be given to  
25 the full array of Delta services that are, or could be provided for an  
26 environmentally, socially and economically sustainable Delta?

## 27 28 29 *Section 2. Delta Agriculture*

30  
31 **State Context.** California is America's number one agricultural state. On its 29  
32 million acres of agricultural land, a third of which is in cultivation, California produces  
33 nearly \$32 billion in agricultural sales. This is more than double the output value of the  
34 next closest agricultural state, Texas. California's per farm output approaches four times  
35 that of the national average on 77,000 farms and ranches that are, on average, 25  
36 percent smaller than the national average. California produces a bounty of  
37 approximately 400 different agricultural commodities, supplying about half of the fresh  
38 fruits, vegetables and nuts consumed by Americans. The state is also prominent on the  
39 international market, accounting for 15 percent of the nation's total agricultural export, an  
40 agricultural export trade volume greater than many leading agricultural nations.

41

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

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

5  
6 **Delta Agricultural Land Use.** A diverse agriculture is the principal land use in the  
7 Delta, involving approximately 553,687 acres of actively farmed, fallowed and related  
8 lands, or more than 80 percent of the Delta's total land area in 2004. (See Table 6) A  
9 preponderance of this agricultural land -- 75 percent -- is classified as Prime Farmland,  
10 land with the best physical and chemical characteristics and reliable irrigation water. By  
11 comparison, only 18 percent of the state's agricultural land is classified as Prime  
12 Farmland.<sup>i</sup> Urban uses make up nine percent of the legal Delta's area. Water and non-  
13 agricultural open space uses balance out the Delta's landscape.

14  
15 The productivity of Delta lands finds its basis in: (1) the fertile and easy to work  
16 organic peat soils that are found on most Delta islands; (2) good quality and plentiful  
17 water; (3) a warm, but marine moderated climate; and adaptable, innovative farmers with  
18 long experience and expertise with this unique growing environment.<sup>ii</sup>

19  
20 San Joaquin County makes up the largest portion of the Delta's agricultural land  
21 base, at 55 percent. Sacramento County follows with 20 percent. Solano and Yolo  
22 Counties contribute eight to ten percent, respectively, and Contra Costa County rounds  
23 out the Delta agricultural land base at seven percent.

24  
25 **Delta Crops.** The 2006 county agricultural commissioners' annual crop reports list  
26 more than 90 different plant and animal products produced by one or more of the Delta  
27 five counties.<sup>iii</sup> Table 1 and Figures 1 and 2 show Delta agriculture's average farmgate

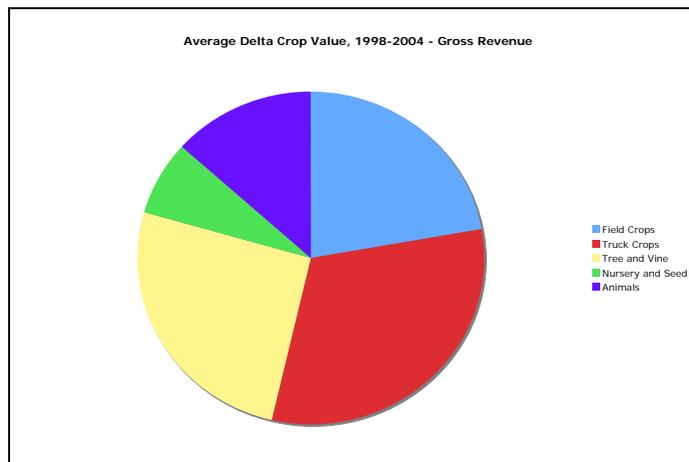


Figure 1. Average Delta Crop Values, 1996-2004—Gross Revenues

sales values and acreages, broken down by broad crop groupings. Truck crops, such as asparagus, tomatoes and potatoes, make up nearly a third of the Delta's production by value, followed closely by tree and vine crops. Together, truck, tree and vine crops contribute nearly 60 percent of the Delta's agricultural production value.

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Conversely, field crops,  
2 including hay and  
3 pastureland account for 70  
4 percent of the Delta's  
5 agricultural landscape.

6  
7  
8 Crop production varies  
9 within the Delta. In dollar  
10 value, tree and vines crops  
11 are the major commodities  
12 in the North Delta, which  
13 includes Yolo, Sacramento  
14 and Solano Counties.

15 Truck crop production predominates in the South Delta, made up mostly of San Joaquin  
16 County. The West Delta is comprised of southwestern Sacramento and eastern Contra  
17 Costa. Agriculture in this region occurs on the most subsided and salt-affect islands and  
18 is comprised on mainly field crops, pasture and livestock. The Central Delta of San  
19 Joaquin County includes a mix of field and truck crops. Figure 3 illustrates the relative  
20 value of agricultural production in each of the Delta regions.<sup>iv</sup> The map dramatizes the  
21 affect that subsidence, previous island flooding and salinity has had on crop patterns.  
22 The West and parts of the Central Delta with the most affected islands have switched  
23 over time to lower risk crops that tolerate the higher surface and groundwater salinities.

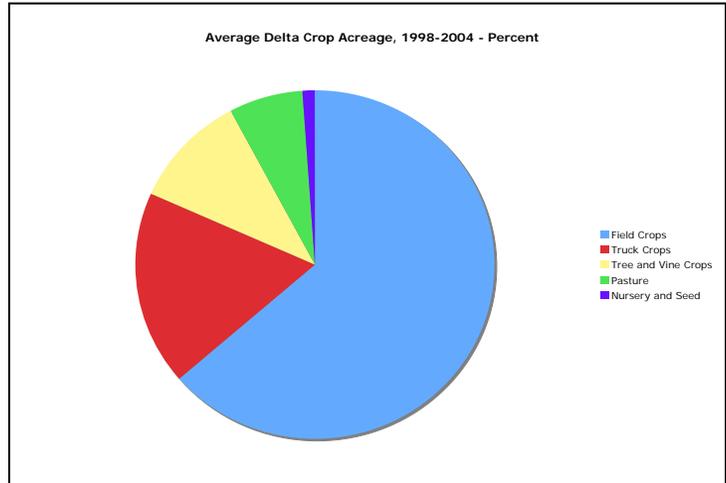


Figure 2. Average Delta Crop Acreage, 1998-2004—percent.

24  
25 **Table 1. Crop Groups – Delta Portions of Counties and Delta Total, 2004**  
26 **Percent Total Agricultural Land and Percent Gross Value**

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

28

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Table 2 lists the major specific crops by 2006 gross dollar value being produced in  
2 the Delta. Between 1998-2004, the average gross agricultural output from the six Delta  
3 counties was calculated by the Department of Water Resources to be \$654,766,017  
4 (2004 dollars).<sup>v</sup> This compares to a total statewide farmgate sales of nearly \$32 billion in  
5 the same time period, or about two percent of the state's total production value.<sup>vi</sup> This is  
6 a small percentage, but if the Delta were a county, it would rank 15<sup>th</sup> out of the state's 58  
7 counties in agricultural production value, just behind Santa Barbara County, and  
8 preceding Sonoma County.

9  
10 **Table 2: Average Top Ten Delta Agricultural Products by Estimated Gross Farm Revenue -1998-**  
11 **2004<sup>vii</sup>**  
12

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

13  
14 Because of the unique growing conditions in the Delta, on a per acre basis, Delta  
15 agriculture is more productive than agriculture for the state as a whole. Using the  
16 average net land actually in production during the 1994-2004 DWR survey period, the  
17 average per acres production value of Delta agriculture is \$1,613; the average per acre  
18 production for the state is \$1,111.

19  
20

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

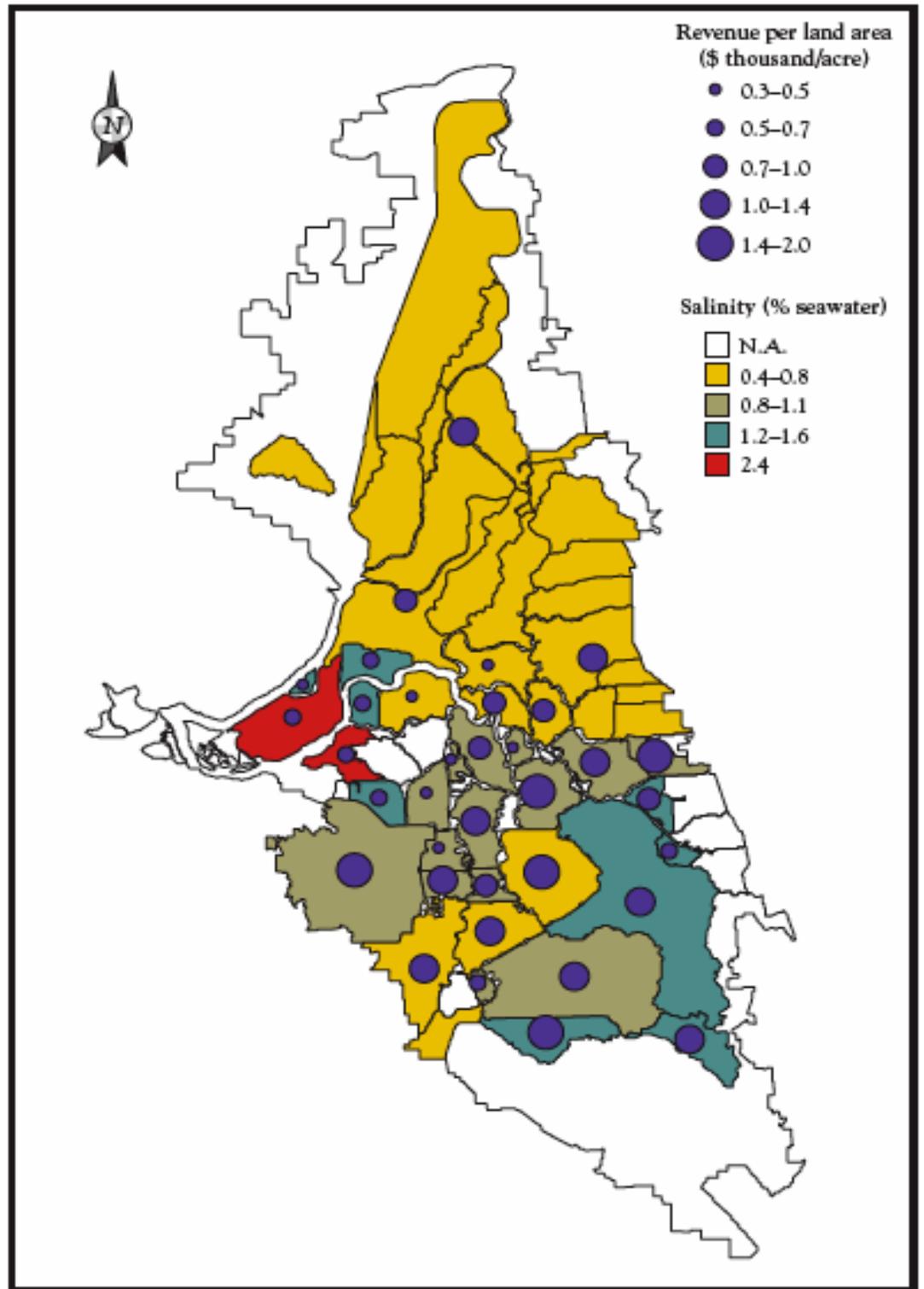


Figure 3. Relative value of agricultural production in each of the Delta regions.

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

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

12

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

23

24           Table 3 shows farm acreage served by water delivery from the Delta to San Joaquin  
25 Valley and Tulare Lake Basin Regions since pumping was initiated from the Delta in  
26 195?. Estimated crop values of agricultural production from these lands are also shown.  
27 **[Once I have this data, I will include a few sentences of analysis.]** Thus, between  
28 in-Delta and South of Delta regions, Delta water directly supports 3,637,000 acres of  
29 agricultural production capacity, with a gross value of approximately \$6.4 billion.

30

31 **Table 3. San Joaquin Valley and Tulare Lake Basin Agriculture Served by Delta Water, 2000**

32

Year	Farmland Served (acres)	Gross Production Revenue (2006 \$)	Delta Water Applied by Agricultural Uses
1950			
1960			
1970			
1980			
1990			
2000	3,083,000	5,780,146,000	3,781,000

33

34           **Community Values.** A University of California-Davis researcher doing agricultural  
35 economics work in the Delta observed that "there is something going on out in the Delta  
36 with agriculture that is a greater value than the sum of crop agricultural values."<sup>xi</sup>

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Agriculture provides a myriad of less quantifiable values to the Delta and the state. The  
2 business of agriculture supports the rural communities of the Delta. The historically and  
3 culturally rich communities, such as Walnut Grove, Isleton, and Clarksburg rely in part  
4 on the business of agriculture for their survival as vital communities linked to place and  
5 history. Though many who now live in the Delta are commuters from outside of the  
6 Delta who seek a more rural lifestyle in the Delta, the Delta's historical and cultural  
7 setting continues to set the Delta apart as a unique California place.

8

9 **Environmental Values.** Delta agricultural also provides environmental services.  
10 One such benefit is the wildlife – including many Endangered Species Act listed species  
11 -- that depends on Delta cropland and its management for habitat. For example, the  
12 cultivation of field crops is suitable habitat for the sand hill crane and other waterfowl.<sup>xii</sup>  
13 Further, many Delta growers leave areas of their fields in wetland or riparian habitat for  
14 the benefit of wildlife. Another environmental service, depending on the crop, is the  
15 sequestration of carbon, a greenhouse gas that contributes to global warming. Further,  
16 agriculture, particularly annual crops, provides a more suitable floodplain land use than  
17 do urban uses. Finally, agriculture provides green open space and clean air for growing  
18 metropolitan areas surrounding the Delta.

19

20 **Recreational Values.** The Delta is well-known for its hunting, fishing and boating  
21 opportunities. Delta agriculture, by maintaining an undeveloped landscape, makes  
22 much of this activity possible. Increasingly, agricultural and environmental tourism is  
23 finding a niche in California, including the Delta. Perhaps the best examples of this kind  
24 of recreation are Staten Island and the Yolo Bypass. Staten Island is managed for  
25 wildlife friendly agriculture and hosts regular opportunities for wildlife viewing. The Yolo  
26 Bypass Wildlife Area is managed by the state Department of Fish and Game for wildlife  
27 conservation, wildlife compatible agriculture, and public recreation for wildlife viewing  
28 and hunting. In addition, direct marketing through wineries and farm road stands offer  
29 opportunities for agricultural tourism.

30

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

36

37

## 38 *Section 3. Trends*

39

40 **Crop Patterns.** Like California agriculture, generally, Delta agriculture is a dynamic  
41 system with new crop introductions, markets, and technologies. Delta county  
42 agricultural commissioners report a number of shifts in crop patterns in the Delta due to

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 these and other forces. The acreage of some traditional Delta crops, such as pears and  
2 asparagus are declining as developing countries bring these crops to the American  
3 market at lower prices. At the same time, because of new varieties and the unique  
4 growing season of the Delta, the plantings of blueberries and cherries are increasing. In  
5 the western and central Delta, water salinity and subsidence on some Delta Islands have  
6 led to a shift from cultivated agriculture to pasture and livestock. Rice is now being  
7 grown on four Delta islands and, as new cool climate varieties are developed, could  
8 expand elsewhere in the Delta. Sugar beets, once a crop grown throughout northern  
9 California and in the Delta has disappeared in recent years as sugar mills serving the  
10 Delta in Clarksburg, Woodland and Tracy have closed. The limited number of  
11 processors of tomatoes poses a similar threat to the future of tomato production.  
12 Increases in land prices, and the emergence of new markets have led growers to shift to  
13 higher value crops, many of which are perennial crops such as, alfalfa, orchards,  
14 vineyards, and nursery crops. The increasing proximity of a large urban market has  
15 made sod turf a profitable crop in the Delta since the mid-1970s.

16

17 **[Insert Table 4 of Delta County agricultural acreage and production value from**  
18 **1946 to 2006, indexed to 2006 which shows a relatively stable Delta agriculture in**  
19 **terms of acreage and gross production value. Still need to verify acreage of some**  
20 **counties in earlier years, and validity of Production Price Index values.]**

21

22 Urbanization in Southern California has forced dairies north. With the growth of the  
23 dairy industry in the Central Valley have come new markets for hay, feed grains and  
24 silage, crops which account for an increasing significant portion of agricultural production  
25 in the Delta. With the increase in corn prices driven by the ethanol market, feed prices  
26 have also risen, providing profitable opportunities for Delta growers.

27

28 **Land Ownership.** The Agricultural Census has shown that there has been little  
29 change in the concentration of agricultural land ownership and production.<sup>xiii</sup> However,  
30 interviews with growers in the Delta indicate that there are fewer landowners owning  
31 more of the agricultural land. A number of growers reported the need to increase  
32 farming scale in order to secure market contracts with the fewer and larger grocery  
33 outlets that require large and predictable supplies of produce. Another driving force for  
34 consolidation is escalating land value. A relatively small Delta grower recently  
35 interviewed bemoaned the fact that increasing land prices have made it difficult to  
36 purchase or lease more land to improve his economies of scale.<sup>xiv</sup> (Throughout this  
37 memorandum the results of interviews with growers in the Delta will be referenced; these  
38 interviews were done for a separate report being prepared on the thoughts from Delta  
39 growers about the Delta's future.)

40

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Another trend in land ownership in the Delta is the increase in public or quasi-public  
2 land ownership. In 2001, the Delta Protection Commission received a staff report on  
3 land acquisition by public and non-profit entities in the Primary Zone of the Delta. As of  
4 2000, it was reported that 59,824 acres (over 12 percent) of the Delta's Primary Zone  
5 was in either public or nonprofit ownership. Included in that figure was 8,000 acres of  
6 agricultural land converted to wildlife habitat. Table 3 lists a few of the larger  
7 acquisitions.

8  
9 **Table 5. Selected Public and Nonprofit Delta Land Acquisitions**  
10

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

11  
12 Some of these lands continue in some level of agricultural production.  
13 Nevertheless, agricultural commissioners and agricultural support industry  
14 representatives who serve the Delta express concerns over the loss of a critical mass of  
15 agricultural land needed to support agricultural infrastructure, including agricultural  
16 support industries.

17  
18 Besides the impacts of public and nonprofit landownership on agricultural land use,  
19 the shift has implications on the local tax base and reclamation and water district  
20 revenues, diminishing public funds available to maintain Delta agricultural and  
21 community services, and infrastructure, including levees.

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

33

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1       **Farmland Conversion.** California is losing its farmland at a rapid rate. Between  
2 2002 and 2004, the Department of Conservation tracked the conversion of 138,644  
3 acres of irrigated land statewide. Urbanization accounted for much of this loss, but land  
4 idling for water transfers or because of salinity, and conversion for public open space  
5 uses such as ecosystem restoration, also contribute significantly to the loss of  
6 agricultural land. The trend is one of acceleration. Loss of Farmland to urban uses has  
7 increased by 10 percent over the 2000-2002 Department of Conservation farmland  
8 conversion reporting period.

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

18  
19       Most of the urbanization of agricultural land in the legal Delta is occurring in the  
20 Secondary. Intended to be a land-use buffer for the Primary Zone, the Secondary Zone  
21 is being consumed by rapid urbanization. As one North Delta farmer observed, "the  
22 outer lands of the Primary Zone are becoming this Zone's own buffer." As of 2004,  
23 nearly 28 percent of the Secondary Zone was urbanized.<sup>xv</sup>

24  
25  
26

**Table 6. Land Use Change Within the Delta and Suisun Marsh**

Land Use	Acres 1990	Acres 2004	Percentage of total 2004	Acreage change 1990-2004	Percent change 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.

27  
28  
29  
30

In the Primary Zone, urban sprawl is not a factor in the loss of agricultural land. However, the Department of Conservation recently conducted a pilot study on the effect of rural subdivision of agricultural land conversion and found that ranchette development

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 was a significant cause of non-urban agricultural land loss between 2002-2004. These  
2 parcels, typically 10 to 40-acres, are often too small to farm and too large for a lawn  
3 mower. The resultant scattered homesites create a number of problems for agriculture,  
4 including increased traffic, nuisance complaints, trespass, weed and pest abatement,  
5 and higher land values that make land sales for agricultural expansion difficult. A further  
6 complication is that most counties lack requirements for where dwellings are located on  
7 the parcel. According to interviews with county agricultural commissioners and Delta  
8 growers, ranchette development is a significant direct and indirect cause of lost  
9 agricultural productivity in the Delta. The Delta Protection Commission's Land Use and  
10 Resource Management Plan includes several policies that call for, among other actions  
11 larger agricultural minimum parcel sizes, the transfer of development credits, and the  
12 location or clustering of homesites on ranchette parcels in a manner that avoids impacts  
13 on neighboring agricultural lands.

14

15 However, the Primary Zone is not free from urban development pressures. In 2007,  
16 the Delta Protection Commission sent a Clarksburg development proposal – the Old  
17 Sugar Mill Project – back to Yolo County for reconsideration. The Commission found  
18 that the project was inconsistent with several policies of its Land Use and Resource  
19 Management Plan for the Primary Zone of the Delta, including policies concerning  
20 impacts on agriculture.

21

22

## 23 *Section 4. Policy Context*

24

25 **The Delta Protection Commission.** In 1992, the Delta Protection Act was enacted  
26 creating the Delta Protection Commission, whose three-pronged mission includes the  
27 protection and preservation of agricultural viability (recreation and wildlife include the  
28 other two Commission objectives). In 1995, in response to the Act's mandate, the  
29 Commission adopted the Land Use and Resource Management Plan for the Primary  
30 Zone of the Delta (Management Plan). The Management Plan contains findings,  
31 policies and recommendations in the areas of environment, utilities and infrastructure,  
32 land use, water, recreation and access, levees, boating and agriculture. Among these,  
33 agriculture is the most prominently mentioned throughout the Plan. Agricultural Policy-1  
34 of 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 supply  
36 needed to sustain the increasing population of the State, Nation and the world.” This is  
37 just one of 10 agricultural policies adopted in the Management Plan. In addition, many  
38 other Plan sections include policies intended to “preserve and protect [the] agricultural  
39 viability” of the Delta. For example, the Land Use Section's Policy-2 states, “Local  
40 general plans...shall continue to strongly promote agriculture as the primary land use in  
41 the Primary zone....”

42

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

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

8  
9 Interested parties may appeal land use decisions that are deemed not consistent  
10 with the Management Plan to the Commission. If the Commission finds that the  
11 decisions are not consistent with policies of its Plan, including its agricultural protection  
12 and viability policies, it is to remand the decision to the local government for  
13 reconsideration. Local entities whose decisions have been remanded must respond to  
14 the Commission's findings prior to proceeding with the decision. The Old Sugar Mill  
15 project, which proposed 160+ residential units, is a recent, but rare example of a locally  
16 approved project appealed to the Commission and subsequently remanded back to the  
17 local government for reconsideration.

18  
19 Among the agricultural land conservation policy tools to be addressed by the  
20 Commission's Land Use and Resource Management Plan is the purchase or transfer of  
21 agricultural land conservation easements/development rights (Public Resource Code  
22 section 29760; Agricultural Policy-7; Land Use Policy-2). In part prompted by the new  
23 authority granted with the enactment of AB 797 (2006), the Commission is working with  
24 the region's land trusts to explore a strategy for the funding and application of  
25 agricultural land easements to protect important agricultural lands from non-agricultural  
26 uses.

27  
28 **Delta Resource Conservation and Development Council (RC&D).** An RC&D is  
29 a U.S. Department of Agriculture (USDA) program whose purpose is to "accelerate the  
30 conservation, development and utilization of natural resources, improve the general level  
31 of economic activity, and to enhance the environment and standard of living in  
32 designated RC&D areas." The Delta RC&D was established via a local coalition led by  
33 the Delta Protection Commission, involving local resource conservation districts, state  
34 agencies, Delta cities and counties and others. In 2003, the USDA approved the  
35 coalition's application to establish the RC&D. An application for \$100,000 in USDA  
36 funding for support staff is pending. The RC&D's work plan targets land resources,  
37 addressing agricultural land protection and subsidence; community economic  
38 development, including recreational opportunities and tourism; renewable energy  
39 development; water resources; and, wildlife habitat conservation. The Council includes  
40 representation from Delta local government officials, as well as public members from

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 agricultural, business, conservation and other interests. Ex Officio members include  
2 state, regional and local agencies.

3

4 **Other State Agricultural Land Use Policies.** Beyond the Delta Protection Act,  
5 while the state does not have an overarching plan or strategy for the conservation of its  
6 agricultural resources, it does have an abundance of policies supporting the protection  
7 and promotion of California agriculture, including its land and water resources. These  
8 include policies sprinkled throughout state statutes concerning the importance of  
9 protecting the state's agricultural lands, particularly its prime agricultural lands. The  
10 protection of agricultural land is included as an important goal in the California Land  
11 Conservation (Williamson) Act; Subdivision Map Act; California Environmental Quality  
12 Act; state general planning and open space laws; Local Government Reorganization Act;  
13 Coastal Act; authorizing legislation for the State Coastal Conservancy; the California  
14 Farmland Conservancy Act; and, of course, the Food and Agricultural Code.

15

16 The state's role in agricultural land conservation is limited to providing guidance and  
17 tools to local government. Prominent among such state programs is the 1965 California  
18 Land Conservation (Williamson) Act. The Act authorizes counties to sign 10 to 20-year  
19 contracts with farmers and ranchers under which landowners are granted preferential tax  
20 treatment in return for a legal commitment to keep in agricultural and related open space  
21 uses. Currently, approximately 16 million acres, or over half of the state's agricultural  
22 lands are protected by the Act. Most of the Delta's Primary Zone is protected from  
23 urbanization for at least 10 to 20 years by the Williamson Act.

24

25 In addition to the temporary protection of the Williamson Act, state and federal  
26 agencies offer grants to local agencies and conservation organizations for the  
27 permanent protection of agricultural land under agricultural conservation easements.  
28 The most significant such program at the state level is the California Farmland  
29 Conservancy. At the federal level, the Farm and Ranch Land Protection Program also  
30 funds the purchase by state and local governments, and nonprofit conservation  
31 organizations of agricultural land conservation easements. Funding for both programs  
32 has been relatively small compared to demand and need as gauged by the state's rapid  
33 loss of agricultural lands.

34

35 **County Policies.** As described above, the Delta Protection Act mandates that the  
36 general plans of the Delta's local governments be consistent with the Delta Protection  
37 Commission's Land Use and Resource Management Plan for the Primary Zone of the  
38 Delta. Under the broad policy guidance of the Management Plan, however, the primary  
39 land use planning authority in the Delta belongs with its cities and counties, who  
40 exercise their authority over land use through their general plans and implementing  
41 zoning, subdivision and related policies. All five Delta counties are currently undergoing

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 updates of their general plans, including in all cases, the general plan agricultural and/or  
2 open space elements. Also, all five of the Delta counties have agricultural advisory  
3 commissions that are appointed by their respective county boards of supervisors, and  
4 are typically staffed by the county agricultural commissioners and, occasionally, planning  
5 department staff. These commissions, among other duties, provide advice on the  
6 promotion and protection of county agricultural business and land use, often including  
7 county land conservation programs, such as the Williamson Act.

8

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

11

12 *Contra Costa:* The agricultural portions of the County are largely designated for  
13 agricultural uses by the County's general plan and its implementing zoning ordinance.  
14 The County has adopted an urban limit line to limit urbanization onto these agricultural  
15 lands. In addition, two land trusts – the Brentwood Land Trust and the Land Trust of  
16 Contra Costa County -- are dedicated to the protection of agricultural land through the  
17 promotion and marketing of local agriculture, "smart growth" land use policies, public  
18 education, and agricultural land conservation easements. Further, the County is  
19 reworking its regulations governing roadside produce stands and value-added  
20 agricultural activities in order to support the economics of local agricultural operations.

21

22 *Sacramento County:* Sacramento County has also adopted an urban limit line, in  
23 part to protect agricultural and open space lands. The Delta is outside of the urban limit  
24 line; however, the County's general plan designates lands within the Primary Zone for  
25 agriculture and compatible natural resource uses only. The planning boundaries and  
26 zoning that were in place at the time that the Delta Protection Act took effect in 1992,  
27 limit development within the County's unincorporated communities (as is the case in all  
28 Delta counties).

29

30 The County has a mitigation fee policy for the loss of agricultural land and habitat,  
31 with a goal of placing one acre of resource lands under permanent protection of  
32 conservation easements for each acre converted out of agriculture or habitat. The  
33 County's general plan update is considering policies and programs that would promote  
34 more efficient forms of development; shore up the protections of the Williamson Act;  
35 provide incentives for developers to continue farming on transition lands; support agro-  
36 tourism and other forms of market assistance; encourage the development of agricultural  
37 infrastructure, such as water, agricultural processing, and transportation; and, provide  
38 incentives for schools and other institutions to buy locally grown agricultural products.

39

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

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1  
2       *San Joaquin County:* San Joaquin County's general plan does not include urban  
3 limit lines, but directs future growth to take place within existing city boundaries. The  
4 County recently adopted an agricultural land mitigation program, which requires  
5 developers to dedicate agricultural conservation easements over equal quality and  
6 quantity agricultural land as that being converted by their projects. A number of cities on  
7 the edge of the Delta, though not yet including Stockton, have adopted similar mitigation  
8 policies. The County has launched an agricultural promotion program, "Select San  
9 Joaquin," which includes public and school education about agriculture; agricultural  
10 marketing assistance; support for direct marketing; grocery outlet support for locally  
11 grown products; and, promotion of fresh fruits and vegetations as part of better nutrition.  
12 The County is building a new \$31 million agricultural service center that will provide a  
13 one-stop shop to farmers and related businesses for assistance from local, state and  
14 federal agencies.

15  
16       The Central Valley Farmland Trust also works within San Joaquin County to protect  
17 and promote agriculture and agricultural resources.

18  
19       The County is participating the Governor Schwarzenegger's San Joaquin Valley  
20 Blue Print project, which includes among its issues the protection of the Valley's  
21 agricultural resources.

22  
23       *Solano County.* The County has had a voter-approved urban growth policy – the  
24 Orderly Growth Initiative – since 1984 (renewed in 1995). The policy prohibits the  
25 conversion of agricultural and open space lands to urban uses outside of urban growth  
26 boundaries without the approval of voters. The policy expires in 2010 unless an update  
27 is approved by voters. The cities of Benicia, Vacaville and Fairfield all have urban  
28 growth boundaries and have, or are, creating agricultural greenbelts to separate these  
29 cities and maintain their identity. An update of the Solano County general plan is in  
30 progress, which includes an analysis of agricultural protection and promotion needs. In  
31 partnership with the University of California's Agricultural Issues Center, the County is  
32 conducting economic studies, agricultural landowner focus groups, and grower  
33 interviews to determine the need for policies to promote and sustain county agriculture  
34 into the future. Solano County is home to the Solano Land Trust, which is dedicated to  
35 the protection of agricultural and open space lands largely through education and  
36 conservation easements.

37  
38       *Yolo County:* The County has a long history of agricultural land protection through  
39 its general plan and Local Agency Formation Commission annexation policies, including  
40 more recently, agricultural land mitigation programs similar to those mentioned above.  
41 The Cities of Davis and Woodland also rely on collaboration with the Yolo County Land

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Trust to require the dedication of agricultural conservation easements as mitigation for  
2 the loss of agricultural land. The County's proposed general plan update is likely to  
3 continue the County's strong agricultural land protection policies with new emphasis on  
4 agricultural economic development policies. The County is hiring an agricultural  
5 ombudsman to assist farmers and ranchers with navigating permit processes for the  
6 development of value-added agricultural enterprises and products, including agro-  
7 tourism.

8  
9 The County, through its agricultural commissioner, is participating in a community-  
10 building and planning exercise established and facilitated with the support of the non-  
11 profit organization, Ag Innovations Network. The Network has worked with county  
12 agricultural, environmental and other community stakeholders since 2004 to establish an  
13 Agricultural Futures Alliance (AFA). The purpose of an AFA is "to ensure that  
14 agriculture, community, and the environment will thrive indefinitely." The Yolo AFA has  
15 been working on building trust among the diverse stakeholders and identifying actions  
16 where there is agreement. So far, the AFA has adopted a vision for the County's  
17 agriculture, developed farmland mitigation principles, and formulated an agricultural  
18 conservation easement ordinance.

19  
20 With respect to the Delta, specifically, Yolo County's prospective general plan would  
21 establish an agricultural district in the Clarksburg area to support agricultural  
22 development by enhancing land use policies to facilitate, among other value-added  
23 activities, agricultural-related tourism.

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

37  
38 **Habitat Conservation Plans.** All five of the Delta counties are in the process of  
39 developing Habitat or Natural Communities Conservation plans. These plans, along with  
40 the Bay Delta [ecosystem] Conservation Plan, that is also in the process of  
41 development, will have impacts on agricultural resources and uses. These conservation

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

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

## 8 9 10 *Section 5. Drivers of Change*

11  
12 Agriculture faces the usual stressors and drivers of change faced by all of California  
13 and American agriculture.<sup>xvi</sup> These include:

- 14
- 15 • Rising costs of inputs, including labor, fertilizer, land and transportation as local  
16 agricultural support industries, such as shipping and processing, will disappear;
- 17 • Increasing foreign competition that has come with the liberalization of trade, has led  
18 to depressed and more volatile crop prices;
- 19 • Growing federal, state and local environmental and land use regulations that place  
20 growers at a competitive disadvantage with other states and countries for market  
21 shares;
- 22 • A growing urban population driving agricultural land conversion, increases in land  
23 prices, land use conflicts, competition for infrastructure (such as roads) competition  
24 for water, and demand for public open space, often at the expense of agricultural  
25 lands;
- 26 • Increasing salinity of land and water;
- 27 • Climate change with its attendant changes in water availability, flood threats, growing  
28 seasons, and markets for carbon credits;
- 29 • Loss of research and technical assistance, particularly from the Cooperative  
30 Extension Service;
- 31 • Aging of farmers and the lack of a next generation to take over the operations; and,
- 32 • New plant and animal pests, invasive species and diseases.

33  
34 In the Delta, there a unique set of drivers of change and stressors.

- 35
- 36 • **Levee improvements**, maintenance and repair. Currently, most of the levees that  
37 protect Delta agricultural lands are maintained by individual landowners, local  
38 reclamation districts supported by fees on landowners, and, to the extent funding and  
39 authority is available, state levee subventions. Farmers recently interviewed do not  
40 see a future for agriculture in the Delta without continuing and new outside support  
41 for Delta levees.

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

- 1 • **Land Subsidence** due to the erosion, oxidation and compaction of the Delta's  
2 organic soils. As these soils continue to subside below sea level, increased pressure  
3 is placed on the surrounding levees, increasing the cost of levee maintenance, water  
4 table management, and land loss from seepage and increasing salinity.
- 5 • **Salinity** of irrigation water. Loss of islands to levee failure, increase in water  
6 pumping for south-of-Delta users, and reduction in flows into the Delta all pose risks  
7 to Delta farmers and ranchers that sea water will move further up the Delta replacing  
8 fresh irrigation water with unusable saline water, eliminating irrigated agriculture on  
9 affected islands. Saline water moving into the Delta can penetrate groundwater  
10 aquifers adjacent to the Delta that supply drinking water to surrounding residents and  
11 communities. In the West and Central Delta, a number of islands have shifted from  
12 row and field crops to irrigated pasture or more salt-tolerant field crops. In the South  
13 Delta, export pumping and low San Joaquin River flows cause poor water quality and  
14 quantity for irrigation.
- 15 • **Ecosystem Restoration.** Growers in the Delta see this driver of change as both a  
16 threat and opportunity. With the development of a habitat restoration plan for the  
17 Delta, land could be removed from agricultural use for terrestrial or aquatic habitat  
18 restoration. The Public Policy Institute's "*Envisioning Futures for the Sacramento-*  
19 *San Joaquin Delta*" report has recommended consideration of Delta alternatives that  
20 increase the fluctuation salinity up the Delta for improved ecosystem conditions. As  
21 already noted, this could adversely affect agriculture in the Delta. Growers are  
22 concerned that the state or federal endangered Act could impinge on their ability to  
23 dredge their drainage and irrigation ditches if deemed to be navigable waters by new  
24 regulations. Conversely, growers see opportunities for income from integrating  
25 habitat restoration into their farming operations.
- 26 • **Island Flooding.** A failure to reclaim islands after a levee failure, or intentionally  
27 flooding islands for environmental purposes, concerns growers not only because of  
28 the potential salt water intrusion up the Delta, but because of the impacts of open  
29 water erosion on the levees of neighboring islands and the increase in island  
30 seepage that weaken levees, and contributes to the loss of farmable land.
- 31 • **Recreation.** With increasing urban growth surrounding the Delta, urbanites are  
32 turning to the Delta for recreation, sightseeing and open space. Again, this presents  
33 both threats and opportunities for Delta agriculture. Increased non-agricultural  
34 populations in the Delta present challenges for farmers and ranchers, including theft,  
35 trespass, vandalism, trash, levee erosion, traffic that interferes with equipment  
36 movement, and limitations on such farm operations as spraying. On the other hand,  
37 some growers see the opportunity for managed recreation that benefits agriculture,  
38 including agro-tourism, direct marketing, public education and farm-related recreation  
39 opportunities such as hunting.
- 40 • **Conjunctive and Value-added Agricultural Uses.** Many growers interviewed  
41 about Delta Vision mentioned the future opportunities for Delta agriculture for the

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

- 1 production of energy crops, particularly for cellulosic ethanol as that technology  
2 develops. Corn prices have increased because of the surging ethanol market, giving  
3 growers optimism for the future of agriculture in the Delta, including for other energy  
4 crops. Wetland cellulose crops, as well as semi-permanent crops, such as  
5 switchgrass are seen a future energy crops that could also be beneficial for the  
6 stabilization or reversal of Delta land subsidence. (The Department of Water  
7 Resources and the U.S. Geological Survey are currently experimenting with rice and  
8 wetland vegetation to manage water quality and land subsidence.) Growers and  
9 others working in the Delta also see potential for new markets for a carbon “crop”;  
10 i.e., payments for carbon sequestration to reduce greenhouse gases.
- 11 • **Urbanization.** Urbanization, as noted above, is a threat to agriculture as an  
12 incompatible and competing user of lands. Urbanization around the Delta also  
13 creates a nearby market for agricultural products. For example, nearby urbanization  
14 has made turf a viable crop in the Delta.
  - 15 • **Water conveyance.** Perhaps the most significant driver of change affecting  
16 agriculture in the Delta is one that is behind many of those listed above; i.e., how  
17 water will be moved through or around the Delta. An isolated conveyance facility will  
18 lessen the importance of large public expenditures in the Delta for levees and water  
19 quality management. In-Delta water users, including agriculture, as well as the  
20 recreation interests, sports fishers, and environmental restoration interests, all fear a  
21 diminished water conveyance role for the Delta will lead to diminishing public  
22 investment in levees, and the eventual loss of these Delta uses.

## 23 *Section 6. Conceptual Model*

24 The 2007 Public Policy Institute of California report, “*Envisioning Futures for the*  
25 *Sacramento-San Joaquin Delta*,” suggests viewing the Delta not as a single  
26 management unit, but as an aggregate of different regions that should function, and are  
27 managed under different constraints to provide different economic and environmental  
28 services. This model takes a similar approach with respect to agriculture.  
29  
30

31  
32 In a 1999 article on the Delta, U.S. Geological Society scientists set forth strategies  
33 for managing Delta islands to address subsidence.<sup>xvii</sup> They suggested that these  
34 strategies be implemented to create a mosaic of land use patterns throughout the Delta  
35 that also benefits wildlife. As part of recent interviews, Delta growers were asked to  
36 visualize their desirable Delta of the future. To a person, the interviewed Delta growers  
37 saw a similar future for Delta agriculture<sup>xviii</sup>. They saw a Delta mosaic that included  
38 wildlife habitat, flood management, carbon sequestration, recreation, and subsidence  
39 management, all integrated with, not supplanting, agricultural uses.  
40

41 Consistent with these “mosaic” visions, this proposed conceptual model would, in  
42 part, reinvent Delta agriculture as an economic land use that provides multiple public

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 services. This would be a “working landscape” where farmers and ranchers are  
2 rewarded in the marketplace for not only the production of food, energy and fiber, but for  
3 wildlife abundance and diversity; the reduction or reversal of subsidence that, in turn,  
4 reduces the public and private costs of levee maintenance; the sequestration of  
5 greenhouse gases; recreation; the sustenance of rural Delta communities; and, the  
6 provision of scenic green open space in the midst of a Northern California metropolis.

7  
8 **West Delta and Central Delta.** In the western and central Delta where subsidence  
9 is most pronounced, the Department of Water Resources and the US Geological Survey  
10 have been experimenting with a variety of ways to stop or reverse Delta island  
11 subsidence due to peat oxidation. Some of these include developing wetland  
12 agricultural uses of the islands that keep the lands wet for all or most of the year. Four  
13 potential “crops” are rice, fish, fish food and carbon (i.e., growing wetland vegetation to  
14 sequester carbon dioxide in return for carbon credit payments as part of a carbon “cap  
15 and trade” program being considered by the Governor pursuant to AB 32 (2006)).  
16 Preliminary results indicate that these agricultural uses could dramatically slow, stop or  
17 reverse peat oxidation and island subsidence.<sup>xix</sup> The production of biomass for  
18 renewable energy would be another potential crop from wetland agriculture. For  
19 example, it has been proposed that wetland algae farms could not only sequester  
20 carbon, but also generate biodiesel.<sup>xx</sup> Besides managing subsidence and levee  
21 vulnerability, and producing potential “crops” for economic benefit, these strategies  
22 would also have benefits for water quality, wildlife habitat restoration, climate change  
23 management and compatible recreation, while maintaining flexibility for salt water  
24 management.

25  
26 *Needs:* Economic, agronomic and biologic research support.

27  
28 **North, South, and parts of the Central Delta.** On less subsidized islands in the  
29 Delta, regulatory, technical and financial incentives would be provided to landowners to  
30 grow crops and manage their lands in ways that continued agricultural production while  
31 also slowing or stopping subsidence, enhancing wildlife benefits, and offering managed  
32 recreational opportunities via agro-tourism and hunting and fishing. Management  
33 strategies would include: crop rotations that included soil-building crops or fallowing;  
34 integrated pest management to reduce pesticides; cover crops; the strategic use of  
35 permanent crops, such as pasture, to reduce soil disturbance and oxidation; and, a form of  
36 conservation tillage for field and row crops that reduces energy inputs, lessens soil  
37 disturbance and oxidation, and minimizes soil compaction by farm machinery field  
38 passes. Regulatory assurances, permit assistance, and technical and financial  
39 assistance, would be provided to growers as needed for the creation of new on-farm  
40 wildlife habitat. Practices could include wetlands on low or otherwise marginal soils;  
41 hedgerows; growing wildlife friendly crops; flooding lands for wildlife during critical parts

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 of the season; and, improving riparian vegetation along levees. The wildlife friendly farm  
2 management being conducted by The Nature Conservancy on Staten Island, and the  
3 floodplain and wildlife compatible farm and ranch management being used by the  
4 California Department of Fish and Game in partnership with lessee farmers and  
5 ranchers in the Yolo By-pass, could be models for such an Delta agricultural model.<sup>xxi xxii</sup>  
6

7 Incentives for growers to provide floodplain management services on Delta Islands  
8 would be another role for a reinvented Delta agriculture. The North Delta Improvement  
9 Project considers the use of setback levees within islands that would enable the  
10 temporary capture of floodwaters during high flows to reduce downstream pressures on  
11 levees.<sup>xxiii</sup> During most years, the lands between rim and setback levees would be  
12 farmed under a flowage easement. Once the flooded portion of an island were drained  
13 after flows had receded, planned emergency assistance would be provided to restore  
14 the land for agricultural and habitat uses. The Yolo By-pass offers an example of  
15 another kind of flood-compatible agriculture that could be modified for other parts of the  
16 Delta, including along the San Joaquin River.

17  
18 *Needs:* Research on the adaptation of common conservation strategies to Delta  
19 peat soils; funding for technical and financial assistance; ESA regulatory assurances for  
20 habitat improvements integrated into farming operations; increased presence of law  
21 enforcement to mitigate the impacts of an increased population of non-agricultural  
22 recreational visitors to the Delta; augmented or redirected funding for the acquisition of  
23 floodplain easements; transportation strategies to manage existing agriculture-impairing  
24 commuter and recreational traffic in the Delta.

## 25 26 *Tools and Strategies to Implement the Model*

27  
28 **Regulatory Barriers:** New approaches to existing federal, state and local  
29 environmental and land use regulations will be needed to support agro-tourism, wildlife  
30 friendly agriculture, and value-added agriculture. For example, many growers fear  
31 creating wildlife habitat and attracting species that may trigger restrictive ESA  
32 regulations. Also, Solano County growers have reported to UC researchers that local  
33 planning and building regulations largely intended for urban land use applications, make  
34 direct agricultural marketing (e.g., farm stands), on-farm recreation or tourism, and  
35 vertical integration, difficult.

36  
37 **Tools:** (1) Planning grants to local agencies to develop new, and adapt existing  
38 ordinances and planning strategies to facilitate recreational and value added agricultural  
39 enterprises. (2) One-stop regulatory assistance and compliance and for growers making  
40 positive changes for agriculture and the environment. (3) Encourage the use of safe  
41 harbor and similar agreements under state and federal Endangered Species Acts. (4)

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 Support a voluntary third party certification for environmental regulatory compliance,  
2 especially for air and water quality regulations. Many of these tools are currently being  
3 developed or in use by counties and state and federal agencies around the Delta and  
4 elsewhere in the state. The non-governmental California Roundtable on Agriculture and  
5 the Environment, made up of established agricultural and environmental stakeholders, is  
6 currently considering the use of environmental certification as a regulatory approach.

7  
8 **Stakeholder Collaboration:** Trust, or a lack of it, is seen by many of the Delta  
9 growers recently interviewed, as a significant barrier to solutions in the Delta. In  
10 addition, a lack of public understanding about the nature and challenges of agriculture is  
11 viewed by these growers as a cause for inflexible local and state regulations that they  
12 believe are often regulations intended for urban settings that have poor applicability in an  
13 agricultural landscape.

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

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

37  
38 **Tools:** (1) Expanded support for "on-the-ground" technical assistance to achieve  
39 the agricultural stewardship goals of the Delta Vision strategy through Cooperative  
40 Extension Service and state-authorized, county-level resource conservation districts  
41 (Division 9 of the Public Resources Code). (2) Support the Governor's effort to shape

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 the 2007 Farm Bill to expand conservation, rural development, energy, research, forestry  
2 and specialty crop provisions to address California's agricultural and environmental  
3 needs.

4

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

10

11 **Tools:** (1) The Conservation Title of the Farm Bill offers environmental set-aside,  
12 technical assistance and cost-share programs to help growers implement soil, water, air  
13 and wildlife stewardship. The President's Farm Bill proposal provides new emphasis for  
14 regional approaches to managing high priority resource issues. The Delta has been  
15 designated a USDA Conservation Priority Area. The 2007 Farm Bill could provide new  
16 opportunities for the application of financial incentives and rewards for a Delta-wide  
17 conservation strategy. A relatively new USDA conservation program, intended to wean  
18 growers from WTO-violating crop subsidies -- but not yet fully funded -- is the  
19 Conservation Security Program, which makes annual payments to growers who provide  
20 environmental services as part of their agricultural operations. (2) The recent  
21 environmental and water bonds passed by voters set aside funds that could be used for  
22 leveraging Farm Bill conservation assistance for cropping systems that assist growers in  
23 farming to meet multiple resource objectives. (3) Encourage the use of mitigation  
24 banking under a Delta-wide Habitat Conservation Plan or its state equivalent to support  
25 the integration of habitat improvements on working agricultural lands. (4) Capitalize on  
26 carbon markets to create opportunities for Delta growers to receive income from  
27 providing carbon sequestration services through strategic cropping and crop  
28 management. (5) Use boat and vehicle sticker, and recreational use fees to support  
29 levee and road maintenance, law enforcement, on-farm environmental enhancements,  
30 and the development of value-added recreational and tourism opportunities.

31

32 **Land Conservation:** Growers, when asked to list the major threats to the  
33 sustainability of Delta agriculture almost always include urban encroachment. In  
34 addition, landowners frequently mentioned the public acquisition of lands as an erosion  
35 of the fee and tax base necessary to support Delta levees and other infrastructure, as  
36 well as Delta communities. They also fear the loss of a critical mass of private  
37 agricultural lands necessary to support the services that support agriculture, such as  
38 fertilizer and seed companies, processors, bankers and shippers.

39

40 **Tools:** (1) Increase or redirect funding for Delta agricultural, floodplain and habitat  
41 conservation easements that keep land in private ownership, that are structured to

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 encourage continuing agriculture that is compatible with the purposes of the easement,  
2 and that prevent incompatible urban development in the Primary Zone. (2) A Delta  
3 Protection Commission farmland conversion mitigation program that relies on transfer or  
4 purchase of development rights on land within the Primary Zone whenever land within  
5 the Secondary Zone is developed. Currently, the Commission staff has convened  
6 representatives from land trusts (the Delta Agricultural Easement Discussion Group) in  
7 the Delta region to explore options and strategies for the protection of Delta agricultural  
8 lands. (3) Planning grants to local land trusts and county planners to develop land use  
9 and economic development strategies that shield agricultural lands from development  
10 pressures and create a supportive local economic environment for agriculture. For  
11 example, alternative land use strategies for Delta lands already fragmented by  
12 parcelization, include reasonable accommodation through the use of agricultural  
13 clustering or transfer of development rights ordinances (see Delta Protection  
14 Commission's Agricultural Policy-10), or restrictive minimum parcel size requirements  
15 and buffers to discourage ranchette development or at least ameliorate its adverse  
16 impacts on agricultural operations. (4) Both strengthening of, and increased flexibility  
17 under, the Williamson Act to not only protect agricultural land, but to also encourage  
18 value-added products and compatible processing and recreational uses that enhance  
19 agricultural profitability.

20

21 **Research and Education:** Delta growers and wildlife managers recently  
22 interviewed believe that a fundamental problem with agriculture and the Delta generally,  
23 is a lack of public understanding of the values that the Delta and Delta agriculture  
24 provide to the state in the form of water conveyance, recreation, wildlife habitat, open  
25 space, and food production. They believe that with a better understanding of these  
26 services on the part of voters there will be a greater willingness to be stewards of the  
27 Delta, both in their use and financial support of Delta resources.

28

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

38

39 **Tools and Needs.** (1) The California Department of Parks and Recreation is  
40 developing a Central Valley Vision to guide the provision of new parks and recreational  
41 opportunities for Californian's. The strategies and resources that could be brought to

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

1 bear to integrate well-managed recreational opportunities in the Delta could be an  
2 important tool to inform the Delta Vision on how to create synergies between recreation  
3 and agriculture. (2) The Yolo Basin Foundation and California Department of Fish and  
4 Game have a shared vision that the Yolo Bypass Wildlife Area along I-80 could become  
5 an important visitor gateway to the Delta, which could serve to educate visitors of the  
6 values of the Delta. A recent visioning exercise conducted by UC Berkeley included the  
7 development of once vision which proposed a similar gateway to the Delta on the  
8 western point of Sherman Island in the form of a Delta national monument<sup>xxiv</sup>. (3) The  
9 Delta Resource Conservation and Development Council was recently was recently  
10 established. The Council has applied to U.S.D.A for funding to support foundational  
11 staff. State support for the application, as well as matching contributions, could create  
12 an entity with Delta focus that would coordinate with local governments, landowners,  
13 resource conservation districts, foundations and state and federal agencies to identify  
14 public outreach and research needs for the Delta, and implement them.  
15  
16  
17

# Context Memorandum: Agriculture in the Delta

Iteration 1: May 23, 2007

## 1 Notes

- 
- i California Department of Conservation, *Farmland Mapping and Monitoring Program, Sacramento/San Joaquin River Delta – Important Farmland 2004*.
- ii California Department of Water Resources, 2007, *Sacramento-San Joaquin Delta Overview*.
- iii County Agricultural Commissioners of Contra Costa, Sacramento, San Joaquin, Solano and Yolo Counties; 2006 *Annual Crop Report(s)*
- iv Public Policy Institute of California. 2007. *Envisioning Futures for the Sacramento-San Joaquin Delta*. P. 121
- vii California Department of Water Resources, 2007, *DRAFT Paper: The Value of the Agricultural Output of the California Delta*, Jim Rich, Division of Planning and Local Assistance.
- viii University of California, Agricultural Issues Center, *The Measure of California Agriculture*, 2006.
- ix Public Policy Institute of California. 2007. *Envisioning Futures for the Sacramento-San Joaquin Delta*. P. 101.
- x Delta Risk Management Strategy. Data derived from the Central Valley Production Model (CVPM) for 200. DVPM regions receiving water from Delta include R10, R13-15, R-19, R-20 and R-21. Included CVPM regions receive Delta water supply either from the CVP or SWP.
- xi Telephone conversation with Kurt Richter, Economic Geography PhD graduate student, University of California, Davis Agricultural Issues Center, researcher with the Solano County Agricultural Futures Project, April 12, 2007.
- xii The Nature Conservancy, 2003, *Farming for Wildlife: An overview of Agricultural Operations at Staten Island, San Joaquin County, California*.
- xiii Ibid.
- xiv Delta Vision Staff Interviews of 15 Delta farmers and ranchers, conducted during April and May of 2007.
- xv California Department of Conservation. 2006. *Sacramento/San Joaquin River Delta: Important Farmland 2004*.
- xvi University of California, Giannini Foundation, 2004 *Whither California Agriculture: Up, Down, or Out? Some Thoughts about the Future (Special Report 04-1)*, Warren E. Johnston and Alex F. McCalla.
- xvii Ingebritsen, S.E., and Ikehara, M.E., 1999, *Sacramento-San Joaquin Delta -- The sinking heart of the state in Galloway, D.L., Jones, D.R., and Ingebritsen, S.E., eds., Land subsidence in the United States: U.S. Geological Survey Circular 1182, p. 83-94*
- xix **Need cite for USGS subsidence reversal report.**
- xx Gibbs, W. Wayt, September 2006, "Plan B for Energy." *Scientific American*, pp. 102-114.
- xxi The Nature Conservancy. 2003. *Farming for Wildlife: An Overview of Agricultural Operations at Staten Island, San Joaquin County, California*. 23 pp.
- xxii *Daily Democrat*. April 29, 2007. "Grant will help recreate Yolo Bypass wetlands"
- xxiii <http://baydeltaoffice.water.ca.gov/ndelta/northdelta/>
- xxiv UC-Berkeley Delta Initiative. 2006. *The Great Delta Charrette: A Report to the California Department of Water Resources*. Pp. 22-25.