

Delta Vision Context Memoranda Summary Report

A Support Document

Staff Report

January 2008

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Executive Summary

In conjunction with the signing of SB 1574 (Kuehl, Chaptered September 28, 2006), Governor Schwarzenegger issued Executive Order S-17-06 to establish the independent Blue Ribbon Task Force to develop a durable vision for sustainable management of California's Delta. During 2007, members of the Task Force studied the critical issues facing the Sacramento-San Joaquin Delta and Suisun Marsh as they formulated their vision for the future.

Their study included review of existing documents, hearing testimony from experts in various fields, and review of written material (context memoranda) prepared specifically at their request. This report presents the compilation of 16 context memoranda requested by the Task Force.

This report is not intended to be a comprehensive description of conditions in the Delta and Suisun, but is structured to provide a summary of the context memoranda highlights.

The memoranda provide a common understanding and language for subjects



An egret flies over a wetland area in California's Delta.

Context Memoranda

The following memoranda, in the order of discussion in this summary report, are:

1. Suisun Marsh
2. Sustainability
3. Flooding and Delta Levees
4. Land Use
5. Agriculture in the Delta
6. Water Supply and Water Quality
7. Delta Water Management Governance Structure
8. Delta Ecosystem
9. Demand Management (Water Efficiency)
10. Transportation
11. Utilities
12. Recreation
13. Local and State Economics
14. Emergency Response
15. Learning from Others
16. Historic and Current Governance in the Delta Region

important to establishing a Delta Vision. Different authors have prepared the context memoranda attached to this report. Therefore, the memoranda have different styles, perspectives, and sometimes opinions. For more information on each subject, the reader can refer to the memoranda attached to the end of the report.

The Task Force considers this report a support document to their vision document, *Our Vision for the California Delta*. During 2008, the Task Force will prepare a strategic plan for implementing the vision, and may ask for additional context memoranda to be prepared to aid in that process.

1. Introduction

During 2007, members of the Delta Vision Blue Ribbon Task Force studied the critical issues facing the Sacramento-San Joaquin Delta and Suisun Marsh as they formulated their vision for the future. Their study included review of existing documents, hearing testimony from experts in various fields, and review of written material (context memoranda) prepared specifically at their request. This report presents the compilation of 16 context memoranda requested by the Task Force.

Purpose of Context Memoranda

The Task Force requested that short papers, context memoranda, be written to provide focused critical information on 16 different subjects. The memoranda were intended to provide a common understanding and language for subjects important to establishing a Delta Vision.

Staff and consultants prepared drafts of each memorandum and made them available on the Delta Vision web site (http://deltavision.ca.gov/Context_Memos/Context_Memos.shtml) for public review and comment. In an iterative process, staff and consultants revised the drafts to address comments and reposted the revised drafts for new comments.

Each memoranda was prepared by a different author with different writing styles. Since each memorandum has its own message

Comments?

You may submit your comments on any context memorandum in two ways: online at dv_context@calwater.ca.gov or by mail. If you are using mail, please send your comments to: Delta Vision Context Memo: Suisun Marsh, 650 Capitol Mall, 5th Floor, Sacramento, CA 95814.

and purpose, the Task Force felt that there was no need to make them conform to a same style. Rather than have 16 separate documents, the Task Force decided to package the documents together in this report for easier access.

Organization of Report

This report packages the context memoranda together into a single reference document. The following chapters provide a brief summary of conditions in the Delta and Suisun Marsh in the form of highlights from each memorandum. For more information on each subject, the reader can refer to the memoranda attached to the end of the report. The Task Force considered much more information than is contained in this brief report. The Task Force considers this report a support document to their vision document, *Our Vision for the California Delta*, (http://www.deltavision.ca.gov/BlueRibbonTaskForce/FinalVision/Delta_Vision_Final.pdf).

It is possible that the Task Force may request additional context memoranda during 2008 as it prepares the strategic plan to implement its Delta Vision. In that case, this report will be updated to include that information.

This report is not intended to be a comprehensive description of conditions in the Delta and Suisun, but is structured to provide a summary of the context memoranda highlights.

Introduction to Delta and Suisun Marsh

The Delta and Suisun Marsh encompass 1,315 square miles at the confluence of the Sacramento and San Joaquin rivers. The area is only about one percent of California's area, but contributes much more to the state's


ecosystem, water supply, and economy. More information on the uses, or services, of the Delta and Suisun Marsh can be found in the report, *Status and Trends of Delta-Suisun Services (2007)*, on the DWR Delta Vision web site: <http://www.deltavision.ca.gov/DeltaVisionReports.shtml>.

Issues for the Delta are often discussed without mention of the Suisun Marsh. However, the Suisun Marsh is closely tied to the Delta, especially for ecosystem functions and water quality. While many documents can be found on various Delta-related subjects, a relatively smaller amount is available on the unique issues in the Suisun Marsh. Therefore, Attachment 1, **Context Memorandum: Suisun Marsh**, provides information from the perspective of the Suisun Marsh Charter Principle Agencies. The memorandum provides a good overview of the Suisun Marsh and its relationship with the Delta. In addition, the memorandum highlights a few ways that the Suisun Marsh is different and separate from the Delta:

- Suisun Marsh is the largest contiguous brackish water wetland remaining on the west coast of North America, and is more than 10 percent of California’s remaining natural wetlands.
- Most of the marsh consists of conservation lands such as managed wetlands, upland grass areas, tidal wetlands, and bays and sloughs as opposed to the Delta’s primary agricultural land use.
- The Suisun Marsh has many of its own institutions, policies, financing, etc. that are separate from those in the Delta.
- The vast majority of Delta Suisun levees have been excluded from funding by the Delta Levee Subventions program, legislation, or the general obligation bonds approved by voters.

- The Suisun Marsh Charter Group Principle Agencies have already conducted considerable work in defining the future of the Suisun Marsh. The group feels strongly that the work to develop the Habitat Management, Preservation, and restoration Plan for the Suisun Marsh is consistent with the Delta Vision mandate and that the plan can be implemented as a distinct element of any future vision. A draft Programmatic Environmental Impact Statement/Environmental Impact Report on the Suisun Marsh Plan is scheduled to be released in spring 2008.

Context Memorandum:
Suisun Marsh



Some policy questions to consider for the Suisun Marsh include:

1. What effect would changes in Delta hydrology or geometry have on the salinity and water quality in the Suisun Marsh?
2. What management actions or legal authorities area needed to diminish subsidence and encroaching urbanization?
3. Should the 1995 water quality standards be re-evaluated based on hydrodynamic modeling and restoration alternatives being evaluated for the Suisun Marsh Plan?

Services Provided by the Delta-Suisun

- Land Uses (agricultural, urban, and conservation)
- Flood Management
- Ecosystem
- Water Supply
- Water Quality Management and Discharges
- Transportation
- Utilities
- Recreation/Tourism
- Local and State Economics

4. To what extent is the state willing to fund Suisun Marsh levees as a component of ecosystem restoration and enhancement and as contributing to protecting Delta drinking water?

4. Sustainable management has no universally accepted meaning in politics or academia. The varied definitions can be synthesized to encompass the “three E’s” – environment, equity, and economic well-being.

Executive Order

In conjunction with the signing of SB 1574 (Kuehl, Chaptered September 28, 2006), Governor Schwarzenegger issued Executive

Order S-17-06

Context Memorandum: Sustainability

(<http://gov.ca.gov/index.php?/executive-order/4525/>)

to establish the independent Blue Ribbon Task Force to develop a durable vision for sustainable management of the Delta. The Task Force wanted a review of the terms, “sustainable or sustainability,” to assist in its deliberations. Therefore, Attachment 2, **Context Memorandum: Sustainability**, reviews existing law, policy, and academic information to clarify the meaning of sustainability and help provide a framework for policy development.

The memorandum points out that there is no universally accepted legal definition of sustainable management. The definition varies in legal, political, and academic disciplines. The existing definitions may be synthesized into the following four points:

1. Sustainable management requires that specific actions be taken in relationship to an identified resource.
2. Sustainable management of a resource is a process, requiring actions to be taken over time that result in a sustainable resource.
3. Sustainable is not a legal term that mandates certain actions in the context of an identified resource. Existing law can force actions that result in sustainable management practices.

The Executive Order Defines Sustainable Management

“Sustainable management of the Delta means managing the Delta over the long term to restore and maintain identified functions and values that are determined to be important to the environmental quality of the Delta and the economic and social well being of the people of the state.”

2. The Levee System

Prior to the discovery of gold in 1849, the Delta consisted on low-lying vegetated wetlands with a complex of rivers, channels and sloughs. The many banks these waterways had low natural levees made up of sediments dropped by floodwaters overflowing a river’s banks. Today, the much higher constructed levee system in the Delta and Suisun Marsh defines the channels and the large land areas that the levees are intended to protect from flooding. All of the services provided by Delta and Suisun Marsh levees are dependent on the levee system. With a different levee system the services also would be different.

The Task Force requested more information about the Delta levees, agriculture that occupies most of the Delta land area, and other land uses.

Flooding and Delta Levees

The context memorandum in Attachment No. 3, **Flooding and Delta Levees**, summarizes the existing levee system,

standards, maintenance, and potential for failure now and in the future.

Today, there are about 1,100 miles of constructed levees in the Delta and about 230 miles of levees in the Suisun Marsh. Due to land subsidence, much of the land area protected by the levees is below sea level and subject to potential flooding 365 days per year. Most levees have failed at least once in the past and many have failed multiple times flooding the land area. Since 1900, at least 166 documented levee failures have flooded Delta islands and tracts. Most failures have occurred during high flood inflows to the Delta, but a few have failed during “sunny day” periods from other undetected problems such as burrowing animals. No levees have failed from earthquakes, but the risks from these seismic events are now recognized as being very high.

The current system for construction, maintenance, and repairs of the levees is highly fragmented among state, federal and local authorities; this results in significant separation of decisions from responsibility of payment and of liabilities. Only about 35 percent of the levees are part of a state and federal flood control project and eligible for U.S. Army Corps of Engineers rehabilitation.

Repairing a levee breach in the Delta is mainly performed to maintain water quality for beneficial purposes, and to protect other services outside the island. The value of the protected island and its infrastructure is seldom greater than the repair cost. For example, the recent levee break cost on Upper Jones Tract in the South Delta was nearly \$100 million for emergency response, damage to private property, lost crops, levee repair, and pumping water from the island. The state led the response for repair and recovery of the island. It is important to note that the state’s response to the Jones Tract levee break does not have a precedent. Historically, the state has repaired levee breaches to prevent salinity

intrusion, with local reclamation districts bearing the expenses of pumping the water out of the islands and restoring it for agriculture.

Land subsidence, sea level rise, and increased flood flows due to climate change will place additional stress on the levee

Context Memorandum:
Flooding and Delta Levees



system. There is a disparity of opinions about the effectiveness of maintaining levees, especially with concern over their viability with these future changes. There is also debate about the probability of a seismic event that would be strong enough to cause major damages in the Delta.

The context memorandum notes five policy questions:

1. Which levees are of long-term importance?
2. What is the appropriate standard to which levees should be built and maintained?
3. How and by whom will decisions about levee reinforcement and maintenance be made?
4. How shall levee construction and maintenance be financed?
5. How shall the consequences of levee failure be distributed?

Land Use

The context memorandum in Attachment

Context Memorandum:
Land Use



No. 4, **Land Use**, provides prospective focusing on urban land use, its governing policies, and potential measures for growth control. While the Primary Zone of the Delta is protected from urbanization, the Secondary Zone has the potential to add 600,000 to 900,000 people in addition to growth in areas outside the Delta. This growth increases

pressures on the Delta for recreation, transportation, utilities, increases urban runoff and wastewater flows, and removes land for other uses important to the Delta and Suisun Marsh. The memorandum states that urbanization can be managed through governmental policies that will be needed to shape a sustainable Delta.

The memorandum presents three policy questions:

1. To what extent should future land use change the Delta and Suisun Marsh region and limit the choices for future comprehensive strategies for water conveyance, utilities, agriculture, transportation and ecosystem restoration?
2. To what extent should the Delta and Suisun Marsh land use be taken under consideration as more than a landscape for water conveyance and agriculture, and more than a utility corridor for roads, rail, gas, and power?
3. To what extent should the Delta and Suisun Marsh region be valued as a place with history, culture, and a unique regional identity with 1,300 miles of levees characterized as an inland coast where life and land use are shaped by physical constraints and public policies?

Agriculture

Agriculture is the dominant land use of the Delta, comprising three-quarters of the region's

landscape. Due to this role, the Task Force requested a

context memorandum about agriculture. The context memorandum in Attachment No. 5, *Agriculture in the Delta*, provides a good overview of agricultural crops, existing policies governing agriculture and the

contribution Delta water makes to agriculture within and outside the Delta.

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. 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.

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.

The survival of agriculture in the Delta depends on a commitment to improving and maintaining levees. In-Delta water users fear that any diminished water conveyance role for the Delta will lead to diminishing public investment in levees, and the eventual loss of levees. Land subsidence is a continued threat to Delta agriculture. Ranchette development in the Primary Zone and urban development in the Secondary Zone both threaten agricultural land uses in the Delta. Salinity in irrigation water from any source (levee failure, sea level rise, increased water exports, etc.) will result in shifts to lower value crops and perhaps the cessation of agriculture.

The memorandum points out that there are opportunities to maintain an economically viable agricultural landscape in the Delta, but deliberate action is required. An improved understanding of the critical mass necessary to support the communities, industries and infrastructure that supports agriculture is needed, as well as investment in research on new crops and crop management systems that



Land Use Change within the Delta and Suisun Marsh – 1990-2004					
			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.

This table shows the broad categories of acreages of land uses and changes in acreages from 1990 to 2004 in the Delta and Suisun Marsh.

can sustain Delta soils, water quality and profitability. Investment in incentives that encourage and reward agriculture for producing multiple public benefits – e.g., compatible wildlife habitat, recreation, subsidence reversal, carbon sequestration, etc. – without sacrificing food, fiber and energy production, is also needed. Finally, certainty with respect to levee maintenance, and water quality and quantity, is needed in order for farmers and ranchers to invest with confidence in a sustainable Delta agricultural future.

As part of recent interviews, Delta growers were asked to visualize their desirable Delta of the future (see Appendix A to the memorandum in Attachment No. 5). To a person, the interviewed Delta growers saw a similar future for Delta agriculture that included a mosaic of wildlife habitat, flood management, carbon sequestration, recreation, and subsidence management, all integrated with, not supplanting, agricultural uses.

3. The Major Uses and the Conflict

The Task Force identifies the water system and the ecosystem of the Delta as co-equal

values that must be preserved on an equal footing. These two major uses have also been the root of open conflict that extends back many decades. Prior to the extensive water system consisting of storage, diversions, and exports to other regions, the ecosystem had use of the entire highly variable flow of water in the rivers ranging from floods to droughts.

One unanswered question that fuels the conflict is how much water can be removed from the natural system to support human needs while providing a healthy ecosystem? A related question that many ask is to what extent water demand management can reduce other regions reliance on Delta water.

To aid its deliberations, the Task Force requested more information about water supply, water quality, how water is governed, the status of the ecosystem, and demand management.

Water Supply and Water Quality

The context memorandum in Attachment No. 6, *Water Supply and Water Quality*,

Context Memorandum: Water Supply and Water Quality



provides an overview of Delta and statewide water use. The memorandum identifies users dependent on water from the Delta

watershed, demonstrates how highly managed the water system is, and how water quality in the Delta is dependent on natural flows, reservoir releases, tides, cross channel gate settings, management for species and habitats, and diversions or exports. Water quality, especially for salinity in the Delta, is highly dependent on flow management.

Millions of acre-feet of water are diverted annually from the system upstream of the Delta for beneficial uses and millions of acre-feet are exported annually for beneficial uses outside the Delta. The policy questions all relate to how to juggle water quantity and quality needed for human health and economic development with water needed to maintain the ecosystem.

The context memorandum in Attachment No. 7, ***Delta Water Management Governance Structure***, shows the complex structure of water operations in the Delta and its watershed. The context memorandum: (1)

Context Memorandum:
Delta Water Management
Governance Structure

describes the water rights laws applicable to Delta water

management; (2) outlines the federal and state statutes applicable to water management in the Delta; (3) summarizes implementing agency responsibilities; (4) identifies the implementing agencies regulatory actions that impact Delta water management; and (5) identifies the policy implications of conflict in law and regulatory implementation.

The water governance structure is a complex network of interacting laws and agencies, each with overlapping goals and mandates. Any change in the water system will likely require modification of the water management governance. Some policy questions include:

1. How do governing agencies meet their legal mandates regarding specific

resources in the context of multiple demands for the same resource?

2. How can local, state, and regional, and federal law be reconciled to best meet the water management needs of the Delta?
3. How can incongruities in the implementation of laws and regulations, as well as planning mechanisms among land use, water, and environmental agencies – even at the same level of government – be reconciled to meet the water management needs of the Delta?
4. How can competing public demands for alternative water uses and the desire for water conveyance through the Delta be reconciled, if at all, with the existing water rights framework?
5. If changes in Delta conveyance are made, what changes in the governance structure should be made to assure its intended operation, and what entity should exercise control?

Delta Ecosystem

The context memorandum in Attachment No. 8, ***Delta Ecosystem***, describes the ecological structure and dynamics of the Sacramento-San Joaquin Estuary and upper San Francisco Bay. This memorandum suggests actions that will contribute to the long term sustainability of the Bay-Delta ecosystem. Conflict with the water supply is not the only important factor that has policy implications for the ecosystem.

The memo is built around 12 key ecological principles together with their main policy implications. The policy implications are as follows:

1. Desired species and ecosystems in the Delta cannot be sustained without ensuring that the necessary physical structures and processes are in place to accommodate them.

2. Management of the Delta estuary needs to incorporate enough of the natural variability of estuaries to provide the necessary physical environmental template for native species. Human uses of large parts of the Delta estuary may have to be changed to accommodate the necessary variability.
3. Management of the Delta estuary will need to be robust to change and uncertainty and designed to respond to conditions that may change rapidly. Management tools, such as adaptive management, that recognize uncertainty and use management as a means to learn about the system as well as to influence it need to become standard procedure.
4. Loss of some species from the ecosystem may be inevitable. However, this should not be an excuse for abandoning policies to conserve native biodiversity. Rather it implies a need for more creative forms of biodiversity conservation, such as establishment of refuge populations where conditions remain suitable.
5. Management of human activity and uses of the landscape and water is integral to successful management and conservation of desired species, ecosystem types and biodiversity in the Delta/estuary.
6. Existing levels of aquatic primary production in the Delta/estuary must be maintained and increased if possible.
7. Management and restoration for natural communities should emphasize ways to enhance the direct pathway (from phytoplankton to zooplankton to fish) for energy transfer in the aquatic community.
8. Human actions in an ecosystem always have multiple consequences. Exploiting some species and/or introducing others have far reaching implications for the

ecosystem. Constructing roadways, dredging channels or diverting water have impacts far beyond the local area.

Management policies need to be framed in the

Context Memorandum:
Delta Ecosystem



context of their consequences for the ecosystem as a whole not just in terms of their effects on an immediate perceived problem.

9. Multi-factorial, ecosystem based approaches to species conservation are more likely to be successful than approaches that address single high profile “causes”. Maintaining ecosystem structure and function appropriate for the species of interest is essential.
10. Management plans and decisions need to be informed by a landscape perspective that recognizes the interrelationship among patterns of land and water use, patch size, location and connectivity, and species success. The landscape perspective needs to be developed at several physical and temporal scales (e.g., patches within the delta, delta within the valley and temporal scales of patch dynamics and evolution). Achieving a sustainable balance of ecosystem services and biodiversity conservation in the Delta is likely to involve allocating considerably more land and water to support natural and semi-natural systems than is presently the norm.
11. An aggressive approach is needed to address the serious and growing problem of invasive species in the ecosystem. As recommended under the United Nations Convention on Biodiversity, a multibarrier approach should be adopted including effective regulation and monitoring to prevent new introductions, an aggressive program of eradication for newly arrived

invaders, and development of efficient control programs for established invaders.

12. Governance for the Bay-Delta should be based on the concept of ecosystem-based management (EBM), a concept that integrates society, economy and the environment. The core elements of this approach were worked out some time ago (see, e.g., Ecological Society of America, 1995, "The scientific basis of ecosystem management", Washington, DC). EBM was adopted as the guiding philosophy of CALFED but implementation has been weak. A more aggressive and committed implementation process is needed in the future.

Demand Management

The context memorandum in Attachment No. 9, ***Demand Management (Water Efficiency)***, provides a summary of the role of water use efficiency in water management. The 2006 Comprehensive Evaluation of the

Context Memorandum:
Demand Management
(Water Efficiency)

CALFED
Water Use
Efficiency
Program
element found

that, depending on the level of investment and other policies, the analysis projects between 1,400,000 and 3,100,000 acre-feet of water savings are projected by 2030.

Some interest groups believe that water use efficiency can meet future water needs rather than building new storage and conveyance facilities. Some believe that more intensive water use efficiency in regions receiving Delta water could allow reductions in water exports from the Delta.

Therefore, the important policy consideration is what is the appropriate level of Bay-Delta supplies that should be available to local and regional agencies while considering costs,

benefits, and tradeoffs among water management strategies?

4. Other Important Uses

The Delta and Suisun Marsh are important for much more than water supply, ecosystem, and flood control for the land uses. Transportation and utilities serve local and state-wide needs. Due to its location, the Delta and Suisun Marsh region is an important recreational area. The 2007 report, *Status and Trends of Delta-Suisun Services*, provided brief summaries of each of these services. To aid in its deliberations, the Task Force requested more detailed information for transportation, utilities, and recreation.

Transportation

The context memorandum in Attachment No. 10, ***Transportation***, describes transportation facilities in the Delta and Suisun Marsh. The

Context Memorandum:
Transportation

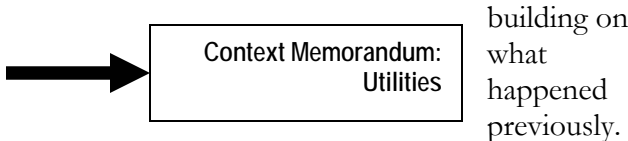
areas protected by Delta levees include highways, railroads, and ship channels that link the Bay Area to the Central Valley and the rest of the nation. The Delta transportation system is critical to emergency response and reconstruction following a levee breach. A loss of roadways during a flood increases potential damages and loss of life.

The major transportation infrastructure continues to be the interstate highways and state highways through the Delta. Three key issues introduce difficulties in planning for the transportation system: divided responsibilities, unclear responsibility for flood damages, and financing difficulties. Expanding population will place more demand on Delta transportation. The main policy questions relate to how to protect transportation from flooding and what role expansion of

transportation corridors should play in a future vision for the Delta.

Utilities

The context memorandum in Attachment No. 11, *Utilities*, describes utilities crossing the Delta and Suisun Marsh. The memorandum points out that utility development has occurred one step at a time,



Individual agencies or service providers have made their independent, next-step decisions over many decades, based on their own needs, and consideration of their own costs and perceived risks. There is not now, and never has been, a grand plan for utilities in the Delta. The Delta Protection Commission’s long-term resource management plan prevents extensions of urban utilities in the Primary Zone unless they are already present or were permitted by zoning in 1992.

It is important to distinguish between utilities that serve local areas of the Delta and other utilities that have regional or statewide importance or impacts. Many of the utilities would be minimally impacted by temporary flooding of Delta islands and tracts since they are buried or elevated above potential flood levels.

The main policy questions relate to how to protect utilities from flooding or what role expansion of utility corridors should play in a future vision for the Delta.

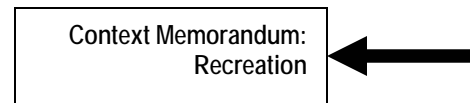
Recreation

The context memorandum in Attachment No. 12, *Recreation*, describes the wide variety of recreational opportunities available in the Delta and Suisun Marsh including fishing, hunting, boating, camping, picnicking, and nature viewing. The area’s proximity to

the Bay Area and Sacramento, and the diversity of recreation settings and experiences makes it a popular recreation destination. Most recreation in the Delta is water-based and involves or requires boating. With approximately 700 miles of navigable channels, it is one of the largest waterway complexes in the western United States. Much of the recreation in the Suisun Marsh relates to waterfowl viewing or hunting.

The Delta Protection Commission developed recreation policies and recommendations. The growing population will place increased demands on the Delta and Suisun Marsh for recreation. There is potential to develop recreational opportunities in the Delta (e.g., legacy towns as cultural and historic

interpretive destinations; biking; bird watching; etc.), but sites to develop are limited because there is a lack of available land with good road and water access.



5. System-Wide Considerations

The economy supported by the Delta and Suisun Marsh is an important system-wide consideration in developing a vision for the Delta. Many of the topics discussed above have economic benefits that combine together in terms of local and state economics. Also, given the potential hazards in the Delta and Suisun Marsh, there are always possibilities of levee failures. Emergency response is an important aspect of minimizing the risks of potential failures and effectively dealing with the failures when they do occur. Therefore, the Task Force requested that one context memorandum be prepared on state and local economics and another be prepared on emergency response.

Local and State Economics

The context memorandum in Attachment No. 13, **Local and State Economics**, summarizes important economic information.

Many economic measures are provided at the county level, but the Delta includes parts of six counties and all of no counties. This complicates measurement and description of the Delta economy.

The memorandum notes several important factors on why the Delta is important to the economy:

- The Delta is important as a place of business and residence.
- The Delta region is important to the state because it includes vital transportation and conveyance facilities.
- The Delta is economically important for a variety of natural and mineral resources.

The following table shows broad economic information to compare the Delta and California.

Context Memorandum:
Local and State Economics



Indicator Statistics for California, the Primary Delta and the Delta Protected Region

Indicator	California	Primary Delta	Delta Protected Region
Households (2000)	11,500,000	3,000 to 4,000	100,000±
Employment	19,626,000	3,000 to 6,000	205,000
Business Income (billion \$)	\$1,443	\$0.5 to \$1.0	\$35
Agricultural Production (billion \$)	\$30	\$0.5±	\$0.7±
Note: California data is from DOF, IMPLAN (MIG 2006) and CDFA. Local employment and income from PBS&J GIS database, California agriculture data from DWR.			

A summary of the estimates of economic benefits from services provided by the Delta and facilities in the Delta is provided in the table, “Economic Values for Delta Services, circa 2000 Conditions.”

The bulk of the urban population dependent on water supplies from the Delta is found in just nine counties in the state, but these are among the state’s most populous. The economic activity supported by Delta water is estimated to be about \$500 billion annually. However, this should not be taken to mean that a loss of Delta water would lead to a cut in the state’s economic activity by this level.

Emergency Response

The context memorandum in Attachment No. 14, **Emergency Response**, describes the various principles that need to be considered as local, state and federal agencies plan actions that can be taken before, during, and after an emergency in the Delta or Suisun Marsh.

Context Memorandum:
Emergency Response



The region’s land and waterscape complicates emergency response plans. The “Delta Region” is part of five counties, each with their own emergency response jurisdictions and plans. Various state and federal agencies also have jurisdiction over some types of emergencies. The context memo describes the current efforts to collaborate and coordinate among these agencies for a comprehensive emergency response plan.

Issues particular to the Delta and Suisun other than multiple jurisdictions that complicate emergency response include subsidence and soils, transportation planning, hazardous materials, and multiple island flooding from levee breaks.

Economic Values for Delta Services, circa 2000 Conditions

Type of Value	Economic Measure (Benefit unless noted)	Value
As a place		
Primary Delta Residential	Mil \$ per event ¹	\$2.14
	plus Mil \$/day of use	\$0.24
Primary Delta Business ^{1,2}	Mil \$ per event	\$0.88
	plus Mil \$/day of use	\$0.05
Protected Area Residential	Mil \$ per event	\$33.00
	plus Mil \$/day of use	\$3.40
Protected Area Business ²	Mil \$ per event	\$15.93
	plus Mil \$/day of use	\$1.22
Primary Delta Public Offices	Employment (jobs)	153
Protected Area Public Offices	Employment (jobs)	38,946
As transportation/conveyance		
Urban water supply ³	Mil \$/year of alternative cost	\$2,000 to \$5,000
	% of State economic activity supported	30.0%
Agricultural water supply ³	Mil \$/year revenue minus variable costs	\$840
Interstate Highways (5, 80, 680, 205)	Mil \$/year of use	\$1,100 to \$1,825 per road. Long duration or multiple closures not likely
State Highways (4, 12 or 160)	Mil \$/year of use	\$36 to \$180 per road, minimum of \$336 for all
Local Roads		Unknown
Railroads, BNSF or UPRR to Sac	Mil \$/year of use	\$290
Railroad UPRR to Stockton	Mil \$/year of use	\$73
Ports (Sacramento & Stockton)	Mil \$/year of use	\$5
Natural Gas Storage & Trans	Mil \$/year of use	\$1,400, winter only
Gas and jet fuel ⁵	Mil \$/year of use	\$9,125 not comparable
Electricity ⁶	Mil \$/year of use	\$440
Natural and Mineral Resources		
Urban water quality	Mil \$/year/mg/l TDS at Delta ⁷	\$1.0
	Mil \$/year/mg/l TOC at Delta ⁷	\$10.0
Delta Agriculture ³	Mil \$/year revenue minus variable costs	\$220
Delta Agricultural Water Quality	Mil \$/year/mg/l TDS, range 500 to 2500	\$5.7
Recreation ⁸	Mil \$/year of use	\$628
Natural Gas Production ⁹	Mil \$/year net revenue	\$784
Wastewater Treatment ¹⁰	Mil \$/year of use	\$3,650
<p>1. An event is any action which forces residents or businesses to leave. Primary Delta approximated by Mean higher high water</p> <p>2. Business losses assume 5% profit rate and substitution by other CA businesses</p> <p>3. Daily values depend on season and increase substantially as duration of lost use increases.</p> <p>5. Assumes no trucking capacity to carry fuels available. Actual would be less.</p> <p>6. Summer only. Three lines, \$0.4 M each</p> <p>7. Urban water benefit if water quality improved by 1 mg/l for 1 year</p> <p>8. Lower bound based only on fishing and boating, not other recreation occurring independently of fishing or boating (e.g. hunting, wildlife viewing, and sightseeing). Does not include Suisun Marsh, other values, see text.</p> <p>9. Value of production net of 10% O&M, most would be recovered later</p> <p>10. Stockton and Ironhorse SD. Based on daily value. Closure for 1 year would result in development of alternative facilities at less cost</p>		

6. Governance

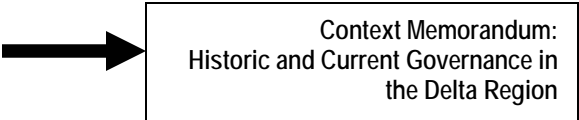
The governance aspects of the Sacramento-San Joaquin Delta and Suisun Marsh are as complex as the ecosystem, water system, and land use they represent. More than 200 public agencies --- federal, state, regional, and local --- claim responsibility for governance, planning, facilities, or resource protections for the Delta and Suisun Marsh. These diverse public agencies, and the legal requirements that guide them, form a complicated patchwork of governance with a complex history and an uncertain future.

The Delta and Suisun Marsh span six counties (five counties for the Primary Zone of the Delta) and include incorporated cities and unincorporated communities. The Delta Protection Commission, established to provide broad oversight in the Delta, has partial authority over land use and resource management of the Delta. Even entities responsible for the same resources may have different missions or standards. The Bay Conservation and Development Commission has similar jurisdiction over the Suisun Marsh. With this fragmented governance, efficient coordination is extremely difficult, if not impossible.

The Task Force could find no individual who defends the current system of governance. Therefore, to help its deliberations, the Task Force requested more information about the history of current governance in the Delta region and information regarding governance structures that others have designed for complex systems in other states.

Delta Governance

The context memorandum in Attachment No. 15, *Historic and Current Governance*

in the *Delta Region*,

 Context Memorandum:
 Historic and Current Governance
 in the Delta Region

reviews the sequence of significant events that have shaped the governance structure used in the Delta region today.

The memorandum focuses on the period beginning in 1959 with passage of the Burns-Porter act authorizing the State Water Project and the Delta Protection Act to provide additional assurances related to impacts of the SWP. While the memorandum documents an evolution of intergovernmental cooperation and coordination, it also demonstrates that conflict persisted at almost every step over the last 50 years.

Some policy questions for governance in the Delta include:

1. Are discrete restoration plans, like the Suisun Marsh Plan and the Bay-Delta Conservation Plan, the best approach for restoring those respective areas and can they be incorporated into an overall Delta Vision?
2. How is the financing principle of “beneficiary pays,” going to be carried out?
3. What is the best way to merge a vision for a future Delta with the needs to adequately manage the system as it exists today?
4. Should the Delta Vision focus primarily on water and environmental issues, despite its charge?
5. Should some new or existing entity be given greater responsibility and control over the Delta and Suisun Marsh, (e.g., should the Delta Protection Commission be augmented or changed from its configuration; could this include new authority as well as new members?)?
6. Does land use in the Delta need to be dealt with other than at a local level?

7. Should there be a new understanding of what constitutes the Primary Zone and the Secondary Zone for the Delta and for the Suisun Marsh?
8. Are legal determinations regarding water operations the best or last resort to achieve a balance between the competing uses in the Delta?

Learning from Others

The context memorandum in Attachment No. 16, *Learning from Others, Governance and Finance Lessons from Three Complex Ecosystem Restoration Programs*, looks for governance approaches used in other states to manage similarly complex ecosystems.

The memorandum summarizes three large and complex ecosystem management programs; 1) Columbia River Basin Program, 2) the Florida Everglades Restoration Program, and 3) the Chesapeake Bay Program. Four lessons can be learned from the review of these programs:

1. **There is no substitute for the independent authority to act.** In each collaborative program reviewed, restoration programs rely on the goodwill of others to implement the goals adopted as part of the collaborative decision-making process. With no independent authority to finance and implement programs, the programs are left to coordinating the work of others toward policy goals. While the federal government plays a major role in each program, the uncertainty of federal commitments can affect progress toward achieving restoration goals. Although the Chesapeake Bay and Columbia River Basin projects involve a multitude of agencies due to the multi-state nature of the ecosystems, the final authority over regulatory and project activities rests with

the federal government and individual state and local agencies. In this case, leadership through the bi-state compacts rests with the persuasive ability of the coordinating agency to convince federal, state and local governments to act. The more players, the more difficult it is to gather consensus on a vision for environmental restoration.

2. **The more independent the players, the more fragmentation and less accountability.** Two of the organizations reviewed are set up through multi-state agreements and generally as open forums for stakeholders. The single state program reviewed, Florida Everglades, is primarily an intergovernmental coordinating program that seeks to bring government agencies with different statutory authorities together to work toward a unified goal. Decisions on specific projects are usually brought to the body formed by the agreement for their approval or endorsement. When activities to be performed are undertaken by an agency other than the agency created by the agreement, accountability suffers. Monitoring progress is particularly important in this circumstance. In these cases, the program always relies on the financial ability and the goodwill of others.
3. **The agency that raises the revenue should spend the money.** Most restoration projects are funded by the federal government and the participating state governments, since the organization in charge of the restoration effort usually does not have independent financing capacity. The Chesapeake Bay and Everglades restoration programs do not have the authority to raise revenue by their own actions and therefore, rely on the fiscal condition of other agencies.

Context Memorandum:
Learning from Others



However, the Columbia River Basin program benefits from revenues generated by the sale of electricity by the Bonneville Power Administration.

4. **Without a vision you do not know where you are going.** Of the three programs analyzed, the Chesapeake Bay project has the most elaborate planning process. The Columbia River project is basically a list of five-year project plans with local agencies competing for a pot of money generated by the Bonneville Power Administration. The Florida Everglades project has a federally recognized restoration plan that includes specific goals that guide specific projects.

7. Conclusions

This report is a package of 16 memoranda that were prepared on various subjects at the request of the Blue Ribbon Task Force for Delta Vision. Therefore, it should not be considered as a comprehensive portrayal of Delta and Suisun Marsh topics, but is a supplement to other existing information available to the Task Force. The context

memoranda attached at the end of the report do, however, provide highlights of most Delta and Suisun Marsh issues and demonstrate the complex nature of the region.

The Delta is a dynamic place. The context memoranda provide a snapshot of information based on 2007 and will not necessarily represent conditions in future years. Different authors have prepared the context memoranda attached to this report. Therefore, the memoranda have different styles, perspectives, and sometimes opinions. In many cases, this makes the context memoranda similar to verbal testimony from various experts, each with their own styles, perspectives, and opinions. The Task Force has considered the context memoranda together with testimony and other available information in preparing *A Vision for California's Delta*.

During 2008, the Task Force will prepare a strategic plan for implementing the vision, and may ask for additional context memoranda to be prepared to aid in that process.