



Proposition 50, Chapter 8

Integrated Regional Water Management Grant Program

IMPLEMENTATION GRANT APPLICATION, STEP 1



Attachment 3: East Contra Costa County Functionally Equivalent Integrated Regional Water Management Plan

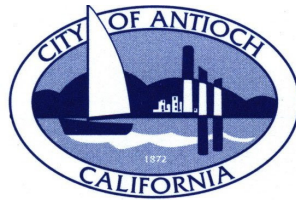


JULY 2005



East Contra Costa County Functionally Equivalent Integrated Regional Water Management Plan

Brought to You By:



City of Antioch

City of Brentwood

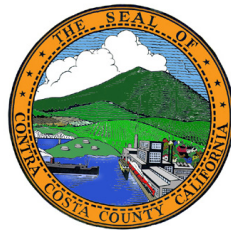


*Delta Diablo
Sanitation District*

Diablo Water District



**DIABLO
WATER
DISTRICT**



Contra Costa County

*Contra Costa
Water District*



*Ironhouse
Sanitary District*

*Natural Heritage
Institute*



City of Pittsburg

Prepared by

RMC

East Contra Costa County Functionally Equivalent Integrated Regional Water Management Plan

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- A-5** East County Water Management Association. *Phase II East County Water Supply Management Study*, 1996.

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- B-3** CALFED Bay-Delta Program. CALFED Rock Slough Water Quality Improvement Project (Carollo Engineers 2003).
- B-4** City of Antioch. Basis of Design Report - Water Treatment Plant Solids Handling Facilities and Plant Expansion, 2005.
- B-5** City of Pittsburg. Award Consultant Contract for Engineering Services Associated with Site Selection and Design of a New Municipal Well, 2005.
- B-6** Contra Costa County. 1995 Marsh Creek Mercury Study, 1995.
- B-7** Contra Costa Water District. Ten-Year Capital Improvement Program for Fiscal Years 2005 – 2014, 2004.
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- B-16** *Investigation of Ground-water Resources in East Contra Costa*. 1999.
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- B-19** Ironhouse Sanitary District. Final Environmental Impact Report, Ironhouse Sanitary District Wastewater Facilities Plan and Delta Environment Science Center, 1994.
- B-20** Ironhouse Sanitary District. Ironhouse Sanitary District Wastewater Facilities Plan Update, 2005.
- B-21** Kirker Creek Watershed Management Planning Group, Contra Costa Resource Conservation District. Kirker Creek Watershed Management Plan, 2004.
- B-22** Levine, Jessie and Rosalyn Stewart. Fall-Run Chinook Salmon Habitat Assessment: Lower Marsh Creek, Contra Costa County, CA, 2004.
- B-23** Marsh Creek Fish Passage Workgroup. Draft Memorandum of Understanding Establishing a Coordinated Approach to Restoring Fish Passage for Anadromous Salmonids in Marsh Creek through Modification or Removal of the Marsh Creek Drop Structure, 2004.
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Acknowledgements

The following persons and agencies are acknowledged for their participation in this effort.

Participating Agencies

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Town of Discovery Bay Community Services District

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Adoption Signature Page

IN WITNESS WHEREOF, the parties hereto have adopted this Functionally Equivalent Integrated Regional Water Management Plan.

CITY OF ANTIOCH

Dated: _____

By: _____
Phillip L. Harrington, Director of Public Works

CITY OF BRENTWOOD

Dated: _____

By: _____
Paul Zolfarelli, Director of Public Works

CONTRA COSTA COUNTY

Dated: _____

By: _____
John Sweeten, County Administrator

CONTRA COSTA WATER DISTRICT

Dated: _____

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Walter J. Bishop, General Manager

DELTA DIABLO SANITATION DISTRICT

Dated: _____

By: _____
Gary W. Darling, General Manager

DIABLO WATER DISTRICT

Dated: _____

By: _____
Mike Yeraka, General Manager

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Dated: _____

By: _____
Tom Williams, General Manager

NATURAL HERITAGE INSTITUTE

Dated: _____

By: _____
Gregory A. Thomas, President

CITY OF PITTSBURG

Dated: _____

By: _____
John L. Fuller, Director of Public Works

Acronyms and Abbreviations

ABAG	Association of Bay Area Governments
AF	Acre-feet
AFY	Acre-feet per Year
BARWRP	Bay Area Regional Water Recycling Program
BASIC	Bay Area Security Information Collaborative
BAWAC	Bay Area Water Agencies Coalition
BBID	Byron Bethany Irrigation District
BMPs	Best Management Practices
CALFED	California Bay-Delta Program
CCC	Contra Costa County
CCC FC&WCD	Contra Costa County Flood Control and Water Conservation District
CCWD	Contra Costa Water District
DDSD	Delta Diablo Sanitation District
DRDWQMP	Delta Region Drinking Water Quality Management Plan
DFG	Department of Fish and Game
DWD	Diablo Water District
DWR	Department of Water Resources
ECCID	East Contra Costa Irrigation District
ECWSMS	East County Water Supply Management Study
FWSS	Future Water Supply Study
ISD	Ironhouse Sanitary District
LOMU	Letter of Mutual Understanding
IRWMP	Integrated Regional Water Management Plan
M&I	Municipal and Industrial
MOU	Memorandum of Understanding
NHI	Natural Heritage Institute
NPDES	National Pollutant Discharge Elimination System
NPS	Non-Point Source
SBA	South Bay Aqueduct
SCVWD	Santa Clara Valley Water District
SWMP	Stormwater Management Plan
SWP	State Water Project
TDS	Total Dissolved Solids
USD	Union Sanitary District
WTP	Water Treatment Plant

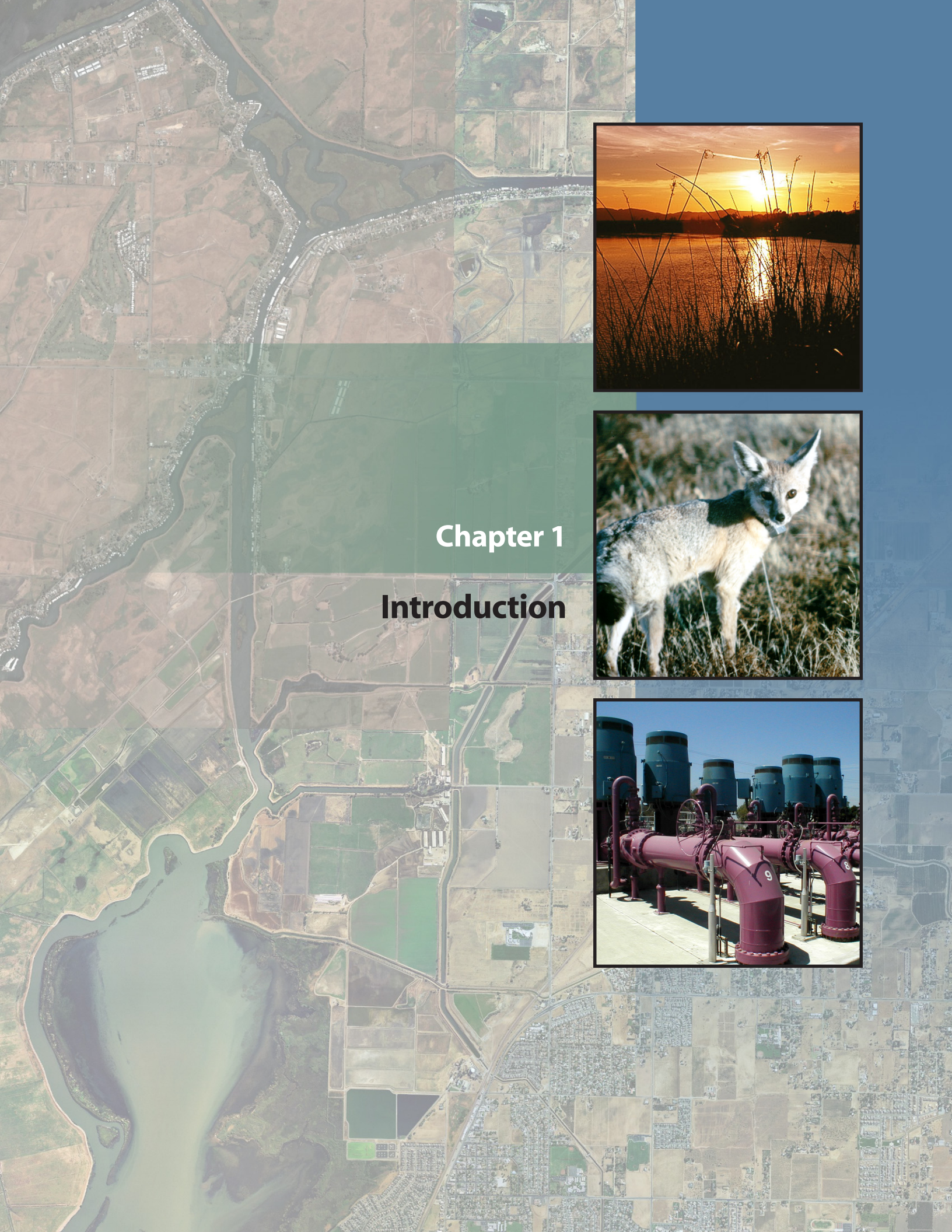
Foreword

East Contra Costa County (“East County”) is a rapidly growing and biologically rich region on the south-western shore of the Sacramento-San Joaquin Delta. It is straddled at the transition between the Bay Area and the Central Valley Bioregions, yet it is part of neither region. It is geographically isolated from its neighbors by Mt. Diablo and its foothills that bound it on the west and south and by the labyrinth of Delta waterways that lie to the north and east. Its land and waters support a diverse population, a booming economy, and host of sensitive species and habitats. With the exception of some groundwater, the entire water supply derives from the Delta and all lands drain back to the Delta.

Although activities in East County have ramifications for the entire California water supply system, it is a relatively isolated region with a distinct set of challenges and opportunities. It includes some of the oldest settlements and water projects in the state, but is home to some of newest and fastest growing communities. The task of modernizing the water-related infrastructure to serve booming population growth is a daunting challenge, but this task also provides an opportunity to create a more integrated system designed to achieve a broader set of water-related objectives.

In response to these challenges, over a dozen different jurisdictions and institutions have joined together in various forums to create a safer, more reliable, and environmentally friendly water management system. For the last decade, the water and wastewater agencies of east Contra Costa County have worked collaboratively to integrate management initiatives and infrastructure in the interest of increasing water supply reliability. More recently, Contra Costa County and Contra Costa Flood Control District joined together with local cities and districts to develop and implement a comprehensive Stormwater Management Plan to protect the beneficial uses of the Delta water system. Finally, the County, many cities, water agencies, and local districts have been working collaboratively with state and federal agencies to develop an innovative habitat conservation plan to preserve endangered species and have launched several ambitious ecosystem restoration projects.

This document brings together all of these initiatives into one shared vision where all interested jurisdictions work together toward a common set of objectives. Under this vision, and in this region – water supply, water quality protection, and storm water management are one and the same. Groundwater, surface water, and reclaimed water are managed as one interconnected system. Under this vision, projects conceived and developed to serve multiple interrelated objectives are the norm, not the exception.



Chapter 1

Introduction

1 INTRODUCTION

Water agencies, wastewater agencies, flood control districts, and watershed management groups within the Eastern portion of Contra Costa County (East County) have a long history of cooperative planning for the region. In the early 1990s, the following agencies joined together as the East County Water Management Association to develop Phases I and II of the East County Water Supply Management Study, a comprehensive water management plan (included as **Appendix A-5** of this document):

- City of Antioch
- City of Brentwood
- Byron-Bethany Irrigation District
- Town of Discovery Bay Community Services District (formerly Contra Costa County Sanitation District No. 19)
- Contra Costa County Water Agency
- Contra Costa Water District
- Delta Diablo Sanitation District
- Diablo Water District
- East Contra Costa Irrigation District
- Ironhouse Sanitary District
- City of Pittsburg

This group continues to coordinate on water management issues for the region, holding regular meetings. This document is intended to show how the various water management planning efforts within the region constitute an Integrated Regional Water Management Plan both in content and intent. The members of the East County Water Management Association are either participating in, or have indicated support of this effort. In addition, the Natural Heritage Institute, Contra Costa County, and the Contra Costa Flood Control and Water Conservation District are participating in this effort. The Letter of Agreement between participating and supporting agencies, and letters of support for this effort from external agencies, are included in **Appendix C-7**.

1.1 Purpose

This document is intended to serve as a Functionally Equivalent Integrated Regional Water Management Plan (IRWMP) for the East Contra Costa region, tying together the following regional water management plans (included in **Appendix A**):

- *Phase II East County Water Supply Management Study, 1996 (ECWSMS)*. Developed by eleven East County agencies, the East County Water Supply Management Study is a comprehensive regional assessment of water demands and supplies, treatment and delivery options, water supply alternatives, and recommendations and implementation strategies for regional water management.
- *Stormwater Management Plan, 1999 (SWMP)*. The Stormwater Management Plan, developed by Contra Costa County in conjunction with the Contra Costa Flood Control and Water Conservation District and local cities and districts, serves as the basis for the Contra Costa Clean Water Program's National Pollutant Discharge Elimination System (NPDES) Permit application to the Central Valley and San Francisco Bay Regional Water Quality Control Boards.

- *Future Water Supply Study Final Report, 1996, and Future Water Supply Study 2002 Update, 2002 (FWSS)*. The Future Water Supply Study (updated in 2002) contains a detailed analysis of the future supply and water needs for the Contra Costa Water District service area, including Eastern Contra Costa County.
- *Delta Region Drinking Water Quality Management Plan, 2005 (DRDWQMP)*. The Delta Region Drinking Water Quality Management Plan was developed jointly by Contra Costa Water District, the City of Stockton, and Solano County Water Agency (the three largest urban water users within the Delta region) with the goal of understanding existing and future water quality conditions at the urban intakes within the Delta, identifying challenges and issues confronting agencies diverting water from the Delta, and developing projects and programs at the local, regional, and statewide level to address these issues and ensure that in-Delta agencies can meet their water quality goals in the future.
- *Draft East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan, 2005 (HCP)*. The East Contra Costa County Habitat Conservation Plan represents a major regional planning effort aimed at preserving and enhancing native habitats that support endangered and sensitive species while providing a regional incidental take permit under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA).

1.2 Document Organization

The Functionally Equivalent IRWMP follows the Integrated Regional Management Grant Program Guidelines established by the State Water Resources Control Board adopted on November 18, 2004; and is organized as follows:

1. Introduction. This chapter describes the intent of the Functionally Equivalent IRWMP to serve as an umbrella planning document to integrate the numerous regional planning efforts in place in East County.

2. Background. This chapter provides a description of the water, wastewater, and other agencies involved in the development of this document and provides a detailed description of the East County region.

3. Water Management. This chapter discusses the region’s water management objectives and strategies in place to meet these objectives.

4. Regional Plan Implementation. This chapter discusses the general plan of action for implementing the regional plan; including data management, financing, relation to local planning, stakeholder involvement, and

Document Organization

This functional area document is organized according to Appendix A of the Integrated Regional Management Grant Program Guidelines (November 18, 2004) as follows:

A. Regional Agency of Regional Water Management Group.....Chapter 2
B. Region Description..... Chapter 2
C. Objectives..... Chapter 3
D. Water Management Strategies... Chapter 3
E. Integration..... Chapter 3
F. Regional Priorities..... Chapter 3
G. Implementation..... Chapter 4
H. Impacts and Benefits..... Chapter 4
I. Technical Analysis and Plan Performance..... Chapter 4
J. Data Management..... Chapter 4
K. Financing..... Chapter 4
L. Statewide Priorities..... Chapter 4
M. Relation to Local Planning..... Chapter 4
N. Stakeholder Involvement..... Chapter 4
O. Coordination..... Chapter 4

Callout boxes have been included throughout the document to link report sections to requirements included in the Grant Program Guidelines.

Functionally Equivalent Documents

Callout boxes have been included in each section to indicate the portions of the Appendix A documents supporting this Functionally Equivalent Plan that contain the information required to address the Appendix A guidelines.

5. Summary. This chapter provides general conclusions and commentary on the key themes of this document.

6. References. This chapter provides a listing of references used in the development of this document.



Chapter 2

Background

2 BACKGROUND

This chapter provides background information on the water, wastewater, and other agencies involved in the development of this document, and provides a detailed description of the East County region.

2.1 Regional Water Management Group

This document was developed under the direction and support of the following water, wastewater, habitat management, and other public agencies contained within East County:

- City of Antioch
- City of Brentwood
- Contra Costa County (CCC)
- Contra Costa Water District (CCWD)
- Delta Diablo Sanitation District (DDSD)
- Diablo Water District (DWD)
- Ironhouse Sanitary District (ISD)
- National Heritage Institute (NHI)
- City of Pittsburg

IRWMP Appendix A Guidelines
Section A: Regional Agency or Regional Water Management Group

- Describe regional water management group or regional agency, including member agencies and organizations and their management responsibilities related to water
- Demonstrate that all agencies and organizations necessary to address the objectives and water management strategies of the Plan were involved in the planning process

Functionally Equivalent Documents

- East County Water Supply Management Study, Chapter 1, pages 1-1 to 1-6.

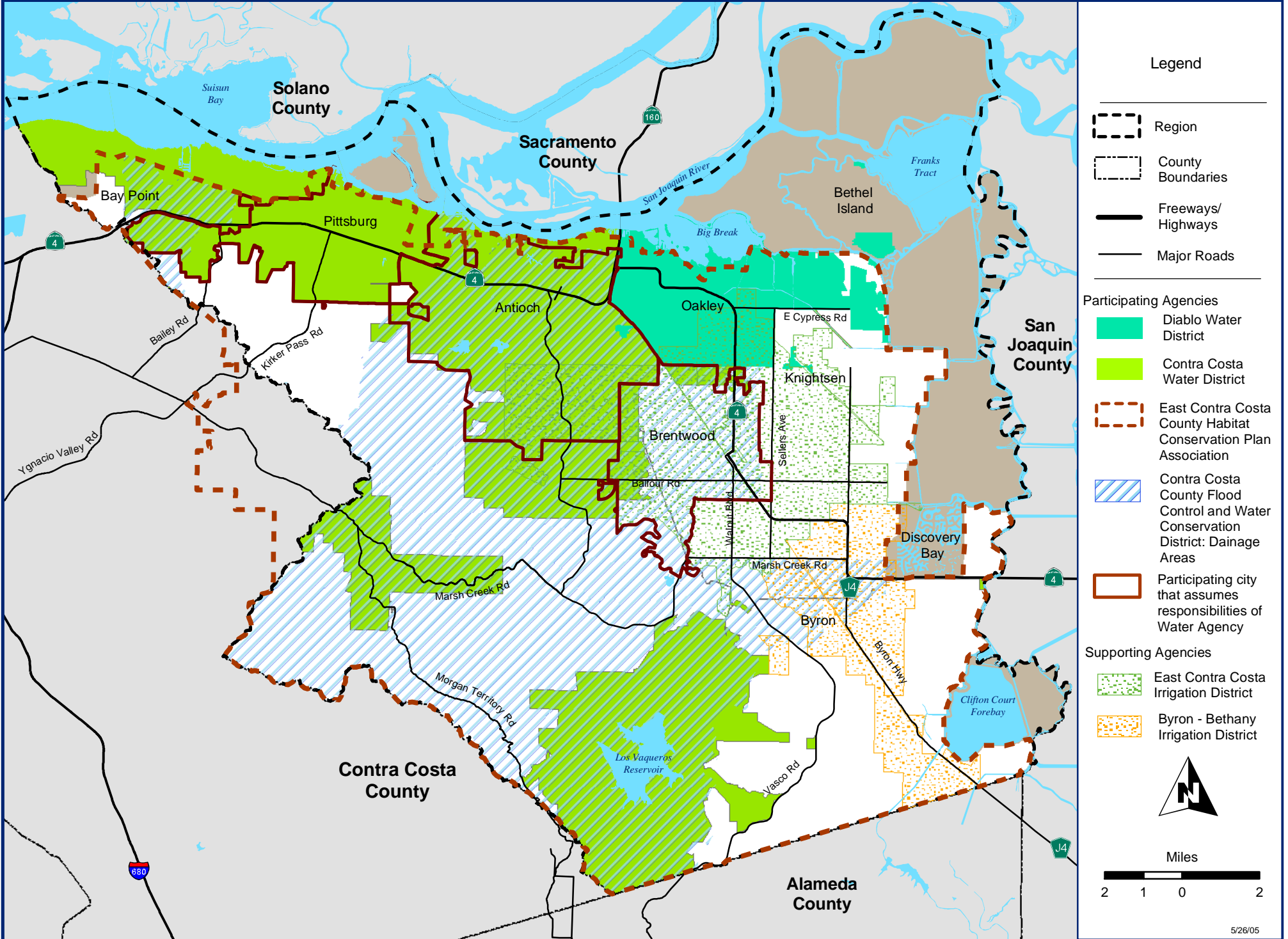
In addition, this effort is supported by the Town of Discovery Bay Community Services District, East Contra Costa Irrigation District (ECCID), and Byron Bethany Irrigation District (BBID).

Figure 2-1 displays the service area boundaries of the participating and supporting water and environmental agencies. **Figure 2-2** displays the service area boundaries of the participating wastewater agencies. As shown in these figures, all of the water and wastewater agencies within East County are either participating or in support of this effort.¹ The participating agencies cover all aspects of water management within the region, ranging from drinking water supply through conveyance, treatment, flood control, and wastewater.

The following paragraphs provide a more detailed description of each of these participating agencies.

¹ The City of Oakley receives water from DWD and wastewater service from ISD, both of whom are participating in this effort.

Figure 2-1 Participating and Supporting Water and Environmental Agency Service Areas



Water Agencies

City of Antioch. The City of Antioch, one of California’s oldest cities, is currently home to 101,049 residents. Antioch purchases raw water from the San Joaquin Delta from CCWD and treats these supplies at the 26-million gallons per day (mgd) Antioch Water Treatment Plant.² In addition, Antioch owns 25% of the original capacity of the Randall-Bold Water Treatment Plant (RBWTP), a regional water treatment plant co-owned by Contra Costa Water District and Diablo Water District. The City of Antioch also maintains a wastewater collection system that flows to Delta Diablo Sanitation District’s Regional Treatment Plant.

City of Brentwood. The City of Brentwood, one of California’s fastest growing cities, supplies water to its 43,000 residents from groundwater wells and surface water entitlements from ECCID. Surface water entitlements are treated at the RBWTP.³ Brentwood is a vested stakeholder in 6-mgd of capacity at RBWTP. Brentwood and CCWD are currently in pre-design stages for a new water treatment facility adjacent to RBWTP.

Contra Costa Water District. The Contra Costa Water District was formed in 1936 to provide water for irrigation and industry. Since then, CCWD has expanded to serve nearly 500,000 customers in north, central, and eastern Contra Costa County, making it one of California’s largest urban water districts. A leader in drinking water treatment technology and source water protection, CCWD acts as both a retail and wholesale water distributor, delivering treated drinking water directly to customers and both treated and untreated water to retail water agencies and major industries. Contra Costa Water District provides treated water to customers primarily in Northern and Western Contra Costa County. Among the retail water agencies purchasing raw water from CCWD are the eastern Contra Costa County water suppliers of Antioch, Pittsburg, and the Diablo Water District, all of whom are partners in this effort.⁴

Diablo Water District. The Diablo Water District was formed in 1953 as an independent state government agency to provide water to customers in downtown Oakley. Today, DWD provides approximately 9.5-mgd of water to approximately 21,000 Oakley residents. DWD purchases Delta water from CCWD and treats it at the Randall-Bold Water Treatment Plant, which is jointly owned with CCWD.⁵

City of Pittsburg. The City of Pittsburg purchases raw Sacramento-San Joaquin Delta water supplies from CCWD in addition to supplying water from groundwater wells. This water is treated at the City of Pittsburg’s 28-mgd water treatment plant prior to delivery to its 56,800⁶ residents.⁷ The City of Antioch also has a wastewater collection system that flows to Delta Diablo Sanitation District’s Regional Treatment Plant.

Wastewater Agencies

City of Brentwood. In addition to its water responsibilities described above, The City of Brentwood also owns and operates a 5-mgd tertiary wastewater treatment facility, including reclamation facilities for irrigation. Brentwood has been collecting and treating the City’s wastewater since 1948.

²City of Antioch website: <http://www.ci.antioch.ca.us/CityGov/PublicWorks/Water/WaterFAQs.htm>

³ City of Brentwood website and water quality report:
<http://www.ci.brentwood.ca.us/department/publicworks/water/water.cfm>

⁴ Contra Costa Water District website: <http://www.ccwater.com/welcome/>

⁵ City of Oakley website, History of Diablo Water District:
<http://www.ci.oakley.ca.us/html/community/utility/water.asp>.

⁶ 2000 U.S. Census. ABAG (Association of Bay Area Governments) Website.
<http://census.abag.ca.gov/cities/Pittsburg.htm>

⁷ City of Pittsburg website: <http://www.ci.pittsburg.ca.us/Pittsburg/Government/Departments/Public+Works/pwd-wtp.htm>

Delta Diablo Sanitation District. Delta Diablo Sanitation District (DDSD) was established in 1976 with the goal of safeguarding the health of both the public and the environment through collection and treatment of wastewater within the region. Serving an estimated 184,000 customers in the City of Antioch, City of Pittsburg and unincorporated community of Bay Point, In 2004, DDSD processed an average wastewater flow of 14.2-mgd and provided 6,900 acre-feet (AF) of recycled water to industrial customers. A Bay Area Green Business, DDSD is a leader in recycled water production, supplying recycled water for industrial and irrigation uses in the area. In addition, a Household Hazardous Waste Facility serving all of East Contra Costa County is located at DDSD.

Ironhouse Sanitary District. Ironhouse Sanitary District (ISD) was established in 1992, combining the wastewater services for Oakley and unincorporated Bethel Island. ISD provides wastewater collection, treatment, storage, and disposal to the more than 30,000 people residing in the communities of Oakley and Bethel Island. ISD's existing wastewater treatment and disposal facilities, located northeast of Oakley, have a current dry weather flow of 2.3-mgd with a treatment and disposal design capacity of 3.0-mgd.^{8,9}

Other Agencies

Contra Costa County. Contra Costa County is the ninth largest of California's 27 counties by population, with nearly 950,000 residents in 2000.¹⁰ Contra Costa County takes an active role in water and resource management throughout the county. Staffed by the Community Development Department (CDD), the Contra Costa Water Agency (CCCWA) was established to develop the County's water policies, oversee ship channel navigation projects, and monitor water rights, water supply and water quality for residents of Contra Costa, while encouraging water conservation.¹¹ The Contra Costa County Flood Control and Water Conservation District (CCC FC&WCD) is a participant in this effort. CCC FC&WCD manages the flood and storm waters in city and county areas of Contra Costa County, develops flood control plans, establishes and collects development fees. CCC FC&WCD is an active partner in the Contra Costa Clean Water Program, which jointly hold a NPDES permit containing a comprehensive plan to reduce the discharge of pollutants to the maximum extent practicable.¹² By partnering in this effort, Contra Costa County further underscores its ongoing commitment to water and resource management and protection throughout the county.

Natural Heritage Institute. The Natural Heritage Institute is a non-profit, non governmental organization that focuses on restoring aquatic ecosystems and the services they provide for human communities. NHI has identified rapidly growing east Contra Costa County as one of the most important opportunities for restoring the Delta's tidal marshes and protecting its water quality from polluted urban runoff. Since 1998 and with funding from several state and local agencies, NHI has worked with numerous local agencies and landowners in East County to develop and implement a watershed based plan to restore wetlands, riparian habitat, and water quality in the Marsh Creek watershed and along the Delta shoreline. NHI staff currently coordinate the watershed stewardship efforts of the Friends of Marsh Creek. NHI has also led the effort to identify strategies to reinforce and restore subsided Delta islands to protect the regions ecological and waters supply functions.

⁸ Ironhouse Sanitary District website, accessed 06/02/05: <http://www.ironhousesanitarydistrict.com/main.shtml>.

⁹ Ironhouse Sanitary District Wastewater Facilities Plan, 2005.

¹⁰ 2000 U.S. Census. ABAG (Association of Bay Area Governments) Website, accessed 06/02/05. <http://census.abag.ca.gov/counties/ContraCostaCounty.htm>

¹¹ Contra Costa Water Agency website, accessed 06/02/05: http://www.co.contra-costa.ca.us/depart/cd/water_agency.htm

¹² Contra Costa Clean Water Program website, accessed 06/02/05: <http://www.co.contra-costa.ca.us/depart/pw/cleanwater/cleanwater.html>

2.2 East Contra Costa County Region Description

East Contra Costa as a Region

Eastern Contra Costa County was identified as an appropriate area for regional water management for a variety of reasons, including:

- The region is segregated by geographic boundaries.
- The East County agencies have a history of regional planning.
- The participating agencies are all located within the Sacramento-San Joaquin Delta.
- Agencies share a common water supply and face common challenges.
- Projected Growth.

Geographic Boundaries. East Contra Costa County is a discrete geographic region that is isolated from neighboring regions by clear and obvious physical boundaries. It is isolated from the remainder of Contra Costa County and the greater Bay Area by the ridgelines of Mt. Diablo which define its southern and western boundaries. The region is bounded on the north and east by the San Joaquin River and Old River, and the associated maze of waterways effectively isolates East County from the Central Valley region. The entire region derives its water supply from the Delta and drains to the Delta primarily through the Marsh Creek, Kirker Creek, and Kellogg Creek watersheds. These watersheds encompass the jurisdictional boundaries of all the participating agencies except Contra Costa County and the Contra Costa Water District which serve a broader area than East County.

History of Regional Planning. The agencies participating in this effort recognize the value of coordinated regional planning, and have established a long history of regional cooperation in water management efforts. Some of these regional planning initiatives are described in further detail below.

East County Water Supply Management Study (ECWSMS). The East County Water Management Association is a consortium of 11 water management agencies within East County. As discussed in **Chapter 1**, members include: City of Antioch, City of Brentwood, BBID, Town of Discovery Bay Community Services District, CCC, CCWD, DDSD, DWD, ECCID, ISD, and the City of Pittsburg.¹³ In 1994, ECWMA completed the first Phase of its assessment of future water supply management within the eastern portion of Contra Costa County. The second Phase of this effort was completed in 1996 (ECWSMS, 1996). Through this effort, these 11 partnering agencies developed a comprehensive regional assessment of water demands and supplies, treatment and delivery options, water supply alternatives, and recommendations and implementation strategies for regional water management. The ECWSMS includes projected water demands and supplies for East County through the year 2040.

IRWMP Appendix A Guidelines

Section B: Region Description

- Explain why the Region is an appropriate area for integrated regional water management
- Describe internal boundaries within the region, major water-related infrastructure, and major land-use divisions
- Describe the social and cultural makeup of the regional community; identify important cultural or social values
- Describe economic conditions and important economic trends

Functionally Equivalent Documents

- East County Water Supply Management Study, Chapters 1 and 2, pages 1-1 to 2-21.
- Future Water Supply Study 2002 Update, pages 3-5, Table B-3.
- Habitat Conservation plan and Natural Community Conservation Plan, Chapter 2, pages 2-1 to 2-20.

¹³ All of agencies are all either participating or in support of this Plan.

Future Water Supply Study. In 1996, CCWD completed a Future Water Supply Study (updated in 2002), which contains detailed analysis of the future supply and water needs for the entire Contra Costa Water District service area, including Eastern Contra Costa County. This analysis evaluated alternatives to meet those needs through the year 2050.

Habitat Conservation Plan/Natural Communities Conservation Plan. The East Contra Costa County Habitat Conservation Plan Association (HCPA) is a joint powers authority consisting of the following seven members:

- Contra Costa County
- City of Brentwood
- City of Clayton
- City of Oakley
- City of Pittsburg
- Contra Costa Water District
- East Bay Regional Park District

The HCPA was established in June of 2000, to oversee development of a Habitat Conservation Plan (HCP) for East County. The HCPA is responsible for drafting the Plan for submittal to the governing boards and councils of member agencies, as well as overseeing compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). This represents a major regional planning effort aimed at preserving and enhancing native habitats that support endangered and sensitive species while providing a regional incidental take permit under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA).

Groundwater Investigation. In 1998, five East County public agencies authorized an investigation of the groundwater resources in East County. Contra Costa County Water Agency, the Town of Discovery Bay Community Services District (formerly Contra Costa Sanitation District No. 19), the City of Brentwood, Diablo Water District and the East Contra Costa Irrigation District initiated the Study to focus on gathering and organizing existing information related to groundwater resources in the region encompassing the City of Brentwood, East Contra Costa Irrigation District, the City of Oakley, Byron, and the Town of Discovery Bay Community Services District. Existing information was used to better characterize the quantity and quality of East County groundwater supplies.

Watershed Planning. Several participating agencies have collaborated over the last decade to define and advance multiple objective, watershed planning initiatives in each of the regions principle watersheds. The Contra Costa County Flood Control and Water Conservation District (CCC FC & WCD), the cities, the Contra Costa Resource Conservation District (CCRCD), and the County have traditionally cooperated in watershed based planning efforts to provide drainage and flood control services necessary to support General Plan growth. More recently, these agencies and groups have joined together with watershed planning groups, Contra Costa Water District, and the Natural Heritage Institute to integrate water quality, wetland and riparian habitat enhancement projects into the drainage and flood control infrastructure of the regions principle watersheds. These efforts have resulted in comprehensive watershed planning documents for Kirker, Marsh, and Kellogg Creeks as well as on the ground water quality and habitat enhancement projects in all three watersheds.

In addition, these agencies are working to improve the quality of water flowing into the Delta by providing technical and financial assistance to East Contra Costa growers for

voluntary implementation of BMPs for agricultural tailwater and runoff management, water conservation and wildlife friendly agriculture. This will reduce the amount of polluted tail water flowing into the Delta and improve the water quality of runoff. Other ongoing cooperative water and watershed-related planning and operation efforts and include the Brentwood sewer treatment plant discharge to Marsh Creek.

To foster collaboration among agencies and share information across watersheds, the County and Flood Control District worked with other agencies and organizations to establish the Contra Costa Watershed Forum, which brings together a variety of groups and individuals monthly to address watershed issues in Contra Costa County. The forum provides a vehicle to advance integrated watershed planning initiatives and projects that achieve multiple objectives from ecosystem restoration and water quality protection to flood management and water supply protection.

Through these ongoing, cooperative planning efforts, East County has developed sound water management approaches to benefit the region as a whole. East County agencies have a history of successfully working together to plan for and respond to increasing pressures on water management resources in the region. The shared geographic, environmental and water supply conditions combined with the established successful history of coordinating planning and implementation of water resources projects distinguishes East County as a logical unit for continued regional planning efforts.

Delta Partners. As shown in **Figure 2-3**, the agencies participating in this effort are all located within the statutory Sacramento-San Joaquin Delta (Delta). The San Francisco Bay/Sacramento-San Joaquin Delta system is the largest estuary on the west coast of North and South America. An environmentally sensitive ecosystem, the Delta supports over 750 plant and animal species. The Delta provides drinking water to over two-thirds (22 million) of Californians, and irrigation water for more than 7 million acres of the most productive agricultural land in the world.¹⁴

Located within the Delta boundaries, and with Delta water as a primary source of drinking water for the region, the agencies in East County share a common commitment to protect and restore the Delta water quality and environment. The water agencies all fall within the jurisdiction of the Central Valley Regional Water Quality Control Board (Region 5).¹⁵

¹⁴ California Bay Delta Authority website, accessed 06/02/05: http://calwater.ca.gov/Regions/DeltaRegion_RPI.shtml

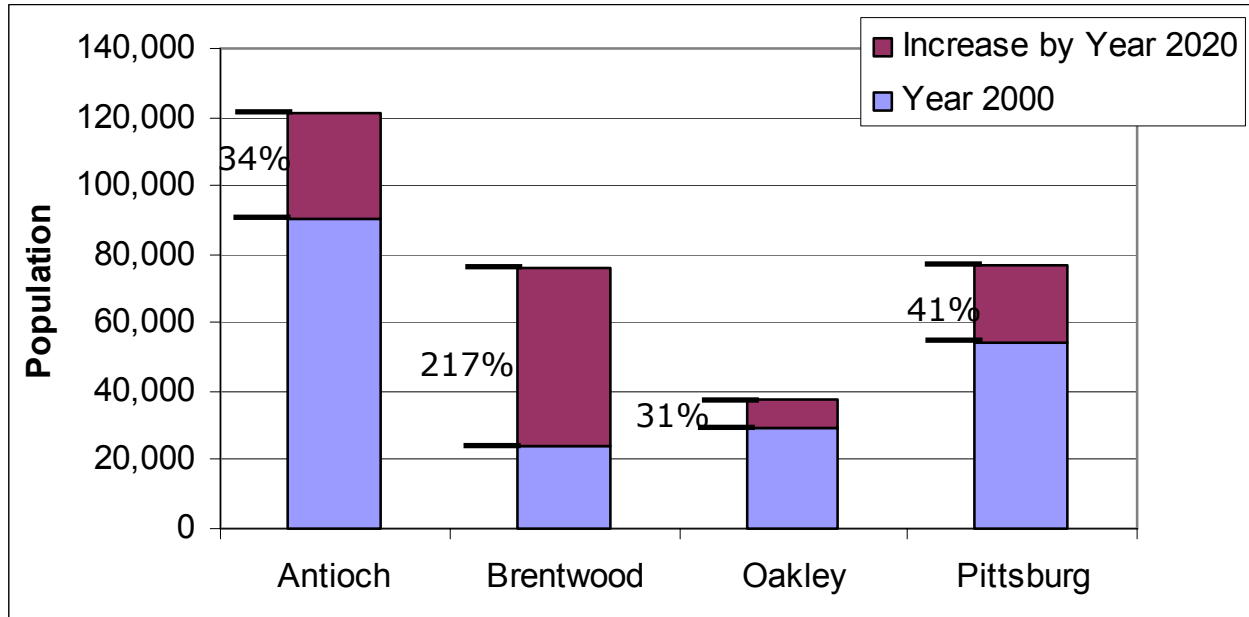
¹⁵ CVRWQCB website, accessed 06/02/05: <http://www.waterboards.ca.gov/centralvalley/index.html>. Note: CCWD, DDSD, and the City of Pittsburg overlap between Regions 2 (San Francisco Bay) and 5 (Central Valley).

Common Water Supply, Common Challenges. Three of the water suppliers included in this Regional Water Management Group (City of Pittsburg, City of Antioch, DWD) purchase raw Sacramento-San Joaquin Delta supplies from CCWD. Brentwood has a Delta surface supply purchased from ECCID that is diverted by CCWD at its Delta intakes. Also, CCWD serves a portion of Brentwood that lies within the CCWD boundaries. Contra Costa Water District is one of the largest water suppliers in California, serving almost 500,000 people. Of the 500,000, approximately 255,000 people are served by the raw water customer agencies of CCWD in East County: Antioch, Bay Point, Pittsburg, and DWD.¹⁶

With common supplies, these agencies share common water management challenges. CCWD and their wholesale customer agencies all face similar potential water quality issues and potential supply reliability challenges that stem from reliance on the Delta as a primary source of supply. Regional partnerships to maximize water quality and supply reliability, while protecting the sensitive Delta ecosystem, can provide a common benefit to all of these agencies while minimizing expense.

Projected Growth. The agencies participating in this document are faced with the challenge of rapid growth. The overall population of East Contra Costa is projected to increase by 146% million people (24%) between 2000 and 2020.¹⁷ As shown in **Figure 2-4**, the populations of Antioch, Brentwood, Oakley and Pittsburg are expected to increase by 34%, 217%, 31%, and 41%, from 2000 to 2020.¹⁸ Due to the rapid increase in population projected for the region, agencies need to implement innovative water management strategies to maximize water supplies and effectively manage demand, as well as increasing wastewater treatment and disposal capabilities. In addition, agencies need to plan carefully to ensure the needs of the growing population are met without sacrificing the needs of the sensitive ecosystem.

Figure 2-4: Projected Future Growth in the East County Region



¹⁶ CCWD website, accessed 06/02/05: <http://www.ccwater.com/welcome/profile.asp>

¹⁷ ABAG Projections 2020 Summary by County, accessed 06/02/05. Website: <http://www.abag.ca.gov/abag/overview/pub/p2000/summary.html>

¹⁸ East County population projections based on Association of Bay Area Governments projections 2002 for Clayton, Oakley, Pittsburg, Antioch, and unincorporated areas of East County. Projections include spheres of influence. Projections for Antioch, Oakley, and Pittsburg from the Antioch, DWD, and City of Pittsburg Year 2000 UWMPs. City of Brentwood projections provided by Paul Eldredge, 05/13/2005.

Regional Setting

East County contains numerous municipalities and special districts, exhibits widely varying land use, has multiple groundwater basins, and spans a variety of watersheds. The boundaries of each of these dividing characteristics are described below.

Municipalities. **Figure 2-3** displays the major boundaries of municipalities and special districts within the region. As previously indicated, all agencies included in the Regional Water Management Group lie within Contra Costa County. The municipal boundaries of the City of Antioch, the City of Brentwood, and the City of Pittsburg define those service areas. DWD serves the City of Oakley, as well as unincorporated parts of East County. DDSD's service area includes the municipalities of Pittsburg and Antioch, and extends into Bay Point. DWD provides water service to and ISD provides wastewater to the communities of Oakley and Bethel Island, and ISD further includes Jersey Island. CCWD and CCC span the entire county. NHI does not have a specified area of influence, conducting projects in the East County Region as well as at international level, with projects in Hungary, Slovakia, Mexico, Israel, and Palestine.

Land Use. As detailed in Chapter 2 of the HCP, land use within eastern Contra Costa County varies widely (**Figure 2-5**). The most densely populated areas of East County lie to the northwest section of the region. To the south, East County is predominantly unincorporated and agricultural land. The eastern portion of the region is predominately very low density single family housing.

Groundwater Basins. The groundwater basins underlying East County can be seen in **Figure 2-6**. Contra Costa County spans two hydrologic regions, the San Francisco Bay Hydrologic Region and the San Joaquin River Hydrologic Region. The majority of East County lies within the San Joaquin River Hydrologic Region.¹⁹ In the San Francisco Bay Region, East County partially overlies the Pittsburg Plain and Clayton Valley Groundwater Basins. In the San Joaquin Region, East County partially overlies the Tracy Subbasin of the San Joaquin Valley Groundwater Basin.

Pittsburg Plain. The City of Pittsburg overlies the Pittsburg Plain Groundwater Basin, which extends approximately one to three miles inland from Suisun Bay. The Pittsburg Plain groundwater basin lies within the two major drainage basins of Kirker Creek and Willow Creek, which discharge into Suisun Bay.

Clayton Valley. The Clayton Valley Groundwater Basin is also located in northern Contra Costa, along the Suisun Bay. The basin lies beneath Concord and Clayton. Marsh Creek flows through the Clayton Valley Basin before emptying into the Suisun Bay. The Sacramento and San Joaquin Rivers drain into the Clayton Valley Basin.²⁰

Tracy. The Tracy Subbasin lies between the Diablo Range on the West, the Mokelumne and San Joaquin Rivers to the North, the San Joaquin River on the East, and the San Joaquin – Stanislaus County line on the South. The Tracy Subbasin is drained by the San Joaquin River.²¹

¹⁹ California's Groundwater Bulletin 118, Update 2003 p. 129-135, 167-173.

²⁰ California's Groundwater Bulletin 118, Individual Basin Descriptions. Website, accessed 06/02/05: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/basins_a-l.cfm#gwb07htm.

²¹ California's Groundwater Bulletin 118, Individual Basin Descriptions. Website, accessed 06/02/05: http://www.groundwater.water.ca.gov/bulletin118/basin_desc/basins_a-l.cfm#gwb07htm.

Figure 2-5: East County Planned Land Use

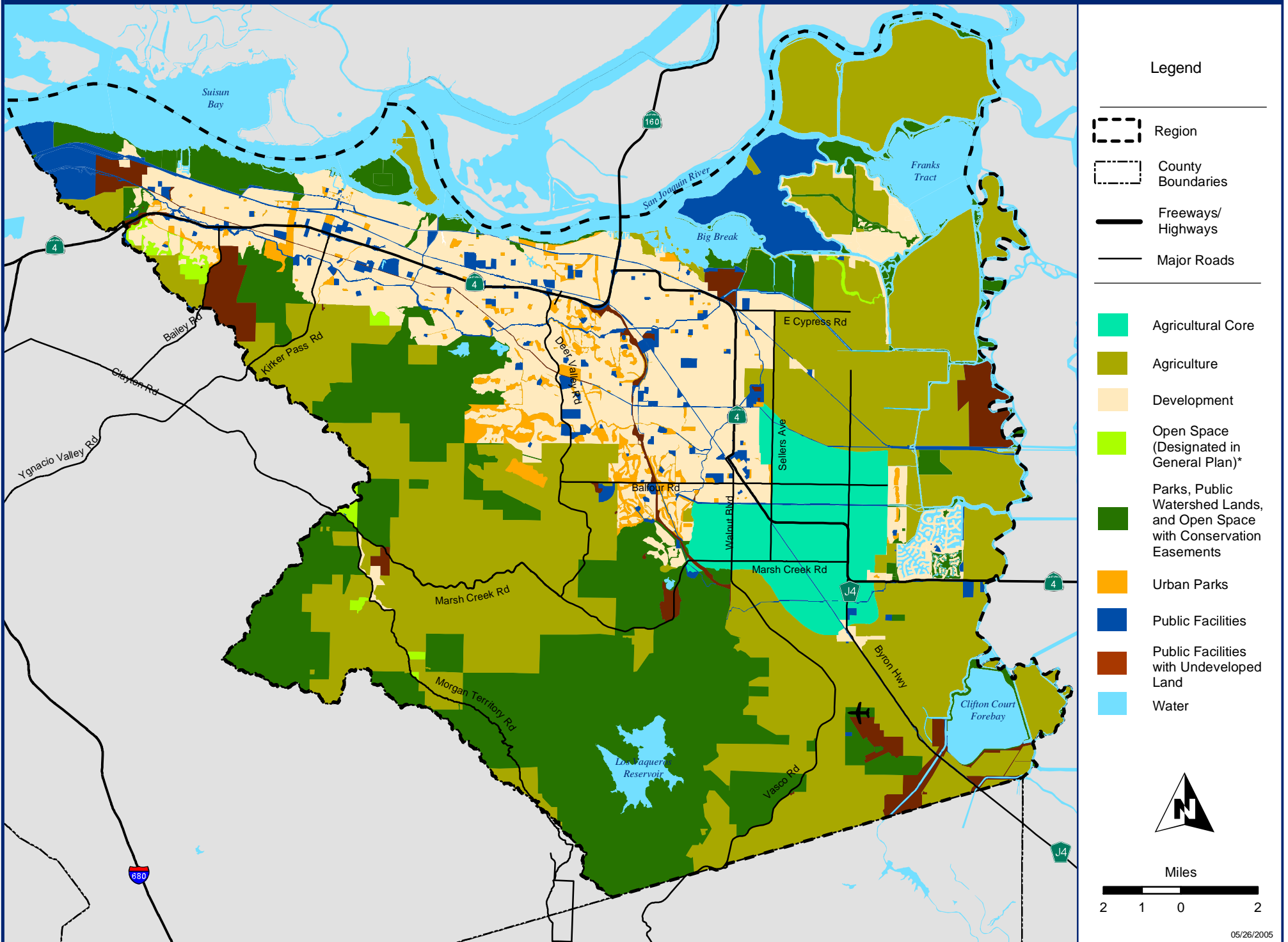
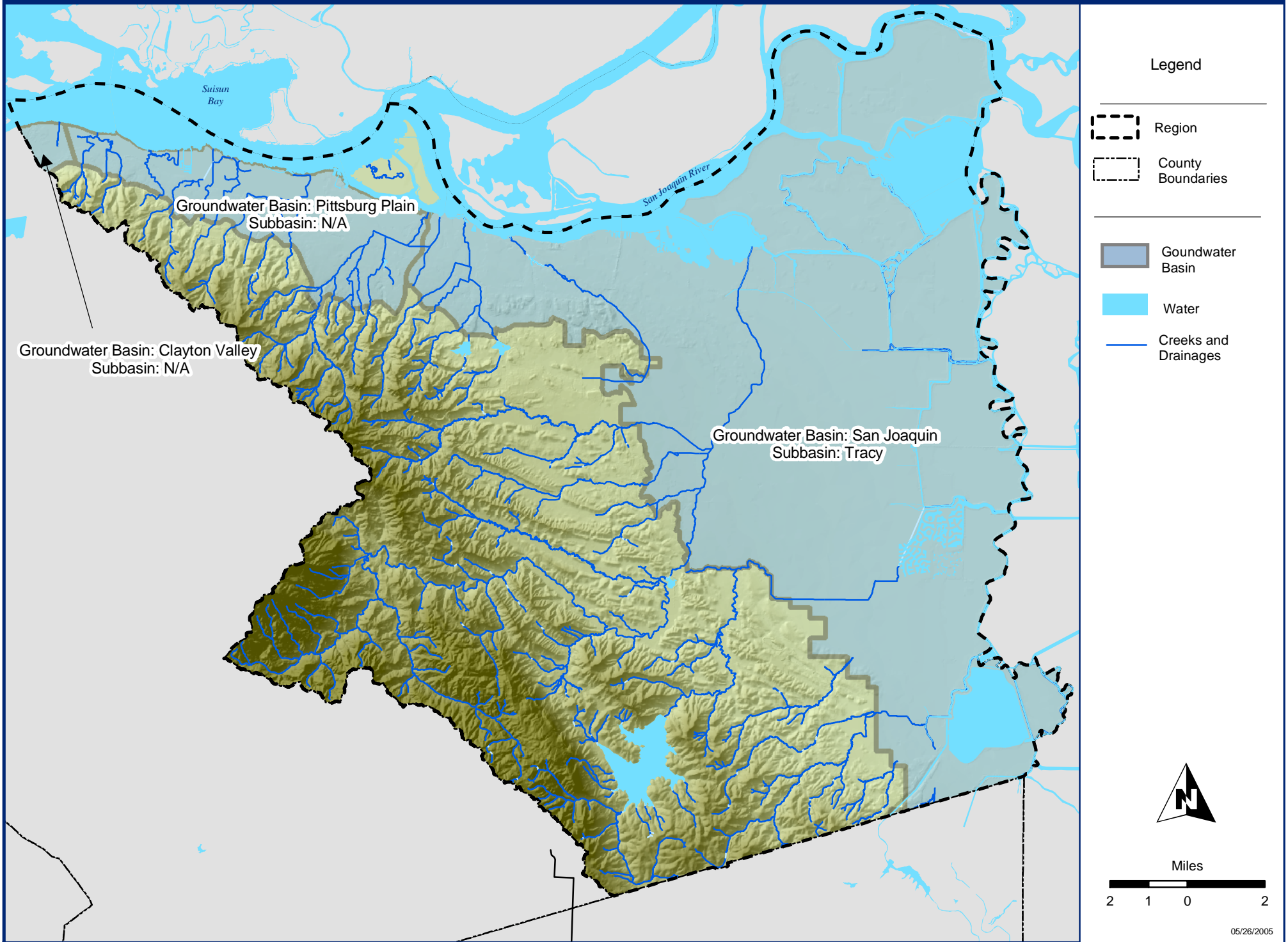


Figure 2-6: Goundwater Basins of East County



Watersheds. The agencies participating in and supporting this effort span seven distinct watersheds the Willow Creek, Kirker Creek, East Antioch Creek, West Antioch Creek, Marsh Creek, East County Drainages, and Kellogg Creek Watersheds. The boundaries of these watersheds are presented in **Figure 2-7**, and additional information on each is provided below.

Willow Creek Watershed. The Willow Creek Watershed is found in the northwest region of East County, bounded by the Sacramento River to the north. Bay Point (served by DDSD) and the City of Pittsburg are within the Willow Creek Watershed.

Kirker Creek Watershed. The Kirker Creek Watershed lies to the southeast of the Willow Creek Watershed. The City of Pittsburg falls within the Kirker Creek watershed.

East and West Antioch Creek Watersheds. The East and West Antioch Creek Watersheds lie to the east of the Kirker Creek Watershed and are bounded by the San Joaquin River to the north. The City of Antioch falls within the East and West Antioch creek watersheds.

Marsh Creek Watershed. South of the East and West Antioch Creek Watersheds is the Marsh Creek Watershed, which contains the Cities of Antioch, Brentwood, Oakley (served by DWD and ISD), as well as unincorporated areas south and west of Brentwood in East County.

East County Delta Drainages. To the northeast of the Marsh Creek Watershed is the East County Drainage area. This area includes Eastern Oakley, Bethel Island, and Knightsen (served by DWD and contained within ISD's service area), as well as the Town of Discovery Bay Community Services District.

Kellogg Creek Watershed. To the south of the East County Drainages is the Kellogg Creek Watershed, which includes Byron (served by BBID) falls. The 100,000 AF Los Vaqueros Reservoir is located within the Kellogg Creek Watershed. CCWD owns and operates the reservoir, along with 20,000 acres of protected watershed lands managed for water quality, conservation and recreation.

Social, Cultural, and Economic Characteristics. Based on the 2000 census results for the cities of Antioch, Brentwood, Oakley and Pittsburg, the East County region is home to a diverse population, including Caucasians (51%), Asians (8%), Hispanics (26%), African Americans (11%), American Indians, Alaska Natives, Native Hawaiian or Other Pacific Islanders (1%), and other races or multiple ethnicities (4%).²²

Industry and agriculture are important to the economy of East County. Approximately 30% of water use is attributable to major industry within the region, including USS-Posco, Delta Energy Center, Los Mendanos Energy Center, and Gaylord Inland Center as major contributors. As seen on the Land Use map (**Figure 2-5**) southern portions of East County are predominantly unincorporated and agricultural lands. More than 80,000 acres in East County are designated for agricultural use, and 99% of this land is located in unincorporated areas. Agricultural lands are generally used for crops, vineyards, and rangelands. Crops grown in East County include nursery crops, vegetables, fruits and nuts, with nuts being the most profitable. The area east of Brentwood and east and south of Oakley is defined as the Agricultural Core. This roughly 10,000 acre area is designed to preserve and protect these extremely fertile and productive agricultural lands. Row crops, including tomatoes and berries, predominate in the Agricultural Core (HCP Section 2-7).

²² Weighted averages of 2000 U.S. Census data for Antioch, Brentwood, Oakley and Pittsburg. ABAG (Association of Bay Area Governments) Website. <http://census.abag.ca.gov/counties/ContraCostaCounty.htm>

Approximately 14% of the population of East County lives in disadvantaged communities based on a median household income of less than 80 percent of the Statewide median household income. These areas are primarily located in Pittsburg, Antioch, Byron and Brentwood.

Figure 2-8 identifies the disadvantaged communities within the region.

Because of the region's dependence upon Delta water supplies, events that threaten the quality or quantity of this supply, such as droughts, water quality events and levee failures, could have significant ramifications on the economic viability of the entire region.

Figure 2-7: East County Watershed Boundaries

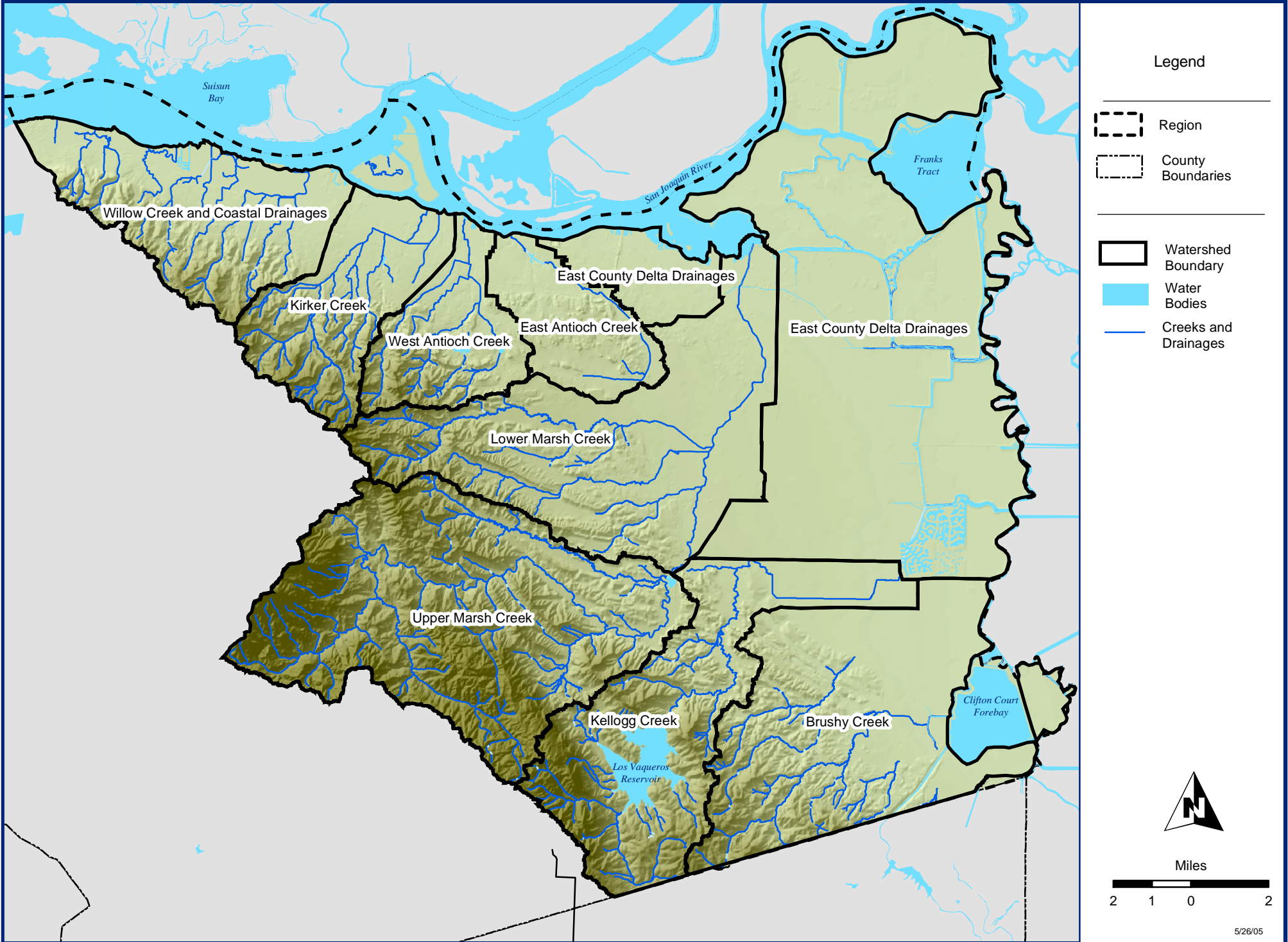
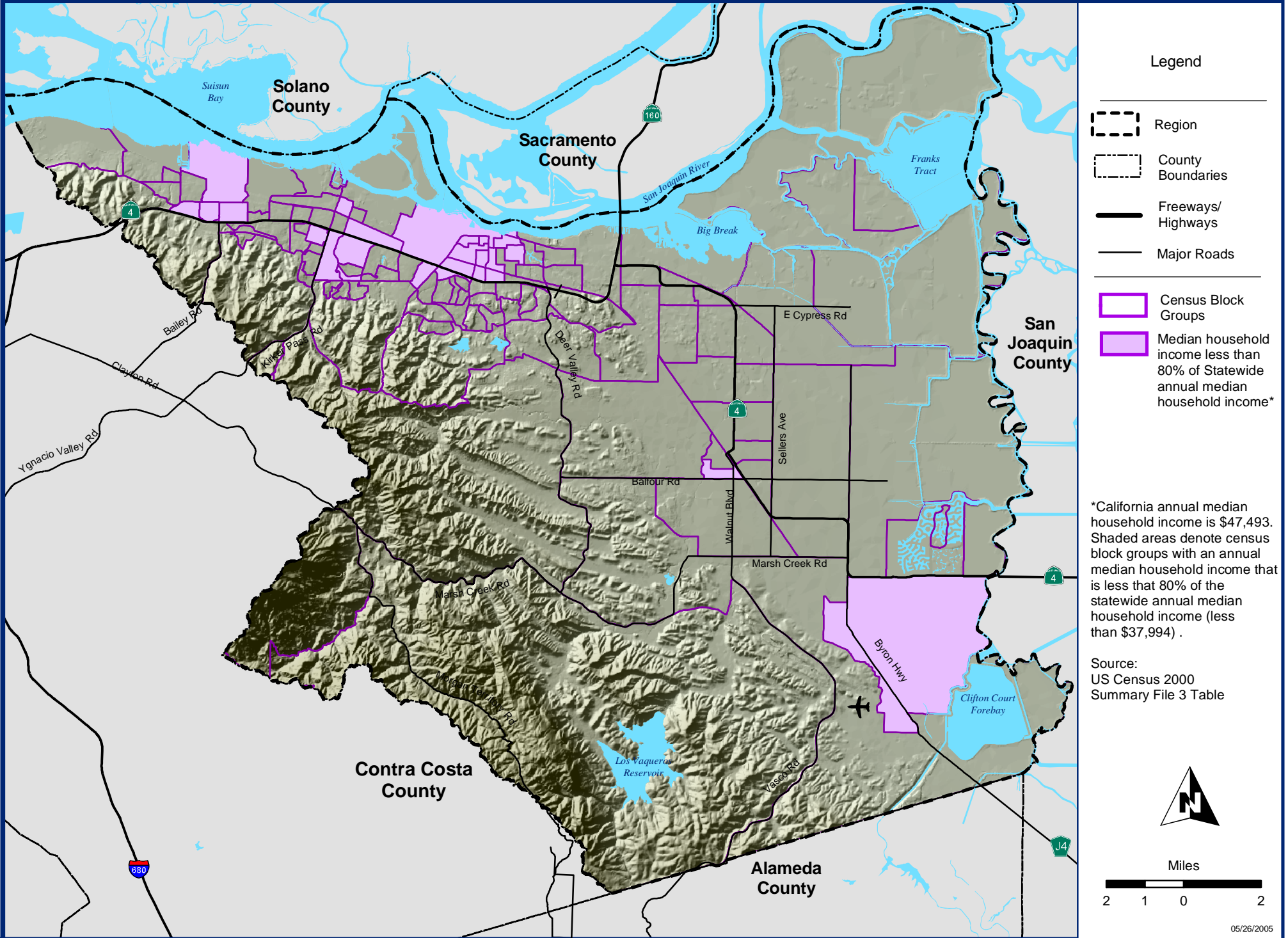


Figure 2-8: Disadvantaged Communities in East County



Regional Water Supply

The Phase II East County Water Supply Management Study, completed in 1996, contains detailed information related to the future water demands and the supply outlook for East County. The Future Water Supply Study (FWSS), updated in 2002, provides a detailed outlook of supplies and demands throughout Contra Costa Water District’s service area. Summary information related to the demand and supply outlook for East County is provided below.

IRWMP Appendix A Guidelines

Section B: Region Description

- Describe water supplies and demand for a 20-year planning horizon

Functionally Equivalent Documents

- East County Water Supply Management Study, Chapter 2, pages 2-1 to 2-18.
- Future Water Supply Study 2002 Update, Section 5.2.1, 5.2.2, 6.1, Appendix B, pages 14 to 15, 17, 21 to 25, B-3.

Demands. As previously described, East County is an area of rapid growth. Projected water demands for this region are included in **Table 2-1**. As described above, the populations of Antioch, Brentwood, Oakley and Pittsburg are expected to increase by 34%, 217%, 31%, and 41%, respectively, between the years 2000 and 2020.²³ This presents unique challenges in terms of managing demands with increasing populations. Projected water demands for East County are included in **Table 2-1**, below.²⁴

Table 2-1: Projected East County Municipal and Industrial (M&I) Demands²⁵

Subregion	Projected Demands (Thousand AFY)					
	2000	2010	2020	2030	2040	2050
City of Antioch	22	28	31	33	34	35
City of Brentwood	5	17	21	22	23	23
Diablo Water District ²⁶	4	8	12	16	19	20
City of Pittsburg	17	31	33	34	34	35
Industrial Reserved Capacity	18	18	18	18	18	18
Total East County M&I Demand	67	102	116	123	128	130

The composition of projected year 2050 demands can be seen in **Figure 2-9**. Nearly 70% of year 2050 M&I demand is projected to be municipal, while the remaining 30% is projected to be for industrial uses.

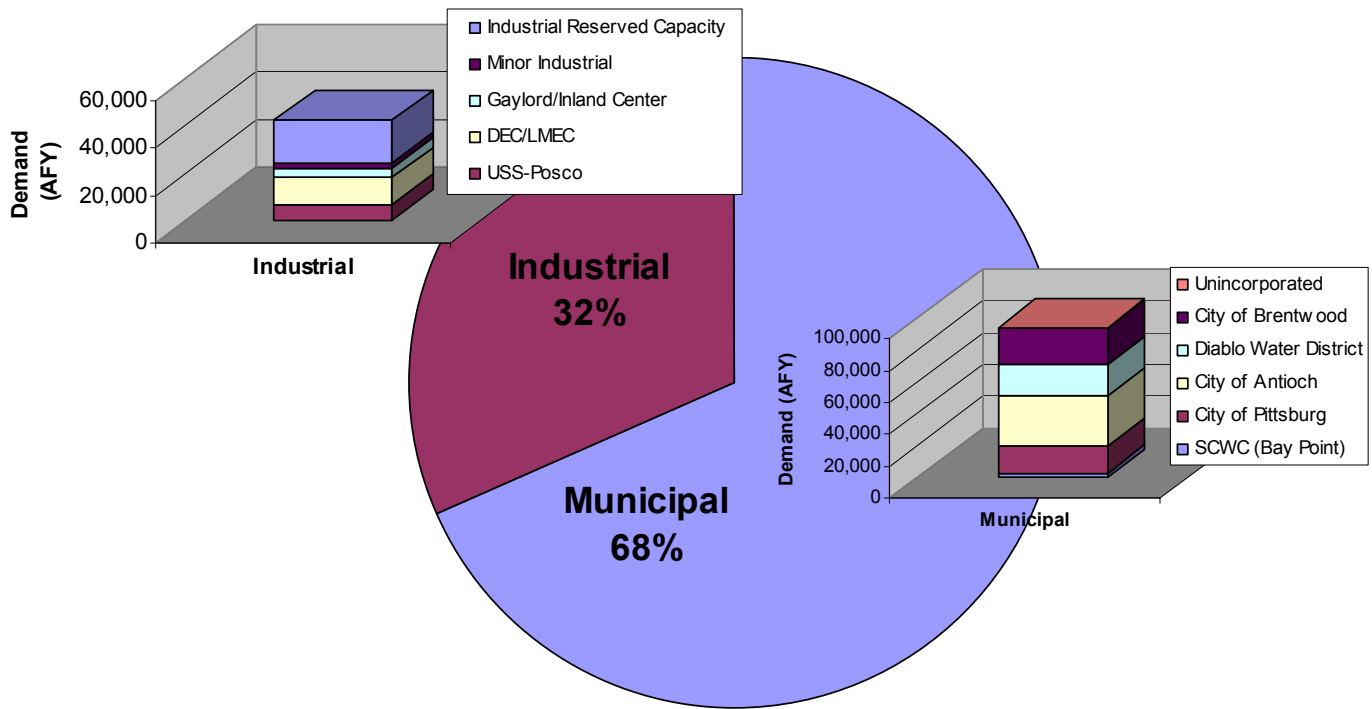
²³ Projections for Antioch, Oakley, and Pittsburg from the Antioch, DWD, and City of Pittsburg Year 2000 UWMPs. City of Brentwood projections provided by Paul Eldredge, 05/13/2005.

²⁴ Demands from FWSS, 2002. East Contra Costa demands calculated as Service Area C plus Brentwood (from Brentwood master Plan) minus CCWD treated water service area demands.

²⁵ East County Demands from FWSS 2002 Update. Includes CCWD raw water service area (RWSA) demands identified for Service Area C, excluding Martinez, Shell Oil, Tosco Oil, flat rate/agricultural. City of Brentwood demands include entire City of Brentwood demand (FWSS included only CCWD-Brentwood overlap), updated based on updated information in the Brentwood Master Plan.

²⁶ DWD demands include Oakley-North Brentwood, Cypress Corridor, Cypress Lakes, Off-Island Bonus Area, Knightsen, Veal Tract, and Bethel Island.

Figure 2-9: Breakdown of Projected Year 2050 M&I Water Demands in East County²⁷



Based on these projections, East County M&I demand is projected to comprise approximately 51% of total CCWD demand by the year 2050, an increase of 9% compared to the year 2000.

Supplies. East County employs a wide variety of water supplies and demand management strategies to meet current and projected future demands. These supplies include:

- CVP Supplies
- ECCID Water Rights
- BBID Water Rights
- Conservation
- Recycled Water
- Groundwater
- San Joaquin River Rights

Table 2-2 presents the CCWD surface water supplies, local recycled water, and groundwater supplies expected to be available to East County in future years.

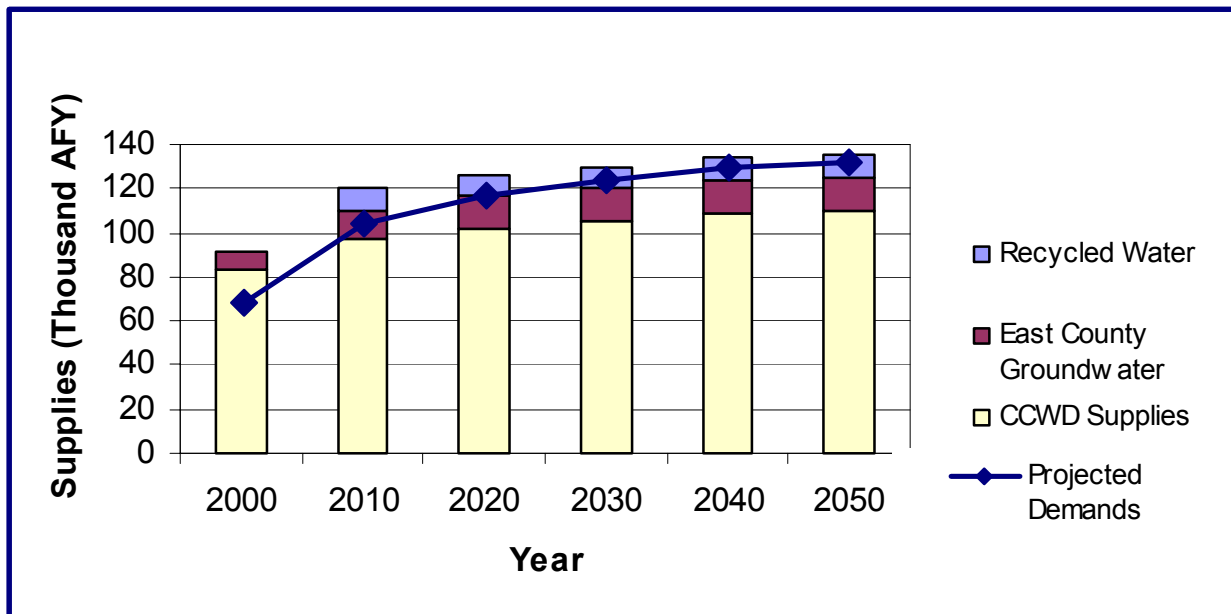
²⁷ SCWC – Southern California Water Company.

Table 2-2: East County Current and Future Supply Availability²⁸

Source	Projected East County Supplies (Thousand AFY)					
	2000	2010	2020	2030	2040	2050
Normal Year						
Surface Water Supplies	83	97	102	106	108	110
Recycled Water	0	10	10	10	10	10
Groundwater	8.4	13.1	14.3	14.3	15.3	15.3
Total Supplies	92	120	126	130	134	135
Dry Year						
Surface Water Supplies	59	73	77	80	82	84
Recycled Water	0	10	10	10	10	10
Groundwater	8.4	13.1	14.3	14.3	15.3	15.3
Total Supplies	67	96	101	104	108	109

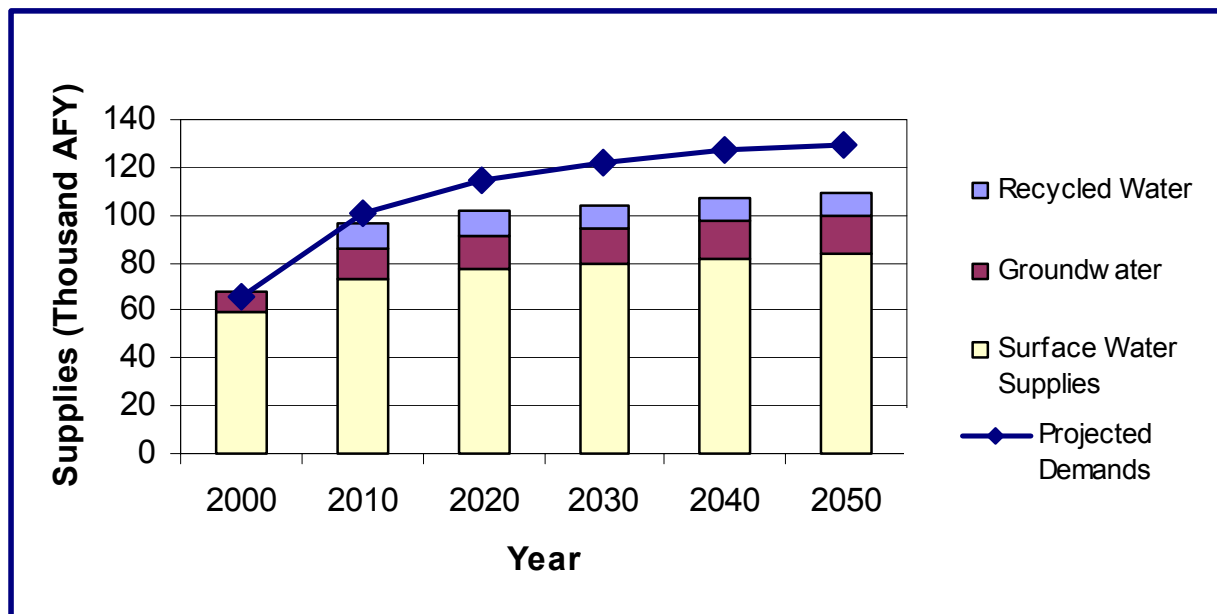
Figures 2-10 through 2-11 present the composition of East County supplies by source compared to future demands for normal and dry years. As shown in these figures, while East County is not projected to face a supply shortage in normal years, additional supplies are necessary to meet future demand in dry years.

Figure 2-10: Normal Year Projected Supply and Demand in East County



²⁸Approximately 20,000 AFY of additional supplies are currently used by CCWD (Mallard Slough) and customers (Major Industrial and Antioch). Consistent with the FWSS, these supplies were considered to be available only in wet years due to poor San Joaquin water quality.

Figure 2-11: Dry Year Projected Supply and Demand in East County



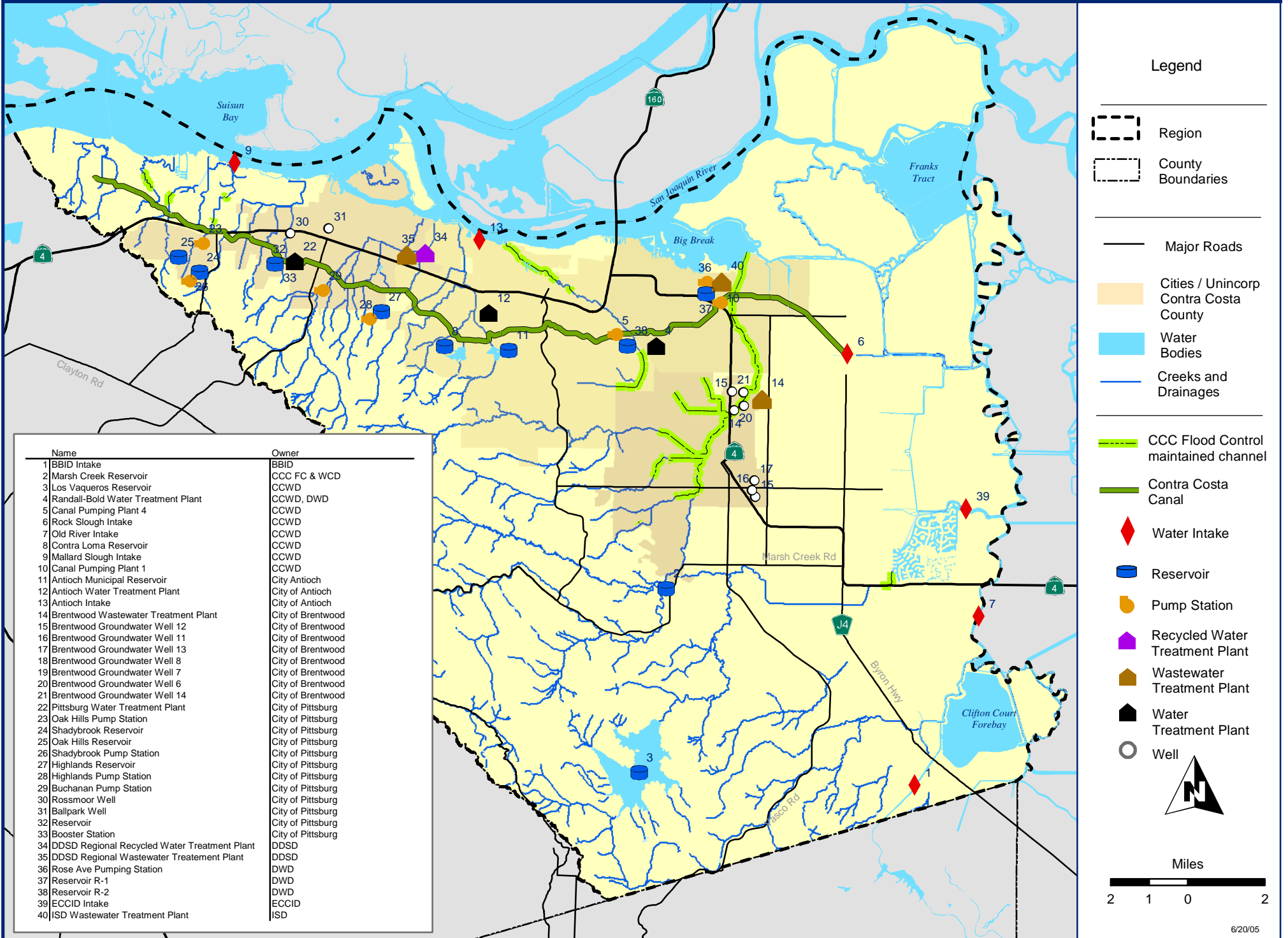
Major Water Infrastructure. A variety of water infrastructure is located within East County, including water bodies, reservoirs, conveyance facilities, pumping plants, and water and wastewater treatment plants. Major water infrastructure within East County is shown on **Figure 2-12**. Among the major water infrastructure in East County are the Clifton Court Forebay, Contra Costa Canal, Los Vaqueros Reservoir and Marsh Creek Reservoir and Flood Control Channel.

- *Clifton Court Forebay.* Located in East County, Clifton Court Forebay is a regulated reservoir located at the head of the State Water Project’s (SWP) California Aqueduct, with intake facilities located on Old River. The SWP is the nation’s largest state-built water and power development and conveyance system, conveying Delta supplies from East County to 23 million Californians and 755,000 acres of irrigated farmland throughout California.
- *Contra Costa Canal.* The Contra Costa Canal is the first and oldest unit of the Central Valley Project. It was originally constructed to serve agricultural needs, and now comprises the backbone of the Contra Costa Water District. The Canal conveys water from the Delta to CCWD’s treatment facilities and raw water customers. The canal spans 48 miles, starting at Rock Slough in East County, passing through several communities including the cities of Oakley, Antioch, Pittsburg, and Bay Point, and ending at the Terminal Reservoir in Martinez. Water is drawn from Rock Slough near Knightsen (eight miles east of Antioch) and Old River near the town of Discovery Bay. The Canal is badly in need of improvements. Water travels from Rock Slough through a four-mile stretch of unlined channel before entering the concrete-lined section of the canal in Oakley. Old River water is delivered by pipeline either to the Los Vaqueros Reservoir or to the Contra Costa Canal in Antioch.
- *Los Vaqueros Reservoir.* CCWD owns and operates the Los Vaqueros Reservoir, which stores up to 100,000 AF of high quality water. The reservoir is surrounded by nearly 20,000 acres of protected watershed, providing more than 55 miles of recreational trails.

The California Bay-Delta Program (CALFED) Los Vaqueros Expansion Studies are currently examining the feasibility of expanding the reservoir to provide water quality and water supply reliability benefits to downstream Delta users, helping to achieve CALFED water quality objectives.

- *Marsh Creek Reservoir and Flood Control Channel.* The Marsh Creek Reservoir is located approximately four miles southwest of Brentwood. It was built in 1962 by the Soil Conservation Service (now Natural Resources Conservation Service) to provide flood control for agricultural land uses in East County, and is now managed by the CCC FC&WCD. The CCC FC & WCD has been gradually improving the system to provide enhanced flood protection for the rapidly urbanizing area. Over the last 40 years, over one quarter of the capacity of the Marsh Creek reservoir has been lost to sedimentation from the upper Marsh Creek watershed, significantly reducing the level of downstream flood protection, and leaving the reservoir without sufficient storage volume to protect against a 1% recurrence interval (100-year) storm.

Figure 2-12: Major Water Infrastructure in East County



Regional Water Quality

This section provides an overview of water quality concerns for the region's delta water supplies and groundwater supplies. A summary of the constituents of concern for these supplies is included in **Table 2-3** and discussed in more detail in the paragraphs below.

Delta Water Quality. Delta water quality is highly variable depending upon the season, the water year, and the intake location. During dry years and seasons Delta supplies contain high concentrations of total dissolved solids (TDS), chloride and bromide. Total organic carbon (TOC) concentrations in Delta supplies are also highly variable, with increases generally corresponding to periods of increased runoff. These concerns are discussed in detail in the Delta Region Drinking Water Quality Management Plan (DRDWQMP). The Los Vaqueros Reservoir is owned and operated by CCWD, and is used to improve the water quality delivered to its customers. Water is pumped into Los Vaqueros during late summer and spring months when Delta water quality good. During the late summer and early fall, when Delta water quality is poor, Delta supplies are blended with the high quality water stored in Los Vaqueros Reservoir to improve the water quality delivered to CCWD's raw and treated water customers.

The quality of Delta water is dependent on maintenance of the Delta levee system as well as land and water management activities throughout the Delta and its larger watershed. Failure of the Delta levee system from flooding or seismic events could dramatically increase levels of chloride, bromide, and TOC and potentially render the water supply unusable for municipal or agricultural purposes. Similarly, changes in Delta land-use and water management practices, including many identified by CALFED, could increase levels of undesirable constituents at East County intake locations. East County is particularly vulnerable to these changes since it has no other reliable sources of drinking water.

Groundwater Quality. Several agencies, including the City of Pittsburg, DWD, and Brentwood, also use groundwater supplies. Groundwater in the Pittsburg/Antioch areas contain elevated levels of iron and manganese. In addition, saline intrusion to the groundwater basin has been observed in these areas, resulting in high TDS levels. Groundwater in the DWD and Brentwood areas has been shown to have high levels of TDS and chlorides, as well as elevated levels of nitrate. In some parts of East County, groundwater supplies have shown arsenic concentrations up to 35 ug/L, more than three times that allowed by the MCL that is expected to take effect in January of 2006. Another potential contaminant of concern for groundwater is boron. Boron is on the unregulated contaminant monitoring list due to the potential for reproductive effects. The California Department of Health Services has set an action level of 1 mg/L for boron in drinking water.

While the participating agencies are currently meeting all state and federal drinking water quality regulations, protecting the integrity of the source water supplies to prevent degradation of water quality is a key challenge faced by all East County agencies.

Recycled Water Quality. In general, recycled water contains a higher salinity content (as TDS) than potable water. Recycled water supplies are treated to suit their end use. For irrigation purposes, the rate at which salts accumulate in soils is an important factor in determining acceptable TDS levels. In addition, the salinity, sodium hazard (as determined by sodium adsorption ratio [SAR]), and potential toxicity to plant foliage and roots from other

IRWMP Appendix A Guidelines

Section B: Region Description

- Describe the quality and quantity of water resources within the region, including surface waters, ground waters, reclaimed water, imported

Functionally Equivalent Documents

- East County Water Supply Management Study, Chapter 2, pages 2-8 to 2-20.
- Delta Region Drinking Water Quality Management Plan, Chapter 3, pages 3-1 to 3-17.

specific constituents are potential concerns. Sampling data for DDSD recycled water supplies shows that these supplies are within acceptable ranges for landscape irrigation.

Table 2-3: Constituents of Concern for East County Source Waters

Constituent of Concern	Reason	Regulatory Standard (Goal)	Location
Total Dissolved Solids	<ul style="list-style-type: none"> ▪ Taste and odor ▪ Agricultural & Industrial impacts 	Secondary Standard: 500 mg/L	Delta Supplies, Groundwater, Recycled Water
Total Organic Carbon	<ul style="list-style-type: none"> ▪ THM, HAA precursor (public health concern) 	MCLs – TTHM: 80 ug/L HAA5: 60 ug/L	Delta supplies
Bromide	<ul style="list-style-type: none"> ▪ Bromate precursor (public health concern) 	(CALFED Goal: 50 ug/L)	Delta supplies
Iron & Manganese	<ul style="list-style-type: none"> ▪ Filter deposits ▪ Rusty color ▪ Taste and odor 	Secondary Standards - Iron: 0.3 mg/L Manganese: 0.05 mg/L	Groundwater
Arsenic	<ul style="list-style-type: none"> ▪ Bladder cancer ▪ Lung cancer 	MCL: 10 ug/L	Groundwater
Boron	<ul style="list-style-type: none"> ▪ Reproductive toxicity 	Action level: 1 mg/L	Groundwater

Ecological Processes and Environmental Resources

East County contains a variety of environmental resources including numerous rare habitats and endangered species that require protection, restoration, and enhancement. The region spans from the Delta shorelines, one of the most important aquatic ecosystems in California, to Mt. Diablo- one of the most floristically diverse environments in the state. The Delta islands and a rich alluvial plain lie between the Mt. Diablo and the Delta and support a variety of agricultural crops and native species. The region supports 154 special status species including San Joaquin kit fox, California red legged frog, Alameda whipsnake, Swainsons Hawk, delta smelt and Chinook salmon. More detail on these environments and the species they support is provided in the draft East County HCP.

IRWMP Appendix A Guidelines
Section B: Region Description

- Describe important ecological processes and environmental resources

Functionally Equivalent Documents

- [Habitat Conservation plan and Natural Community Conservation Plan Chapter 3, pages 3-1 to 3-41.](#)

East County encompasses over 100 miles of Delta shoreline that spans from the brackish tidal environments on the west to freshwater tidal further east. This area once supported over 50,000 acres of tidal and seasonal marshes, but most of these former marshes were drained and diked for agriculture during the nineteenth century. Relatively large remnants of brackish and freshwater tidal marsh persist at Browns Island, Little Break, Big Break, Franks Tract, Sand Mound Slough, and along Old River. These environments are sustained by combination of ecological processes including tidal flows, bio-accretion of wetland vegetation, river flows,

and sediment deposition. They provide habitat for many sensitive species, generate food supply for the Delta's ecosystem, cycle nutrients, and filter many pollutants from the Delta's waters. A more detailed explanation of the importance of tidal marsh, the processes that sustain them and the species they support is offered in the CALFED Ecosystem Restoration Plan.

The Delta islands and channels are also critical environmental and economic resources for the Pacific flyway and fisheries. The Delta islands not only produce a variety of agricultural crops, but they also provide agricultural wetlands essential to wintering waterfowl and other bird species that use the Pacific Flyway. The Delta's channels serve as the migration corridor for Chinook Salmon, striped bass, sturgeon, and other species migrating to and from the Pacific Ocean. The recreational and commercial industries supported by fish and wildlife that use the Delta are significant.

Mt. Diablo and the alluvial plain to its north and east support a wide diversity of plant species and communities including blue oak woodlands, chaparral, grasslands, riparian woodlands, vernal pools, and the endangered Antioch Dune plant community. Due to its elevation above the surrounding landscape and its location between the Bay Area and Central Valley bioregions, Mt. Diablo supports an unusual mix of species many of which are not present in the surrounding region. Aeolian deposits of the Delphi sands support pockets of Antioch dune scrub community including extremely rare species such as the Contra Costa Wallflower, Antioch Dunes primrose, and the Lange's Metalmark.

Relationship to Other Local and Regional Planning Efforts

As stated previously, the agencies participating in this effort have a long history of regional cooperation on water management issues. This functional equivalent IRWMP and the supporting regional planning documents included in **Appendix A** of this report have been developed in coordination with other planning efforts in the region, and were based on information provided in local plans (e.g., General Plans).

The East County Functionally Equivalent IRWMP is also being coordinated with the larger Bay Area IRWMP effort. These efforts differ in terms of geographic focus, specific water management projects and programs identified, and status of current planning documents.

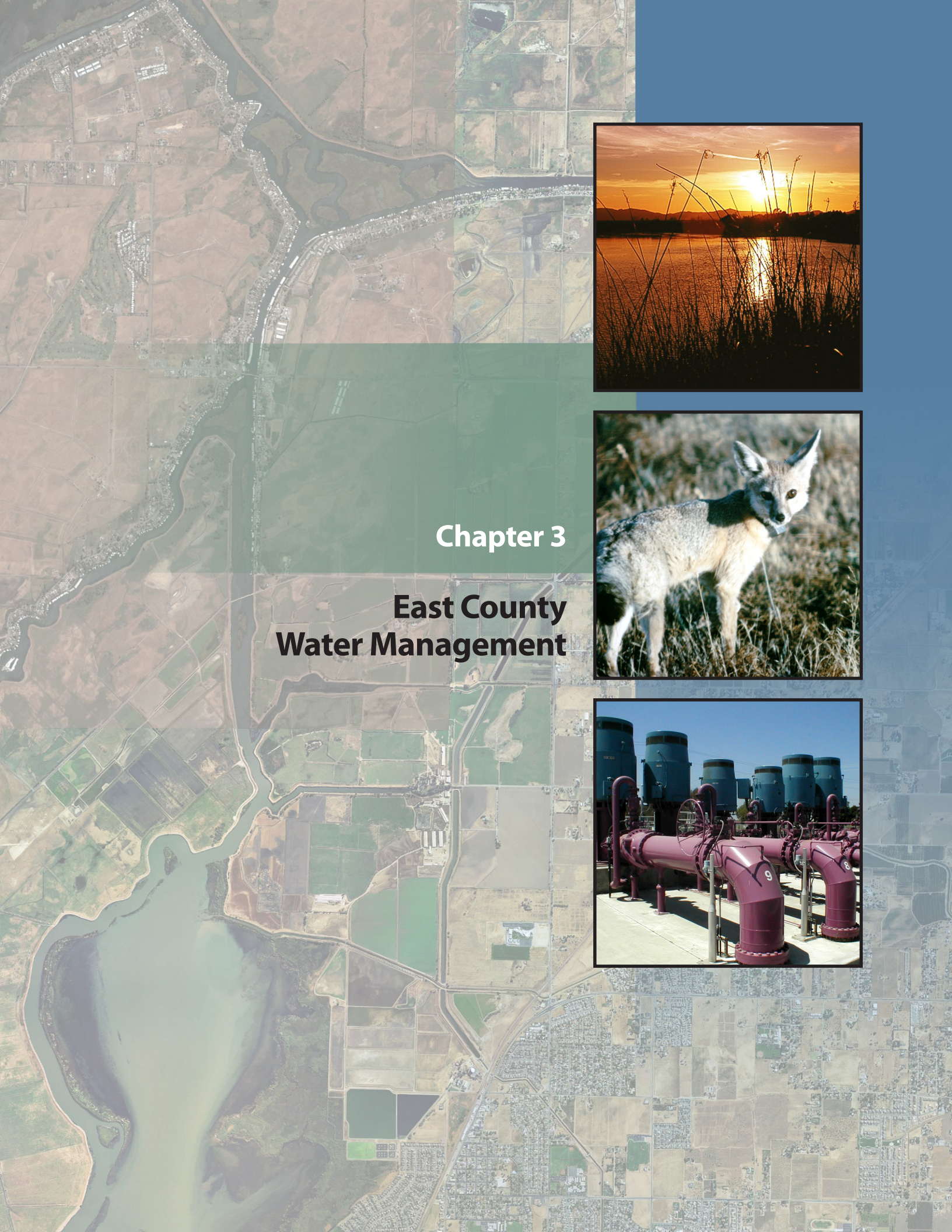
The East County effort involves the East Contra Costa County Regional Water Management Group. These agencies have common supply sources and projected growth patterns, and are all located within the statutory Delta. In addition, the East County agencies have a long history of regional planning and are therefore able to develop a Functionally Equivalent IRWMP at this time. The larger Bay Area IRWMP effort includes all nine counties within the San Francisco Bay Area Region, and is defined by Regional Water Quality Control Board (Region 2) boundaries. Although the geographic extent of the Bay Area effort is larger than that of the East County effort, the participating agencies do not share the long history of regional planning that the East County region has developed, and the Bay Area agencies do not have regional planning documents to serve as the basis of a Functionally Equivalent IRWMP.

CCWD and other East County agencies are participating in both efforts to ensure that the planning objectives are coordinated and the projects and programs included in each effort are neither duplicated nor in conflict with one another.

IRWMP Appendix A Guidelines

Section B: Region Description

- In certain cases, individual agencies may participate in different regional efforts...the application should include an explanation of why participation in various regional efforts is appropriate



Chapter 3

East County Water Management

3 EAST COUNTY WATER MANAGEMENT

This chapter describes the objectives established for the region, the common challenges faced by all East County water agencies, and the comprehensive, integrated water management strategies undertaken to meet the objectives and address the challenges.

3.1 Water Management Objectives

The participating agencies have a long history of regional planning, including such cooperative efforts as the East County Water Supply Management Study, the Future Water Supply Study, the Contra Costa Stormwater Management Plan, and the Natural Communities Conservation Plan/Habitat Conservation Plan. Through these planning efforts, the participating agencies have identified regional water management objectives in the following categories:

- Water Supply
- Water Quality
- Groundwater Management
- Ecosystem Restoration/Preservation
- Wastewater
- Flood Control
- Implementability

For each category, specific objectives have been developed through the regional planning processes identified above. In addition, potential approaches to meet those objectives have been evaluated. **Table 3-1** presents the regional objectives identified for each category, the range of potential approaches to meet these objectives, and the source or planning efforts responsible for development of each objective.

IRWMP Appendix A Guidelines

Section C: Objectives

- Identify IRWMP Plan objectives and the manner in which they were determined. The Plan must address major water-related objectives and conflicts within the region, including water supply, groundwater management, ecosystem restoration, and water quality

Functionally Equivalent Documents

- Delta Region Drinking Water Quality Management Plan, Chapter 1, page 1-4, Chapter 3, pages 3-1 to 3-17.
- East County Water Supply Management Study, Chapter 2, pages 2-1 to 2-20.
- Future Water Supply Study, Section 5, page 5-3.
- Habitat Conservation Plan and Natural Community Conservation Plan Section 1, pages 1-1 to 1-2.
- Stormwater Management Plan, Section 2, pages 2-1 to 2-3.

Table 3-1: Regional Planning Objectives

Category	Objective(s)	Potential Approaches	Source or Planning Study
Water Supply	<ul style="list-style-type: none"> ▪ Maximize Dry Year Supplies ▪ Maximize Water Supply Reliability ▪ Meet Future Demands ▪ Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies 	<ul style="list-style-type: none"> ▪ Maximize Recycled Water ▪ Maximize Conjunctive Use ▪ Maximize Conservation ▪ Maximize Water Transfers ▪ Maximize Desalination ▪ Enhance Stability of Western Delta Levee 	ECWSMS, FWSS
Water Quality	<ul style="list-style-type: none"> ▪ Maximize Public Health Protection ▪ Protect and Enhance Source 	<ul style="list-style-type: none"> ▪ Maximize Treated Water Quality ▪ Relocate Intakes 	ECWSMS, DRDWQMP, SWMP

Category	Objective(s)	Potential Approaches	Source or Planning Study
	Water Quality	<ul style="list-style-type: none"> ▪ Optimize Surface and Groundwater Treatment ▪ NPS Pollution Control ▪ Stormwater Collection and Management ▪ Minimize Risk of Salt Water Intrusion (i.e., maximize levee stability) ▪ Optimize Flood Control and Management 	
Groundwater Management	<ul style="list-style-type: none"> ▪ Protect Against Overdraft ▪ Protect Water Quality from Degradation 	<ul style="list-style-type: none"> ▪ Characterize Groundwater Basins ▪ Develop Conjunctive Use Programs 	ECWSMS
Ecosystem Restoration/ Preservation	<ul style="list-style-type: none"> ▪ Minimize Environmental Impacts ▪ Maximize Environmental Benefits 	<ul style="list-style-type: none"> ▪ Protect and Restore Sensitive Species ▪ Protect, Restore and Enhance Sensitive Habitats ▪ Minimize Environmental Impacts of Development ▪ Protect, Restore and Enhance Wetlands 	HCP
Wastewater	<ul style="list-style-type: none"> ▪ Reduce Pollutant Discharges ▪ Maintain Regulatory Compliance ▪ Protect Public Health and Environmental Resources ▪ Maximize Environmental Sustainability 	<ul style="list-style-type: none"> ▪ Maximize Recycled Water ▪ Optimize treatment ▪ Increase Beneficial Reuse of Solids 	Local agency Wastewater Master Plans
Flood Control	<ul style="list-style-type: none"> ▪ Protect Against Flooding 	<ul style="list-style-type: none"> ▪ Flood Control Planning to accommodate General Plan Growth ▪ Development review to assure compliance to standards and planning goals ▪ Monitor and maintain existing facilities to design capacities 	Flood Control Drainage Area and Drainage Zone Plans
Implementability	<ul style="list-style-type: none"> ▪ Maximize Implementability 	<ul style="list-style-type: none"> ▪ Maximize Regional Coordination ▪ Conduct Public/Stakeholder Outreach ▪ Maximize Cost-Effectiveness ▪ Minimize Impacts ▪ Maximize Benefits ▪ Address Environmental Justice/Benefit Disadvantaged Communities 	ECWSMS, SWMP, HCP

Conflicts within the Region

In addition to helping to build trust and coordination between the agencies resulting in avoidance and successful resolution of potential conflicts within the region, the Phase II East County Water Supply Management process made several recommendations for maximizing regional resources that were later implemented. Planning efforts resulting from the Phase II East County Water Supply Management Study provided significant regional benefits from regional project implementation. Among the projects implemented as a result of the East County Water Supply Management Study is the development of Contra Costa Water District's Multi-purpose Pipeline (MPP) with an intertie to Antioch. The MPP was constructed to supplement the Contra Costa Canal and to provide improved water transmission reliability to meet needs following an emergency (such as an earthquake or fire), as well as providing increased capacity for meeting projected demand through the year 2020. In addition to the MPP, other regional planning efforts providing multiple benefits and directly resulting from coordinated regional planning efforts include:

- Construction of a \$1M Antioch-DWD intertie
- Development of a joint water treatment plant expansion project between DWD and Brentwood
- Initiation of ECCID-CCWD-Brentwood water transfers
- Completion of a comprehensive East County Groundwater Study in 1999
- Construction of an interim intertie between DWD and Brentwood

In this way, the region's commitment to coordinated regional planning has assisted the East County water agencies in successfully collaborating to identify and resolve potential conflicts early-on.

3.2 Water Management Strategies

As described in the previous chapter, regional planning objectives and potential approaches have been developed as part of ongoing regional planning efforts within East County. The potential approaches represent a range of alternatives that may contribute to achieving each objective. In addition, East County has explored a broad range of local and regional water management alternatives to address the region’s objectives. The water management strategies considered to meet the objectives are summarized in **Table 3-2**. Each water management strategy is described in further detail below.

IRWMP Appendix A Guidelines
Section D: Water Management Strategies

- Document the range of water management strategies considered to meet the objectives

Functionally Equivalent Documents

- East County Water Supply Management Study, Section 2 pages 2-1 to 2-20.
- Future Water Supply Study, Section 6, pages 6-1 to 6-25.
- Future Water Supply Study 2002 Update, Section 4, pages 4-1 to 4-34.
- Habitat Conservation plan and Natural Community Conservation Plan Chapter 5, pages 5-1 to 5-134.

Table 3-2: East County Water Management Strategies

Water Management Strategy	Notes
Ecosystem Restoration/Habitat Protection	Participating agencies have identified an advanced a variety of ecosystem restoration and habitat protection alternatives, most notably through the HCP, the Dutch Slough, and a number of projects identified in the Marsh and Kirker Creek reports.
Water Supply Reliability	Water supply reliability, in terms of infrastructure reliability as well as drought supply reliability, is a primary goal of the East County agencies. The agencies are pursuing recycled water, groundwater, and desalination supplies, as well as levee improvements and subsidence mitigation to achieve these objectives.
Flood Management	The flood control district has a mandate to protect infrastructure, property, and public safety from flooding. In an effort to improve habitat, water quality, and stormwater management, the CCC FC & WCD has worked with a number of participating agencies to identify strategies and projects that simultaneously improve or maintain flood protection while advancing other objectives.
Groundwater Management	Groundwater management is a critical part of maximizing supplies within the region, an objective established in the ECWSMS with the concept of pooling regional supplies. East County agencies are continuing to evaluate projects and programs with the goal of optimizing use of groundwater within the region.
Recreation and Public Access	Integrating recreation and public access into project and facilities management allows the public to access and enjoy open space lands on the Delta shoreline and throughout the Diablo range. It also provides agencies with an effective vehicle for educating the public about the regions water supply and ecosystem. Many East County projects and programs including the HCP, Dutch Slough, and projects on Jersey Island explicitly include recreation and public access elements.
Stormwater Capture and	The Contra Costa County Stormwater Management Plan contains

Water Management Strategy	Notes
Management	detailed county-wide objectives for management of stormwater. A variety of projects and programs being conducted within the study area include stormwater capture and management elements.
Water Conservation	Water conservation is an important component of the East County approach to water management. The current conservation programs being implemented are in accordance with Best Management Practices (BMPs) established by the California Urban Water Conservation Council (CUWCC). The agencies are committed to ongoing demand management as a cornerstone to meeting future supply needs.
Water Quality Protection and Improvement	Water quality protection and enhancement is an important part of protecting public health, and has been identified as an important ongoing water management strategy for East County in the ECWSMS. In addition, many proposed projects and programs focus on water quality protection and improvement.
Water Recycling	East County is a leader in recycled water production. Continued commitment to water reuse is a major component of the future water supply programs of these agencies. Many projects and programs within the study area focus on water reuse.
Wetlands Enhancement and Creation	Participating agencies have identified and advanced numerous tidal, seasonal, and riparian wetland enhancement and restoration projects at Dutch Slough, Jersey Island, and throughout the Marsh, Kellogg, Kirker, and Antioch Creek watersheds. These projects will help protect a variety of threatened and endangered species identified in the HCP.
Conjunctive Use	The participating agencies recognize conjunctive use as a potential future water supply alternative. As the local groundwater basins become more fully described and safe yields are established, conjunctive use may become an increasingly viable water supply alternative.
Desalination	Desalination is regarded as a potential water supply alternative for the participating agencies. A feasibility-level project has been proposed to evaluate the feasibility of brackish water desalination as a viable water supply alternative within the region.
Imported Water	In general, imported water refers to Delta supplies which are conveyed to water users throughout California via the State Water Project and Central Valley Project. Located within the statutory Delta, the East County agencies' Delta supplies are not imported. Use of additional Delta supplies was evaluated in the ECWSMS and the FWSS. Additional Delta supplies are not being pursued at this time.
Land Use Planning	With a rapidly increasing population, land use planning is critical for protecting water quality and sensitive habitats as well as maintaining water supply reliability. The County General Plan and urban limit line establish guidelines for land use planning. The HCP contains land-use planning objectives, and the Marsh Creek report offers recommendation for integrating creek restoration into new development in a manner that protects water quality and ecosystem function.
NPS Pollution Control	Non point source pollution control is a key element of the County's

Water Management Strategy	Notes
	storm water management plan which identifies a variety of strategies including public education and industrial outreach, new development and construction controls, and watershed management activities including wetland restoration. The County has partnered with a variety of including the Resource Conservation District and NHI to help implement these strategies in East County.
Surface Storage	Some of the participating agencies currently own and operate surface water storage facilities. Additional surface water storage is not being pursued by the participating agencies at this time.
Watershed Planning	This strategy is discussed in the Ecosystem Restoration/Habitat Protection section that follows.
Water and Wastewater Treatment	Water and wastewater treatment is an important element of protecting public health. Ongoing projects and programs within East County aim to improve and expand water and wastewater treatment to provide improved public health protection.
Water Transfers	The FWSS evaluated out-of-county water transfers and the ECWSMS evaluated in-county water transfers as potential future water management strategies. Currently, ECCID and CCWD have an agreement to transfer water within East County. Although additional transfers are currently not being pursued, they may be viable alternatives in future years, provided that appropriate water rights agreements can be established.

Ecosystem Restoration/Habitat Protection and Improvement

Ecosystem restoration and habitat protection are unavoidably linked to protecting the water quality and water supply reliability in East County. Protecting Delta water quality protects source water for the region and protects the Delta’s aquatic species from the harmful impacts of degraded water quality. Promoting the recovery of the Delta’s endangered fish species improves water supply reliability by reducing regulatory conflicts between the need to divert water from the Delta and the legal requirements to protect endangered species. Wetland and riparian restoration projects can sometimes create habitat for endangered species while at the same time reducing the amount of polluted run-off flowing into the Delta – a win for water quality, endangered species, and water supply reliability.



*California Red-Legged Frog*²⁹

A wide variety of natural habitats and special-status species make their homes in East Contra Costa County. East Contra Costa is home to hundreds of acres of wetlands, including permanent, seasonal, alkali wetlands, creeks, ponds and vernal pools. East Contra Costa’s wetland resources provide important habitat for a variety of rare, threatened and endangered plant and animal species and perform a number of important hydrologic functions. Ecosystem

²⁹ Image from East Contra Costa County Habitat Plan Association, accessed 06/02/05: www.cocohcp.org/overview.html.

enhancement, restoration, and creation are necessary for protecting the rich resources of East Contra Costa County. Increasingly, the participating agencies have integrated restoration and protection of these resources into their water quality and water supply projects. CCWD manages the upper Kellogg Creek watershed to support a host of rare species including the endangered red legged frog and Alameda whip snake. The flood control district's efforts at Marsh Creek reservoir, Knightsen biofilter, Kellogg sedimentation basin, and Mt. Diablo mercury mine will all improve water quality, enhance habitat, and improve flood protection. CCWD's canal encasement project will be integrated into the first phase of the Dutch Slough project leading to an improvement in drinking water quality, habitat restoration, and a reduction of non-point pollution discharge to the Delta. The Ironhouse Sanitary District's wastewater treatment plant upgrade will free up land for habitat restoration at the mouth of marsh creek as well as wetland creation on Jersey to create waterfowl habitat and reverse subsidence.

East County's habitat conservation planning is a model for integrating land and water resource planning in a manner that protects endangered species. The population of East County is projected to rise 146% between the years 2000 and 2020,³⁰ requiring careful planning to protect and restore the sensitive species of the region. To this end, seven local land-use and resource management agencies in East Contra Costa, in cooperation with U.S. Fish and Wildlife service and California Department of Fish and Game (DFG), are developing the Habitat Conservation Plan/Natural Community Conservation Plan, which is one of the primary documents supporting this Plan. The HCP contains a detailed inventory of the habitats and rare, threatened and endangered species within East Contra Costa County. Using habitat suitability models for most of the species covered, the HCP estimates the level of impact of a variety of urban development activities on suitable habitats as well as the level of conservation offered by a variety of conservation measures. Chapter 5 of the HCP identifies, in detail, the conservation measures to be performed to mitigate for the impacts of urban development, to contribute to the recovery of covered species in the region, and to enhance restore, and create wetlands. Conservation measures to be performed include land acquisition, habitat enhancement/restoration, species population enhancement and impact avoidance and minimization. In addition, an important element of the HCP involves ensuring that there is no net loss of important resources such as wetlands and breeding habitats for specific covered species. The HCP will create a Preserve System of approximately 24,000 to 30,000 newly conserved acres to connect and augment the 44,000 acres of existing conserved lands in the area. The preserve system will benefit covered species, natural communities, biological diversity and hydrologic and ecosystem function.

Ecosystem restoration in East County is also being addressed by NHI, in partnership with the California DWR and Coastal Conservancy, through extensive work relating to restoration of the Dutch Slough wetlands, a habitat corridor that extends from Suisun Marsh, Browns Island and Sherman Lake that is used for juvenile salmon rearing and splittail spawning and rearing. The Dutch Slough Tidal Marsh Restoration Preliminary Opportunities and Constraints Report identifies measures for restoring Dutch Slough to a fully functioning, self-sustaining ecosystem with diverse habitats.

Several Ecosystem Restoration projects are currently being considered within East County. These include:

- Dutch Slough Tidal Marsh Restoration – Phase 1
- East Antioch Creek Marsh Restoration Project

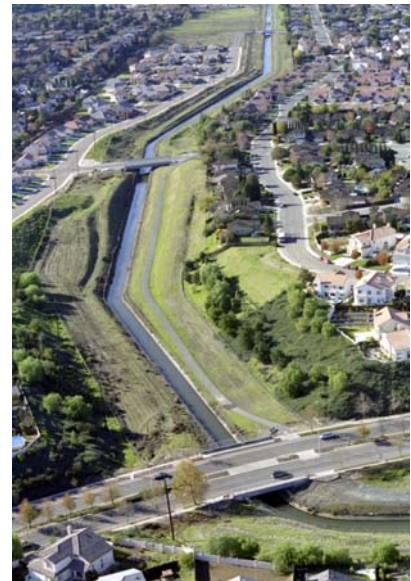
³⁰ Population projections based on Association of Bay Area Governments projections 2002 for Clayton, Oakley, Pittsburg, Antioch, and unincorporated areas of East County. Projections include spheres of influence.

- East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
- Kellogg Sedimentation Basin Project
- Marsh Creek Fish Passage Project
- Marsh Creek Reservoir Rehabilitation
- Pinn Brothers Marsh Creek Riparian Restoration Project

Additional information on these projects is provided in **Section 3.4** of this Plan.

Water Supply Reliability

Water supply reliability is a prime concern for the participating agencies, which obtain the majority of their supplies from the Sacramento-San Joaquin Delta. The reliability of Delta supplies varies significantly with hydrology, and in drought years, when they are most desperately needed, Delta supplies may be severely restricted. In addition, potential levee failures and subsidence threaten the reliability of Delta supplies. Water supply reliability is a primary goal of the participating agencies, and a variety of water management techniques have been explored and innovative techniques implemented with the goal of improving water supply reliability.



Contra Costa Canal³¹

Dry Year Supply Reductions. With the exception of the City of Brentwood, all of the participating water agencies purchase raw water from CCWD. The City of Brentwood has an interim contract with CCWD to receive treated water, and receives raw water supplies from EECID via CCWD. CCWD is a Central Valley Project (CVP) contractor, and relies on the Delta for the majority of its supply. Delta supplies are dependent on hydrology, and deliveries to CCWD can be reduced during regulatory restricted or drought years. The Central Valley Project Improvement Act (CVPIA) further reduced the reliability of these supplies by as much as 15%, potentially reducing the amount supplied to CCWD from their 195,000 AFY permit amount to 166,000 AFY in normal years, and less in dry years.³² CCWD and its retail agencies rely heavily on the Delta to meet water supply needs. As discussed in section 2 of the Phase II East County Water Supply Management Study, factors such as environmental water needs, changing water quality standards, and the overall vulnerability of the Delta all threaten the reliability of these agencies, reducing their ability to meet their customers' water needs.

The agencies of East County have conducted numerous coordinated regional planning efforts with a variety of objectives, including improved supply reliability. One of the primary documents supporting this effort, the Phase II East County Water Supply Management Study, presents a detailed analysis of the water supply reliability outlook for East County. In addition, the Study evaluates 30 alternative strategies for pooling local resources to maximize regional supply reliability. Potential sources of water supply evaluated include:

- In-county surface water

³¹ Image from CCWD website, accessed 06/07/05:
http://www.ccwater.com/photopages/pages/Aerial%20photo%20of%20Contra%20Costa%20Canal_.jpg.htm
³² CCWD Urban Water Management Plan, 2000.

-
- In-county groundwater
 - Conjunctive use development
 - Reclaimed water
 - Outside-county water
 - Water Conservation

Another primary supporting document to this Plan, the Future Water Supply Study (and 2002 Update), provides detailed information regarding the water supply and water demand outlook for all of the CCWD Planning Area through the year 2050. The FWSS included a Preferred Alternative and Implementation Plan for improving supply reliability throughout the CCWD Planning Area through the year 2040. This alternative identified actions to be taken including implementation of conservation measures, purchase of surface water transfers, water banking, and spot transfers, as necessary. Implementing the Preferred Alternative will provide improved drought reliability in the near term, while positioning CCWD to meet projected demands through the year 2040.

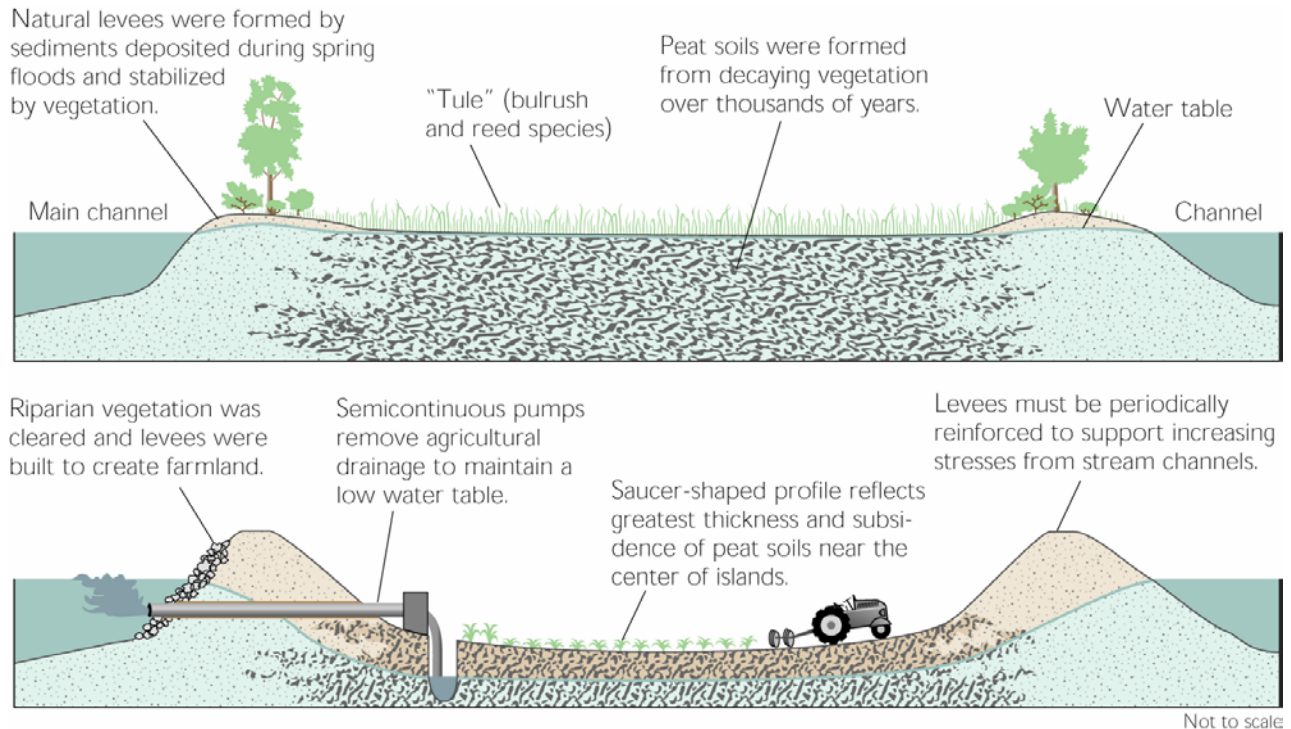
Subsidence and Potential Levee Failures. In addition to supply reliability issues associated with dry year supply reductions, Delta supplies are also vulnerable to subsidence and levee failures.

In the Sacramento-San Joaquin Delta, ongoing subsidence removes about 27,000 cubic meters of soil (over 2,500 dump truck loads) from peat islands per day, creating an equivalent volume below sea level. Left unabated, subsidence will continue to jeopardize water supply by increasing the possibility of levee failure due to ever increasing hydraulic pressures on levees. Also, continuing subsidence will exacerbate water-quality and water-supply effects of any future flooding and levee failure by creating additional volume or accommodation space below sea level. A catastrophic flooding event could lead to extensive permanent or long-term flooding in the Delta and could severely impede or prevent implementation of ecosystem restoration or water supply improvement projects. Ongoing subsidence threatens the success of Delta water-supply improvement and ecosystem restoration.

Recent work and modeling on Twitchell Island indicates that as subsidence continues over the next 50 years, island drainage volumes and dissolved organic carbon (DOC) loads will increase 10 to 15% due to increased hydraulic gradients onto islands and compensatory deepening of island drainage ditches. When multiplied by all the peat islands this may significantly affect achievement of desired water quality conditions. **Figure 3-1** schematically illustrates the effects of subsidence on the evolution of Delta islands. Subsidence due to oxidation of drained organic soils has created accommodation space and reduced the land mass supporting Delta levees, increasing the need for strengthening of levees.

Finding ways to effectively mitigate subsidence is integral to the success of three CALFED programs, Water Quality, Ecosystem Registration and Levee System Integrity. Consistent with CALFED values, East County agencies have identified potential projects that may reverse the affects of subsidence, including permanently flooded wetlands. Permanently flooded wetlands on Delta peat soils slow microbial oxidation of soil organic carbon which is the primary cause of net loss of soil carbon and present-day subsidence. This slowing of microbial oxidation leads to carbon accumulation and the accretion of organic material thus stopping and reversing the effects of subsidence. The reversal of the effects of the subsidence using wetlands will be a long-term process and to bring island elevations to tidal range in less than 100 years will require additional subsidence reversal measures. This is especially needed in the western Delta where the water supply threat of levee failure and island flooding is the greatest. However, implementation of permanently flooded wetlands will stop subsidence now and prevent the additional soil loss.

Figure 3-1: Evolution of Delta Islands



The reduction in land mass that supported 1,100 miles of levees surrounding Delta islands has reduced their ability to withstand channel hydraulic pressures. Over 50 levee failures, of which the June, 2004, Upper Jones Tract Middle River Levee failure is a recent example, have occurred since 1930 with a cost of hundreds of millions of dollars. Levee failure can also result in water supply disruption and water quality degradation for over 23 million Californians that depend on water from the Sacramento-San Joaquin Delta. In the western Delta, ongoing subsidence translates into ever increasing quantities of saline water intruding into the Delta when island levees fail. Increased salinity was the primary reason State water exports were shut down for over a month during the 1972 Brannan-Andrus flood which cost over \$90 million in 2003 dollars. The participating agencies recognize the importance of improving Delta levee integrity to safeguard California's Delta system.

Several levee and subsidence projects are currently being considered in East County, including:

- Jersey Island Levee Improvement
- Jersey Island 3,000 foot Cross Levee
- Subsidence Mitigation on Jersey Island Blind Point Area

Flood Management

Flood management and planning is critical to achieving the objectives of protecting public safety, ensuring and maintaining public access, and managing water quality. In addition, careful flood management can provide opportunities for ecosystem and environmental habitat protection, restoration and enhancement. Also, the flood management facility lands provide excellent opportunities for joint uses for Recreation and Public Access.

Throughout East County, flood management programs and projects are being evaluated to achieve regional goals. CCC FC & WCD manages the flood and storm waters in city and county areas of Contra Costa County and has the following responsibilities:

- Develops flood control plans
- Establishes and collects development fees
- Coordinates the implementation of the flood control plans through development review and capital improvement projects as fees accrue
- Coordinates with local, state, and federal agencies for the planning and implementation of major flood control projects
- Maintains and manages flood control facilities such as channels, detention basins, and flood retarding structures
- Conserves floodwaters for beneficial purposes by spreading, storing, retaining and causing them to percolate into the soil for groundwater recharge
- Cooperates with cities and park districts to provide recreation opportunities within lands it manages and where such uses are compatible with the flood control operations and improvements
- Promotes environmental enhancement projects in its managed facilities when they protect the flow capacity and maintainability.

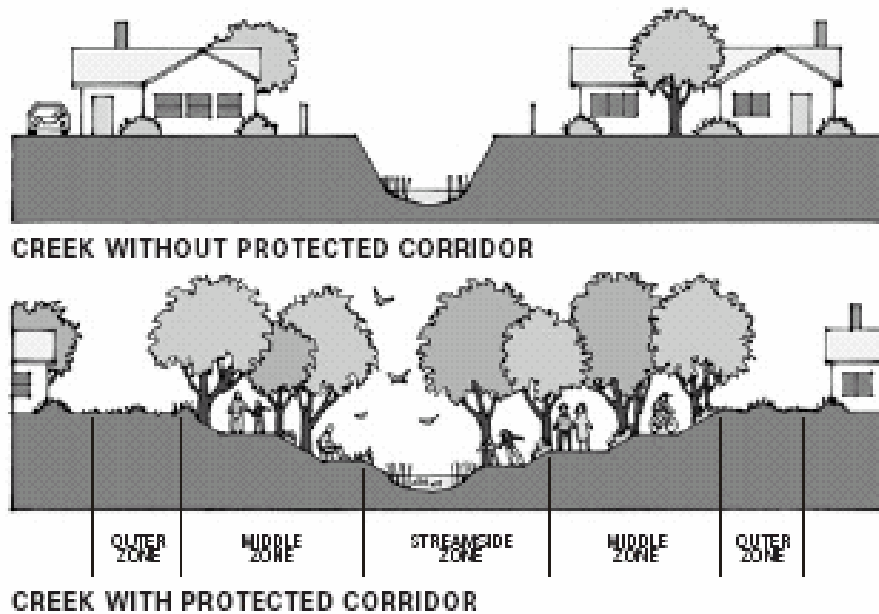


Efforts are underway to provide salmon passage

Accommodating growth while simultaneously providing increased levels of flood control, water quality protection, and habitat restoration is a difficult task. Restoring habitat while maintaining flood control conveyance capacity is the main technical challenge. The Past and Present Condition of the Marsh Creek Watershed report provides recommendations for expanding flood control channels into “two stage” channels with enough capacity to accommodate flood control and habitat objectives while enhancing recreation and access. The report also provides recommendations for working with willing landowners to create buffers and parks between new development and the stream channels that convey floodwaters. The City of Brentwood has adopted these recommendations in Appendices 10 and 11 of their Parks, Trails, and Recreation Master Plan. NHI, the City of Brentwood, CCC FC & WCD and the RCD are now working collaboratively to implement these recommendations along Marsh Creek on projects such as the Pinn Brothers Marsh Creek Riparian Restoration Project. **Figure 3-2** displays development of protected corridors as a means for maintaining flood control protection while enhancing recreation, access, and habitat objectives.

³³ Image from Brentwood Press & Publishing Company website, accessed 06/02/05:
http://www.cccrd.org/news/Drop%20Structure%20BW%20Press_Jan-7-05.htm

Figure 3-2: Development of Protected Corridors for Enhanced Flood Control, Recreation, Access, and Achievement of Habitat Objectives



Several East County projects are being considered for flood control benefits, including:

- East Antioch Creek Marsh Restoration Project
- Jersey Island Levee Improvement
- Jersey Island 3,000 foot Cross Levee
- Kellogg Sedimentation Basin Project
- Knightsen Biofilter Project
- Marsh Creek Reservoir Rehabilitation
- Pinn Brothers Marsh Creek Riparian Restoration Project
- Subsidence Mitigation in the Blind Point Area

Groundwater Management

Groundwater is a valuable, hydrology-resistant supply. Of the participating agencies, ECCID, the City of Brentwood, and Hotchkiss Tract and Bethel Island, which fall within the DWD sphere of influence, rely primarily on groundwater supplies. DWD and the City of Pittsburg both supplement their supplies with groundwater. The agencies of East County recognize groundwater management and the development of additional groundwater supplies as vital actions in developing a sound water management strategy for a rapidly growing area. Furthermore, as Delta water supply users, they understand the importance of drought-resistant supplies, and appreciate the supply reliability benefit posed by groundwater supplies, particularly in dry years.

Phase II of the East County Water Supply Management Study (**Appendix A-5**) presents a detailed description of the groundwater supplies in East County. While less vulnerable to hydrology than surface water supplies, groundwater supplies are limited to the safe yields of the basin. Total groundwater production in East County is approximately 8,400 AFY. Safe yields of groundwater basins in East County are currently unknown. As a result, it is difficult to estimate the total potential for groundwater development within East County. Still, optimization of groundwater as a supplemental supply source is a priority for the participating agencies.

As additional studies are performed and safe yields of the groundwater basins within East County are identified, groundwater supplies are likely to become increasingly important to the water management strategies of the participating agencies. Pursuit of these and other groundwater management projects will allow East County to optimize use of valuable, drought-resistant groundwater supplies, potentially offsetting reliance on less reliable, imported surface water supplies. Several groundwater management projects are currently being proposed within East County. These include:

- DWD Well Utilization Project Phase I and Phase II
- City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan
- Knightsen Biofilter Project

Recreation and Public Access

The participating agencies own and manage land on the Delta shoreline, along stream channels and in the upper watersheds. There is strong public demand to access and recreate on these lands and the participating agencies have moved to accommodate these demands while still managing the lands to meet their core mission. Integrating recreation and public access into project and facilities management allows the public to access and enjoy open space lands on the Delta shoreline and throughout the Diablo range. It also provides agencies with an effective vehicle for educating the public about the regions water supply and ecosystem.

Many East County projects and programs including the HCP, Dutch Slough, Marsh Creek Trail, and projects on Jersey Island explicitly include recreation and public access elements. ISD recently opened four miles of shoreline trail on Jersey Island to the public and also allows the East Bay Regional Park District to route more than one mile of trail through their mainland facility. A primary objective of the Dutch Slough project is to extend this trail to the north and through the Dutch Slough site providing 4 miles of trail, two miles of shoreline access, non-motorized boating, fishing, and a community park for the City of Oakley. The CCC FC & WCD accommodates over six miles of trails along the Marsh Creek flood control channel between the Delta and the City of Brentwood. The City of Brentwood is currently developing an extension of this trail to the Marsh Creek Reservoir site where it will link-up with the Round Valley, Mt. Diablo, and Los Vaqueros Trail systems. CCWD



Marsh Creek Trail³⁴

³⁴ Image from R&G Promotions website, accessed 06/02/05:
<http://www.randgpromotions.com/oakley/pages/photos/february2001/MarshCreekPhotos.html>

manages over 60 miles of trails in Kellogg Creek as part of Los Vaqueros, which also includes boating, fishing access, and interpretive facilities.

Chapter 5 (conservation measure 1.4.2) of the HCP includes specific measures directed at development of a recreation and public access plan. The HCP establishes a Preserve System of approximately 24,000 to 30,000 newly conserved acres to connect and augment the 44,000 acres of existing conserved lands in the area. The preserve system will benefit covered species, natural communities, biological diversity and hydrologic and ecosystem function. A detailed recreation plan will be developed for the Preserve System to facilitate the passive recreational uses of suitable portions of the Preserve System. The plan indicates that recreational uses will be controlled using a techniques such as fences, gates, signed trails, educational kiosks, trail maps and brochures, ranger and police patrols, and interpretive programs. Signs and informational kiosks would convey the sensitivity of the resources in the Preserve.

In addition, the Dutch Slough Opportunities and Constraints Report identifies extensive opportunities for recreation and public access. Current plans include regional trail connections, educational facilities, and other public access elements.

Several projects being evaluated in East County include recreation and public access elements:

- Dutch Slough Tidal Marsh Restoration – Phase 1
- East Antioch Creek Marsh Restoration Project
- East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
- Marsh Creek Fish Passage Project
- Marsh Creek Reservoir Rehabilitation
- Pinn Brothers Marsh Creek Riparian Restoration Project

Stormwater Capture and Management

Stormwater capture and management is critical to protecting source water quality and public health as well as maintaining flood protection. Stormwater capture and management also creates opportunities for ecosystem protection and restoration.

Contra Costa County has developed a detailed Stormwater Management Plan to serve as the basis for the Contra Costa Clean Water Program’s National Pollutant Discharge Elimination System (NPDES) Permit application to the Central Valley and San Francisco Bay Regional Water Quality Control Boards. Five of the agencies participating in the East County IRWMP³⁵ are participants in the Contra Costa Clean Water Program. The plan aims to:

- Minimize adverse water quality impacts associated with new development activities;
- Increase public awareness of daily activities and actions that may contribute to stormwater pollution;
- Optimize municipal maintenance activities to maximize removal of pollutants during routine maintenance;
- Conduct inspections to minimize pollutants in stormwater runoff from industrial and commercial activities;

³⁵ Contra Costa Flood Control District, Contra Costa County, and the Cities of Brentwood, Antioch, and Pittsburg are all participating members of the Clean Water Program.

- Control, analyze and address illicit discharges;
- Use monitoring and special studies to identify problems and sources of pollutants in the Bay-Delta; and
- Conduct watershed management activities, including stream restoration, to help define a model stormwater management approach in Contra Costa County.

Contra Costa County, CCC FC & WCD, NHI, the RCD, CCWD, and the Cities of Antioch, Brentwood, and Pittsburg are all working collaboratively to implement various elements of the Stormwater Management Plan in East County. Contra Costa County has contracted with NHI and the RCD to work with local residents and landowners on efforts to reduce stormwater pollution and enhance wetland habitat in the Marsh and Kellogg Creek watersheds. The RCD has been collaborating with CCWD, ECCID and BBID, and Contra Costa County Flood Control and Reclamation District 800 in an effort to provide technical and financial assistance to East County growers for voluntary implementation of BMPs for agricultural tailwater and runoff management, water conservation and wildlife friendly agriculture. The Cities of Antioch and Pittsburg have joined together with the RCD to implement the Kirker Creek Watershed Plan, which advances many elements of the Stormwater Management Plan.

Projects identified in East County that incorporate stormwater capture and management include:

- Dutch Slough Phase 1
- Kellogg Creek Sedimentation Basin
- Knightsen Bio-filter Project
- Marsh Creek Reservoir Expansion
- Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)
- Pinn Brothers Marsh Creek Riparian Restoration Project

Water Conservation

The participating agencies recognize that effective demand management is a key aspect of meeting future water supply needs. The Cities of Brentwood and Pittsburg, CCWD, and NHI are members of the California Urban Water Conservation Council (CUWCC). The CUWCC strives to integrate urban water conservation Best Management Practices (BMPs) into the planning and management of California’s water resources through development of statewide partnerships among urban water agencies, public interest organizations, and private entities. East County water agencies anticipate additional water savings from demand management in the future, attributable to continued commitment to aggressive and innovative water conservation programs.

The Future Water Supply Study identifies an effective conservation program that includes a suite of initiatives, including:



Commercial Washing Machine³⁶

³⁶ Image from CCWD website, accessed 06/02/05: <http://www.ccwater.com/conserves/c-commwashingmachine.asp>.

- *System operations and loss reductions:* System upgrades that reduce water losses from seepage, evaporation and leaks, including canal lining, leak detection and repair, corrosion control programs;
- *Public information and education:* Programs to promote public awareness of water conservation, including media campaigns, workshops, school presentations, newsletters, bill inserts, speakers to community groups, coordination with government agencies, industry and public interest groups;
- *Pricing and incentives:* Water rate structure that provides customers with an incentive for keeping water use low;
- *Ordinances and plan reviews:* Model landscape ordinance and water waste prohibition regulations;
- *Audits:* Audits of all major customer categories (Single and Multi-family residential, Commercial and Light Industrial, Landscape and Industrial) encompassing distribution and installation of interior plumbing features, leak detection, review of irrigation system performance, preparation of personalized irrigation schedules, and distribution of educational information;
- *Ultra Low Flow Toilet (ULFT) Rebate Program:* Rebate program for replacement of non-efficient toilets with ULFTs.

This conservation program is consistent with the CUWCC BMPs with a focus on efficient irrigation practices, ULFT rebate programs, and audit programs designed to improve water use efficiency of industrial users. It is anticipated that this program will result in an annual savings of 1-2% of the total service area demand.

Conservation programs are integral to the East County agencies' abilities to meet the future water supply needs of the region. Like water recycling, desalination in East County has the additional benefit of improving delivered water quality within the region by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered.

Agencies will continue to explore opportunities to expand upon conservation efforts as new water saving technologies emerge. In addition, the City of Brentwood is currently evaluating an Irrigation Controller Replacement Program for near-term implementation, with the goal of reducing outdoor water use in the City.



Water Quality Protection and Improvement

East County agencies have evaluated a variety of alternatives for protecting and improving water quality within the Region. A wide variety of supply sources are employed throughout East County, each with unique water quality challenges. As discussed in **Section 2.2**, the primary source water constituents of concern in East County water supplies are TDS, bromide, TOC, manganese and iron, nitrate, and boron.

CCWD and its raw water customers (the City of Antioch, the City of Brentwood, the City of Pittsburg, and DWD) receive Delta supplies, which are highly variable by season and hydrology. In addition, Delta water quality can vary significantly with intake

*Water Quality Protection is Critical to Public Health*³⁷

³⁷ Image from CCWD website, accessed 06/02/05: <http://www.ccwater.com/waterquality/>.

location. These supplies generally contain high concentrations of TDS, chloride and bromide, and this effect is most pronounced in late summer and early fall. TOC concentrations in Delta supplies are also generally high, and exhibit significant variability, making it difficult to tailor treatment methods appropriately. CCWD conveys raw water supplies to the Cities of Pittsburg and Antioch and to DWD through the Contra Costa Canal. During conveyance, groundwater seepage into the canal results in further water quality degradation. In addition, local groundwater supplies within the county have exhibited high concentrations of TDS, chloride, hardness, nitrate, and arsenic.

As development continues to threaten source water quality and water quality regulations continue to become more stringent, attention to water quality protection and improvement becomes increasingly more important. Several water quality and protection projects are currently being considered in East County with water quality protection and improvement as a primary goal. These include:

- Beacon West Well Head Arsenic Treatment
- CCWD Alternative Intake Project
- Contra Costa Canal Improvement Project
- Dutch Slough Tidal Marsh Restoration – Phase 1
- East Antioch Creek Marsh Restoration Project
- East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
- Jersey Island Levee Improvement
- Jersey Island 3,000 foot Cross Levee
- Kellogg Sedimentation Basin Project
- Knightsen Biofilter Project
- Marsh Creek Fish Passage Project
- Marsh Creek Reservoir Rehabilitation
- Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)
- Pinn Brothers Marsh Creek Riparian Restoration Project
- Subsidence Mitigation on Jersey Island Blind Point Area
- Willow Park Marina Well Head Treatment

In addition, CCWD operates the Los Vaqueros Reservoir to improve delivered water quality for their raw and treated water customers. By pumping water into the reservoir during periods of good Delta water quality, and storing this high quality water to be blended with Delta supplies during periods of poorer water quality in the Delta, Los Vaqueros Reservoir assists CCWD in providing high quality supplies to its raw and treated water customers. All projects that increase available water supply or reduce demands in East County (e.g., groundwater supply projects, recycled water projects, conservation measures), can reduce the quantity of Delta water required, and increase the proportion of delivered Los Vaqueros supplies, improving overall water quality within the region.

Water Recycling

Water reuse and maximization of existing resources is a cornerstone of efficient water management. East County water agencies recognize that recycled water is a reliable, drought-proof supply that can reduce dependence on more vulnerable surface water supplies. In addition, recycled water supplies can help to restore and preserve salt-water and tidal marshland habitats, turning a waste stream into a valuable resource. Maximizing recycled water supplies also frees up additional high quality potable supplies for uses requiring the highest quality water. East County agencies have evaluated numerous alternatives for optimizing the use of recycled water supplies within the region. Already, DDSD is a leader in recycled water production in California. Still, potential exists to further develop these valuable, drought-resistant supplies. That potential is recognized in the Bay Area Regional Water Recycling Program (BARWRP) 1999 Master Plan as near-term recycled water projects in the Bay Area that should be pursued.



Purple Pipes Preserve Potable Supplies

The Phase II East County Water Supply Management Study presents a detailed description of the potential for recycled water production by the wastewater treatment plants in East County. DDSD currently operates one of the largest recycled water facilities in California, which provides approximately 2.2 billion gallons per year of recycled water to two Calpine power plants and 20 acres of park and street-side landscaping near downtown Pittsburg. DDSD recently completed Phase I of their Recycled Water Master Plan, which identified potential opportunities for recycled water in the City of Pittsburg as well as in the community of Bay Point. DDSD is currently pursuing the preferred alternative identified in Phase I of the Recycled Water Master Plan. In addition, Phase II of the Recycled Water Master Plan is underway, and will identify opportunities for recycled water use in the City of Antioch.³⁸ In addition, the City of Brentwood is currently using recycled water for irrigation purposes of a sports complex, several neighborhood parks and street scapes that amount to approximately 50 acres that would otherwise been irrigated with potable water. This acreage will increase as new parks are constructed and additional facilities are constructed.

Opportunity exists for ISD, the City of Brentwood and the Town of Discovery Bay Community Services District to produce recycled water as well. The East County agencies will continue to evaluate the viability of recycled water projects as the benefits and costs become further defined and as new technology becomes available. Several water recycling projects are currently being considered for implementation in the County, including:

- Antioch Recycled Water Implementation
- City of Brentwood Non-Potable Distribution System Phase II
- City of Brentwood Non-Potable Distribution System Phase III
- Caltrans Recycled Water Implementation
- Pittsburg Recycled Water Implementation

³⁸ DDSD website: <http://www.ddsd.org/info.html>

Conjunctive Use

By optimizing groundwater and surface water resources together, conjunctive use programs have the potential to provide a number of benefits to East County agencies. These programs can enhance natural recharge to the groundwater basin, protecting groundwater basins from overdraft and subsidence and preventing saltwater intrusion while providing emergency storage.

The Phase II East County Water Supply Management Study describes the potential for development of groundwater conjunctive use programs in East County. A groundwater conjunctive use program could potentially involve storage of excess surface water in wet years in the groundwater basin for use by agricultural users to use instead of surface water in dry years. A potential candidate for this type of program would be ECCID, which currently has a large amount of groundwater use. However, because the safe yields of basins in East County are currently unknown, it is difficult to determine the potential supply reliability benefit that might be provided through development of conjunctive use programs.

Desalination

As advancements in membrane technology continue to increase the viability of desalination projects, desalination facilities become more and more attractive as year-round, drought-resistant supply sources. Desalination could benefit East County by maximizing use of existing water rights and helping to meet customer demands in dry years.



Desalination uses Reverse Osmosis

The FWSS evaluated the use of desalination at Mallard Slough as a potential firm supply source, as well as an intermittent, supplemental supply source in the event of drought or regulatory restrictions. Due to high construction costs, energy requirements, and brine disposal issues, desalination of Mallard

Slough was not considered cost-effective at the time of the FWSS, but ongoing evaluation of this alternative was recommended with FWSS updates, and with advances in technology.

In another effort, CCWD, along with three other San Francisco Bay water agencies, has completed the first phase of the Regional Desalination Project (RDP). The RDP is aimed at evaluating the feasibility of a regional desalination for meeting customer demands. Two potential site locations were identified, and future phases of the RDP will develop more detail surrounding the potential for desalination as a viable supply source for CCWD and other Bay Area partners.

As advancements in technology continue to make desalination a more cost-effective option in coming years, the East County water agencies will continue to consider new desalination projects as potential supply sources in future years. The DDSF Feasibility-Level Desalination Project is currently being considered for implementation in East County. This project would involve construction of a 5-mgd reverse osmosis desalination facility at DDSF.

Imported Water

In general, imported water refers to Delta supplies which are conveyed to water users throughout California via the State Water Project and Central Valley Project. The agencies of East County are located within the statutory Delta. As such, their Delta supplies are not imported. However, Delta supplies are imported to a vast majority of Californians.

As discussed in the Supply Reliability portion of this section, CCWD is a CVP contractor and currently relies heavily on Delta supplies. With the exception of the City of Brentwood, all of the East County water agencies purchase raw water from CCWD. Depending on hydrology, imported water deliveries to CCWD can be substantially reduced during regulatory restricted or drought years.



*Sacramento-San Joaquin Delta*³⁹

Surface water supplies, including Delta supplies and surface water storage, are important water management components for the agencies in East County, used to meet the majority of demands within the region.

Surface water supplies are hydrology-dependent, and reduced yield is expected in drier years. The agencies of East County are currently evaluating a variety of alternatives to supplement their water management portfolios and address some of the issues related to imported surface water supplies.

Land Use Planning

All water management planning efforts in East County (including the Future Water Supply Study, HCP, etc) take into consideration land use plans identified in the General Plans for each city/county. Land use planning projections provide the basis for establishing water supply projections, identifying infrastructure needs and identifying habitat areas that will need to be protected against impacts associated with urban development. Land use plans will continue to play an important role in developing effective water management strategies for the East County region. The HCP/NCCP currently being proposed for implementation in East County incorporates strict land use planning elements.

NPS Pollution Control

The goal of NPS Pollution Control programs is generally to protect or restore a water resource by reducing the pollutant delivery to that resource. NPS Pollution Control programs provide source water quality benefits, ecosystem and environmental habitat protection, and public health and safety benefits. The East County agencies recognize the importance of NPS pollution control in an overall water management approach.

In 1987, the Federal Water Pollution and Control Act (Clean Water Act or CWA) was amended to prohibit discharge of pollutants from point sources unless that discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The CWA was later amended to establish a framework for regulating municipal stormwater discharge under the

³⁹ Image from California Farm Water Coalition website, accessed 06/02/05:
http://www.cfwc.com/about/photo_delta.html

NPDES program. These regulations require municipalities to obtain NPDES permits, detailing the programs and activities required to control stormwater pollution.

In response to these requirements, nineteen cities in Contra Costa County, including the cities of East County and the Contra Costa Flood Control and Water Conservation District, formed the Contra Costa Clean Water Program. In September of 1993 and January of 1994, the Contra Costa Clean Water Program obtained five-year Joint Municipal NPDES Permits from the San Francisco Bay and Central Valley Regional Water Quality Control Boards, respectively. These permits, reissued in July of 1999 and June of 2000, respectively, contain comprehensive plans for reducing pollutants to the maximum extent practicable.

Water and Wastewater Treatment

Several water and wastewater treatment plants serve the East County region:

- *Antioch Water Treatment Plant.* The Antioch Water Treatment Plant has two parts, part A (16-mgd capacity) and part B (10-mgd capacity), for a total capacity of 26-mgd. The Antioch Water Treatment Plant also relies on chloramine disinfection.
- *Pittsburg Water Treatment Plant.* The City of Pittsburg operates a 28-mgd water treatment plant that uses chloramine disinfection.
- *Randall-Bold Water Treatment Plant.* The Randall-Bold Water Treatment Plant is a 40-mgd direct filtration plant jointly owned by DWD and CCWD. CCWD supplies to DWD and the City of Brentwood are treated at Randall-Bold WTP, which uses both pre- and post-ozonation.
- *ISD Current Wastewater Treatment Plant.* Existing wastewater facilities have the capacity to handle an average dry weather flow of 3.0-mgd at an influent BOD concentration of 188 mg/L. Treatment includes a parshall flume, two channel grinders, screw pumps, and two aerated ponds with return sludge capability.
- *DDSD Water Pollution Control Facility (WPCF).* DDSD's WPCF is a secondary treatment plant with a rated average dry weather flow (ADWF) capacity of 16.5-mgd. The major treatment processes include screening and grit removal, primary clarification, tower trickling filters, aeration, secondary clarification, and disinfection/dechlorination.



Randall-Bold Water Treatment Plant⁴⁰

All potable water within East County currently meets or exceeds drinking water quality standards, and all wastewater within the region meets or exceeds NPDES standards. In addition, as the population continues to increase and source water quality is threatened, drinking water treatment plants continue to require upgrades and expansions to accommodate new treatment technologies and larger capacities. In addition, increasingly stringent regulatory requirements are necessitating treatment where it did not used to be required.

The water and wastewater agencies within East County are committed to maintaining the highest standard of public health. To this end, they continue to evaluate the feasibility of new and innovative treatment options to meet their growing water and wastewater treatment

⁴⁰ Image from CCWD website, accessed 06/02/05: http://www.ccwater.com/photopages/pages/Randall-Bold%20Water%20Treatment%20Plant%20Front_jpg.htm

needs. The following water and wastewater treatment projects are being considered for implementation:

- City of Antioch Solids Water Treatment Plant Handling Facilities
- Beacon West Well Head Arsenic Treatment
- City of Brentwood Surface Water Treatment Facility, Phases I and II
- City of Brentwood Wastewater Treatment Plant Expansion, Phase II
- Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion
- Willow Park Marina Well Head Treatment

Water Transfers

The Phase II East County Water Supply Management Study evaluated in-county water transfers as a means for improving supply reliability for the East County agencies. The concept of maximizing East County water resources by in-county transfers and pooling of supplies was evaluated in detail in the ECWSMS. In order to maximize the pooling of supplies, new agreements would be required to enable the long-term transfer of supplies from ECCID and BBID to the agencies meeting M&I demands in East County.

One example of successful in-county transfers resulting from implementation of the recommendations of the ECWSMS is the CCWD-ECCID agreement. In response to the East County Water Supply Management Study, CCWD and ECCID entered into an agreement whereby CCWD purchases surplus ECCID water for service in the overlap area of ECCID and CCWD. The City of Brentwood receives ECCID supplies via CCWD.

One of the major supporting documents to this Plan, the Future Water Supply Study (included as **Appendix A-2**), evaluated a variety of options for out-of-county water transfers. The five alternatives deemed most feasible were:

- South Fork Feather River and Slate Creek: 30,000 AFY permit
- Yuba River: 332,700 AFY permit
- Sacramento River (Sutter Municipal Water Company/Sutter): 172,900 AFY permit
- Sacramento River (Reclamation District 108/Colusa): 199,000 AFY permit
- Sacramento River (Natomas Mutual Water Company/Sacramento): 98,200 AFY permit

Numerous institutional, legal, and environmental issues would arise if new imported water supplies were adopted, and have not been addressed to-date.⁴¹

⁴¹ Actions including crop fallowing, substitution from groundwater storage, and reservoir storage release would be required to make water available for transfer.

3.3 Integration of Water Management Strategies

The water management strategies described in the previous section were evaluated for their ability to achieve the regional objectives previously identified in **Table 3-1**. Of these strategies, those that were found to most effectively contribute to achievement of the regional objectives for the East Contra Costa County agencies were retained for inclusion in this Plan. Water management strategies included in the Plan, and the objectives they assist in addressing, are described in **Table 3-3**. As shown in this table, multiple water management strategies were found to contribute to each objective.

IRWMP Appendix A Guidelines

Section E: Integration

- Present the mix of water management strategies selected for inclusion in the Plan and discuss how these strategies work together to provide reliable water supply, protect or improve water quality, and achieve other objectives.
- Include a discussion of the added benefits of integration of multiple water management strategies.

Functionally Equivalent Documents

- Appendix B Project Documents

Table 3-3: Objectives and Water Management Strategies

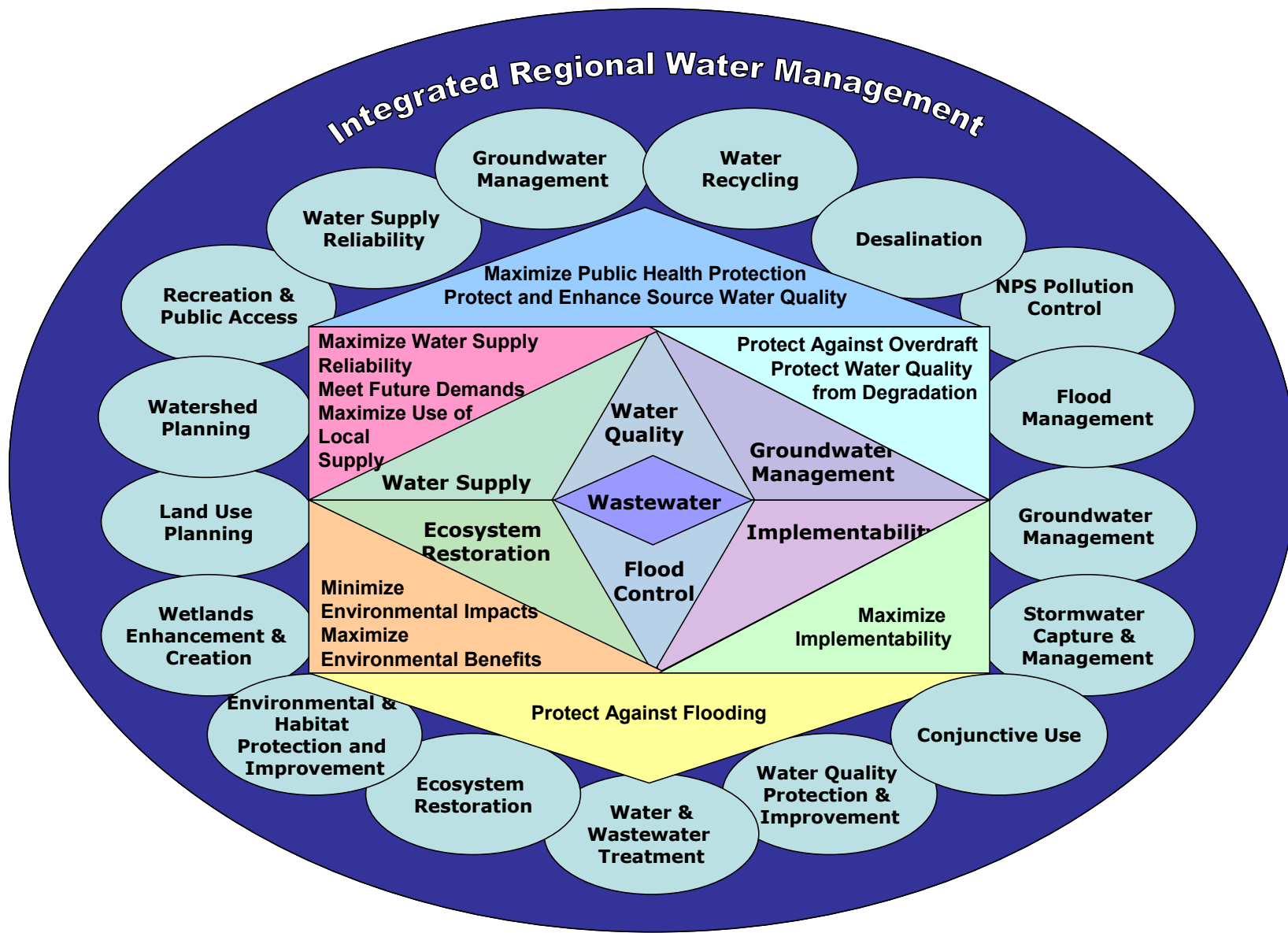
Category	Objectives	Water Management Strategies
Water Supply	<ul style="list-style-type: none"> ▪ Maximize Water Supply Reliability ▪ Meet Future Demands ▪ Maximize Use of Local Supplies/Reduce Dependence on Imported Supplies 	<ul style="list-style-type: none"> ▪ Water Supply Reliability ▪ Groundwater Management ▪ Water Recycling ▪ Desalination ▪ NPS Pollution Control ▪ Conjunctive Use ▪ Subsidence mitigation/levee stability
Water Quality	<ul style="list-style-type: none"> ▪ Maximize Public Health Protection ▪ Protect and Enhance Source Water Quality 	<ul style="list-style-type: none"> ▪ Flood Management ▪ Groundwater Management ▪ Stormwater Capture and Management ▪ Water Quality Protection and Improvement ▪ Desalination ▪ NPS Pollution Control ▪ Water and Wastewater Treatment ▪ Conjunctive Use ▪ Subsidence mitigation/levee stability
Groundwater Management	<ul style="list-style-type: none"> ▪ Protect Against Overdraft ▪ Protect Water Quality from Degradation 	<ul style="list-style-type: none"> ▪ Groundwater Management ▪ Water and Wastewater Treatment ▪ Conjunctive Use
Ecosystem Restoration	<ul style="list-style-type: none"> ▪ Minimize Environmental Impacts ▪ Maximize Environmental Benefits 	<ul style="list-style-type: none"> ▪ Ecosystem Restoration ▪ Environmental and Habitat Protection and Improvement ▪ Flood Management ▪ Stormwater Capture and Management ▪ Wetlands Enhancement and Creation ▪ Land Use Planning ▪ NPS Pollution Control ▪ Watershed planning ▪ Recreation and Public Access
Flood Control	<ul style="list-style-type: none"> ▪ Protect Against Flooding 	<ul style="list-style-type: none"> ▪ Flood Management
Implementability	<ul style="list-style-type: none"> ▪ Maximize Regional Coordination ▪ Conduct Stakeholder Outreach ▪ Maximize Cost-Effectiveness 	<ul style="list-style-type: none"> ▪ All

<i>Category</i>	<i>Objectives</i>	<i>Water Management Strategies</i>
	<ul style="list-style-type: none"> ▪ Minimize Impacts ▪ Maximize Benefits ▪ Address Environmental Justice Issues/Benefit Disadvantaged Communities 	

Integrated approaches to water management issues provide multiple economic, environmental, and long term water security benefits for the region. Combining multiple water management strategies to achieve a single objective similarly provides multiple benefits.

Combining multiple water management strategies to achieve multiple objectives allows for a diversified approach to problem solving. Each water management strategy considered will address specific objectives and span one or more categories. By integrating multiple water management strategies, each aspect of each objective is addressed by one or more strategies, resulting in a more comprehensive, redundant solution. The water quality objectives identified are not simple objectives that can be solved with a simple solution, but complex objectives requiring a multi-faceted solution. As shown in **Figure 3-3**, combining water management strategies results in an integrated approach to regional water management that not only addresses all elements of the objectives for each category, but provides redundancy.

Figure 3-3: Integrated Approach to Water Management Includes Multiple Strategies



3.4 East County Water Management Projects and Programs

A variety of projects and programs spanning multiple water management elements are being evaluated within East County. **Table 3-4** presents the projects and programs being evaluated in East County and identifies the water management strategies incorporated by each project. Additional information project information is provided below.

Antioch Recycled Water Implementation. DDSD is currently completing a recycled water master plan for the City of Antioch, which will identify a recommended alternative for implementation.

City of Antioch Solids Water Treatment Plant Handling Facilities. The City of Antioch has completed design of a water treatment plant expansion and construction of new solids handling facilities. Currently, chemically treated sludge, backwash water and filter-to-waste are all deposited in the lagoons for clarification, resulting in potential chemical contamination of nearby surface and groundwater. Development of Solids Handling Facilities will provide a source water quality benefit by reserving the lagoons for stormwater management only and eliminating this potential source of chemical contamination. In addition, the proposed solids handling facilities would allow for water recycling, which is not possible with the current design.

City of Brentwood Chloramination of Wells. This project would consist of changing the disinfection method at the existing Brentwood wells from chlorine to chloramines.

City of Brentwood Irrigation Controller Replacement Program. This project would involve replacement of existing standard irrigation controllers in residences with Intelligent Irrigation Controllers that utilize evapotranspiration, plant and soil type and micro climate to determine the irrigation schedule.

City of Brentwood Non-Potable Distribution System Phase II. This project would involve design and installation of a trunk reclaimed water pipeline, storage reservoir and increase the pumping capacity at the existing pump station.

City of Brentwood Non-Potable Distribution System Phase III. This project would extend the recycled water distribution system described in Phase II for irrigation purposes throughout Brentwood.

City of Brentwood Surface Water Treatment Facility, Phases I and II. Phase I of this project consists of the design and construction of a finished water pump station and pipeline that is sized for the ultimate build out of the City. Phase II consists of design and construction of a new surface water treatment facility to treat Brentwood surface water supply. Both of these projects are joint ventures between CCWD and the City.

City of Brentwood Wastewater Treatment Plant Expansion, Phase II. This project involves expansion of the existing wastewater treatment plant to provide additional capacity. In addition, this project involves modifications to portions of the treatment train to accommodate anticipated regulations from the RWQCB. These modifications include but are not limited to: ultraviolet (UV) disinfection to reduce the potential formation of trihalomethanes (THMs), and reverse osmosis (RO) to reduce the total dissolved solids (TDS) and salinity being discharged into the Delta.

Beacon West Well Head Arsenic Treatment. This project is designed to reduce the current 35 ug/l arsenic levels from the groundwater serving the 30 housing units in the Beacon West complex on Bethel Island (served by DWD) to below the 10ug/l standard that will take effect January 2006.

Caltrans Recycled Water Implementation. DDSD is currently completing a recycled water master plan for Caltrans, which will identify a recommended alternative for implementation.

Table 3-4: Projects and Water Management Strategies Included in Plan

Project	Water Conservation	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Stormwater Capture & Management	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	NPS Pollution Control	Watershed Planning	Water & Wastewater Treatment
Alternative Intake Project				✓					✓							
Antioch Recycled Water Implementation				✓			✓		✓	✓						✓
Antioch Water Treatment Plant Solids Handling Facilities			✓		✓			✓	✓	✓						✓
Beacon West Well Head Arsenic Treatment				✓		✓			✓							✓
Caltrans Recycled Water Implementation				✓			✓		✓	✓					✓	
CCWD Canal Improvement Project				✓					✓					✓		
Brentwood Chloramination of Wells				✓		✓			✓							✓
Brentwood Irrigation Controllers	✓			✓					✓							
Brentwood Non-Potable Water Distribution System - Phase II				✓					✓	✓						✓
Brentwood Non-Potable Water Distribution System - Phase III				✓					✓	✓						✓
Brentwood Surface Water Treatment Facility Phases I and II				✓					✓							✓
Brentwood Wastewater Treatment Plant Expansion - Phase II									✓							✓
Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan				✓		✓			✓							
DDSD Feasibility-Level Desalination Plant				✓					✓				✓			✓
Diablo Water District Well Utilization Project Phase 1 and 2				✓		✓			✓							
Dutch Slough Tidal Marsh Restoration - Phase 1		✓	✓		✓		✓	✓	✓		✓			✓		
East Antioch Creek Marsh Restoration Project		✓	✓		✓		✓				✓					
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)		✓	✓		✓		✓		✓		✓			✓	✓	
Habitat and Watershed Protection/Restoration to Jump Start the East Contra Costa County Habitat Conservation		✓	✓		✓		✓		✓		✓			✓	✓	

Project	Water Conservation	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Stormwater Capture & Management	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	NPS Pollution Control	Watershed Planning	Water & Wastewater Treatment
Plan/Natural Community Conservation Plan																
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project		✓	✓	✓		✓			✓	✓						✓
Jersey Island 3,000-foot Cross Levee				✓	✓				✓							
Jersey Island Levee Improvement				✓	✓				✓							
Kellogg Sedimentation Basin Project			✓		✓				✓							
Knightsen Bio-filter Project					✓			✓	✓		✓			✓		
Marsh Creek Delta and Tidal Marsh Restoration		✓	✓		✓						✓					
Marsh Creek Fish Passage Project		✓					✓				✓					
Marsh Creek Reservoir Rehabilitation		✓	✓		✓		✓	✓	✓		✓					
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)								✓	✓							
Pinn Brothers Marsh Creek Riparian Restoration Project		✓	✓		✓		✓	✓	✓		✓			✓		
Pittsburg Recycled Water Implementation				✓			✓		✓	✓					✓	✓
Subsidence mitigation on Jersey Island Blind Point area				✓	✓				✓							
Willow Park Marina Well Head Arsenic Treatment				✓		✓			✓							✓

CCWD Alternative Intake Project. The Alternative Intake Project will relocate one of CCWD's drinking water intakes in the central Delta to provide access to higher quality source water. The relocation will both offset water quality degradation caused by projects that increase pumping in the Delta and help meet CALFED Delta drinking water quality improvement goals. The Alternative Intake Project is a critical water quality project under the CALFED program authorized in the CALFED Bay Delta Authorization Act of 2004 (Title 1 of Public Law 108 361), and will allow the CALFED Program and the Delta Improvement Package to proceed in a balanced fashion.

Contra Costa Canal Improvement Project. The purpose of this project is to modify portions of the unlined Contra Costa Canal to improve source water quality available to CCWD, increase the flexibility of the SWP and CVP (by removing local degradation that affects the ability of the SWP and CVP to meet water quality standards at Pumping Plant No. 1), improve security and public safety, and to ensure that CCWD's water supply conveyance facilities are compatible with the changing land uses immediately adjacent to the canal. The project area includes the entire 4-mile unlined canal and will be constructed in phases as funding is made available.

Dutch Slough Tidal Marsh Restoration – Phase 1. The Dutch Slough Tidal Marsh restoration project is located at the mouth of Marsh Creek in northeast Contra Costa County. The project will restore 1,266 acres of wetland and upland habitats including tidal marsh, oak woodland, Antioch dune scrub, and shaded riverine riparian. Phase 1 entails excavating approximately 750,000 cubic yards of material on Ironhouse Sanitary District lands immediately west of the Marsh Creek flood control channel to create 100 acres of tidal marsh and riparian habitat at the mouth of Marsh Creek while cost-effectively providing fill material necessary to prepare the 1,166 Dutch Slough site east of Marsh Creek for tidal marsh restoration. Fill material from the Iron House Sanitary District lands will be used to bolster interior levees and elevate subsided areas in preparation for tidal marsh restoration at DWR's Dutch Slough project site.

After excavation, the 100 acre ISD site west of Marsh Creek will be restored to a tidal marsh and riparian habitat zone especially designed to enhance the functionality of the Marsh Creek flood control channel and to biofilter polluted water emanating from the Marsh Creek watershed. The biofiltration wetland will reduce pollutants entering the Dutch Slough site and the Delta and thereby help protect the regions water quality source from degradation by non point run-off. The project is contingent on realignment of the Contra Costa Canal associated canal pipeline project as well as permitting and funding of the ISD Wastewater Treatment Plant Expansion/Upgrade.

DWD Well Utilization Project Phase I and Phase II. This project will provide up to 3-mgd of additional supply from groundwater within the DWD service area. Current DWD maximum day demand is 9-mgd.

East Antioch Creek Marsh Restoration Project. This project is located in the lower reach of East Antioch Creek between the San Joaquin River and Lake Alhambra. The reservoir rehabilitation will be conducted in two phases and has three identified goals: enhanced marsh expansion and restoration, increased tidal and storm flow capacity, and establishment of community-based conservation through public education and outreach programs.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan. This project involves protection and/or restoration of approximately 1,500 acres of key habitat for rare, threatened, and endangered. Habitats to be protected and restored include: annual grassland, oak savannah, oak woodland, chaparral, riparian vegetation and streams, permanent wetland, and seasonal wetland.

Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion. ISD recently completed a Wastewater Facilities Plan Update which looked at various alternatives that would allow ISD to expand and upgrade existing facilities to accommodate growth and comply with anticipated discharge requirements. It is ISD's desire to secure a long-term reliable year-round effluent disposal method which is envisioned to include, to some degree, a surface water discharge to the San Joaquin River. The Plan recommended evaluation in the subsequent EIR upgrades to the treatment plant that would allow discharge of treated effluent by means of a combination of land disposal/river discharge or year-round river discharge to the San Joaquin River.

Jersey Island Levee Improvement. This project would involve the use of dredge and other fill materials to reinforce land side of levees on Jersey Island adjacent to Dutch Slough, Big Break and San Joaquin River.

Jersey Island 3,000 foot Cross Levee. This project would involve construction of a levee to separate the southwestern tip of Jersey Island for containment to separate water management for subsidence reversal project in the Blind Point area.

Kellogg Sedimentation Basin Project. Reclamation District 800 (Byron Tract) is responsible for maintaining the channels in the Town of Discovery Bay as part of its authority to provide drainage to lands within its boundaries. This project would involve construction of a detention basin on approximately 80 acres of land adjacent to Kellogg Creek to desilt the diverted water before entering back into Kellogg Creek.

Knightsen Biofilter Project. The community of Knightsen has been experiencing significant flooding during periods of heavy rain. Stormwater mixes with outflow from septic systems and contaminates drinking water. A two-phase Water Quality Wetland Feasibility Study within the Knightsen area was completed to identify potential locations and types of water quality and flood control facilities that can be constructed. This project would involve construction of the proposed drainage facilities in 3 phases between 2008 and 2013.

Marsh Creek Fish Passage Project. The objective of this project is to modify a six-foot dam on Marsh Creek to provide passage for fall run Chinook salmon to reach seven miles of habitat upstream. A partnership that includes NHI, the county flood control agency, the City of Brentwood, DWR, East Bay Regional Park District, American Rivers and others have undertaken a project to construct a fish ladder to allow Chinook salmon unhindered passage over the dam.

Marsh Creek Reservoir Rehabilitation. The Marsh Creek Reservoir is located approximately four miles south-west of Brentwood. The reservoir currently lacks sufficient storage volume to protect against a 1% recurrence interval (100-year) storm. The CCC FC & WCD intends to expand the storage capacity of the reservoir to provide necessary flood protection while restoring the tributary streams on site to improve habitat, create wetlands, and provide mitigation opportunities.

Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed). The project involves protecting sources water from mine tailings piles at a closed mercury mine located on Horse Creek and Dunn Creek (tributary to Marsh Creek) near the intersection of Marsh Creek Road and Morgan Territory Road. This will be accomplished by covering mine tailings with soil cap and vegetation to reduce or prevent precipitation from contacting the mine tailings, and diverting runoff and upslope groundwater flows around the tailings pile. Other components of the project include improving the functionality of the adjacent settling pond to increase its effectiveness in removing suspended mercury from stormwater runoff.

Pinn Brothers Marsh Creek Riparian Restoration Project. Working in collaboration with the City of Brentwood, CCC FC & WCD and NHI, the Pinn Brothers developers plan to restore a

floodplain and riparian vegetation along 1,900 linear feet of Marsh Creek as part of a 579-unit subdivision development on 79 acres in downtown Brentwood. This project is the longest stretch of undeveloped land adjacent to Marsh Creek in the City of Brentwood.

City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan. This project will involve exploration of new groundwater sources and expansion of groundwater use in the City of Pittsburg to supplement water supply from the Delta. In addition, this project will include development of an AB 3030 Groundwater Management Plan.

Pittsburg Recycled Water Implementation. DDS recently completed a recycled water master plan for the City of Pittsburg. This Plan included a recommended alternative for implementation which includes improvements designed to provide 615 AFY of recycled water supply to City Park, City Hotel, Stoneman Park, and the Delta View Golf Course.

Subsidence Mitigation on Jersey Island Blind Point Area. This project would develop permanently flooded wetlands for stopping and reversing effects of subsidence.

Willow Park Marina Well Head Treatment. This project is designed to reduce the current 13 ug/l arsenic levels from the groundwater serving the 162 housing units in the Willow Park Marina complex on Bethel Island (served by DWD) to below the 10 ug/l standard that will take effect January 2006.

3.5 Regional Priorities

This section identifies near and long-term projects for plan implementation and describes the process by which projects included in the Plan were prioritized. **Table 3-5** presents a preliminary assessment of short and long-term projects for implementation.

IRWMP Appendix A Guidelines

Section F: Regional Priorities

- Include short-term and long-term priorities for implementation of the Plan. Discuss the process for modifying priorities in response to regional challenges.

Functionally Equivalent Documents

- Appendix B Project Documents

Table 3-5: Short-term and Long-term Projects

Project	Short-Term	Long-Term
Alternative Intake Project	✓	
Antioch Recycled Water Implementation		✓
Antioch Water Treatment Plant Solids Handling Facilities	✓	
Beacon West Well Head Arsenic Treatment		✓
Caltrans Recycled Water Implementation		✓
CCWD Canal Improvement Project	✓	
City of Brentwood Chloramination of Wells	✓	
City of Brentwood Irrigation Controller Replacement Program	✓	
City of Brentwood Non-Potable Water Distribution System - Phase II	✓	
City of Brentwood Non-Potable Water Distribution System - Phase III		✓
City of Brentwood Surface Water Treatment Facility Phases I and II	✓	
City of Brentwood Wastewater Treatment Plant Expansion - Phase II	✓	
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	✓	
DDSD Feasibility-Level Desalination Plant		✓
Diablo Water District Well Utilization Project Phase 1 and 2	✓	
Dutch Slough Tidal Marsh Restoration - Phase 1	✓	
East Antioch Creek Marsh Restoration Project	✓	
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)		✓
Habitat and Watershed Protection/Restoration (Jump Start) - HCP/NCCP	✓	
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	✓	
Jersey Island 3,000-foot Cross Levee		✓
Jersey Island Levee Improvement		✓
Kellogg Sedimentation Basin Project		✓
Knightsen Bio-filter Project		✓
Marsh Creek Fish Passage Project	✓	
Marsh Creek Reservoir Rehabilitation	✓	
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)		✓
Pinn Brothers Marsh Creek Riparian Restoration Project		✓
Pittsburg Recycled Water Implementation	✓	
Subsidence Mitigation on Jersey Island Blind Point area		✓
Willow Park Marina Well Head Arsenic Treatment		✓

Short-Term Projects

Implementation of projects included in the Plan will be phased, based on short-term and long-term project implementation. Short-term projects were identified by agencies as projects that:

- Improve water supply reliability
- Improve water quality
- Reduce dependence on imported water
- Assist in achieving the regional objectives
- Provide multiple benefits
- Eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance

Projects included for short-term implementation have been shown to be feasible and cost-effective. In addition to these criteria, projects designated as short-term are those that were deemed to be ready to proceed.

Long-Term Projects

Long term projects for plan implementation include projects and projects that meet the regional objectives but are not ready to proceed and require additional time to assess feasibility, cost-effectiveness, and implementation schedule/constraints.

Prioritization

As part of the integrated regional planning process, the East County agencies developed a procedure for prioritizing both short- and long-term projects. As detailed in **Appendix C-1**, the East County agencies constructed a system for prioritizing projects that assigned highest priority to those projects that were found to most effectively address each of the regional objectives and the Proposition 50 Integrated Regional Water Management Grant Program Preferences as outlined in Appendix A of the Program Guidelines. Additional consideration was given to those projects that were identified as agency top priorities, have a high percentage of local funding in place, demonstrate synergies with other projects, and are ready to proceed. This prioritization process was intended to identify a group of diverse projects that pose the greatest potential benefit to the region.

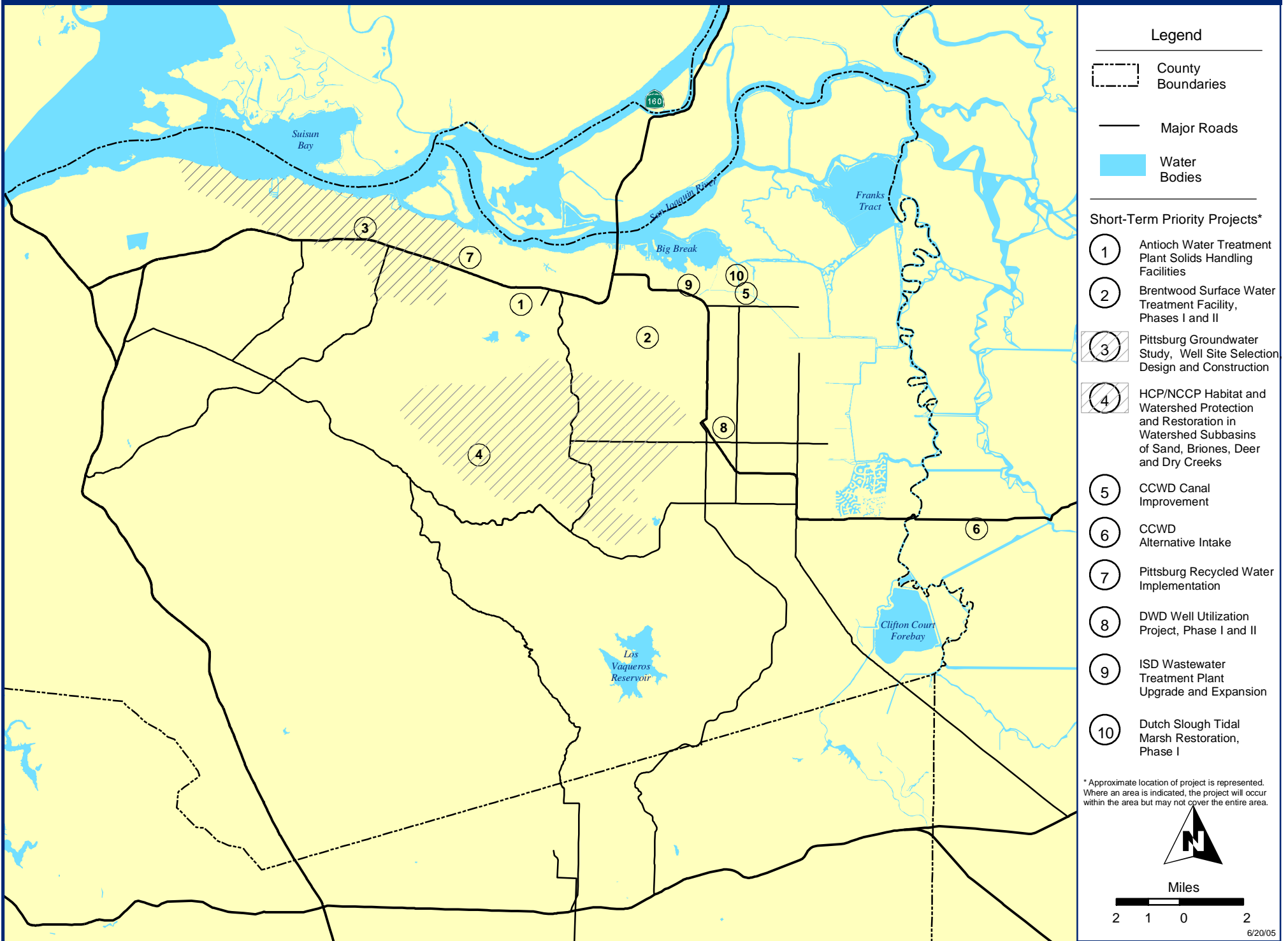
The ten projects identified as the highest priority for short-term implementation by the East County agencies are:

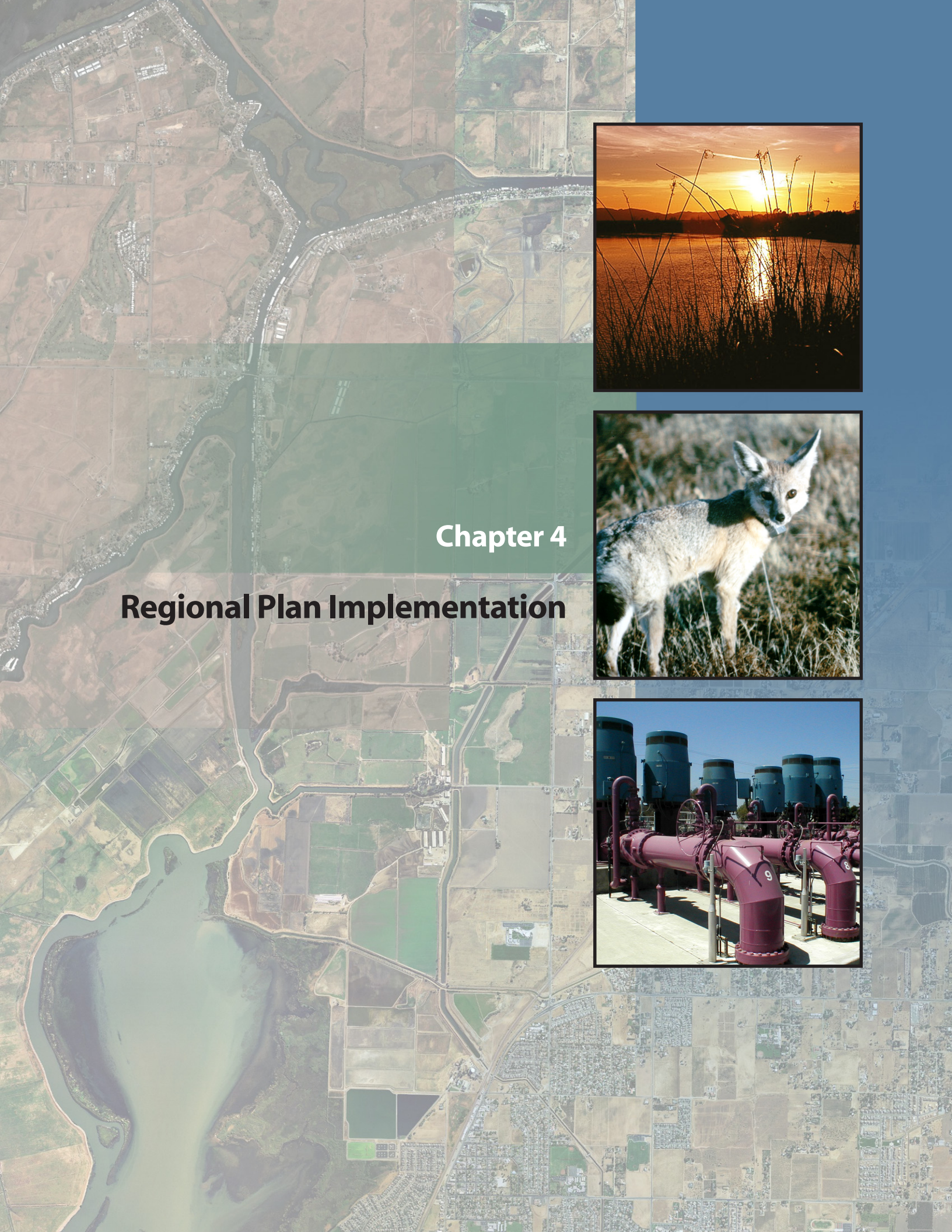
- Alternative Intake Project
- City of Antioch Water Treatment Plant Solids Handling Facilities
- City of Brentwood Surface Water Treatment Facility Phases I and II
- CCWD Canal Improvement Project
- Diablo Water District Well Utilization Project Phase 1 and 2
- Dutch Slough Tidal Marsh Restoration – Phase I
- Habitat and Watershed Protection/Restoration to Jump Start the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

-
- Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project
 - Pittsburg Recycled Water Implementation
 - City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan

These high priority, short-term projects balance agency interests, regional objectives, program preferences, and other considerations. Locations of these high priority projects can be seen in **Figure 3-4**.

Figure 3-4: Locations of Short-Term, High Priority Projects in East County





Chapter 4

Regional Plan Implementation

4 REGIONAL PLAN IMPLEMENTATION

Each of the agencies participating in development of this Functionally Equivalent Plan currently has its own planning efforts in place. In addition, several ongoing regional planning efforts continue to progress within East County. This Functionally Equivalent Plan is intended to integrate other regional water management documents either developed or under development the region. The Plan does not aim to duplicate efforts of local agencies and regional partnerships, but rather to coalesce various agency water management efforts and formulate a comprehensive approach to meeting regional water management challenges. By working together to create this document, East County agencies endeavor to avoid potential conflicts and inconsistencies between their individual planning documents and to address any gaps in the region from a water management or geographic context.

This section presents additional information regarding the projects identified as short-term and long-term projects for implementation, including the East County agencies, implementation schedule, impacts and benefits, performance metrics, data management, and financing. In addition, discussion is included pertaining to the ability of each project to achieve statewide priorities, relationship to land use planning, stakeholders involvement and opportunities for additional coordination with other local, state and federal agencies.

4.1 Implementation

This Plan will be implemented through short- and long-term implementation of a series of projects and programs designed to achieve the regional objectives. **Table 4-1** provides the following information about each project/program identified for Regional Plan implementation:

- Agencies responsible for project implementation: Lead agency(ies) identified as responsible for project implementation;
- Linkage between projects: relationship between implementation of projects included in the Plan;
- Project status: the current level of project development (e.g., planning stages, CEQA complete, in construction, etc);
- Anticipated schedules and timelines.

IRWMP Appendix A Guidelines

Section G: Implementation

- Identify specific actions, projects and studies, ongoing or planned, by which the Plan will be implemented.
- Identify the agency(ies) responsible for project implementation and clearly identify linkages or interdependence between projects
- Demonstrate economic and technical feasibility on a programmatic level
- Identify the current status of each element of the Plan, such as existing infrastructure, feasibility, pilot, or demonstration project, design completed, etc.
- Include timelines for all active or planned projects and identify the institutional structure that will ensure Plan implementation

Functionally Equivalent Documents

- Appendix B Project Documents

Each project included in the Plan has been demonstrated to be economically and technically feasible. Supporting feasibility documentation for each project included for short-term implementation is included in **Appendix B**.

For each project included in the Plan, a lead agency has been identified as responsible for overseeing project implementation. In addition, the East Contra Costa Regional Water Management Group will be responsible for periodically reviewing the progress of the Plan in achieving the regional objectives, and reassessing project priorities as needed. Additional

project oversight committees will be established by the Regional Water Management Group as necessary.

Table 4-1 describes the current status and projected schedule for each project in the Plan. **Figure 4-1** shows the projected schedule for short-term priority project implementation.

Table 4-1: Projects and Programs for Plan Implementation

Project	Agency(ies) Responsible	Project Status	Schedule and Linkages to Other Projects
Short-Term Priority Projects			
Alternative Intake Project	CCWD	Public scoping completed; preparing draft EIR/EIS. Public review of EIR/EIS is targeted for fall 2005, and CCWD Board will consider certification of EIR in April 2006.	Planning: 2005-mid 2006 Design and Construction: 2006-2009
Antioch Water Treatment Plant Solids Handling Facilities	City of Antioch	Design completed	Bid period: 06/2005 Construction 8/2005 through 09/2006
CCWD Canal Improvement Project	CCWD	Planning stage; CEQA/NEPA underway	Pre-Design: 2005-2006 Construction: 09/06 – 09/07
City of Brentwood Surface Water Treatment Facility Phases I and II	City of Brentwood	Phase I – Mitigated Negative Declaration completed and certified, currently under construction. Phase II – Draft EIR comments due from the public on May 31, 2005. Predesign going on concurrently.	Phase I under construction with anticipated completion is February 2006. Phase II construction is currently anticipated to begin in 2006 with a completion date of early 2008.
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	City of Pittsburg	Consultant is gathering lithologic, well construction, water quality, water level, and other hydrogeologic data for areas in and around the City of Pittsburg. Site selection expected in August 2005. CEQA expected to occur in September 2005.	Based on a starting date of May 1, 2005 the consultant estimates that the wells could be completed and ready for service by June 2006.
Diablo Water District Well Utilization Project Phase 1 and 2	Diablo Water District	CEQA Mitigated Negative Declaration completed. Phase 1 is in construction with anticipated completion in spring of 2006. Phase 2 design to start Winter 2005 and construction to begin Summer 2006.	Phase 1 is currently under construction and is scheduled for completion in Spring 2006. Phase 2 will be into construction in Summer of 2006.
Dutch Slough Tidal Marsh Restoration – Phase 1	California Department of Water Resources	Land acquisition, conceptual design, and baseline surveys complete. Feasibility report scheduled for completion June 30, 2005. CEQA scheduled for completion by March 2006.	Construction scheduled to begin in 2007. The project is closely linked with adjacent the Contra Costa Canal pipeline that borders the site to the north and the Ironhouse Sanitary District wastewater treatment facility upgrade and the Jersey Island management plan. Seepage into canal or

Project	Agency(ies) Responsible	Project Status	Schedule and Linkages to Other Projects
			onto Jersey Island are major constraints on the project. Encasement of the canal in a pipeline and changes in the management of Jersey Island associated with the upgrade of the Ironhouse treatment facility will largely eliminate these constraints. The supply of 750,000 cubic yards of material from the adjacent Marsh Creek delta on ISD property is necessary for cost effectively raising portions of the Dutch Slough site to elevations suitable for tidal marsh restoration.
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP	Habitat Conservation Plan Association	Public Draft HCP/NCCP and EIR/EIS due in June. Final in late 2005. Interim acquisitions count toward implementation of HCP/NCCP, are common with other HCP/NCCPs and are needed to ensure consistency with Jump Start provisions of HCP/NCCP. Specific restoration opportunities exist on parcels that have been or are being acquired by conservation organizations that will partner with the HCPA. Can identify specific opportunities if need be, but prefer to describe the project as a focused restoration program. CEQA could be handled separate from HCP CEQA.	<p>Winter 2005-2006 -- Complete acquisitions</p> <p>Spring 2006 – Design site specific restoration and management</p> <p>Summer 2006 – Construct habitat restoration</p> <p>Summer 2006 to Summer 2011 – Monitor and adaptively manage restored habitats</p>
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	Ironhouse Sanitary District	<p>Wastewater Facilities Plan Update complete,</p> <p>Background Groundwater Study complete, Beneficial Use Impact Study complete.</p> <p>1994 EIR complete. Subsequent EIR to 1994 EIR currently being completed.</p>	<p>Design expected to begin late 2005/early 2006 with construction award by February 2007 and construction completion by August 2010.</p> <p>Without tertiary treatment and a river discharge for ISD, ISD cannot provide the land necessary to construct the Marsh Creek delta tidal marsh restoration or provide approximately 750,000 cubic yards of material necessary to stabilize the levees of the Dutch Slough project.</p>
Pittsburg Recycled Water Implementation	DDSD, City of Pittsburg	CEQA completed 03/2005	Scheduled to begin construction in early 2006

Other Short-Term Projects			
City of Brentwood Chloramination of Wells	City of Brentwood	Project is currently in the design and Public Notification Process	It is anticipated that construction will begin in winter of 2005
City of Brentwood Irrigation Controller Replacement Program	City of Brentwood	Small scale testing of controllers has been completed with an operational pilot test to begin in July of 2005.	Ongoing program to replace existing controllers with the intelligent controller.
City of Brentwood Non-Potable Water Distribution System - Phase II	City of Brentwood	Currently in the predesign phase	Construction is anticipated to begin in spring of 2006 and this project is somewhat linked to the Wastewater Treatment Plant Expansion Project - Phase II due to the location of the pump station at the plant.
City of Brentwood Wastewater Treatment Plant Expansion - Phase II	City of Brentwood	Predesign beginning in July 2005	This project is linked to the reclaimed water distribution system projects as the water reclamation pumps are located on the treatment plant site.
East Antioch Creek Marsh Restoration Project	Contra Costa Flood Control and Water Conservation District	Right of way has been acquired. Preliminary design work and grant application has been completed. Project is currently waiting for funding.	Construction expected no earlier than 2008.
Marsh Creek Fish Passage Project	Natural Heritage Institute	35% design plans available by May 31. Have funding to complete permitting. Seeking funding for 100% design documents and construction.	Two-week construction schedule anticipated for the spring of 2006
Marsh Creek Reservoir Rehabilitation	Contra Costa Flood Control and Water Conservation District	Right of way has been acquired. CCC FC & WCD has committed to a community-based, collaborative planning effort to scope and design the project. This process is not expected to start until mid-2006 at the earliest.	Construction expected in 2008.
Long-Term Projects			
Antioch Recycled Water Implementation	DDSD, City of Antioch	Master Planning underway, scheduled to be completed late spring of 2005 with potential recycled water projects and CEQA review to follow	
Beacon West Well Head Arsenic Treatment	Diablo Water District	Preliminary planning stages	
Caltrans Recycled Water Implementation	DDSD, Caltrans	Master Planning underway, scheduled to be completed late spring of 2005 with potential recycled water projects and CEQA review to follow	

City of Brentwood Non-Potable Water Distribution System - Phase III	City of Brentwood	Conceptual plans and alignments as shown in the reclaimed water master plan.	The schedule is currently undetermined and this project is somewhat linked to the wastewater treatment plant expansion project due to the pump station location at the plant.
DDSD Feasibility-Level Desalination Plant	DDSD	Feasibility study complete	Project concept is being included as part of the Regional Desalination Project being developed by CCWD, EBMUD, SCVWD, and SFPUC. Site selection scheduled for October 2005.
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	Habitat Conservation Plan Association	Public Draft HCP/NCCP and EIR/EIS due in June. Final in late 2005. Interim acquisitions count toward implementation of HCP/NCCP, are common with other HCP/NCCPs and are needed to ensure consistency with Jump Start provisions of HCP/NCCP. Specific restoration opportunities exist on parcels that have been or are being acquired by conservation organizations that will partner with the HCPA. Can identify specific opportunities if need be, but prefer to describe the project as a focused restoration program. CEQA could be handled separate from HCP CEQA.	To Be Determined Tasks include: Complete acquisitions, Design site specific restoration and management, Construct habitat restoration, Monitor and adaptively manage restored habitats
Jersey Island 3,000-foot Cross Levee	California Department of Water Resources	Environmental documentation to be completed before March 2006	Construct over 3 years. First year cost would be \$3 M.
Jersey Island Levee Improvement	Ironhouse Sanitary District	Environmental documentation currently being prepared	Scheduled for 2006 and beyond. Linked to Dutch Slough Project to reduce potential for seepage onto island due to opening of Dutch Slough to tidal inundation.
Kellogg Sedimentation Basin Project	Reclamation District 800	Working to develop conceptual design	TBD
Knightsen Bio-filter Project	Knightsen Town Community Service District (KTCS)	Planning stages	Anticipated construction window: 2008-2013
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)	Contra Costa Flood Control and Water Conservation District	Watershed Mercury Assessment Report has been completed. Report includes recommendations and a work plan.	Feasibility of project is dependent on passage of a "Good Samaritan" legislation that protects project proponents from liability.
Pinn Brothers Marsh Creek	NHI	CEQA is complete. The Brentwood City Council	The first phase of construction will begin in

Riparian Restoration Project	City of Brentwood Contra Costa Flood Control District	approved the EIR in February 2005. Final plans are currently being developed in collaboration with the City of Brentwood Parks and Recreation and Engineering Departments, the Natural Heritage Institute, and the Contra Costa County Flood Control District.	2006. This project will provide improved habitat for salmon migrating upstream when the Marsh Creek Fish ladder is constructed. The project will improve water quality for the Dutch Slough project.
Subsidence Mitigation on Jersey Island Blind Point area	California Department of Water Resources	Environmental documentation to be completed before March 2006	Begin in 2006
Willow Park Marina Well Head Arsenic Treatment	Diablo Water District	Planning stages	

Figure 4-1: Projected Schedule for Short-Term Project Implementation

Project	Year					
	2005	2006	2007	2008	2009	2010
Short-Term Priority Projects						
Alternative Intake Project						
Antioch Water Treatment Plant Solids Handling Facilities						
CCWD Canal Improvement Project						
City of Brentwood Surface Water Treatment Facility Phases I and II						
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan						
Diablo Water District Well Utilization Project Phase 1 and 2						
Dutch Slough Tidal Marsh Restoration – Phase 1						
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP						
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project						
Pittsburg Recycled Water Implementation						
Other Short-Term Projects						
City of Brentwood Chloramination of Wells						
City of Brentwood Irrigation Controller Replacement Program						
City of Brentwood Non-Potable Water Distribution System - Phase II						
City of Brentwood Wastewater Treatment Plant Expansion – Phase II						
East Antioch Creek Marsh Restoration Project						
Marsh Creek Fish Passage Project						
Marsh Creek Reservoir Rehabilitation						

4.2 Impacts and Benefits

Implementation of the Plan will provide numerous benefits to the East Contra Costa Regional Water Management Group, their customers, and the Sacramento-San Joaquin Delta. Further, due to the profound ecological importance of the Delta system, benefits that accrue to the Delta environment will affect millions of Californians. Minimization of impacts and maximization of benefits were identified as key regional objectives by the East County agencies.

As such, the projects included for implementation in the Plan have been selected, in part, due to their ability to provide maximum benefit with minimum impact. Anticipated benefits and potential impacts associated with Plan implementation are included in **Table 4-2**.

In addition to the project-specific benefits anticipated to accrue from project implementation, additional benefits are expected to result from a regional approach to planning, including:

- *Increasing Regional Understanding.* By working together as a group, each agency gains a deeper understanding of the effects of their projects on other agencies, as well as the effects of other agencies' projects on their own agency. This in turn will assist agencies in developing projects that minimize the types of interagency conflicts that can ultimately prevent projects from gaining the support necessary to proceed to implementation.
- *Economies of Scale.* Many of the East County agencies use common sources of supply. As a result, many agencies share the same water management challenges. By coming together to develop integrated regional approaches to water management, resources can be pooled, maximizing efficiency on a regional scale. In this way, existing resources can be optimized, duplication of efforts can be avoided, and larger-scale efforts can be established, potentially providing a greater benefit than from individual efforts alone.
- *Fostering Support.* When planning is conducted on a regional scale, more parties are involved in projects from the planning stage. Each participant brings to the planning process his or her own values and priorities. The result is projects that not only minimize impacts to more parties, but incorporate benefits to more parties as well. When more benefits are realized and impacts avoided, more support follows.

The East County Water Supply Management Study process and other early regional planning efforts helped to build trust and coordination between the East County agencies. As a result, many issues that could have developed into conflicts were either avoided or successfully addressed by the agencies. For example, DDSD and CCWD were able to negotiate an agreement for recycled water production in overlapping service areas, ISD was able work with CCWD to resolve potential groundwater/surface water issues related to ISD discharge, and potential issues related to overlap in the DWD and Brentwood service areas were avoided.

Regional planning allows a holistic approach to water management to be taken, by integrating project elements from different water management agencies to develop a more effective overall project. For example, taking a regional approach to planning helps to identify opportunities for combining projects to achieve synergies. For example, the ISD Wastewater Treatment Plant Upgrade and Dutch Slough Projects would not be possible on their own. However, by combining the projects, feasibility can be established and greater benefits realized. This is just one example of integrating projects on a regional scale to achieve greater benefits to communities, habitat and wastewater treatment.

IRWMP Appendix A Guidelines

Section H: Impacts and Benefits

- Discuss at a screening level the impact and benefits of Plan implementation within the region and adjacent areas.
- Discuss added benefits of regional planning

Functionally Equivalent Documents

- Appendix B Project Documents

While no environmental justice concerns have been identified for East County, Plan implementation is projected to provide benefits to disadvantaged communities within East County. Disadvantaged communities have been identified within the general areas of Pittsburg and Antioch. Pittsburg and Antioch are the potential locations of several projects included in this Plan, including the Pittsburg Recycled Water Implementation Project, the Antioch Recycled Water Implementation Project, the Caltrans Recycled Water Implementation Project, the DDSD Feasibility-Level Desalination Plant, the City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan projects. These projects will improve water supply and quality within disadvantaged communities, and provide irrigation to public parks within these communities. Similarly, the Dutch Slough Tidal Marsh Restoration Project will provide free public access to Delta shoreline. The stakeholder processes associated with these projects will include members of disadvantaged communities within the respective areas served. In addition, the CCWD Canal Improvement and CCWD Alternate Intake projects will improve water quality throughout East County, benefiting disadvantaged and non-disadvantaged communities alike.

Table 4-2: Anticipated Benefits and Potential Impacts from Plan Implementation

Project	Anticipated Benefits	Potential Impacts
Short-Term Priority Projects		
Alternative Intake Project	<ul style="list-style-type: none"> ▪ Ensure CCWD customers’ water quality remains high especially during droughts and in late summer/fall months, despite deteriorating Delta water quality. ▪ Help meet CALFED’s water quality goals of continuous improvement and allow the CALFED Program and the Delta Improvement Package to proceed in a balanced fashion. ▪ Protect the public health by helping to ensure CCWD consistently meets or exceeds current and future drinking water quality standards. ▪ Help protect drinking water quality during emergencies such as Delta levee failures. An alternative intake location could help CCWD avoid areas of the Delta affected by an emergency 	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Antioch Water Treatment Plant Solids Handling Facilities	Source water quality benefit by reserving the lagoons for stormwater management only and eliminating this potential source of chemical contamination. In addition, the proposed Solids Handling Facilities would allow for water recycling, which is not possible with the current design.	
CCWD Canal Improvement Project	Water quality; ecosystem; flood control; public safety	Temporary construction
City of Brentwood Surface Water Treatment Facility Phases I and II	The construction of this project enhances the water supply reliability of Brentwood potable water system by providing a long term solution to Brentwood’s treatment needs. Additionally, this project will minimize Brentwood’s reliance upon groundwater as a primary source of potable water thus providing some relief to the aquifer system. This project will provide reliability in the water supply, improve water quality, and reduce the reliance upon groundwater.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	Greater water supply availability and drought protection for the 62,000 residents of the city of Pittsburg. Reduction in water demand on Contra Costa Canal system and Delta. Reduction in water supply costs for disadvantaged community.	Groundwater impacts unknown. Existing groundwater table does not appear to be fully utilized. Project construction will include two monitoring wells. Groundwater level and water quality monitoring will also be included at two existing well sites.
Diablo Water District Well Utilization Project Phase 1	Greater water supply protection for the 30,000 residents of Oakley. Drought supply. Emergency backup supply in the	Diablo Water District has begun monitoring of other water wells within

Project	Anticipated Benefits	Potential Impacts
and 2	event surface water treatment plant were to fail. Will leave more water in the Delta for the Environment. Will help relieve demand on surface water supplies. Will improve delivered water quality by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered.	two miles of the wells being constructed as part of the project and will have two years of baseline hydrogeology data prior to the wells going into operation. DWD will continue monitoring wells in the area to verify no impact from the project.
Dutch Slough Tidal Marsh Restoration – Phase 1	Currently, Marsh Creek is a trapezoidal flood control channel void of trees and other riparian vegetation. This project will create a unique natural stream delta at mouth of Marsh Creek. Approximately 100 acres of tidal marsh and riparian woodland will provide habitat for a host of threatened and endangered species including Sacramento splittail, juvenile Chinook salmon, California black rail, giant garter snake, and western pond turtle.	Like other tidal marsh restoration projects, the project has the potential to increase mercury methylation. Project will increase dissolved organic carbon in Delta water, but entrainment in drinking water intakes is likely to be small due to projects location in western Delta.
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP	Conservation of habitat for RTE species consistent with an HCP that will be part of the ECC IRWMP Functionally Equivalent Approval and implementation of the HCP will enable full utilization of water rights in the East County area Protection of watershed lands and hydrological function in the IRWMP planning area	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	Improve groundwater quality, 750,000 cubic yards of material to Dutch Slough tidal marshland, ecosystem enhancement, seepage control.	Discharge of treated effluent to San Joaquin River.
Pittsburg Recycled Water Implementation	Improved water supply reliability & water use efficiency. Will improve delivered water quality by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered. Parks irrigation benefits to disadvantaged community. Reduction in wastewater discharge to Delta.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Other Short-Term Projects		
City of Brentwood Chloramination of Wells	Reduces the amount of water to be diverted from the delta.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
City of Brentwood Irrigation Controller Replacement Program	Reduces the overall water demand due to irrigation equating to less water needed from the ground or the delta and reduces the municipal runoff associated with over watering.	No impacts have been identified for this project.
City of Brentwood Non-Potable Water Distribution System - Phase II	Minimize the water requirements from the City’s groundwater wells and the delta for potable water currently used as irrigation.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.

Project	Anticipated Benefits	Potential Impacts
City of Brentwood Wastewater Treatment Plant Expansion – Phase II	Reduce the potential for THMs and reduce the salt and TDS levels in Marsh Creek and the delta.	Rate increases to cover additional capital and operations costs. No negative environmental impacts identified at this time.
East Antioch Creek Marsh Restoration Project	Create valuable habitat (both wetland and upland) for threatened and endangered species, Provide new public access and public education of environmental issues Create and enhance 26 acres of saline emergent wetland by restoring tidal action to East Antioch Creek Improve overall health of severely degraded marsh Increased flood protection.	Temporal impacts from excavation and restoration of marsh area.
Marsh Creek Fish Passage Project	This project will provide passage to an additional seven miles of stream for fall-run Chinook salmon, including 3 miles of excellent spawning habitat. When restored, this run will pass through downtown Brentwood offering exceptional public outreach and educational opportunities in California’s fastest growing city.	No significant long-term impacts have been identified for this project
Marsh Creek Reservoir Rehabilitation	Increased flood protection. New public access and trail connection to parklands. Restoration of heavily grazed, degraded streams. Improved riparian, wetland and oak woodland habitat. Continued containment of mercury sediments.	Temporal impacts from excavation of additional storage upstream of the existing wet pool. Impacts expected to be mitigated by having project included in the East County Habitat Conservation Plan.
Long-Term Projects		
Antioch Recycled Water Implementation	Improved water supply reliability & water use efficiency. Will improve delivered water quality by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered. Parks irrigation benefits to disadvantaged community. Reduction in wastewater discharge to Delta.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Beacon West Well Head Arsenic Treatment	Meet drinking water standards	
Caltrans Recycled Water Implementation	Improved water supply reliability & water use efficiency. Will improve delivered water quality by reducing the amount of potable water required by the region, allowing a higher fraction of high quality Los Vaqueros Reservoir supplies to be delivered. Parks irrigation benefits to disadvantaged communities. Reduction in wastewater discharge to Delta.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
City of Brentwood Non-Potable Water Distribution	Minimize the water requirements from the City’s groundwater wells and the delta for potable water currently used as	Temporary construction impacts anticipated; no significant long-term

Project	Anticipated Benefits	Potential Impacts
System – Phase III	irrigation.	impacts have been identified.
DDSD Feasibility-Level Desalination Plant	This study could establish the feasibility of a regional brackish water desalination facility for supply reliability in the Bay Area.	Brine discharge, fisheries impacts
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	Conservation of habitat for RTE species consistent with an HCP that will be part of the ECC IRWMP Functional Equivalent Approval and implementation of the HCP will enable full utilization of water rights in the East County area Protection of watershed lands and hydrological function in the IRWMP planning area	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Jersey Island 3,000-foot Cross Levee	Reduced risk for Jersey Island flooding and water supply disruption for over 22 million Californians. Allow for containment of Blind Point area for subsidence reversal project.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Jersey Island Levee Improvement	Reduced risk for Jersey Island flooding and water supply disruption for over 22 million Californians.	Temporary construction impacts anticipated; no significant long-term impacts have been identified.
Kellogg Sedimentation Basin Project		TBD
Knightsen Bio-filter Project	Improvement in water quality as well as protection of properties within the Knightsen area	TBD
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)	Greatly reducing the amount mercury entering the watershed has tremendous health benefits for all levels of the food chain.	Temporal impacts from constructing the soil cap over the mine tailings and reconfiguring the settling pond.
Pinn Brothers Marsh Creek Riparian Restoration Project	Currently, Marsh Creek is a trapezoidal flood control channel void of trees and other riparian vegetation. This project will expand the Marsh Creek channel, creating enough room to restore riparian vegetation while maintaining the 100-year flood conveyance capacity. Riparian vegetation will provide habitat for birds, shade for the residents who use the adjacent trail, and lower the temperature in the creek to improve habitat for aquatic species such as the endangered red-legged frog, western pond turtle and spawning fall-run Chinook salmon.	The adjacent development will increase stormwater runoff into Marsh Creek.
Subsidence Mitigation on Jersey Island Blind Point area	Stops ongoing subsidence which is about 1 inch per year. Improves water supply reliability and quality, levee stability enhancement, ecosystem restoration.	Water quality; need to manage water to avoid increasing DOC loads in drainage water.
Willow Park Marina Well Head Arsenic Treatment	Meet drinking water standards	

4.3 Technical Analysis and Plan Performance

The projects included in this Plan are intended to provide multiple benefits to both the individual East County agencies and the Regional Water Management Group as a whole.

Each project included in the Plan has been developed based on analysis of historic and projected data for the individual agencies and overall region, including:

- Water supply data;
- Population information;
- Water demand information;
- Dry year supply reliability;
- Water quality data;
- Cost information for potential water management alternatives.

Depending upon the status of each project identified in this Plan, studies ranging from feasibility analyses to detailed design have been completed, establishing the technical and economic feasibility of the projects. These studies and documents are included as supporting documents in **Appendix B**. Analytical tools used to establish scientific basis for the projects included:

- Hydraulic models;
- Water quality models;
- Land use data;
- Species and habitat maps and models;
- Watershed inventories.

For each project or program included, specific project metrics have been developed, and appropriate monitoring approaches identified to assess plan performance on an ongoing basis. The anticipated metrics and monitoring approaches for gathering performance data and measuring Plan success are included in **Table 4-3**. As described previously, a lead agency has been identified for each project or program. This agency is the primary entity responsible for overseeing project implementation. As part of this oversight, the lead agency will be responsible for ongoing assessment of project performance. The East Contra Costa Regional Water Management Group will be responsible for periodically reviewing the overall progress of the Plan in achieving the regional objectives. Additional progress oversight committees will be established by the Regional Water Management Group as necessary.

IRWMP Appendix A Guidelines

Section I: Technical Analysis and Plan Performance

- Discuss data, technical methods and analysis used in development of the Plan
- Discuss performance measures and monitoring systems used to gather performance data
- Discuss mechanisms to adapt project operations based on performance data

Functionally Equivalent Documents

- Appendix B Project Documents

Table 4-3: Metrics and Monitoring Strategies for Performance Tracking

Project	Performance Tracking Metrics/Monitoring Strategy
Short-Term Priority Projects	
Alternative Intake Project	<ul style="list-style-type: none"> ▪ Monitor CCWD delivered water quality ▪ Evaluate CCWD’s ability to meet its goals for source and delivered water quality.
Antioch Water Treatment Plant Solids Handling Facilities	<ul style="list-style-type: none"> ▪ TBD
CCWD Canal Improvement Project	<ul style="list-style-type: none"> ▪ Reduction in salinity, organic carbon, turbidity, nutrients and pathogens in local or regional discharges and runoff ▪ Reduction in formation of regulated disinfection by-products (DBPs) in the drinking water of CCWD’s 500,000 customers
City of Brentwood Surface Water Treatment Facility Phases I and II	<ul style="list-style-type: none"> ▪ Quantity of water treated by facility ▪ Finished water quality
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	<ul style="list-style-type: none"> ▪ Monitor groundwater production with wellhead meters. ▪ Monitor groundwater levels, well efficiency and water quality of all production wells and groundwater levels of the two monitoring wells that are to be installed as part of this project ▪ Measure the quantity of benefit to Los Vaqueros Reservoir storage
Diablo Water District Well Utilization Project Phase 1 and 2	<ul style="list-style-type: none"> ▪ Monitor the groundwater flow out of the well with the use of flow meters ▪ Monitor groundwater levels of other wells within two miles of the project area for any adverse impacts ▪ The well pumps were designed as variable speed in order to reduce or increase flow based on the results of monitoring data ▪ DWD has also invested in two monitoring wells to study the health of the aquifer. ▪ Measure the quantity of benefit to Los Vaqueros Reservoir storage
Dutch Slough Tidal Marsh Restoration – Phase 1	<ul style="list-style-type: none"> ▪ Monitored using an Adaptive Management program ▪ Performance metrics will include presence of Sacramento splittail, juvenile salmon, California black rail, giant garter snake, and western pond turtle; growth and survival of splittail and juvenile salmon; acres of tidal marsh and riparian habitat.
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP	<ul style="list-style-type: none"> ▪ Strict land management, adaptive management and monitoring as outlined in HCP/NCCP
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	<ul style="list-style-type: none"> ▪ Monitor existing groundwater wells on the “mainland” property to document improved groundwater quality ▪ Monitor surface water discharge to ensure compliance with NPDES Waste Discharge Requirements.
Pittsburg Recycled Water Implementation	<ul style="list-style-type: none"> ▪ Quantity of recycled water production as a percentage of the projected 615 AFY ▪ Quantity of recycled water benefit to Los Vaqueros Reservoir storage ▪ Salt management techniques for using recycled water on golf courses and other landscape applications
Other Short-Term Projects	
City of Brentwood Chloramination of Wells	<ul style="list-style-type: none"> ▪ Well flow rates versus overall usage
City of Brentwood Irrigation Controller	<ul style="list-style-type: none"> ▪ Quantity of water used per residence on

Project	Performance Tracking Metrics/Monitoring Strategy
Replacement Program	peak days
City of Brentwood Non-Potable Water Distribution System - Phase II	<ul style="list-style-type: none"> ▪ Quantity of reclaimed water offsetting potable water for irrigation
City of Brentwood Wastewater Treatment Plant Expansion – Phase II	<ul style="list-style-type: none"> ▪ Quantity of wastewater treated by facility
East Antioch Creek Marsh Restoration Project	<ul style="list-style-type: none"> ▪ Monitor and evaluate changes in various water quality, physical and biological characteristics
Marsh Creek Fish Passage Project	<ul style="list-style-type: none"> ▪ Yearly fish counts at passage facility and in spawning gravels ▪ Number of redds ▪ Yearly sampling of juvenile out-migration ▪ Number of citizens involved in fish counts and other educational activities.
Marsh Creek Reservoir Rehabilitation	<ul style="list-style-type: none"> ▪ TBD
Long-Term Projects	
Antioch Recycled Water Implementation	<ul style="list-style-type: none"> ▪ Quantity of recycled water production ▪ Quantity of recycled water benefit to Los Vaqueros Reservoir storage ▪ Salt management techniques for using recycled water on golf courses and other landscape applications
Beacon West Well Head Arsenic Treatment	<ul style="list-style-type: none"> ▪ Measure Arsenic levels before and after treatment
Caltrans Recycled Water Implementation	<ul style="list-style-type: none"> ▪ Quantity of recycled water production ▪ Quantity of recycled water benefit to Los Vaqueros Reservoir storage ▪ Salt management techniques for using recycled water on golf courses and other landscape applications
City of Brentwood Non-Potable Water Distribution System – Phase III	<ul style="list-style-type: none"> ▪ Quantity of reclaimed water offsetting potable water for irrigation
DDSD Feasibility-Level Desalination Plant	<ul style="list-style-type: none"> ▪ Raw and treated water quality monitoring, production monitoring
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	<ul style="list-style-type: none"> ▪ Strict land management, adaptive management and monitoring as outlined in HCP/NCCP
Jersey Island 3,000-foot Cross Levee	<ul style="list-style-type: none"> ▪ Install instrumentation for monitoring of cross levee stability
Jersey Island Levee Improvement	<ul style="list-style-type: none"> ▪ Measure levee stability ▪ Measure through levee seepage water levels pre- and post-project
Kellogg Sedimentation Basin Project	<ul style="list-style-type: none"> ▪ TBD
Knightsen Bio-filter Project	<ul style="list-style-type: none"> ▪ TBD
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)	<ul style="list-style-type: none"> ▪ Periodic testing of mercury levels downstream of the project site would provide indication of project success.
Pinn Brothers Marsh Creek Riparian Restoration Project	<ul style="list-style-type: none"> ▪ Monitor: <ul style="list-style-type: none"> ▪ Survivorship of planted riparian vegetation ▪ Marsh Creek water quality before and after the restoration, including benthic macroinvertebrates ▪ Fish and wildlife species diversity and abundance.
Subsidence Mitigation on Jersey Island Blind Point area	<ul style="list-style-type: none"> ▪ Primary cause of elevation loss is oxidative loss of soil carbon ▪ Monitor carbon fluxes and land surface elevation changes to verify stopping or reversing effects of subsidence
Willow Park Marina Well Head Arsenic Treatment	<ul style="list-style-type: none"> ▪ Measure Arsenic levels before and after treatment

4.4 Data Management

As projects included in the Plan continue to evolve, details of data management and dissemination will be further developed. Data will be collected and managed in a manner intended to facilitate coordination with statewide data collection efforts, with spreadsheets and/or databases as potential tools. Water quality data will be formatted for integration with the SWRCB's statewide data management efforts.

IRWMP Appendix A Guidelines

Section J: Data Management

- Include mechanisms by which data will be managed and disseminated to stakeholders and the public and include discussion of how data collection will support statewide data needs
- Assess the state of existing monitoring efforts for water quantity and water quality, and identify data gaps where additional monitoring is needed.

Functionally Equivalent Documents

- Appendix B Project Documents

Surface Water Quality

Currently, water quality and supply is being monitored both on an individual agency and a regional scale. Since CCWD supplies raw water to the majority of the East County water agencies, CCWD water supply and water quality monitoring is common to the East County agencies. Studies such as the East County Water Supply Management Study and the Future Water Supply Study are ongoing regional planning efforts aimed at evaluating changes in water supply and water quality within the region and projecting future water supply and water quality needs and challenges. In addition, the Delta Region Drinking Water Quality Management Plan provides a detailed assessment of water quality in the Delta, including potential treatment techniques and other alternatives for water quality improvement. These regional water supply and water quality programs and studies provide solid foundational water quality and supply monitoring data. Surface water monitoring data resulting from Plan implementation will be provided to SWRCB's Surface Water Ambient Monitoring Program (SWAMP).

Groundwater Quality

Further study of groundwater basins and subbasins in East County is needed for optimal groundwater management within the region. In addition, increased groundwater supply and groundwater quality monitoring data would be helpful in characterizing the groundwater supplies in use throughout the region. Groundwater basin characterization and increased groundwater monitoring are important elements of the groundwater projects included in this Plan. Groundwater quality data resulting from Plan implementation will be made available to the SWRCB's Groundwater Ambient Monitoring Assessment (GAMA) Program.

Data dissemination to public and other stakeholders will be conducted through regular channels, including posting information on agency websites, providing written materials related to procedures for obtaining data and information, and holding workshops to disseminate data for review and comment by major stakeholders.

4.5 Financing

Financing projects continues to be a major obstacle for the East County agencies, often preventing projects from proceeding to implementation. As demands on the agencies' limited funds continue to increase, the challenge of balancing costs associated with ensuring the highest standard of water quality and supply reliability, protecting and enhancing the sensitive Delta ecosystem, and minimizing costs incurred by end-users becomes increasingly difficult. In the case of projects that benefit the environment but do not provide a measurable improvement to water supply reliability and/or water quality, this challenge becomes further intensified, as funding vehicles become more limited. Without ratepayers to fund a project, project survival depends wholly upon public assistance for implementation.

IRWMP Appendix A Guidelines

Section K: Financing

- Identify beneficiaries and potential funding/financing for Plan implementation.
- Discuss ongoing support and financing for Operation and Maintenance.

Functionally Equivalent Documents

- Appendix B Project Documents

The continuing trend in the regulatory arena, reflected in the CALFED Record of Decision (ROD), is to move toward the "beneficiaries pay" principle. This principle suggests that those receiving a benefit should bear the fiscal responsibility of projects. By this principle, recipients of water from project implementation bear the financial burden, rather than taxpayers overall, shifting the financial burden of project implementation to the local level. Costs associated with maintaining compliance with water quality regulations and ensuring sufficient supplies to growing populations in times of drought continue to escalate, and can at times be unaffordable at a local level. While the "beneficiaries pay" principle is intended to protect taxpayers from the potentially high costs associated with water resources project implementation, it does not account for benefits to the general public that accrue from many projects. If a project provides a general environmental benefit beyond improving water supply or water quality for customers directly receiving that supply, then the general public should bear fiscal responsibility for project implementation that is consistent with the general benefit received. As the costs associated with providing clean, reliable water supplies continue to compete with the pressure to keep rates down, agencies are increasingly being faced with the at times impossible task of balancing a shrinking budget.

The agencies within East County recognize the importance of maintaining the highest standards of cost-effectiveness for projects considered for implementation. In addition, as a means for protecting ratepayers from increasing water rates, East County agencies have explored a variety of potential funding vehicles, including the State Revolving Fund, Proposition 50 and other State and Federal grant programs, and local bond measures. Each of the projects identified for inclusion in this Plan has been demonstrated to be both technically and economically feasible. However, limited funding at the local level threatens to prevent project implementation. As a result, alternative potential funding vehicles have been evaluated for the majority of the projects included for implementation. Anticipated costs and potential funding sources are presented in **Table 4-4**.

Table 4-4: Anticipated Costs and Potential Funding Sources

<i>Project</i>	<i>Capital Cost</i>	<i>O&M Cost</i>	<i>Potential Funding Sources⁴²</i>	<i>Beneficiaries</i>
Short-Term Priority Projects				
Alternative Intake Project	\$96M	\$150,000/year	<ul style="list-style-type: none"> ▪ Local, State and Federal Funding ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents
Antioch Water Treatment Plant Solids Handling Facilities	\$16.2 M	\$150,000/year	<ul style="list-style-type: none"> ▪ Water Enterprise Fund ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
CCWD Canal Improvement Project	\$74.5 million	\$0.2 M/year	<ul style="list-style-type: none"> ▪ Local ▪ WRDA ▪ CALFED/Reclamation ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents
City of Brentwood Surface Water Treatment Facility Phases I and II	\$52.3 million	\$0.6 M/year	<ul style="list-style-type: none"> ▪ City funds ▪ City- and or CCWD-obtained financing ▪ User fees ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	\$1.220 million	\$75/AF pumping costs	<ul style="list-style-type: none"> ▪ Water Enterprise Fund ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment
Diablo Water District Well Utilization Project Phase 1 and 2	Total Phase 1 and Phase 2 project cost is \$11 million.	\$0.2 M/year	<ul style="list-style-type: none"> ▪ DWD funding ▪ Grant funding ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public
Dutch Slough Tidal Marsh Restoration – Phase 1	Approximately \$50 million. Phase 1, \$4 million.		<ul style="list-style-type: none"> ▪ CALFED Bay Delta Ecosystem Restoration Program ▪ Proposition 50, Chapter 8 ▪ State Coastal Conservancy 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP	\$3 million	\$0.5 M/year	<ul style="list-style-type: none"> ▪ U.S. Fish and Wildlife Service Section Land Acquisition and Restoration Grant Programs ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public

⁴² Potential funding sources are in addition to potential funding from Proposition 50, Chapter 8.

Project	Capital Cost	O&M Cost	Potential Funding Sources⁴²	Beneficiaries
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	1st Phase Capital Cost: \$53 million to \$69 million	\$3.4 M/year	<ul style="list-style-type: none"> ▪ Local funding ▪ SWRCB SFR Loan ▪ Bond Issuance ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
Pittsburg Recycled Water Implementation	\$4.61 Million	\$0.48 Million/Year	<ul style="list-style-type: none"> ▪ Federal funding through Title 16 or WRDA ▪ Local funding (City of Pittsburg) ▪ State/Federal funding ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
Other Short-Term Projects				
City of Brentwood Chloramination of Wells	\$916,522	\$60,000/year	<ul style="list-style-type: none"> ▪ City funds ▪ State/Federal funding 	<ul style="list-style-type: none"> ▪ Agency Constituents
City of Brentwood Irrigation Controller Replacement Program	\$5.5 Million	None	<ul style="list-style-type: none"> ▪ City funds (operational pilot test) ▪ State and Federal Funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
City of Brentwood Non-Potable Water Distribution System - Phase II	\$3.8 million	\$8,000/year	<ul style="list-style-type: none"> ▪ City Funds ▪ User fees 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment
City of Brentwood Wastewater Treatment Plant Expansion – Phase II	\$39 million	\$0.5 M/year	<ul style="list-style-type: none"> ▪ City funds ▪ SRF loan ▪ State and Federal funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment
East Antioch Creek Marsh Restoration Project	\$1,750,000	TBD	<ul style="list-style-type: none"> ▪ Drainage fees to be paid by developers in the East Antioch Creek Watershed plus funding commitments by the City of Antioch, Lake Alhambra 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public
Marsh Creek Fish Passage Project	\$200,000 (for 100% design documents and implementation)	\$5,000/year	<ul style="list-style-type: none"> ▪ American Rivers/NOAA ▪ Coastal Conservancy 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public
Marsh Creek Reservoir Rehabilitation	\$8,000,000	TBD	<ul style="list-style-type: none"> ▪ Grants ▪ Drainage fees paid by developers in the Marsh 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public

Project	Capital Cost	O&M Cost	Potential Funding Sources⁴²	Beneficiaries
			<ul style="list-style-type: none"> ▪ Creek Watershed ▪ Aged reservoir rehabilitation funds by the Natural Resource Conservation District ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Delta environment
Long-Term Projects				
Antioch Recycled Water Implementation	TBD	TBD	<ul style="list-style-type: none"> ▪ Local funding ▪ State/Federal funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
Beacon West Well Head Arsenic Treatment	\$3 million	\$30,000/year	<ul style="list-style-type: none"> ▪ TBD 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment
Caltrans Recycled Water Implementation	TBD	TBD	<ul style="list-style-type: none"> ▪ Local funding ▪ State/Federal funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
City of Brentwood Non-Potable Water Distribution System – Phase III	\$14.2 million	TBD	<ul style="list-style-type: none"> ▪ State and Federal Funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment
DDSD Feasibility-Level Desalination Plant	\$19.8 M	\$6.93 M/year	<ul style="list-style-type: none"> ▪ Bay Area water agencies ▪ State/Federal funding 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	\$12 million	\$4 M/year	<ul style="list-style-type: none"> ▪ U.S. Fish and Wildlife Service Section Land Acquisition and Restoration Grant Programs ▪ Local Park and Open Space tax revenue ▪ Proposition 50, Chapter 8 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public
Jersey Island 3,000-foot Cross Levee	\$ 6.6 million	\$0.05/year	<ul style="list-style-type: none"> ▪ Department of Water Resources ▪ Army Corps of Engineers 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public

Project	Capital Cost	O&M Cost	Potential Funding Sources⁴²	Beneficiaries
			(for supply of dredge material)	<ul style="list-style-type: none"> ▪ Delta environment
Jersey Island Levee Improvement	\$9 M (assumes dredge material application on 40,000 feet of levee) to be spent over 5 years	\$0.25 M/year	<ul style="list-style-type: none"> ▪ Department of Water Resources subventions and special projects programs, which expire in 2006 ▪ Army Corps of Engineers ▪ RD-830 minimal cost share 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
Kellogg Sedimentation Basin Project		TBD	<ul style="list-style-type: none"> ▪ Grants ▪ Reclamation District 800 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public
Knightsen Bio-filter Project	\$3.0 to \$7.5 M	TBD	<ul style="list-style-type: none"> ▪ Anticipated Parcel tax revenue ▪ Grants 	<ul style="list-style-type: none"> ▪ Agency Constituents
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)	TBD	TBD	<ul style="list-style-type: none"> ▪ Grants 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public
Pinn Brothers Marsh Creek Riparian Restoration Project	Approximately \$1.5 million	TBD	<ul style="list-style-type: none"> ▪ TBD 	<ul style="list-style-type: none"> ▪ Delta environment ▪ General Public
Subsidence Mitigation on Jersey Island Blind Point area	\$2.5 M	\$1 M/year	<ul style="list-style-type: none"> ▪ Department of Water Resources 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ General Public ▪ Delta environment
Willow Park Marina Well Head Arsenic Treatment	\$4 million	\$50,000/year	<ul style="list-style-type: none"> ▪ TBD 	<ul style="list-style-type: none"> ▪ Agency Constituents ▪ Delta environment

4.6 Statewide Priorities

Statewide Priorities have been identified by DWR and SWRCB with respect to regional projects. These objectives include:

- Reduce conflict between water rights users or resolve water rights disputes, including inter-regional water rights issues;
- Implementation of TMDLs that are established or under development;
- Implementation of RWQCB Watershed Management Initiatives, chapters and policies;
- Implementation of SWRCB's NPS Pollution Plan;
- Assist in meeting Delta Water Quality Objectives;
- Implementation of recommendations of the floodplain management task force, desalination task force, recycling task force, or state species recovery plan;
- Address environmental justice concerns;
- Assist in achieving one or more goals of the CALFED Bay-Delta Program.

IRWMP Appendix A Guidelines

Section L: Statewide Priorities

- Identify statewide or State agency priorities that will be met or contributed to by implementation of the plan.

Functionally Equivalent Documents

- Appendix B Project Documents

Many of the projects included in this Plan achieve one or more Statewide Priorities, as indicated in **Table 4-5**.

Table 4-5: Projects Addressing Statewide Priorities

Project	Reduce Conflicts Between Water Rights Users	Implement TMDLs	Implement Watershed Management Initiatives	Implement SWRCB's NPS Pollution Plan	Assist in meeting Delta Water Quality Objectives	Implement task force recommendations/ state species recovery plan	Address environmental justice concerns	Assist in meeting CALFED goals
Short-Term Priority Projects								
Alternative Intake Project					✓			✓
Antioch Water Treatment Plant Solids Handling Facilities						✓		✓
CCWD Canal Improvement Project				✓	✓			
City of Brentwood Surface Water Treatment Facility Phases I and II								✓
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan						✓		
Diablo Water District Well Utilization Project Phase 1 and 2								✓
Dutch Slough Tidal Marsh Restoration – Phase 1						✓		✓
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP			✓			✓		✓
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project					✓			✓
Pittsburg Recycled Water Implementation		✓				✓		✓
Other Short-Term Projects								
City of Brentwood Chloramination of Wells								
City of Brentwood Irrigation Controller Replacement Program					✓			✓
City of Brentwood Non-Potable Water Distribution System - Phase II						✓		✓
City of Brentwood Wastewater Treatment Plant Expansion – Phase II		✓			✓			✓
East Antioch Creek Marsh Restoration Project						✓		✓

Project	Reduce Conflicts Between Water Rights Users	Implement TMDLs	Implement Watershed Management Initiatives	Implement SWRCB's NPS Pollution Plan	Assist in meeting Delta Water Quality Objectives	Implement task force recommendations/ state species recovery plan	Address environmental justice concerns	Assist in meeting CALFED goals
Marsh Creek Fish Passage Project						✓		✓
Marsh Creek Reservoir Rehabilitation						✓		✓
Long-Term Projects								
Antioch Recycled Water Implementation		✓				✓		✓
Beacon West Well Head Arsenic Treatment								
Caltrans Recycled Water Implementation		✓				✓		✓
City of Brentwood Non-Potable Water Distribution System – Phase III						✓		✓
DDSD Feasibility-Level Desalination Plant						✓		✓
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)			✓			✓		✓
Jersey Island 3,000-foot Cross Levee								✓
Jersey Island Levee Improvement								✓
Kellogg Sedimentation Basin Project								✓
Knightsen Bio-filter Project								✓
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)								✓
Pinn Brothers Marsh Creek Riparian Restoration Project				✓		✓		✓
Subsidence Mitigation on Jersey Island Blind Point area								✓
Willow Park Marina Well Head Arsenic Treatment								

4.7 Relation to Local Planning

This Functionally Equivalent IRWMP is intended to serve as a unifying document for previous local and regional planning efforts. It is not intended to supercede these documents, but to combine them into one overarching regional planning document. As an umbrella document combining previous efforts, this document is consistent with the local and regional planning programs of the East County agencies.

The water management strategies, projects, and programs included in this Functionally Equivalent IRWMP originated in local planning studies and plans including local Integrated Water Resources Plans, Urban Water Management Plans, Water Supply Master Plans, Recycled Water Master Plans, Wastewater Master Plans, Capital Improvement Plans, and other local planning efforts. In addition, the water supply and demand data, objectives, and priorities incorporated into this Plan were developed based on regional planning programs such as the East County Water Supply Management Study, Stormwater Management Plan, Habitat Conservation Plan and Future Water Supply Study. These local and regional planning documents are included as part of this Plan. The relationship between this effort and local and regional planning efforts is illustrated in **Figure 4-2**.

IRWMP Appendix A Guidelines

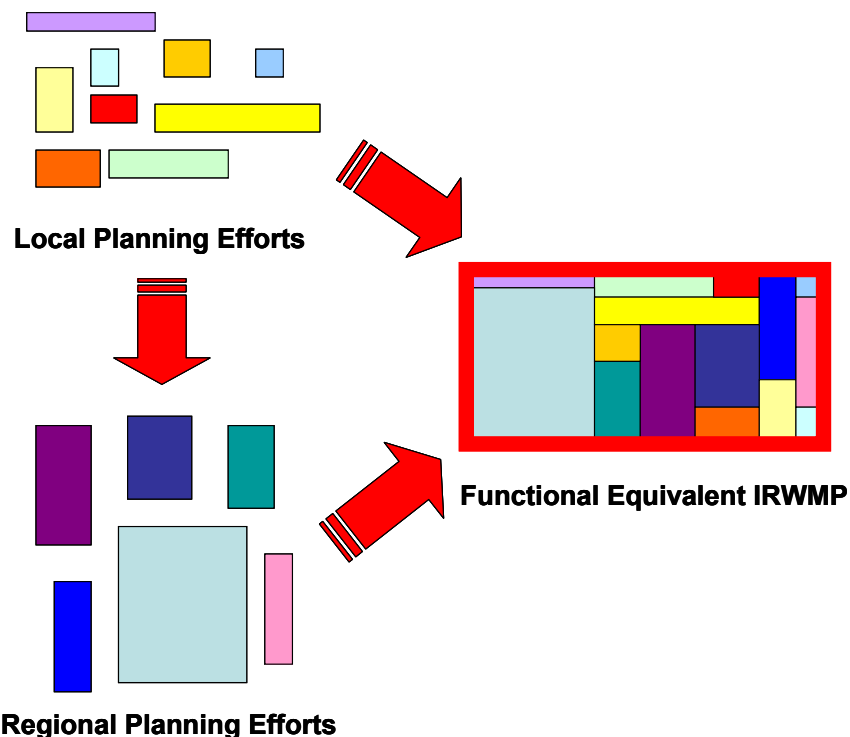
Section M: Relation to Local Planning

- Discuss how the IRWM Plan relates to planning documents and programs established by local agencies.
- Demonstrate coordination with local land-use planning decision-makers.
- Discuss how local agency planning documents relate to IRWM strategies and the dynamics between the two planning documents.
- Describe the linkages between the Plan and local planning documents.

Functionally Equivalent Documents

- East County Water Supply Management Study
- Future Water Supply Study (and 2002 Update)
- Habitat Conservation plan and Natural Community Conservation Plan
- Stormwater Management Plan
- Habitat Conservation Plan/Natural Community Conservation Plan

Figure 4-2: Relationship of Local and Regional Planning to Functionally Equivalent IRWMP



4.8 Stakeholder Involvement

Identifying and involving stakeholders is an important aspect of local and regional planning processes. There are various benefits to including stakeholders throughout the planning stages. Stakeholder involvement provides opportunity to explain the need for projects, as well as projected benefits. In addition, when parties likely to be affected by project implementation are involved from the early planning stages, potential concerns and/or opposition can be addressed early-on, and projects can be planned in a way to minimize negative impacts and maximize benefits to all affected parties. In addition, stakeholder outreach can provide an excellent forum for sharing data and soliciting feedback from interested and/or affected individuals and agencies. This Functionally Equivalent IRWMP is intended to serve as an umbrella document, uniting previous regional and local water resources planning documents. As a result, there was not stakeholder process directly associated with development of this document. However, briefings have been provided to the East County Water Management Association and all participating agencies will consider the plan in duly noticed public meetings.

The East County agencies recognize the importance of incorporating stakeholders throughout the project planning and implementation stages. Each of the projects and studies that comprise this Functionally Equivalent IRWMP included a stakeholder outreach process appropriate for the level of detail associated with that study or project. Some examples of stakeholder outreach associated with development of supporting documents for this Functionally Equivalent IRWMP include:

- *Delta Region Drinking Water Quality Management Plan.* The Delta Region Drinking Water Quality Management Plan incorporated extensive stakeholder outreach, including status reports and requests for input to stakeholders, as well as presentations to the CALFED Drinking Water Subcommittee.
- *Phase II East County Water Supply Management Study.* The ECWSMS included public notices, press releases, public workshops, presentations to stakeholder groups and development of a four-page color brochure for public distribution and communication of Study results.
- *Future Water Supply Study.* The FWSS included extensive stakeholder outreach. Stakeholders were incorporated through Board of Directors' Workshops/Public Forums, a Customer Feedback Group, Interagency Workshops, and Newsletters. The Customer

IRWMP Appendix A Guidelines

Section N: Stakeholder Involvement

- Identify stakeholders included in developing the Plan.
- Identify how stakeholders were identified, how they participate in planning and implementation efforts and how they can influence decisions made regarding water management.
- Include documentation of stakeholder involvement such as inclusion of signatory status or letters of support from non-agency stakeholders, i.e., those who have not “adopted” the Plan
- Include a discussion of mechanisms and processes that have been or will be used to facilitate stakeholder involvement and communication during implementation of the Plan.
- Discuss watershed or other partnerships developed in the planning process.
- Discuss disadvantaged communities within the region and their involvement in the planning process.
- Discuss efforts to identify and address environmental justice needs and issues within the region.
- Identify possible obstacles to Plan implementation.

Functionally Equivalent Documents

- East County Water Supply Management Study, Chapter 1, pages 1-3 to 1-6.
- Future Water Supply Study, Technical Appendices TA-G and TA-H.
- Habitat Conservation Plan/Natural Community Conservation Plan, Chapter 1, pages 1-17 to 1-18.
- Stormwater Management Plan Chapter 1, pages 1-3 to 1-4, Appendices B and C.
- Delta Region Drinking Water Quality Management Plan, Appendix 1-A.
- Appendix B Project documents

Feedback Group was established to represent all customer groups within the CCWD service area, as well as organizations concerned with public policy issues, and met numerous times over the course of the Study, helping to identify the Study's preferred alternative. The Customer Feedback Group was ultimately opened up to all interested parties, including the general public. The Interagency Group consisted of planning, resource, and regulatory agencies, and focused on assisting in identifying implementation and environmental issues associated with the alternatives. The public was notified periodically of the Study progress via newsletters.

- *HCP*. The HCP highlights the importance of public outreach and stakeholder involvement with an extensive public outreach program. The HCP Coordination Group consisted of a Stakeholder Panel, HCP Association staff and staff from State, Federal, and other agencies. The Coordination Group provided recommendations and advice to the Executive Governing Committee. The Stakeholder panel was designed to include organizations and interests with the most direct interest in the HCP process, including private permit seekers, conservation advocates, and private landowners and agriculturalists.
- *Stormwater Management Plan*. The importance of stakeholder outreach is highlighted in the Stormwater Management Plan, which identifies one of its goals as public outreach and education, aimed at educating businesses and individuals within the County to adopt less polluting and more environmentally sensitive practices.

In addition, the East County agencies each develop urban water management plans and conduct other water resources planning and management programs, through which public and stakeholder outreach mechanisms are implemented.

Recognizing the importance of early and ongoing stakeholder involvement in water resources planning, the East County agencies have plans to incorporate stakeholder outreach efforts into all of the projects and programs included in this Plan. **Table 4-6** contains further information on the stakeholder processes in place or planned for each of the projects included in this document.

No environmental justice issues have been identified for resolution by this Plan. However, the stakeholder processes that have been part of the foundational document development have succeeded in including disadvantaged communities. Disadvantaged communities within East County have been identified within the general areas of Pittsburg and Antioch. Pittsburg and Antioch are the potential locations of several projects included in this Plan, notably the Pittsburg Recycled Water Implementation Project, the Antioch Recycled Water Implementation Project, the Caltrans Recycled Water Implementation Project, the DDSF Feasibility-Level Desalination Plant, the City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan projects. The stakeholder processes associated with these projects will include members of disadvantaged communities within the respective areas served.

Due to the good faith stakeholder efforts that have taken place prior to development of this Plan, as well as the planned and ongoing stakeholder outreach efforts to be conducted as part of the projects identified for short- and long-term implementation, stakeholder opposition is not expected to be a major obstacle to Plan implementation.

Table 4-6: Planned and Ongoing Stakeholder Outreach Efforts

<i>Project</i>	<i>Stakeholder Outreach</i>
Short-Term Priority Projects	
Alternative Intake Project	Stakeholder outreach efforts include public meetings, stakeholder meetings, written updates, project web site, fact sheet, stakeholder database for distribution of project materials.
Antioch Water Treatment Plant Solids Handling Facilities	Being developed
CCWD Canal Improvement Project	Stakeholder outreach efforts include public meetings, as well as targeted stakeholder meetings.
City of Brentwood Surface Water Treatment Facility Phases I and II	Being developed
City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan	Being developed
Diablo Water District Well Utilization Project Phase 1 and 2	DWD has informed all stakeholders who may be potentially impacted by the project and has invited them to attend project information meetings. DWD has responded to stakeholder concerns and continues to answer questions on a regular basis. DWD has been in contact with the City of Brentwood, which is the closest municipality with a well that could be impacted by our project, however preliminary full flow testing of the new well has shown that there would be minimal impacts if any. The City of Brentwood and DWD are continuing to share ground water data on a regular basis.
Dutch Slough Tidal Marsh Restoration – Phase 1	The project is a component of the Dutch Slough Restoration project which includes quarterly stakeholder meetings and special public outreach events including the Dutch Slough Day of the Oakley Science Week.
Habitat and Watershed Protection/Restoration (Jump Start) – HCP/NCCP	Plan development has included 3 years of monthly stakeholder meetings that include representatives from the environmental, landowner and agricultural communities as well as other interested members of the public.
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project	Public outreach forums will be held to inform users of project.
Pittsburg Recycled Water Implementation	DDSD conducted extensive public outreach, including a two-page color brochure as well as extensive outreach to state and federal electeds, and public hearings to solicit input.
Other Short-Term Projects	
City of Brentwood Chloramination of Wells	Public notification process to begin shortly.
City of Brentwood Irrigation Controller Replacement Program	Being developed
City of Brentwood Non-Potable Water Distribution System - Phase II	
City of Brentwood Wastewater Treatment Plant Expansion – Phase II	

Project	Stakeholder Outreach
East Antioch Creek Marsh Restoration Project	The CCC FC & WCD announced the project to the local community and the community leaders of Antioch in 1999 in anticipation of the grant application. Adjacent landowners received a letter describing the phases of the proposed project to protect the sensitive habitat and enhance their valuable community resource. The project was widely supported, and considered favorable with no third party impacts identified. The City of Antioch, Lake Alhambra Homeowners Association, Contra Costa Clean Water Program, Dow Chemical, Southern Energy of California (formally PG&E), pledged in-kind contributions while the Delta Diablo Sanitation District noted they would consider both an in-kind and cost share if the proposal were funded. The CCC FC & WCD anticipates a similar response if (or when) the project is restarted.
Marsh Creek Reservoir Rehabilitation	CCC FC & WCD intends to work closely with watershed stakeholders (including Cities of Oakley and Brentwood, and the newly-formed "Friends of Marsh Creek") and the regulatory community.
Long-Term Projects	
Antioch Recycled Water Implementation	Being developed
Beacon West Well Head Arsenic Treatment	Outreach will include informing local home owners of DWD's efforts to meet water quality standards.
Caltrans Recycled Water Implementation	Being developed
City of Brentwood Non-Potable Water Distribution System – Phase III	
DDSD Feasibility-Level Desalination Plant	Being developed
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	Plan development has included 3 years of monthly stakeholder meetings that include representatives from the environmental, landowner and agricultural communities as well as other interested members of the public.
Jersey Island 3,000-foot Cross Levee	Being developed
Jersey Island Levee Improvement	Ongoing outreach is occurring with stakeholder agencies such as DWR, State Water Project contractors, Port of Stockton, and Army Corps of Engineers
Kellogg Sedimentation Basin Project	Being developed
Knightsen Bio-filter Project	The recently formed community services district has been included in this project.
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)	Land owner is willing to partner, but has limited resources to contribute.
Pinn Brothers Marsh Creek Riparian Restoration Project	The Pinn Brothers Marsh Creek Riparian Restoration Project is a top priority for the newly created Friends of Marsh Creek Watershed community group. The Friends are actively involved in the progress of this project and are working with the developer to ensure the protection and enhancement of Marsh Creek.
Subsidence Mitigation on Jersey Island Blind Point area	Being developed
Willow Park Marina Well Head Arsenic Treatment	Outreach will include informing local home owners of DWD's efforts to meet water quality standards.
Alternative Intake Project	Outreach to include public and stakeholder meetings, written updates, project web site, fact sheet, and a stakeholder database for distribution of project materials.

4.9 Coordination

As the projects identified for short- and long-term implementation continue to be developed, the state and federal agencies to be involved in the project will be identified and the type of assistance necessary will be determined.

State and federal agencies were actively involved in development of several of the foundational documents of this Functional Equivalent IRWMP, including the HCP, the Delta Region Drinking Water Quality Management Plan and the Future Water Supply Study. Additionally, several projects such as the Canal Encasement and Dutch Slough projects are part of the CALFED program. Most projects will need permits from regulatory agencies ranging from waste discharge permits from the Regional Water Quality Control Board and section 404 permits from the Corps to treatment plant operating permits from the California Department of Health Services. The permitting needs of individual projects are discussed in project documents (see **Appendix B**).

USFWS, EPA, Army Corps of Engineers and DFG have supported development of the HCP, assigning staff to participate in stakeholder efforts, reviewing draft documents, guiding development of conservation strategies and providing funding. USFWS and DFG both need to approve the HCP before it can be implemented. Because of their close involvement throughout development of the plan, the approval process will be significantly streamlined.

The Delta Region Drinking Water Quality Management Plan was funded through a grant from the CALFED Drinking Water Quality Program. CALFED staff have coordinated with the regional partners in developing the plan to ensure it helps meet CALFED drinking water quality goals. Presentations were made to the Drinking Water Subcommittee of the Bay Delta Public Advisory Committee as well as the Delta Planning Commission.

The Future Water Supply Study outreach program included an Agency Workgroup and implementation of the FWSS included consultation with USFWS under section 7 of the federal Endangered Species Act. One of the outcomes of that consultation was a commitment from CCWD to help organize, fund and develop a Habitat Conservation Plan for East Contra Costa County to help mitigate for the secondary effects of growth on terrestrial species.

The Canal Encasement and Dutch Slough projects are both CALFED sponsored projects--the Canal Encasement project helps meet drinking water quality goals and the Dutch Slough project meets ecosystem restoration goals. The U.S. Bureau of Reclamation is the federal lead agency on the Canal Encasement project. Early consultation has taken place with the Corps, NOAA Fisheries and USFWS. The Dutch Slough project is being implemented by a partnership that includes the California Department of Water Resources, CALFED, the California State Coastal Conservancy, and the City of Oakley.

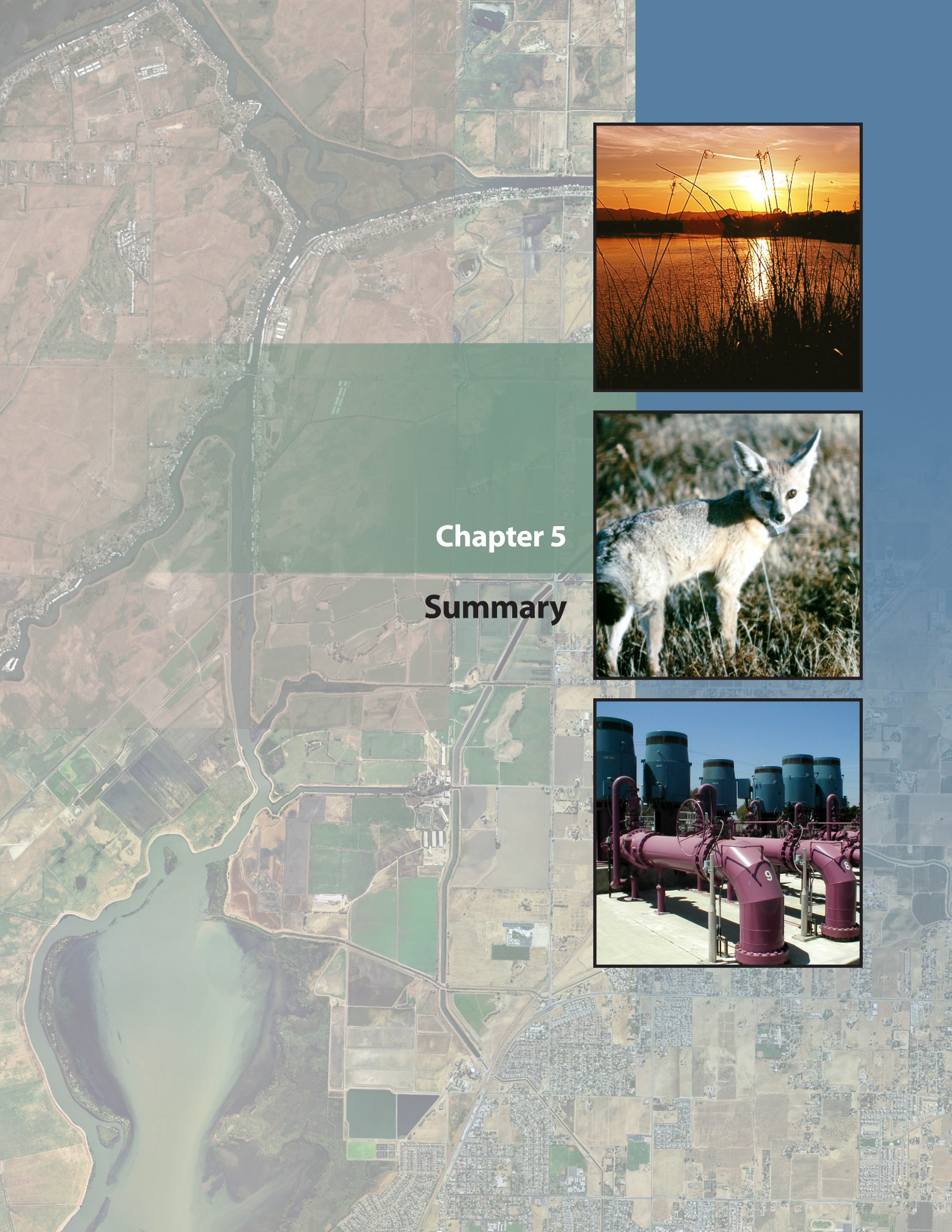
IRWMP Appendix A Guidelines

Section O: Coordination

- Identify state or federal agencies involved with strategies, actions, and projects.
- Identify areas where a state agency or other agencies may be able to assist in communication, cooperation, or implementation of Plan components or processes, or where state or federal regulatory decisions are required for implementation.

Functionally Equivalent Documents

- Appendix B Project Documents.



Chapter 5

Summary

5 SUMMARY

The East County agencies have a rich history of regional water management planning.

The agencies of East County included in, and supporting this Functionally Equivalent IRWMP represent all of the water and wastewater agencies in East County, as well as Contra Costa County and the Natural Heritage Institute. These agencies have a long history of regional water resources planning, facilitating the ongoing, integrated planning process.

Through their history of regional planning, the East County agencies have identified regional water management objectives that address their common water management challenges.

The East County agencies share common water supply, water quality, and environmental challenges. All of the East County agencies are located within the boundaries of the statutory Delta, the largest estuary on the west coast of North and South America. As such, they recognize the importance of protecting, restoring, and enhancing this environmentally sensitive ecosystem. In addition, while the East County agencies are not projecting future water supply shortfalls under normal hydrologic conditions, the rapidly growing population in the region makes meeting future water supply needs a challenge in dry years.

Through development of the Phase II East Contra Costa Water Supply Management Plan, the Future Water Supply Study, the Habitat Conservation Plan, the Stormwater Management Plan, the Delta Region Drinking Water Quality Management Plan, and other regional planning efforts, the agencies have developed a set of regional objectives for water management focusing specifically on the areas of Water Supply, Water Quality, Groundwater Management, Ecosystem Restoration, Flood Control and Implementability designed to address the region's common challenges.

A wide range of projects spanning multiple water management strategies has been identified to meet the regional objectives.

A diverse array of water management strategies and approaches was considered to meet the regional objectives and therefore address the region's common challenges. Employing a variety of different water management strategies provides a greater benefit by addressing all aspects of the challenges associated with meeting objectives while providing redundancy. A large selection of projects was identified, based on the ability of projects to meet the regional objectives and provide multiple benefits. Projects and water management strategies selected for inclusion are presented in **Table 5-1**.

Table 5-1: Projects and Water Management Strategies Included in Plan

Project	Water Conservation	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Stormwater Capture & Management	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	NPS Pollution Control	Watershed Planning	Water & Wastewater Treatment
Alternative Intake Project				✓					✓							
Antioch Recycled Water Implementation				✓			✓		✓	✓						✓
Antioch Water Treatment Plant Solids Handling Facilities			✓		✓			✓	✓	✓						✓
Beacon West Well Head Arsenic Treatment				✓		✓			✓							✓
Caltrans Recycled Water Implementation				✓			✓		✓	✓					✓	
CCWD Canal Improvement Project				✓					✓					✓		
Brentwood Chloramination of Wells				✓		✓			✓							✓
Brentwood Irrigation Controllers	✓			✓					✓							
Brentwood Non-Potable Water Distribution System - Phase II				✓					✓	✓						✓
Brentwood Non-Potable Water Distribution System - Phase III				✓					✓	✓						✓
Brentwood Surface Water Treatment Facility Phases I and II				✓					✓							✓
Brentwood Wastewater Treatment Plant Expansion - Phase II									✓							✓
Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan				✓		✓			✓							
DDSD Feasibility-Level Desalination Plant				✓					✓				✓			✓
Diablo Water District Well Utilization Project Phase 1 and 2				✓		✓			✓							
Dutch Slough Tidal Marsh Restoration - Phase 1		✓	✓		✓		✓	✓	✓		✓			✓		
East Antioch Creek Marsh Restoration Project		✓	✓		✓		✓				✓					
East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)		✓	✓		✓		✓		✓		✓			✓	✓	

Project	Water Conservation	Ecosystem Restoration	Environmental & Habitat Protection & Improvement	Water Supply Reliability	Flood Management	Groundwater Management	Recreation & Public Access	Stormwater Capture & Management	Water Quality Protection & Improvement	Water Recycling	Wetlands Enhancement & Creation	Conjunctive Use	Desalination	NPS Pollution Control	Watershed Planning	Water & Wastewater Treatment
Habitat and Watershed Protection/Restoration to Jump Start the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan		✓	✓		✓		✓		✓		✓			✓	✓	
Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project		✓	✓	✓		✓			✓	✓						✓
Jersey Island 3,000-foot Cross Levee				✓	✓				✓							
Jersey Island Levee Improvement				✓	✓				✓							
Kellogg Sedimentation Basin Project			✓		✓				✓							
Knightsen Bio-filter Project					✓			✓	✓		✓			✓		
Marsh Creek Delta and Tidal Marsh Restoration		✓	✓		✓						✓					
Marsh Creek Fish Passage Project		✓					✓				✓					
Marsh Creek Reservoir Rehabilitation		✓	✓		✓		✓	✓	✓		✓					
Mount Diablo Mercury Mine Remediation (Marsh Creek Watershed)								✓	✓							
Pinn Brothers Marsh Creek Riparian Restoration Project		✓	✓		✓		✓	✓	✓		✓			✓		
Pittsburg Recycled Water Implementation				✓			✓		✓	✓					✓	✓
Subsidence mitigation on Jersey Island Blind Point area				✓	✓				✓							
Willow Park Marina Well Head Arsenic Treatment				✓		✓			✓							✓

Short-term priority projects balance agency interests with regional objectives.

Regional projects that improve water supply reliability and water quality, reduce dependence on imported water, assist in achieving the regional objectives, provide multiple benefits, and eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance were identified as short- or long-term. Short-term projects were identified as those projects that were most cost-effective and ready to proceed. A detailed prioritization process was developed to prioritize the short- and long-term projects. Through this prioritization, the East County agencies identified ten projects as highest priority for short-term regional implementation. These projects are:

- Alternative Intake Project
- City of Antioch Water Treatment Plant Solids Handling Facilities
- City of Brentwood Surface Water Treatment Facility Phases I and II
- CCWD Canal Improvement Project
- Diablo Water District Well Utilization Project Phase 1 and 2
- Dutch Slough Tidal Marsh Restoration – Phase I
- Habitat and Watershed Protection/Restoration to Jump Start the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
- Ironhouse Sanitary District Wastewater Treatment Plant Upgrade/Expansion Project
- Pittsburg Recycled Water Implementation
- City of Pittsburg Groundwater Study, Well Site Selections, and Design and Construction of two New Municipal Wells and development of a Groundwater Management Plan

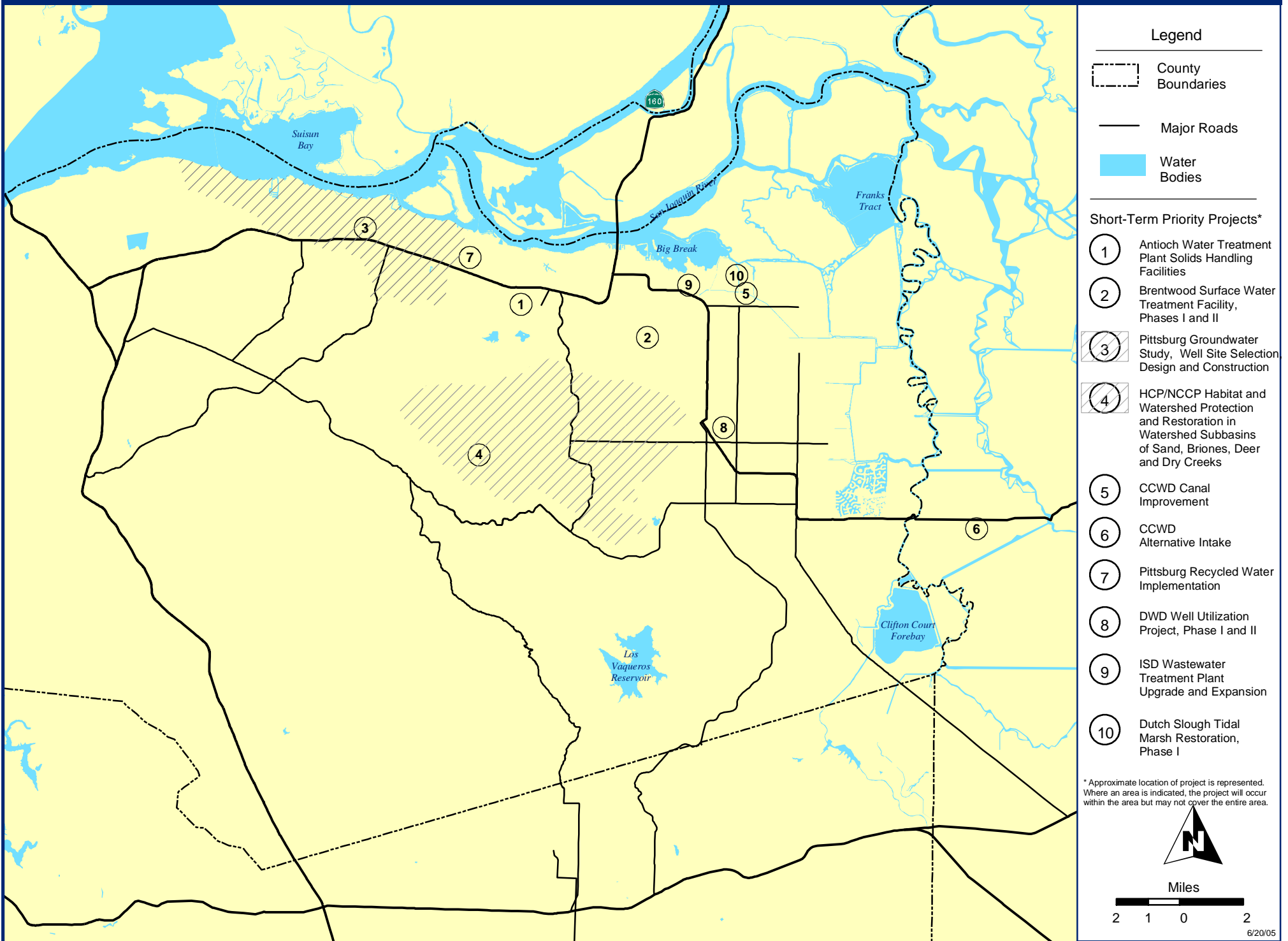
Locations of these short-term, high priority projects are shown on **Figure 5-1**.

Implementation of the Plan will provide multiple benefits through regional integration.

This Functionally Integrated IRWMP will be implemented through implementation of a series of short- and long-term projects and programs. Implementation of each of the projects included in the Functionally Equivalent IRWMP will be the responsibility of the respective lead agencies. In addition, the East Contra Costa County Regional Water Management Group will be responsible for periodically reviewing overall Plan performance and making adjustments to objectives, priorities, and projects as necessary.

A wide array of benefits is expected to result from Plan implementation, including improved water supply reliability, improved water quality, increased public health and safety protection, environmental and wetlands restoration, enhancement and creation, improved public access, and improved NPS pollution control. In addition, many specific benefits are expected to accrue to the disadvantaged communities located in the Pittsburg and Antioch areas, including improved irrigation of public parks, improved water supply reliability and improved water quality. Further benefits to disadvantaged communities include free public access to the Delta shoreline established as part of the Dutch Slough project. The environmental benefits associated with Plan implementation, similarly, are expected to far outweigh any potential impacts. Potential impacts are primarily temporary construction impacts, while an array of ecosystem creation and restoration, as well as sensitive species and habitat protection projects have been included.

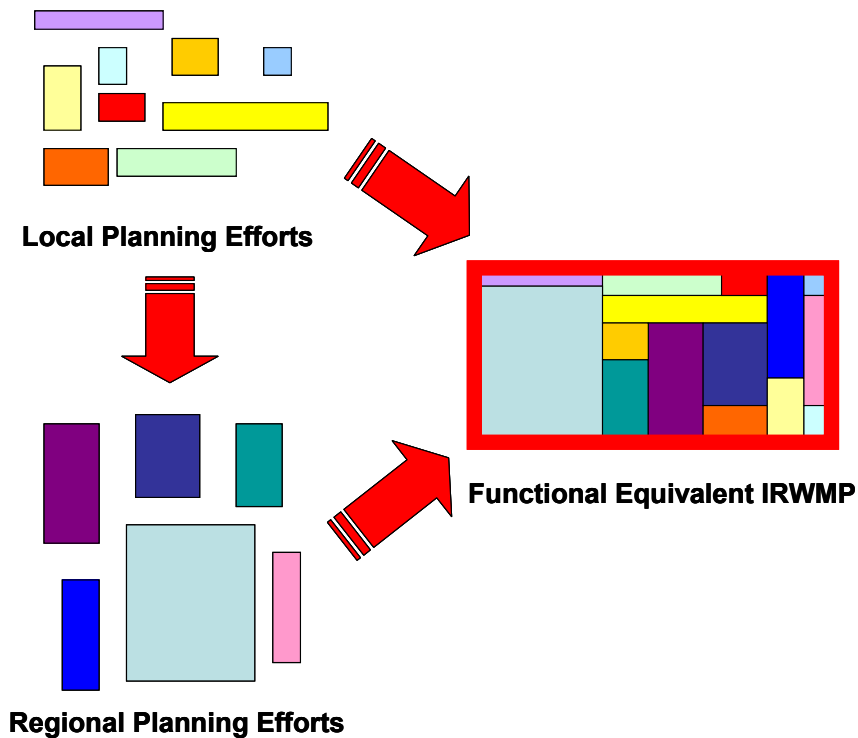
Figure 5-1: Locations of Short-Term, High Priority Projects in East County



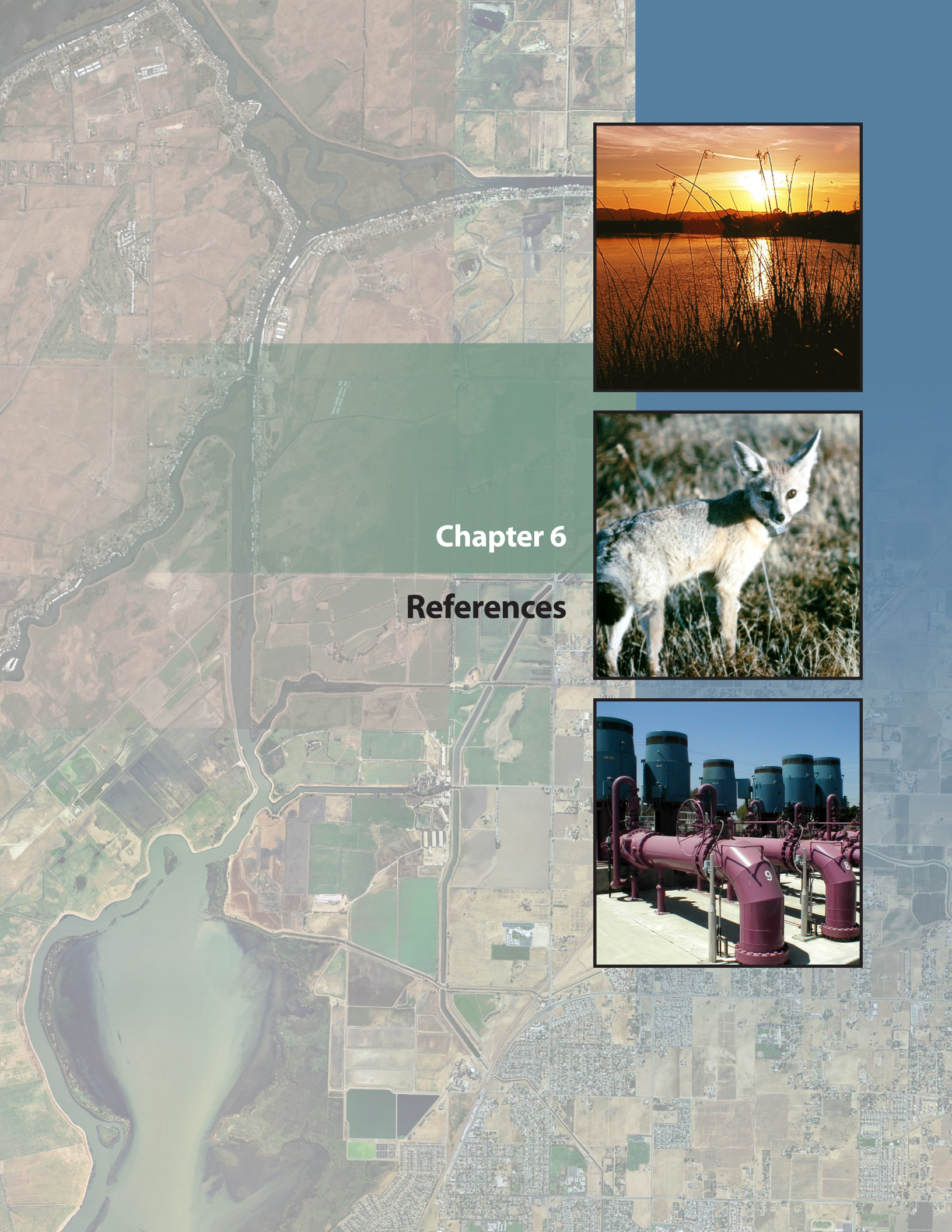
The Functionally Equivalent IRWMP integrates previous regional planning efforts into a cohesive plan for a sustainable future.

This Functionally Equivalent Plan is not intended to supercede prior local and regional planning efforts, but rather to coalesce them into a blanket regional water resources management plan for East County. The relationship between the Functionally Equivalent IRWMP and other local and regional planning efforts is shown in **Figure 5-2**.

Figure 5-2: Relationship of Local and Regional Planning to Functionally Equivalent IRWMP



The projects and programs included as part of Plan implementation are all rooted in previous local and regional planning efforts. Extensive stakeholder outreach efforts have already been conducted as part of the plans and studies comprising the foundation of this document. In addition, ongoing and planned stakeholder outreach processes are expected to help pave the way for successful plan implementation. The East County agencies recognize that joining together through regional cooperation can help them to realize greater benefits than individual planning alone. The East Contra Costa Regional Water Management Group continues to strive to provide reliable sources of high quality water to their customers while maintaining the highest standards of environmental stewardship. Implementation of this Functionally Equivalent Plan represents the next step along the road to a more sustainable future.



Chapter 6

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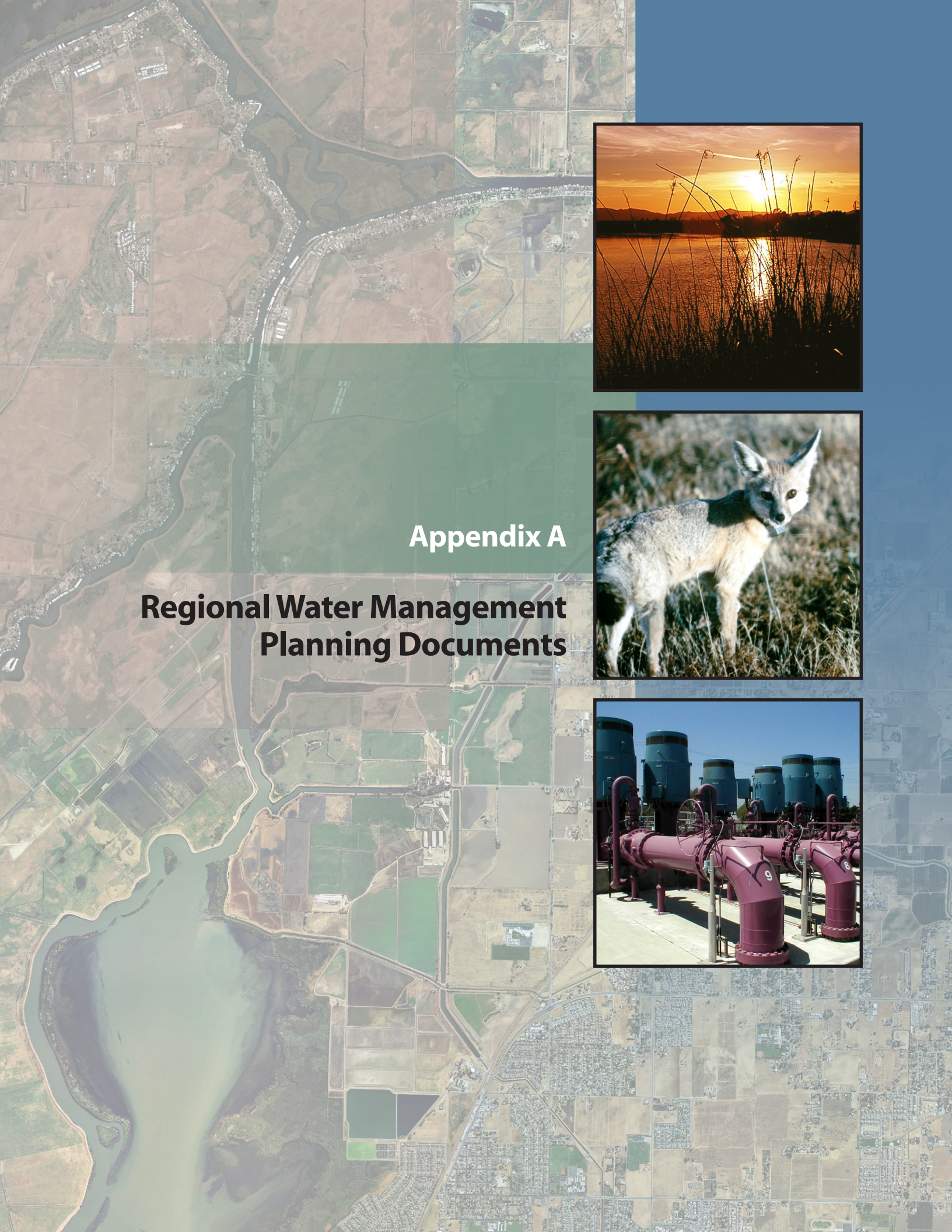
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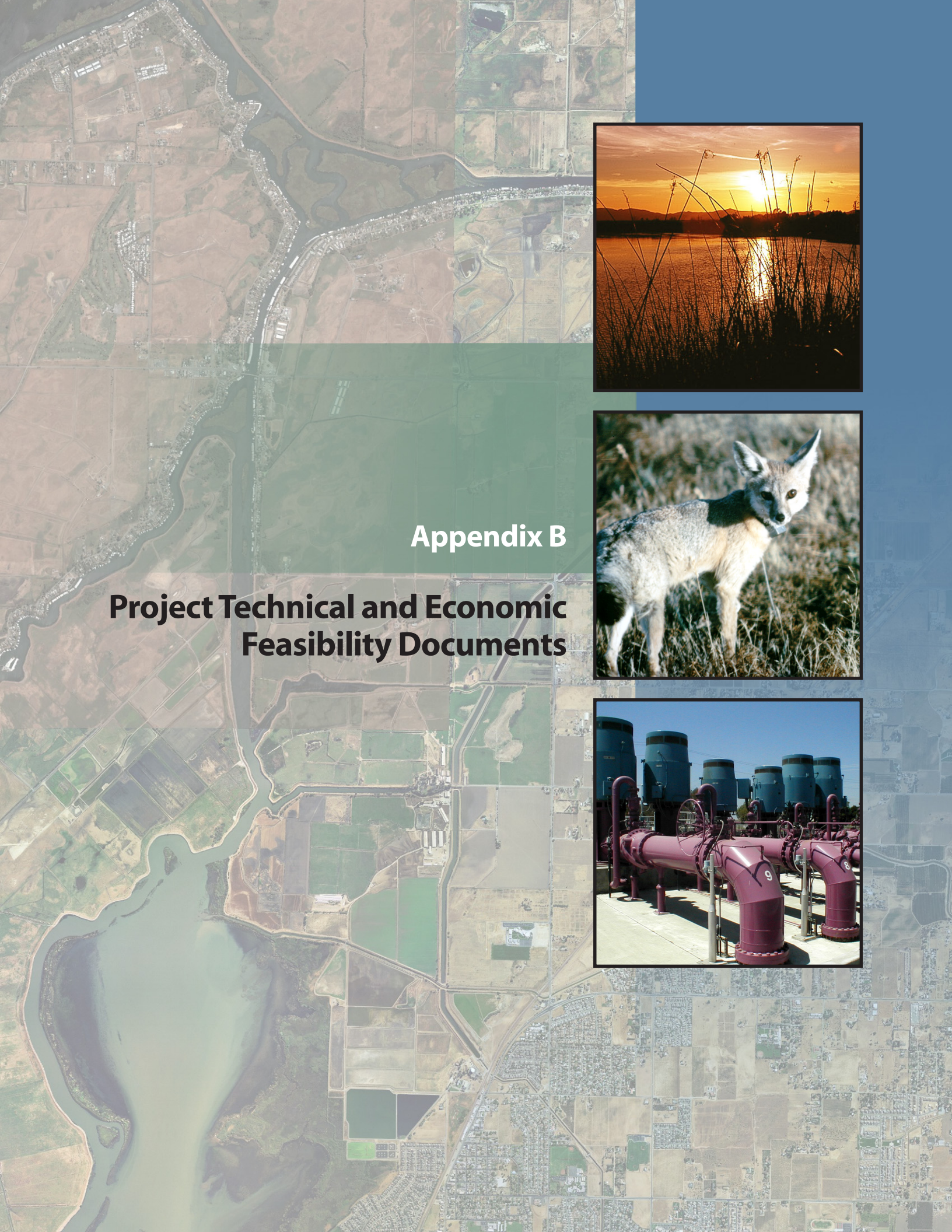
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Appendix A

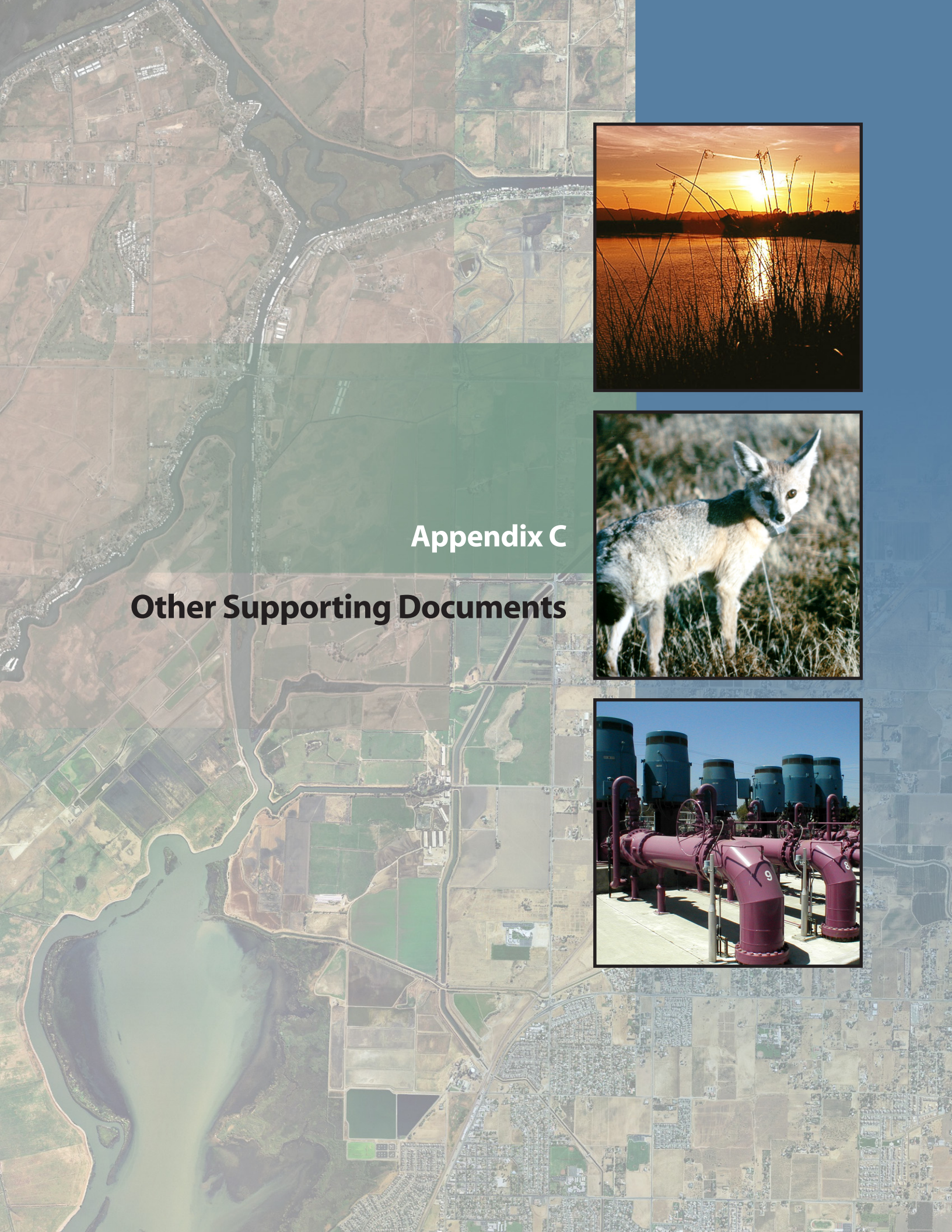
Regional Water Management Planning Documents





Appendix B

Project Technical and Economic Feasibility Documents



Appendix C

Other Supporting Documents