

# SACRAMENTO RIVER CONSERVATION AREA HANDBOOK

**JANUARY 2000**

*Prepared for The Resources Agency  
State of California  
by the Sacramento River Advisory Council  
under Senate Bill 1086  
authored by Senator Jim Nielsen*

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*Cover photo: Looking west over Murphy Slough near the M&T flood relief structure. By Geoffrey Fricker  
Chapter divider artwork: Toni Cardenas and Narca Moore Craig (Chapter 4)*

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*Dedicated to Bob Bosworth, who has grown up and worked along the Sacramento River his entire life. Bob is a strong advocate of balancing the needs of agriculture and wildlife habitat for the benefit of future generations.*

This Handbook is a "living document." As conditions change and our understanding of the river system increases, periodic updates may be made. However, substantive changes will be made following an established amendment procedure. If you would like to receive updates, have comments or corrections, or would like to submit a proposed amendment, please contact:

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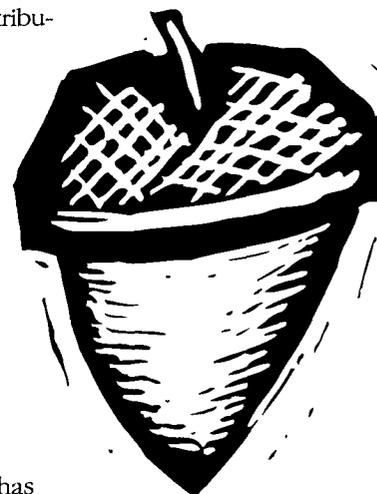
## FOREWORD

Passed by the State Legislature in 1986, Senate Bill 1086 called for a management plan for the Sacramento River and its tributaries that would protect, restore, and enhance both fisheries and riparian habitat. The law established an Advisory Council, composed of representatives of state and federal agencies, county supervisors, and representatives of landowner, water contractor, commercial and sport fisheries, and general wildlife and conservation interests.

After more than 50 lengthy meetings and workshops, the Council and its action teams developed a plan which included a specific and action-oriented fisheries plan and a more conceptual riparian habitat plan. This plan, the *Upper Sacramento River Fisheries and Riparian Habitat Management Plan (1989 Plan)*, was published in 1989. Many of the fisheries action items have since been, or are currently being implemented, such as fish bypass structures at diversions on Sacramento River tributaries and the Shasta Dam temperature control structure.

Today, the Riparian Habitat Committee of the Advisory Council is working toward on-the-ground implementation of the riparian plan, with the goals of preserving remaining riparian habitat and reestablishing a continuous riparian ecosystem along the Sacramento River. An informal and consensus-based planning group, the committee includes landowner representatives, environmental group leaders, and agency personnel. The committee was created in 1993, when the Advisory Council was reconvened by the Secretary of Resources to "complete its earlier work concerning riparian habitat protection and management, including the development of a specific implementation program."

The committee has developed this *Handbook* to guide an implementation program for riparian habitat management along the Sacramento River, and has worked to ensure that this *Handbook* addresses both the dynamics of riparian ecosystems as well as the realities of local agricultural issues. It has done this by developing a set of guiding principles and planning tools that should govern riparian habitat management along the river.



The six principles fall into the categories of:

- Ecosystem management
- Flood management
- Voluntary participation
- Local concerns
- Bank protection
- Information and education

Recommended actions include the formation of a largely locally-based nonprofit entity to coordinate voluntary restoration efforts within a 213,000-acre Sacramento River Conservation Area. The work of this proposed nonprofit organization would be supported by the various agencies and organizations along the Sacramento River through a Memorandum of Agreement. Much of the work of the organization would focus along an area within the *inner river zone guideline*, where flooding and channel movement are present, primarily between Red Bluff and Colusa. Whether a particular parcel or property is within the inner river zone will be determined on a case-by-case basis, using voluntary participation, erosion and accretion projections, and flood frequency as criteria. If all landowners within the potential inner river zone choose to participate, the area could include about 40,000 acres between Red Bluff and Colusa.

This *Handbook* is intended to guide the activities of the nonprofit organization, and to provide a bridge between the organization and those agencies that will be asked to support it. The descriptive and scientific portions of this Handbook (Chapters 2–6) are based upon current knowledge. As our understanding of the Sacramento River system improves over time, these chapters may need to be amended. Similarly, the portions of the Handbook (Chapters 1, 7, 8 and 9) dealing with institutions and policies will also become outdated as circumstances change. Therefore, it is expected that the nonprofit organization will, from time to time, adopt revisions to this Handbook.

Chapter 1 describes the guiding principles and planning tools that the nonprofit management entity will use. Chapter 2 describes the Sacramento River ecosystem and how it relates to riparian habitat. This chapter also includes a complete description of the inner river zone guidelines. Chapters 3 through 6 discuss the river ecosystem in more detail within the four broad river reaches of the Conservation Area. The restoration priorities and inner river zone guidelines are then applied to each reach. Chapter 7 describes existing riparian habitat management programs along the river. Chapter 8 describes those government agencies and private organizations that the nonprofit management entity will be working with most closely in conducting riparian habitat management activities. Chapter 9 describes the recommended actions to be carried out on-the-ground.

A series of appendices on topics useful to the nonprofit management entity is also included.

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## BASIC PRINCIPLES AND MANAGEMENT GUIDELINES

The overall goal of the management program for the Sacramento River Conservation Area (SB 1086) is to *preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico*, and reestablish riparian vegetation along the river from Chico to Verona. This will be accomplished through this incentive-based, voluntary river management plan. Riparian habitat is actually a diverse mosaic of habitat types, which is part of a bigger picture that includes the entire river ecosystem and the humans within it.

Too often, restoration is attempted piecemeal, or is carried out in ways that do not take human activities into account. In the SB1086 program, the principles which provide the foundation for all restoration work are rooted in the fact that riparian habitat is closely linked to the river ecosystem and human activities. These principles, discussed in the next section, fall into six categories:

- Ecosystem management
- Flood management
- Voluntary participation
- Local concerns
- Bank protection
- Information and education

In addition to developing these principles, the committee has also developed a set of management guidelines. These tools are described in this chapter, and discussed in greater detail throughout the *Handbook*.

- *Handbook*
- Conservation Area definition
- Inner river zone guidelines and limited meander concept
- Restoration priorities
- Site-specific planning process
- Sacramento River Geographic Information System

The following actions are recommended:



- **Form locally-based, non-profit management organization**
- **Obtain signed Memorandum of Agreement**
- **Develop site-specific plans and contracts**
  - conservation easements
  - set-aside agreements
  - bank protection
  - acquisition
  - landowner protections
  - floodplain management
- **Develop regulatory consistency/streamlining program**
- **Develop mutual assistance program**
- **Develop education and outreach program**
- **Support monitoring and research programs**

These actions are described in detail in Chapter 9. Figure 1-1 shows the relationship between the goals of the SB1086 program, its guiding principles, and the planning and action items.

### **Basic Principles:**

The guiding principles of the SB1086 Riparian Habitat Management program are as follows:

- **Ecosystem Management**—Management should take an ecosystem approach, providing for the recovery of threatened and endangered species while taking into account human-imposed constraints, using concepts such as a limited meander. Where possible, management should allow for natural revegetation in areas of the river's influence. Valley oak woodland, however, needs to be actively restored on high terrace lands.

Ecosystem management uses natural processes to create a sustainable system over the long-term, often obtaining the greatest environmental benefits at the least cost. Management decisions should be based on the whole picture—the physical environment, the biological environment, and the human environment. It takes into account the interaction between organisms, their habitat, and physical processes. We must understand how the parts of a large alluvial river system interact before we can sensibly manage its various components. Ecosystem management differs markedly from current regulatory or species centered approaches, where problems are prioritized often without reference to their context.

Another feature of ecosystem management is that working with the physical realities of the system is often cost-effective. *By using an ecosystem management approach we can often gain maximum biological and ecological benefits in the most cost-efficient manner.*

An ecosystem management approach along the Sacramento River recognizes the fact that a large river and its floodplain are inseparable with respect to water, sediment, and productivity. They are so intimately linked that they should be understood, managed, and restored as a single ecosystem. Another key concept is that lateral channel migration is the fundamental process that determines the distribution and extent of riparian vegetation in the Sacramento River system.

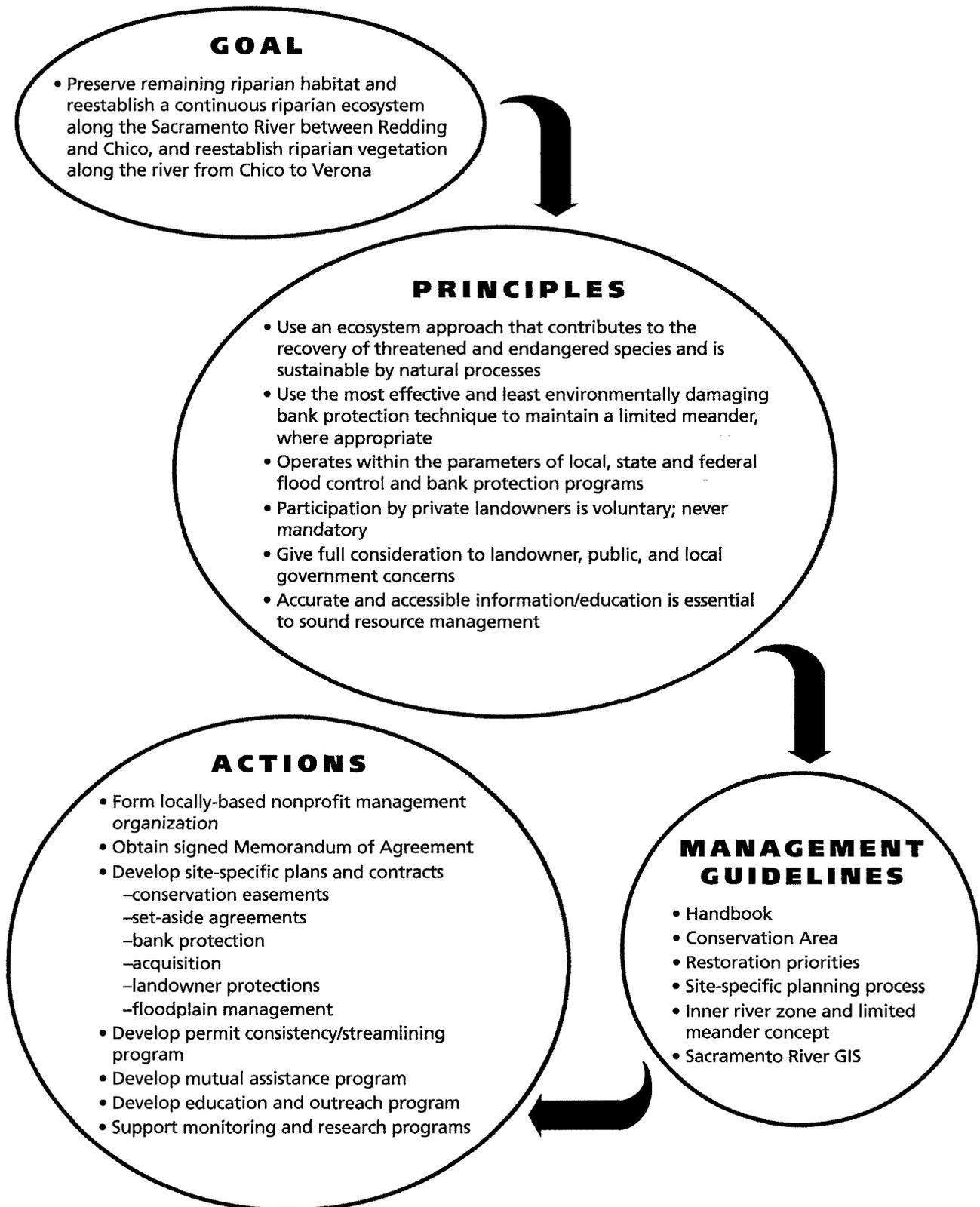


Figure 1–1. The Structure of the SB1086 Program

Chapter 2, "The Riparian Forests of the Sacramento River," lays the groundwork for ecosystem management by describing the physical and biological components of the system. This chapter also describes the *inner river zone guidelines* (pages 2-24 through 2-28), which are used to determine the most dynamic part of the river ecosystem and where a limited meander might be a useful management tool. The human component of the system is discussed in the section of Chapter 2 pertaining to flood control, as well as throughout Chapters 3 through 6 which discuss the four broad reaches of the river between Keswick and Verona.

- **Flood Control**—Conservation Area management must give full consideration to local, state, and federally-sponsored flood control and bank stabilization programs. Local flood control and bank protection issues must be resolved as part of any site-specific planning. In many cases, the county may maintain federally-constructed bank protection. The state Reclamation Board is responsible for maintaining safe floodways within the Sacramento River watershed. In some areas the Department of Water Resources is charged with maintaining flood control structures built by the federal government. The U.S. Army Corps of Engineers (USACE) constructed the Sacramento River Flood Control Project, the associated Sacramento River Bank Protection Project, and the Chico Landing to Red Bluff Project, a bank protection project. These local, state, and federal agencies should be part of any riparian habitat management planning as applicable. Chapter 7, "Local, State and Federal Agencies and Private Organizations" discusses the duties of those agencies in more detail. The role of the USACE is also discussed at the end of Chapter 2 in the section, "the Sacramento River Flood Control Project."
- **Voluntary Participation**—Because private landowners own most of the existing riparian habitat on the river, there is a need for incentives, such as conservation easements, set-aside programs, bank protection, and outright purchase to encourage their active participation in riparian habitat management. Private landowner involvement in the programs outlined in this *Handbook* will be strictly voluntary. Chapter 9 describes action items, including many incentive programs, designed to encourage voluntary participation by private landowners in riparian habitat management programs.
- **Local Concerns**—Conservation Area management must give full consideration to landowner, public, and local government concerns. For example, neighboring landowners should not be adversely affected by riparian habitat management decision on adjacent lands. No county or local government should lose revenue by virtue of an increase in public land. Access to riparian lands should be limited to public areas and managed through education, planning, and arrangements with law enforcement personnel. Neighboring landowners should be invited to be part of any riparian habitat management planning.

The SB1086 planning process has, by law, included representatives from all of the counties, major interest groups, including landowner and environmental groups, and agencies along the river. This is an essential feature. To ensure that

local concerns are fully addressed, and that true system-wide planning is effective, this must continue.

The issue of local concerns will be addressed in several ways. The proposed non-profit organization will be locally based, with a board of directors appointed by county supervisors. Site-specific management planning must, by definition, include affected landowners and county representatives. The planning must also address issues such as the effect on the local tax base as well as potential trespassing problems. Mutual assistance programs will be developed to improve cooperation among federal and state agencies and county government.

Another key concern of landowners along the river is changing and inconsistent environmental regulations. The SB1086 program foresees this problem being addressed through permit streamlining, or programs similar to “safe harbors” or “habitat conservation planning,” the development of which would require the active participation of the regulatory agencies. Chapter 9 discusses these action items.

- **Bank stabilization**—There are places along the river where bank stabilization will be necessary to limit the meander to the inner river zone. This limitation will take into account the potential need to protect existing land uses including agriculture and structures such as buildings, bridges, pumping plants, and flood management structures from bank erosion. When a need is identified, the most effective and least environmentally damaging techniques should be used.

While the construction of bank stabilization has resulted in a loss of riparian habitat along the Sacramento River, the SB1086 program considers bank stabilization an implementation tool that, when used carefully, can further the goal of the program. Decisions on the location of bank protection should be made on a site-specific basis in cooperation with participating landowners. Funding mechanisms for bank protection may vary depending on funding sources and should be written into the site-specific contract.

- **Information and education**—Sound resource management depends upon a solid base of knowledge about the river and the regulations governing its use. A clearinghouse is needed to help riparian landowners obtain grants, permits, and technical assistance for work involving riparian habitat on their property. The need for a clearinghouse of information on the Sacramento River is multi-faceted. Chapter 9 discusses these actions further.

## Management Guidelines:

- **Sacramento River Conservation Area**—The SB1086 Riparian Habitat Committee and Advisory Council have defined a Conservation Area for the Sacramento River, approximately encompassing 213,000 acres of potential riparian habitat or valley oak woodland. The area, based on soils and floodplain features, denotes the locations where landowners would be eligible to participate in conservation programs. For this reason, the Conservation Area is much broader than the pre-

sent day riparian corridor or the area in the inner river zone guideline. Ownership of property within the Conservation Area will not result in any regulation or taxation to the landowner—it merely makes landowners eligible to participate in voluntary programs. The definition of the Conservation Area for each of the four broad reaches is discussed at the beginning of Chapters 3 through 6.

- **Inner River Zone Guidelines**—Much of the work of the SB1086 Riparian Habitat Committee and Advisory Council has centered on the concept of a limited, or managed, meander. A limited meander provides room for the channel movement necessary to attain the goal of the program, but also provides a greater degree of certainty for landowners along the river. The inner river zone guideline has been developed (pages 2-24 through 2-28) to determine that area along the river most prone to channel movement and flooding. It is in these areas that processes are the most intact and, given voluntary landowner participation, should be the first priority for preservation. The actual area, an *inner river zone*, will be determined on a case-by-case basis using voluntary participation, erosion projections, and flood frequency as criteria. Currently, data on erosion projections is only available for the Red Bluff-Chico Landing Reach. If all landowners within the potential inner river zone chose to participate, the area could include about 33,000 acres between Red Bluff and Colusa. This would mean an approximate 15,000-acre increase in riparian habitat on both private- and publicly owned lands. Chapter 2 describes the inner river zone guideline, and Chapters 3 through 6 discuss the guidelines in the context of specific river reaches.
- **Site-specific Management Planning.** The SB1086 program foresees riparian habitat conservation along the river being implemented by both public and private landowners who have developed site-specific management plans through a proposed non-profit organization. Implementation tools that could be incorporated into site-specific management plans might include conservation easements or “set aside” payments, outright purchase, bank protection, technical assistance, and permit streamlining. Chapter 9 contains a detailed discussion of site-specific management planning. When implementing the restoration strategies (as described in Chapters 3-6) and in following the restoration priorities, the proximity of the inner river zone should be the first planning consideration.
  - Protect inner river zone boundaries.* If the meander is getting close to the inner river zone boundary, decide if bank protection will be installed or if other previously agreed-upon actions will be implemented.
- **Restoration Priorities**—Evaluation of restoration projects within the inner river zone must follow the six guiding principles of the program. The site should then be assessed using the following set of restoration priorities. By focusing on river process, these priorities are designed so that projects are carried out in a manner consistent with the guiding principle on ecosystem management. They are listed in order of their significance to ecosystem management of the Sacramento River

and its floodplain. Chapters 3 through 6 contain descriptions of how these priorities apply to each of the four broad subreaches.

— *Protect physical process where still intact.* Does the project protect existing physical process of erosion, deposition, or flooding? Such projects would likely be within the *inner river zone guideline* described in Chapter 2, where erosion and deposition are predicted to occur over the next 50 years and where the river channel has been in the last 100 years. Or, the proposed project might lie in an area outside of the inner river zone guideline, but still be subject to flooding.

— *Allow riparian forests to reach maturity.* Does the project protect existing riparian habitat? As terraces build along the Sacramento River and as vegetation matures, they become more subject to conversion to agricultural uses. Projects that protect existing riparian forest land from conversion to non-riverine or non-riparian habitats are supported.

— *Restore physical and successional process.* Does the project include restoration of process? For example, a project may reduce stress on local flood control systems by redesigning non-strategic flood control structures. Allowing flooding and river channel migration where feasible restores the natural physical and successional process of the river. In some locations, reconnecting the river with its floodplain may increase channel storage (reducing flood effects downstream and regionally), maintain existing riparian forests, and initiate natural self-restoration with a minimum of input.

— *Conduct reforestation activities.* If the project includes reforestation activities, is this used a last resort? Manual reforestation should be viewed as a last resort for several reasons: it is difficult to determine what vegetation community and structure is appropriate for a given site; it's expensive; it's not always successful.

- **Sacramento River GIS.** An important basis of any comprehensive plan for the river is a shared information base, such as that provided by a geographic information system (GIS). The principal advantage of GIS is that digital data are permanently stored and may be accessed quickly for mapping or analysis. The Sacramento River GIS was the primary tool used to define the Conservation Area. This delineation incorporated aspects of geology, geomorphology, soils, hydrology, vegetation, and infrastructure (Appendix C). In a similar fashion, it is presently being used to manage resource information and develop the inner river zone guidelines discussed in Chapter 2.

The GIS is often used to prepare maps illustrating physical factors and river dynamics at specific sites. These maps aid landowners in making sound land management decisions. Although the Sacramento River GIS is useful as an inventory and resource database, it could be developed into a predictive tool to assist in guiding restoration and management decisions. "What if?" modeling of river meandering could be used to evaluate proposed management scenarios and their potential consequences to habitat, wildlife species, and landowners.

The SB1086 program and this *Handbook* lay a foundation of guiding principles and planning tools with which to achieve its goal of restoring and maintaining a continuous and self-sustaining riparian corridor along the Sacramento River. The development of a nonprofit management entity, supported by organizations and agencies through a Memorandum of Agreement, will be the next step. This group will work to carry out the actions that are essential for the success of the program, uniting site-specific knowledge with a big-picture understanding of riparian habitat issues along the Sacramento River.

## KESWICK DAM—RED BLUFF REACH

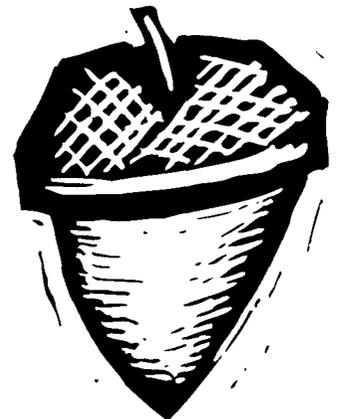
The Keswick-Red Bluff Reach of the Sacramento River, the uppermost reach of the Conservation Area, is unique in many ways.

The reach extends from Keswick Dam (about 10 miles below Shasta Dam) downstream through the cities of Redding and Anderson, past Bloody Island, through Iron Canyon and the City of Red Bluff to the Red Bluff Diversion Dam (Figure 3-1 and Table 3-1). The broad alluvial portion of the reach between Redding and Balls Ferry has the potential to support significant tracts of riparian forest. Along much of the reach, however, riparian forests are confined to narrow corridors at the base of canyon walls. It is the most urbanized and industrialized of the four reaches, while also supporting agriculture. It has three water control structures (Keswick, Anderson-Cottonwood Irrigation District, and Red Bluff Diversion Dams). Historically the river between Redding and Anderson supported several gravel mining operations.

In its *1989 Plan*, the SB1086 Advisory Council recommended the establishment of a Conservation Area along the Sacramento River. The Conservation Area would define the location where interested landowners may participate in voluntary riparian habitat programs administered or coordinated by a proposed nonprofit management entity. The purpose of this area is for the preservation and reestablishment of a continuous riparian ecosystem along the Sacramento River in a manner that:

- Uses an ecosystem approach that provides for recovery of threatened and endangered species and is sustainable by natural processes;
- Gives full consideration to local, state and federal flood control and bank protection programs;
- Works only with voluntary participants;
- Gives full consideration to landowner, public, and local government concerns;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

The Keswick-Red Bluff portion of the proposed Conservation Area would include all areas within the 100-year floodline, existing areas of riparian bottomlands, and all areas of contiguous valley oak woodland. It encompasses approximately 22,000 acres, ranging in width from more than one mile wide in the broad alluvial area near Bloody Island to only 500 feet in the confined canyon near Table Mountain and within Iron Canyon.



Shasta Dam, hydrologic operations, urbanization, and gravel mining operations have disrupted the physical processes that shape riparian forest development in this reach. However, there are still tracts of riparian habitat, and some flooding and channel movement still occur. While an inner river zone guideline has not been developed for this reach, project selection can still be based on the restoration priorities outlined in Chapter 1.

Table 3-1. Features of the Keswick—Red Bluff Reach

RIVER MILE	FEATURE	RIVER MILE	FEATURE
302	Keswick Dam	271L	Mouth of Battle Creek
301R	Middle Creek	268R	Mouth of Frazier Creek
300R	Mouth of Salt Creek	267	Jellys Ferry Bridge
299	Lake Redding	265L	Mouth of Inks Creek
299	Southern Pacific Rail Road	258	Bend Bridge
298	Redding Diversion Dam	258	Bend Ferry
297	Highway 299	255L	Bend
295	Cypress Avenue Bridge	253L	Mouth of Paynes Creek
290R	Mouth of Clear Creek	252R	Bald Hill
290R	Olney Creek	251L	Mouth of Sevenmile Creek
285L	Mouth of Churn Creek	248R	Mouth of Blue Tent Creek
285	Interstate 5	247R	Mouth of Dibble Creek
284R/L	Anderson	246R	Mouth of Brewery Creek
284	Airport Road	246	Interstate 5
281	Deschutes Bridge	245R	Mouth of Reeds Creek
281L	Mouth of Stillwater Creek	245R	Brickyard Creek
278L	Mouth of Bear Creek	245R/L	Red Bluff
278L	Dry Creek	244L	Mouth of East Sand Slough
277L	Mouth of Ash Creek	244	Interstate 5
276	Balls Ferry Bridge	244L	Samson Slough
274R	Mouth of Anderson Creek	244L	Paynes Creek Slough
273L	Bloody Island	243	Red Bluff Diversion Dam
273R	Mouth of Cottonwood Creek	243R	Mouth of Red Bank Creek

## PHYSICAL SETTING

### Geology and Soils

The geologic characteristics of this reach vary greatly. From Keswick Dam to Redding the river flows through volcanic and sedimentary formations. The canyon is relatively narrow here with little floodplain and a correspondingly narrow riparian corridor. From Redding to the Cow Creek confluence there are limited areas where the river has meandered over a broader floodplain of alluvium derived from the Klamath Mountains and the Coast Ranges. From the Cow Creek confluence to near Red Bluff the river is almost entirely controlled by the Tuscan Formation (DWR, 1981). Here the channel is often narrow and deep, between high canyon walls. Table Mountain, a two-mile long volcanic plateau adjacent to the river and steep-sloped Iron Canyon (RM 250-253) are both examples of Tuscan Formation outcrops. At Red Bluff the river flows out onto the broad alluvial floodplain of the Sacramento Valley.

## RIPARIAN VEGETATION

### Current Acreage

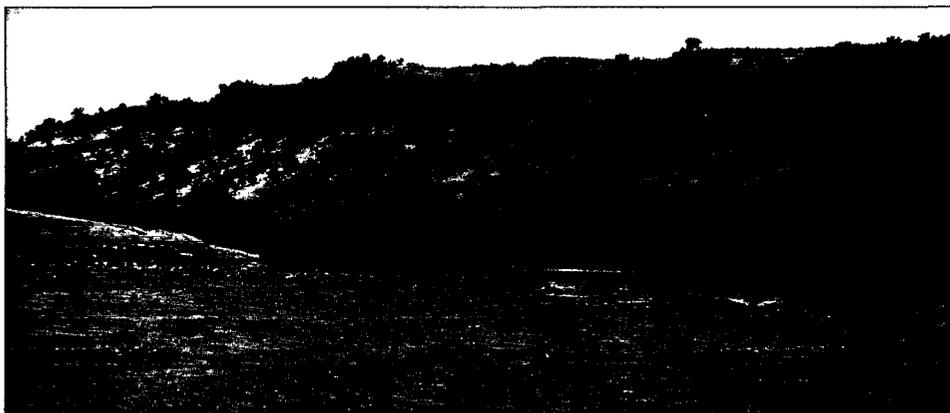
The most current survey of the riparian resources within this reach is based on aerial interpretation of 1991 photos of Shasta County and 1993 photos of Tehama County. Initial interpretation was performed by the Geographic Information Center at California State University, Chico. There are 4,180 acres of riparian habitat within the Conservation Area, as defined by the 100-year floodline.

Table 3-3 presents a summary of the riparian and closely related habitats within the Conservation Area. Because portions of the channel within this reach are geologically confined, the width of riparian vegetation is often very narrow (Figures 3-3 and 3-4). Areas with potential for the development of large tracts of riparian vegetation are often converted to agriculture or are under other types of development. Approximately 128 acres of valley oak woodland are contiguous with the outer boundaries of the 100 year flood line.

Unlike the downstream reaches, a large amount of native upland vegetation (such as chaparral and various woodland types) occurs within the Keswick-Red Bluff Reach. A total of 4,308 acres of these vegetation types occur within the Conservation Area, often functioning as “buffer” areas between the river habitats and developed areas. Native vegetation (both riparian and non-riparian) currently represents almost 40 percent of the total land surface of the Conservation Area.

*Table 3-3. Riparian and closely related habitats within the Conservation Area, Keswick-Red Bluff Reach*

HABITAT	ACRES
Riparian Forests . . . . .	2,643
Riparian Scrub . . . . .	1,178
Valley Oak Woodland . . . . .	450
Marsh . . . . .	32
Blackberry Scrub . . . . .	5
<b>Total . . . . .</b>	<b>4,308</b>



*Figure 3-3. Narrow corridor of riparian vegetation bordered by native upland vegetation*

### Ownership

More than 85 percent of the Conservation Area within the Keswick-Red Bluff Reach is privately owned (Table 3-4). As described in Chapter 3, the Keswick-Red Bluff Reach contains parts of the Sacramento River Area that the Bureau of Land Management (BLM) owns and manages. About 500 of the 12,000 acres that BLM owns lie within the Conservation Area, including approximately 14 miles of river frontage.

Other significant publicly owned parcels that include riparian habitat are holdings by the City of Redding along both banks of the river, and the associated 200-acre Redding Arboretum and Kapusta River Access, a former gravel mining site (RM 287 R). California Department of Fish and Game (DFG) owns 264 acres largely in riparian habitat at Anderson River Park, which the City of Anderson manages (RM 282 R). DFG's mouth of Cottonwood Creek Wildlife Area (571 acres, RM 273 R) also falls within this reach. The state also owns several fishing and small public access sites. South of Red Bluff, between RM 242L and 243L the U.S. Forest Service (USFS) owns a 299-acre parcel at the Red Bluff Recreation Area. A portion of this parcel is being actively restored to riparian habitat in cooperation with the Sacramento River Discovery Center (Chapter 7).

Table 3-4. Land ownership, Keswick-Red Bluff Reach

OWNERSHIP	ACRES	% OF LAND SURFACE AREA
Private	15,800	85%
Public		
Federal	1,100	6%
State	800	4%
Local District, City and County	800	4%
Total Land Surface Area	18,500	99%
Channel Surface	3,300	
<b>TOTAL AREA</b>	<b>21,800</b>	

Acreage rounded to nearest 100 acres.

### Restoration Strategy

Restoration activities carried out through the SB1086 program shall be conducted in a manner that:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;

## RED BLUFF—CHICO LANDING REACH

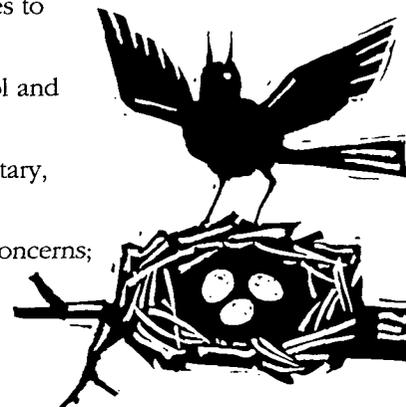
The pattern of riparian forest succession driven by channel movement and flooding is most fully expressed along the Red Bluff–Chico Landing Reach.

With some exceptions, this reach is unleveed and contains significant and substantial remnants of the Sacramento Valley's riparian forest. The floodplain shows a long history of erosion, deposition, and channel migration. The river has recently meandered in deep alluvial soils throughout this reach.

This reach extends from the Red Bluff Diversion Dam downstream past the towns of Tehama, Los Molinos and Nord (Figure 4-1 and Table 4-1). The reach ends at Chico Landing, a site at the mouth of Big Chico Creek that was once a busy river-boat landing. In addition to supporting a mosaic of riparian vegetation, the river floodplain supports a significant portion of the region's walnut orchards, as well as prunes and row crops.

In its *1989 Plan*, the SB1086 Advisory Council recommended the establishment of a Conservation Area along the Sacramento River. The Sacramento River Conservation Area would define the locations where interested landowners may participate in voluntary riparian habitat conservation and restoration programs administered or coordinated by a proposed nonprofit management entity. The purpose of this area is for the preservation and reestablishment of a continuous riparian ecosystem along the Sacramento River in a manner that:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

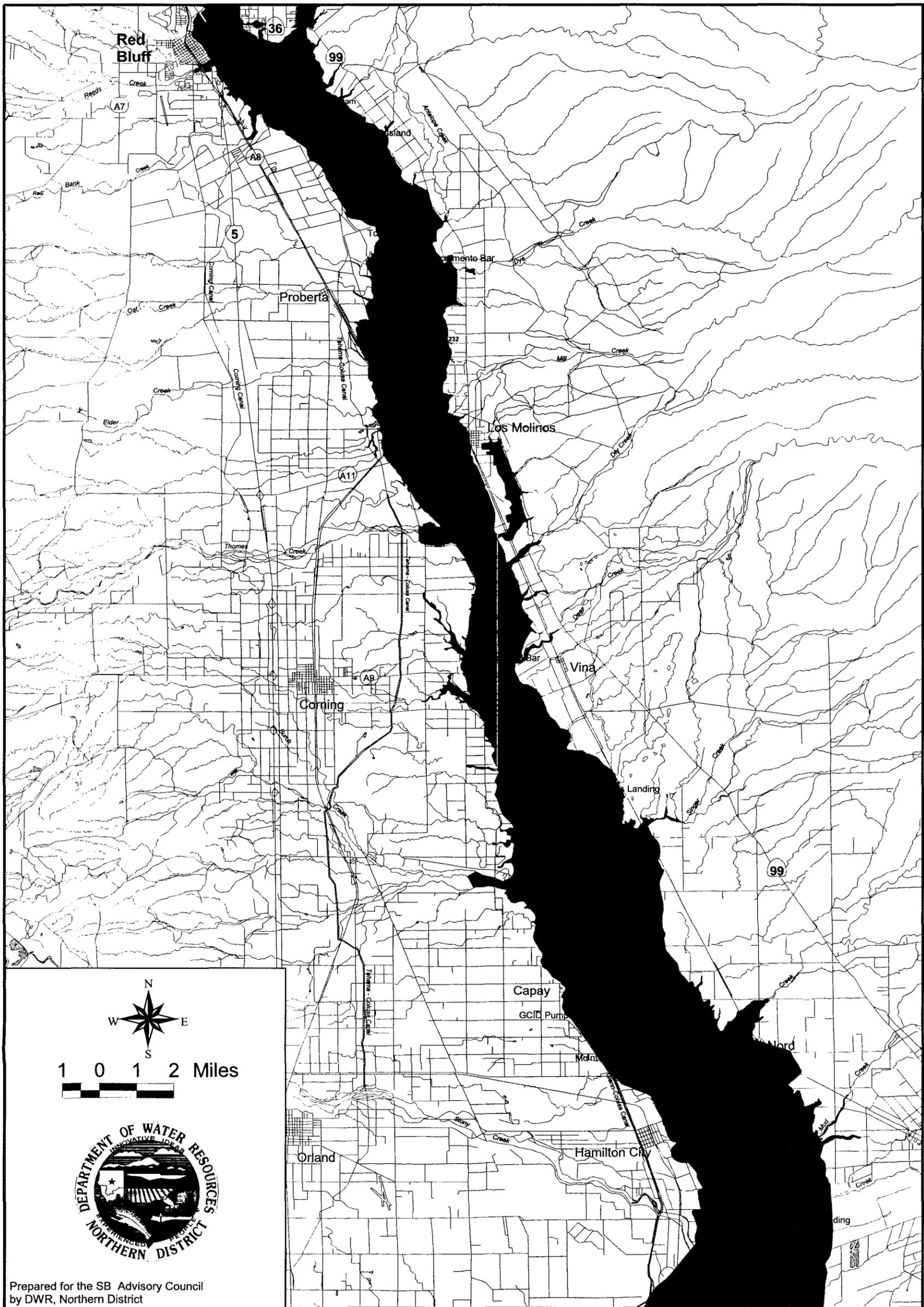


The Red Bluff—Chico Landing portion of the Conservation Area would include all areas within geologic control, within the 100-year floodline, and stands of valley oak woodland that are contiguous with this area. It would encompass about 58,000 acres and averages about two miles wide.

The Conservation Area in the Red Bluff—Chico Landing Reach will also contain an *inner river zone*, as recommended by the SB1086 Advisory Council in its *1989 Plan*. (Resources Agency, 1989). Guidelines for this reach have been developed (Chapter 2, pages 2-24 through 2-28), and should be incorporated into site specific planning.

Table 4-1. Features of the Red Bluff—Chico Landing Reach

RIVER MILE	FEATURE	RIVER MILE	FEATURE
243	Red Bluff Diversion Dam	220L	Mouth of China Slough
240L	Mouth of Salt Creek	220L	Mouth of Deer Creek
239L	Blackberry Island	220L	Copeland Bar
239L	Mouth of Craig Creek	219L/R	Woodson Bridge State Recreation Area
237	Todd Island	218	Woodson Bridge
236L	Mouth of Butler Slough	215R	Mouth of Jewett Creek
235R	Sacramento Bar	211R	Foster Island
235L	Mouth of Antelope Creek	210R	Lower Foster Island
234R	Coyote Creek	209L	Mouth of Dicus Slough
234L	Mouth of Dye Creek	209R	Mouth of Burch Creek
233R	Mouth of Oat Creek	208L	Mouth of Snaden Slough
231L	Mouth of North Fork Mill Creek	207L	Snaden Island
230L	Mouth of Mill Creek	205R	Glenn-Colusa Irrigation District Intake
230R	Mouth of Elder Creek	202R	McIntosh Landing
229R	Tehama	199R	Hamilton City
229	Southern Pacific Rail Road	199	Gianella Bridge
229L	Los Molinos	198R	Mouth of Dunning Slough
229	Highway 99	196L	Kusal Slough
226R	Mouth of Thomes Creek	196L	Mouth of Pine Creek
226R	Mouth of McClure Creek	195R	Jenny Lind Bend
225L	Champlin Slough	194L	Chico Landing
223L	Mouth of Toomes Creek	194L	Bidwell River Park



Prepared for the SB Advisory Council  
by DWR, Northern District

Figure 4-1. proposed Sacramento River Conservation Area, Red Bluff to Chico Landing Reach

The DWR figure represents six percent of the main channel bank length (bank swallow nesting habitat is on the active channel) or four percent of the total channel length.

### ***Shaded Riverine Aquatic Habitat***

DWR measured 47.41 miles of shaded riverine aquatic habitat in this reach (36 percent of total bank length).

### ***Sand and Gravel Bars***

Depositional areas accounted for 47.84 miles of bank length (36 percent).

## **Ownership**

Within the Conservation Area, about 46,100 acres (83 percent) are privately owned, and about 6,800 acres (13 percent) are publicly owned. Most of the publicly owned land lies within the more flood—and erosion—prone lands within the inner river zone guideline (Table 4-6). Private ownership is not limited to agricultural lands. Overlays using the Sacramento River GIS (Appendix C) indicate that in 1994, 2,300 acres (65 percent) of mature riparian forests were owned privately. An additional 2,600 acres of younger riparian habitat was privately owned.

In addition to riparian habitat, the public owned approximately 2,600 acres of agricultural land within the Conservation Area in 1994. Some of this land is being converted to riparian habitat, while other portions are leased to agricultural operators to fund restoration efforts (Chapter 7).

*Table 4-6. Ownership, Red Bluff—Chico Landing Reach*

	INNER RIVER ZONE GUIDELINE		CONSERVATION AREA	
	Acres	% of Land Surface Area	Acres	% of Land Surface Area
Private	10,200	65%	46,100	83%
Private Conservation	300	2%	600	1%
Private, with Easements	100	1%	100	<1%
Public				
Federal	2,700	17%	4,500	8%
State	1,900	12%	2,000	4%
Local District, City and County	<100	<1%	300	1%
Not Determined	600	4%	1,800	3%
Total Land Surface Area:	15,800	101%	55,400	100%
Channel Surface Area	2,800		2,800	
<b>TOTAL</b>	<b>18,600</b>		<b>58,200</b>	

Acres rounded to nearest 100 acres. Totals differ slightly from Table 4-6 due to rounding.

## **Restoration Strategy**

All restoration:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

### **Inner River Zone Guideline**

An inner river zone guideline has been developed for this reach (Figure 4-5), since the 100-year meanderbelt and erosion projections have both been mapped. When combined, they cover a land surface area of 15,900 acres (Table 4-7). This guideline should be used to focus restoration efforts, and projects should be evaluated according to the established restoration priorities:

1. Preserve intact processes

As the most erosion- and flood-prone land along the river, the Red Bluff—Chico Landing Reach has the greatest potential for the re-establishment of a functional riparian ecosystem. *Protection of land within the inner river zone guidelines, either through landowner participation in voluntary programs or through purchase of these properties or easements by the proposed nonprofit management entity or cooperating public agencies, should receive top priority.*

In the Red Bluff to Chico Landing Reach a 2.5 year interval flood event is associated with inundation of more than 38 percent of the Conservation Area. For some localities, flooding occurs outside of the inner river zone guideline (Figure 4-6). Flood frequency at the 2.5 year recurrence could permit the natural regeneration of riparian forest if the timing of other factors such as seed dispersal, and temperature regime are favorable. Monitoring programs within frequently flooded fallow fields should indicate if this method of “natural restoration” is feasible on a large scale.

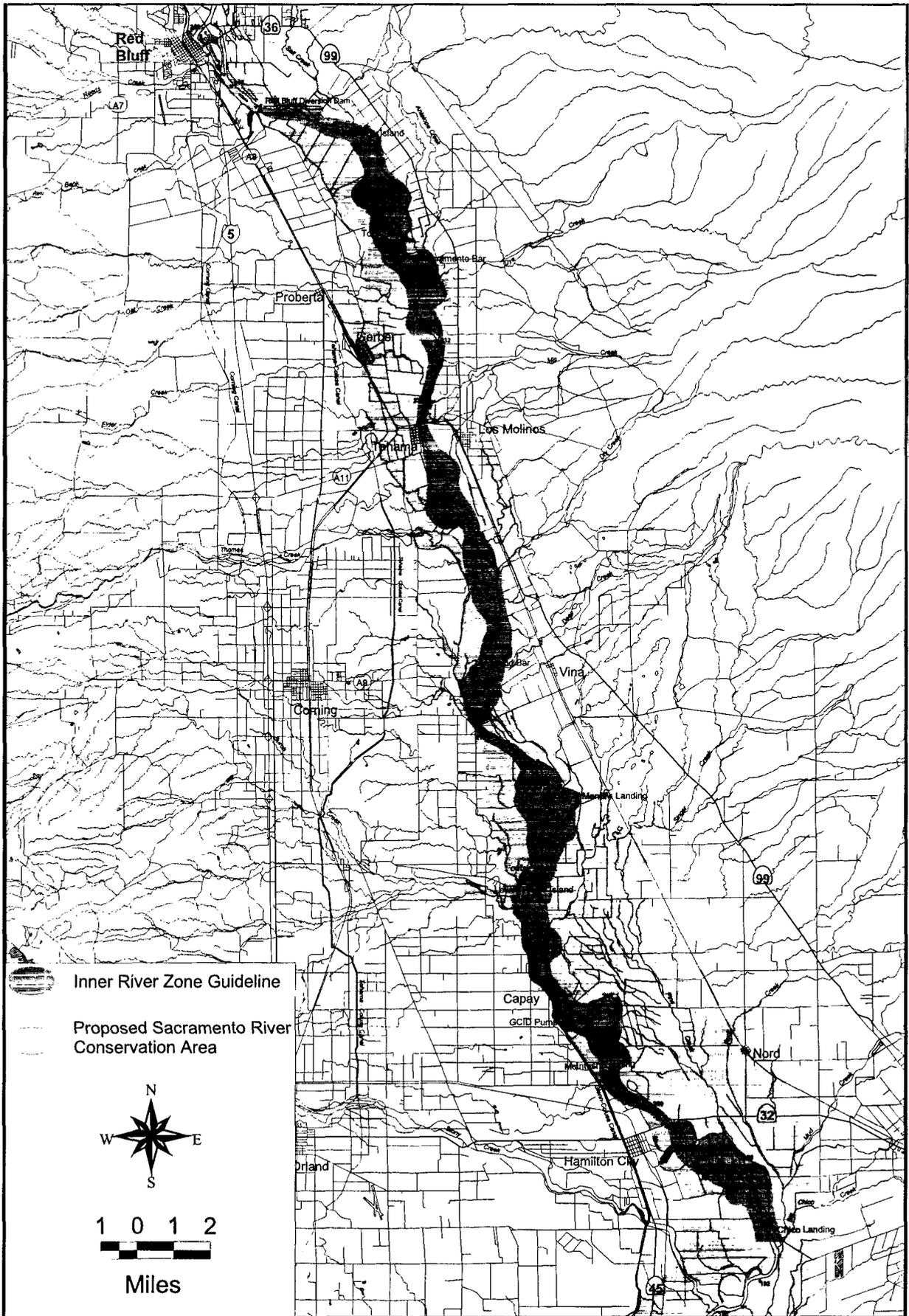


Figure 4-5. Inner river zone guideline, Red Bluff—Chico Landing Reach.

## CHICO LANDING—COLUSA REACH

Significant remnants of riparian forest remain between Chico Landing and Colusa. Their pattern upon the landscape reflects the meander scrolls left by former channels of the river.

This reach of the river marks the beginning of historical overflow into the Butte and Colusa Basins and the gradual downstream development of natural levees. It is also the beginning of the Sacramento River Flood Control Project, which controls and directs overflows into the Sutter Bypass through a system of setback levees, overflow areas, and weirs.

This reach extends from Chico Landing at the mouth of Big Chico Creek, past the Ord Ferry Bridge, the tiny towns of Ord, Glenn, and Butte City, and the Butte City Bridge. Downstream of Princeton and the Princeton Ferry, floodwaters are diverted out of the setback levee system into Butte Basin through the Moulton Weir. Just north of Colusa, the Colusa Weir diverts additional floodwater. The reach ends at Colusa Bridge in the City of Colusa (Figure 5-1 and Table 5-1).

In its *1989 Plan*, the SB1086 Advisory Council recommended establishing a Conservation Area along the Sacramento River. This proposed Conservation Area would define the location where interested landowners may participate in voluntary riparian habitat programs administered or coordinated by a proposed nonprofit management entity. The purpose of this area would be for the preservation and reestablishment of a continuous riparian ecosystem along the Sacramento River in a manner that follows the six guiding principles:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

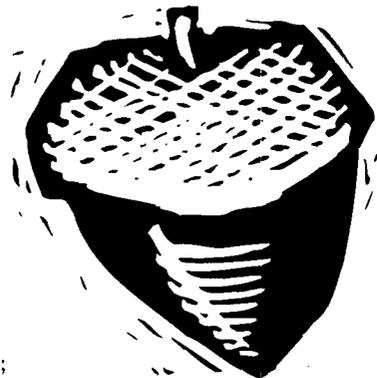


Table 5-1. Features of the Chico Landing—Colusa Reach

RIVER MILE	FEATURE	RIVER MILE	FEATURE
194L	Chico Landing	169R	Mouth of Rasor Slough
194L	Mud Creek	169L	Butte City
193L	Mouth of Big Chico Creek	169R	Codora
193L	Bidwell River Park	167R	Packer Island
191R	Phelan Island	167R	Packer Lake
190R	Mouth of Stony Creek	164R	Princeton
190L	Mouth of Murphy Slough	164	Princeton Ferry
190L	Golden State Island	161L	Boggs Bend
184	Ord Ferry Bridge	160R	Stegeman
184	Ord Ferry Road	159L	Moulton Weir
184R	Ordbend	151L	Hamilton Bend
182L	The Lagoon	146L	Colusa Weir
181L	Perkins Lake	146L	Mouth of Colusa Bypass
180R	Jacinto	145R	Colusa Sacramento River State Recreation Area
178R	Mouth of Provident Irrigation Main Canal	144R	Colusa
176L	Eddy Lake	143	River Road
173L	Hartley Island		
171R	Hanson Island		

The Chico Landing—Colusa portion of the proposed Sacramento River Conservation Area includes all areas between the setback levees of the Sacramento River Flood Control Project and a one-mile transition area outside of the levees where soils are suitable for riparian species or valley oak woodland. Where there are no setback project levees, the Conservation Area would include the areas where aerial photography shows evidence of meander, and a one-mile transition area where soils are suitable for the establishment of riparian species or valley oak woodland. It would encompass approximately 76,000 acres.

The Conservation Area in this reach will also contain an *inner river zone*, as recommended by the SB1086 Advisory Council in its *1989 Plan* (Resources Agency, 1989). The inner zone would include only those areas with participating landowners, and represents those areas along the river that should be the focus of efforts to preserve and restore river processes. By nature, the channel alignment in this area is transitory and subject to change. The criteria to be used to develop a guideline for the inner river zone include historical and projected future erosion (Chapter 2). A guideline for the inner river zone for this reach would require erosion projections, which have not yet been made.

tle (VELB) sites between RM 169 and 180 (CDFG, 1996). The beetle's host plant, blue elderberry, can be found in a wide variety of vegetation types including mature riparian forest and open elderberry savannas on higher terraces along the river.

### ***Current Extent of Habitat Types at the Water's Edge***

The total bank length for this reach of the river, (including sloughs, side channels and islands), is approximately 133 miles (USACE, 1991). The main channel (excluding sloughs, side channels and islands) has a bank length of approximately 105 miles. There are several types of banks and habitat types, including shaded riverine aquatic habitat, cut banks, sand and gravel bars, and revetted banks (Appendix D).

### ***Bank Swallow Nesting Habitat***

The U.S. Fish and Wildlife Service (USFWS) surveyed the river for bank swallow nesting habitat in 1989 (USFWS, 1990). Biologists measured 2.01 miles of active habitat, and 8.97 miles of inactive habitat. Active sites had bank swallow burrows. Inactive sites did not have burrows, but had the suitable slope, bank height, and soil erodability. The total bank swallow habitat for this reach represents 8 percent of the total bank length and 10 percent of the main channel.

### ***Shaded Riverine Aquatic Habitat***

USFWS biologists measured 22.20 miles of shaded riverine aquatic habitat along the Chico Landing-Colusa Reach in 1991. This represents 17 percent of the total channel bank length.

### ***Ownership***

Approximately 84 percent (61,900 acres) of the Conservation Area is owned privately. Publicly owned parcels encompass approximately ten percent (7,100 acres) of the area and are largely concentrated close to the main channel of the river. Table 5-4 shows the proportion of publicly held land within the Conservation Area.

The publicly owned land includes several units of the federal Sacramento River National Wildlife Refuge. State publicly owned land includes lands held by the California Department of Fish and Game (DFG) as part of the Sacramento River Wildlife Area, lands held by the State Lands Commission, and approximately 400 acres purchased by the Reclamation Board to preserve riparian vegetation and preserve stability of the river. These purchases include MBK sites (Chapter 7).

There are also approximately 19 conservation easements on private land in this reach encompassing 3,600 acres. These easements range greatly in size. Some are small areas between the waterside levee toe and the river on the waterside berm, purchased from willing sellers to mitigate for the second phase of the Sacramento River Bank Protection Project. The Reclamation Board holds these easements and DWR manages them. The Nature Conservancy and the USFWS hold the two largest easements, at Llano Seco, owned by Parrot Investment Company, Inc. (near R.M. 176-183, right bank). DFG also administers conservation easements in this reach (Chapter 7).

Table 5-4. Ownership, Chico Landing—Colusa Reach

CHICO LANDING TO COLUSA				
	INNER RIVER ZONE GUIDELINE		CONSERVATION AREA	
	Acres	% of Land Surface Area	Acres	% of Land Surface Area
Private			58,300	79%
Private Conservation			0	0%
Private, with Easements			3,600	5%
Public				
Federal			2,600	4%
State		Not determined for this reach	3,900	5%
Local Districts, City and County			600	1%
Not Determined			4,500	6%
Total Surface Area			73,500	100%
Channel Surface Area			2,700	
<b>TOTAL</b>			<b>76,200</b>	

Acreage rounded to nearest 100 acres.

### Restoration Strategy

All restoration shall use the six guiding principles:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

### Inner River Zone Guideline

An inner river zone guideline has not been developed for this reach. Development of a guideline would require an assessment of the potential for future channel movement in this reach. Assessment of flood-frequency for riparian lands would also assist this effort. Although a guideline has not yet been developed, projects within this reach should be evaluated according to the established priorities (Chapter 1).

## COLUSA—VERONA REACH

The character of the Sacramento River changes considerably near Colusa. This was as true before the completion of the Sacramento Valley Flood Control Project as it is today.

Downstream of Colusa the gradient of the river decreases, the channel becomes narrower and deeper, its capacity smaller, and its bed material finer. The natural levees, discontinuous further north, are now continuous along both sides of the channel to its confluence with the Feather River. These levees are not pronounced, but are broad surfaces that slope gradually away from the river.

In its *1989 Plan*, the SB1086 Advisory Council recommended establishing of a Conservation Area along the Sacramento River. This proposed Conservation Area would define the location where interested landowners may participate in voluntary riparian habitat programs administered or coordinated by a proposed nonprofit management entity. The purpose of this area would be the preservation and reestablishment of a continuous riparian ecosystem along the Sacramento River in a manner that follows the six guiding principles:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

The Conservation Area for this reach is centered on the river's main channel of an area from Colusa to the confluence with the Feather River at Verona, an area about 57,000 acres between the levees and alluvial soils up to a mile from the river (Figure 6-1 and Table 6-1). It includes much of the area of natural levees, but does not include the basins, the Sutter Bypass or weir channels. Although the natural levees and associated loamy soils extend up to 15 miles beyond the main channel of the river, the Conservation Area only includes those areas up to a mile outside of the levees.



## PHYSICAL SETTING

### Soils

The natural levees generally consist of floodplain materials deposited over clays. They tend to be composed of loams and sandy loams, with some silt loams and clay loams. The levee soils tend to be well-drained, although some have a high water table. Typical soils series along these levees are the Colombia and Sycamore soils, which are often planted in orchards. Closest to the river these floodplain loams are deepest, becoming shallower with distance. Before the advent of the flood control project, these natural levees were about 5-20' higher than the flood basins on either side of the river. They range in width from one to ten miles. Prior to reclamation, the natural levees formed corridors of relatively dry land up either side of the river channel as the basins on either sides turned in to vast marshlands during the fall, winter, and spring.

Historically, these "natural levees" also formed along the sloughs that drained flood-water into the basins, as well as along the river channel itself. The Knights Landing Ridge, for example, which separates Yolo and Colusa Basins, is the pair of natural levees alongside the historical course of Cache Creek. The location of some of these former sloughs can be seen in the pattern of alluvial soils in the valley.

Because the natural levees prevented some tributary streams (such as Butte Creek) from joining the main river, particularly during lower flows, they would drain to the basins into "an intricate plexus of sloughs which meander through the tule-land bordering the main river" (Thompson, 1961). Prior to reclamation, runoff from surrounding areas tended to concentrate in Butte, Colusa, Sutter, and Yolo Basins.

Table 6-1. Features of the Colusa-Verona Reach

RIVER MILE	FEATURE	RIVER MILE	FEATURE
143	Colusa Bridge	104R	China Bend
141L	Butte Slough	103L	Collins Eddy
138L	Butte Slough Outfall Gates	102R	Tyndall Landing
137L	Woods Lake	102L	Mystic Lake
134L	Meridian	102L	Horseshoe Lake
132R	Former mouth of Sycamore Slough	102R	Beaver Lake
127R	Cecil Lake	99L	Eldorado Bend
125L	Sills Lake	97L	Missouri Bend
125R	Grimes	94L	Sutter Recreation Area
119L	Tisdale Weir	90R	Knights Landing Outfall Structure
119L	Mouth of Tisdale Bypass	90R	Mouth of Colusa Canal Basin Drainage
118R	Mouth of Wilkins Slough	90R	Knights Landing
116R	Steiner Bend	88R	Portuguese Bend
115L	Cranmore	87L	Mary Lake
112R	Millers Landing	86L	Horseshoe Lake
111L	Boyers Bend	82R	Fremont Weir
107R	Bullock Bend	80L	Mouth of Sacramento Slough
105L	Kirkville	80L	Mouth of Feather River
104L	Hiatt Lake	80L	Verona

## Restoration Strategy

As narrow as the existing band of riparian habitat corridor is within this reach, it can be excellent wildlife habitat, particularly where stands are contiguous, providing an important wildlife corridor. The SB1086 goal in this area is to restore and maintain a contiguous band of riparian vegetation in a manner that follows the six guiding principles:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;
- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

## Inner River Zone Guideline

An inner river zone guideline has not been developed for this reach. The Sacramento River Flood Control Project determines channel configuration in this reach. In addition, the natural channel dynamics are much different than upstream. A thorough geomorphological, engineering and environmental examination of this reach would be necessary to determine the soundest method of riparian habitat restoration.

Although an inner river zone guideline does not apply to this reach, projects should still be evaluated according to the restoration priorities in Chapter 1.

1. Preserve intact processes

The ability of the river to meander in this reach is limited by the levee system. The area between RM 126 and 130 contains the banded appearance of various successional stages which are typical of riparian vegetation with active channel movement. Several significant riparian stands exist within the leveed areas (Table 6-6). *Purchase of such areas or landowner participation in voluntary programs within these areas should receive the highest priority for the protection of riparian habitat.*

Approximately 1,200 acres between the levees are in agricultural crops or support grasses and herbs. A recent review of 1995 aerial photos, taken during a four year recurrence interval flood event, suggests that all of these surfaces are covered by water on a fairly frequent basis. These areas could support early successional stages if left undisturbed.

2. Allow riparian forests to reach maturity

The DWR 1987 data suggest that the majority of the riparian vegetation within and adjacent to the levees is largely climax vegetation. Only 565 of the 1,928 acres of riparian habitat within the levees is subclimax or young vegetation. This may indicate that early stages are being removed through maintenance activities. All stages of

riparian vegetation are important for the survival of a diverse assemblage of wildlife species. *Management of existing and newly established vegetation should be done with a goal of increasing the diversity of riparian types.*

*Table 6-6. Significant areas of native vegetation and potential “natural restoration” areas between levees*

RIVER MILE	NAME OF AREA
138	Moon's Bend
130 – 126	Ogden Bend to Girdner Bend
120 – 119	North of Tisdale weir
111	Boyer's Bend
106	Poker Bend
105.5 – 103.5	China Bend
103-101	Tyndel Landing
101-99	Upstream of Eldorado Bend Outside of levee also
97	Missouri Bend
96	Victor Bend
94	Upstream and Downstream of Railroad Bend
88-87	Portuguese Bend/Mary Lake

3. Restore physical and successional processes

This reach contains potential areas for setback levees. Setback levees within this reach need to be investigated from an engineering feasibility as well as a riparian restoration feasibility standpoint.

4. Conduct reforestation activities

*Restoration of the area between levees through “natural” restoration should receive the highest priority.* Active restoration should be conducted in areas of high terraces and berms which do not receive an adequate flooding regime for the establishment of riparian vegetation. The effect of riparian restoration on river stage, velocity and sediment transport should be evaluated before implementing projects. *The protection and restoration of a contiguous riparian strip down the rivers edge should also receive the highest priority.* Areas outside of this corridor should be evaluated for restoration based on the ability to restore large blocks of habitat, linkage to other blocks of riparian or valley oak woodland as well as proximity to the main channel or sloughs and tributaries. Roughly 50,000 acres of suitable alluvial soils would be eligible for restation to wetlands, riparian vegetation, and valley oak woodland or incorporated into the Conservation Area as compatible agricultural cropland. Restoration to specific habitats would be based on ground water levels (especially seepage areas) and soil textures.

for the future. Plans are usually revised about every 5 to 10 years. General plans contain "elements" discussing specific areas of concern within the county or city. References to the Sacramento River are most often found in the Conservation and Open Space elements. It should be noted that the policies recommended within a general plan do not become law unless the county passes an ordinance or zoning regulation related to the issue. All zoning ordinances, public works decisions and subdivision map approvals, however, are to be consistent with the general plan.

Several other state and federal laws implemented at the county level affect riparian habitat resources:

**THE SUBDIVISION MAP ACT** establishes procedures for local government to follow when land is subdivided. To ensure that subdivision does not harm public resources, the law requires environmental review under the California Environmental Quality Act. The Act also allows local governments to require a variety of set-asides for the benefit of community residents. These may include land, public facilities, or payment of "in lieu" fees for various facilities, as well as easements to provide public access to rivers and streams. Additionally, the Act specifically gives local governments the option of requiring developers to dedicate local park acreage, pay equivalent fees for local governments to acquire parkland, or some combination of both. These options can help maintain riparian habitat along urbanized and urbanizing reaches of the Sacramento River.

**THE SURFACE MINING AND RECLAMATION ACT OF 1975** (and amended many times since) requires that a surface mining operation obtain a permit from and submit a reclamation plan to the county or city in which it is located. The local government is not only responsible for the permitting, but for follow-up on approved reclamation plans. Because instream and near-stream mining can have such significant impacts on the character of both upstream and downstream reaches of a system, the local role may be pivotal for the continued well-being of the system as a whole.

**THE NATIONAL FLOOD INSURANCE ACT OF 1968** establishes local, state, and federal responsibility for ensuring that federal flood insurance is available, while also attempting to reduce exposure to flood hazard risks through local and state regulation. When participating communities adopt and enforce floodplain management regulations, residents and businesses are then able to purchase federal flood insurance. Local jurisdictions along the Sacramento River have generally adopted ordinances that put them in compliance with the federal law. Because these ordinances may restrict the type of development in floodplain areas, they may have an indirect impact on the riparian habitat of the river corridor.

## **SHASTA COUNTY**

### *General Plan*

The Shasta County General Plan, recognizing the Sacramento River as one of the most important county and state natural resources, seeks to protect its fish, wildlife and vegetation resources. It seeks a balance between habitat protection and management of agricultural and timber lands. The plan recommends minimizing sedimentation and erosion through grading and hillside development regulations.

Shasta County has designated significant creek and riverside corridors on general plan maps in order to protect riparian habitat from adverse impacts related to development

or conflicting land use. Public access and easements for recreation are encouraged as long as riparian habitat will not be significantly affected. The following policies are designed to protect such areas: 1) vegetation removal is regulated; 2) grading and road construction is regulated; 3) development set-backs are required for new projects; 4) structure siting is regulated often involving clustering in order to minimize impacts; 5) recreation plans are regulated.

The Shasta County General Plan encourages and supports DFG's Upper Sacramento River Stream Corridor Protection Program. The county consults DFG on all development applications that propose changes to streamside areas.

Salmon and steelhead trout spawning gravels are protected. Aggregate mining projects are permitted only if stream disturbance is minimal. Restoration activities are recommended. Mining in the vicinity of waterways is discouraged (Shasta County, 1993).

#### *Codes and Ordinances*

Although no changes to the county code have been made yet, Shasta County's planning department plans to integrate the goals of the Upper Sacramento River Stream Corridor Protection Program with existing county codes. CDFG is consulted regularly when development applications are submitted that can impact the Sacramento River. Shasta County has also adopted a floodplain ordinance consistent with the federal legislation.

#### **FOR FURTHER INFORMATION:**

Shasta County Community Planning  
1855 Placer Street  
Redding, CA 96001-1759  
Phone: (530) 225-5532

## **TEHAMA COUNTY**

### *General Plan*

The Tehama County General Plan recognizes that water resources are essential to the environmental and economic well-being of the county and that water resources and supply systems should be protected and conserved. Tehama County has designated significant river and creekside corridor land use subcategories, which delineate areas considered essential for groundwater recharge, as well as areas considered in need of bank protection.

The general plan recommends preservation of environmentally sensitive lands and water, recognizing the recreational, educational, and ecological value of the county's abundant wildlife. The plan states that the county will work with other agencies for proper riparian restoration and management. The county cooperates with DFG on the Upper Sacramento River Stream Corridor Protection Program. DFG's development set-back recommendations are used as guidelines for approving development applications that encroach on native riparian areas. Significant river, creekside corridor, and natural resource areas are designated on zoning maps. The county also recommends purchasing private lands that front the Sacramento

River for conservation purposes. The county encourages easement donations from private landowners (Tehama County, 1993).

#### *Codes and Ordinances*

TEHAMA COUNTY CODE CHAPTER 9.16 requires that all watercourses remain unobstructed by dams, fences, structures, debris, or any other material in order to prevent unnecessary flooding that could injure neighboring property or people. Individual property owners are responsible for maintaining unimpeded waterways; if the property owner does not abide by this code a special assessment against the property is made.

TEHAMA COUNTY CODE 17.08 states that commercial excavation of natural materials is not permitted in the floodways of the Sacramento River or the main and south forks of Cottonwood Creek. Excavation activities already in operation when this law was passed are permitted to continue.

TEHAMA COUNTY CODE CHAPTER 17.42 allows farming, gardening, grazing, etc. within the Primary Floodplain District without permit. The placing of buildings (or other structures) or public use and diversion structures within this floodplain requires a permit.

TEHAMA COUNTY CODE CHAPTER 17.44 deals with natural resource lands and reclamation districts. Measures to promote soil, water, and vegetation conservation or to reduce erosion and fire hazard are permitted within natural resource areas. These measures may include stables, parks, picnic sites, farming, grazing, boat launching and utilities establishment.

TEHAMA COUNTY CODE CHAPTER 15.52 regulates development within floodways and areas of special flood hazard status, consistent with federal legislation.

Tehama County Code Chapter 13.28 defines standards for surface mining operations in compliance with the 1975 California Surface Mining and Reclamation Act. The County requires mining permit applicants to disclose hours of operation, the amounts of noise and dust that will be created as a result of the activity, as well as fencing and aesthetic considerations. The Tehama County Planning Department is responsible for reviewing all applications and approving all permits.

#### **TEHAMA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**

This special district was formed under a state act in 1957. Its purpose is to provide for control, conservation and deposition of storm and flood waters of the district. It also makes water available for any present or future uses of lands or inhabitants within the district, including acquisition, storage, and distribution for irrigation, domestic, fire protection, municipal, commercial, industrial, recreational and all other beneficial uses.

Key district programs include:

- Coordinated AB 3030 Groundwater Management Plan for Tehama County
- Integration with the Incident Command System for Tehama County, which provides emergency management duties during declared flood disaster events
- Drainage improvement studies/capital improvement programs

- Development of county grading ordinance
- Administration of watercourse obstruction ordinance
- Maintenance of flood control facilities throughout the county (TCFC&WCD, nd.)

**FOR FURTHER INFORMATION:**

Tehama County Planning Department  
444 Oak Street, Room 1  
Red Bluff, CA 96080  
Phone: (530) 527-2200

Tehama County Flood Control and Water Conservation District  
9380 San Benito Avenue  
Gerber, CA 96035  
Phone: (530) 385-1462

## **BUTTE COUNTY**

### *General Plan*

The Butte County General Plan (updated, 1977) is being amended at this time. The general plan does not outline any specific recommendations regarding the Sacramento River, but deals with the river indirectly in various portions of the plan.

The land use element, drafted in 1991, states that it is the county policy to maintain quality and quantity of water resources and ensure their adequacy for all county uses. Development should be controlled in watershed areas in order to minimize erosion and water pollution. Water conservation efforts are encouraged in all plans for new development. The county recognizes that a variety of wildlife species require riparian habitat areas and that, therefore, these regions require protection. In addition, the county encourages compatible land use patterns in scenic corridors and areas adjacent to scenic waterways, rivers and creeks. The county however, has not placed any restrictions, codes and ordinances on extraction of mineral resources in streamside areas (Butte County, 1977; 1991).

**FOR FURTHER INFORMATION:**

Butte County Development Services  
7 County Center Drive  
Oroville, CA 95965-3334  
Phone: (530) 538-7601

## **GLENN COUNTY**

### *General Plan*

Glenn County identifies goals and policies within its general plan that address conservation issues along the Sacramento River. While the county has created a map overlay that outlines groundwater and streamside areas recommended for protection, county ordinances have not yet been amended to include development standards

that protect watershed areas. Map overlays for restorable wetlands and areas of biological importance have also been created. Watershed protection standards recommend that all new developments proposed adjacent to streams include grading, excavation and erosion control plans to minimize degradation to soil and water quality. Development along the Sacramento River should avoid environmentally sensitive areas and eliminate or minimize any adverse impacts from all proposed projects.

The Glenn County General Plan recognizes the Sacramento River corridor as an area of significant biological importance. County policy encourages preservation of the natural riparian habitat along the Sacramento River as well as other watersheds, including Butte and Stony Creeks. Existing riparian vegetation should be protected and revegetation programs undertaken. Mitigation measures should result in no net loss of habitat productivity. The county works with DFG and USFWS, as well as conservation and preservation groups, to identify areas for restoration and enhancement.

The general plan suggests amending county zoning code to include a Streamside Protection Zone, but the county has not addressed this recommendation. The county has recently applied for a federal grant to fund preliminary watershed protection studies.

Mining and mineral resources are also addressed in the Glenn County General Plan. Mineral extraction is permitted, but is required to be compatible with surrounding land use and should not affect the environment. The use-permit process decides when and where these activities can occur. The Extractive-Industrial zoning designation has been removed from areas containing natural riparian habitat and changed to agricultural or light-industrial status; this is meant to provide greater protection to habitat areas previously subject to mining activities (Glenn County, 1993).

#### *Codes and Ordinances*

GLENN COUNTY CODE 16.16 outlines regulations for land leveling and changes to conditions.

GLENN COUNTY CODE 16.24 details the minimum standards for dealing with public drainage courses. Maps, plans and profiles are required to describe the present site conditions, proposed work plan, adjacent land uses and proposed finished site and private losses due to flooding. The purpose of this law is to minimize loss and damage to life and property, ensure that potential buyers are aware of flood hazards and ensure that individuals occupying areas of flood hazard are responsible for their actions. It establishes general standards related to subdivisions, utilities and storage of material and equipment as well as specific standards regarding residential and non-residential construction and mobile homes.

GLENN COUNTY CODE 21.04 sets county regulations in accordance with the 1975 Surface Mining and Reclamation Act. Applicants for mining permits are required to: identify landowners and mineral rights holders, specify dates of activity, quantity and type of materials to be removed, contain site maps and descriptions of existing conditions, and operating and reclamation plans. A public hearing is required before the permits are granted and annual inspections are conducted. This code also considers idle and abandoned mines. (Glenn County Code, 1995).

**FOR FURTHER INFORMATION:**

Glenn County Resource Planning and Development Department  
125 South Murdock Avenue  
Willows, CA 95988  
Phone: (530) 934-6540

**COLUSA COUNTY**

*General Plan*

The Colusa County General Plan recognizes there are sensitive lands along the Sacramento River that contain rare species. The plan also recognizes that much of the Sacramento River's riparian vegetation has been destroyed as a result of agriculture, flood control, and channelization. County policy recommends habitat resource conservation and protection of water quality and quantity.

The Resource Conservation Element of the Colusa County General Plan encourages conservation of fish and wildlife habitat throughout the county. Preservation of the natural qualities of rivers and streams is also encouraged. Zoning, planning, and taxation policies should preserve watershed areas, as well as agricultural lands and hillside areas. Development in the Sacramento River floodway and ecologically sensitive areas is discouraged. The Open Space and Recreation Element additionally encourages the conservation of the natural beauty of rivers and streams (Colusa County, 1989).

**FOR FURTHER INFORMATION:**

Colusa County Planning and Building  
220 12th Street  
Colusa, CA 95932  
Phone: (530) 458-0480

**SUTTER COUNTY**

*General Plan*

The Open Space Element of the Sutter County General Plan keeps its discussion of goals and policies related to the Sacramento River somewhat general. The plan identifies the importance of natural resources and encourages development projects that minimize impacts to open space and wildlife habitat areas.

The Natural Resources section encourages the preservation and protection of water resources. In cooperation with DFG's Stream Corridor Protection Program, the county's policies encourage development set-backs from all water courses and the protection of water recharge areas. Wetland and riparian areas are defined as significant areas that are important to protect. The county has established a policy of no net loss of wetlands. In addition, surface runoff from agricultural or other uses is discouraged from diversion into wetland areas. The county recommends the preservation of areas of high habitat value by supporting preservation and reestablishment of fisheries. Riparian areas are to be protected and the planting of native and drought tolerant plants are encouraged (Sutter County, 1994).

### *Codes and Ordinances*

SUTTER COUNTY SURFACE MINING AND RECLAMATION CODE requires that all extractive activities, such as mining, submit reclamation plans to the county and receive permit approval before operations in streamside areas can begin.

SUTTER COUNTY ZONING CODE SECTION 7910 establishes a Flood Plain Combining Zoning District within which development standards or use restrictions apply.

SUTTER COUNTY RESOLUTION 92-124 states that any development in special flood zone hazard area, as defined by FEMA, must submit an elevation certificate by a licensed surveyor.

#### **FOR FURTHER INFORMATION:**

Sutter County Planning Department  
PO Box 1555  
Yuba City, CA 95992  
Phone: (530) 822-7400

## **YOLO COUNTY**

### *General Plan*

The Yolo County General Plan recommends maintaining waterways and riverbank corridors as part of its open space preservation program. Because of high scenic value. The plan includes maps which highlight these areas as significant. Other recommendations include protection and creation of wildlife habitat areas and the adoption of lists and maps of the distribution of natural features and other significant characteristics of the county's physical environment. The county's goal is to plan, encourage, and regulate natural resources in order to ensure long-term ecological benefits, and to prevent unnecessary disruptions to terrain, vegetation, and other resources.

All watershed areas are designated on county overlay maps for conservation purposes. Watershed areas are limited to the following activities: grazing; wild hay production; soil, water and wildlife conservation; and non-intensive recreation. The county requires conditional use permits to ensure conservation of natural vegetation.

The general plan does not permit sand and gravel mining operations in areas along the Sacramento River or its tributaries (Yolo County, 1983).

### *Codes and Ordinances*

YOLO COUNTY CODE CHAPTER 3, TITLE 8, FLOOD DAMAGE PREVENTION requires that any obstructions built in the 100-year floodplain be above the 100-year flood level. A thorough review process is required before permits are issued.

### *Yolo County Habitat Management Plan*

The county is currently working on a habitat management plan that encourages conservation easements and habitat protection zones within active agricultural fields and county sloughs. At present the management plan focus has been on agricultural

areas and has not focused on habitat issues inside the Sacramento River levee system. The plan may incorporate these issues. Currently, the draft habitat management plan is undergoing city and county review (Yolo County, 1995; Hamblin, 1997 pers. comm.).

*Yolo County Flood Control and Water Conservation District.*

This special district was created by the state legislature in 1951, for the control and disposition of the storm and floodwaters of the district, and to make water available for any beneficial use of land or inhabitants (DWR, 1978).

**FOR FURTHER INFORMATION:**

Yolo County Planning Department  
292 West Beamer Street  
Woodland, CA 95695  
Phone: (530) 666-8775

**CITY OF TEHAMA**

*General Plan*

The general plan for the City of Tehama encourages the recreational use of the Sacramento River. Streets that end at the bank of the river and portions of First Street that lie along the river are reserved for river access. In addition, city approval is required for the removal of trees (City of Tehama, 1972).

*Code and Ordinances*

ZONING ORDINANCE #89 – All river frontage not privately owned is reserved for the city to use for mini parks, river access, river bank control, wildlife preservation and scenic beauty and recreation (City of Tehama).

FLOOD ORDINANCE #130 – This ordinance sets standards for development within special flood hazard areas and prohibits development within floodways that would result in an increase in flood levels (City of Tehama).

**FOR FURTHER INFORMATION:**

City of Tehama  
250 Cavalier Drive  
Tehama, CA 96090  
Phone: (530) 384-1501

**CITY OF COLUSA**

*General Plan*

The City of Colusa General Plan does not mention specific policies or goals related to the Sacramento River. Because the city is protected from the bordering Sacramento River by levees of the Sacramento Valley Flood Control Project, development in the area between the river and levees has not and will not occur.

The general plan recognizes that because of its proximity to the river, Colusa has abundant waterfowl and raptors. The plan also recognizes that the Sacramento River is of scenic importance to the community.

The Colusa-Sacramento River State Recreation Area consists of 63 acres just outside the city limits along the Sacramento River. The general plan asserts that it will support the continuation of this facility. The City of Colusa recognizes FEMA's boundary of the 100-year floodplain and, as a result, development on or within the levee system that borders the Sacramento River is not permitted (City of Colusa, 1994).

#### *Downtown Development/Preservation Program*

The City of Colusa developed a Downtown Development/Preservation Program in 1988 that outlines a comprehensive plan for the downtown commercial area. It recommends reducing the density of commercial activity in the area along the Sacramento River by changing zoning to lighter density commercial in approximately half of the area.

The program also recommends that Colusa "take advantage of its proximity to the Sacramento River." By recreating a downtown more accommodating to pedestrian travel, the town is hoping to promote enjoyment of the river (City of Colusa, 1988).

#### **FOR FURTHER INFORMATION:**

City of Colusa Planning Department  
P.O. Box 1063  
Colusa, CA 95932  
Phone: (530) 458-4740

## **CITY OF REDDING**

### *General Plan*

The Redding General Plan recognizes the Sacramento River as the area's greatest physical asset. The city's stated goals and policies are to enhance and protect the River as well as provide increased public access. The city is working toward maintaining the scenic quality of waterways by encouraging planned public access areas and trail systems. The plan recognizes that preservation and maintenance of existing riparian vegetation is critical for scenic reasons. The plan recommends implementing of development standards that will prevent stream flooding and loss of habitat.

Redding also recommends minimizing grading impacts within the 100-year floodplain. The city recommends maintaining gravels within the 100-year floodplain for salmon spawning and has a policy of promoting vegetation growth near spawning pools and replanting riparian vegetation on stream and river banks where channel modification is deemed necessary.

The general plan recommends locating structures and developments (other than public parks) outside the riparian buffer area. Riparian corridors are recommended for the 100-year flood plain and facilitated by the creation of easements and fee deductions. The city's general policy is to prohibit all development within the 100-year floodplain.

The City Council has endorsed the DFG Stream Corridor Protection Program. Program maps will be used to work with developers so that site plans are developed with minimal impact to riparian corridors. Redding is working on implementing development set-back regulations in accordance with the program and plans to formalize such recommendations by amending the general plan.

The city requires all tentative subdivision applicants to provide maps of all streams, watercourses, and seasonal drainages in an anticipated project area. Riparian habitat must be delineated and a buffer defined that will protect such habitat. Slope and soils characteristics must also be defined and information on grading (existing and proposed conditions) is required (City of Redding, 1985).

#### *Codes and Ordinances*

REDDING MUNICIPAL CODE CHAPTER 18.47, COMBINING FLOODPLAIN DISTRICTS. This code restricts development within the 100-year floodplain to elevated structures.

#### **FOR FURTHER INFORMATION:**

City of Redding Planning Director  
760 Parkview Drive  
Redding, CA 96001-3318  
Phone: (530) 225-4020

### **CITY OF ANDERSON**

#### *General Plan*

The City of Anderson General Plan states that the areas of most significant habitat are along the Sacramento River and Anderson Creek. The city's policies focus on retaining riparian vegetation along waterways in conjunction with preserving wildlife habitat areas. One of the city's goals is to prevent degradation of area water resources due to development and growth; maintenance of quality and quantity of water is an important goal. The City of Anderson zoning code precludes mining operations along the Sacramento River within the city limits (Anderson, 1989).

#### *Codes and Ordinances*

CITY OF ANDERSON FLOOD DAMAGE AND PROTECTION ORDINANCE sets the flood-proofing and elevation criteria for any development within the 100-year floodplain (City of Anderson, April 1997 pers. comm.).

#### **FOR FURTHER INFORMATION:**

City of Anderson  
Anderson Planning Department  
1877 Howard Street  
Anderson, CA 96007  
Phone: (530) 378-6636

## **CITY OF RED BLUFF**

### *General Plan*

The City of Red Bluff General Plan suggests measures to protect and conserve the area along the Sacramento River. These measures include discouraging development within the riparian area and floodplains and cooperating with the county in promoting the protection of riparian habitat.

Red Bluff's general plan recommends conducting a wetland resources inventory for use in all land use decisions. A tree preservation ordinance has been suggested that would result in no net loss of native trees within the city limits. A list of native plants compatible with valley oaks is also being considered as a conservation tool.

The water resources section of the general plan promotes the conservation and improvement of ground and surface water resources. Watersheds and recharge areas are to be protected. The soils and vegetation in water recharge and percolation areas are to be preserved and maintained in their natural state. Reduction of sediments entering waterways is recommended ; projects reducing soil erosion are encouraged. A stated goal is to restrict urban intrusion into the floodplain area (City of Red Bluff, 1993).

### *Codes and Ordinances*

**ZONING CODE** The small areas of riparian habitat within the city (such as Dog Island Park) are zoned as public agency lands, protecting them from development.

**RED BLUFF'S FLOOD HAZARD PREVENTION ORDINANCE** protects the Sacramento River and tributary streams from development within the 100-year floodplain by eliminating density credits from all new development within this area. Lots zoned for development prior to the passage of this ordinance, however, can develop. Structures must be built so that they are above the flood line.

### **FOR FURTHER INFORMATION:**

City of Red Bluff  
555 Washington Street  
Red Bluff, CA 96080-3433  
Phone: (530) 527-2605

## **Resource Conservation Districts**

Resource conservation districts (RCDs) are formed in accordance with Division IX of the Public Resources Code for the State of California. RCDs are special districts with local responsibility for addressing such resource issues as non-point source pollution, soil erosion, loss of prime and unique farmland, improvement of grazing and the promotion of integrated pest management practices. RCDs work closely with the USDA Natural Resources Conservation Service and other technical assistance agencies through memoranda of understanding, to address resource concerns through technical and financial assistance programs and conservation education. RCDs often make recommendations to county planning departments and boards of supervisors on soil, habitat and drainage-related issues associated with land conver-

sions and building site development. Board members are elected locally or appointed by the board of supervisors and a board may include an unlimited number of non-voting directors. RCD directors hold regular monthly business meetings and prioritize local resource conservation concerns via annual and long-range work plans. Although there is no mechanism in place for funding RCDs, several districts throughout California exercised their right to assess taxes before Proposition 13 passed. Several other RCDs around the state have entered into grant program agreements as a way to help fund conservation demonstration projects, land treatment programs and information and education activities.

### ***Western Shasta RCD***

The Western Shasta Resource Conservation District (WSRCD) was established in 1957, and extends north to Siskiyou County, west to Trinity County, south to Tehama County, and east essentially along the watershed divide between eastern and western Shasta County. It covers approximately 1,700,000 acres.

A board of seven directors governs the WSRCD. The County Board of Supervisors appoints RCD directors who serve voluntarily. They are local, private landowners who share a common interest in providing direction in their community's natural resource programs.

WSRCD can act as the "on-the-ground" implementing agency for restoration and conservation work by contracting with agencies. WSRCD also organizes Coordinated Resource Management Plans involving local landowners and government agencies. District activities include technical field assistance, urban development projects, environmental education and information programs, along with a variety of other services.

The district's mission is to work cooperatively with willing landowners and other organizations leading to conservation or restoration of desirable natural resources.

#### **FOR FURTHER INFORMATION:**

Western Shasta Resource Conservation District  
3179 Bechelli Lane, Suite 110  
Redding, CA 96002-2041  
Phone: (530) 246-5252

### ***Tehama County RCD***

Tehama County Resource Conservation District (TCRCD) was created in 1987 when Cottonwood RCD, Lassen View RCD, and Corning RCD consolidated. Vina RCD, in southeastern Tehama County, decided to remain a separate district. Five directors govern TCRCD assisted by eight associate directors. The directors have held offices and been involved at the state and national level.

TCRCD promotes conservation and supports the existing watershed conservancies. The district is encouraging planning and implementation of programs in other watersheds. In addition, TCRCD has promoted resource education for youth by sponsoring resource days, science fairs, and other natural resource activities. TCRCD has also sponsored workshops and seminars on topics including holistic resource management and wildlife management.

**FOR FURTHER INFORMATION:**

Tehama County RCD  
Natural Resources Conservation Service  
2 Sutter Street, Suite D  
Red Bluff, CA 96080  
Phone: (530) 527-4231

***Sutter County RCD***

Sutter County Resource Conservation District advises individuals and public agencies in planning and applying conservation practices for protection, restoration, or development of land, water, and related natural resources. It is not a regulatory agency. Technical help is provided without charge and covers a range of resource management activities, including: irrigation systems, irrigation water management, wildlife habitat management, range management, conservation education, erosion control, soils interpretations, wetland habitat, vegetation plantings, and rice residue management.

Five directors administer the Sutter County RCD, serving without pay for a four-year term. Meetings are at 7 p.m. on the second Wednesday of each month at 1511-B Butte House Road in Yuba City. All meetings are open to the public.

**FOR FURTHER INFORMATION:**

Sutter County Resource Conservation District  
1511-B Butte House Road  
Yuba City, CA 95993  
Phone: (530) 674-1461

***Yolo County RCD***

Active for over 40 years, Yolo County RCD administers grants for habitat restoration, workshops, public outreach, water and energy conservation, groundwater recharge, flood control, pesticide management, and blending wildlife habitat with recreational opportunities. They welcome new members and alliances, both with individuals and agencies.

**FOR FURTHER INFORMATION:**

Yolo County Resource Conservation District  
221 West Court Street, Suite 8  
Woodland, CA 95695  
Phone: (530) 662-2037

***Other Resource Conservation Districts***

Other RCDs within the Sacramento River Conservation Area are:

- Vina RCD
- Glenn County
- Colusa County

### **Irrigation Districts**

Nine irrigation districts lie partially within the proposed Conservation Area. Each has a unique history and organizational structure. The Glenn-Colusa Irrigation District, for example, has its roots in the formation of the Central Irrigation district under the Wright Act of 1887. Other districts depend on groundwater, or tailwater, from adjacent districts. In addition to the irrigation districts within the proposed Conservation Area, several are located outside of the Conservation Area but obtain water at Sacramento River diversions.

### **Levee and Reclamation Districts**

The formation of reclamation districts was originally authorized in 1868 to facilitate reclamation of swamplands by building levees and drainage systems. The formation and regulation of reclamation districts is incorporated into the Water Code, Section 50000 and following. Today, the landowners within these districts support their operation, maintenance, and improvement. Reclamation Districts 70, 1660, and 1500 are responsible for the maintenance of a major portion of the Sacramento River Flood Control Project levees on the east side of the main river channel below Colusa. The Sacramento River West Side Levee District is responsible for maintenance of the west side of the levee along the Sacramento River from Colusa to Knights Landing. In areas where there are no reclamation or levee districts, DWR maintains the project levees. (See Figure 2-13).

Irrigation, levee, and reclamation district activities along the Sacramento River can relate to riparian habitat management in several ways. Unlined irrigation and drainage ditches and canals may provide sufficient water for the growth of riparian habitat in areas that might not otherwise support it. Ditch and levee maintenance practices may also affect riparian habitat. In some areas levee maintenance is carried out in a way that allows strips of riparian habitat to remain on levee berms; in other areas this is not the case. The siting of larger diversion structures along the Sacramento River may also have important implications for riparian habitat; structures requiring bank protection may inhibit the physical river processes which maintain riparian forest succession.

Appendix E contains the addresses of the levee and reclamation districts within the proposed Conservation Area.

## **STATE AGENCIES**

### **Office of the Secretary for Resources**

The Secretary for Resources directs the State Resources Agency, which functions as an "umbrella" agency, setting major resource policy for the state and overseeing programs of agency departments including the Department of Water Resources (DWR), Department of Fish and Game (DFG), and California Coastal Commission (CCC). The agency evaluates California Environmental Quality Act (CEQA) documents for consideration of existing state policy, programs and plans. It coordinates all state agency comments on applications for U.S. Army Corps of Engineers (USACE) permits. State conservancies, such as the California Coastal Conservancy and the Tahoe Conservancy, are also within the Agency.

**SACRAMENTO-SAN JOAQUIN VALLEY WETLANDS MITIGATION BANK ACT OF 1993**  
(SECTIONS 1775-1796 OF THE FISH AND GAME CODE)

This Act recognizes that wetlands within the Sacramento-San Joaquin Valley provide significant value for migratory waterfowl, endangered species, other resident wildlife and fish populations, as well as such additional public benefits as water quality improvement, flood protection, stream bank stabilization, recreation, and scientific research. The intent of this Act is to establish a mechanism for establishing and operating mitigation banks to provide specific predefined sites within which credits may be purchased to mitigate for wetlands impacts.

**SIGNIFICANT NATURAL AREAS PROGRAM**  
(SECTIONS 1930-1933 OF THE FISH AND GAME CODE)

This program is based upon state policy to encourage cooperative efforts to maintain the state's most significant natural areas. It implements the California Natural Diversity Data Base, designed to identify and document the state's most significant natural areas and encourage cooperative measures to maintain and perpetuate them.

**WILDLIFE AND NATURAL AREAS CONSERVATION PROGRAM (PROPOSITION 70)**  
(SECTIONS 2700-2729 OF THE FISH AND GAME CODE)

This Act was passed to provide the Wildlife Conservation Board (WCB) and DFG the financial means to correct the most severe deficiencies in wildlife habitat and in the statewide system of areas designated for the preservation of California's natural diversity through a program of acquisition, enhancement, restoration, and protection of areas that are most in need of proper conservation.

**KEENE-NIELSEN FISHERIES RESTORATION ACT OF 1985**  
(SECTIONS 2760-2765 OF THE FISH AND GAME CODE)

This Act is directed at reasonable efforts to prevent further declines in fish and wildlife, to restore fish and wildlife to historic levels where possible, and to enhance fish and wildlife resources where possible. The Act is particularly directed at implementing measures to protect, restore and enhance naturally spawning populations of salmon and steelhead.

**CALIFORNIA WILDLIFE PROTECTION ACTION OF 1990 (PROPOSITION 117)**  
(SECTIONS 2780-2799.6 OF THE FISH AND GAME CODE)

The Act directs the preservation, maintenance and enhancement of wildlife habitat, with particular emphasis on deer and mountain lion.

**NATURAL COMMUNITY CONSERVATION PLANNING ACT**  
(SECTION 2800-2840 OF THE FISH AND GAME CODE)

The Natural Community Conservation Planning Act (NCCP) provides for the implementation of a plan on a regional or area wide basis that protects and perpetuates natural wildlife diversity while allowing compatible and appropriate development and growth.

**SALMON, STEELHEAD TROUT, AND ANADROMOUS FISHERIES RESTORATION PROGRAM**  
(SECTIONS 6900-6924 OF THE FISH AND GAME CODE)

This act establishes the goal of doubling the natural production of salmon and steel-

head trout by the end of the century, while encouraging public participation in mitigation, restoration and enhancement programs.

**COMMERCIAL SALMON TROLLERS ENHANCEMENT AND RESTORATION PROGRAM  
(SECTIONS 7860-7863 OF THE FISH AND GAME CODE)**

This program implements projects to restore and enhance salmon habitat.

**TAXES AND ASSESSMENTS - STATE OWNED PROPERTY  
(SECTION 1504 OF FISH AND GAME CODE)**

This section of the Fish and Game Code discusses reimbursement, assessments, and payments on state owned property. When income is derived from state owned property "the department shall pay annually to the county in which the property is located, an amount equal to the county taxes levied upon the property at the time title to the property was transferred to the state. The department shall also pay the assessments levied upon the property by any irrigation, drainage, or reclamation district."

**FOR FURTHER INFORMATION:**

**Shasta County**                      California Department of Fish and Game  
**Tehama County**                    Region 1 (Northern California-North Coast)  
601 Locust  
Redding, CA 98001  
Phone: (530) 225-2300

**Butte County**                        California Department of Fish and Game  
**Glenn County**                      Region 2 (Sacramento Valley-Central Sierra)  
**Colusa County**                      1701 Nimbus Road  
**Sutter County**                       Rancho Cordova, CA 95870  
**Yolo County**                        Phone: (530) 358-2900

***Fish and Game Commission***

The Fish and Game Commission, consisting of five members appointed by the Governor, sets the policy under which DFG operates, and regulates the possession and taking of fish and wildlife. Fish and Game Commission policies, which directly relate to the implementation of a Sacramento River Riparian Conservation Area, include:

***Policies***

**Land Use Planning**

This policy states that the preservation, protection and restoration of fish and wildlife resources within the state is of significant public interest. It is inseparable from the need to acquire, preserve, protect and restore fish and wildlife habitat to the highest possible level, and to maintain, in a state of high productivity, those areas that can be most successfully used to sustain fish and wildlife and which will provide appropriate consumptive and nonconsumptive public use.

Flood Control Project, including the main and overflow channels of the Sacramento River and its tributaries. This division is responsible for inspecting the Sacramento River Flood Control Project levees, to assess compliance with environmental easements adjacent to these levees. The Division also works as the state coordinating agency for the Federal Emergency Management Agency (FEMA).

DWR's Division of Local Assistance (Northern District) provides staff support to the Upper Sacramento River Fisheries and Riparian Habitat Management Program. This work includes the development of a Sacramento River Geographical Information System. In addition, the Division conducts studies related to the riparian ecosystem along the Sacramento River, including land use, riparian vegetation, erosion, and see page studies.

**FOR FURTHER INFORMATION ON DWR'S FLOOD MANAGEMENT ACTIVITIES  
ALONG THE SACRAMENTO RIVER:**

California Department of Water Resources  
Division of Flood Management  
Floodplain Management Branch  
1020 9th Street  
Sacramento, CA 95814  
Phone: (916) 574-2783

**FOR MORE INFORMATION ON THE SACRAMENTO RIVER GEOGRAPHICAL  
INFORMATION SYSTEM:**

California Department of Water Resources  
Division of Local Assistance  
Northern District, Water Management Branch  
2440 Main Street  
Red Bluff, CA 96080  
Phone: (530) 529-7300

***Reclamation Board***

Staffed by DWR, the Reclamation Board (the Board) is the state agency that cooperates with the USACE in controlling flooding along the Sacramento and San Joaquin Rivers and tributaries. The California Legislature created the Board in 1911 to carry out a comprehensive flood control plan for the Sacramento and San Joaquin Rivers. Under California law, no reclamation project may be started or carried out on or near the Sacramento and San Joaquin Rivers until the Board has approved plans for such work. The Board's efforts focus on controlling floodwater, reducing flood damage, protecting land from floodwater erosion that would affect project levees, and controlling encroachment into floodplains and onto flood control works, including levees, channels, and pumping plants.

The Board also establishes designated floodways in order to maintain channel capacity. The Board usually administers this regulation, but counties can administer it under an agreement with the Board. The Board owns and manages riparian habitat along the Sacramento River which serves a flood control purpose (often known as "MBK sites" after the firm, Murray, Burns and Kienlen which identified them) (Chapter 2). It has also purchased environmental easements along the river as mitigation for bank protection construction and general, as well as levee, maintenance activities.

**FOR FURTHER INFORMATION:**

The Reclamation Board  
1416 Ninth Street  
Sacramento, CA 95814  
Phone: (916) 653-5434

***Department of Parks and Recreation***

California Department of Parks and Recreation's (DPR) mission is to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.

DPR activities are directed toward accomplishing eight principal objectives:

1) secure and preserve elements of the state's outstanding landscape, cultural, and historical features; 2) provide the facilities and resources required to fulfill the recreational demands of the people of California; 3) provide a meaningful environment in which the people of California are given the opportunity to understand and appreciate the state's cultural, historical, and natural heritage; 4) maintain and improve the quality of California's environment; 5) prepare and maintain a statewide recreational plan that includes an analysis of the continuing need for recreational areas and facilities and a determination of the levels of public and private responsibility required to meet those needs; 6) encourage all levels of government and private enterprise throughout the state to participate in the planning, development, and operation of recreational facilities; 7) meet the recreational demands of a highly accelerated, urban-centered population growth, through the acquisition, development, and operation of urban parks; and 8) encourage volunteer services in the State Park System through the establishment of a recognition program of such services. DPR's resource management includes native plant reintroduction, exotic plant removal, prescribed fire management, and restoration of stream channels, banks, and associated riparian vegetation.

DPR is responsible for the disbursement of state bond funds and Federal Land and Water Conservation Funds (when such funds exist) and other grants to local government park and recreation agencies that contribute to the resource management of rivers and streams.

DPR owns and manages several sites along the Sacramento River (Chapter 7). These sites are managed according to the eight management principles discussed above.

**FOR FURTHER INFORMATION:**

California Department of Parks and Recreation  
P.O. Box 942896  
Sacramento, CA 94296-0001  
Phone: (916) 653-7423

California Department of Parks and Recreation  
Northern Buttes District  
400 Glen Drive  
Oroville, CA 95966-9222  
Phone: (530) 538-2200

### **Department of Boating and Waterways**

The Department of Boating and Waterways (DBW) is responsible at the state level for providing programs to develop recreational boating access and promote safety on California's waterways. To these ends, DBW provides programs to construct and improve small craft harbors and marinas, boat launching facilities, and boating facilities on state-owned lands. DBW's Beach Erosion Control Unit studies coastal sand supply and transport, which is related to the management of inland stream systems. Under the Recreational Trails Act of 1974 (Sections 5070 - 5076 of the Public Resources Code), DBW has planning responsibilities for the Boating Trails Element of the Recreational Trails Plan, including identifying non-motorized boating trail routes, and complementary facilities to be included within the system. The department publishes *A Boating Trail Guide to the Sacramento River, Woodson Bridge to Colusa* and *Safe Boating Hints for the Sacramento River*. A third publication, *A Boating Trail Guide to the Sacramento River, Redding to Red Bluff* is currently in production.

#### **FOR FURTHER INFORMATION:**

California Department of Boating and Waterways  
1629 S Street  
Sacramento, CA 95814  
Phone: (916) 445-2615

### **California Water Commission**

The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resource matters. The nine-member citizen commission serves to coordinate state and local views with regard to federal appropriations for flood control, water, and fishery projects in California. It provides a water resources forum for the people of the state, acts as liaison between the legislative and executive branches of state government, and coordinates federal, state, and local water resources efforts. A member of the California Water Commission has participated in the SB1086 Advisory Council since its creation.

#### **FOR FURTHER INFORMATION:**

California Water Commission  
1416 9th Street, Room 1148  
Sacramento, CA 95814  
Phone: (916) 653-5958

### **Office of Emergency Services**

The Office of Emergency Services (OES) assists local governments in preparing for and responding to flooding and other disasters. It is often active along the Sacramento River during emergency flood events. OES also administers Hazard Mitigation funds, which can be applied to riparian corridor securement programs that provide demonstrated positive cost benefit ratios relative to flood management.

**FOR FURTHER INFORMATION:**

Office of Emergency Services  
2800 Meadowview Road  
Sacramento, CA 95832  
Phone: (916) 262-1800

**Department of Forestry and Fire Protection**

The mission of the California Department of Forestry and Fire Protection (CDF) is to: 1) prevent and suppress fires occurring on state and privately owned forest, brush, and grass covered lands; 2) provide land management programs; 3) administer and enforce forest practice rules; 4) assist in range improvement programs; and 5) conduct or cooperate in forest and fire research programs.

When funds are available, CDF also administers various cost-share programs including the Forest Improvement Program, the Stewardship Incentive Program, the California Forest Improvement Program, and the Agricultural Conservation Program (Chapter 2). Some of these are applicable to riparian habitat conservation on the Sacramento River.

CDF plays an important role in fire protection along the Sacramento River. In addition, its activities in the forests of the surrounding watersheds may impact runoff amount and pattern into the Sacramento River. A CDF representative sits on the SB1086 Advisory Council.

**FOR FURTHER INFORMATION:**

Shasta County: California Department of Forestry and Fire Protection  
Shasta Ranger Unit  
1000 Cypress Avenue  
Redding, CA 96001  
Phone: (530) 225-2418

Tehama County: California Department of Forestry and Fire Protection  
Glenn County: Tehama-Glenn Ranger Unit  
604 Antelope Boulevard  
Red Bluff, CA 96080  
Phone: (530) 529-8548

Butte County: California Department of Forestry and Fire Protection  
Butte Ranger Unit  
176 Nelson Avenue  
Orville, CA 95965  
Phone: (530) 538-7111

Colusa County: California Department of Forestry and Fire Protection  
Yolo County: Sonoma-Lake-Napa Ranger Unit  
1572 Railroad Avenue  
St. Helena, CA 94574  
Phone: (707) 963-3601

### **Regional Water Quality Control Board**

The Regional Water Quality Control Board (Regional Board) acts locally for the State Water Quality Control Board. Its role is to protect surface and groundwater quality and the beneficial uses of the waters throughout the region by: 1) issuing waste discharge requirements (permits) regulating the discharge of waste to surface water and groundwater; 2) enforcement of waste discharge requirements by issuing cease and desist orders, cleanup and abatement orders, administrative civil liability orders, and court action; 3) water quality control planning within the region; and 4) surveillance and monitoring to detect new sources of pollution and to ensure that ongoing discharges are in compliance with waste discharge requirements.

The primary historical relationship between the Regional Board and landowners along the Sacramento River, has been through Section 401 of the Clean Water Act. Under this law, applicants for a permit from the U.S. Army Corps of Engineers (pages 35-36) for discharge of dredge or fill material must also obtain a "Water Quality Certification" that the project will uphold state water quality standards. Applicants for this certification are required to submit an application with the appropriate fee to the Executive Officer of the Regional Board. Upon receipt of a complete application, the Regional Board staff will determine if waiver, certification, or denial of certification will be recommended. California Environmental Quality Act (CEQA) compliance is required prior to board action.

In addition to these regulatory responsibilities, the Central Valley Regional Water Quality Control Board is administering the Sacramento River Watershed Program (funded by the Environmental Protection Agency). The goal of this program is to ensure that the current and potential uses of the Sacramento River watershed's resources are sustained, restored, and where possible, enhanced, while promoting the long-term social and economic vitality of the region.

#### **FOR INFORMATION ON OBTAINING WATER QUALITY CERTIFICATION IN CONNECTION WITH A U.S. ARMY CORPS 404 PERMIT:**

Shasta, Tehama  
and Glenn Counties:      Central Valley Regional Water Quality Control Board  
   Redding Office  
   415 Knollcrest Drive  
   Redding, CA 96002  
   Phone: (530) 224-4845

Butte, Colusa, Sutter  
and Yolo Counties:      Central Valley Regional Water Quality Control Board  
   3443 Routier Road  
   Sacramento, CA 95827-3098  
   Phone: (916) 225-3000

#### **FOR INFORMATION ON THE SACRAMENTO RIVER WATERSHED PROGRAM:**

Central Valley Regional Water Quality Control Board  
3443 Routier Road, Suite A  
Sacramento, CA 95827-3098  
Phone: (916) 255-3000

## **State Lands Commission**

The Commission administers state-owned "sovereign lands". Sovereign lands, those underlying tidal and navigable waterways, encompass nearly 4 million acres of lakes, rivers, sloughs, and bays, as well as state ocean waters. Examples of sovereign lands include the California portion of Lake Tahoe, San Francisco Bay, most Delta waterways, the San Joaquin and Sacramento Rivers, and the three-mile strip of tide and submerged lands along the entire California coastline.

Under the Public Trust Doctrine, sovereign lands are held for the benefit of all the people of the State for public trust purposes of waterborne commerce, navigation, fisheries, open space, recreations, and habitat preservation, among others.

The Lieutenant Governor, the State Controller and the State Director of Finance serve as ex-officio members of the Commission. A staff of more than 220 specialists in land management, mineral resources, boundary determination, petroleum engineering, and the natural sciences assist the Commission.

The Upper Sacramento River, defined by this *Handbook* as between Keswick Dam and the mouth of the Feather River, as well as some portions of the larger tributaries in this area, are state-owned sovereign lands. These particular waterways are regarded as non-tidal and therefore California holds a fee ownership in the bed of the river or stream between the ordinary low water marks. The entire river or stream between the ordinary high water marks is subject to a Public Trust Easement. (In tidal waterways, the State generally owns in fee to the ordinary high water mark, as in, for example, the tidal portions of the Sacramento River in its downstream reaches.)

Because the landward boundaries of the State's sovereign interests are generally based upon the ordinary high water marks as they last naturally existed, boundaries may not be readily apparent from observing present day conditions.

Both easement and fee-owned lands are under Commission jurisdiction as land owner and manager. Proposed development projects on state-owned lands or other projects seeking to occupy sovereign lands for a variety of uses normally require Commission authorization. On fee-owned state lands, public and private entities may apply to the Commission for leases or permits for a variety of purposes including marinas, boat launches, private docks, pipeline crossings, dredging, or fish and wildlife refuges.

In its day-to-day role as trust land manager, the Commission seeks to balance resource management, revenue generation, environmental protection, and public enjoyment on sovereign state lands. The Commission must carry out its responsibilities under the Public Trust Doctrine as well as a number of other laws and regulations which govern its operation, including the California Environmental Quality Act (CEQA).

The Commission recently published *California's Rivers: A Public Trust Report*, a 334 page report on the status and trends of the states rivers, including their values, ecology, and history. A representative of the Commission sits on the SB1086 Advisory Council.

### **FOR FURTHER INFORMATION:**

California State Lands Commission  
100 Howe Avenue, Suite 100  
Sacramento, CA 95825  
Phone: (916) 574-1900

## **FEDERAL AGENCIES**

### ***United States Fish and Wildlife Service***

The U.S. Fish and Wildlife Service (USFWS) is the principal agency through which the federal government carries out its responsibilities to conserve, protect, and enhance the nation's fish and wildlife and their habitats. The agency's major responsibilities are for migratory birds, and candidate, threatened and endangered species. The USFWS is both a regulatory agency with jurisdiction over both public and private lands and a land management agency for federal wildlife refuges.

USFWS's programs include fish and wildlife conservation; technical and financial assistance on fish and wildlife management to the private sector, federal, state, and local agencies. Migratory birds; the acquisition of areas for management and protection of migratory birds, endangered species, and other wildlife, and for wildlife-oriented public recreation; wetlands conservation; funding for wetlands acquisition; wetland delineation; assessing the affects of contaminants on wildlife and their habitats; conservation of estuarine areas under the Estuarine Areas Act (PL 90-454); the National Wetland Inventory and insuring compliance with NEPA.

In accordance with the Fish and Wildlife Coordination Act, the USFWS reviews projects which are funded by the federal government or require a federal permit. The Clean Water Act gives the USFWS the authority to review dredge and fill permits administered by the U.S. Army Corps of Engineers in waters of the U.S. (Section 404 and Section 10). The USFWS reviews hydroelectric power projects under the authority of the Federal Power Act, and also provides consultation on endangered species for the environmental review processes under the Endangered Species Act, National Environmental Policy Act (NEPA), and the California Environmental Quality Act (CEQA).

#### ***Endangered Species Act***

The USFWS implements various provisions of the Endangered Species Act (ESA): species listing, consultations and permits for possible "incidental takes" of listed species, and oversight and approval of Habitat Conservation Plans. The act provides for the establishment of lists of threatened and endangered species. Any inclusions to or deletions from the lists must come after proper notice and, if requested, public hearing. The lists are reviewed every five years to determine if any species should be removed or have their status changed.

The Secretary of the Interior may also identify critical habitat and impose regulations governing those areas. The Secretary of the Interior is also directed to establish programs for the conservation and recovery of listed species, including the acquisition of land and other interests affecting habitat.

#### ***Migratory Bird Conservation Act***

Under the Migratory Bird Conservation Act of 1929, the USFWS is authorized to acquire lands for conservation of migratory waterfowl. The agency can also purchase land for refuges under the Fish and Wildlife Act of 1956, the Endangered Species Act of 1973, and the Emergency Wetlands Resources Act of 1986. In northern California, the FWS manages the Klamath Basin, Modoc, Sacramento, San Francisco Bay, Stone Lakes, and Humboldt Bay National Wildlife Refuges.

### *Other Programs*

The USFWS has also been actively involved in the conservation and restoration of riparian habitat along the Sacramento River through the Private Lands Program established in 1989 and its ongoing acquisition and management of the Sacramento River National Wildlife Refuge and the private lands program established in 1989. The agency also has an interest in the conservation and restoration of riparian habitat because of its role in identifying and protecting habitat of federal trust resource species. For example, the Service has identified shaded riverine aquatic habitat as critical habitat for migratory juvenile winter run salmon. A USFWS representative is on the SB1086 Advisory Council.

### *Central Valley Project Improvement Act*

In collaboration with the Bureau of Reclamation, the Service administers the Central Valley Project Improvement Act of 1992. The Act provides for the implementation of activities to protect, restore, and enhance fish, wildlife and associated habitats in the Central Valley and Trinity River Basins.

#### **FOR FURTHER INFORMATION ON THE SACRAMENTO NATIONAL WILDLIFE REFUGE COMPLEX:**

U.S. Fish and Wildlife Service  
Sacramento River National Wildlife Refuge  
752 County Road 99W  
Willows, CA 95988  
Phone: (530) 934-2801

#### **FOR FURTHER INFORMATION REGARDING WILDLIFE AND FISHERIES ISSUES ALONG THE SACRAMENTO RIVER:**

U.S. Fish and Wildlife Service  
Sacramento Field Office  
2800 Cottage Way, W-2605  
Sacramento, CA 95825  
Phone: (916) 414-6600

### ***United States Bureau of Reclamation***

The Bureau of Reclamation (USBR) is an agency of the Department of the Interior. Its mission is to manage, develop, and protect water and water-related resources in an environmentally and economically sound manner in the interest of the American public. As part of its responsibilities, the USBR provides states or state entities with technical assistance on projects already underway, consistent with the state's needs and the USBR's capability.

The USBR constructs and maintains federal water development and reclamation projects, including those along the Colorado River and the Central Valley Project (CVP). It provides water for irrigation, municipal and industrial use, hydro-electric power generation, water quality improvement, wind power, fish and wildlife enhancement, outdoor recreation, river regulation, and flood control. The USBR plays a major role on the more significant river systems and a lesser role on their tributaries. The Central

Valley Project Improvement Act requires the USBR to put environmental uses of CVP water on an even footing with urban and agricultural consumptive uses, and also guarantees minimum quantities for fishery protection under specified circumstances.

The USBR supplies water to 3.8 million acres in California. Activities include the Central Valley Project, (including Shasta, Clair Engle, Whiskeytown, New Melones, Folsom, San Luis, and Millerton lakes) and major canals and hydroelectric facilities (the All-American Canal system in the Imperial Valley and the Parker, Davis, Cachuma, Klamath, Orland, San Diego, Solano, Truckee Storage, Ventura River, Santa Maria, and Washoe projects).

The USBR is signatory to the Coordinated Operating Agreement between the CVP and the State Water Project (SWP) (1986), which provides that both the CVP and SWP are subject to water quality standards and export decisions taken from the State Water Resources Control Board (SWRCB) Water Rights Decision 1485. This provides for CVP/SWP proportional splits of 75/25 responsibility for meeting in-basin use from stored water releases and 55/45 for capture and export of excess flow. It also requires a commitment of about 2.3 million acre-feet from both projects during a critical water supply period.

USBR operates both Shasta and Keswick Dams and therefore plays a key role in the regeneration and health of the riparian forest downstream. It also operates the Whiskeytown Dam on Clear Creek and East Park and Stony Gorge Reservoirs on Stony Creek. USBR also operates Red Bluff Diversion Dam which is the diversion point into the Tehama-Colusa and Corning Canals, which irrigate the west side of the Sacramento Valley.

**FOR FURTHER INFORMATION:**

U.S. Bureau of Reclamation  
Mid Pacific Region  
Northern California Area Office  
16349 Shasta Dam Boulevard  
Shasta Lake, CA 96019  
Phone: (530) 275-1554

***United States Bureau of Land Management***

The Bureau of Land Management (BLM) is a federal agency within the United States Department of the Interior responsible for the management of public lands and resources. BLM manages California's "public domain." Public domain includes all of the unsold federal lands within the state which are not withdrawn or reserved for some other federal purpose (e.g., Department of Defense, National Forests, National Parks and Monuments, Strategic Petroleum Reserve, Water Project, etc.) While the majority of BLM lands are in the southern California deserts, public lands exist throughout the state.

BLM management is based upon the principles of multiple-use and sustained yield, which strives to balance the nation's short-term needs with the long-term needs of future generations for renewable and non-renewable resources. The Federal Land Policy and Management Act of 1976 gives the BLM authority to establish policy and guidelines for the management, protection, development, and enhancement of pub-

lic lands that it manages. The Federal Land Policy & Management Act of 1976 requires BLM to manage public lands for multiple uses, including recreation, wilderness, animal and plant species, grazing, mining, and alternative energy. The Act authorizes the use of Areas of Critical Environmental Concern (ACEC) to protect and prevent irreparable damage to important historic, cultural, and scenic values; fish or wildlife resources; other natural systems or processes; or to protect human life and safety from natural hazards.

Much of BLM's jurisdictional area encompasses rivers and streams with substantial recreational and ecological value. BLM manages the riparian areas along those streams which flow through its jurisdictional area as part of its mandate to provide for multiple use of its resources. BLM recently completed a Riparian/Wetland Statewide strategy that calls for interdisciplinary planning, on-the-ground improvements of wetland/riparian areas, monitoring, out-reach efforts, and expanding work with partners and volunteers to restore and enhance wetland/riparian areas.

BLM is consolidating public land parcels through land exchanges and Land and Water Conservation Fund purchases in order to improve management of riparian areas along rivers. BLM is also involved in Challenge Cost Share programs with environmental groups, private organizations, and other government agencies.

BLM is developing cooperative agreements with farmers and cattle ranchers to help protect riparian areas. It has revised its grazing management plans to reduce overgrazing near sensitive stream and river banks and to increase monitoring. With the help of volunteers, BLM has been fencing riparian areas in order to provide appropriate livestock grazing prescriptions, rehabilitating closed roads, and restoring native plant species along river banks.

BLM takes part in the Coordinated Resource Management Planning (CRMP) process, a collaborative public-private project planning and implementation process which seeks to involve all interested parties in management and restoration decisions and in project implementation. CRMP projects include innovative bank restoration projects and restoration of riparian habitat. BLM is also participating in bioregional planning and management efforts.

BLM owns and manages the Sacramento River Area in Tehama County, as described in Chapter 7. This land was acquired to protect riparian and wetland resources in the northern Sacramento Valley, to enhance anadromous fisheries and to provide recreational opportunities. BLM also owns other scattered parcels along the river, including Todd and Foster Islands in Tehama County.

**FOR FURTHER INFORMATION:**

Bureau of Land Management  
355 Hemsted Drive  
Redding, CA 96002-0910  
Phone: (530) 224-2100

## **United States Natural Resource Conservation Service**

The mission of the Natural Resource Conservation Service (NRCS) is to provide national leadership in the conservation, development, and productive use of the nation's soil, water and related resources through a balanced, cooperative program that protects, restores and improves those resources. Formerly known as the Soil Conservation Service, the NRCS provides technical assistance in the conservation and sustained use of the nation's soil, water, air, plant, and animal resources through partnerships with local Resource Conservation Districts, state and federal Conservation Agencies, farm organizations, private interest groups, and other special districts. In addition, NRCS develops conservation plans for private landowners, makes recommendations on the installation of conservation practices, provides engineering survey and design information, conducts and publishes soils surveys and is responsible for maintaining National Resource Inventory information.

NRCS administers the conservation provisions of the 1985, 1990 and 1996 Farm Bills and makes highly erodible land and wetland determinations as they relate to growers participation in USDA subsidy programs. NRCS also administers the Wetland Reserve Program (WRP), Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), PL-566 Small Watersheds Program and provides technical assistance for the Conservation Reserve Program (CRP) and the Emergency Watershed Protection (EWP).

### **FOR FURTHER INFORMATION:**

#### **Shasta County:**

Natural Resources Cons. Service  
3179 Bechelli Lane, Suite 107  
Redding, CA 96002-2041  
Phone: (530) 246-5252

#### **Glenn County:**

Natural Resources Cons. Service  
132-B North Enright  
Willows, CA 95988  
Phone: (530) 934-4601

#### **Tehama County:**

Natural Resources Cons. Service  
#2 Sutter Street, Suite D  
Red Bluff, CA 96080  
Phone: (530) 527-4231

#### **Colusa County:**

Natural Resources Cons. Service  
100 Sunrise Boulevard, Suite B  
Colusa, CA 95932  
Phone: (530) 458-2931

#### **Butte County:**

Natural Resources Cons. Service  
Soil Survey Office, CSUC  
Chico, CA 95926-0310  
Phone: (530) 898-4903

#### **Sutter County:**

Natural Resource Cons. Service  
1511 Butte House Road, Suite B  
Yuba City, CA 95993  
Phone: (530) 674-1461

#### **Yolo County:**

Natural Resource Conservation Service  
221 West Court Street, Suite 1  
Woodland, CA 95695  
Phone: (530) 662-2037

## **United States Forest Service**

The United States Forest Service (USFS) manages approximately 20 million acres of National Forest lands, about 20 percent of the land in California. By law, National

Forest resources are managed for many uses including water supply and watershed protection, timber, range, fishery and wildlife habitat, and recreation. About 50 percent of the water supply in California originates in watersheds within national forests and the headwaters of most rivers and streams are found in national forests. Approximately 1,000 miles of federally designated Wild and Scenic Rivers originate or pass through one or more national forest. Some 3.9 million acres have been set aside as Wilderness under the Wilderness Act of 1964.

Management of riparian and aquatic resources in National Forests is guided by standards and guidelines found in individual Forest Land and Resource Management Plans, as well as national environmental legislation such as the Clean Water Act, the Clean Air Act, and the Endangered Species Act. All National Forests use a special management designation for riparian areas (Streamside Management Zone) and land management activities that affect the riparian area may be modified or curtailed when impacts to riparian resources are anticipated. Wildlife management on the forests is conducted in cooperation with the California Department of Fish and Game (DFG).

The U.S. Forest Service owns the Lake Red Bluff Recreation Area in Red Bluff. This 488-acres site includes two boat launching facilities, camping and picnicking areas, and paved trails. Several riparian habitat restoration projects are on the site, which also houses the Sacramento River Discovery Center.

**FOR FURTHER INFORMATION:**

U.S. Forest Service  
Red Bluff Recreation Area  
1000 Sale Lane  
Red Bluff, CA 96080  
Phone: (530) 527-2813

***National Marine Fisheries Service***

The mission of the National Marine Fisheries Service (NMFS) is to conserve, manage, and develop living marine resources and to promote the continued use of these resources for the nation's benefit. Although NMFS jurisdiction and management activities are primarily confined to the coastal zone and its network of estuaries, the agency also is an advocate of measures to protect the health of salmon and other anadromous species. Together with eight Regional Fishery Management Councils and the coastal states, NMFS manages U.S. fisheries under the authority of the Magnuson Fishery Conservation and Management Act, the Fish and Wildlife Coordination Act, and many other federal statutes. Together with the states and the U.S. Coast Guard, NMFS also operates a stringent program to enforce fisheries and protected species laws.

Each NMFS Regional Office is served by a Science and Research Center that conducts the studies necessary to support management decisions. Research that contributes to this important work is conducted at the 24 NMFS laboratories which collect fisheries statistics, perform resource and environmental surveys, study the biology and population structures of marine species, analyze the ecosystems that control the abundance and distribution of living marine resources, and investigate contaminants of the nation's seafood supply.

## **PRIVATE ORGANIZATIONS**

### ***California Central Valley Flood Control Association***

The nonprofit California Central Valley Flood Control Association was formed in 1926 to promote the common interest in maintaining effective flood control systems for protection of life, property, and environmental values. The purposes of the organization include promoting awareness and distributing of information on flood-related issues and promoting effective flood control systems at the state and federal levels. Members include reclamation, flood control, levee, drainage, protective and similar districts, political subdivisions, public corporations, owners of record, non-profit organizations and other persons, corporations, or organizations.

#### **FOR FURTHER INFORMATION:**

California Central Valley Flood Control Association  
910 K Street, Suite 310  
Sacramento, CA 95814  
Phone: (916) 446-0197

### ***Sacramento River Discovery Center***

Opened in 1996, the Sacramento River Discovery Center provides information to the public about the river, its dynamic nature, the history of its development by humans, and methods for improving the health of its ecosystem. Its mission is to promote an understanding of the many uses of the Sacramento River. The center provides school children and adults with the opportunity to view fish, native plants and communities of flora and fauna endemic to the Sacramento riverine system. The center is located on U.S. Forest Service property on the Sacramento River near Red Bluff. The many acres of living classroom provide visitors to the center with a sense of the various uses of the river. Currently housed in a temporary facility, the ultimate goal of the Sacramento River Discovery Center is to open a 20,000 square foot building that will house an interpretive center as well as an education and research facility. The Discovery Center is a non-profit tax exempt organization, managed by a board of directors, interns, and volunteers.

#### **FOR FURTHER INFORMATION:**

Sacramento River Discovery Center  
P.O. Box 1298  
Red Bluff, CA 96080  
Phone: (530) 527-1196

### ***Sacramento River Preservation Trust***

Founded in the 1984 in response to the Chico Landing to Red Bluff bank stabilization project, the Sacramento River Preservation Trust is a nonprofit organization devoted to the preservation and rehabilitation of the riparian system which exists

along the Sacramento River corridor. The Trust is currently concerned primarily with educating the public and retaining constant awareness of the policies and regulations that may impact the Sacramento River and her environment. The Trust is a membership based non-profit, tax-exempt organization.

**FOR FURTHER INFORMATION:**

Sacramento River Preservation Trust  
P.O. Box 5366  
Chico, CA 95927  
Phone: (530) 345-1865

***Sacramento Valley Landowners Association***

The Sacramento Valley Landowners Association consists of farmers and allied groups concerned with maintaining flood control facilities promoting bank protection, supporting agricultural endeavors, and representing the membership's concerns at meetings and forums. SVLA members own or control more than 100 miles of river frontage and farm almost 100,000 acres. SVLA supports river management and flood protection that is economically sound and ecologically reasonable.

**FOR FURTHER INFORMATION:**

Sacramento Valley Landowners Association  
P.O. Box 879  
Los Molinos, CA 96055  
Phone: (916) 384-0161

## RECOMMENDED ACTIONS

Several actions are needed to carry out the goals of the *Upper Sacramento River Fisheries and Riparian Habitat Management Plan* (Resources Agency, 1989), and the plans described in this *Handbook*. These actions are:

- **Form a locally-based nonprofit management organization**
- **Obtain a signed Memorandum of Agreement (MOA) between the appropriate agencies**
- **Develop site-specific plans and contracts, which may include the following features:**
  - conservation easements
  - set-aside agreements
  - bank protection
  - land acquisition from willing sellers
  - landowner protections
  - floodplain management strategies
- **Develop program to improve permit and regulatory coordination and consistency**
- **Develop mutual assistance program**
- **Develop education and outreach program**
- **Support monitoring and research programs**

This chapter provides a brief outline of these actions. They will be carried out in a manner that:

- Uses an ecosystem approach that contributes to recovery of threatened and endangered species and is sustainable by natural processes;
- Uses the most effective and least environmentally damaging bank protection techniques to maintain a limited meander where appropriate;
- Operates within the parameters of local, state and federal flood control and bank protection programs;
- Participation by private landowners and affected local entities is voluntary, never mandatory;



- Gives full consideration to landowner, public, and local government concerns;
- Provides for the accurate and accessible information and education that is essential to sound resource management.

### **Form a Locally-based Nonprofit Management Organization**

The SB1086 Riparian Habitat Committee recommends creating a local non-profit organization (NPO) to implement the *1989 Plan* and the actions, principles, and strategies discussed in this *Handbook*. This nonprofit management entity would receive support from a technical advisory team of agency personnel. Other implementation options such as a state conservancy, or other necessary programs, may be considered as needs are further defined.

### **Obtain a signed Memorandum of Agreement between the appropriate agencies**

The SB 1086 Riparian Habitat Committee and Advisory Council are developing a Memorandum of Agreement among the agencies most closely related to riparian habitat management issues along the Sacramento River. The MOA will document broad public agency endorsement of the decisions and recommendations made by the Advisory Council in the *1989 Plan*, and the goals, principles and recommended actions in this *Handbook*. In addition, it will document public agency support for the establishing of a new non-profit organization, improving coordination and cooperation between public agencies, and identifying agreements and relationships among the signatory public agencies in implementing the *1989 Plan* and *Handbook*.

### **Develop site-specific plans and contracts**

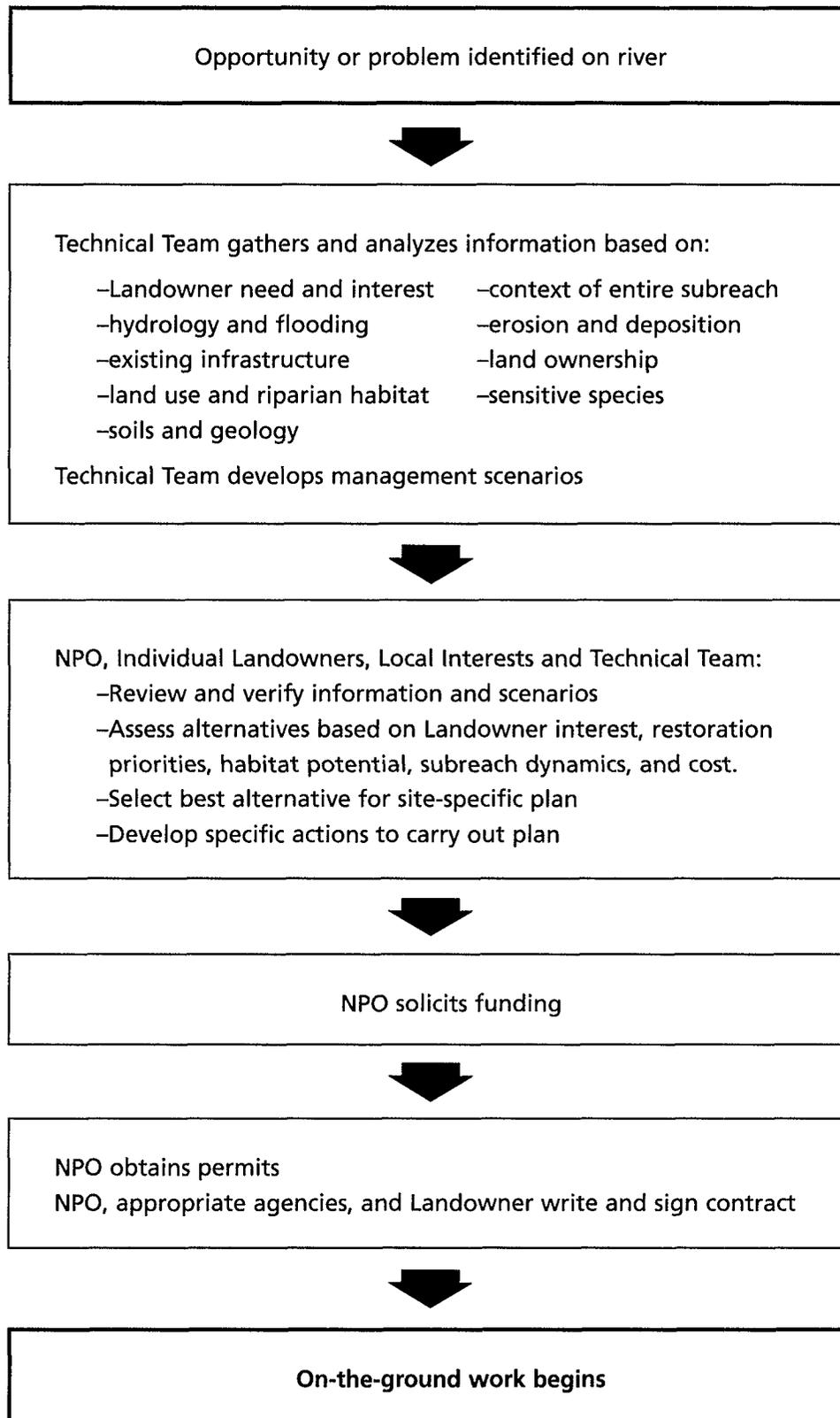
Site-specific management plans will provide the building blocks of the Sacramento River Conservation Area, particularly in areas falling within the inner river zone guidelines (Figure 9-1).

A site-specific plan should outline the current condition of a particular sub-reach and the potential that exists to protect and restore habitats and river processes. Consideration is given to ecological processes (flooding and channel migration), habitats (riparian forests, sloughs, gravel bars, and shaded riverain aquatic), and identified locations of sensitive sites (bank swallow colonies, yellow-billed cuckoo nests, and winter run chinook salmon redds). In addition, current land use, ownership, and development infrastructure is important in determining realistic restoration projects. The plans should address issues that could affect neighboring landowners, such as fire and trespass problems. Any negative effects on local tax bases that might result from restoration of the site should also be addressed.

After the potential for riparian restoration within a reach is reviewed and reasonable objectives are formulated, more detailed data obtained from field studies are necessary for site-specific decisions.

The site-specific plan should describe program eligibility and where proposed management actions would rank in terms of the overall riparian restoration strategy. The highest priority projects are those that preserve intact process and are cost effective.

Figure 9-1. Site-specific management planning.



Project alternatives should be evaluated in terms of net change in riparian vegetation compared to a no-project alternative.

A draft proposal based on the greatest biological benefit at the least cost should be developed with input from potentially affected landowners. This document (possibly the final site-specific plan with recommendations) should become the foundation for negotiations with landowners and the basis of a formal funding proposal.

Actions that could be included as part of the site-specific management plan include conservation easements, set-aside agreements, bank protection, acquisition, landowner protections, and floodplain management. These actions will be carried out through contractual agreements on individual properties which will contain enforcement provisions if either party violates the contract. The following actions could be taken as part of a site-specific management plan.

### ***Conservation easements***

Conservation easements are restrictions landowners voluntarily place on their property that legally bind the present and future owners. Generally, an easement is sold or donated to a trustee agency or organization. A conservation easement may prohibit some activities in order to protect the habitat, vegetation, or wildlife found on the land. Conservation easements do not, as a rule, allow public access. Several state and federal agencies currently use conservation easements as a tool to protect valuable habitat and river processes along the Sacramento River. Some county general plans suggest conservation easements with private landowners as a means of improving public access to the river. The proposed nonprofit management entity would work with existing state, federal, or local easement programs, or may develop its own easement program.

Conservation easements would be incorporated into site-specific management plans. The NPO may institute conservation easements using contract agreements on individual properties which contain enforcement provisions if the contract is violated by either party.

### ***Set-aside agreements***

The purpose of a set-aside program is to provide additional incentives for private landowners (who own 86% of the land in the Conservation Area) to voluntarily participate in riparian habitat conservation. Much of the eligible land which could be preserved in riparian habitat is potentially high quality agricultural land and could be profitable for the owners to farm, while some of the eligible land is already in crops. Other eligible land is not as suitable for crops, but landowners want to retain control for many reasons. A set-aside program would provide an incentive to phase out agricultural activities and let the land return to riparian habitat for farmers who either wish to maintain ownership control over the land or prefer limited-term arrangements.

A set-aside program, carried out by the proposed nonprofit management entity, would offer an option for dedicating land for habitat purposes that is short of selling a fee or easement interest. Set-aside agreements would be short-term, e.g. for five years—akin to a lease arrangement. They would have an automatic renewal provision and requirement notification, e.g. for five consecutive years, in order to withdraw—akin to a Williamson Act contract. At the time of this writing, it is recog-