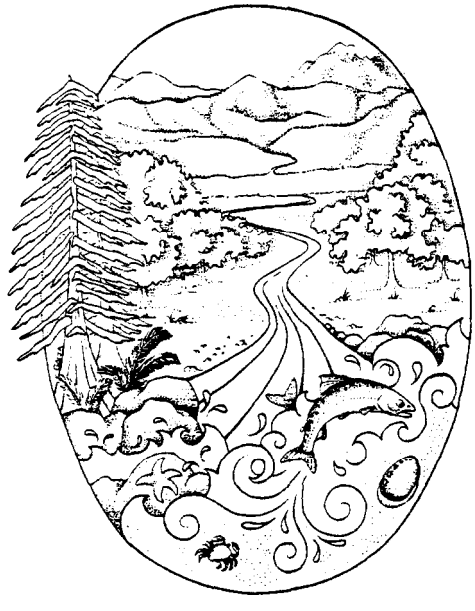
Science for Solutions

NOAA COASTAL OCEAN PROGRAM
Decision Analysis Series No. 8

WATERSHED RESTORATION
A Guide for Citizen Involvement in California



William M. Kier Associates
Sausalito, California

December 1995

U.S. DEPARTMENT OF COMMERCE
Ronald H. Brown, Secretary
National Oceanic and Atmospheric Administration
D. **James** Baker, Under Secretary
Coastal Ocean Office
Donald Scavia, Director

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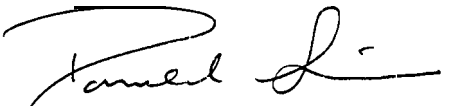
Note to Readers

Watershed Restoration: A Guide for Citizen Involvement in California was developed by William M. Kier Associates with funding from the NOAA Coastal Ocean Program (COP). The format and intended audience are unlike any other document COP has published to date. Most COP studies are aimed at the coastal management audience. This document is aimed at the public in coastal watersheds in whose hands the ultimate management of coastal resources resides. COP is publishing this document in the belief that coastal watershed restoration is an important aspect of improving coastal resources, that it is best accomplished when citizens are actively involved in the process, and that this effort deserves the best science and technical tools which this document aims to provide.

COP provides a focal point through which NOAA, together with other organizations with responsibilities for the coastal environment and its resources, can make significant strides toward finding solutions to critical problems. By working together toward these solutions, we can ensure the sustainability of these coastal resources and allow for compatible economic development that will enhance the well-being of the Nation now and in future generations. The goals of the program parallel those of the NOAA Strategic Plan.

A specific objective of COP is to provide the highest quality scientific information to coastal managers in time for critical decision making and in a format useful for these decisions. To help achieve this, COP inaugurated a program of developing documents that would synthesize information on issues that were of high priority to coastal managers. A three-step process was used to develop such documents: 1) to compile a list of critical topics in the coastal ocean through a survey of coastal resource managers and to prioritize and select those suitable for the document series through the use of a panel of multidisciplinary technical experts; 2) to solicit proposals to do research on these topics and select principal investigators through a rigorous peer-review process; and 3) to develop peer-reviewed documents based on the winning proposals. Seven topics were selected in the initial round, but the series is expanding because of the suitability of findings from other COP-funded research to appear in this synthesis format. The documents already published are listed on the inside back cover.

As with all of its products, COP is very interested in ascertaining the utility of the Decision Analysis Series particularly in regard to its application to the management decision process. Therefore, we encourage you to write, fax, call, or E-mail us with your comments. Please be assured that we will appreciate these comments, either positive or negative, and that they will help us direct our future efforts. Our address and telephone and fax numbers are on the inside front cover. My Internet address is DSCAVIA@COP.NOAA.GOV.



(Donald Scavia
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About the Authors

BILL KIER heads William M. Kier Associates, consultants in natural resources planning, management and policy analysis. Mr. Kier is a certified fisheries scientist whose work has involved both field research and management with the California Department of Fish &Game, where he was chief of the environmental services branch. From 1967 until 1983 he served the California State Senate as its principal consultant in natural resources conservation and environmental protection. His firm has been active since 1986 on behalf of government agencies and businesses performing watershed and fisheries assessments, restoration planning and implementation, and ecosystem monitoring and evaluation.

DEBRA CALDON served as EPA's Region 9 Nonpoint Source Coordinator from 1986 to 1990 administering nearly $20 million in grant funds to local government and nonprofit agencies for watershed planning and restoration in California. Ms. Caldon specializes in watershed assessment, community-based planning and strategies for implementing environmentally sustainable practices. She has been involved in several watershed projects including Tomki Creek and the Garcia River in Mendocino County, Sonoma Creek in Sonoma County, Pescadero Creek in San Mateo County, the Forest Practice Rules Monitoring Program and Rangelands Water Quality Assessment for the State Board of Forestry. In 1994, EPA awarded her the Hal Wise Award for exceptional leadership in promoting the control of nonpoint sources and the ecological management and restoration of watersheds.

GOIJA POST, cover illustration artist, is a native of the Pacific Coast. She received a degree in Studio Art and Scientific Illustration from University of California - Santa Cruz in 1990. Her hometown of Point Arena, California provides an ideal and inspiring location to pursue her career in the visual arts. She is adept in all mediums, from 'recycled garbage art' cars to fine realistic illustration. Through her business GoijaArt, she is an active in the growing Point Arena art community and a member of several watershed restoration groups.

Contents

Executive Summary

There is nothing mysterious about how coastal rivers, their estuaries, and their relationship with the sea all work to satisfy many of our greatest needs, including drinkable water, fish and shellfish, and soils essential for sustaining the production of food and fiber. Nor are the methods that have proved successful in the protection and restoration of watershed health difficult to understand. It *is* difficult, however, to imagine how we are to survive without healthy watersheds. Each watershed along California's coast shows signs of increasing abuse from road construction and maintenance, livestock grazing, residential development, timber harvesting, and a dozen other human activities. In some cases whole streams have simply been wiped away.

This document has been created to guide and support every person in the community, from homemaker to elected official, who wants her or his watershed to provide clean water, harvestable fish resources and other proof that life in the watershed cannot only be maintained but also enjoyed. It is based on years of experience with watershed protection and restoration in California. If citizen involvement is to be effective, it must draw not only on scientific knowledge but also on an understanding of how to translate individual views into commitments and capable group action.

This guide briefly reviews the condition of California's coastal watersheds, identifies the kinds of concerns that have led citizens to successful watershed protection efforts, explains why citizen, in addition to government, effort is essential for watershed protection and restoration to succeed, and puts in the reader's hands both the technical and organizational "tools of the trade" in the hope that those who use this guide will be encouraged to join in efforts to make their watershed serve this and future generations better.

The National Oceanic and Atmospheric Administration (NOAA) Coastal Ocean Program (COP) funds high-quality scientific research aimed at finding solutions to our most pressing coastal ocean problems. COP funded William M. Kier Associates to produce this watershed restoration manual in the belief that watershed restoration is an important aspect of improving coastal ocean resources. Restoration is best accomplished when the communities affected by the conditions in the watershed take part in the process. Therefore, COP encourages coastal ocean communities to become actively involved in the management of their watersheds, and strives to provide the best science and technical tools to assist these efforts. Our hope is that the guidance in this handbook provides both.

Timeliness of the Material in this Guide

This guide was prepared in the summer of 1995. During this period environmental laws were going through an unprecedented number of reviews and possible revisions. At the time this guide was printed Congress had not completed its reauthorization of these laws and there may well be significant changes. It is our goal to provide a foundation of information concerning these laws and agency sources to aid your understanding of their current status.

ACRONYMS LIST

ABAG	Association of Bay Area Governments
AMBAG	Association of Monterey Bay Area Governments
BMPs	Best Management Practices
c c c	Calfomia Coastal Commission
CEQA	California Environmental Quality Act
COP	Coastal Ocean Program
corps	U.S. Army Corps of Engineers
CRMP	Coordinated Resource Management and Planning
CWA	Federal Clean Water Act
CWPI	California Watershed Project Inventory
CWRC	California Water Resources Center (University of California)
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Federal Coastal Zone Management Act
DFG	California Department of Fish and Game
DWR	California Department of Water Resources
EPA	United States Environmental Protection Agency
EPIC	Environmental Protection Information Center
ESIC	Earth Science Information Center (USGS)
ESA	Federal Endangered Species Act
FrOG	Friends of the Garcia River
FWS	Fish and Wildlife Service
GIS	Geographic Information System
HSU	Humboldt State University
IRE	Institute for River Ecosystems (Humboldt State University)
KRIS	Klamath Resource Information System
LCP	Local Coastal Plan (California Coastal Commission)
MELVYL	University of California online library catalog system
MOU	Memorandum of Understanding
MRC	Mattole Restoration Council
NCCP	Natural Community Conservation Plan
NDDB	Natural Diversity Data Base (Cal Dept. of Fish and Game)
NEPA	National Environmental Policy Act
NERRS	National Estuarine Research Reserve System (NOAA)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NPS BBS	Nonpoint Source Electronic Bulletin Board System (EPA)
NRCS	Natural Resource Conservation Service
OCLC	Online Computer Library Center
RCD	Resource Conservation District
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SCAG	Southern California Association of Governments
SLC	California State Lands Commission
SWRCB	California State Water Resources Control Board
UC	University of California
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirements
WMC	Watershed Management Council
WRC	Wildland Resources Center

1 Introduction

A. What Is A Watershed?

The conceptual definition of a watershed is any sloping surface that sheds water. Practically, it is a term used to describe the land area that is drained by a particular river, stream or creek. When hydrologists use the term they refer to a drainage basin or area as the total land area that discharges its surface water streamflow through one outlet or mouth. A large stream like the Klamath River can drain a huge land area and encompass a watershed of thousands of square miles. Most large watersheds are made up of several smaller watersheds associated with tributary rivers and feeder streams that contribute flow from areas known as sub-basins. Watersheds are ultimately defined by gravity. When you want to define a watershed you begin by selecting the stream or river that is of interest; the drainage area is then defined by a boundary of ridgetops. A drop of water falling on the top of that ridge will flow by gravity into your watershed or to the other side into an adjacent watershed depending on the topography or lay of the land.

For most of us, watersheds are more than just drainage areas. They are the place where we live, work and recreate. Watersheds provide habitat for wild creatures and biological diversity in the midst of otherwise human sameness. Today it may be difficult to visualize your watershed — in urban areas many streams have been "undergrounded" or culverted so that it is hard to place where local creeks once flowed -but you are part of a watershed nonetheless. In this guide, we have taken the concept of watershed to define not just a drainage area but a way of organizing community environmental interests to improve water quality, fisheries and wildlife habitat, and the local quality of life. One of our goals is to increase the awareness of the importance of watersheds to our environment. If this guide inspires you to do nothing else but find out which watershed(s) you live in, then we have made some progress. Beyond that our main purpose is to provide tools and a network for local citizens to organize better around the environmental issues in their respective watersheds. Although we are focused on coastal California watersheds, the approaches contained in this guide can be applied, easily, to watersheds elsewhere.

Coastal watersheds are among the most productive ecosystems in the nation. While all watersheds provide critical habitat for aquatic species of birds and other animals, coastal watersheds are essential for anadromous fish like salmon that are dependent upon a healthy estuary and river channel for spawning and rearing habitat. In California, coastal watersheds are also essential to human welfare as some 18 million of our 30 million state residents live in these coastal watersheds.[1] The streams in coastal watersheds supply clean water for drinking, recreation, industry and farming, as well as inspiration in our daily lives.

B. AN OVERVIEW OF THE COASTAL ZONE MANAGEMENT ACT AMENDMENTS

In the last fifty years rapid population growth in coastal areas has created conflicts between human use of these watersheds and the protection of water quality necessary to support fisheries and municipal water supplies. To this end, Congress has enacted several laws aimed at improving and maintaining beneficial water quality and protecting coastal resources. Such laws include the Clean Water Act (CWA) and the Coastal Zone Management Act (CZMA) which are discussed in greater detail in Chapter 3. Each of these laws is administered by separate state and federal agencies: the Environmental Protection Agency (EPA) and the California State Water Resources Control Board (SWRCB) administer the Clean Water Act; and National Oceanic and Atmospheric Administration (NOAA) and the California Coastal Commission administer the CZMA. Each has different but related goals of protecting the coastal environment. In 1990, Congress adopted section 62 17 of the Coastal Zone Act Reauthorization Amendments (CZARA) that requires that coastal states with coastal management programs, such as California, develop a stronger link between coastal zone management and water quality pollution control programs. This goal is to be accomplished through the adoption of "coastal nonpoint programs" that "implement management measures for nonpoint source pollution to restore and protect coastal waters . . ."[2]

This program is important to local coastal watershed activists because it requires that the California State Water Resources Control Board work with the Coastal Commission to:

- implement management measures (also known as "best management practices") for land uses that degrade coastal waters;

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1 *California Comprehensive Offshore Resource Study: Volume* **I. 1994. California State Lands Commission.**

2 *Coastal Nonpoint Source Pollution Control Program: Program Development and Approval Guidance.* **October 1991. U.S. Environmental Protection Agency and National Oceanic and Atmospheric Administration.**

- **provide technical and other assistance to local governments and the public to implement management measures;**
- provide opportunities for public participation in all aspects of the program;
- improve coordination between state and local agencies responsible for land use permitting, habitat protection, and public health and safety.

NOAA and EPA have already provided the public a thorough reference document detailing minimum standards for management measures that should be used to protect watersheds under the coastal nonpoint program. Arranged by the type of land use (agricultural, urban, marinas, etc.), this *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal* ***Waters.***[3] *lists* a range of practices including design specifications, costs, effectiveness and monitoring that should be used to protect waterbodies from degradation by common land uses. When developing a local watershed plan, these measures can be used as plan recommendations. Further, this Guidance is an excellent tool to use to ensure that local public officials require that new development projects and existing land uses are adequately mitigated to compensate for the pollution generated by such activities.

Management Measures are defined as: "economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives."4

C. WHY LOCAL COMMUNITIES NEED TO BE ACTIVE IN WATERSHED PROTECTION

To former Speaker of the House, Thomas "Tip" O'Neil's famous quotation, "All politics are local," could be added "and all watershed planning is intensely political." Whether you are politically active or not, local authorities are making decisions every day regarding land use, zoning and developments that affect the quality of your environment and the watershed where you live. Today most land use decisions require a public participation process that allows for public review and comment on the project? Besides local land use laws, the State of California requires analyses of potential environmental impacts of governmental actions under the California

3 *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* **1993. U.S. EPA.**

4 *Coastal Zone Management Reauthorization Amendments of 1990,* **§** *6217.*

5 *California Land Use and Planning Law. 1993. Daniel J. Curtin, Jr.*

Environmental Quality Act (CEQA). CEQA, too, requires public review of Environmental Impact Reports that allows citizens to object to environmentally unsound development proposals.[6]

Although public participationis still important, the local community is often involved at the very end of the process and consequently is caught in a situation of trying to stop a train that is picking up speed. This can be frustrating and certainly contributes to that sense of apathy supporting the notion that "You can't fight City Hall." While it is true that one person will quickly tire of trying to keep up with all the decisions that affect the environment of his or her community, a group of concerned citizens can effectively influence public policies within their areas of interest. Organizing around only one particular project or problem at a time means that the group may be caught up fighting a series of disconnected projects or decisions with no end in sight.

There is another way. In this guide we have gathered examples of citizens' groups that have gotten **in front** of the decision-making process and have set goals and policies for the future by developing plans for their watersheds.

These groups have common elements. They are composed of local activists that have effectively built a constituency to support watershed protection. They have recognized that development interests often have financial clout and powerful economic arguments that support them in pursuing their ends. Developers frequently espouse the idea that they represent "progress" and improvement for the local economy. To counter this strong bias towards "progress" and the "economy," watershed groups have come to understand the importance of organization, information gathering, networking, and political strategies. While these groups have worked with local, state and federal agencies, they have not waited for government agencies to take the lead in formulating watershed goals and plans.

Why, you may ask, must regular citizens spend time on such issues when there are state and federal agencies which have the responsibility to protect the environment? The fact is that most agencies are woefully understaffed and underfunded for the task of protecting every watershed in the State. Often, agencies may be constrained from involving themselves in local issues without explicit requests from local authorities or organizations. Even though your watershed may suffer from serious environmental impacts, the way to ensure that these problems receive proper attention is through a systematic effort to raise the awareness of the problem in your local community and to communicate this awareness to the responsible authorities. This is best done through citizens' organizations that are focused on identifying and solving local watershed problems.

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6 Guide *to the* California Environmental Quality Act *(CEQA).* 1993. Michael Remy, *et* al.

If you care about the environment and especially about your local quality of life then you may wish to join a local watershed group or "friends of a river" association. If there isn't one in your watershed then perhaps it is time to organize such a group whose goal is to develop a blueprint or plan for protecting your watershed. The last chapter of this guide contains a list of existing organizations that you may want to join or that can help you start an organization in your watershed. We hope that this guide will help you to get involved, or if you are already part of a group, our aim is to help you be more effective.

D. AN OVERVIEW OF CALIFORNIA'S COASTAL WATERSHEDS

Issues and Citizen Involvement

Along the coast from the Oregon border to the Tijuana River community-based watershed groups have organized around resource issues that range from flood control to wastewater treatment. These groups have plucked up the tools that exist in environmental laws and used them to drive stream protection efforts. They have learned that fish and endangered species populations are powerful stream health indicators and that protecting and maintaining their habitats, in turn, provides an opportunity to achieve an improved quality of life for all watershed residents. The following provides an overview of the range of problems found in coastal watersheds and the creative solutions that watershed activists have devised to counter such problems.

CALIFORNIA'S COASTAL WATERSHED REGIONS

1. Smith River, Redwood Creek, Mad River Region
2. Klamath - Trinity River Basin
3. Mattole, Eel and Van Duzen Rivers
4. Marin, Sonoma and Mendocino County Coastal Streams
5. Russian River
6. San Francisco Bay Streams
7. Central Coast Streams
8. South Coast Streams

1. North Coast — Smith River to Humboldt Bay

This reach of California's coast extends from the Oregon state line south to Humboldt Bay. Although the reach includes the Klamath River, the Klamath deserves and gets its own discussion just below. The Smith, Mad and Redwood Creek are smaller, less complex systems than the Klamath.

Smith River

The Smith, squeezed into the State's northwest comer, is well forested, lightly logged and, until quite recently, very lightly populated. The Smith continues to produce some of the largest chinook salmon *(Onchorhynchus tshawytscha)* of any river in California and is widely viewed as northwest California's only unspoiled river. Public concern for the Smith became very vocal in the late 1980s following an announcement by the State that it would build a large prison near the river. Since the only wastewater treatment plant in the area was incapable of serving the prison, the State proposed using an unproven wastewater treatment technology viewed by many as a severe threat to the Smith's high water quality.

Opposition to the proposed prison wastewater system came first from the area's small conservation community and finally from Del Norte County's principal health official. The opposition became so intense the State scrapped its original plan and adopted a tertiary treatment system that has, ironically, become the pride of the California correctional establishment. Close monitoring indicates the system is working well.

The prison wastewater campaign energized Smith River area conservation interests, who then proceeded to lobby Congress successfully to create the Smith River National Recreation Area (NRA). The Smith River NRA designation overlays the watershed's National Forest jurisdiction in ways that the river's champions, which include the citizen-based Smith River Alliance, hope will bring lasting protections to the stream's fish and water resources.

The ancient mouth of the Smith River is now a pair of coastal lakes where controversy common in more developed areas has only recently cropped up: dispute over whether to breach the sandbar that separates the lakes, Earl and Talawa, from the ocean during dry seasons. The lakes are managed by the State Department of Fish and Game whose waterfowl managers want to keep the sandbar intact and the lake levels high. Fish conservation interests, on the other hand, want migratory fish like coho salmon *(Onchorhynchus kisutch)* to have free access from the ocean to the lakes and their feeder streams. The National Marine Fisheries Service's summer, 1995 recommendation to list the coho as threatened under the terms of the federal Endangered Species Act may ultimately decide the sandbar breaching dispute in favor of the fish.

Contact: **Smith River Alliance: Larry Moss at 707/ 677- 3324**

Smith River Advisory Council: Jim Walvogel at 707/464 - 4711

Redwood Creek

Redwood Creek lies just south of the Klamath and runs from private timber and grazing lands down through the Redwood National Park before reaching the Pacific Ocean at Orick. Activity in the Redwood Creek watershed is of great concern to the Redwood National Park staff because many of the values for which Congress acquired the Park 20 years ago depend on channel stability and high water quality in the creek. The Park staff has, therefore, functioned much like a community "watershed watch" group. Redwood Creek's salmon population plummeted following the loss in the 1960s of the wetlands in its lower reach to a federal flood control project. National Park Service plans to restore some of the wetlands by acquiring pasture land and breaching one of the flood control levees has been stalled for years for lack of funds.

Mad River

The Mad River watershed has along history of intensive logging and dam development which has left its lower reach, just north of Humboldt Bay, buried in eroded gravel and finer sediments. The growing Humboldt Bay community now stores its water in the Mad's headwaters near Ruth; releases it down the river and recovers it from streambed collectors just above tidewater. The community has a direct stake in the health of the Mad River watershed, therefore, and has exercised it with increasing concemin recent years.

Contact: Northcoast Environmental Center, Tim McKay • 707/ 822-7237

2. Klamath-Trinity River Basin

The Klamath River, including its principal tributaries the Trinity, Shasta, Scott and Salmon rivers and over 200 smaller feeder streams, drains nearly 10,000 square miles of southern Oregon and northwestern California. Three-quarters of the watershed is within the boundaries of the Klamath, Six Rivers, Shasta-Trinity and Winema National Forests. The communities in the watershed have participated vigorously in the recent debate over how these public lands should be managed, particularly concerning timber harvesting. The watershed's Indian peoples, the Yurok, Hoopa, Karuk and Klamath tribes, have become increasingly involved within the past decade in public water, timber and fish resource protection and allocation decisions.

Because the watershed's salmon resource has plummeted in the last two to three decades, Congress has authorized multimillion dollar fish restoration programs for the Trinity and mainstem Klamath rivers. Coordinated resource management and planning (CRMP) "stakeholder" groups have formed in the Shasta, Scott and South Fork Trinity sub-basins largely to interact with these federal restoration programs. Citizen action groups have sprung up in the past decade, most on a sub-basin "neighborhood watershed watch" basis, but at least one (Friends of the Trinity River) arose from sharp disagreement over the restoration measures undertaken by federal program managers. It would appear at this point that watershed protection and restoration efforts in the Klamath-Trinity watershed are replete with plans and spending authority and that prospects for funding, while insufficient, are well above average.

Contact: **Salmon River Restoration Council, Peter Brucker at** 916/ 462-4720
Klamath Forest Alliance, Felice Pace at 916/ 467-5405
Friends of the Trinity River: 415/ 389-l300

3. Mattole, Eel and Van Duzen Rivers

The Eel River enters the Pacific Ocean just below Humboldt Bay, the Mattole 20 miles further down the coast. The Van Duzen is a major Eel tributary which joins the Eel just a few miles above its mouth.

The Mattole

The Mattole is the principal drainage of California's "Lost Coast," the sparsely inhabited southern coastal portion of Humboldt County. The Mattole River community, many members of which are professionals who fled the cities more than 20 years ago, has been deeply involved, through their nonprofit umbrella organization, the Mattole Restoration Council (MRC), in watershed protection and restoration for the past decade. The MRC and its member organizations provide a prime example of how a watershed-concerned community can develop the technical and political resources needed to sustain a program of repairing past damage and preventing further harm to watershed values. The MRC is currently focused on the role the degradation of the Mattole's estuary has played in the decline of the basin's anadromous fish resources.

Eel River

The Eel drainage is large, nearly 2 million acres. It drains the west side of the Coast Mountain Range from southern Humboldt County to mid-Mendocino County, a distance of 100 miles. This is highly erodible country that has been heavily damaged by more than a century of use, principally for grazing and logging.

Much of the southern portion of the watershed is relatively dry, given over to livestock grazing. The northern portion, that like the Van Duzen sub-basin nearer the coast, is prime timber- and salmon-producing country. The large industrial forest tracts of this watershed have been caught up in intense conflict over the effect of timber harvesting on fish and wildlife values, particularly the northern spotted owl *(Strix occidentalis caurina),* the marbled murrelet *(Brachyramphus marmoratus)* (a robin-sized federal Endangered Species Act-listed bird that ranges from the ocean to heavy timber inland) and, more recently, coho salmon and steelhead *(Onchorhynchus mykiss).*

At the same time conflict rages over timber management in the Eel watershed, the drainage has become a California Department of Fish and Game model for large river basin assessment and restoration planning. Cooperation between the Department and large landowners, and between the landowners and the area's watershed restoration organizations, has built steadily in recent years.

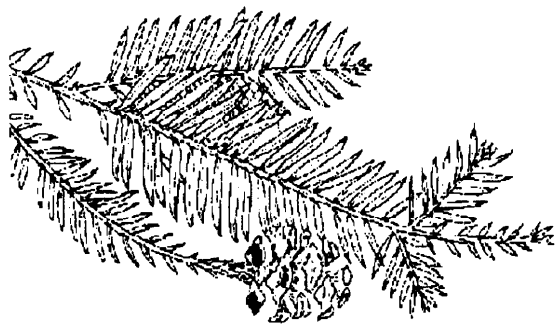
Contact: **Environmental Protection Information Center (EPIC)**
707/ **923-2931**

4. Mendocino, Sonoma and Marin County Streams

Mendocino County

Coastal Mendocino County is rural with small pockets of population typically adjacent to coastal streams. Community water supply systems are small and depend on the nearest stream. Community watershed protection concerns therefore focus on the health of the stream that supplies each community's drinking water. One action group however, Friends of the Garcia River, has organized around total watershed health concern for this 72,000-acre basin and another, the Redwood Coast Watersheds Alliance, focuses largely on how timber harvest practices affect the water quality in a number of Mendocino's coastal streams.

The Mendocino County coastal watersheds have been used extensively for timber production for a century. While early day loggers selected large trees, particularly redwood, for their clear grain for carpentry, that "sawlog" market has changed in the past two or three decades to one which prizes just about anything that will yield wood fiber for lumber, particle board or paper pulp. This means that stream-loving species like alder and cottonwood now have commercial value and that forest practice regulations, rather than the marketplace, stand between steambank protection and streambank denuding.



Salmon populations are an important stream health gauge. Salmon require cool, clear water and streambeds relatively free of sand and silt. Unlike chinook salmon, which migrate to the sea in the spring and early summer after only a few nomths residency, coho salmon remain in their natal freshwater environment for a year or more. Coho need cool water throughout this prolonged nursery period. The California Department of Fish and Game found coho salmon in virtually every Mendocino County coastal stream in the mid-1950s. By the mid-1980s, of 70 streams in the area surveyed by the Department, only 20 still supported coho, many at remnant population levels. This dramatic decline has been attributed to the removal of shade and cover producing trees from the riparian zone and the infilling of once-protective pools with sediments from watershed disturbances.

Contact: Friends of the Garcia River: 707/ 882-3086
Redwood Coast Watersheds Alliance: 707/ 468-1253
Mendocino Environmental Center: Betty Bail, 707/468-1660

Coastal Sonoma County

Although coastal Sonoma County is sparsely populated, water and land use are critical issues. Small settlements are concerned with the management of local streams and the lagoons that are found at the mouth of these waters. Protection of local species of fish and aquatic wildlife have driven a great deal of community awareness. Of course, a number of these communities are embroiled in ongoing issues surrounding the management of the Russian River (discussed below). A sharp controversy has developed, however, over the fast-growing inland City of Santa Rosa's plans to build a wastewater reservoir near Two Rock that would make releases into two small estuaries, Estero de Americano and Estero de San Antonio, which adjoin the Gulf of the Farallones National Marine Sanctuary.

Area landowners have petitioned Sonoma County's supervisors to oppose the Two Rock project. The manager of the National Marine Sanctuary has expressed opposition to wastewater discharges that would endanger Gulf of the Farallones values.

Contact: **Friends of the Esteros, Kathy Tresch at 707/ 762-7952**

Coastal Marin County

Coastal Marin County has a remarkably sparse population, considering that it is only minutes from San Francisco. The County's supervisors have strictly controlled development of west Marin's agricultural lands, largely dairy grazing lands. Whatever the County has not been able to accomplish in keeping west Marin rural, the creation and gradual expansion of the Point Reyes National Seashore/Golden Gate National Recreation Area has. The only hitch is that populous east Marin draws much of its water supply from west Marin's coastal streams, particularly Lagunitas Creek. Lagunitas Creek is the principal tributary to Tomales Bay, within the Gulf of the Farallones National Marine Sanctuary.

Following a drought in the 1970s the Marin Municipal Water District increased the size of its storage reservoir on Lagunitas Creek. This triggered formal protests from the nonprofit Tomales Bay Association and others concerned with the health of Lagunitas Creek and its struggling coho salmon population. The State Water Resources Control Board recently concluded a review of the District's water rights which confirms that the District must release more water down Lagunitas Creek to support fishlife. Meanwhile the steady improvement of the stream's coho population, through the hard work of Trout Unlimited andothers in the community, is a bright spot in the Pacific Coast coho salmon picture.

Contact: **Tomales Bay Association, Ken Fox at** 415/663-l467
North Bay Chapter, Trout Unlimited: 510/528-5390

5. Russian River

With a watershed of nearly one million acres the Russian is one of California's larger coastal streams. The basin historically hosted large populations of salmon and trout and was celebrated by anglers for its excellent steelhead fishing. Urbanization, particularly in the Santa Rosa area, has taken a heavy toll on the Russian's fish habitat. The river has been diverted for irrigation and city water and homesites have been built on its banks, additionally, the Russian River floodplain has become the major source of gravel for the fast-growing north San Francisco Bay region.

Opposition to increased Russian River gravel mining began in earnest in the early 1980s with fishing interests, but has since spread to area landowners, particularly vineyard owners, who fear the effects of mining on groundwater levels and channel stability. In fact, community organizing on behalf the Russian River has, since the early 1990s, become a virtual textbook example of how concern for a river can provide a synthesis for citizens' concerns over a wider slate of community growth issues.

Under pressure from the community, Sonoma County's supervisors have enacted rules to wind down gravel mining in the Russian River's floodplain. Meanwhile, the Coastal Conservancy has enabled a community-based investigation into the river's present behavior and future condition as a basis for drawing up a restoration plan.

Contact: **Sotoyome - Santa Rosa R.C.D. at 707/ 573-1409**
Friends of the Russian River, Joan Vilms at 707/545-7572

6. San Francisco Bay Streams

Fifty-seven rivers and creeks enter San Francisco Bay, not counting the large Sacramento and San Joaquin rivers, the Bay's principal tributaries. Battles have been waged, at the community level, on behalf of virtually every one of these streams.

The Bay Area is a fast-growing region and much of the growth in recent decades has occurred in floodplain areas. This floodplain urban development has been facilitated by locally-endorsed, federally-funded flood control projects. Where these projects were begun in the development frenzy immediately after World War II, they largely succeeded. A case in point is the 1960s flood control project at Walnut Creek that has virtually erased all signs of the stream that gave the town its name.

The post- War legacy of enthusiasm for flood control projects in the San Francisco Bay area has weakened. One project that is still being discussed is the Guadalupe River in Santa Clara County. Here, local pro-stream activists have focused media attention on poorly designed flood control structures which make it difficult for salmon to reach their spawning grounds. Salmon have become a powerful agent for focusing public concern on stream health issues.

Contact: **Evergreen Resource Conservation District at 408/ 288-5888**

7. Central Coast Streams

As one moves down the coast from San Francisco the communities become larger even as rainfall and local streams shrink. These communities, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura and dozens of cities and towns further south have experienced three generations of engineering which dammed the local streams, piped them to the townsites, set the growth machinery in high gear and left future generations to fathom how to sustain relentless development with finite water supplies.

Surprisingly, California's parched central coast has spawned some of its more creative and successful community-based watershed protection and restoration campaigns. Citizens in the Half Moon Bay area, for example, are drawing plans to restore Pilarcitos Creek. The headwaters of Pilarcitos were dammed in 1861 to provide fast-growing SanFrancisco, 32 miles to the north, a dependable water supply. In 1992 the stream was impacted again, this time by a torrent of mud which escaped a construction site. Those responsible for the 1992 mishap have reached a $900,000 settlement with the State of California for violating stream pollution laws. The funds underwrite Pilarcitos' restoration, perhaps the first time in the State that stream restoration funds have become available ahead of plans for their use.

Contact: **San Mateo County Fish & Wildlife Advisory Committee**
Keith Mangold ◆ 415/ 726-9119

Santa Cruz County

Santa Cruz is known for its progressive thinking. The combination of highly erodible watersheds and almost total dependence on local streams to provide high-quality drinking water has spurred the County to develop a local watershed management program. This program serves as a model for local government-sponsored watershed restoration that could be used by local governments throughout the state.

The Santa Cruz County Watershed Management Program has been active since the early 1970s. The program is funded by the Flood and Water Conservation District, a special district instituted in 1955. One of the primary charges of the District is to monitor, protect and restore surface and ground waters in the County. These duties are crucial for communities in the county. Local streams supply almost 70% of all the waters used for domestic purposes and many households rely completely on the natural water purification afforded by a healthy watershed for their high quality drinking water.

To ensure the health of its communities in the watershed of its major river, the San Lorenzo, the County developed the San Lorenzo River Management Plan in 1978. The Plan was the first of its kind in the state. Plan recommendations were aimed at stopping the degradation of the river and creating an innovative stream restoration program. Most of the Plan's recommendations have been implemented over the last 15 years. During this time, the Flood and Water Conservation District Watershed Management Program has removed all priority fish barriers to fish migration, opening prime

spawning habitat on over 30 miles of stream. Annually, over 30,000 hours of crew time are devoted to restoration projects funded by the District. District funds have also served to attract over $2,000,000 in project grants from State and federal sources to control erosion and improve stream habitat.

Santa Cruz County is clearly ahead of its time, over the past twenty years, the County has supported staff to monitor water quality, and has developed regulations and a program for restoring instream habitat. The County's program provides funding for erosion control and enforcement of riparian protections. The District funds a water quality monitoring lab, a hydrologist, a water planner, forester and resource planner to carry out its program. To ensure long-term watershed protection in the face of rising population growth, County staff have completed a Water Master Plan, a Timber Management Plan, a Stream Survey of Fish Habitat and are in the process of updating the San Lorenzo River Management Plan.

Santa Cruz County is not only concerned with supplying high quality water to its human population but is also devoted to protecting native fish populations such as coho. Coho salmon historically ranged as far south as Big Suron the Monterey County coast, while steelheadranged south all the way to Mexico. The July 1995 announcement by the National Marine Fisheries Service (NMFS) that its has determined that three populations of West Coast coho salmon, including the central coast's, warrant special protections under the federal Endangered Species Act (ESA) puts a new light on this area's struggling watershed protection and restoration efforts. In fact, the California Fish and Game Commission has acted on a request from Santa Cruz County to list the coho salmon of Scott and Waddell creeks under California's Endangered Species Act and the State has already begun to place special stream protection restrictions on timber harvesting in that coastal area. The status of steelhead is also an issue. It is clear that public awareness of California's coastal watershed conditions will rise sharply in the very near future.

Contact: Dave Hope, Santa Cruz Co. Planning Department ◆ 408/454-3096

8. South Coast

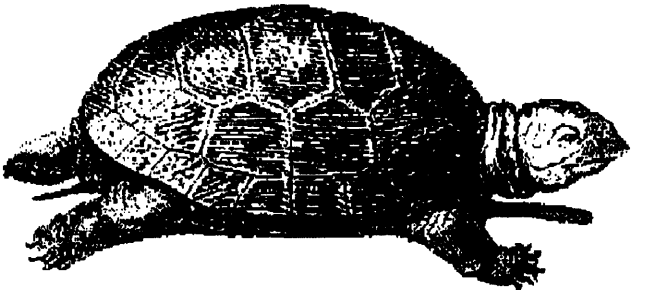
As we suggested above, the paucity of rainfall along California's southern coast seems to make watershed activists' efforts all the more determined A case in point is Ventura County's Santa Clara River, an hour north of Los Angeles and the subject of a 1987 water rights decision by the State Water Resources Control Board (SWRCB). When the State Department of Water Resources (not to be confused with the SWRCB) and the local water district sought amendments to their State rights to dam and divert the Santa Clara River several years earlier, the California Department of Fish and Game, with urging from local conservationists, protested the water rights changes, claiming that they would be the final blow to the river's surviving steelhead.

In 1982 the SWRCB approved the State and local water applications on the condition mat a study would be conducted to determine whether steelhead were, in fact, surviving in the Santa Clara and, if so, what it would take to assure their conservation. The Department of Fish and Game completed the study in early 1985. The SWRCB reviewed the results, together with the water applicants' continued opposition to providing streamflow or other conservation measures for the steelhead at a public hearing heldinlate 1986. The SWRCB issued its Santa Clara River water rights decision in September 1987.

The SWRCB's 1987 Santa Clara River water rights decision recognizes that there are relatively few steelhead surviving in the river, but goes on to note "Restoration of steelhead resources has been successful on other streams in California where good habitat was available. There is some possibility that the Santa Clara River steelhead resource could be restored if the measures sought by the Department [Fish and Game] were implemented." Those measures included a fish ladder and fish screen at the water district's diversion dam and guaranteed streamflows to assure upstream passage of adult fish in winter and downstream passage of juvenile steelhead in springtime. To make the basis for its actions very clear, the SWRCB includedthe following statement in its 1987 decision: "Further, we are of the opinion that the Santa Clara River steelhead, as an anadromous fish, is protected by the public trust doctrine. The Board has continuing authority to adopt conditions to avoid or minimize effects on resources protected by the public trust doctrine."'

If the SWRCB's position concerning its power to protect the Santa Clara River's tiny steelhead population is accepted, and no one has challenged it to this day, then the same position could be taken on the Santa Ynez, the Ventura, on Malibu Creek - in fact on any stream in California where water diversions have led to the decline of fish populations and fish habitat. Southern California watershed activists feel themselves empowered by the National Audubon case, the SWRCB's ruling on the Santa Clara River and steadily-growing public support for reversing the environmental damage to many southern California coastal streams.

Contact: **Friends of the Ventura River, Mark Capelii at 805/ 682-5240**



7 National Audubon Society v. Superior Court of Alpine County (33 Cal.3d 419 - 1983).

E. NEED FOR THIS GUIDE

This guide is intended to provide groups and individuals up and down the coast with science and organizational information that can aid their efforts to protect and restore their valuable community watersheds. Watershed planning is most effective where there is citizen involvement. Active community involvement ensures that the ideas of the people most affected by the outcome are included at the front end of the planning process. Scientists and managers are stewards of public resources, but they need interaction with the public to understand the most appropriate way to manage these resources to fulfill people's goals. Since public opinions on resource issues are often conflicting, compromise is always the key to achieving desirable action. Such compromise is only valuable when it is based on the views of all the parties interested in the outcome. The more citizens arc involved in watershed planning, the more effective the planning process will be in attaining community-based goals for public resources.

The experiences of the Californian projects surveyed in this guide, suggest that a model watershed plan is built step-by-step using the essential tools and actions shown in Figure 1. below. The chapters and appendices in this guide are arranged to provide insights into each of these tools. For ease in reference we have used icons to highlight information that you may find useful to future projects.

Building Blocks for Citizen Watershed Planning

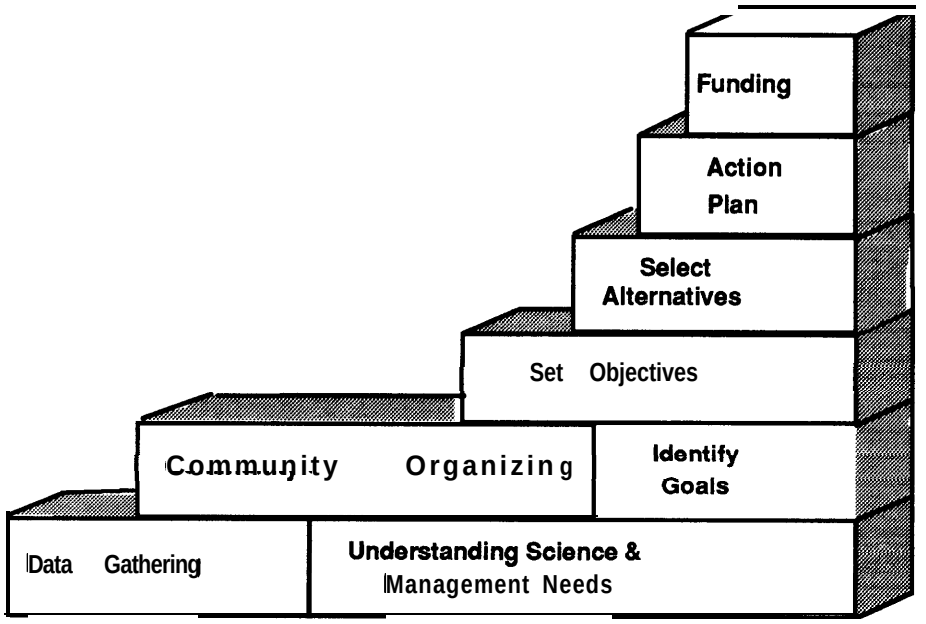


Figure 1

Resources

- *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. 1993.* U.S. EPA.
- *California Land Use and Planning Law. 1993.* Daniel J. Curtin, Jr.
- *Guide to the California Environmental Quality Act (CEQA). 1993.* Michael Remy, *et al.*

2 ♦ Understanding the Science and Management of Watersheds

A. RESTORATION GOALS: GUIDING LIGHTS FOR WATERSHED REHABILITATION

Whenever we set out to restore a piece of our tattered environment we seem to run immediately into the challenge "Restore to *what?"* That is not always an easy question to answer but, until we do in some acceptable fashion, our restoration efforts will lack the focus they need for success. Dr. Joy Zedler, professor of biology at the Pacific Estuarine Research Laboratory in San Diego, put her finger on this aspect of the restoration planning problem in her recent review of salt marsh rehabilitation efforts in California where she comments, "Intuitively, the goal of restoration should be to replace what has been lost. For several reasons, this goal is difficult to define. First, coastal salt marshes are far from being stable ecosystems. Their topography changes with sediment deposition and erosion; their species composition responds to variations in tidal and riverine influences; their rates of productivity and nutrient cycling are driven by fluxes of materials and organisms, as fresh and/or tidal water floods and drains the intertidal zone. With such dynamic structure and function, it is difficult to set a specific historic time or condition as a target for salt marsh restoration."[1]

But Dr. Zedler is describing a technical problem in determining restoration goals. There are many examples where restoration goals have been established through the political process with considerable success. One of the best examples of political restoration goal-setting is that of the Federal Water Pollution Control Act Amendments of 1972 which declared "The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters? The same section sets down two "national goals": (1) eliminating the discharge of pollutants into navigable waters by 1985, and (2) achieving an interim water quality level that would protect fish, shellfish and wildlife while providing for recreation in and on the water wherever attainable.

These famous "fishable, swimmable" water quality restoration goals have been debated by scientists and technologists as to their practicality and affordability, but they are to this day the goals toward which hundreds of federal, state and municipal laws and hundreds of millions of public and private investment dollars are dedicated. They may be technically troublesome, but they are politically popular and that is why they continue to provide a clear guideline for the federal Clean Water Act restoration program.

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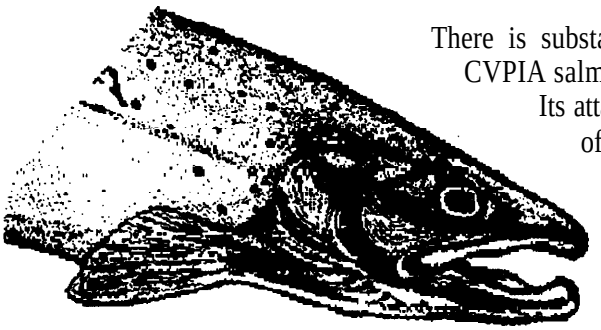
1 Zedler, J. B . 1995. *Salt Marsh Restoration: Lessons from California.* Pages 75-95. *In* Rehabilitating Damaged Ecosystems. John Cairns, Jr. ed. CRC Press, Inc. Boca Raton, FL.

2 Federal Water Pollution Control Act Amendments of 1972, § 101[a] (33 U.S.C.466 et esq).

Another example, absolutely applicable to California's coastal watersheds, is the "salmon doubling" policy established by the State's Secretary for Resources nearly 20 years ago. The Secretary adopted salmon as an important element in his Administration's statewide resource renewal program and, challenged to define the extent of his restoration ambition, declared simply that California would strive to double the number of salmon produced in the state's waters over the early 1980s levels. Soon after, the California Legislature commissioned a panel of fishery experts (the California Advisory Committee on Salmon and Steelhead Trout) to draw up a statewide salmon conservation program which recommended the adoption of the Resource Secretary's "doubling" goal. The Legislature subsequently adopted the same goal, emphasizing the need to restore watershed health and natural, as opposed to hatchery salmon production, as State policy? The story does not end there.

As Congress deliberated proposals in 1992 to reform and make more "fish friendly" the operations of the federal Central Valley Project (CVP), a sprawling system of dams, reservoirs and canals that diverts water from the Klamath-Trinity, Sacramento and San Joaquin rivers and delivers it to farms and towns along the coast as well as in the Central Valley, it asked: "Shouldn't federal actions effecting environmental resources in California conform to the same objectives as those set by the State?" The answer is now firmly lodged in the Central Valley Project Improvement Act of 1992 where Congress directs the U.S. Secretary of the Interior to develop and implement "a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991."[4]



There is substantial debate, of course, over whether the CVPIA salmon doubling goal is practical or affordable. Its attainment will require a substantial reallocation of water, and water, as we have observed, is one of California's most contentious resources. But the goal, just as in the case of the Clean Water Act, remains.

The California Department of Fish and Game cites the Legislature's salmon doubling mandate when it comments on projects that would harm salmon streams or when it proposes programs to improve them. The salmon doubling goal has been adopted for federal fish restoration programs in the Klamath River Basin. It may not be a perfect goal; it may have to be adjusted for local conditions. There are certainly streams where more than a doubling could be accomplished, and there are good-quality streams where doubling may be neither possible nor desirable. If those

3 California Fish & Game Code, § 6900 *et seq.*

4 Central Valley Project Improvement Act (CVPIA) § 3406[b] [11.

responsible for shaping a restoration program in a particular watershed have information that suggests a greater or lesser goal should be adopted there, then some accommodation should be made. To make restoration contingent upon the establishment of a technically based goal, alone, may, as Dr. Zedler's comments suggest, frustrate the effort.

Inasmuch as watershed restoration inevitably involves the reallocation of resources, program goals must be politically popular whether or not they are technically correct. One important way to address the political aspects of watershed planning is to get the interests, especially private landowners, together to define the watershed values and goals for the restoration efforts. This process is known as "community-" or "interest-based" planning. The process is most effective when conducted by an experienced, impartial facilitator whose role is to help the community find consensus on watershed problems and restoration goals. In watersheds where there is a high level of mistrust between the interests or where one or more interests have pursued legal action against another, mediation may be the best course for resolving these issues and moving restoration goals ahead. If it appears that the goals of the watershed planning process will be rife with controversy, or the interests have strong conflicts, then expert mediation is a sound investment for the planning process. The *Center for Resolution of Environmental Disputes* specializes in solving seemingly intractable environmental issues all over the state and can help turn conflict into common ground.

Contact: Elizabeth Watson, PhD., Acting Director,
Center for Resolution of Environmental Disputes
Humboldt State University, Arcata, CA 95521-8299.
Telephone: 707/826-5421 • 826-4750 • FAX 707/826-5450.
e-mail: WATSON@AXE.HUMBOLDT.EDU

B. DOCUMENTING THE PROBLEMS IN YOUR WATERSHED

Once you have identified the "benefits" you want restored to your watershed — drinkable water, fishing, swimming, stabilized soils, or whatever your community agrees it needs and deserves from its watershed — you are ready to document the factors that prevent or limit those services now. The path to documenting these "limiting factors" is not always a smooth one. There are usually diverse, often passionate views in the community as to why, for example, the fish in the local stream have all but disappeared: too much fishing, too little water, too much silt, not enough shade. If your livelihood depends on fishing, overfishing is not the limiting factor you would likely identify first. If you are ranching along the stream or harvesting timber there, you might be slow to agree that removal of vegetation from the streambanks is the culprit. Until the links between the limiting factors and the loss of watershed services can be fairly well demonstrated, it will be impossible to get agreement on the actions needed to achieve your restoration goals. **This is why gathering, organizing, and publicly reviewing information are essential steps in watershed restoration planning.**

In order to document watershed problems, one needs good information. It is often the case that statistically reliable data does not exist. In these instances, a combination of existing data and the judgment of scientists and experts can be used to determine the factors that impair watershed resources. The South Fork of the Trinity River demonstrates how a combination of data from government agencies, scientists and local interests have pooled resources and expertise to define problems and identify restoration solutions.

South Fork Trinity River watershed

A good example of a successful watershed restoration plan involving private land, one that carefully links limiting factor information to recommendations for curing those problems is the *Action Plan for Restoration of the South Fork Trinity River Watershed and its Fisheries*[5] funded by the U.S. Bureau of Reclamation's Trinity River Restoration Program for the South Fork Trinity Coordinated Resource Management Planning (CRMP) group and others in 1994. This 1,000 square-mile Klamath-Trinity river tributary watershed in northwestern California supports small communities, like Hayfork, with limited sewage treatment, pasture irrigation, range livestock grazing and timber harvesting activities on both private and National Forest lands. Many of this sub-basin's streams have been literally buried in sediment unleashed from steep, erodible slopes in this high-rainfall country. The plan describes Hayfork Creek as having "dark sludge on the banks and foam floating on the water" in summer with "dead fish including steelhead observed." This is not an image that the hardworking residents of Hayfork would have liked to presented, but it reflects the observed conditions in their watershed.

The primary goal of the South Fork Trinity Plan is to restore the steelhead fishery. Therefore, when preparing the plan, the CRMP planners focused their data collection efforts on information related to those factors that were limiting fish survival and reproduction. The CRMP gathered information from a long list of public and private sources:

California Department of Fish and Game — Data on fish populations, habitat and fishing pressure surveys, that documented declines in fish production.

California Department of Water Resources — Geological data and maps showing high erosion risk and mass wasting (landslide) areas, that may be factors contributing to fisheries decline.

State Water Resources Control Board — Water diversion and water pollution information from STORET and other databases, showing that water quantity and quality may be limiting factors to fish survival.

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[5] *Action Plan for Restoration of the South Fork Trinity River Watershed and its Fisheries. 1993.* Prepared by Pacific Watershed Associates for the U.S. Bureau of Reclamation Trinity River Restoration Program.

U.S. Forest Service — Watershed assessment and fish habitat typing data for federal lands within the watershed.

U.S. Geological Survey (USGS) — Streamflow data from the WATSTOR database.

U.S. Fish & Wildlife Service (FWS) — Salmon population estimates and forecasts.

National Marine Fisheries Service (NMFS) -- Identified restoration actions and management options.

U.S. Natural Resources Conservation Service (NRCS) — Soil typing maps, watershed inventory data, sediment yield estimates, needed to identify areas with potential to contribute sediment to the river.

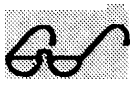
Tsnungwe Tribal Council — Descriptions of the Native American rights to the fisheries resources.

The weekly Trinity Journal — Historic fish and fishing articles documenting historic decline in fish populations.

Private scientist consultants- evaluations of erosion problems, suggested treatments for private lands.

And many, many other sources.

The Plan divided the South Fork Trinity River watershed into its tributary stream sub-basins. Existing information about soil, water, fish, geological and management conditions for each basin was compiled. Draft findings concerning the factors limiting fish production in each sub-basin were reviewed and discussed by the CRMP, which includes representatives of the watershed's landowners. A solid indication of the community's Plan "buy-in' is the 1995 commitment of one of the region's largest industrial forest landowners to cost-participate in sediment control and related measures in some of the South Fork's target restoration reaches. As with pudding, the proof of restoration planning is in the implementation of the plan and the South Fork Trinity community has demonstrated a hearty appetite for watershed restoration.



Finding Watershed Expertise

Local, state and federal agencies can be a valuable source for watershed information and expertise (see discussion of agency roles in Chapter 3). There are also many state and local institutions that conduct studies and maintain staff scientists that can be helpfulin watershed planning. The following list of better known institutions involved in watershed planning and protection is not exhaustive, but provides a starting point for locating scientists involved in, and information about watershed planning in California.

The National Estuarine Research Reserve System (NERRS) has two reserve sites administered by NOAA and the State of California which are dedicated to the study of estuarine ecology and processes. At these reserve sites research and education projects are stressed with the goal of providing information that would be useful for

coastal managers throughout the State. The *Elkhorn Slough National Estuarine Research Reserve* is located at Moss Landing north of Monterey Bay. The Elkhom Reserve is managed by the California Department of Fish and Game and is involved in a wide array of research projects including habitat restoration, innovative agroecology for strawberry farming, bird studies, and management plan development. Teacher training and curricula, and outreach programs are available to the public.

Contact: **Becky Christensen, Education Coordinator**
Elkhorn Slough National Estuarine Research Reserve
1700 Elkhorn Road, Watsonville, CA 95076 • 408/728-0560.

The Tijuana River National Estuarine Research Reserve is located immediately north of the U.S. - Mexico border in southern San Diego County and contains some of the few remaining examples of relatively undisturbed, tidally flushed coastal wetlands in southern California. California's Department of Parks and Recreation manages the reserve which is also the site of the *Pacific Estuarine Research Laboratory* run by San Diego State University. The reserve serves as a center for wetland restoration research and compares the value of constructed marshes versus natural marshlands to identify improved restoration methods.

Contact: **Gail Sevrens, Education Coordinator**
Tijuana River National Estuarine Research Reserve
301 Caspian Way
Imperial Beach, CA 92032 ◆ 619/ 575-3613.

The Institute for River Ecosystems (IRE) is dedicated to the preservation of river ecosystems and to the improvement of river management through research and education. The IRE has a pool of experts, Humboldt State University (HSU) faculty and graduate students, who specialize in research related to river management. Current projects include: a basinwide study of the anadromous salmonid population of the Smith River; evaluating potential impacts to juvenile salmonid of a summer dam on the Eel River; quantifying downstream effects of hydroelectric dams; developing management strategies for gravel extraction from rivers; and riparian ecosystem dynamics.

Contact: **Dr. William Trush, Director**
Institute for River Ecosystems
Schmidt House #90, Fisheries Department, Humboldt State University, Arcata, CA 95521 • 707/ 826-3561.

The California Water Resources Center (CWRC) conducts research and investigates water-related issues in California. The Center, associated with the University of California (UC) system, collects and publishes the results of much of the water-related research conducted by UC faculty. The Center maintains *the Water Resources Center Archives,* a special collection of published and archival materials covering

water-related literature of California and the West from the 1890s to the present. The Archives can be accessed through the On-line Computer Library Center (OCLC) and through the on-line University catalog system (MELVYL). WRC publishes extensive water resources literature and the *Directory of Water Resources Expertise*[6] which lists water resource faculty and staff scientists throughout the UC system. This is an excellent source for finding scientists that may be available to assist in watershed studies.

The Archives are located at: *Water Resources Center Archives,* 410 O'Brien Hall, University of California, Berkeley, CA 94720. 510/ 642-2666.

For a list of WRC publications or a copy of the Directory, write or call:

Henry J. Vaux, Jr., Office of the Director
Water Resources Center, Rubidoix Hall,
University of California, Riverside, CA 92521.
909/ 787-4327 /FAX 909/ 787-5295.

*The **Wildland** Resources Center* (WRC), also associated with the UC system, conducts research aimed at solving scientific and practical problems concerned with managing and conserving wildland resources. One purpose of the WRC is to provide a statewide network of specialists and county advisors that can convey information to people interested in the utilization, wise management andconsetvationof California's natural resources. The WRC has developed a directory that lists wildland resources experts, their specialties andinterests arranged by keywords. *The Wildland Expertise and Facilities in the University of California System*[7] contains a wealth of information about the types of research available and where to find the experts.

To find out more or to obtain a copy of the Directory contact:

Wildland Resources Center
Don Erman, Director
145 Mulford Hall, University of California, Berkeley, CA 94720
510/642-0263 FAX 510/642-5067

There are many other institutions that are valuable information sources. Natural History Museums can provide a wealth of information and expertise. Some of these institutions specialize in documenting the local ecology and may have priceless information in their archives. Some of the larger institutions that can provide such information include:

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6 *Directory of Water Resources Expertise in California.* January 1993. California Water Resources Center, University of California, Riverside, CA.

7 *Wildland Expertise and Facilities in the University of California System.* May 1993. Wildland Resources Center, University of California, Berkeley CA.

California Academy of Sciences
Golden Gate Park
San Francisco, CA 94118
Contact: Dr. John McCosker ♦ 415/ 750-7249

Santa Barbara Museum of Systematics and Ecology
Department of Biological Sciences
UC Santa Barbara, CA 93106
Contact: Assistant Director Mark Holmgren • 805/ 893-4098

Southern California Academy of Sciences
Natural History Museum of Los Angeles County
900 Exposition Blvd.
Los Angeles, CA 90007 • 213/ 744-3384

Camm Swift
Loyola Marymount University
Department of Biology
Loyola Boulevard at West 80th Street
Los Angeles, CA 90045-2699. 310/338-5386 • FAX 310/ 338-4479
cswift@lmumail.lmu.edu

Joy B. Zedler
Professor of Biology
Pacific Estuarine Research Laboratory
San Diego State University
San Diego, California

Because watershed management encompasses a number of specialized disciplines such as geology, hydrology ,and fisheries science, some forward-thinking professionals decided that there needed to be an interdisciplinary organization devoted to the field of rivers and watershed management. *The Watershed Management Council (WMC)* was formed in the late 1980s to "advance the Art and Science of Watershed Management." The organization is made up of scientists, professionals from a wide range of disciplines, students, teachers and individuals interested in promoting proper watershed management. WMC provides a forum for disseminating watershed information, and a network of people interested in watershed management. WMC has compiled research, studies, policy information, and sources of expertise in the watershed field. The organization publishes a quarterly newsletter and places informationon EPA's Nonpoint Source Electronic Bulletin Board System (NPSBBS) (see below). WMC has recently set up an Internet address at "watershed.org" to allow on-line access to their publications.

For membership or newsletter information, contact:

The Watershed Management Council
c/o Water Resources Center
UC Davis, CA 95616
or Clay Brandow, via e-mail at: clay-brandow@fire.ca.gov

The newsletter editor is Mike Fumiss
c/o Interagency Watershed Center
4886 Cottage Grove Ave.
Mckinleyville, CA 955 19 ◆ 707/839-6277
e-mail: furniss@watershed.org

Finding Existing Information and Using Data

One way to begin documenting changes in your watershed to find as much historical data as possible and compare it with existing data. For example, changes in river, marsh or estuary configuration can be documented through comparisons of old maps with current maps or aerial photographs. Old maps can be found in libraries, universities and at local historical museums and historical society files. City and county offices often have plat maps dating back to the first settlements in the community. These maps can show the prior placement of streams and creeks that have been channelized, culverted or diverted. National, State or regional parks may also have historic records and maps that can provide information about the watershed.

Comparisons of aerial photographs taken over the years can provide information on land use and other changes in the watershed. Historical photo sequences from earliest to most recent can provide valuable clues to natural or human-related land disturbances, and changes in land uses and vegetation. The local Resource Conservation District often has sets of aerial photos for the local area. One of the best contacts for finding aerial photographs is the Earth Science Information Center (ESIC), operated by the U.S. Geological Survey (USGS). ESIC's Aerial Photography Summary Record System identifies over 130 California sources of aerial photographs, both public and private, that can be obtained through their services.

Contact: ESIC, Building 3, MS 532, 345 Middlefield Road
Menlo Park, CA 94025 ◆ 415/ 329-4309

Including a chapter on the history of the watershed, both the natural history and that of the human community, is a safe way to begin to get buy-in into the plan. Almost everyone can agree on the history of their community. As the community learns to agree on the history of their watershed, it can begin to work together on defining future goals. One way to encourage participation is to interview long-time residents and members of historical societies. These interviews can provide especially valuable insights into the fisheries and other resources in the watershed and to document changes that have occurred over time.

Look for unpublished surveys and studies that may have been conducted by college students or agency staff. Many colleges and universities keep copies of undergraduate theses and studies in their libraries. Fish and Game staff may have conducted small studies that have not been formally published that can be useful for documenting past fish and wildlife populations. The California Department of Transportation (Cal Trans) may have cross-sections and river channel surveys conducted as part of bridge or road building projects, that can be useful to document changes in the river channel or profile.

Do not overlook what seem like obscure sources. When developing the Garcia Plan, we checked the records at the old Point Arena lighthouse, a local historic museum. Although the U.S. Coast Guard had closed the lighthouse some thirty years ago, we found a survey map of the coast from 1870 along with rainfall records from 1902 to 1941. The information proved extremely valuable in showing estuary conditions before extensive resource depletion. A fish-finder map for tourists from the 1950s, published by the City of Point Arena and found in the University of California's map library in Berkeley, was crucial in identifying location of historic fish habitat on the river.

Exploring Watershed Information Via the Internet

More and more information is being made available electronically over the Internet. The Internet offers opportunities to contact scientists, explore the wide array of research available and network with other watershed groups and projects. Forums and new information "nodes" are springing up everyday, but there are a number warrant mention and that can be extremely useful for data gathering efforts:

EPA's Nonpoint Source Bulletin Board (NPS BBS) provides nonpoint source pollution-related information, a forum for discussion and information exchange. The BBS features Specific Issues Groups (SIGs) that are dedicated to topics such as Watershed Restoration, Volunteer Monitoring, and Coastal NPS Control. The BBS also contains all of the issues of EPA's *Nonpoint Source News-Notes* a bulletin which is published several times annually. The bulletin contains articles from around the nation concerning the control of nonpoint source pollution and the ecological management and restoration of watersheds.

To subscribe to the newsletter contact:

NPS News-Notes, c/o Terrene Institute
1717 **K Street, NW, Suite** 801
Washington, DC 20006 • 202/260-1517

To access the NPS BBS:

You will need a PC, a modem, and telecommunications software. The phone number is 301/ 5 89-0205. The telecommunication parameters are: No parity, 8 bits, 1 stop-bit (N-8-l). You can also access the NPS BBS over the Internet by typing TELNET FEDWORLD.GOV. Once on Fed World, turn ANSII graphics off and gothroughthe Gateway to NPS-BBS, or command D 79. The information has recently been added to the World Wide Web at:

http://www.epa.gov/OWOW/NPS/npsie.html

Recently, an e-mail discussion group called NPSINFO was opened. If you have an e-mail account you can access NPSINFO. To subscribe, end a message to "listserver@unixmail.rtpnc.epa.gov" and include in the message:

subscribe NPSINFO yourfirstname yourlastname

After you have subscribed you can post and receive messages via this address:

npsinfor@unixmail.rtpnc.epa.gov

The National Park Service, Rivers, Trails and Conservation Assistance Program has developed ***the California Rivers Assessment*** which contains information on over half the river segments in the state. The assessment has conducted a survey and gathered the best professional judgments from experts regarding the condition of riparian and aquatic resources of California's rivers. The Park Service has established criteria and performed analyses to rank river segments according to their ecological integrity based on riparian condition, flow regime, and native species populations. Assessment information is available on-line, where users can browse or download survey forms, basin maps, water quality data, vegetation data, and NDDB information.

For more information about the *California Rivers Assessment* contact:

Linda Stonier, National Park Service
600 Harrison St., Suite 600
San Francisco, CA 94107. 415/ 744-3975 • FAX 415/ 744-3932.

The Rivers Assessment is accessible via the Internet at:

http://ice.ucdavis.edu/CA-RIVERS-assessment/

There are many existing projects throughout the state that can provide valuable insights for new groups that want to undertake new watershed projects. Recognizing the importance of such information exchange, the California Executive Council on Biodiversity, several federal and state agencies, and the University of California have joined together to create ***the California Watershed Project Inventory*** (CWPI). The CWPI contains information on some 200 watershed projects statewide. Most projects

have been mapped by bio-region and hydrologic unit. Project information includes the contact person, funding sources, problems and successes, and monitoring or other data collected by the project. Project types vary from those aimed at water quality or wildlife protection to riparian enhancement and forest restoration. One of the main goals of the Inventory is to provide an avenue for watershed groups to network and learn from the each other's project experiences. Inventory information is available via the Internet and users can review the survey and download maps and reports associated with each project entry.

For more about the *California Watershed Project Inventory* contact:

Anitra Pawley, Division of Environmental Studies
UC Davis, Davis, CA 95616. 916/ 752-9381 • FAX 916/ 752-3350

e-mail: alpawley@ucdavis.edu

The Internet, World Wide Web access for the Inventory:

http://ice.ucdavis.edu/CA-WATERSHED-Projects-Inventory/

The Internet is changing the way that information is disseminated and used. There is such an immense amount of knowledge available through computers that finding pertinent information can be bewildering. We've listed those Internet addresses that are specific to watershed management, but there are certainly other sites that may containinformation that would be helpful for a watershed project. The best part about the Internet is that you can explore a topic fully without ever leaving your desk. For those interested in delving more deeply into water resource issues, the following Web sites may prove to be useful:

I[Water:	http://www.waterweb.com/
American Water Works Association:	http://www.awwa.org
Environmental Organizations directory:	http://www.webdirectory.com
FWS Coastal Ecosystems Info:	http://www.fws.gov/-cep/cepcode.html
National Science Foundation:	http://www.nsf.gov/
National Academy of Sciences:	http://www.nas.edu/
National Oceanic and Atmospheric Administration (NOAA):	http://www.noaa.gov/
NOAA Coastal Ocean Program:	http://hpcc.noaa.gov/cop/cop-home.html

Using Data Effectively

To use data effectively and persuasively, the community must understand the reasons for collecting specific types of information and the methodology used to gather it. These reasons and methods should be explained in the plan, in a simple and straightforward manner understandable to the non-scientific lay person. This is a crucial part of the education and public awareness process. If the community understands the technical information and how it is used to reach community goals, then trust is established along with increased participation. For instance, if the general goals are to identify historic and existing conditions, and problems on the river, then observations of its physical characteristics must be made. A chapter that explains the reasons for collecting certain types of data and the methods used should be a centerpiece of your watershed plan.

Explaining Watershed Data

The following provides an example of an approach for conveying the reasons and methods to help community understanding of datagathering efforts for such goals:

(Reason)

The study of rivers is called HYDROLOGY. It involves studying channel forms, the movement of water through the system of channels, and the effects of the water's energy. CHANNEL FORM, or MORPHOLOGY, is an important factor. The shape of river channels often change over the course of the years due to floods and high flows. Observing changes in the form of the channel provides an understanding of CHANNEL STABILITY which can depend on many factors, such as increased erosion caused by land use (roads, timber harvesting, grazing, etc.), landslides, or stream bank failure. Information about channel form and stability can be obtained by looking at historical information, especially aerial photographs, and by making CROSS SECTIONS AND LONGITUDINAL PROFILES of the river.

(Method)

A CROSS SECTION is a diagram of the river's shape taken at right angles to the direction of flow of the river, creating a picture of the bank and river bottom features. A cross section is made by first staking the point on the left bank of the river and then stretching a tape to the right bank, which has also been staked. Depth measurements along the bottom are made by reading the tape level next to the horizontal tape connecting the stakes, or by using more sophisticated surveying equipment which speeds up this process. Cross sections provide information about channel hydrology and fish habitat. Cross sections taken over time are a valuable tool for understanding a river and detecting specific changes in pool depth, channel stability, and form.

C. INFORMATION STRENGTHENS THE PUBLIC'S COMMITMENT TO RESTORE KLAMATH RIVER FISH

The Klamath River is California's second largest river and by far the biggest of its coastal streams. Only the Sacramento, which drains much of the state's Central Valley, produces more water — and salmon. The Klamath's salmon are considered to be in a precarious condition.

Following a period of poor ocean feeding conditions, the number of king salmon *(Oncorhynchus tshawystscha)* returning to the Klamath to spawn dropped to 30,000 fish in 1984, less than half the number of prior years. Concerned by these plummeting numbers, the region's commercial salmon trollers, anglers and Indian salmon fishers (the Klamath supports California's only recognized tribal river fishery) sought federal help in restoring the river's salmon. In 1986 Congress adopted the Klamath River Basin Act, authorizing a million dollars a year for 20 years to restore the river's fish resources.

The Klamath Act states that the decline of the Klamath's salmon resource can be explained in part by "floods, the construction and operation of dams, diversions and hydroelectric projects, past mining, timber harvest practices, and toad building [that] have all contributed to sedimentation, reduced flows, and degraded water quality which has significantly reduced the anadromous fish habitat in the Klamath-Trinity River System."[8] The Act created a 14-member Klamath River Basin Fisheries Task Force representing federal, state and county governments, Indian tribes, commercial fishermen and anglers. The Task Force's role is to advise the U.S. Secretary of the Interior on precisely how the Restoration Program should address the problems identified in the Act.

Information needed for planning and monitoring

Organized in late 1987, the Klamath Task Force began a thorough assessment of fish habitat conditions in the 10 million-acre watershed as the basis for a plan to guide the 20-year Restoration Program. The Task Force completed its *Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program in* 1991.[9] The plan identifies the factors, most of them involving nonpoint sources of

8 The Klamath River Basin Act. Public Law 99-552.

9 Klamath River Basin Fisheries Task Force. January 1991. *Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program.* Prepared by William M. Kier Associates.

water pollution, which limit salmon growth and survival in the mainstem Klamath and the river's principal tributaries. The plan is both a fish restoration plan and a water quality restoration plan. In the Klamath, these two goals are inseparable.

The Task Force's plan draws its facts from hundreds of published reports, administrative memos and single-purpose databases created by agencies and individuals throughout the region. Concerned by the effort required to locate and evaluate all this information, the plan called for a comprehensive, computer-aided system to assure the continued, timely capture and maintenance of fishery and water quality information to support the Klamath program. The system would enable the evaluation of the Restoration Program, itself, as well as the sharing of information quickly and reliably among all parties interested in the Program.

"KRIS" (for Klamath Resource Information System, see sidebar) was launched in 1992 with a grant of federal Clean Water Act funds to the Task Force for its development. KRIS now covers more than half the Basin's watershed area. As it is used by Restoration Program participants and observers, the system is assuming an important, largely unanticipated role in guiding restoration decisions.

Since the earliest declines of these important fish, Klamath basin interests have been unclear, or downright uninformed as to the reasons. For many of those who mine, ranch or cut timber far from the coast, the answer has been overfishing on the ocean and lower river. For those who make their living harvesting salmon the problem involves land use and water diversions in the upstream spawning and nursery areas. With this divergence of opinion it has been naturally difficult for the concerned parties to agree on how to restore salmon to the Klamath.

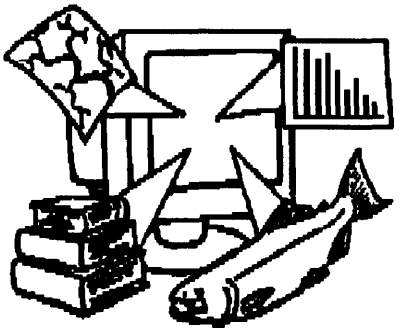
KRIS' development reflects the *Long Range Plan's* findings about water quality conditions and how they limit fish production — what fish scientists call "limiting factors." For example, the plan describes how water diversions, the loss of shade from streambanks and the reduction in pool volume by sediment drive Shasta River temperatures up and dissolved oxygen levels down frustrating the growth and survival of juvenile salmon in this key spawning tributary. KRIS' Shasta River data elements thus provide graphic summaries of flow, temperature and dissolved oxygenconditions, making the precise nature of the Shasta's conditionunderstandable to all. At the same time, those with fishing impact concerns can review KRIS' fishing data to inquire whether over-harvesting could explain the Shasta's diminished salmon spawner returns.

Information can hasten consensus

KRIS is used by Klamath Restoration Program managers to maintain information for monitoring, evaluating and strengthening the Program's performance. That is the primary use envisioned for KRIS in the Task Force's long range plan. Meanwhile, a second subtle, but important use of KRIS has emerged. By quantifying and mapping

the nature and extent of the watershed's water quality and habitat problems KRIS strengthens community understanding of these fish-limiting factors and fosters consensus on what do about them.

In large watersheds computer-supported infonnation systems like KRIS can help people comprehend the "big picture" more quickly than traditional reports. That comprehension then paves the way for agreement on what needs to be done and the cooperation needed for doing it. That has been the experience of the Klamath River Basin Fisheries Task Force as KRIS' information steadily builds community support for the Klamath Fisheries Restoration Program.



KRIS

WHAT IS KRIS?

The Klamath Resource Information System-"KRIS" — is an interactive computer database that contains a collection of information concerning fish, fish habitat and water quality conditions in the Klamath River basin. KRIS is also an assembly of computer software tools for locating, using and updating the information collection — for "managing" the data. And, it is a collection of Klamath River basin maps — or, more precisely, computer-processed map "coverages," that includes the U.S. Environmental Protection Agency's River Reach File. Because KRIS' information collection (databases) is tied to map locations, KRIS is also a Geographic Information System, or "GIS." KRIS can be operated on a personal computer. KRIS is user friendly. Copies of KRIS are being distributed to Klamath River basin communities.

KRIS contains information about:

- **Klamath River fish populations, habitat and harvest:**
- **Klamath River water quality and quantity, including** USGS streamflow gaging records, stream temperatures, dissolved oxygen, sediment deposition, and riparian (streambank) vegetation conditions.
- **Klamath Basin geographic map layers,** photographs and remote sensing data.
- **KRIS can** be **used by** resource management agencies, tribes, landowners and community groups that participate in, or wish to monitor the progress of the Klamath Basin Fisheries Restoration Program.

For more information about KRIS **contact:** Patrick Higgins, William M. Kier Associates • 707/ 822-9428

D. FILLING DATA GAPS: CITIZEN'S MONITORING

The concept underlying KRIS is that data should be managed in a manner that allows the local community to both use the information and add to it. The KRIS experience has taught us that when information about a watershed is collected and properly organized, probably the first thing that will be apparent is the need for additional data with which to answer specific questions. Once your group has gathered all the existing data, you may find there is not enough information to document, with any certainty, the cause of problems in your watershed. Lack of data and uncertainty about specific causative factors are conditions that are common to watershed planning. Where there is not enough information to make informed decisions about a resource or its limiting factors, there is a "data gap." Filling data gaps is key to decision-making and approaches for improving the data picture should be addressed in the watershed plan.

Collection of long-term trend data on factors such as stream flow volumes, water quality, fish and wildlife habitat characterization and population information is key to determining the conditions and trends in a watershed.[10] Unfortunately, most watersheds and their associated rivers and streams lack basic or "baseline" data on the conditions of the resources, and ongoing trend data has became less available as government budgets for monitoring have declined.

Citizens have stepped in to fill this need. More and more we find agencies recognizing that, with proper training, local community groups can be relied upon to inventory resources and perform monitoring in their watersheds. In some instances local groups are forming partnerships with agencies to conduct ongoing, systematic monitoring of streams and riparian resources. These partnerships promise to reverse the problem of "data gaps."

Coyote Creek Riparian Station

One of the pioneers and tireless promoters of citizens' monitoring techniques is Michael Rigney of the Coyote Creek Riparian Station. The Coyote Creek Riparian Station, a nonprofit membership organization is located adjacent to Coyote Creek at the southernmost reach of San Francisco Bay. Begun in 1982 as a field station for

10 For an excellent discussion of monitoring approaches see MacDonald, L. *et al.* 1991. *Monitoring Guidelines to Evaluate Effects of Forestry Activities on Streams in the Pacific Northwest and Alaska.* U.S. EPA, Region 10. 166 pages. Publication # EPA/910/9-91-001.

the study of migratory birds, it has expanded its focus to include habitat, riparian and water quality inventories of all the streams that empty into the southern end of San Francisco Bay. The Station's Community Creek Watch Stream Inventory Projectnow coordinates the efforts of hundreds of volunteers who collect data on these bayside streams. The Project sponsors a StreamKeeper Program that trains volunteers to identify, report to the appropriate authorities, and follow-up on illegal dumping and polluting in the creeks near their homes. Through volunteer monitoring the Coyote Creek Riparian Station has been able to provide valuable assistance to local agencies while developing community awareness of watershed issues and problems.

Rigney and his dedicated staff began their Stream Inventory Program by asking local agencies such as the Santa Clara Valley Water District (the water delivery and flood control agency for Santa Clara County) if they had, or needed a program to systematically collect data on riparian habitat conditions to assist the agency in planning, flood control and ground water recharge projects. The District agreed that this was needed, but there was no in-house program to do so and that to hire consultants to collect the information would be too costly. The Station then proposed that trained volunteers might be able to collect the needed baseline habitat data at a considerable cost savings to the agencies?

The agencies initially had concerns about the reliability of the information and fear of overzealous volunteers, whose enthusiasm might, in the minds of the agencies, cause public relations and logistical problems for regular staff. To allay these concerns, the Station researched standard and widely acceptedmethods for wildlife habitat surveying and water quality monitoring. With grant funding from EPA, the Santa Clara Valley Water District and foundations, the Station adapted these methods to suit the training needs of volunteers and developed standard methods known as field "protocols" for their monitoring program. The protocols included those monitoring and inventorying techniques that were reliable, inexpensive, capable of being used by modestly trained volunteers, and able to produce data comparable with assessments conducted by private concerns or agencies. In developing its citizen monitoring program techniques the Station coordinated its efforts with EPA, the Department of Fish and Game and the U.S. Fish and Wildlife Service. The monitoring program quality assurance plan was certified by the U.S. EPA in 1993, and citizens' monitoring began in earnest.

The Station's Community Creek Watch Stream Inventory volunteers now conduct monitoring at creek sites located throughout Santa Clara County. Information on water quality, birds, streamside plants, fisheries, amphibians and reptiles is collected at sites along these streams. Besides local community members, the program draws upon the experience of focused interest groups such as the local Audubon Society

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11 Santa Clara County Citizens' MonitoringlStream Inventory Project: Protocols and Procedures. 1994. Coyote Creek Riparian Station.

chapters, native plant societies and fishing groups to provide volunteers skilled in bird and plant identification and fish habitat characteristics. Summaries of the collected data are published in the Station's quarterly *RipariaNews*. The project is the first of its kind in California. Its success has led to the Station to expand its efforts toward assisting other citizens' groups to initiate monitoring efforts by providing training materials and sampling equipment.

Michael Rigney and Station staff are currently collaborating with the San Francisco Estuary Institute to develop a Guide for Starting a Citizens' Monitoring Group. The effort is funded by the State Water Resources Control Board and the Guide is expected to be available in 1996. To find out more about the upcoming Guide, contact Gwen Starrett, the SWRCB Citizens' Monitoring Coordinator at 916/ 657-0518.

If your group is interested in starting your own citizens' monitoring effort and would like information about the Community Creek Watch Program, contact:

Coyote Creek Riparian Station
P.O. Box 1027
Alviso, CA 95002 • 408/ 262-9204.

Resources

The Coyote Creek Riparian Station offers several publications available for public purchase (cost varies for nonprofit versus private purchasers):

- **Santa Clara County Citizens' Monitoring and Stream Inventory Project: Protocols and Procedures.**
- **StreamKeeper's Guide to Pollution Prevention: A Manual for Protecting Creeks, Storm Drains and the Bay.**

3 ♦ Took for Finding Solutions to Problems

A. REGULATORY AGENCIES AND MECHANISMS

The Federal Clean Water Act and the Environmental Protection Agency

The federal Clean Water Act, enacted in 1972, is administered by the U.S. Environmental Protection Agency (EPA). EPA generally implements federal law, including provisions of the Clean Water Act (CWA), through the states using what is known as the "state - federal partnership." This means that EPA 'delegates' its authority to implement water quality controls to the state and local agencies while EPA takes the responsibility of ensuring that the states fulfill their commitment to implement the law. In other words, EPA is primarily organized to work with its state counterparts and has only recently involved itself directly in local watershed issues. Probably the largest obstacle for EPA is that nonpoint source pollution and watershed restoration are local problems and the agency's role, other than administering grants through the state, is largely removed from local efforts. Nevertheless, EPA and the CWA provide tools and funding opportunities to assist local groups in watershed restoration.

Background on Watersheds and Nonpoint Source Pollution

Early on, EPA recognized that water pollution results not only from end-of-pipe "point source" discharges from cities and factories but also from human activities such as agriculture, forest management, construction and other land-uses. Adverse water quality impacts resulting from crop production, timber harvesting and other landuse activities are called **nonpoint source pollution.** Because rivers and streams generally flow toward the ocean, accumulating both flow and pollutants, nonpoint source problems impact coastal resources disproportionately. In California nonpoint source pollution is considered the state's most significant source of water pollution, impairing estuaries, bays, and near shore waters.[1]

In the late 1970s as it became clear that even incremental improvements in water quality from point source controls could only be obtained at higher and higher costs, Federal efforts gradually turned to the widespread problem of nonpoint source pollution and, hence, to watersheds. Understanding provisions of the CWA will enable watershed groups to use them as tools for characterizing watershed problems and obtaining funding for planning and implementing watershed restoration.

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[1] *California's Ocean Resources: An Agenda for the Future (draft).* July 1995. The Resources Agency.

The Clean Water Act Section 208 Program — Water Quality Planning

In 1977, Congress added section 208 to the Clean Water Act. This provision charged EPA and state water quality agencies with developing **water quality control plans** that would identify nonpoint source related pollution. These plans "set forth procedures and methods to control to the extent feasible such sources"[2] The plans relied upon the use of "Best Management Practices or "BMPs" (see below) as measures to control nonpoint source pollution. Several "208 Plans" were developed for various parts of the state by regional authorities. For example, the Association of Bay Area Govemments (ABAG); the Association of Monterey Bay Area Governments (AMBAG); the San Diego Association of Governments (SANDAG) and the Southern California Association of Governments or SCAG, all have developed areawide water quality control plans. Although most of these plans were published in the late 1970s where a plan exists, it can be a good starting point for identifying problems in your watershed.

The 1987 Federal Nonpoint Source Management Program

By 1987, Congress realized that the purely planning-based approach of Section 208 was not working adequately to control nonpoint pollution. It became clear from nationwide reporting that the remaining water quality pollution problems resulted predominately from nonpoint sources. In fact, it was observed that water quality gains made through point source controls in the 1970s were actually losing ground to widespread nonpoint source problems arising from urban runoff, agriculture and other diffuse discharges.[3]

In response, Congress added section 319 to the Act. Section 319, the Nonpoint Source Management Program, directed EPA and each State to develop Assessment Reports and Management Programs describing the states' nonpoint source problems and setting out a program to control nonpoint source pollution impacts.[4] In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards administer the program and are responsible for the California Nonpoint Source Management Plan.[5]

The federal section 319 program is incentive based, meaning it provides funding to assist the state in the implementation of its Management Program (see discussion of grant funding sources, Appendix B). The elements of the nonpoint source program include:

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2 Section 208 of the Clean Water Act as Amended, 1977. (33 U.S.C. 1288).
3 ***Report to Congress: Nonpoint Source Pollution Impacts on Water Quality. 1984.*** U.S. EPA.
4 Section 319 of the Clean Water Act as Amended by the Water Quality Act Amendments of 1987, March 1988. (33 U.S.C. 1329).
5 ***Nonpoint Source Management Plan.*** November 1988. California State Water Resources Control Board.

- Identification and assessment of water quality problems on a **watershed-by-watershed** basis.
- Development of Best Management Practices (BMPs) to prevent the problems identified, and programs for implementing such BMPs.
- Institutional arrangements to promote (voluntary program), encourage (incentive-based program), or require (regulatory program) the implementation of BMPs.

The federal nonpoint law contained in section 319 was based on the assumption that the necessary planning had been completed under the section 208 program. While this assumption was true for a few states, it was not the case for most. California is a big state; while much effort had been put into the development of Basin Plans and Areawide Waste Management Plans such as those of the Regional Planning Agencies mentioned above, there are relatively few watershed plans that identify nonpoint source impacts or programs to abate them. It is important that local communities organize to assess and develop plans to protect and restore their watersheds because it is clear that the federal and state water authorities have too big a job to do so without public involvement.

NOAA and the Coastal Zone Management Act

The most recent legislative development that affects coastal watersheds is the federal Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). Through these amendments, mentioned above, Congress added section 6217 to provide a link between CWA, section 319 (State Management Programs), and state coastal zone management programs under section 306 of the Coastal Zone Management Act (CZMA).[6] The program also gives EPA and the National Oceanic and Atmospheric Administration (NOAA) joint authority to approve state programs. The purpose of the provision is to **strengthen state and local efforts to manage land use activities that degrade coastal waters and critical habitats.** The provision requires that states implement management measures (similar to Best Management Practices) in conformance with EPA guidance and implement "additional management measures for land uses and critical coastal areas adjacent to impaired or threatened coastal waters."[7]

To accomplish this purpose, the law requires that the state program must be "coordinated closely with State and local water quality plans and programs."[8] Thus, the State agencies are charged with developing a coordinated program that:

- identifies categories of nonpoint sources that adversely impact coastal waters;

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6 Coastal Zone Management Act of 1972, § 306. (16 U.S.C. 1455).

7 *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance.* October 1991. National Oceanic and Atmospheric Administration and U.S. EPA.

* Coastal Zone Management Reauthorization Amendments of 1990, $6217.

- describes the guidance management measures to be employed, including operation and maintenance, inspection procedures, and monitoring;
- identifies the land uses and critical coastal areas that will require additional management measures;
- describes the state-developed additional management measures to be implemented in critical areas;
- documents the authorities the state will use to implement both the guidance and additional management measures, including designation of a lead agency for each source category; and
- sets forth a schedule to achieve full implementation of the guidance management measures within eight years (by 2004) of the first approval action by EPA and NOAA, and full implementation of additional management measures within eleven years of the first approval action.

The management measures guidance recognizes several land uses that should be addressed in coastal areas. The guidance identifies management practices for each land use type for the purpose of reducing the discharge of pollutants including, sediment, nutrients and chemicals from such activities.9

In California, the State Water Resources Control Board and the Coastal Commission worked together to develop a Coastal Nonpoint Source Program that was submitted to EPA and NOAA in the fall of 1995. The proposed coastal nonpoint program will build on the existing California Nonpoint Source Plan, but goes further to identify "Critical Coastal Areas" — watersheds that contain waterbodies identified in the State's Waterbody Assessment[10] as not meeting water quality standards. **In these Critical Coastal Areas the State proposes to target specific watersheds for focused attention, including funding of pilot watersheds to test new approaches, financial assistance through grants and loans, watershed assessments conducted by multi-agency assessment teams and training local groups in technical and planning functions.** These activities are to be coordinated through a watershed enhancement center that would serve as a focal point for which local agencies and watershed action groups could receive support for watershed activities. Details of the center's program were being developed as this report was going to press. To find out more contact the California State Water Resources Control Board (SWRCB).

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9 *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* **January 1993. U.S. EPA.**

10 *Water Quality Assessment.* **1992. California State Water Resources Control Board.**

NOAA's National Estuarine Research Reserve System and Marine Sanctuaries

Section 315 of the CZMA created the National Estuarine Research Reserve System (NERRS), a program designed to protect estuarine areas from pollution and development pressures in order to allow for long-term monitoring and research. NOAA administers these Reserves and works with the states to ensure that NOAA and state scientists have the opportunity to study the natural and human processes that affect estuaries so that impacts on these areas can be minimized. In California there are currently two reserves, the Tijuana River National Estuarine Research Reserve in southern San Diego County and the Elkhorn Slough National Estuarine Research Reserve north of Monterey Bay. A third area in San Francisco Bay has been proposed for inclusion in the system.

At these reserve sites research and education projects are stressed with the goal of providing information that would be useful for coastal managers throughout the State. NERRS projects have included coastal restoration pilot projects, assessment and abatement of nonpoint source pollution, biological monitoring, and inter-disciplinary studies of estuarine productivity. Another goal of the Reserves is to promote public awareness of the importance of estuarine resources through public lectures, interpretive exhibits, and outreach programs. (See Chapter 2 for specific information on the reserves.)

NOAA is also responsible for administering the National Marine Sanctuary program authorized under the Marine Protection, Research and Sanctuaries Act (MPRSA). There are four sanctuaries off the California Coast - the Channel Islands, Monterey Bay, the Gulf of the Farallons and the Cordell Banks. Although the sanctuaries are offshore, the Monterey Bay Sanctuary is developing a water quality protection program aimed at reducing the impacts of coastal activities on these near coastal waters.

The State Water Resources Control Board (SWRCB) and the Porter - Cologne Act

While the concept of watershed protection is relatively new to the Clean Water Act, the Nation's most comprehensive State water quality program, the 1969 Porter-Cologne Water Quality Control Act has, since its enactment, given the SWRCB and the nine Regional Water Quality Control Boards the authority to control surface and ground water pollution regardless of the source. Porter-Cologne, Division 7 of the California Water Code, gives "the State and Regional Boards the authority to implement a statewide program for water quality control."[11] Water quality control is defined by the Act to mean "the regulation of any activity or factor which may affect the quality of the waters of the state and includes prevention and correction of water quality or nuisance."[12] The primary tool for implementing water quality control plans is through the issuance of "waste discharge requirements" which can be ordered for any discharge to water that threatens to cause pollution.

In actual practice, however, the SWRCB has, until recently, focused most of its efforts on point sources. Because point source discharges are carried by discrete conveyances (pipes), they are more readily controlled through permit-based regulations like waste discharge requirements (WDRs). While the Regional Boards have adequate authority to issue WDRs for nonpoint source discharges, they seldom have the necessary documentation or evidence needed to connect a specific discharge to its discharger. The fact that such discharges often result from diffuse runoff from a number of combined sources or landuses makes permit issuance extremely difficult. As a consequence, the State and Regional Boards have relied primarily upon voluntary programs to control nonpoint sources of water pollution.

Basin Planning

Driven by Porter-Cologne requirements, CWA section 208 grants from EPA were used extensively during the 1970s and 1980s to assess water quality conditions in California's 16 hydrologic "planning basins." The State and its nine Regional Boards developed waterquality control plans, known as Basin Plans, to fulfill the requirements of state and federal law. Basin Plans identify the beneficial uses made of water within each hydrologic basin and the criteria, typically stated in physical or chemical parameters, to be achieved and maintained to protect each beneficial use. Together, the beneficial uses and the protection criteria comprise the "water quality objectives" or standards for the waters in each Basin of the state.

Basin Plans include the actions necessary to support the beneficial uses the public makes of streams and other water bodies. Beneficial uses include domestic water supply, preservation and enhancement of fish and wildlife, recreation, and others for rivers, streams and lakes. Different beneficial uses demand differing physical or

[11] The Porter-Cologne Act of 1969 (Cal. Water Code section 13000 *et seq.]*
[12] Id. {Cal. Water Code section 13050(i)).

chemical criteria for their protection, and, therefore, for a given water body regulators gear water quality safeguards to the "most sensitive use." Two of the most sensitive uses are cold-water fisheries and domestic water supplies. Understanding the beneficial uses and their sensitivity to various land use activities is key for assessing the problems in your watershed and for selecting the best management practices to mitigate the effects of particular land use activities.

Each Basin Plan is divided into hydrologic sub-basins that define the boundaries of the watersheds within the larger Hydrologic Unit (see sidebar). The Basin Plans have been recently updated; the Regional Water Quality Control Board in your area has the Basin Plan and Hydrologic Areas maps available for review. Each Basin Plan also includes an 'Implementation Chapter' which identifies actions the Regional Board needs to take to protect beneficial uses, including nonpoint source control. Nonpoint source control has been largely one of voluntary prevention through the implementation of best management practices, or "BMPs" (see page 3-21). Some activities, such as timber harvesting or feedlot operations, have become subject to governmental regulation; in these cases BMPs have been incorporated into regulatory programs. Contacting the local Regional Board and reviewing the Basin Plan for your area are good starting points for any watershed effort (see the Networking Directory, Agency Networking).

Hydrologic Basin Maps

California's hydrologic boundaries are displayed on a series of 12 hydrologic basin maps at a scale of 1 to 500,000. Each river watershed and its tributaries are assigned hydrologic numbers so that information for that watershed may be identified by that number. The maps and corresponding hydrologic unit numbers are used for coding water-related data for computer storage and retrieval. This data includes sampling stations, discharge permits, stream flows, and water quality and aquatic tissue monitoring. The 12 hydrologic basins are:

North Coast (NC)	Tulare Lake (TL)
San Francisco Bay (SF)	North Lahontan (NL)
Central Coast (CC)	South Lahontan (SL)
Los Angeles (LA)	Colorado River (CR)
Sacramento (SB)	Santa Ana (SA)
San Joaquin (SJ)	San Diego (SD)

To obtain copies of the Hydrologic Basin Map for your area contact:

Chief, Surveillance and Monitoring Unit
Division of Water Quality
State Water Resources Control Board
P.O. Box 100
Sacramento, California 95812-0100

Water Quality Certification — Section 401 of the Clean Water Act

If your watershed plan is complete and your group is ready to implement an in-stream restoration project that may be subject to a federal permit (see discussion about U. S. Army Corps of Engineers and section 404, page 3- 10) you will need to work with the local Regional Board to obtain a section 401 certification. Under section 401 of the Clean Water Act (Water Quality Certification Program) the State and Regional Boards are responsible for review of any federally permitted or licensed activities to ensure that such activities comply with water quality standards set forth in the Basin Plans. The Regional Board must review and certify that the project will not have adverse water quality impacts before any federal permits can be issued for the project. For the most part, the Regional Boards routinely certify stream restoration projects that benefit the public and public resources. Their support of a project can be most helpful when dealing with other regulatory agencies such as the Army Corps of Engineers and the Department of Fish and Game.

The Role of the State Water Resources Control Board in Water Rights

It should come as no surprise that the citizens of arid California had legal procedures for allocating precious water resources long before any thought was given to joining the Union. From the beginning of statehood until the early 20th century, however, the State's administration of the rights of towns, businesses and individuals to dam and divert streams was chaotic and contentious. Conflicts over water withdrawals were so common they moved early-day California resident Mark Twain to observe that "Whiskey is for drinkin', water is for fightin' over!"

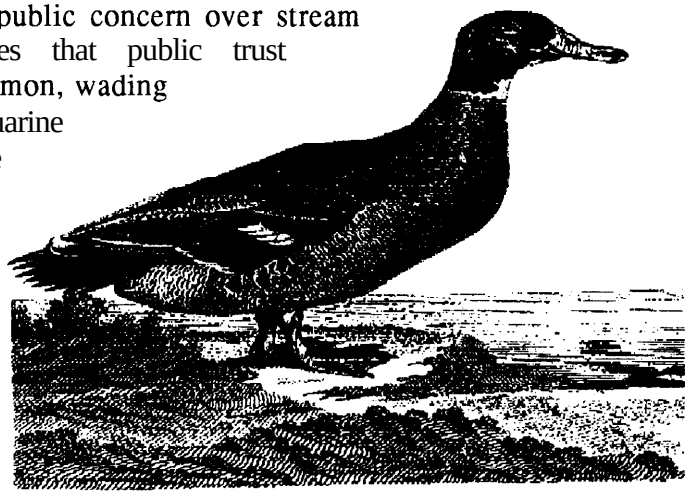
In 1914 the California Legislature declared that surface waters that had not been put to use by then were the property of the State.[13] Henceforth, applicants would come to the State for permission to dam, store, divert and use public stream resources. Because of the enormous value of this limited resource, California's post- 1914 administration of water rights assumed the solemnity of a court with filings, hearings, sworn witnesses, findings, appeals, and decisions. These were the province of the State Water Rights Board until its replacement in 1967 by the State Water Resources Control Board (SWRCB). The SWRCB was given the dual responsibility of reconciling the administration of water rights with enforcement of the State's water pollution control laws.

13 Cal. Water Code $102

Until a decade or so ago the administration of California's water rights was pretty much a one-way street. There seemed no end to the requests to obtain water resources, beginning with the City of Los Angeles' bold scheme to dam the streams of the eastern Sierra Nevada and pipe them hundreds of miles south. This plan was accomplished in 1940 and was followed immediately by an explosion of water projects aided, or constructed in their entirety, by State and federal agencies. Many of these projects were on coastal streams.

In the wake of Earth Day 1970, however, Californians began to challenge the traditional management of the State's streams. The National Audubon Society, for example, sued Los Angeles over the city's diversion of the streams that historically fed Mono Lake, which lies at the foot of the eastern Sierra. In its 1983 review of National Audubon's complaint, the State Supreme Court declared that the State's waters are subject to a public trust and that the State, as trustee, has a duty to preserve this trust property from harmful diversions by water rights holders.[4] The court's application of this "public trust doctrine" means that water rights are not like property rights, that they can never be owned outright like real estate. They can be revisited, revised and, if necessary, recalled.

The SWRCB recognized the State Supreme Court's public trust position on State-granted water rights when it ordered protections for the Santa Clara River steelhead in 1987, which we described earlier. It did so again when it trimmed Los Angeles' Mono Lake Basin water rights in 1994, and once more in 1995 when it proposed that the Marin Municipal Water District reduce its draw on Lagunitas Creek to protect coho salmon. There is reason to believe the SWRCB will continue to amend water rights wherever public concern over stream degradation demonstrates that public trust resources, including salmon, wading birds, or important estuarine plant communities have been harmed by water diversions.



[4] 33 Cal.2d 419

B. Other Federal Agencies and Laws that Assist Watershed Management

In addition to U.S. EPA, there are a number of federal agencies that can assist watershed groups with technical information, planning and funding. The Agency Networking Directory provides a comprehensive list of these contacts. Some of the agencies and the laws they administer are crucial to any watershed planning effort; their roles are outlined briefly below.

U.S. Army Corps of Engineers — Rivers and Wetlands Protection

The U.S. Army Corps of Engineers (Corps) is the federal agency responsible for regulating activities in the nation's waters. Until 1968 the purpose of the regulatory program was to protect and facilitate navigation through the issuance of permits and design specifications for levee and dam construction, maintenance dredging for port and deep water channel facilities, flood control and shore stabilization projects. In recent years the agency's role has expanded greatly, however, to include other responsibilities such as assessing project impacts to fish and wildlife and water resource and wetlands protection. The regulatory authorities and responsibilities of the Corps of Engineers are based primarily on two laws:[15]

- **Section 10 of the Rivers and Harbors Act of 1899 (33** U.S.C. 403) prohibits the obstruction or alteration of navigable waters, including diking, dredging, filling or placement of structures, without a permit from the Corps.
- **Section 404 of the Clean Water Act (33** U.S.C. 1344) regulates the disposal of dredged or fill material into waters of the United States. These waters are defined by the section 404 provisions and court cases to include all navigable waters, their tributaries and wetlands, tidal areas, lakes, and intermittent streams and ponds.[16] Under section 404, a project, **even a beneficial stream restoration project,** that entails movement of soil, stream channel materials or placement of structures, must have a permit from the Corps or fall into one of the exemptions before it can proceed.

Because section 404 is a provision of the Clean Water Act, it is administered jointly by EPA and the Corps. The Corps has the lead role in deciding jurisdiction, processing permit applications, issuing or denying permits and enforcement against violators. EPA sets the standards followed by the Corps and has the final authority to veto a permit decision made by the Corps.

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[15] U.S. Army Corps of Engineers. 1985. Regulatory Program. EP 1145-2-l.

[16] *Federal Manual For Identifying Jurisdictional Wetlands*. 1989. Federal Interagency Committee for Wetland Delineation. Interagency Cooperative Technical Publication.

For stream restoration projects it is vital to understand the regulatory process because even small projects may fall under the jurisdiction of the Corps' permitting authority (see Figure 2). Unfortunately, section 404 does not distinguish between public benefit stream restoration and development projects. From the point of view of the Corps, both types of projects involve movement of soil or streambank materials (dredge materials), and both may involve placement of fill materials. Even though your project may merely involve placing log revetments to protect a bank, this can be considered fill by the Corps. It is best to contact the the staff in charge of "jurisdiction" and "Nationwide Permits" while in the planning stage to familiarize them with your project and to request assistance in obtaining any needed permits.

The Section 404 Permit Process

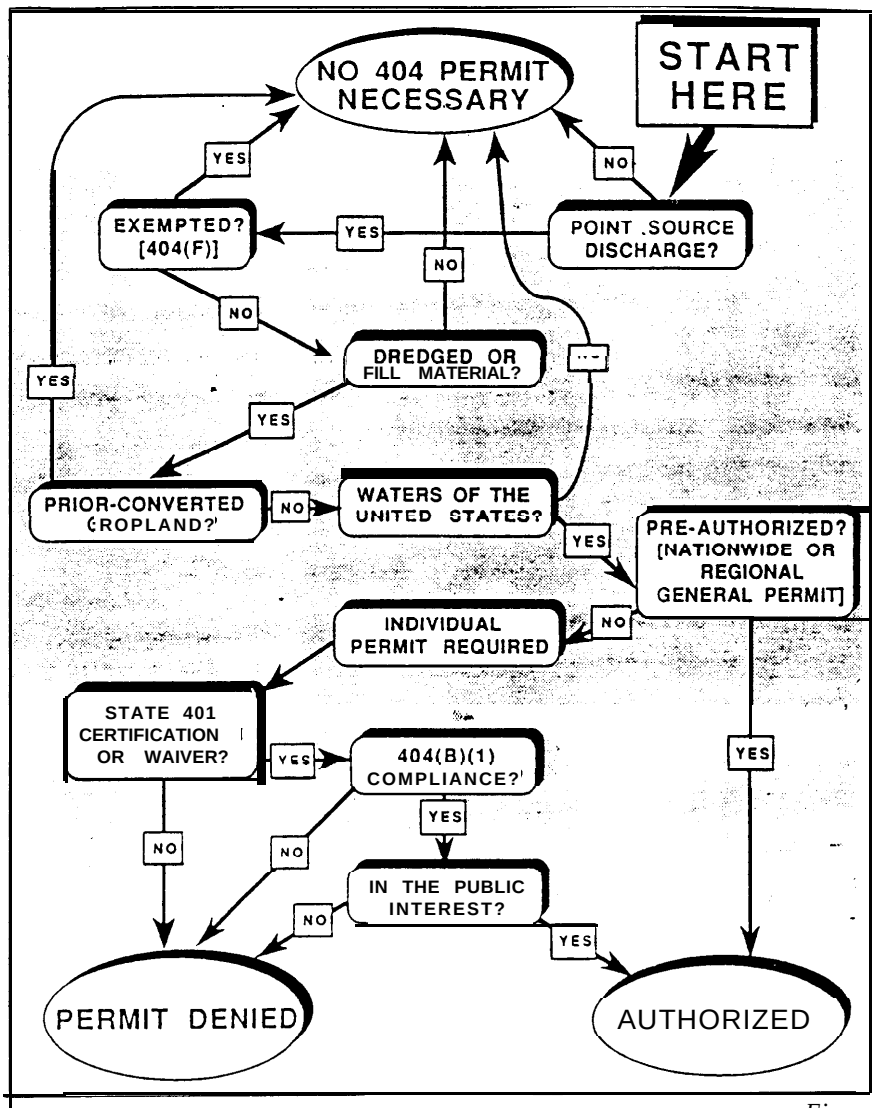

Figure 2.

The California Marsh ***Manual***[17] from the Campaign to Save California's Wetlands provides an excellent in-depth description of the section 404 process and is a helpful reference to the permit process.

To obtain a copy of the *California Marsh Manual,* contact the:

Campaign to Save California's Wetlands
Southern California Office
19276 Torrey Pines Circle
Huntington Beach, CA 92648 • 714/374-4825
Northern California Office
Box 2065, Oakland, CA 94620-0651 • 510/654-7847

U.S. Fish and Wildlife Service (FWS) and NOAA National Marine Fisheries Service (NMFS) - Endangered Species Act/Wildlife Protection

The Fish and Wildlife Service (FWS) carries out many of the federal programs that conserve and protect wildlife. The Fish and Wildlife Service together with the NOAA National Marine Fisheries Service (NMFS) jointly administer the Endangered Species Act (ESA)[18] which forms the basis for federal protection of plants, insects, fish and wildlife that are listed as threatened or endangered by extinction. NMFS has the responsibility for Pacific anadromous salmonids and the FWS takes the lead for terrestrial and freshwater species. The ESA charges NMFS and the FWS with five main tasks:

- Initiation or approval of petitions for listing of threatened or endangered species.
- Identifying critical habitat and developing recovery plans for listed species.
- Providing consultations regarding endangered species to federal agencies (US Army COE for section 404 permits) on federal projects or permitting activities.
- Issuing violations and civil penalties to private parties, local, state or federal agencies for unlawful "taking" of endangered species.
- Issuing permits for "incidental taking" of threatened or endangered species.

(*Note: Under the ESA the definition of a "taking" is to "harass, harm,* **pursue,** *hunt, shoot, wound, trap, capture* **or** *collect,* **or to** *attempt to engage in any such conduct" (16 U.S.C. § 1538(a)(1)).*[18])

[17] *California Marsh Manual.* May 1995. Campaign to Save California Wetlands.
[18] 16 U.S.C. § 1531 *et* seq.

Once a species is listed under the ESA, any proposed or actual federal project affecting the species or its habitat area is subject to review by the FWS or NMFS to determine if the project may have adverse impacts or result in a taking. The project proponent is required to consult with the FWS and NMFS and these agencies are required to issue a "Biological Opinion," identifying any potential impacts and mitigation measures that would reduce or eliminate such impacts.

The ESA affects most development activities in critical habitat areas and, for this reason, the Act has been the center of continued controversy. For example, a development project, whether public or private, that involves land clearing that may destroy habitat is subject to a permit for an incidental taking under section 10 of the Act. This means that permits are required for road and other construction activities if they are in, or adjacent to, critical habitat areas. In order to obtain a section 10 permit, the project proponent must submit an acceptable "habitat conservation plan" to the FWS or NMFS. The habitat conservation plan must meet the requirements of the ESA and of the National Environmental Policy Act (NEPA), possibly including the preparation of an Environmental Impact Statement.

Developing a habitat conservation plan is usually complex, costly, time consuming and often blocks future land development. This aspect of the ESA has driven the State of Califomia to try to find ways to streamline the process, especially for fast growing areas like southern California. There, proposed development projects encroach upon the habitat of the California gnatcatcher *(Polioptila californica), the* Cactus wren *(Campylorhynchus brunneicapillus)* and other coastal scrub habitat-dependent species. The new approach is one of multispecies planning where habitat conservation plans for several species are integrated into natural community conservation plans (NCCP). NCCPs identify conservation measures and opportunities to protect a number of species with one plan. This process has been adopted by the California Legislature[19] and is implemented by the Department of Fish and Game.[20]

The problem is statewide and serious enough that Governor Pete Wilson instituted ***"The Agreement on Biological Diversity"*** to grapple with the issue. The Agreement establishes a Statewide Executive Council (composed of the Secretary of the Resources Agency and the heads of nine other State and federal agencies involved with resource issues) "to develop guiding principles and policies, design a statewide strategy to conserve biological diversity... through regional and local institutions."[21] Through a Memorandum of Understanding the Executive Council has agreed to "encourage the participation of local public, landowner, and private organizations in the formation of watershed or landscape associations"[22] to develop specific cooperative

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19 A.B. 2172 (Chapter 765, stats. 1991)

20 Cal. Fish & Game Code § 2800 et seq.

21 *Memorandum of Understanding: California's Coordinated Regional Strategy To Conserve Biological Diversity."Agreement on Biological Diversity* 1992. The Resources Agency of the State of California.

22 Id. Section V. (B).

projects and participate in Coordinated Resource Management Planning processes (see discussion of Resource Conservation Districts, page 3-20) that would assist in the achievement of the goals. The U.S. Fish and Wildlife Service is a signatory to this agreement along with the California Department of Fish and Game. These two agencies probably have the most important role in implementing the agreement's stated goals.

The U.S. Fish and Wildlife Service's role in watersheds is important in both the planning and project implementation stage. In developing a watershed plan it is important to recognize any areas within the watershed that have been identified by the FWS as critical habitat for endangered species. The FWS office nearest to your watershed can provide information on the presence of federally listed endangered species and critical habitat in the watershed. The staff can provide copies of existing habitat conservation plans that may contain essential information that can be used to protect sensitive sites. Under the MOU discussed above, FWS biologists may be able to provide technical assistance in the assessment of habitat areas and through participation in cooperative resource planning teams for the watershed.

FWS staff have a major role in the issuance of the section 404 permits (discussed above) that may be required for stream restoration projects. The agency reviews all federal permit applications under the Fish and Wildlife Coordination Act[23] to ensure that the proposed activities will not jeopardize endangered species or critical habitat areas. To make sure that your project moves through the permit process smoothly, it is best to involve FWS staff early in the planning stages.

C. STATE AGENCIES THAT ASSIST IN WATERSHED MANAGEMENT

The State of California employs several agencies to monitor, maintain and protect its vast resources. These agencies have different missions and are responsible for various aspects of resource protection. While the State Water Resources Control Board and its nine Regional Boards are critical because the need to protect and maintain water quality often drives the watershed planning process, other resources are closely tied to water quality protection and need to be considered in developing a plan or in implementing watershed protection projects. The goal of the following discussion is to encourage watershed groups to contact these agencies early in the planning process to enlist technical staff assistance ondatacompilation, permitting and legal requirements for implementing any plan recommendations.

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[23] The Fish and Wildlife Coordination Act of 1958. { 16 U.S.C. § 661-66C}.

California Department of Fish and Game (DFG)

The Department of Fish and Game (DFG) is the State counterpart to the federal U.S. Fish and Wildlife Service and in this capacity serves to protect, maintain and enhance California's numerous species of fish, wildlife and plants. Like its federal counterpart, DFG is responsible for administering the California Endangered Species Act which lists California species as threatenedorendangered from extinction. Unlike the federal Act, California's Endangered Species Act provides that the decision regarding such listings be made by the California Fish and Game Commission, a five member board appointed by the Governor. Species can be listed under the State or federal law, or both. Where species are jointly listed under both State and federal law, DFG usually assists in the development of a recovery plan.[24]

To aid habitat conservation planning the Department's Natural Heritage Division maintains a **Natural Diversity Data Base** (NDDB) that contains information and maps on the location of species of special concern; threatened, endangered and rare animals; plants and natural communities throughout the state. An initial step in watershed planning is to contact DFG to request a report or map overlay from this Data Base. To do so, you will need to know the name of the U.S. Geological Survey (USGS) Quadrangle maps that cover the watershed. The smallest area that the data base can search is a 71/2-minute quad, and the price of the search varies with the number of "hits" or information found within each quad search requested. For each occurrence found, a report of the species or community is provided at a cost of $8.00 for commercial or $4.00 for government or nonprofit requesters. If there is a possibility of a number of occurrences within a given area, it is a good idea to get a cost estimate for the report before going ahead with the request.

To find out more about the Natural Diversity Data Base or to get a cost estimate for a report call the DFG Marketing Unit at 916/ 324-3812.

As discussed above, the Department of Fish and Game is one of the major signatories to the Governor's "Agreement on Biological Diversity," and DFG staff regularly provide technical assistance and data regarding fish and wildlife populations for watershed and community planning. Department biologists have, for years, conducted fish and wildlife surveys in their assigned areas. Often this data is unpublished but can be extremely valuable in documenting the presence of important species in a watershed.

In addition to providing staff assistance for land use planning, DFG promotes habitat restoration activities through publications and grants (see Appendix B). One of the most comprehensive and useful tools for fisheries restoration is its *California*

[24] For more information about the life history, habits and distribution of threatened and endangered plant and animal species, request a copy of the Department of Fish and ***Game's: Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants.***

Salmonid Stream Habitat Restoration Manual[25] *which provides detailed infonation* on assessing a watershed; inventorying salmon and steelhead habitat; and planning, implementing and monitoring projects.

To obtain a copy of the **California Salmonid Stream Habitat Restoration *Manual*** **contact:**

California Department of Fish and Game, Inland Fisheries Division
ATTN: Salmon Habitat Restoration Coordinator
1416 **Ninth Street, Sacramento, CA 95814.**

DFG is also responsible for protecting the natural flow, channel and banks of rivers, streams and lakes. DFG must be notified of any work that may alter or divert natural flows or that may change the bed, channel or banks of any waterbody. If the project falls within Department jurisdiction, under Fish and Game Code sections 1601-1603, the project proponent must get a Streambank Alteration Agreement from the local DFG warden. An agreement acts as a permit in that it specifies the time frame for completion of the project and may include mitigations needed to protect fish and wildlife from potential impacts of the work. Stream restoration activities that modify streambanks, stabilize the channel or provide habitat structures require a section 1603 permit. Call your local DFG regional office to arrange to meet with staff in the initial stages of watershed plan development or designing a project (for DFG numbers, see the "Agency Networking" section in the Networking Directory). If the staff have assisted in project design and development, obtaining the needed agreements can be a relatively simple task.

California Coastal Commission

The California Coastal Commission regulates development and promotes conservation of coastal areas designated within the coastal zone boundaries as defined by the California Coastal Act of 1976[26] and the federal Coastal Zone Management Act (see above discussion and Chapter 1-B., "An Overview of Coastal Zone Management Act Amendments," page 1-2). The Coastal Commission's policies regarding development, public access and other land use issues are set forth in the statewide Coastal Plan. The Commission assists in the development, reviews and approves Local Coastal Plans (LCPs) prepared by local governments for incorporation into their General Plans (See Figure 3). Once a LCP is approved, the local government assumes responsibility for regulating land use within the LCP area. Not all coastal areas have approved LCPs. Where a LCP exists, a watershed plan should be consistent with its goals and policies.

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25 Flosi, Gary and Forrest L. Reynolds. October 1994. ***California Salmonid Stream Habitat Restoration Manual.*** Second Edition. California Department of Fish and Game, Inland Fisheries Division, Sacramento, CA.

26 California Coastal Act. Public Resources Code § 30000 ***et esq.***

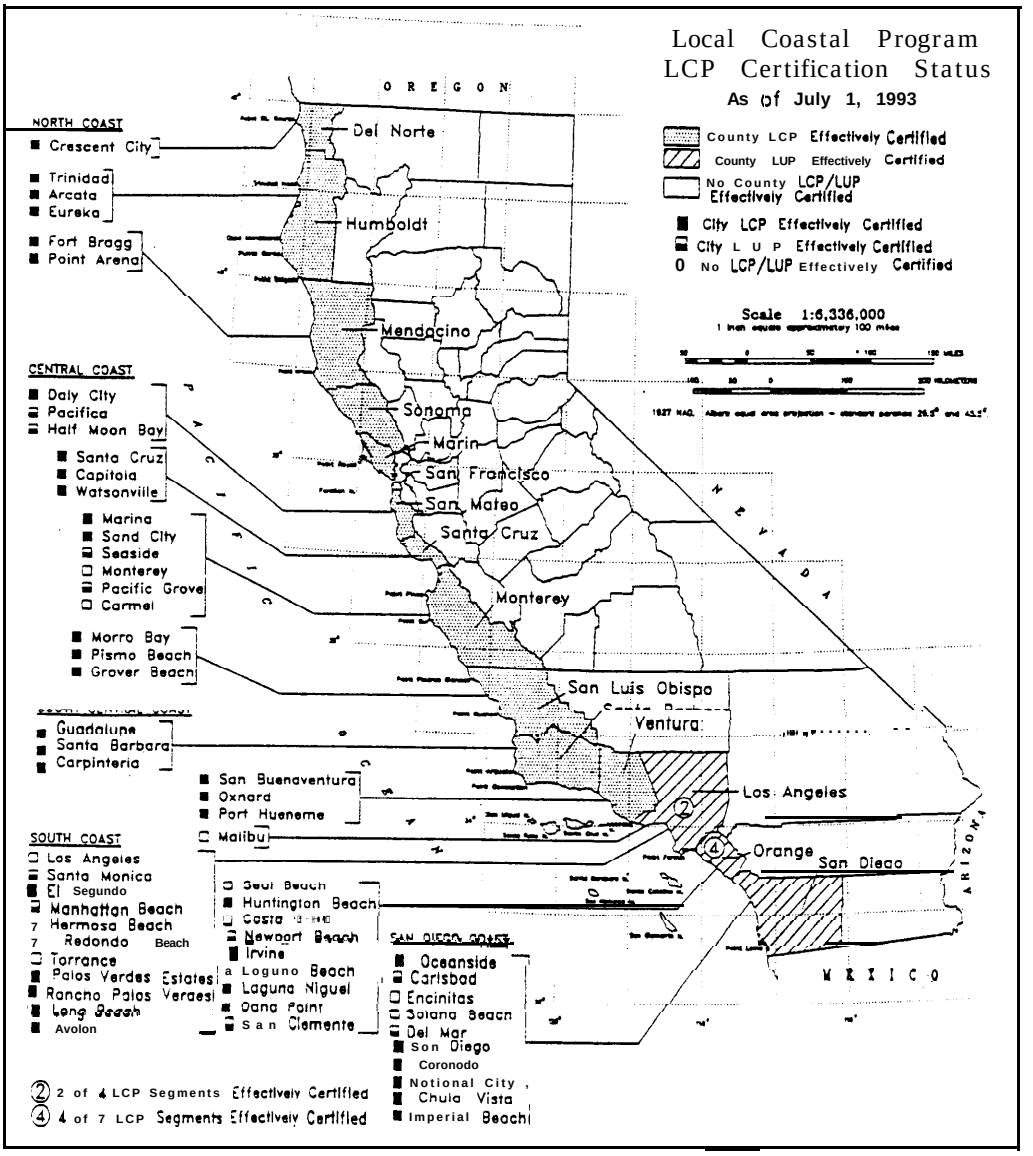

Figure 3.

In the California coastal zone, the Commission, in conjunction with the Department of Fish and Game, is responsible for regulating development in wetland areas under the California Coastal Act. The Commission reviews Environmental Impact Reports and issues Coastal Development Permits for wetland-related projects within the coastal zone. This is important because most stream restoration projects occur in the riparian or wetland areas of a watershed. As with the section 404 permitting process, the Commission guidelines do not distinguish between restoration and development projects. Your restoration project may require a Coastal Development Permit to proceed.

For information on the Coastal Commission process, request the Procedural *Guidance for the Review of Wetland Projects in California's Coastal Zone.*[27] Write to the Coastal Commission, 45 Fremont Street, San Francisco, CA 94105-2219.

California Coastal Conservancy

The Coastal Conservancy is a public agency chargedwiththe restoration, enhancement and acquisition of coastal resources.[28] The Conservancy has no regulatory authority, instead it has the welcome task of distributing grants and coordinating funding for resource enhancement planning and related studies in the coastal zone or in watershed areas that directly impact the coastal zone. Conservancy funding comes from bond measures or environmental license plate funds. In addition to grants, the Conservancy uses other means of financing its projects including tax incentives implemented through conservation easements. Conservancy staff can provide advice and assistance to land trusts that are interested in establishing conservation and public access easements, and to watershed groups desiring to initiate a watershed enhancement plan. For further information about Conservancy grant funding see the discussion of funding in Appendix B.

Department of Water Resources (DWR)

Under the Urban Creek Restoration and Flood Control Act of 1985[29] the Department of Water Resources (DWR) provides grant assistance to local agencies and organizations for the purpose of stabilizing natural stream channels, tevegetating riparian areas, and maintaining stream channel capacities to reduce the possibility of flood damage and to enhance natural environmental values. The intent of the program is to restore creek environments to enhance aesthetic, recreational, and fish and wildlife values and opportunities for urban dwellers. The program has been successful in getting local governments to begin to develop flood control and streambank stabilization projects that rely on more low-cost, non-structural, so-called "bio-engineering" techniques to achieve improved flood damage reduction goals. Several cities throughout the State have built or are planning downtown revitalization projects around the notion of "daylighting" previously culverted or buried creeks using funds and assistance from DWR. For more information regarding the DWR grant program see Appendix B.

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27 California *Coastal* Commission. 1994. *Procedural Guidunce for the Review of Wetland Projects in California's Coastal Zone.*

28 Public Resources Code § 31251 *et seq.*

29 Ca. Gov. Code § 65303.4 and Ca. Water Code § 7048.

State Lands Commission (SLC)

The California State Lands Commission (SLC) and its staff manage some 4 million acres of state owned public lands. These lands, held in public trust, include the beds of rivers, lakes and streams, and the tidal and submerged lands along the State's 1,100 miles of coastline. The Commission is also responsible for "school lands," those lands originally granted to the California by Congress in the 1800s to benefit public education. The Commission's policies for management of these State lands rely on a balance between environmental protection, promoting economic growth and the Public Trust Doctrine, which sets forth the right of the public to use these water resources for navigation, fisheries, commerce, environmental preservation and recreation, among others. One of the Commission's main responsibilities is to secure and protect the public's right to access public lands and waterways.

Under the California Environmental Quality Act (CEQA), State Lands Commission staff provide analysis and review all projects that occur in areas under their jurisdiction. To accomplish this task, the Commission maintains a Coastal Resource Database which contains information on fish and wildlife resources, geology, shoreline topography, etc., arranged on computerized maps layers known as a Geographic Information System (GIS). The Commission's GIS serves as a central repository for information gathered from other government agencies and public institutions and may be able to provide useful information regarding the coastal resources in your watershed.

A catalog of information from the Coastal Resource Database can be obtained by contacting:

Eric Kauffman, State Lands Commission ♦ 916/574-1 879

Or to access the database contact:

Teale Data Center
P.O. Box 13436, **Sacramento, CA 95813-4436**
ATTN: GIS Unit ♦ 916/263-1886

Finally, because watershed plans involve river and stream beds, they are subject to SLC review to ensure CEQA compliance. Fortunately, the Commission has been active in promoting the protection and restoration of the State's rivers, and encourages local watershed groups in the watershed planning process. To this end, the SLC has produced an informative publication examining river resource status and trends, titled *California's Rivers: A Public Trust* ***Report,***[30] available for $15.00 from the:

California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202 ♦ 916/574-l900

u, California State Lands Commission. 1993. ***California Rivers: A Public Trust Report.*** California State Lands Commission, Sacramento, CA.

Resource Conservation Districts (RCDs)

California's 113 Resource Conservation Districts (RCDs) are the state chartered, local public agencies charged, under Division 9 of the Public Resources Code, with developing land, soil and water conservation programs in their local areas throughout the state. Districts are organized as a subunit of State government, but are created by the local County Board of Supervisors. There may be more than one RCD in a county, but a few areas are not covered by a District at all.

Districts receive technical support and assistance from the federal Natural Resource Conservation Service (NRCS), formerly the Soil Conservation Service, and the State Department of Conservation. Their volunteer Boards of Directors work with NRCS to provide free conservation assistance to residents within the District boundaries. As local pubic agencies, the RCDs are able to receive and administer grant funds from State and federal agencies and often act as the lead agency working with watershed organizations and groups to develop watershed plans, provide CEQA documentation, and implement watershed projects.

The local RCD can be instrumental in bringing federal, State and local agency resources together with interested local groups to develop a watershed plan through the Coordinated Resource Management and Planning process or CRMP (pronounced 'crimp'). The CRMP process is a form of community-based resource planning that attempts to get all the interested parties to meet together to identify resource problems, organize information and develop recommended programs and plans to better manage their resources. Most CRMPs are formed around a geographic area of concern and the process is considered the optimum way to achieve a workable watershed plan. Most of the examples of good watershed planning presented here have Resource Conservation District involvement at some level: Because Districts can play an important support role for any watershed organization, the "Networking Directory" at the end of this document contains the list of local Districts and their phone numbers.

For more information about RCDs, call the:

California Association of Resource Conservation Districts at 916/ 447-7237 or your local District listed in the Networking Directory.

D. A WORD ABOUT BEST MANAGEMENT PRACTICES

Best Management Practices, or "BMPs," are the controls used to prevent pollution, generated by farming, grazing, timber harvest, urban and other dispersed land-use activities, from entering surface and ground waters. Impacts to water quality from such activities are referred to as "nonpoint source pollution" to differentiate them from "end-of-pipe" or point sources which are waste discharges made to waters from factories, sewer treatment plants and other more readily identified sources with pipes or conveyances which carry the waste to the waterbody.

Pollution from point sources is controlled by permits, called "waste discharge requirements" under State laws. These permits specify the level of waste allowed in discharges made to lakes, rivers or other waterbodies. The discharger is required to control its manufacturing or wastewater treatment processes in ways designed to comply with the waste discharge requirements. To ensure compliance with their permit, dischargers are required to monitor their effluent and report their results to the appropriate Regional Board.

In contrast, nonpoint source pollution has no single point of entry, but enters waters through normal rainfall runoff patterns. This means controls or BMPs must be aimed at not only reducing pollution, such as sediment, but also at preventing pollutants from reaching waterbodies altogether. There are many kinds of BMPs. Some are structural, such as settling ponds; others involve cultural practices like timing of pesticide applications; or others involve public education such as programs that educate residents about proper disposal of oil or chemicals. Nonpoint source pollution control programs use those BMPs that can be shown to be practical and effective means of controlling polluting runoff, given technical, institutional and economic constraints.

Typical BMPs have been developed based on the type of land-use activity where they should be applied. There are many BMP manuals available from various agencies. One of the most comprehensive is the "Guidance for Specifying Management Measures for Nonpoint Source Pollution."[31] These include practices for agriculture, forestry, road and building construction, marinas, streambank erosion, etc. Applicable BMPs are often identified as part of the recommendations for implementing a watershed enhancement or restoration plan, and often form the basis for a program of watershed-wide pollution prevention. The best way to encourage landowners to adopt such practices as part of your plan is to get their cooperation in the selection and educational efforts surrounding their use. Where there are no BMPs that relate to a specific land-use situation in a watershed, locally affected interests can be the best source of improved techniques. This approach is well illustrated by the grape-growing community in the Sonoma Valley watershed bordering San Francisco Bay.

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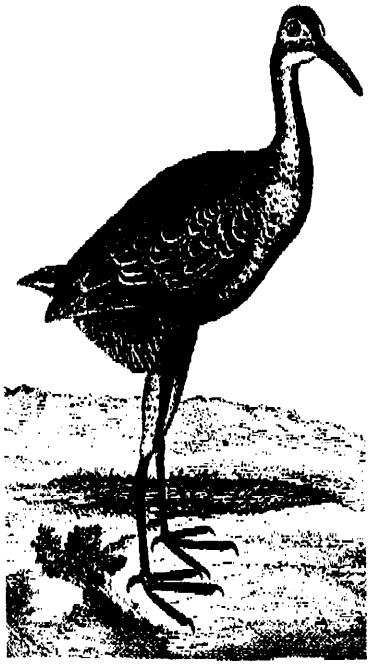
31 *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* **January 1993. U.S. EPA.**

Vineyard Practices — The Sonoma Valley Grape Growers Come Together to Protect Sonoma Creek

The Sonoma Creek watershed drains 110,000 acres of southeastern Sonoma County. The mouth of Sonoma Creek enters San Pablo Bay, and its surrounding marshlands provide habitat to three rare and endangered species, the California freshwater shrimp *(Syncaris pacifica),* California clapper rail *(Reithrodontomys raviventris)* and the Salt marsh harvest mouse *(Rallus Zongirostris obsoletus).* The Sonoma Valley has experienced rapid urban and agricultural development in the last twenty years, resulting in extensive impacts to the water quality of Sonoma Creek and its tributaries as evidenced by its listing as an impaired waterbody. Although there is impairment, many of the upper tributaries still support steelhead populations.



The lower watershed supports dairy and hay operations but wine grape production is the primary agricultural use in the valley. About 13,000 acres are in vineyard production. Much of this acreage is located on hillslopes with high erosion potential (>5% slope). As with other vineyard areas in the north coast, the *Phylloxera biotype "B"* aphid infestation is expected to impact the grape vines resulting in the need to replant large areas of vineyards in the near future. The Sonoma Valley Vintners and Growers Alliance recognized that such large-scale replanting efforts and resulting soil disturbance could degrade the water quality of the watershed. If appropriate practices were not used, sensitive beneficial uses, including the steelhead fishery and spawning, could be adversely impacted.

The growers' association got together with the Southern Sonoma County Resource Conservation District to determine the best ways to prevent water quality impacts associated with vineyard production. Funded by a grant from EPA, together they developed the Vineyard Management Practices Manual.[32] Completed in June 1993, the manual provides specifications for treatments and practices aimed at reducing hillslope erosion and controlling sedimentation, and introduces sustainable agriculture concepts that expand grower awareness of practices that promote a healthy watershed. The long-term goal is to encourage widespread, voluntary adoption of these practices by the grower community.

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32 Southern Sonoma *County* Resource Conservation District. 1993. *Vineyard Management Practices: An Environmental Approach to Development and Maintenance.* Southern Sonoma County Resource Conservation District.

To achieve this goal the next phase is a project aimed at demonstrating the practices to the growers and the public. Several major vineyards are volunteering to implement various practices on a variety of sites to show the economic cost and water quality benefits associated with the treatments. These demonstration vineyards will provide an "outdoor classroom" for other growers to adopt these practices.

The growers recognize that, in this era of "green consumerism," it is good business to make the public aware that they are adopting environmentally beneficial and sustainable practices. The demonstration project will foster public awareness by sponsoring the local school district's "Adopt-A-Watershed" program (see Chapter4); and by providing public tours of these sites.

For more information or copies of the *Vineyard Management Practices: An Environmental Approach to Development and Maintenance,* contact:

Robin Davis, Secretary
Southern Sonoma County Resource Conservation District
1301 Redwood Way, Suite 170
Petaluma, CA 94954. 707/ 794-l242

E. GETTING AGENCY ASSISTANCE

Federal, State and local agencies can have a strong supporting role in watershed planning. That support can take the form of information, funding, or technical assistance depending on the resources of the watershed. This chapter has outlined the mission and authorities of different agencies to help direct watershed interests to the right place for assistance. The "Networking Directory" at the end of this document contains an Agency Directory that includes a list of phone numbers and contacts for the most important agencies. To utilize these agency resources effectively, it is best if your watershed group does some preparation before calling agency staff. Most staff are quite willing to provide answers, but the watershed group has to be able to ask the right questions. As a general rule, it is best to start by contacting local agencies, such as the city or county planning departments, to find specific information for your watershed. The next step would be to contact State agencies, and finally, federal agencies. Initial planning efforts can resemble a scavenger hunt, but the following checklist of information should help to organize the search so that everyone's job is easier.

Assistance Checklist

- ❑ Determine size and identify boundaries of the watershed. Get a copy of the Hydrological Unit map for the area (see discussion on Regional Water Quality Control Boards, page 3-7), and make a note of the unit number. Even a relatively small creek has a sub-watershed designation. The smaller the watershed, the easier it is to obtain results.
- ❑ Get a map of the watershed area that shows the topography (terrain features). U.S. Geological Survey maps are useful, but the local city or county planning department may have maps at a larger scale.
- ❑ Obtain maps of the soil types within the watershed. These are available at the local Resource Conservation District (RCD) office.
- ❑ Identify land uses within the watershed boundary. Again, the county planning department may have the latest land-use maps for the area. In wildland areas, the federal or State agency responsible for managing the area may have aerial photographs. Look for development trends such as new construction or road building.
- ❑ List the natural resources of the watershed, the agencies involved in managing these resources, and the users of these resources. These are the potential interests that need to be involved in the planning effort.
- ❑ Gather information on social trends, particularly, economic and employment data, and where possible, trends in local attitudes.
- ❑ Identify and contact other organizations that can be allied to your effort. Meet with the local RCD, city or county staff to garner their support. It is important to enlist their help to contact agencies to assist in developing the plan. The larger your list of cooperators the more help you can expect from State and federal agencies.
- ❑ Start a log book or good filing system that is organized by topic. This will prevent duplication of efforts.

Once the information on this checklist has been gathered, it will be much easier to identify which agencies will be the most helpful to the watershed effort. When contacting agencies let the staff know that the goal is to develop a watershed plan, name the watershed and its location, the resources, such as fisheries or drinking water, that may be at risk. Be clear about the type of information or assistance that is needed from the agency. Be patient and courteous. If the person does not know the answer your question, ask where you may be able to get an answer. As with most endeavors, persistence is the key to finding the information you need.

Resources

- *California **Marsh** Manual.* May 1995. Campaign to Save California Wetlands.

- *California Salmonid Stream Habitat Restoration Manual.* Flosi, Gary and Forrest L. Reynolds. October 1994. Second Edition. California Department of Fish and Game, Inland Fisheries Division, Sacramento, CA.

- *California Rivers: A Public Trust Report.* 1993. California State Lands Commission, Sacramento, CA.

- *Vineyard Management Practices: An Environmental Approach to Development and Maintenance.* 1993. Southern Sonoma County Resource Conservation District.

4 Organizing Your Community to Win Cooperation

The 1960s and 1970s were the heyday of planning. Local, state and federal agencies created general and redevelopment plans, regional waste treatment plans, and extensive forest and park plans involving millions of acres of land. Many state and local comprehensive plans aimed at solving pollution problems were never fully implemented. Most of these early plans share an important characteristic--they were imposed from the top down by various authorities without enough participation from the people most affected by the plan.

The main lesson to be learned from this is that watersheds are not only hydrological divisions with administrative boundaries, but are made up of communities. In areas throughout California, environmental protection efforts have been most successful where locally-based planning processes have been used to focus the political will toward finding solutions to agreed-upon problems. It is the affected community that is the key to planning and implementation of environmentally sustainable practices, the so called Best Management Practices. As such, the only way to foster long-term implementation is for the community interests to have a role in the planning from the beginning.

Effectively involving the target community is a difficult, time-consuming approach but one that promises a more successful program and better return on the investment of time and energy. The following examples of successful watershed planning efforts illustrate these principles.

A. Consent Building on the Garcia River

The North Coast of California is famous for its rugged picturesque shore. Grassy coastal bluffs and forested slopes meet the Pacific Ocean along Highway 1, the scenic route extending from San Francisco to the California border and beyond. In Mendocino County, 120 miles north of San Francisco, the coastal range gives rise to several small coastal rivers that are known for their outstanding salmon and steelhead sport fisheries and unique fishing villages. SmaII towns located at the mouth of these rivers form communities whose livelihoods depend upon tourism, commercial and sport fishing, logging, farming and gravel extraction.

This dependence upon scenery on one hand and resource use on the other creates a fragile balance, and conflict, in the communities themselves. Nowhere is this more apparent then on the Garcia River located close to Point Arena, a small town situated on Highway 1. The Garcia River flows from headwaters high in the mixed conifer ridges of the coastal range to a small estuary surrounded by potato fields and dairy lands. The tranquillity here belies deeper issues between those that depend upon traditional uses of the watershed's resources and environmental interests. Despite these closely held beliefs, the Garcia River community was able to find the one thing

that all the interests could agree on — that was the need to restore the populations of salmon to historic levels. It is the process of finding common ground among sharply opposing viewpoints that makes the Garcia River Watershed Enhancement Project an example of innovative coastal protection efforts.

The Garcia River drains 72,000 acres (114 square miles). The river's 44-mile mainstem plunges from an elevation of 2,470 feet to sea level in a very short distance. The upper watershed is steep forestland, much of which has been logged and is scarred by erosion from past logging. The more gently sloping lower reach, with coastal terraces and alluvial bottom lands is used for farming and grazing. The small estuary serves as an important habitat for anadromous fish, many species of shore birds and waterfowl, and other wildlife, including the endangered Point Arena Mountain Beaver *(Aplodontia rufa).* Until the mid- 1980s, the river was widely known for its large coho salmon and its excellent steelhead fishery, but the combined pressures of a long drought and degraded spawning habitat had resulted in a serious decline in the anadromous fish population, especially the coho.

Balancing Interests Is the Key

In 1990, Friends of the Garcia River (FrOG) the local watershed group approached the Mendocino County Resource Conservation District (District) with the idea of developing a plan that would stem the decline in the river's resources and address the visible impacts of past land use activities. The District, like other Resource Conservation Districts, is a special district set up under state law to provide soil and water conservation assistance to landowners in California Counties (see Chapter 3, Resource Conservation Districts, page 3-20). The community request was timely. The District had worked for ten years restoring the Tomki Creek watershed in the Eel River and felt it was ready to undertake a similar project in a coastal watershed.

FrOG members were largely from the environmental community. The District felt that the long-term success of the project hinged on pulling together a broad range of interests. To this end a Watershed Advisory Group was formed; its 12 members represented major interest groups in the watershed including gravel operators, the timber industry, environmentalists, agricultural and tribal representatives, and commercial and sport fishermen. The District asked several agencies to provide technical assistance, including the California Coastal Conservancy, Natural Resource Conservation Service (NRCS), the Department of Fish and Game, the North Coast Regional Water Quality Control Board, the Mendocino County Water Agency, University of California Cooperative Extension and the Bureau of Indian Affairs.

The development of the watershed plan was supported with a $100,000 grant from the Coastal Conservancy. The Advisory Group held public meetings every other month throughout the 18-month planning process to develop Plan goals, review each chapter and make plan recommendations. Consensus was reached on every Plan recommendation. The Plan was completed in October 1992 with the stated purpose of fostering the conservation, restoration and sound management of the Garcia River's natural resources. The main objective of the community embodiedinthe Plan is to restore the salmonid fishery in the Garcia River by improving fish habitat and treating areas of accelerated erosion that impact water quality and fisheries habitat. By the time of the Public Hearing on adoption of the Plan, the community offered complete support. No negative comments were received. The process worked — by ensuring community-based support, few, if any, felt uncomfortable with the outcome of the plan.

Flexibility and Cooperation

Community agreement on the goals and recommendations of the Plan took time and effort. The Advisory Group did not always agree -- the first year of the planning process was fraught with conflict. Conflict was replaced with accommodation as the different interests began to understand each other's viewpoints making it possible to find workable solutions.

One of the first obstacles to confront the group was gravel extraction. This was an extremely divisive issue that threatened the ability of the Advisory Group to forge any agreement. The group was aware that gravel extraction was a county-wide concern and was subject to State and federal regulatory authority. Since, the community had agreed that the plan would focus on voluntary practices, regulated activities needed to be treated differently. Gravel operations were an important part of the river's complexion that could not be ignored.

The Advisory Group came up with a compromise: create an outline for a Gravel Management Plan for the river and let the County Water Agency produce a separate plan that would become a model for the entire county. To achieve this, the District asked the Natural Resources Conservation Service (NRCS) to provide a team of hydrologists and river planning experts to recommend the tasks needed for a comprehensive gravel management plan. The NRCS Hydrologic Unit Planning Team from Davis, California, provided a clear outline, and the District assisted the Mendocino County Water Agency in obtaining an EPA section 205(j)(2) planning grant to prepare the Gravel Plan. The contentious gravel quagmire was turned into a positive long-term solution that would benefit rivers throughout the County.

| Mendocino County Resource Conservation District. 1992. ***The Garcia River Watershed Enhancement Plan.*** Prepared by J. Monschke Watershed Management and William M. Kier Associates for the California Coastal Conservancy.

Implementing the Plan — Creative Funding Sources

While planning can be difficult, getting the recommendations on the ground is the true test of plan acceptance. Garcia Plan implementation has been initiated through funding received from AT&T and the County District Attorney's Office. This funding was a boon that can largely be attributed to the existence of the Plan and the perseverance of FrOG and the Advisory Group. In July 1992, AT&T contractors installing a fiber optic line accidentally spilled several thousand gallons of drilling mud into the river. The District and the Advisory Group members negotiated with AT&T regarding the mitigation for the damage and were awarded over $200,000 in funds, part of which went to the Friends of the Garcia to establish monitoring stations and to set up a GIS data base. The Advisory Group agreed upon an Action Plan to set priorities and, although the funds were nowhere near the amount needed to fully fund the projects on the list, they served as match for other grants, including funds from the Coastal Conservancy. Restoration of the Garcia River Watershed has become a reality. Although it will take a long-term commitment to restore the river, the community is willing to meet the challenge.

Copies of the Garcia River Watershed Enhancement Plan, are available for $10.00 per copy.

Copies of the District's 20-minute video, *Tomki Watershed: A Project of Community Concern* are available for purchase at $15.00 or rental for $10.00.

Contact the Mendocino County Resource Conservation District 405 Orchard Avenue, Ukiah, CA 95482 • 707/ 468-9223

Initiating Community-Based Watershed Planning

The planning process on the Garcia River Watershed offers some important insights on good watershed planning. The Plan was formulated with impressive community involvement over the two years of planning, and the strong bonds formed during the planning process continue to be an asset for long-term implementation of the plan. The following approaches and principles formed the basis for the planning effort.

'Who, What, When, Where and How"

The Garcia River Plan was begun by asking a few simple questions: "What, Who, Where, When and How" can the watershed be improved?" Once the answers to these questions were elicited, the next step was to target the affected and/or interested parties in the watershed and to start to work with them (for more on organizing an outreach effort see Appendix A).

WHAT are the Watershed Problems and goals?

Begin by defining the nature of the problem you want to concentrate on and the possible goal of the efforts. Be as specific as possible. The problem may seem obvious to you, but bear in mind that this "problem definition" will be used to convey the need and importance of such goals to people outside of your organization. Problem definition and goal setting will eventually be critical in monitoring the progress and effectiveness of the watershed planning effort.

WHO can assist in defining the problem and achieving the goals?

Define all of the agencies or organizations that may have authority over the problem and possible resources to contribute to the activities. Describe what the authority or resources entail (regulations, technical information or other expertise, grants or loan funds). To the extent possible, these groups should be involved in the effort. These "stakeholders" can be of great assistance in finding solutions to the problem.

WHERE do these problems exist?

Determine where the problem exists and the best place to focus efforts. Is it a watershed-wide problem or should the focus be on a specific sites within the watershed?

HOW can these problems/goals be addressed?

Describe the plan of action for solving the target problem. The 'how' cannot be completely determined at the beginning of the planning process because the affected community or target audience should be involved in determining the course of action. The approach that has been the most effective is to 1) research what has been done in the past, not only on the particular issue but on related issues (are there existing BMPs? have they been implemented?); 2) evaluate these efforts for their effectiveness (what programs or delivery mechanisms have been tried? have they worked?), and 3) outline a general course of action that allows for maximum flexibility.

WHEN can the effort be completed?

Set the time frame for accomplishing tasks. Understand that when you are involving outside groups, especially volunteer efforts, accomplishing the goals may take more time.

Working with the Affected Community

Once these questions have been answered your organization will be in a good position to organize an advisory group composed of members of the target community. The following ten principles[2] were used as the framework for the Garcia planning process and provide some insights on the most effective way to use community-based planning to achieve the goals of your watershed plan:

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2 These rules are based on: Pinkerton, E. 1991. ***Locally based water quality planning: contributions to fish habitat protection.*** Can. J. Fish Aquat. Sci. 48: 1326-1333.

1. **Provide purpose and impartiality:** The leaders of the effort must have a clear sense of direction that allows for an outcome that is based on community goals. The organization must also have the capability to implement plan recommendations.

2. **Develop good coordination:** The coordinator of the planning process must be experiencedin negotiation and be able to bring together divergent interests in a fair and impartial manner.

3. **Involve your worst enemies:** The selection of watershed planning group members must include a balance of representatives from all the affected local interests. Those interests which are the most likely to be negative about the efforts are as critical to the process as the supporters.

4. **Find common ground:** Encourage committee members to explaintheirinterests, not to take positions.

5. **Empower all interests:** Recognize that the beginning of the process will focus on education. Technical matters must be clearly understood by all members of the group to enable them to become active participants in decision-making.

6. **Establish a process:** The watershed committee needs to set ground rules and establish a decision-making process to be used in setting goals and in developing both short- and long-term objectives.

7. **Build consensus:** The process must help build consensus among the committee members. If there is no consensus on an issue then find another way to resolve it.

8. **Reach out to the Community:** Community support can only be built through community outreach concerning the goals and recommendations of the plan and through participation in volunteer projects.

9. **Develop an Action Plan:** Plan recommendations must be prioritized into a strategy or action plan for implementation that is attainable.

10. **Recognize community control:** The organization overseeing the planning process should be willing to intervene in the process only if there is stalemate, and otherwise should avoid being rigid or trying to push things along too quickly.

These principles are basic elements for any successful local planning process. The principles should be used as guidelines for a rather fluid process — they are not rigid rules of the game. Each watershed community is as different as the people who live there, and each watershed plan should be a reflection of the desired future of the community. Only when the community has accepted the process will there be a willingness to volunteer to protect the environment and improve the resources.

B. CREATING NATURAL ALLIES — NAPA RIVER OWNERS MANUAL AND LAND STEWARDSHIP

Like the Garcia River, the local communities along the Napa River have developed a watershed plan to grapple with intense resource conflicts. Here the problems of rapid urbanization are often at odds with expansion of the lucrative wine grape industry. Both need clean water; both impact water quality and create stiff competition for the water needed by the area's fish and wildlife.

Napa Valley is world renowned for its wines and is California's pioneer grape-producing area. Beyond the vineyards, the Napa River watershed has outstanding scenic, recreational, and fish and wildlife resources. The river flows through downtown Napa adding to its charm, but causes periodic flood damage during northern California's heavy winter rains. Below Napa, the river broadens as it meanders through the tidal Napa Marsh. The marsh supports several endangered species, including the California freshwater shrimp *(Syncaris pacifica).* The marsh provides critical habitat for young trout and salmon during their out migration and is a well-used stopover for thousands of birds during the fall and spring migrations.

The human inhabitants are dependent upon this watershed too. It provides 85 percent of their drinking supplies from ground and surface water. Increasingly, the Napa River's water quality is being impacted by stormwater from urban and agricultural uses and from diversions for irrigation. Groundwater supplies are susceptible to problems associated with overpumping, such as subsidence and salt water intrusion.[3] As a result of these problems, in the early 1990s, the San Francisco Bay Regional Water Quality Control Board identified the Napa River as one the leading contributors of pollution to San Pablo Bay, the northern portion of San Francisco Bay, and emphasized the need for proper management of the watershed to control sediment and other nonpoint sources of pollution.

Napa County has been working to resolve some of these problems through local ordinances such as the Napa County Flood Plain and Riparian Ordinance, and the County Resource Conservation Regulations. These laws are aimed at reducing erosion, protecting riparian corridors and controlling stormwater runoff. In addition, the Regional Board adopted a requirement that all cities within the County prepare a baseline plan to control urban stormwater runoff. Despite these measures, it became clear that these problems could not be solved with regulation alone, but would need the combined will of the County's residents.

Because the Report identifying soil erosion as one of the most pressing problems, the Napa County Resource Conservation District took the lead in developing a watershed

3 *Napa River Watershed Draft Background Information Report. 1992. San Francisco Bay Regional Water Quality Control Board.*

plan for the Napa River. Soil conservation was not the only concern. Landowners felt constrained by the imposition of new County regulations. The District recognized this conflict and understood that "no amount of government funding or regulation can equal the effects of broad voluntary participation on the part of individuals in the effort to provide long-term protection to the watershed's natural resource system."[4] The District's preferred approach to solving resource problems was through the concept of land stewardship — a notion whose motto is "Get Government off your back by shouldering a little responsibility . .." The main purpose of the Land Stewardship program is to instill an 'ethic' that induces each landowner to become an ally in resource conservation management. Land stewardship uses a consensus process to identify watershed goals and the best course of action to pursue for a voluntary cooperative program to achieve success among landowners.

Using the land stewardship approach, the District convened two advisory committees, one focused on technical issues and the other on educational approaches. The Technical Advisory Committee included such local agencies as the Agricultural Commissioner, the Farm Bureau, Flood Control and Water Conservation District, Napa Sanitation District; State and federal agency staff from the Natural Resource Conservation Service, US Army Corps of Engineers, the Regional Water Quality Control Board, Department of Forestry and Fire Protection, Coastal Conservancy, US Fish and Wildlife Service, EPA; environmental groups; and a number of large and small vineyardowners. The Educational Advisory Committee included representatives from several agencies and many of the schools in the area.

Both committees held public forums to identify concerns and actions need to protect and preserve the natural and community resources of the Napa River watershed in an economically reasonable manner. The fruit of their efforts is *The Napa River Watershed Owner's Manual: A Framework for Integrated Resource Management* — which has the goal of maintaining a sustainable river ecosystem for the Napa River watershed. The community chose nine objectives to achieve their goal:

1. Promote stream stabilization using natural processes
2. Promote contiguous habitat
3. Increase biological diversity
4. Increase migratory and resident fish habitat
5. Coordinate natural resource protection and planning efforts
6. Encourage land stewardship
7. Reduce soil erosion
8. Promote sustainable land use concepts
9. Promote and improve water management

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4 ***The Napa River Watershed Owner's Manual: A Framework for Integrated Resource Management.*** 1994. Napa County Resource Conservation District.

Despite the fact that the technical committee had a strong agricultural presence, these objectives are surprisingly environmental. This is a testament to the land stewardship principle that most landowners want to do a responsible job of managing their lands and that education can accomplish more to promote resource-friendly management than legislation. The Land Stewardship approach to Watershed Plan Development[5] entails the following steps:

- ✔ Identify stakeholders — people or groups with interests in the watershed may include landowners, government agencies, citizen groups, schools, churches, trade associations, etc.
- ✔ Identify stakeholder interests — those attitudes that are needed or that can block the development of a cooperative effort.
- ✔ Develop goals — a statement that sums up the vision for the watershed.
- ✔ Define objectives to measure progress toward attaining the Goal(s).
- ✔ Describe those tasks necessary to attain the objectives.
- ✔ Establish a monitoring program to measure the progress of the plan.
- ✔ Implement the plan.

The Napa County Resource Conservation District offers 2 Day Stewardship Training Workshops that focus on Natural Resource Protection and Enhancement. Topics covered include: Watershed Planning and Management, Conflict Management, and Interest-Based Problem Solving.

For more information, contact:

Kathleen Edson,
Napa County Resource Conservation District
1303 Jefferson Street, Suite 5B
Napa, CA 94559 707/252-4188

5 *Land Stewardship Watershed Plan Development.* **1993. Napa County Resource Conservation District.**

C. MAKE YOUR PROBLEM AN OPPORTUNITY — ECONOMIC DEVELOPMENT AND WATERSHED RESTORATION

During most of the 1990s California's economy has suffered a serious downturn. Tax revenues have declined resulting in cutbacks in State and local government programs. In the midst of such hard times, it might seem that public expenditure on watershed restoration would be an extravagance. In fact there is much evidence that watershed restoration is a good investment with the potential to generate returns capable of recovering the costs and, in some instances, boosting the local economy. When organizing the community around watershed issues do not overlook the importance of building partnerships with businesses and local governments. A positive way to create these alliances is to examine and show the potential economic benefits that can be derived from the watershed plan and related projects. Where localities and businesses understand the short- and long-term benefits to be derived from protecting watershed resources they are more likely to offer both financial and technical support for the effort.

Assessing Economic Benefits of Watershed Protection

Both the National Park Service and the California Department of Water Resources have done studies that show that there are economic benefits generated through resource enhancement and protection. National Park Service studies indicate that real estate property values increase near greenways, trails and open space, particularly where there are water-based recreation opportunities.[6] Increases in property values usually result in increased property taxes for local governments, such that these projects may pay for themselves in a fairly short period of time through the increased tax increment.

Greenways, trails and river access help support the local economy through tourism and resident expenditures on recreation. If your watershed provides opportunities for fishing, hunting, birdwatching, boating or trail-related activities, there is a potential to promote these activities through watershed planning andenhancement. Recreational activities can fuel local economies. Spending by birdwatchers contributed a total of $27 million in wages and business income to California's economy in 1987; some 2,000 California jobs are supported by birdwatchers.[7] Enhanced resources can attract more tourism dollars to a local site. The presence of such amenities has marketing potential. For example, the City of Campbell, California required, as a condition for development, that the Campbell Inn provide an easement for the Los Gates trail. The developers realized the marketing potential and not only provided an easement but

6 National Park Service. *1995. Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors: A Resource Book.*

7 *Loomis,* John and *Chris* Unkel. 1989. *The Economic Contribution of Wildlife Viewers. Outdoor* California.

constructed part of the trail, which passes through forests and alongside a stream. The Inn uses the trail in its promotional brochures and offers rental bicycles for their guests. Room rates at the Inn, in 1995, were substantially higher than other local accommodations.

Enhanced natural areas can attract businesses to a community. In urban areas access to natural settings, recreation and open space contribute to the "quality of life" which is increasingly cited as an important factor in corporate and business locationdecisions. Localgovernments are becoming aware of the need to capitalize on previously-neglected natural areas to attract businesses to their downtown districts. In the early 1970s, the City of San Luis Obispo returned San Luis Creek to its original streambed by opening up culverts, a process called "daylighting," and saw a resurgence in their economy and tourism. The cities of San Anselmo, Napa and Mariposa have based downtown redevelopment around the restoration of a central city stream[8] to serve as an open space and recreation area for local residents and travelers. More and more cities are considering opening up previously "buried" streams to enhance the livability of their towns.

Creek restoration begins in Gilroy

GILROY Work is under way to restore a creek running through town to its natural state, thanks to $1 million willed by a developer and former city councilman who died 10 years ago.

Relatives of Dennis De Bell, who made the gift, were on hand as the $1.4 million restoration of Uvas Creek began Thursday.

By the end of October, crews hope to create a year-round channel that will allow steelhead trout to spawn. Banks of the creek will be graded and landscaped and a trail system will be built.

Gravel mining destroyed the natural coures of the creek, causing it to stop flowing and pool during dry months. That and a lack of shade made it impossible for fish to spawn.

- San Francisco Examiner, 8/20/95

The National Park Service's *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors* provides methods of estimating the potential economic benefits and values of natural areas. The workbook format provides a framework for non-economists to conduct their own economic analyses for projects. Although trails and greenways are the focus, the approaches are useful in watershed planning. Copies of the workbook are available from:

National Park Service
Rivers, Trails and Conservation Assistance Program
600 Harrison Street, San Francisco, CA 94107

[8] California Department of Water Resources. 1991. *Stream Restoration Program.*

The NOAA Coastal Ocean Program (COP) has also produced an excellent workbook geared to the non-economist through its "Science for Solutions" series. This publication, *Economic Valuation of Natural Resources -A Handbook for Coastal Resource* ***Policymakers***,[9] contains a series of case studies illustrating economic valuation principles and outlines methods for applying these techniques to specific resource situations. This is a valuable reference for documenting the value of coastal resources and can be obtained through:

NOAA's Coastal Ocean Office
1315 East West Highway, Sta. 15140
Silver Spring, MD 20910 • 301/ 713-3338 or FAX • 301/ 713-4044

The Department of Water Resources' study by Streiner and Loomis[10] specifically examined the economic effects of stream restoration measures funded by its Urban Stream Restoration Program (see Chapter 3, page 3-l 8). Using a method taken from the National Park Service's ***Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors*** that estimates home buyers' willingness to pay known as the "hedonic price method, "the authors looked at restoration projects that had implemented such measures as streambank stabilization, revegetation, flood proofing, and maintaining fish and wildlife habitats. The study found that bank stabilization projects can increase the property values of residences adjacent or near the sites by 3 to 11 percent. Projects that included fish habitat enhancement and the development of an educational trail increased property values by 15 to 16 percent. When bank stabilization measures are combined with fish habitat improvements the increase was estimated to be 17 percent. These values do not include any estimates of the reduction in costs associated with reduced flood damage expenditures which, in some instances, can be substantial.

Assessing the Economic Benefits of Fisheries

Many of the examples of watershed planning discussed here focus on the goal of restoring or enhancing fisheries resources. Fish are significant because they act as sensitive indicators of water quality and are subject to protection under numerous environmental laws. Fishing contributes considerably to California's economy both through commercial catches and sportfishing. Watershed planning undertaken with a goal of improving fish resources can serve to improve State and local economies.

Although the number of fishing industry jobs has declined steadily from close to 50,000 in 1978 to around 6,000 in 1990, commercial fishing is still a major industry

9 Lipton, Douglas W. and Katharine F. Wellman. June 1995. *Economic Valuation of Natural Resources -- A Handbook for Coastal Resource Policymakers.* Decision Analysis Series No. 5., NOAA Coastal Ocean Office, Silver Spring, MD.

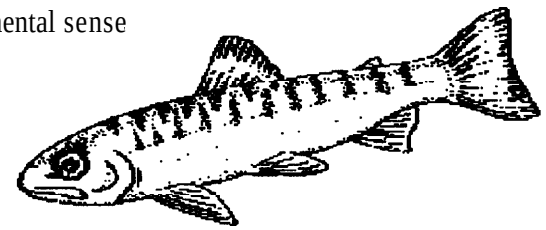
10 Streiner, Carol and J. Loomis. June 1995. *Estimating the Benefits of the Urban Stream Restoration.*

in California. The wholesale value of the catch in 1992 was over $136 million, with an estimated retail value of $960 million dollars.[11] While over 6,000 Californians are directly employed in wholesale fish or processing operations, the jobs of many thousands more are indirectly linked in retail, transportation and equipment industries.

The decline of California's salmon-fishing industry has been linked largely to the loss of fish habitat due to dams, agriculture (diversions and grazing) and timber harvesting. In its 1988 report to the California Legislature and the Fish and Game Commission, the California Advisory Committee on Salmon and Steelhead Trout presented economic analyses that indicated that the restoration of these fish to twice their depressed 1980s levels would increase business revenues approximately $75 million per year. Net economic benefits to Californians, from both business and non-market benefits, were estimated at $150 million annually. Full implementation of the doubling effort over 15 years would yield $6 billion in net profits — $1 billion in profit to small businesses. The salmon restoration program, implemented by the Legislature in 1988, is expected to create 8,000 new jobs in California.[12]

The Advisory Committee's[13] analyses suggest that where fish population levels are the lowest, the effort associated with doubling has a higher return on the investment. In other words, each additional fish added to rivers where fish have declined the most has a higher incremental value. The value of each fish added, or the restoration return on investment, is particularly high in streams near urban populations. For example, the benefit to local businesses alone of increasing the annual catch of steelhead in the Cannel River would run $50,000 a year according to the Committee's analysis, enough to warrant a fish habitat restoration investment of $1 million dollars over a 20-year period. When you add non-market values (values include recreation, "existence" and "bequest" values) of improving the Cannel River steelhead catch by that level, the restoration benefit grows enough to justify a $25 million Cannel River restoration investment. The Committee's findings yielded similar fishery restoration benefits for the Ventura River.

It is clear that restoring fish habitat and the watersheds that support good habitat not only makes environmental sense but also makes good business sense.



11 National Marine Fisheries Service. May *1994. Fisheries of the United States 1993, Current Fishery Statistic No. 9300.*

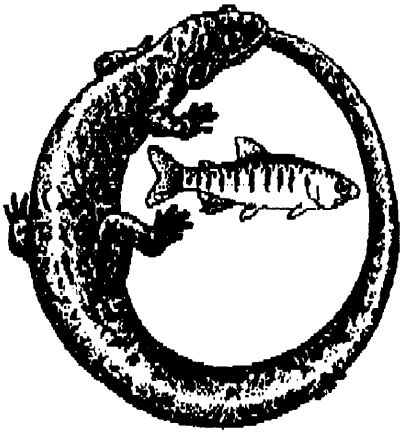
12 Advisory Committee on Salmon and Steelhead Trout, July, 1988. *Restoring the Balance,* a report to the Legislature and the Department of Fish and Game.

13 Meyer Resources, Inc., April 1988. *Benefits from present and future salmon and steelhead production in California.* Davis, CA. A report to the California Advisory Committee on Salmon and Steelhead Trout.

Watershed Restoration and Jobs — Mendocino watershed Service

Watershed plans, for the most part, focus on water quality improvement and enhancement of fish or wildlife habitats, but watershed restoration activities can also serve to improve the local economic picture. When developing your watershed plan it is important to look not only at natural resources but at the human resources. Documenting local economic trends can provide insights that will allow you to dovetail the needs of the human community with those of natural communities.

In areas with unemployment, watershed restoration can provide an avenue for community economic development through the training and employment of displaced workers for jobs in environmental restoration. The following example shows how one coastal community has begun to tackle this problem.



Historically, Point Arena, the town closest to the Garcia River, has had a resource-dependent economy relying on timber production, commercial fishing and sportfishing-based tourism. As these resources declined, the unemployment rate in Point Arena climbed, reaching 30 percent by 1993. One of the recommendations of the Garcia River Watershed Enhancement Plan (discussed above) was to use restoration activities identified by the Plan as a means to provide much-needed employment to local workers. The Plan recommended that the Point Arena community form a nonprofit community economic development corporation whose purpose would be to train and develop local personnel to carry out restoration projects.

Craig Bell, a sportfishing guide, sat on the Garcia Watershed Advisory Group and helped develop the plan for the river. He had firsthand experience with the problems of unemployment. Bell had worked as a logger. When timber jobs disappeared in the early 1970s, he turned to commercial fishing for his livelihood. When the commercial salmon catch quotas were reduced in the 1980s he started Greenwater Guide Service to take sport fishermen out on north coast rivers. As the number of salmon dwindled in the early 1990s and sportfishing limits were reduced, he knew that it was time to find another career.

Bell's guide service had offered him a unique vantage point; he had seen the problem of salmon habitat destruction from his guide boat. The idea of working to restore fish habitat and training others to do so, struck a chord. Where others saw an overwhelming problem, he saw stream restoration as an opportunity to improve both fish and human habitats.

The planning process had opened Bell's eyes to the possibilities of finding grant funds to pursue this idea. In 1993, the need to retrain displaced workers was an issue that was faced by the whole Pacific Northwest. The President's Forest Plan[14] for dealing with the endangered Northern Spotted Owl was forcing National Forests to substantially reduce the amount of federal timber available for harvest. To address the outcomes expected from the new policy, the federal government instituted several programs aimed at retraining displaced forest workers.[15] Bell found out that Mendocino County was a target area under this program. He won the support of Point Arena city officials and the Mendocino County Resource Conservation District board of directors for his grant proposal to form a local community economic development corporation, a nonprofit organization that would provide job training and organize crews for restoration work. The proposal was funded by a grant from the U.S. Forest Service's Economic Recovery Implementation Program under the National Forest-Dependent Rural Communities Diversification Act of 1990. The proposal was successful, in large part, because the watershed plan was already in place.

In 1994, its first year of existence, the Mendocino Watershed Service (MWS) sent 40 people through the Salmonid Restoration Federation's Salmonid Stream Habitat Restoration School. By 1995, 16 of the original trainees had found new jobs in watershed restoration, and 4 had improved their skills for other existing employment. Mendocino Watershed Service had received almost $180,000 in watershed project commitments to fund its crews. Trainees not directly employed by MWS had generated close to $200,000 in funded project proposals in other Mendocino County watersheds. In addition, MWS had built partnerships with several timber companies interested in hiring crews to perform riparian planting and stream-bank stabilization projects on their lands. Recently, Bell and his group have received additional funding from the Department of Commerce's Salmon Watersheds and Communities Revitalization Program to train Mendocino County's unemployed and displaced fishermen in fish-habitat improvement, habitat surveying and monitoring. The Mendocino Watershed Service has quickly become an important job source for Mendocino County, while, at the same time, providing a means for investment in a sustainable resource base for the future.

Contact: **Craig Bell or Tom Taylor**
Mendocino Watershed Service
P. 0. Box 225, Point Arena, CA 95468
• 707/882-I947 • FAX 707/882-I916

14 President William J. Clinton. 1993. ***"The Forest Plan for a Sustainable Economy and a Sustainable Environment."***

15 ***The Northwest Economic Adjustment Initiative. 1993.***

D. OUTREACH AND EDUCATION

In this chapter we have stressed the importance of building partnerships with key watershed interests and of using economic strategies to convince potential stakeholders to participate in and support the development of watershed plans and restoration projects. Public outreach to the local community is the first step in building the kind of partnerships that are essential to plan development and acceptance. Through outreach efforts watershed groups can begin to educate the entire community about their watershed and the things that can be done to improve the services the watershed provides. The following section outlines the steps needed to undertake an effective community outreach program; you can find more detailed information on conducting community meetings in Appendix A. For further insights and tips on outreach and watershed education, we suggest David Bolling's excellent book, ***How To Save A River***, available at most bookstores.[16]

Opening a Channel of Communication with Community Interests

Because it would be impractical for everyone in the community to work on the watershed plan, the most successful planning efforts have used the advisory group approach to formulate goals, identify "limiting factors" and find solutions to include in the watershed plan. An advisory group is usually composed of people that represent different interests in the watershed. For example, business interests such as timber, mining or tourism; landowners such as dairy farmers or vineyard owners; trade organizations or producer groups, like commercial fishermen; and user groups such as sportfishermen or birdwatchers, would constitute major interests. The type of interests represented depends upon each watershed's resource use patterns. All of these interests have a different perspective to offer, and their cooperation or "buy in' to the plan's recommendations is key. That is not to say that the larger community should not participate, but it is critical to have potentially affected interests closely involved during the planning process. Although it may be more comfortable to work with those interests that agree with your watershed group, the ultimate success of the planning effort will depend on your ability to cooperate and work with those interests that may hold differing viewpoints.

When approaching interests within your community there are two basic principles to bear in mind:

- Concerns and problems that are identified early in the process usually can be resolved but those not brought up until late in the game are much more difficult to resolve, if they can be resolved at all.
- Establishing early and free communication is key to the successful implementation of your plan or project.

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16 *How To Save A River.* 1994. Edited by David M. Bolling. Island Press, Washington, D.C.

Begin by asking WHO might be interested and start compiling a list of the following interests:

- Interests which may be affected in one way or another by the watershed plan or project activity.
- Interests which believe they have something at stake — even if you are sure that the plan will not affect them in any way.
- Interests that may at some later date choose to become involved in the project, **for reasons of their own,** even though you and they both know that they will not be affected by the project.

Then follow up by:

- Initiating contact with each interest as soon as it shows up on your list — make sure that your communication has the following elements:
  1. Explain **what** the planning or project is about.
  2. Explain **why** your group is involved in the project, i.e., your group's responsibilities in general, and its specific responsibility for this project.
  3. Explain **how** your group is going about developing the project, i.e., what is your planning process.
  4. Explain how far the project planning has progressed to date and the timeline for future actions.
  5. Invite the interest to express his/her views that might have bearing on the project. Solicit advice and comments. Stress that you are looking for ways of accommodating these views.

Follow these guidelines:

- Initial contact should be a sincere invitation to the interest's participation as well as documentation of that invitation.
- Organizations and agencies should always be contacted in writing.
- Individuals can be contacted in person or by phone, but it is best that both approaches be used.
- It is most important that the contact open a two-way dialogue. Once the channel has been opened both ways, then communication can be open.
- Other means of contacting interests are those that use existing media. Piggy-backing your communication onto existing publications, such as newsletters, bulletins, journals or local newspapers can provide a means to reach more people. This technique is suggested only as a supplement and runs the risk of informing only one or a couple of groups.

Education — The "Adopt-A-Watershed" Concept

The planning process itself should have a strong education component so that watershed planning groups and the interested public can become familiar with the issues and the language of watershed planning. It is also important to find ways to inform the broader community of the planning efforts and encourage their participation in watershed restoration activities. The most effective education programs use existing delivery mechanisms to get out the message. One of the best places to begin an education program is in the local schools. Once children are involved in watershed restoration efforts, they have a very persuasive ability to involve their parents in the efforts. For example, on Tomki Creek in Mendocino County, one of the tributaries was severely impacted by erosion from the access road to residences within the sub-basin. Several attempts were made to get the local road association to improve maintenance and drainage of the road, but the residents were not very cooperative. The Mendocino County Resource Conservation District thenbegan working with the local elementary school to provide educational materials explaining the relationship between soil erosion, road maintenance, and water quality. The children took up the cause and badgered their parents until the local road association took action. Road problems were corrected and the water quality in the nearby stream improved immensely.

In Hayfork, California, resource conflicts in the watershed had threatened to destroy civic unity (see Chapter 2, page 2-4). The small community was deeply divided between those who made their living logging the surrounding forest and those who relied upon fishing and tourism. Kim Stokely, a local school teacher, came up with the idea that the way through this impasse was to focus on resource-related education of the community's children. Kim felt that improved science education could provide new opportunities for everyone's kids, while, at the same time, education that used the watershed as a classroom had the potential to instill a sense of stewardship toward the environment that could assist the entire community. Stokely developed the "Adopt-A- Watershed" curriculum to be used in the local Hayfork schools. It was so successful with the teachers and students alike that word spread to many other communities.

From one idea in a small community, the Adopt-A-Watershed program now provides teacher training and science-oriented curriculum for kindergarten through 12th grade. The curriculum uses a local watershed as an outdoor classroom — a living laboratory — that allows students at each grade level to undertake field studies, restoration and community action projects that apply science and natural resource management concepts.

By 1996, an estimated 22,000 students will be participating in the Adopt-A-Watershed program; in the last 4 years over 1,000 teachers in California have been trained to use the curriculum. The program has the support of the California's Departments of Education and Conservation, the U.S. Forest Service, and the Natural Resource Conservation Service as well as several foundations and trusts.

Students have responded well to science training with this hands-on approach. Adopt-A-Watershed classes are currently monitoring streams in Mendocino, Sonoma, Trinity and other Counties. Children have participated in stream restoration projects along the Petaluma and Napa Rivers. Every child that participates becomes an advocate for proper stewardship of the watershed in which the individual lives and brings that message home to parents and friends. The Adopt-A-Watershed program has proven to be among the most powerful community organizing tools, while it provides children a strong science education and outdoor experience.

For more information on instituting the Adopt-A-Watershed Program at your local school contact:

Kim Stokely, Program Director
Adopt-A-Watershed
Box 356, Hayfork, CA 96041
916/628-5334 • FAX 916/ 628-4212.

Resources

- *The Garcia River Watershed Enhancement Plan.* 1992. Mendocino County Resource Conservation District. Prepared by J. Monschke Watershed Management and William M. Kier Associates for the California Coastal Conservancy. Contact the Mendocino County Resource Conservation District, 405 Orchard Avenue, Ukiah CA 95482, 707/468-9223.

- *Tomki Watershed: A Project of Community Concern.* 1995. Mendocino County Resource Conservation District. Copies are available for purchase at $15.00/copy or rental for $10.00.

- *The Napa River Watershed Owner's Manual: A Framework for lntegrated Resource Management.* 1994. Napa County Resource Conservation District.

- *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors: A Resource Book.* 1995. National Park Service.

- *Economic Valuation of Natural Resources — A Handbook for Coastal Resource Policymakers.* June 1995. Lipton, Douglas W. and Katharine F. Wellman. Decision Analysis Series No. 5. NOAA Coastal Ocean Office, Silver Spring, MD.

- *Restoring the Balance,* a report to the Legislature and the Department of Fish and Game. July, 1988. Advisory Committee on Salmon and Steelhead Trout.
- *How to Save A River.* 1994. Bolling, David, Ed., Island Press, Washington D.C. 266 pages. $17.00.

5 Getting It On the Ground — What Works

A. The Best Laid Plans

Setting Priorities

Planning for the future of an entire watershed can be an overwhelming task. Watersheds are complex with many interactions between species, including humans, and the environment. The only way to successfully tackle the job is to focus your group's efforts. In planning, this focus is created through a series of deliberate steps: 1) understanding the problem and the related science issues; 2) establishing goals; 3) agreeing upon objectives to support these goals; 4) exploring management alternatives and selecting management measures that can achieve the objectives; 5) setting priorities among the recommended management measures; and 6) adopting an action plan to implement priority items.

Once stakeholders and the community have agreed upon the goals for restoring a watershed's resources through the Advisory Group or Coordinated Resource Management and Planning (CRMP) process, the next step is to establish objectives that can support or achieve these goals. For example, if your goal is to increase the salmon population or prevent further loss of riparian or wetland areas, what levels are feasible and, more importantly, achievable? Does the data justify a doubling of the fish population? Is it possible to prevent the loss of all the remaining wetlands or just those in critical target areas? What are the factors that presently limit the restoration of these watershed resources? Keep in mind that objectives must be acceptable by all the stakeholders to be useful to the planning effort.

Adopting realistic objectives helps to clarify the types of additional data that you will need to collect and provides a direction for selecting management measures and alternatives. Before your group can decide on specific management measures or actions, it is crucial to consider a full range of alternatives. Talk to experts from different disciplines to identify potential management options. When the list of possible management alternatives has been created, the next step is to select the best alternatives available to achieve the mutually-agreed-upon objectives. One way to accomplish this is for the group to hold brainstorming sessions. Use these sessions to evaluate each alternative for its advantages or disadvantages based on economic, environmental, social and other factors.

The group then must work to forge consensus on each of the proposed management alternatives. Those alternatives that are agreed upon become the recommendations to be included in the plan. This is the core of the planning process and may take several

months to complete. Do not try to rush the process, otherwise, the results will be a plan that cannot be implemented. Patience, good negotiating skills and the ability to resolve conflict among the respective watershed interests is key to building a plan that can be successfully "put on the ground." ,

For more information on specific goal setting and negotiation techniques we recommend:

Getting To Yes: Negotiating Agreement Without Giving In. 1981. by Fisher R. and W. Ury.[1]

Watershed Management Kit In A Box. Put out by the Conservation Technology Information Center.[2]

B. PLANNING FOR ACTION

When your community has agreed on the measures needed to restore your watershed's resources, you will be ready to prioritize these restoration measures into an "action plan." An action plan is merely a list of the most important actions the group has decided to undertake. The action plan should identify who is responsible for carrying out the actions, the timeframe for completing them and the estimated cost of each action. Your watershed restoration action plan should make clear to potential funders how restoration dollars will be spent, to regulators how they can best support your restoration efforts and to landowners just how restoration can involve them and their property. The *Garcia River Watershed Enhancement Plan (see* discussion in Chapter 4, page 4-1) is a good model of how these steps-goal-setting, limiting factor analysis, and treatment "prescriptions"- come together in an action plan. The Garcia Plan goes on to provide cost estimates for the various restoration measures and guidance concerning how the program may be funded.

Like so many watershed protection and restoration planning efforts, the Garcia Plan was born out of controversy — in this case, public concern over applications to Mendocino County to mine gravel from the stream's bed and the effects of long term timber harvesting. Anglers and others were concerned that these resource-extracting industries on the Garcia had contributed to major problems in the stream system resulting in salmon habitat deterioration that had been observed in recent decades.

A comprehensive resource management and planning (CRMP) group, called the Watershed Advisory Group, was formed. This brought all the key stakeholders — landowners, commercial fishermen, and concerned agencies — together early. In this

1 Fisher R. and W. Ury. 1981. *Getting To Yes: Negotiating Agreement Without Giving In.* Houghton Mifflin Co. 160 pp.
2 Know Your Watershed/Conservation Technology Information Center (CTIC). 1994. *Watershed Management Kit In A Box.* CTIC, 1220 Potter Drive, Room 170, W.Lafayette,IN47906-1383.$15.00.

way the stakeholders could work together to create a plan they could all support. There was early agreement that Garcia River resources could be restored and that the goals of the Plan should include restoration of salmon habitat, recreational opportunities, water quality and a stronger program of land "stewardship" in the watershed.

The mainstem Garcia and its several tributary streams were broken into reaches, for planning purposes, and each reach was evaluated as to its ability to support salmon and the other desired services. The factors that impair watershed resources in each reach were mapped and described. Prescriptions for treating these limiting factors were agreed upon by the Advisory Group and presented in the Plan, along with preliminary estimates of the cost of these prescriptions. The reaches were then assigned priorities, based on their role in restoring watershed function, which yielded a multiyear restoration investment program. Finally, the Advisory Group's Garcia River Plan reviews the potential federal, State and local sources of funding for the kind of restoration and stewardship efforts it recommends and suggests which of these funding sources hold the greatest promise.

The Garcia Plan, completed in October 1992, has already proved a success by at least two yardsticks: the Advisory Group has been highly successful in raising funds with which to implement the Plan; and the basin's landowners have been strongly supportive of the Advisory Group's fund-raising efforts. Since it takes both financial resources to carry out restoration work and access to where the work must be done, it would appear the Garcia restoration program possesses the essential elements of success.

Developing an Action Plan

There are different schools of thought regarding specific approaches for restoring a damaged watershed system, but most everyone agrees that it is critical to restore the relationship between the river and the land around it. This relationship is most visible in the riparian or streamside zone. These riparian corridors also suffer the most impacts from damming, channelization, logging, erosion or development. Protecting existing healthy riparian areas should be a priority as these areas can be a foundation to tie together restoration priorities in the watershed.

Keep in mind that watershed problems tend to be concentrated downstream, but that the watershed is an interactive system — major problems in the lower reaches often are caused by a combination of problems in upstream reaches and tributaries. It is tempting to begin "fixes" on visible downstream problems. Much money has been wasted in the past treating the lower part of a river without addressing the real cause of its problems. For example, excessive sediment, loss of fish habitat and unstable streambanks in the mainstem of a river are often the result of seemingly less compelling problems in upland creeks. If the problems in smaller streams are not addressed, treatments implemented on the main part of the river will just be quick fills, temporary at best, and are likely to be lost during a major storm event.

To develop an Action Plan, begin by listing all the objectives and the associated management measures that your group has adopted in your plan. For each objective decide which measures are the most important to achieving your goals. These become your priorities for action. Using your list of your objectives and the management measures for each objective, describe the specific actions needed to carry it out. Identify who can take responsibility for these actions and estimate the cost and time frame for doing so. The following is excerpted from the Garcia River Action Plan to show a good technique for action plan development:

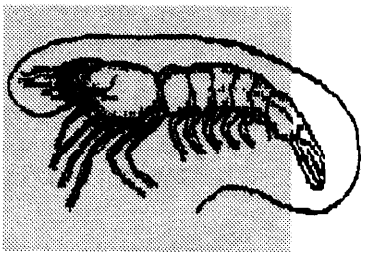
Objective	Alternative	Action	Responsible	Time Frame	Cost
Realign estuary channel to conform with historic flow patterns.	Determine whether recommendations are environmentally and technically feasible.	Conduct Estuary Feasibility Study; Hydrobgical Modeling.	consultant chosen by RCD, WAG and coastal Conservancy.	May 1994-96	$60,000
Reduce limiting factors of lack of habitat diversity and high temperatures by restoration of upper tributaries.	North Fork Garcia sites within the 100-year Flood Plan should be restored first using specific restoration measures identified in the plan and plan maps.	Armor stream banks below Coon Creek. On selected sites stabilize instream sediment terraces utilizing available native materials. Between North Fork river miles 0 and 1, stabilize channel.	RCD and Mendocino Watershed Service or other local crew.	July 1995-96	$88,000
Devebp an effective monitoring program.	Establish at least 4 datalogger sites to monitor temperature.	Purchase datalogger Establish sites Collect data	FrOG Mendo. Co. Water Agency FrOG/MCWA	June 1993 Aug. 1993 Ongoing	$15,000 In-Kind

This chart shows how objectives are related to management measures and translated into actions that can be targeted for completion. Notice that the upland tributaries are a restoration priority. Of course, this is only a partial list of the objectives set forth in the Garcia Plan but it shows generally the way in which an Action Plan is developed. Including the estimated costs of the projects identified in the Action Plan is key. Having cost estimates at hand simplifies grant writing and development of funding proposals. This allows your group to be prepared when funding opportunities arise-often there is not much time to prepare a proposal.

C. SMALL IS BEAUTIFUL — STEMPLE CREEK AND "THE SHRIMP CLUB"

The watershed planning process may certainly be time consuming and sometimes difficult, but the process can be simple. The concept of improving a watershed and the environment is a mission that the fourth- and fifth-graders at Brookside School in Marin County have taken to heart, and in the process have shown the kind of dedication and organization that adults would be wise to admire. It began in 1993 with a classroom discussion about the plight of endangered species. Laurette Rogers, the fourth-grade teacher who began the project recalled, one student asked, "What can be done to save them?" Rogers contacted the State Department of Education's Adopt-A-Species program and the students found out that there was an endangered species right in their own community — the California Freshwater Shrimp *(Syncaris pacificus),* a 1½-inch long crustacean, which survives in only 15 creeks around San Francisco Bay. The Shrimp Club was born out of this interest.

From that innocent question, the students began educating themselves about the shrimp and found out that pollution and destruction of habitat was threatening them with extinction. The class broke up into committees that specialized in various aspects of the project and divided the workload so that each part was doable. All decisions about the direction the project would take were made by consensus and that decision mode has continued to the present.



The students began by informing themselves about the shrimp, then took that knowledge to the broader community through presentations to local ranchers and vineyard owners, environmentalists, businessmen and politicians — anyone who could help, in some way, to save the shrimp. They sent out information packages and press releases and arranged for their project to be featured in magazines, local newspapers, on the radio and on local and national television. They used innovative ways to raise money and public awareness by marketing their own Shrimp Club T-shirts, presenting a play, writing a children's book and stamping a shrimp message on grocery bags at local supermarkets.

Their Shrimp Information Package was used to win a $32,500 environmental education award from Anheuser Busch's "A Pledge and A Promise" program. This provided the initial funds for beginning creek restoration activities. They began working with two local ranchers to fence and build cattle bridges on Stemple Creek, one of the habitats for the shrimp. Additional grants and awards, including $32,000 from the Marin Community Foundation, have allowed the students to continue to work with other ranchers to restore riparian vegetation along the creek.

To Laurette Rogers and Ruth Hicks, teachers at Brookside School, the Shrimp Project demonstrated a novel way of teaching that allows students to learn by taking an idea and running with it. This concept of project-based learning lets the students take charge of their own learning experience, while the teacher becomes a guide and an active participant.

The student's project is putting restoration on the ground and continues to grow. Its strong success can be judged by the additional ranchers who want assistance in restoring their streams; the schools and education groups who invite the students to speak to them; the environmental groups who call upon the students' expertise, and the foundations who continue to grant money.

To find out more about the Shrimp Club or to purchase T-shirts, write to:

Shrimp Club, Brookside School
46 Green Valley Court, San Anselmo, CA 94960

If you are interested in Project-Based Learning contact:

Laurette Rogers at the Autodesk Foundation
111 McInnis Parkway, San Rafael, CA 94903

D. URBAN WATERSHED PLANNING — THE SANTA MARGARITA WATERSHED

While some watershed restoration efforts may seem easy, most, especially those in urban areas, are not. In urban settings it can take years for a community to come together to set even the most basic goals. Generally, the more densely urbanized the watershed, the more difficult watershed planning becomes. With higher population concentrations come more potential for resource conflicts and more difficulty in pulling together a large number of diverse stakeholders to agree on their vision for the watershed. Most of the watersheds used as examples here are located in northern California's more rural areas; only a few occur in urbanized watersheds. By and large, watershed restoration activities in highly urbanized areas have not progressed as quickly as those in more rural settings because planning is much more difficult. Although there are a number of such programs underway, there are relatively few completed plans for urban watersheds.

One successful approach for dealing with the complexity of urbanized watersheds has been to focus on smaller sub-basins. The Coyote Creek program (see Chapter 2, page 2- 17) and local groups such as the Shrimp Club and the Friends of San Leandro Creek have accomplished a great deal working on their small "sub-watersheds" within the large San Francisco Bay watershed. The theory is that restoring each sub-basin will eventually result in overall watershed improvement. Starting small allows a local group to avoid many planning pitfalls, such as overlapping administrative boundaries (streams can flow through several cities and counties without regard for boundaries),

too many stakeholders or stakeholders with widely divergent views, enormous data needs, and information complexity regarding the functioning of the watershed. If you live in an urban area, we recommend this incremental approach which also has the advantage of encouraging full community involvement. It is much easier to get the local community excited about improving a stream that is close to home because you can tap into people's "sense of place" and neighborhood values.

This is not to say that watershed planning and restoration cannot be done on a large urbanized scale. Current large watershed planning efforts include the Russian River watershed near Santa Rosa, the Santa Monica B ay Project in Los Angeles County, and our example, the Santa Margarita River watershed in northern San Diego and western Riverside Counties.

The Santa Margarita River watershed encompasses 750 square miles of prime southern California real estate. Its two major tributaries, Murrieta and Temecula Creeks, along with numerous smaller streams, flow from the Santa Rosa mountains 27 miles to the Pacific just above the city of Oceanside. The Santa Margarita River watershed has two faces. The estuary and the lower reach of the river meander through the huge Camp Pendleton Marine Base. The base's 136,000 acres, largely in a wild state, serve as a rare island of biodiversity amidst a sea of human encroachment. Camp Pendleton acts as a *de facto* nature preserve providing habitat for some 14 federally-listed endangered or threatened species, along with 87 "proposed" candidates for listing. The upper watershed is largely private land. Besides spanning two counties, the Santa Margarita's upland tributaries flow through numerous towns and new housing developments. Like so much of southern California, the area is experiencing spiraling growth; the current population of 67,000 is projected to reach 760,000 by 2010.[3]

With rapid growth comes conflict between maintaining natural habitats and beauty and meeting the resource needs of a burgeoning population. On one hand, the river provides water and habitat for numerous species of plants, animals and fish, whose habitats have otherwise been gobbled up by southern California's suburban sprawl. On the other, the river and its tributaries are increasingly relied upon to provide services such as drinking water, flood storage and groundwater recharge. Urban development means road construction, grading, paving, vegetation removal, and altering of drainage patterns and stream channels. The scale of these activities in the upper watershed has the potential to degrade water quality, increase flooding, and damage and destroy natural habitat throughout the watershed system.

3 ***The Riverside County Southwest Area Community Plan.*** Riverside County Transportation and Land Management Agency.

Here, conflict between public and private wateruses adds additional complexity to the watershed planning process. The river provides Camp Pendleton with its only source of drinking water, but water needs in the upper basin threaten that supply. The issue of who gets the water is a bitter one that began in the 1920s. In the early 1950s Camp Pendleton, as a downstream user, filed suit in federal court to safeguard its water rights against possible appropriation by other water users.[4] In its 1966 ruling on the case, the court affirmed an earlier apportionment decision, but declined to adjudicate all the water rights to the river indicating that a comprehensive survey of the amount of water apportioned through riparian and appropriated rights had never been conducted. The federal court did, however, retain jurisdiction over all surface and ground waters that support the river system. In 1989, with water becoming an increasingly precious commodity necessary to future growth, the court appointed a Water-master to oversee its use within the watershed. The Watermaster must approve every withdrawal of water from the river which is a very cumbersome process for the purveyors. To this day, the major water users along the river continue to negotiate to find a settlement that will satisfy their water needs.

Battles over water rights are always difficult for watershed planning. Such conflicts tend to last for years and sow suspicion and distrust between the warring factions that is often mirrored in the larger community as people side with one interest or the other. In the Santa Margarita River the conflict between the federal government and local development interests over water rights and flood control has been further complicated by the need to protect endangered species and wetlands under State and federal environmental mandates. Given the value of the resources at stake, the Santa Margarita River has attracted a panoply of local, State and federal agencies all with separate missions and responsibilities. In a recent publication, the National Park Service described the Santa Margarita situation as follows, "When pressures mount on the resources in a watershed, many entities become involved . . . When such entities have diverse (and sometimes divergent) responsibilities and interests within the same area without the means to coordinate or resolve them, the result is often more regulation and litigation, sometimes without significant benefits for maintaining the intended economic or environmental health of the watershed after all."[5]

Clearly, the watershed needed an approach that would integrate all of these efforts. In 1992 the Santa Margarita Watershed Management Program was initiated to provide a process that would involve the agencies and local citizens in planning for the future of the watershed. Over the last 3 years representatives from over 40 federal, state and local agencies and citizen groups have met to share their concerns and to hammer out their goals for the future of the watershed.

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4 United States v. Fallbrook Public Utility District.

5 ***Santa Margarita River Watershed: Today's Management Framework — Participants In Profile.*** 1995. Prepared by the National Park Service, Rivers, Trails and Conservation Assistance Program for the Santa Margarita River Watershed Management Program.

Although specific goals and objectives have not yet been determined, the program participants have devised a "mission statement" that relies on a cooperative planning effort to set common goals "to maintian and restore the ecological integrity of the Santa Margarita River resource system while providing for appropriate watershed uses and activities." The Program seeks to "reduce potential conflicts among diverse projects such as flood control, sensitive species protection, groundwater recharge and water supply facilities."

The actual planning process has not yet begun, but determination and patience are starting to pay off. The California Coastal Conservancy and EPA recently awarded $300,000 in grants to be used to develop a watershed plan for the river. Watershed planning will begin in earnest in 1996 and the final plan should be completed in two years.

To contact the Santa Margarita River Watershed Management Program call:

Keith Downs
P.O. Box 1409
Riverside, CA 92502-l 409 • 909/275-4319

For an excellent survey of the institutional and legal framework of the various interests associated with the Santa Margarita River Watershed, see the *Santa Margarita River Watershed: Today's Management Framework- Participants In Profile.* Available from the National Park Service, Rivers, Trails and Conservation Assistance Program.

E. LIFE ON THE LOST COAST — WHERE WATERSHED RESTORATION CAN BE FUN

We introduced you, briefly, to the Mattole River watershed community in Chapter 1 (page l-8). No story about West Coast watershed restoration would be complete, however, without a look at the Mattole's creative approach.

California's policy commitment to watershed restoration began in earnest in the late 1970s when the Legislature first made grant funds available, through the Department of Fish and Game, to improve fish habitat along north coast salmon streams. The Mattole River watershed community was among the new program's watershed restoration pioneers. The 195,000-acre Mattole River watershed is the principal hydrologic feature of California's "Lost Coast," land so rugged the state's road-builders turned coast Highway 101 inland 30 miles to escape its steep terrain. There are three villages in Mattole country, Whitethom, Honeydew and Petrolia, and about 2,000 residents tucked into cabins and an occasional white-washed ranch house along the watershed's net of largely unimproved roads.

The first century of European contact treated the Mattole landscape fairly gently. The principal land use in those days was livestock grazing. Up to this point the Mattole which means "clear water" in the local Indian tongue - continued to live up to its name. Its waters produced abundant salmon and steelhead.

Advances in tractor technology during World War II set the stage, however, for intensive logging in the north coast region. Around the village of Honeydew alone, eight sawmills thrived in the 1950s. The record-setting rains of 1955 washed out the area's new logging roads and scoured bare hillsides, reshaping the Mattole almost overnight. From its headwaters to estuary, the river's silt load became more than it could handle. The salmon's gravel spawning beds, nursery pools andestuarine refuges were choked with ton upon ton of gluey clay sediment. By the time logging in the area slowed in the 1970s, the Mattole's salmon and steelhead populations were reduced to a handful of survivors.

And this is when the Mattole's new pioneers, many of them disaffected urban professionals, began to arrive in search of the rustic joys of Lost Coast living. The new Lost Coast settlers organized, particularly around the protection of the environment, and the focus of their organizing soon became the river and its struggling salmon. By the end of the 1980s the volunteer-based Mattole Restoration Council had assessed the river's salmon habitats, surveyed the geologic hazards on the surrounding hillsides, and outlined the process of restoration in the Council's 1989 publication *Elements of Recovery*. The process would be a long and slow one and so, it seems, the Mattole's restoration practioners resolved to lighten their labors with song and dance.

The entertainment provided by these Lost Coast players has become the high point of the annual workshops and conference of the 3,000-member Salmonid Restoration Federation. Restoration-related ditties, often parodies of popular songs, sung with bluesy gusto by "Woody Debris," "Thal Wag" and "Detritus," and the "Holy Mattole Rock and Rollers" delight the annual conference barbecue crowd. The Mattole community nearly outdid itself with the introduction of the full-length opera *Queen Salmon* in 1991. Premiered at the Ninth Annual Salmonid Restoration Federation conference in Santa Cruz, this musical comedy captures the West Coast ecosystem restoration spirit. *Queen Salmon* continues to play to enthusiastic audiences in Seattle, Portland, San Francisco, as well as smaller watershed communities up and down the coast, energizing watershed activists wherever it appears.

Watershed restoration may be difficult, and at times frustrating, but the rewards are many.


Feet First Presents
The Third in the Human Nature Series
Queen Salmon
A Biologically Explicit Musical Comedy
for People of Several Species

Resources

- *Getting To Yes: Negotiating Agreement Without Giving In.* 1981. Fisher R. and W. Ury. Houghton Mifflin Co. 160 pp.

- *Watershed Management Kit In A Box.* 1994. Know Your Watershed/ Conservation Technology Information Center (CTIC), 1220 Potter Drive, Room 170, W. Lafayette, IN 47906-1383. $15.00.

- *Elements of Recovery*. 1989. Mattole Restoration Council, P.O. Box 160, Petrolia, CA 95558. (707) 629-3514.

- *Dynamics of Recovery*. 1995. Mattole Restoration Council, P.O. Box 160, Petrolia, CA 95558. (707) 629-3514.

- *Santa Margarita River Watershed: Today's Management Framework* — ***Participants In Profile.*** **1995. Available from the National Park Service, Rivers, Trails and Conservation Assistance Program.**

6 Networking Directory

A LIST OF WATERSHED GROUPS AND ORGANIZATIONS

Organization	Contact	Address	Phone
Southern California			
Amigos de Bolsa Chica	Adrianne Morrison	Box 3748, Huntington Beach, 92605	714/897-7003
Ballona Lagoon Marine Preserve	Iylene Weiss	Box 9244, Marina del Rey, 90255	310/ 306-5078
Batiquitos Lagoon Foundation	Dolores Welty	Box 3103, Carlsbad, 92009	619/942-9897
Bayfront Conservancy Trust	Dr. Neudecker	1000 Gunpowder Pt. Dr., Chula Vista, 92010	619/422-2473
Buena Vista Lagoon Foundation		Box 157, Carlsbad 92008	
Cottonwood Creek Conservancy	Mary Renaker	P.O. Box 2422, Leucadia, 92024	619/942-1506
Coyote Hills Committee	Bob Ward	454 Pinehurst Ct., Fullerton, 92635	714/ 525-8038
Del Mar Terrace Conservancy	Tracy Gerald	Box 2632, Del Mar, 92014	619/ 456-9144
Escondico Creek Conservancy	Tom Robinson	4030 Manchester Ave., Encinitas, 92024	619/ 753-1409
Fallbrook Land Conservancy	Wallace Tucker	P.O. 270 Box Fallbrook, 92088	619/ 28-0889
Friends of Ballona Wetlands	Ruth Lansford	6953 Trolley Way, Playa del Rey, 90293	310/ 821-7695
Friends of Cattail Cove	Jan Vandersloot	2221 E. 16th St., Newport Beach, 92663	714/548-6326
Friends of Famosa Slough	Barbara & Jim Peugh	2776 Nipoma Street, San Diego, 92106	619/2244591
Friends of Henrietta Marsh	Dale Lincoln	20524 Wayne Ave. ,Torrance, 90503	310/ 316-5062
Friends of Los Angeles River	Martin Schalageler	P.O. Box 292134, Los Angeles, 90029	213/223-0585
Friends of Madrona Marsh		Box 5078 Torrance, 90510	310/ 326-2774
Friends of Newport Bay	Lane Koluvek	Box 2001, Newport Beach, 92663	

Organization	contact	Address	Phone
Friends of Northern San Jacinto Valley	Ann McKibben	24285 Sunnymead Blvd. #202, Moreno Valley, 92553	909/ 924-8150
Friends of Santa Margarita River		Box 923, Fallbrook, 92028	
Friends of Sycamore Canyon Pk.	Susan Nash	Box 1023, Riverside, 92501	
Friends of Tecolate Canyon	Shirlie Miller	5643 Tamres Drive, San Diego, 92111	619/291-9308
Friends of the Irvine Coast	Fern Pirkle	Box 67 1, Corona de1 Mar, 92625	7 14/ 644-5998
Friends of the San Dieguito River Valley		Box 973, Del Mar, 92014	
Friends of the Santa Ana River	Alan & Janet Remington	1164 Boise Way, Costa Mesa, 92626	714/546-7713
Huntington Beach Wetlands Conservancy	Gary Gorman	Box 5903, Huntington Beach, 92615	714/ 963-2123
Laguna Canyon Conservancy	Michele Phillips	20522 Laguna Canyon Rd #108, Laguna Beach, 91651	714/ 494 8190
Laguna Canyon Foundation	Mary Fegraus	Box 4895, Laguna Beach, 91652	714/497-8324
League for Coastal Protection	Mel Nutter	200 Oceangate #440, Long Beach, 90802	310/432-8715
Los Penasquitos Lagoon Foundation	Lynne Robinson	P.O. Box 866 Cardiff, 92007	619/697-1459
Malibu Creek Project	Jim Edmonson	9770 Sombra Terrace, Shadow Hills, 91040	818/ 951-4015
Morongo Basin Conservation Assn	A. Lucas	Box 218, Twentynine Palms, 92277	619/ 367-7743
Newport Conservancy		Box 5556, Balboa Island, 92662	714/756-8277
Pamo Valley Conservancy	Bob Hartman	1988 Noble St, Lemon Cove, 91945	619/ 462-3162
San Elijo Lagoon Conservancy		Box 230634, Encinitas, 92023	619/ 436-3944

Organization	Contact	Address	Phone
San Elijo Lagoon Foundation		Box 1001, Solana Beach, 92075	
Santa Catalina Island Conservancy	Doug Propst	Box 1547, Avalon, 90704	213/510-1421
Santa Clarita Org. for Planning the Env.		Box 1182, Canyon Country, 91386	
Santa Monica Mountains Conservancy	Ruth Taylor Kilday	3800 Solstice Canyon #l Malibu , 90265	310/456-7154
Santiago Creek Greenway Alliance	Howard M. DeCruyenaere	P.O. Box 1402, Orange, 92668	7 14/997-4446
Stop Polluting Our Newport	Karl Hufbauer	Box 102,Balboa Island, 92662	714/756-8277
Tecolate Canyon Citizens Advisory Committee	Eloise Battle	5635 Tamres Drive, San Diego, 92111	619/278-1617
Central California			
Cal Trout	Craig Fusaro	435 El Sueno Road, Santa Barbara, 93110	805/963-8819 Fax 963-0647
Carpinteria Creek Committee	Robert Hansen	P.O. Box 1128, Carpinteria, 93013	805/ 684-7948
Citizens to Preserve the Ojai	Stan Greene, President	P.O. Box 635, Ojai, 93023	805/646-8957
Friends of Black Lake Canyon	Bill Denner	Box 73, Nipomo, 93444	
Friends of Estuary at Morro Bay	Bill Newman	Box 1375, Morro Bay, 93443	805/ 772-8657
Friends of the Santa Margarita River -- Santa Margarita Foundation	Evelyn Ashton	2980 Los Alisos Drive, Fallbrook, 92928	
Friends of the Santa Ynez River	John Bullock	217 South Third Street, Lompoc, 93436	805/ 736-8074

Organization	Contact	Address	Phone
Friends of the Ventura River	Mark Capelli, Executive Director	63 So. Olive Street, San Buenaventura, 93001	805/643-6074
Kern River Preserve	Reed Tollefson	P.O. Box 1662, Weldon, 93283	619/ 378-2531
Mission Creek Task Force		720 ##C Castillo St, Santa Barbara, 93101	
Mono Lake Committee		Box 29, Lee Vining, 93541	619/ 647-6386
Morro Bay Project	Steve Eabry	Dept. of Planning and Building, County of San Luis Obispo, 93408	805/ 549-5723
San Joaquin Parkway Conservancy	Doug Vogl	P.O. Box 14166, Fresno, 93650	209/292-6284
San Luis Obispo County Land Conservancy	John Ashbaugh	Box 12206, San Luis Obispo, 93401	805/ 544-9096
Santa Barbara County Land Trust Santa Ynez River Project	Laura Golino	P.O. Box 91830, Santa Barbara, 93190	805/ 966-4520
Save Grasslands Wetlands	Veronica Woodruff	22759 S. Mercey Springs Rd., Los Banos, 93635	209/826-5188
Save Our San Juan	Bob Ring	Box 1838, San Juan Capistrano, 92693	714/494-1813
Stream Consciousness	Judy A. Neuhauser	4-H. U.C. Coop. Ext., 2156 Sierra Way, Ste. C, San Luis Obispo, 93401	805/54- 5943
Urban Creeks Council - Santa Barbara Chapter	Brian Trautwein	5771 Leeds Lane, Goleta, 93117	805/964-3105

Northern California			
Organization	**Contact**	**Address**	**Phone**
Addison Valley Watershed Assoc.	Mary Walsh	P.O. Box 92, Philo, 95466	
Albion River Protective Association	Mary Pjerrou	P.O. Box 661, Albion, 95410	
Anderson Valley Land Trust	Connie Best	P.O. Box One, Yorkville, 95494	707/ 895-3616
Arcata Creeks Club	Nancy Reichard	1465 Chester Ave., Arcata, 95521	707/822- 1666
Butte Environmental council	Tom Leonardi	708 Cherry St., Chico, 95928	916/891-6424
Citizen's Advocates for Preservation of St. Vincent/Silveira		Box 4442, San Rafael, 94913	
Citizens Coalition to Save Warner Creek	Rob & Joan Nye	27 Kristy Court, Novato, 94947	415/898-9042
Citizens for Alameda's Last Marshlands	Barbara Schockley	1890 Bockman Rd., San Lorenzo, 94580	5 10/ 276-7272
Coast Action Group	Alan Levine	Box 215, Point Arena, 95468	707/ 884-2484
Coastal Advocates	K. Van Velsor	236 N. Santa Cruz Ave. #237A, Los Gatos, 95030	408/395-9116
Coastal Conservation Committee	Flo Ann Norvall	Box 930, Mendocino, 95460	707/ 937-4376
Committee for Green Foothills	Linda Schild- Jones	900 High School Way, Mountain View, 94041	5 10/494-6886
Committee to Save the Mokulumne	Bill Jennings	5637 N. Pershing #A2A, Stockton, 95207	209/ 474-3177
Coyote Creek Alliance	Dominic Kovacevic	166 Arroyo Way, San Jose, 95112	408/289- 1681
Coyote Creek Riparian Station	Mike Rigney	P.O. Box 1027, Alviso, 95002	408/262-9204
Cunningham Marsh Preservation Committee	Shepherd Bliss	c/o Kokopelli Farm 1543 Cummingham Rd., Sebastopol, 95472	707/829- 8185

Organization	Contact	Address	Phone
East Bay Citizens for Creek Restoration	John Steere	P.O. Box 800, Berkeley, 94701	510/ 849- 1969
EPIC	Jama Chapin	Box 397, Garberville, 95440	707/923-2931
Federation of Flyfishers - San Mateo County	Richard Izmirian	2215 Eaton Avenue, San Carlos, 94070	415/592-9595
Friends of Alhambra Creek	Kathy Radke	843 Carquinez Way, Martinez, 94553	510/370-0648
Friends of Cache Creek	Frances Looney	Box 85, Ramsey, 95679	916/ 796-3521
Friends of Charleston Slough	Philip LaRiviere	453 Tennessee Lane, Palo Alto, 94306	415/ 493-5540
Friends of Creeks in Urban Settings	Bev Ortiz	1778 Sunnyvale Avenue, Walnut Creek, 94596	510/936-6323
Friends of the Esteros	Kathy Tresch		707/762-7952
Friends of Glen Canyon Park	Lucretia Levinger	300 Sussex, San Francisco, 94131	415/775-6200
Friends of Islais Creek	Julia Viera	6 Hillview Court, San Francisco, 94124	415/826-5669
Friends of Lobos Creek		GGNRA, Fort Mason Bldg 210, San Francisco, 94123	415/556-1007
Friends of the Russian River	Joan Vilms		707/545-7572
Friends of San Leandro Creek	Rich Richards	SanLeandro, 94577	5 10/ 569-9405
Friends of Sonoma Creek	Maggie Baylis	71 Creek Lane, Sonoma, 95476	707/935-3983
Friends of the Garcia River	John Hooper	P.O. Box 235, Point Arena, 95468	707/882-3086
Friends of the Gualala River	Vivian Green	P.O. Box 1543, Gualala, 95445	707/884-4104
Friends of Mill Valley Watershed	Jennifer Fiarillo, S.F. Estuary Habitat Institute	Bdg. 180, Richmond Field Station, 1301 So. 46th St., Richmond, 94804	510/ 231-9539 FAX 231-9414
Friends of the Navarro	Diane Paget	P.O. Box 861, Boonville, 95415	707/895-2966

Organization	Contact	Address	Phone
Friends of the Roseville Parkway	David Manhart	121 Park Drive, Roseville, 95678	916/331-3360
Friends of San Leandro Creek	Rich Richards		510/469-9405
Friends of the Trinity River			415/ 389-1300
Gualala River Steelhead Project	Gregg Warner	P.O. Box 122, Gualala, 95445	707/ 884-4322
Jacoby Creek Watershed Protection Assoc.	Liz Finger	137 Nature Lane, Arcata, 95521	
Klamath Forest Alliance	Felice Pace	P.O. Box 820, Etna, 96027	916/ 467-5405
Klamath River Basin Fisheries Task Force	Ron Iverson	P.O. Box 1006, Yreka, 96097	916/842-5763
Laguna de Santa Rosa Foundation	Kin Cordell	Box 797, Sebastopol, 95473	707/ 823-8810
League to Save Lake Tahoe	Rochelle Nason	989 Tahoe Keys Bl. #6, South Lake Tahoe, 96150	916/541-5388
League to Save Sierra Lakes	Brad Pearson	Box 267, Kirkwood, 95646	209/ 245-4760
Marin Baylands Advocates		Box 415, Larkspur, 94977	415/ 456-1438
Marin Conservation League	Karen Urquhart	35 Mitchell Bl. #11, San Rafael, 94903	415/ 472-6170
Martinez Regional Land Trust	Tina Batt	Box 2452, Martinez, 94553	510/ 370-6127
Mattole Restoration Council	Freeman House	P.O. Box 160, Petrolia, 95558	
Mendocino Environmental Center	Betty Ball	106 W. Standley Street, Ukiah, 95482	707/ 468-1660
Mendocino Watershed Service	Craig Bell	P.O. Box 255, Point Arena, 95468	707/ 882-1947 FAX 882-1916
Mission Creek Conservancy	Toby Levine	1366 Guerrero Street, San Francisco, 94110	415/ 657-3052

Organization	contact	Address	Phone
Napa County Land Trust		800 School St. #D, Napa, 94559	707/252-3270
North Coast Environmental Center	Tim McKay	Arcata	707/677-3172
Pacific Forest Trust	Laurie Wayburn	P.O. Box 858, Booneville, 95415	
Pacifica Open Space Committee	Michael Crabtree	City of Pacifica, 170 Santa Maria Avenue, Pacifca , 94044	415 738 7340
Petaluma River Council	David Keller	Box 750501, Petaluma, 94975	707/ 763-9336
Plumas Corporation	Leah Wills	P.O. Box 3880, Quincy, 95971	916/283-3739
Protect Our Watershed	Gaylene Hurley	5669 Cherry Lane, Paradise, 95969	
Putah Creek Council	Susan Sanders	P.O. Box 743, Davis, 95616	9 16/ 662-2655
Ramona Woods Water Association	Virginia Fordice	P.O. Box 628, Boulder Creek, 95006	
Redwood Coast Watersheds Alliance	William G. Johnson	Box 209, Comptche, 95427	707/468-1253
Redwood Community Action Agency	Stephen Madrone	904 G Street, Eureka, 95501	707/ 445-0881
Russian River Unlimited	Rebecca Kress	P.O. Box 760, Hopland, 95449	707/ 744- 1874
Salmon River Restoration council	Peter Brucker	P.O. Box 610, Forks of Salmon, 96031	916/462-4720
Save Our South Bay Wetlands	Ginny Becchine	1046 Wright #l , Mountain View, 94043	415/ 968-4875
Save San Francisco Bay Assn.	Barry Nelson	1736 Franklin St. 3 Fl., 94612	5 10/ 452-9261
Save Wetlands in Mayhews	Margaret & Dean Lewis	36102 Spruce St., Newark, 94560	5 10/ 792-8291
Sacramento River Preservation Trust	John Merz	Box 5366, Chico, 95927	916/ 891-6425
Sierra Env. Resource Ctr.	John Buckley	Box 396, Twain Harte, 95383	209/ 586-7440

Organization	contact	Address	Phone
Sierra Nevada Alliance	Laurel Ames	Box 9072, South Lake Tahoe, 96158	916/ 542-4546
Smith River Advisory Council	Jim Walvogel		707/ 464-4711
Smith River Alliance	Larry Moss		707/677-3324
Sonoma Co. Wetlands Watch	Donna Strom	2730 Ash Dr., Santa Rosa, 95407	707/ 526-0820
Sonoma Land Trust	Richard Charter	908 College Avenue, Santa Rosa, 95404	707/ 526-6930
Soquel Creek Watershed CRMP	Sharon Corkrean, Santa Cruz. RCD	3233 Valencia Ave. Suite B-6, Aptos, 95003	408/ 685-3602
Streaminders	Scott Murphy	P.O. Box 3051, Chico, 95927	916/894-1305
Tomales Bay Assoc.	Ken Fox	Box 369, Point Reyes Station, 94956	415/ 663-1467
Urban Creeks Council Roland Hauck Chapter	Dave Keller	1327 I Street, Petaluma, 94952	707/763-9335
Urban Creeks Council - Sacramento Chapter	Frank Cruzen	5225 Atlanta, Sacramento, 95841	916/332-3775
Watershed	Cary Fargo	Box 364, Graton, 95444	707/ 527-0866
Wild in the City	Nancy Morita	6 Cypress Road, San Anselmo, 94960	
Yolo Basin Foundation	Robin Kulakow	Box 943, Davis, 95617	916/ 758-8882
Yolo Environmental Resource Center	Nicole Vanoni	132 E Street, Ste. 2-F, Davis, 95616	916/758-9372
Yuba Watershed Institute	Don Harkin	21481 Casey Ranch, Nevada City, 95959	

ORGANIZATIONS

Organization	Contact	Address	Phone
American River Coalition	Charlie Casey	128 J Street, 2nd Floor, Sacramento, 958 14	916/ 448-1045
Cal Trout		870 Market St., San Francisco, 94102	415/392-8887
California Nature Conservancy		201 Mission St. 4th Floor, San Francisco, 94105	415/777-0487
CA Sportfishing Protection Alliance		Box 357, Quincy, 95971	916/283-3767
CA Striped Bass Assn	Jay Sorensen	Box 9045, Stockton, 95209	209/ 957-1707
Ducks Unlimited	Ron Stromstad	9823 Old Winery Pl. #16, Sacramento, 95827	916/363-8257
Environmental Defense Center	John Buse	906 Garden Street, Santa Barbara, 93101	805/ 963-1022
Friends of the River		128 J Street, Sacramento, 95814	916/ 753-5579
Institute for Sustainable Forestry		P.O. Box 1580, Redway, 95560	707/ 923-4719
Golden West Women's Fly Fishers	Annette Thompson	3949 Edenvale Place, Oakland, 94605	5 10/ 569-7763
Golden State Wildlife Federation	Ann Riley	2530 San Pablo Avenue #D, Berkeley, 94702	510/ 848-2211
Northcoast Environmental Center	Andy Alm	879 Ninth Street, Arcata, 95521	707/ 822-7237
Northern Califoma Council Federation of Flyfishers	Dave Ford	6705 Plum Tree Court, Citrus Heights, 95616	916/ 722-2710
Salmonid Restoration Federation	Jud Ellingwood	P.O. Box 4260, Arcata, 95521	707/ 444-8903
The Nature Conservancy	Steve Johnson	1540 River Park Drive #201, Sacramento, 95815	916/641-1763
Trout Unlimited	Stan Griffin	5200 Huntington Avenue, Richmond, 94804	510/ 528-5390
United Anglers of California		5200 Huntington Avenue #300, Richmond, 94804	5 10/ 525-FISH
Urban Creeks Council	Carole Schemmerling	1250 Addison Street #7, Berkeley, 94702	5 10/ 524-4005
Watershed Management Council		c/o Water Resources Ctr., UC -Davis, Davis, 95616	

Agency Networking

CALIFORNIA'S RESOURCE CONSERVATION DISTRICTS

Resource Conservation Districts (RCD) can and do provide many types of assistance to a watershed planning effort from aerial photographs to serving as a fiscal agent for grants (see discussion in Chapter 3, page 3-20). Contact your local RCD for information about watershed restoration activities in your area.

California Association of Resource Conservation Districts (CARCD)
c/o Department of Conservation
801 K Street, 13th Floor
Sacramento, CA 95814
Executive Director: Julie Spezia • 916/447-7237

California Coordinated Resource Management and Planning Council
2121-C Second Street, Ste 100
Davis, CA 95616-5475 • 916/757-8200

District	Address	Phone #
Area 1 (Northeast CA)		
Butte Valley RCD	P.O. Box 195, Macdoel, 96058	916/398-4411
Central Modoc RCD	1030 N. Main Street, Alturas, 96101	916/233-4137
Fall River RCD	P.O. Box 551, Fall River Mills, 96028	916/336-5115
Glenn County RCD	132 N. Enright, Suite B, Willows, 95988	916/934-4601
Goose Lake RCD	1030 N. Main Street, Alturas, 96101	916/233-4137
Honey Lake Valley RCD	712-835 Highway 395, Susanville, 96130	916/257-7271
Feather River RCD	48228 Hwy 70, Quincy, 95971	916/283-2833
Lava Beds RCD	Route 1 Box 246-AA, Tulelake, 96134	916/667-5268
Pit RCD	P.O. Box 301, Bieber, 96009	916/294-5394
Shasta Valley RCD	215 Executive Court, Ste. A, Yreka, 96097	916/467-3975
Sierra Valley RCD	P.O. Box 392, Loyalton, 96118	916/994-3464
Siskiyou RCD	P.O.Box 641, Fort Jones, 96032	916/467-3975
Surprise Valley RCD	P.O. Box 777, Cedarville, 96104	916/279-6110
Tehama County RCD	2 Sutter Street #D, Red Bluff, 96080	916/527-4231
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Sloughhouse RCD	2001 Vesta Way, Sacramento, 95864	916/485-9883
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Appendix A ♦ Making Meetings Work

Getting People to Participate — Meeting Types

Depending upon what you are trying to accomplish and the nature of your target stakeholder group decide what type of participation will be most effective to accomplish your aims. There are several meeting types[1] but the most useful for watershed planning are:

- **Working Meetings:** Focus on an agenda of work to be accomplished.
- **"Open Meetings":** Similar to working meetings but with a public audience and participation.
- **Forums:** A meeting designed to air certain issues, to provide education but **not for decision-making.**

If you plan on holding meetings, you must first decide the appropriate type. The fundamental questions to determine the best approach:

- What is the purpose of the meeting?
- How can we maximize the chances of accomplishing this purpose?
- What should the agenda be?

Working Meetings

Working Meetings are designed to achieve a specific purpose. You should design the attendance, agenda and preparation to maximize your chances for achieving that purpose. This meeting type is most effective with a technical or interagency group. One reason to have such a meeting is to invite and facilitate a free give and take discussion.

- No more than 12 people should attend.
- Specific points to be resolved should be spelled out in the agenda.
- All participants should be aware of the agenda items, whether written or oral.
- The meeting should have a chair to maintain focus.
- When the group has conflicts or the participants' views are soincompatible that is threatens the group's work, the group has to focus on finding those areas where the participants have something in common. Then they can work at expanding this area of agreement.

[1] Citizen Participation Handbook for Public Officials and Other Professionals Serving the Public. 1986. Institute for Participatory Management and Planning, Laramie, WY.

Open Meetings

Open Meetings are similar to Working Meetings except there is an audience participating in the meeting. This is the type of meeting that **works well with a community advisory group.** In addition to the elements discussed under Working Meetings, the following elements are important:

- The meeting, including its purpose, and agenda, should be advertised and announced so that the interests are targeted.
- A completely neutral or disinterested facilitator is advisable if the body holding the meeting may to party to conflicts.
- Care must be taken that participants do not feel intimidated- everyone must feel free to actively participate.

Forums

Forums aren't designed to accomplish some task, to negotiate and issue or resolve some differences; but to air certain issues, to hear different points of view, or to educate.

- Use this technique if the issues surrounding a decision or project are not well understood by the various affected interests.
- Advertise it widely.
- Invite each of the interests to make a presentation.
- Have a disinterested individual who is respected by all participants moderate the presentations.
- Arrange for media coverage.
- Prepare documentation which includes the expression of the ideas and captures the value systems of the participants.

Using Advisory Committees

Advisory Committees have a great potential to accomplish implementation goals when used correctly. The biggest problem is they are often used without enough forethought. In order to use an advisory committee successfully first consider:

- **What** do you want to accomplish?
- How can an Advisory Committee accomplish this?
- Advisory Committees require a great deal of commitment of time and resources.
- Although the Committee's advice is advice — you cannot solicit advice and then ignore it.
- Advisory Committees have only a two to three year shelf life. After that these Committees begin to be a hindrance to the project, unless they are reformulated.

Advisory Committees should be designed to depolarize interests and build consensus. In watershed planning it can be expected that the interests will disagree about the problem and can be so polarized that they will not accept a solution on its merits. If this committee is to work then:

- The committee must be composed of all of the competing interests.
- The committee's operating procedures or ground rules have to be such that:
  - The interests actually learn to appreciate that there are several different legitimate points of view.
  - The interests are encouragednot to "grand stand" and to further polarize their positions.
  - The representatives of the various interests come to know — if not "like" at least "respect" — each other.
  - The committee finds, focuses on, and builds upon, areas of agreement rather than focusing on the areas of disagreement.
  - There is an opportunity to establish a long-term, on-going working relationship which provides opportunities for compromise.

Getting Started - Conducting the first meeting on the project

When you have identified your purpose; when you have identified the potentially affected interests and decided what type of meetings will work the best for your project; you are ready to have a meeting with the interested parties.

Arrange a neutral meeting place, preferably one locatedin the community or with easy access for the interests that you have targeted.

- Going out to the community sends the message that you are willing to go out of your way to hear their ideas.
- Holding meetings in a place that is familiar to the community will greatly increase the potential for participation.

Provide adequate written notice and if possible, coordinate ahead of time, the date, time and location of the meeting with important interests.

- When setting up your meeting contact a local person for ideas on where and when to hold it.
- Choose for this initial contact an interest who has shown the most resistance to the project.
- Follow up written invitations with personal phone calls to the key interests.

Develop an agenda which initially focuses on explaining the purpose of the meetings and roles for the participants. Second, have a large portion of the agenda dedicated to finding out the opinions of the participants and their values.

- Focus on finding out the goals of the interests or possible positive outcomes for the project.
- Second, focus on finding out the perceived obstacles to achieving the goals of the project or program.
- Encourage positive interaction and discourage further polarization.
- The first meeting should not try to accomplish more than these three things to begin to help you assess the values of the interests.

Second Meeting

The second meeting should focus on how the ongoing decision-making process should work and the establishment of procedures, i.e. Ground Rules for achieving the goals of the process. Some pointers include:

- Let the Committee or group choose their own Chairperson for the meeting. This Chair should be chosen each meeting.
- Begin with a set of possible Ground Rules to work from, but allow the group to tailor them to meet their needs.
- Let the group decide whether they want to work on a consensus, majority, or consent basis for decision-making.
- Be clear about how decisions will be used and by who.
- Take good minutes and distribute them early and regularly.
- Set up a binder or notebook for each member to put information from the process together.
- Be available to talk before and after meetings.

This is where you get down to the business at hand, but don't be too stringent about the need to accomplish everything in a few meetings. Be open to the need for a "blow-out" meeting where the participants have an opportunity to throw out all their gripes about agencies, each other, the process, etc. Such a meeting can be surprisingly productive.

Factionalizing

Any group of people meeting together has a natural propensity to form factions and to gang up on others to increase the probability that their interest is the one that prevails. In conducting your group be alert to the possibility of this occurring. It is not possible to stop this natural "affinity" but there are some ways to manage it.

- Strive for balance among the interests in your group.
- Maintain strict objectivity and avoid any show of impartiality.
- If an interest appears to be intimidated by one or more other interests, work on drawing that person or persons out.
- Suggest a consensus or consent building approach as opposed to majority rule.
- Recognize and be willing to bring the issue of factionalization out in the open for discussion.
- Make sure all views are documented.

Publishing a Project Newsletter

As a project gets under way there will be a growing list of agencies, individuals and groups who need to be kept informed about the status and the issues involved. In this day of desktop publishing, one of the most convenient means for keeping everyone up to date is to distribute a newsletter on a regular basis.

Assign one person to produce the newsletter. Quarterly publication is probably the most effective. Develop and maintain a comprehensive mailing list. Keep the following principles in mind:

- Most readers are lay people, not professionals. Without "talking down" to them, aim the writing to this group.
- Don't use jargon, insiders shoptalk or abbreviations unless it is really clumsy not to do so, even then be sure to explain these terms.
- If the newsletter is to be read, it needs to contain real news — specifically news that is of interest to the readers. If there is news of interest around that is **not** project-related, include it.
- Don't use the newsletter as a propaganda tool — report problems and setbacks openly.
- Keep it objective. If readers detect a slanting of views you will lose them.
- Consider using a coupon with which the reader can respond or request additional information.
- Keep the newsletter short (no more than eight pages) and graphic.
- The mailing list will probably expand constantly. You will have new readers — people who hear about the project for the first time — at every stage of the project. You can do two things for these people:
  - Write a special "Introductory Issue" of the Newsletter that is designed to brief the newcomer. Send it to every individual when he first shows up on your mailing list. This issue will need updating to keep it current with the progress of the project.
  - As you write each current issue, be aware that some people will be unfamiliar with the project. Write the issue in such a way that a newcomer can understand it.
- Clean-up your mailing lists regularly, at least once a year. Require that the newsletter subscriber renew his interest by responding with an "address currency" card. By sending in this card, he will continue to receive the newsletter, if not then he is dropped from the list.

Appendix B: Successful Funding

We have outlined the process for developing a community-based watershed plan. After your plan is complete and has been reviewed under CEQA, the next step is to begin to implement plan recommendations, establish monitoring programs and institute public policy changes as a long term strategy for restoring and protecting your watershed's resources. All of these processes require investment of both time and money. Unless your group has a rich benefactor, grants are a logical source of funding to support your efforts.

There are several grant programs that provide funding for watershed planning and implementation activities, but in all cases the total amounts available are relatively small and the competition can be fierce. The purpose of this chapter is to give your group an edge in competing for grants. The following sections outline grant sources, introduce the basics of structuring a proposal and offer some tips on writing grant proposals that will get funded.

A. Funding Sources

Most of the funding programs discussed here are only available to cities, counties, special districts and nonprofit organizations. A nonprofit organization is a group that has a federal 501(c)(3) tax-exempt status.[1] If your group is not an official non-profit, you will need to find an eligible sponsor or fiscal agent (a nonprofit or public agency) to support your grant proposal. For ways to include a sponsoring agency in your project, refer to the discussion below regarding the structuring of grant proposals.

Grant Funding

Programs outlined below are ongoing, but as with any government program, they are subject to the vagaries of annual budget appropriations. The last few years of government belt tightening has caused some long-term programs to be "zeroed out" meaning that although the programs still exist there is no money allocated from state or federal coffers. This guide only includes those programs that currently have funding or expect to have ongoing funding well into the future?[2]

California State Coastal Conservancy

Watershed Enhancement Program

The Coastal Conservancy (See chapter 3, page 3- 16) is one of the few agencies that provides grants to conduct watershed planning in coastal watersheds. The Conservancy draws its funds from various state bond acts (Propositions 18, 19, 70) and must comply with the specific authorities of each act. Under their Watershed Enhancement Program, the Conservancy can provide a maximum of $100,000 for plan preparation. Once a plan has been completed, additional funds may be available for implementing plan recommendations. A local match of 25-33% of the total project cost is normally required; this match can be made up of funds or in-kind services (see discussion below, Structuring a Proposal).

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[1] For information on forming a nonprofit organization the best reference available is Anthony Mancuso's *California Non-Profit Corporation Handbook, Sixth Edition. 1994.* Nolo Press, 950 Parker Street, Berkeley, CA 94710, 510/ 549-1967.

[2] The authors are grateful to Earle Cummings of the Department of Water Resources for his 1994 paper *Money for Creeks: Who has it, How to get it,* as a valuable starting point for researching funding sources.

Unlike most agencies, the Conservancy has no formal application forms, nor does it set dates for proposal submittal. Proposals are reviewed year round. Selection criteria include: the significance of the downstream resource and need for watershed enhancement; a greater-than-local concern for the area; the urgency and cost effectiveness of the project; evidence of strong cooperation and support of local government and private landowners; provision for monitoring and long term maintenance of the project; and the ability of the site to serve as a model project.

If you have a specific project that you would like to see funded, submit a description of the project, a detailed budget and a discussion of the significance of the affected resource to Conservancy staff. All Conservancy grants must be approved by the Coastal Conservancy Board. The staff normally works with local agencies and nonprofits to develop the project proposal and to gain Board approval.

Further questions should be directed to:

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Reed Holderman, Program Manager
State Coastal Conservancy
1330 Broadway, Suite 1100
Oakland, CA 94612 | 510/286-1015

Department of Education

Environmental Education Grant Program

The California Department of Education (CDE) works with the state Resources Agency and the California Environmental Protection Agency to promote educational opportunities relating to energy conservation, environmental protection, pollution effects and the use of natural resources. The purpose of the Environmental Education Grant Program is to assist kindergarten to twelfth grade students and teachers in achieving "environmental literacy," to understand fundamental ecological concepts, and to facilitate responsible action toward the environment.

The Evironmental Education Grant Program (EEGP) provides four categories of competive grants: Mini-grants (up to $3,000); Implementation, Site/Facilities, and Networking Grants (up to $15,000). The Department's Science and Environmental Education Unit coordinates the allocation of grant funds to schools and non-profit agencies. Applicants must show proof of commitment of matching contributions and submit a proposal that convinces the Grant Review Committee and CDE that the project will continue to benefit the target audience after the State funds have been expended.

1. **Mini-grants: Grants** for projects that implement environmental education programs and those that promote responsible action projects such as the *Adopt-A-Species, Project Life Lab, Adopt-A-Stream, Adopt-A-Beach,* and projects that monitor the environment.

2. **Implementation Grants:** Grants for projects that adapt existing curricula to a local situation. The program/project must benefit a large percentage of students in multiple schools or in a district-wide or regional setting. An example would be the *Adopt-A-Watershed Program* (see Chapter 4, page 4-18).

3. **Site/Facilities Development Grants: Grants** for the development of a local site or facility that will result in more effective environmental instruction for students or faculty in the school. Examples include construction of a nature center or interpretive trail.

4. **Networking Grants:** Grants for projects that encourage networking between schools and other agencies, districts and existing state and national networks. An example would include the opportunity to develop a cohesive group with mutual goals and shared focus such as participation on a CRMP or watershed advisory group.

Recommended activities that would be eligible for funding are projects that:

- Conduct ecology lessons in natural settings. Experiential learning through field studies to increase understanding of diverse ecosystems.
- Allow participation in ecologically responsible action projects.
- Offer lifelong learning about the environment.

Applications for competitive grants are available in the spring and the deadline for submission of grant proposals is May 31. CDE offers workshops to help applicants develop grant proposals. For more information contact:

Lisa Miller
California Department of Education
Science and Environmental Education Unit
P.O. Box 944272
72 1 Capitol Mall
Sacramento, CA 94244-2720 • 916/ 657-5374

California Department of Fish and Game

Inland Fisheries Grant Program

The Department of Fish and Game provides grants for restoring fisheries and fish habitat restoration projects. Funds for this program come from a variety of sources, including monies collected by salmon fishermen on their commercial catch. Annual funding levels are recommended by the Commercial Salmon Trollers Advisory Committee and the California Advisory Committee on Salmon and Steelhead Trout. Approximately $2 -3 million dollars are available annually.

The Department issues an annual Request for Proposals (RFP) in February and grant applications are due in early April. Anyone may apply, but action projects are favored over studies, assessments or monitoring. Eligible projects include fish rearing or rescuing, fish habitat enhancement, and public education programs to promote the importance and understanding of the ecology of salmonids.

For more information contact:

Department of Fish and Game
Inland Fisheries Division
1416 9th Street
Sacramento, CA 95814
Forrest Reynolds | 916/653-4729, or
Harvey Reading | 916/ 654-5628

County Fish and Game Advisory Commissions

Under the State Fish and Game Code (Section 13003) one half of all fines collected for violations of the code are sent to the county in which the offense was committed. These funds are to be used for the protection and improvement of fish and wildlife resources or education regarding these resources in that county. Every county must have some mechanism to disperse the funds. Most counties have Fish and Game Advisory Commissions that are responsible for distributing these funds. The amounts available vary from county to county and from year to year; check with your local county to get specific details about your local Fish and Game Advisory Commission and the availability of such funds.

For example, Santa Cruz County has a Fish and Game Advisory Commission which considers applications for grants supported by fine money. The annual amount available averages about $25,000. The Commission provides up to $3,000 in grants for projects that involve habitat improvement, research, education, wildlife management, rehabilitation and law enforcement. Past projects have included fisheries assessment and habitat typing, support of a local fish hatchery, funding for Native Animal Rescue, slough restoration and educational material for schools. The Santa Cruz Commission grants are awarded to individuals, institutions, nonprofits or agencies, and the funding cycles are in August and February of each year.

California Department of Forestry and Fire Protection (CDF)

Urban Forestry Grant Program

The Urban Forestry grant program was created by the California Wildlife, Coastal and Park Land Conservation Bond Act of 1988 (Proposition 70). The bond measure allocated five million dollars to be administered over a five to seven year period beginning in 1989. Approximately $633,000 is available annually for grants.

Cities, counties, districts and non-profit organizations may apply for grants. Eligible activities include planting trees along streets, in dedicated open space areas, and in public parking lots and school yards. The maximum grant request is $30,000 per project, and 90% of the funds must be used for purchasing trees. The remaining 10% can be used for public awareness and education that will encourage community participation, stewardship, and additional community tree planting. Grant funds may **not** be used for salaries or overhead costs. No matching funds are required, but local match improves the chances for funding.

The Department also wants to work with smaller community groups (PTA's, homeowners associations and churches) that may not have organized as a nonprofit corporation. For these groups, the program offers tree planting grants of up to $5,000 through the nonprofit organization known as California ReLeaf.

In addition, CDF administers a federal grant program for local community enhancement which offers similar groups grants up to $5,000 to create tree boards, newsletters, public outreach, and workshops on watershed management. This grant program could be used to support initial planning efforts in developing a watershed plan for the community. The program requires a one to one match, i.e., each grant dollar received must be matched by local resources.

The Department normally sends out a Request for Proposals in February. Applications for all programs must be received by May 1. Applicants selected for funding are notified in July, and contracts are approved in the fall. Projects must be completed within 12 months of the award.

To find out more or to get on the RFP mailing list contact:

Eric Oldar
Department of Forestry and Fire Protection
2524 Mulberry
Riverside, CA 92501 • 909/ 782-4140 x 6125

Forest Stewardship Program

This program is supported by funds from the U.S. Forest Service's Local Assistance Program. The program provides grants to develop forest "stewardship" plans. In addition to improving forest resources and addressing fire safety, the purpose of stewardship plans is to identify resources, such as wildlife, fisheries, threatened and endangered species for improved management. **Most recently the focus of the program has changed from individual landowners to assisting communities develop community-based watershed plans.**

Local government agencies, special districts such as Resource Conservation Districts and nonprofit orgranizations are eligible for grants. The area addressed by the proposal must be wildland area outside of the urban zone. Oak woodlands and coastal scrub along with traditional forest types are eligible areas.

Approximately $15,000 is available per grant. No match is required, but those projects with local matching funds are treated more favorably in the selection process. The Department issues a Request for Proposals in February with a proposal deadline of early May. Grant money must be expended in a 12 month period. For more information contact:

Steve Jones
Department of Forestry and Fire Protection
Forest Stewardship Program
1416 Ninth Street
Sacramento, CA 95814 • 916/653-9450

California Department of Parks and Recreation

Land and Water Conservation Fund Program

This program is funded by a federal grant from the National Park Service to assist in the acquisition or development of neighborhood, community or regional parks or facilities supporting outdoor recreation activities.

Eligible applicants include counties, cities, recreation and park districts, and special districts with public park and recreation areas. The program requires a 50/50 match. The applicant is expected to finance the entire project and will be reimbursed for half of the costs, up to the amount of the grant. Announcements of funding availability are mailed to eligible entities each year in May, and the application deadline is in early October.

Habitat Conservation Fund

This program provides funding for a variety of habitat conservation projects. Eligible applicants include counties, cities, and districts. Eligible projects are those that protect or enhance deer or mountain lion habitat, including oak woodlands; habitat for rare and endangered, threatened and fully protected species; wildlife corridors and urban trails; wetlands; aquatic habitat for spawning and rearing of anadromous salmonids and trout species; and riparian areas.

The program requires a 50% match from a non-State agency source. Two million dollars are available annually. Application announcements are sent in May, and the proposals deadline is early October. For additional information on either program, contact:

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Odel King
California Department of Parks and Recreation
Local Assistance Section
1416 Ninth Street, Room 1449-l
P.O. Box 942896
Sacramento, CA 94296-0001
916/ 653-8758 • FAX: 916/653-4510

California Department of Water Resources

Urban Streams Restoration Program

The Department of Water Resources provides grants for local stream restoration projects through the Urban Stream Restoration Program (see discussion in Chapter 3, page 3-18). The purpose of the program is to prevent property damage by floods and stream bank erosion and to restore the natural value of streams.

Local agencies, districts and nonprofit organizations may apply for grants. private entities or community organizations without tax exempt status must find a nonprofit organization or local government entity to sponsor the proposal. The program stresses community participation — any proposal submitted by a local government agency must be co-sponsored by a local group with interest in the problems or streams to be addressed by the proposal. Likewise, projects submitted by a nonprofit organization must be co-sponsored by a local government agency.

The maximum allowable grant is $200,000, but most grants range from $5,000 - $50,000. Funds can be used to support organizing of volunteer monitoring, stream clean-up or stream restoration projects.

The application process is deliberately kept simple to encourage small local agencies and nonprofit organizations to take part in the program. Application forms are available in the fall, and the application deadline is in midwinter. Grant awards are announced in late spring

or early summer. All applications are reviewed by an interdisciplinary team from the Departments of Water Resources and Fish and Game to select the most competitive projects for funding. For further information, contact:

Earle Cummings
Department of Water Resources
Urban Streams Restoration Program
P.O. Box 942836
Sacramento, CA 94236-0001 • 916/ 327-I656

The Resources Agency

Environmental Enhancement and Mitigation Program Grants

This grant program provides funding for projects that mitigate eligible transportation facilities. The state Legislature established the program in 1989 (Section 164.56 of the Streets and Highways Code) and allocated $10 million annually for ten years beginning in Fiscal Year 1991-92 through Fiscal Year 2000-01.

Any local, state or federal agency or nonprofit entity may apply for these grants. The applicant does not have to be a transportation or highway related organization, but must be able to demonstrate adequate capability and enabling authority to carry out the type of project proposed. Projects may be sponsored by two or more proponents.

Eligible projects include highway landscaping and urban forestry; acquisition, restoration or enhancement of resource lands; and acquisition and/or development of roadside recreational opportunities, including trails and trailheads. The general limit for individual projects is $250,000 but under unusual circumstances additional funds may be awarded. Application forms are available in the fall; the proposal deadline is in late November. For information and applications contact:

Bi l l Borden, Program Coordinator
Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814
916/ 654-2506 • FAX: 916/ 653-8402

California State Water Resources Control Board

Water Quality Management Planning Grants

These grants provide funds specifically for planning and assessment activities that address surface and ground water quality problems. The funds are provided through the U.S. Environmental Protection Agency under Sections 604(b) and 205(j)(2) of the federal Clean Water Act. State, local and regional agencies are eligible for funding. Private nonprofit organizations are **not** eligible.

Funding emphasis is placed on those project that address water bodies identified as "impaired" in the State's Water Quality Assessment, and those that foster a comprehensive watershed management approach to solving water quality problems. These funds can be used to develop a watershed plan or to conduct assessments as part of an ongoing planning

process. Individual grant amounts range from $20,000 to $200,000; a 25% non-federal fund match on the total project is required. The grant Guide is usually available in spring with a proposal submittal deadline in early summer. To find out more contact:

Paul Lillebo
Water Quality Planning Program • 916/657-1031

Nonpoint Source Implementation Grant Program

Like the program above, funds for controlling nonpoint source pollution (see Chapter 3, page 3-2) are available through EPA under Section 319 of the federal Clean Water Act. These funds are to be **used to implement actions identified in a watershed management plan.**

Nonprofit organizations, government agencies, including special districts and educational institutions, are eligible to receive grants. All projects must have a clearly defined water quality/beneficial use enhancement goal. Activities can include implementation of Best Management Practices, technology transfer, groundwater protection, pollution prevention, citizens monitoring and educational programs. The maximum allowable grant per project phase is $330,000, and a 40% non-federal fund match of the total project cost is required.

The State Water Resources Control Board sends out a Request for Proposals (RFP) in late spring or early summer with a proposal deadline in early July. For more information contact:

Pablo Guitierrez • 916/657-0793

The address for both programs is:
State Water Resources Control Board
Division of Water Quality
901 P Street
Mail: P.O. Box 100
Sacramento, CA 95801-0100

Private Foundations and Grants — The Foundation Center Library

More and more private foundations and corporations are adding environmental areas to the list of causes they support. Listing specific private grant sources, each with their own requirements, would be beyond the scope of this guide. There are, however, sources which can greatly assist your group in identifying funding prospects. Probably the best resource for obtaining information on foundations is the Foundation Center Library in San Francisco. The Center operates an extensive network of libraries that are open to the public and produces a number of useful publications for fund seekers and nonprofit organizations.

Some useful Center publications include:

- *The Foundation Directory*. A reference guide to major foundations. Listings are indexed according to fields of interest and geographic area.
- *National Data Book of Foundations: A Comprehensive Guide to Grantmaking Foundations, 13th edition.* 1989. (2 Volumes). Indicates name of foundation, contact person, and amounts given.

- *The Foundation Grants Index, 18th edition.* 1989. Describes grants given by over 400 foundations.

- *National Directory of Corporate Giving.* 1989. Lists more than 1,500 U.S. corporations, givings patterns and application information.

All of the Center's publications are available for reference use at Foundation Center Libraries. Purchasing information may be obtained by calling 800/ 424-9836.

Foundation Libraries in California are located at:

Southern California

Ventura County Community Foundation
Funding and Information Resource Center
1355 Del Norte Road
Camarillo, CA 93010
805/988-0196

California Community Foundation
Funding Information Center
606 S. Olive St., Suite 2400
Los Angeles, CA 90014-1526
213/413-4042

Los Angeles Public Library
West Valley Regional Branch Library
19036 Van Owen Street
Reseda, CA 9 1335
818/345-4393

Riverside City & County Public Library
3021 Franklin Ave.
Riverside, CA 92502
714/782-5201

San Diego Community Foundation
Funding Information Center
101 West Broadway, Suite 1120
San Diego, CA 92101
619/239-8815

Los Angeles Public Library
San Pedro Regional Branch
9131 S. Gaffey St.
San Pedro, CA 90731
310/548-7779

Volunteer Center of Greater Orange County
Nonprofit Management Assistance Center
1000 E. Santa Ana Blvd.
Santa Ana, CA 92701
714/953- 1655

Santa Barbara Public Library
40 East Anapamu
Santa Barbara, CA 93101-1603
805/962-7653

Santa Monica Public Library
1343 Sixth Street
Santa Monica, CA 90401-1603
213/458-8859

Northern California

Humboldt Area Foundation
P.O. Box 99
Bayside, CA 95524
707/442-2993

Peninsula Community Foundation
Funding Information Library
1700 S. El Camino Real
San Mateo, CA 94402-3049
415/358-9392

Oakland Community Fund
Nonprofit Resource Center
1203 Preservation Pkwy., Suite 100
Oakland, CA 94612
510/ 834-1010

Grant & Resource Center of Northern California
Building C, Suite A
2280 Benton Drive
Redding, CA 96003
916/ 244-1219

Nonprofit Resource Center
Sacramento Public Library
828 I Street, 2nd Floor
Sacramento, CA 95814
916/264-2772

Nonprofit Development Center Library
1922 The Alameda, Suite 212
San Jose, CA 95126
408/248-9505

Sonoma County Library
3rd & E streets
Santa Rosa, CA 95404
707/545-0831

Seaside Branch Library
550 Harcourt St.
Seaside, CA 93955
408/899-8131

For those unable to visit a library in person, Foundation Center databases can be accessed on-line through DIALOG (415/ 858-2700).

The Center's Internet address is: http:\\fdncenter.org

For more information regarding The Foundation Center Library contact:

The Foundation Center
312 **Sutter Street**
San Francisco, CA 94108 • 415/ 397-0902

Loans — The State Revolving Fund (SRF)

The last five years has seen a steadily growing interest in watershed planning and restoration. This interest has meant increasing competition for the relatively few grant dollars available for planning and implementation of watershed activities. This situation has been exacerbated by budget cutting fervor at the state and federal level. The question of how to fund community-based watershed restoration efforts is becoming more difficult to address — as grant sources continue to dry up, it is time to look at new ways of funding restoration work.

There is one funding source that has yet to be fully explored by watershed activists in California- the State Revolving Fund (SRF). The State Revolving Fund is a revolving loan program established by the federal Clean Water Act[3] to replace the Construction Grants Program. In lieu of grants for specific wastewater construction projects (sewer treatment plants), the federal government contributed funds to the states to set up a loan program. In California, the State Water Resources Control Board (SWRCB, see Chapter 3, page 3-2) administers the revolving fund and makes this money available through loans to local agencies for use in particular projects. The loans must be repaid to the Fund. Repaid loan money can then be reused by the SRF to provide further assistance on future projects.

3 Clean Water Act, Title VI — State Water Pollution Control Revolving Funds, §§ 601-607.

Besides the major difference of being a loan program instead of a grant program, the SRF is also different in that it allows loan funds to be used to provide assistance to implement watershed plans under Section 319 of the Clean Water Act (see discussion of Section 3 19 grants). This means that loan funds may be used for the same types of activities that would be eligible for Section 319 grants. In addition, the Fund may be used to finance the development of Comprehensive Conservation and Management Plans for estuaries and to fund implementation actions associated with an estuary management plan.[4] California's State Revolving Fund enabling authority allows for this "expanded use" of Fund monies. **This program offers one of the best avenues for funding of watershed implementation efforts.** Despite the complexities involved with setting up the program in a community, the Fund deserves some attention by watershed activists. The following discussion provides some insights into Fund requirements with the intention of arming activists with information that can be used to persuade local authorities of the need to consider this program as a funding source for future efforts.

The Fund is a loan program. Although, the interest rates may be well below market, just like your mortgage or credit cards the money must be repaid in a specified time. In order to qualify for a receipt of an SRF loan, a city or other local entity must identify a "dedicated repayment source". In these shaky financial times this may sound like a difficult proposition. The common practice for municipal bonds or other local capital improvement projects is to have the users pay for the project through user fees. For instance, maintenance and improvements of sewer lines is normally paid for by residential and commerical users through a monthly use fee or annual assessment that is billed to the property owner. Municipalities may be wary of instituting fees fearing tax payer backlash, but our experience has shown that people can be quite willing to pay a few extra dollars to support something that is considered truly important to the local quality of life.

The problem of dedicated repayment can be complicated by the fact that watershed restoration activities may have no clear identifiable "users"or "benefactors" from which the loan repayment can be generated. The question is, how do you charge people in a watershed for an improved wetland or increased fish production? Under Fund regulations the dedicated revenue source does not need to be generated by the activity to which the loan is provided. This means that the loan can be repaid by revenues from other sources. Some examples are lease of equipment, special fees and taxes on sales of gasoline, cigarettes, land, pesticides and fertilizers, water or utility use. Money can be generated by real estate transfer fees, permit applications, registrations, or developer assessments.

Finally, a city or county might consider using a portion of its general tax receipts to repay the loan. Another example would be the creation of a special assessment district which would have the power to levy an assessment on parcels within the district. This is a common way for services to be funded, for instance mosquito abatement districts located throughout the state for the purpose of preventing mosquito-borne diseases are funded through this mechanism. Most of these districts are county-wide and the cost to local property owners seldom exceeds more than twenty dollars annually. Creation of a watershed-wide assessment

4 *Funding of Expanded Uses Activities by State Revolving Fund Programs.* August 1990. U.S. EPA, Office of Water. Washington DC. #EPA 430/09-90-006.

district for the purpose of watershed improvement would not only be capable of generating a loan repayment stream, but would have the advantage of continuing to generate funds for future maintenance and small project expenditures after the loan has been paid off.

The possibilities for the use of the loan program are inexhaustible, but, to date, only a few communities have taken advantage of these funds for nonpoint source activities. In California, most of these nonpoint source-related Fund projects involve more traditional capital outlay programs such as stormwater improvements (Cities of Fresno and Stockton). But the City of Davis has used the Fund to implement a program designed to reduce pollution to riparian areas through implementation of Best Management Practices. Repayment will be made through sewage fees. Two Central Valley irrigation districts (Broadview and Firebaugh Canal Water Districts) have borrowed Fund money to institute a program for farmers to purchase irrigation equipment that will reduce polluting subsurface flows. Farmers lease the equipment and leasing fees are used to repay the fund .[5] In the latest funding cycle (federal Fiscal Year 1996), however, the City of South Lake Tahoe submitted a loan request for money to support an erosion control project.

Why should watershed groups be interested in the loan fund? The answer is simple — it has the largest amount of money available of any program in the state. The federal government is adding $269 million dollars to California's State Revolving Fund this year (FFY 1995-96), in addition to loan repayments and interest earnings of $47 million dollars, all available for loans. Despite the fact that watershed implementation activities will need to chart new ground in accessing the Fund, it is the only program with funding prospects virtually guaranteed well into the future. To find out more about the State Revolving Fund contact:

Bill Campbell
State Water Resources Control Board
Division of Water Quality
P.0. Box 944213
Sacramento, CA 94244
916/ 657-1043 • FAX 916/ 657-2388

B. WRITING GRANTS THAT GET FUNDED

The ability to produce grant proposals that get funded may be an innate gift to a good grant writer, but the skills of grant writing can be readily cultivated with a bit of effort. There are a few important principles that, once learned, can be employed to turn your ideas into fundable projects. The following section outlines these principles and offers explanations of approaches for developing key elements in a grant proposal.

What is a grant proposal? A grant proposal serves four main functions: 1) It identifies a program plan or work plan; 2) it requests something from the grantor; 3) it is a promise to undertake specific tasks; and 4) it as an instrument of persuasion.[6] A good grant proposal contains all of these elements presented in a cohesive manner.

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5 *Funding NPS Projects Through the State Revolving Fund Program: Experiences and Opportunities.* July 1994. U.S. EPA presentation at The Challenge of Watershed Protection Conference, July 26-28, 1994.

6 Getting A Grant in the 1990s. 1982. Robert Lefferts. Prentis Hall Press, New York, N.Y.

Developing a Program or Work Plan

In order to obtain grant funds you must be able to tell the granting organization what it is you want to do in a step-by-step fashion. The work plan is your guideline for the tasks you want to accomplish and it indicates to funders your organization's ability to plan and organize the project for which funds are requested. If your group is requesting funds to develop a watershed plan, then you need to know what tasks are involved in developing that plan. Completing the initial checklist outlined in Chapter 3 (see E. Agency Assistance, page 3-24) can help clarify the direction of the planning effort. If your grant request involves a specific project, you must understand the specific tasks needed to complete the project.

The work plan must have a purpose or goal, and objectives that relate to fulfilling that purpose. The purpose of the project is usually a general statement set forth in a few sentences. This is another good reason for developing an action plan (see Chapter 5, Planning for Action, page 5-2). Use the goals and objectives identified in your Action Plan in the grant request for funds to support a specific project.

Make sure that your purpose is consistent with those of the granting organization. This is why the purpose for each of the grant programs outlined above is made clear. For example, if you are requesting grant funding from the State Water Resources Control Board (see discussion above) then one of the main goals of the grant must be to "improve water quality or enhance a beneficial use."

Set objectives that are obtainable and that are related both to the purpose and the tasks in the proposal. Objectives essentially outline briefly what the tasks should accomplish. The following is an example of language from a recently funded grant that accomplishes this:

Example: Identifying Proposal Objectives

The objective of this project is to develop a watershed plan for the Sonoma Creek Watershed. The plan's goals would be to maintain and improve water quality as well as to enhance aquatic fish and wildlife resources in the watershed. Existing information is available regarding the condition of the watershed, and specific Best Management Practices (BMPs) have been developed for the agricultural practices in the valley. The main objective of this project is to gather and compile this information into a plan that would identify specific treatment priorities and target BMP implementation.

The development of the Sonoma Creek Enhancement Plan involves three major elements: 1) technical data compilation, 2) public participation /outreach, and 3) preparation for the plan implementation phase, including treatment recommendations and CEQA documentation. The public involvement aspect of the work plan recognizes that successful implementation of the plan depends upon the support of local landowners and the interested community. To ensure that these parties are actively involved in the Plan development and concur with the Plan recommendations, a Technical Advisory Committee (TAC), composed of landowners, environmental groups, school districts and representatives from interested local, state and federal agencies, will be convened to advise on the Plan formation.

When you have established your objectives, the tasks for the work plan will be clear. Work plan tasks should indicate what will be done and how it will be done. The task section indicates to funders how familiar the requester is with the work that is proposed. Before you develop a work plan, talk to others that have done similiar projects and find out the steps that were involved in the project. A sample work plan for a watershed restoration project is shown below:

Work Plan Example

The proposed project entails the following tasks. A contractor will perform the tasks and will provide equipment, labor, tools and materials. The grantee will be responsible for securing landowner concurrence, design and engineering, permits, project management.

Task 1. Secure landowner concurrence and conduct project design and survey. Conduct engineering surveys of site for design purposes.

Task 2. Develop design alternatives and obtain permits. Section404 COE, and DFG section 1603 permits and a section 401 certification are required and will be obtained for the project.

Task 3. Install permanent photo reference points along a transect of the project to provide before-treatment documentation of the site.

Task 4. Develop bid package for construction activities. Develop subcontract documents and obtain necessary reviews and approvals from project sponsors before execution.

Task 5. Construction: Install treatments requiring construction according to permits.

Task 6. Planting: Install willow and rip-rap siltation baffles along both banks, secured to rock revetments.

Task 7. Final stabilization: Complete all remaining construction activities during second season.

Task 8. Take "after" treatment photographs at all permanent reference points.

Task 9. Final Completion Report, submit to project sponsors by a specified date.

Task 10. Administration: Perform all administrative functions related to project: accounting, invoices, etc.

Making the Request from the Grantor

A grant proposal is a request for money to support a project. This means that you have to be able to estimate the costs of the tasks you plan to undertake and develop a budget for the project. This is often the most difficult aspect of writing the proposal and requires careful consideration. The budget is the core of any proposal. The estimated costs must be realistic and justified. Funders look carefully at the proposal budget, so correct budget presentation is critical to getting a project funded. Many agencies supply a format for budget presentation. To be responsive to that agency it is important to follow that format. If you are not clear about how the specific budget items should be presented, ask the organization to explain their procedures. The more that you can find out about an organization's rules and procedures regarding grant budgets, the better you will be able to compete.

The most important principle in preparing a budget is that any costs included must correspond to the narrative description and the tasks contained in the project. In other words, do not include expenses for activities or items that are not described in your work plan. Grant budgets include expenses or costs, income (where applicable) and in-kind contribution categories.

Expenses

Expenses are normally broken down into several types: personnel, direct and indirect expenses. Not every category is used in every grant. Categories are used as a way to group expenses into a budget that describes the particular project. See the sample budget on the following page.

- **Personnel expenses:** are usually broken out into two different types of costs: 1) wages or salaries paid to staff, and 2) fringe benefits associated with employees.
- **Direct expenses:** are the nonpersonnel costs of performing the project. These include contracted services, travel, *per diem*, office supplies, equipment, rent, telephone, construction supplies and any other item needed to support the project. These expenses may be separated out into administrative costs and project costs.
- **Indirect expenses:** this refers to costs charged by the larger agency within which the project is performed. If the proposed project is not part of a larger operation then it is not used. If you are working with a city or local agency as a co-sponsor be sure to ask whether they charge an indirect cost rate for accepting grants.

In-kind contributions or match

Many public agency funders require that the applying organization share a part of the cost of the project or provide a "match" to the dollars provided. The match requirement can be met in two ways — through actual cash contributions or through "in-kind" or donated services of some sort. For an organization with lots of volunteers an in-kind match should be no problem — the match can be made up of the value of the volunteers' time. Your organization will need to track this time using simple time-sheet forms. A simple time accounting system can pay off in real project dollars. Another way to provide in-kind match is through commitments of agency staff time. For example, if a the local water district has a staff that conducts ongoing water quality monitoring, the cost of that staff time can be counted as a match as long as it relates to the project. As a general rule anything of value that contributes to the project can be used as a match including donations of supplies,

materials and equipment and equipment time. **The most important rule is that the value of the match be documented.** Once your group gets in the habit of tracking the many things that the community can provide, their value can be surprisingly large.

Another way to meet the match requirement is through a cash contribution that comes in the form of another grant. This is known as"leveraging" grant dollars. For example, a Department of Fish and Game grant to implement a restoration project as part of an action plan can serve as the match amount for another project in the watershed. Or a project can be funded by two diffent grants each using the other as a match. Although this is more tricky in terms of the timing because the match money must come within the project period or time frame of the grant contract. In our experience, the length of time between the award of a grant and the issuance of the grant contract (when the money actually becomes available) allows for additional grant applications to be made. If you have been awarded a grant, then use this fact when applying for other grants in order to leverage additional funds.

Income

Most watershed proposals do not have an income source. Unless your organization will be charging some sort of fee to participate in the project, this budget category is not applicable.

Budget preparation

When preparing your budget make sure that the items are clear to the funder. Always attach budget explanation notes to clarify anything that may not be readily apparent. The following is an example of an expense budget for a stream restoration project:

Sample Project Budget

Budget Category (2 years total)	Total Budget	Match Share	Grant Share
A. Personnel Services:			
Salaries and Wages	$60,880 *1	$20,000 *2	$40, 880
Benefits (27%)	$15,120		$15,120
Indirect Charges (overhead)		$ 4,000	
Subtotal A:	$80,000	$24,000	$56,000
B. Operating Expenses:			
Travel	$1,000		$1000
Equipment (van lease/purchase)3	$ 8,000		$8000
Other (photo/monitoring costs)	$ 2,000	$ 1,000	$ 1,000
Subtotal B :	$11,000	$ 1,000	$1 0,000
C. Professional and Consultant Services:	$31,000		
	$15,000 *4	$16,000	
	$31,000	$15,000	$16,000
D. Construction Expenses:	$22,000	$18,000 *5	$ 5,000
	$22,000	$18,000	$ 5,000
Total Budget (A+B+C+D):	$145,000	$58,000	$87,000

Sample Budget Explanation: Costs are for two year life of the project. For more detailed discussion please see the attached proposal.

l Personnel expenses will be used to provide partial salary to San Mateo County for oversight of conservation crews for two years.

z The remainder of County salary and estimated value of labor for conservation crews at $5.OO/hour will be the major match source.

3 Equipment purchase of one chainsaw at approximately $250.00. Equipment lease of large passenger van to transport crews to the site.

4 Advisory, permit assistance and oversight services provided by agencies involved with the CRMP.

5 Construction materials and much of the heavy equipment needed will be provided by the landowners and associated agencies.

Functional or task-related budgets

Some funders or grant programs require that the budget be broken out on a function or task basis as opposed to line item expenses. This type of budget is also important to understanding the relative costs of each of the tasks that are proposed. A task-based budget is constructed by estimating the cost of each task in the proposal, including administrative costs. A task-related budget has cost items arrayed by the actual work to be performed. For example, the following is a task budget for a watershed planning grant:

Sample Task Budget Summary

Task	Product	Month due	Total Amount	Contract Amount	Match
l	Quarterly Reports, 8 reports	3,6,9,12, 15,18,21	$24,000	$16500	$7,500
1.2	Contract prel		$ 1,000		$1,000
2 1	TAC Meetings, 7 meetings	3,6,9,12, 15,18,20	$22500	$8,000	$14,500
2.2	Newsletter 6 newsletters @ $800 each	2,5,8,10, 14,19	$4,800	$4,800	
2 3	Public meetings Plan & CEQA	2 2	$5,500	$4,500	$1,000
3.1,3.3	summary of information	1 0	$13,000	$7,000	$6,000
3.2	Maps	1 1	$12000	$9,000	$3,000
3.4	Preliminary recommendations	1 6	$11,000	$11,000	
3 5	BMPs	1 5	$6,000	$ 6,000	
3.6 - 3.7	Monitoring and potential impacts	17	$ 6,200	$ 6,200	
4	Implementation Plan & Checklist	18	$ 5,000	$5,000	
5.1	draft final plan	21	$ 5,000	$ 5,000	
5.2	Final Plan prep	23	$ 8,000	$ 8,000	
5.3	CEQA	24	$ 6,000	$ 6,000	
			$ 133,000	$ 100,000	$ 33,000

Whichever the format, begin developing your project budget by defining the line item expense budget. Then look at the major functions of the project, administration, planning, construction, etc. Estimate which portion of each of the line item belongs in each functional category. For example, a staff person mat gets paid $30,000/year and will be working half the time on administration and half on plan preparation would have $15,000 in administrative tasks (Quarterly reporting, etc.) and the remaining split into the various task items for which that person is responsible. Add up the amounts allocated in each category. Reconfigure the budget to show the amounts allocated for each task. Include budget explanations, where needed, to describe how the total for the category was reached.

Persuasion — the Problem Statement

Your proposal will most likely be competing with many others for funding. Somehow you must be able to persuade funding organizations to select yours from the many. The best way to accomplish this is to submit a well-written, well thought out proposal. It also helps to understand the interests and mission of the funding organization to whom you are applying. Emphasize areas in the proposal to fit the application or proposal request, but be direct and straightforward in describing the proposed activities. Avoid rhetoric and inflammatory statements. Spend time honing your problem statement so that it is compelling and strikes a chord with the granting agency or organization. Describe your vision for the watershed or watershed project in illustrative terms.

The is no one way to begin a proposal. Some grant writers begin with the budget. Others start with the problem statement or work plan, but all begin with an idea. The best way to begin is to take the idea, research possible funders, and sit down and write. Be prepared to revise the proposal several times. Even the most experienced grant writers will tell you that success lies in the revision process. Remember if you do not get the first proposal funded, keep trying.

C. Structuring the Proposal

Different funding organizations have different formats for submitting grant proposals. You should always follow, closely, the structure requested by the organization to which you are applying. Often private foundations do not have application forms so you must structure your proposal on your own. There are some basic elements that are common to grant proposals that should be used when submitting proposals that do not have an application format. These elements include:

- A cover letter or letter of transmittal.

  The letter should be on organization letterhead and indicate the contact person for the project, a brief description of the goals, objectives and summary of the proposal. A brief explanation of why the proposal is being sent to the organization.

- Title page

  The title page should include the title of the proposal, the name and address of the submitting organization, the date, and the name of the funding organization.

- Summary or abstract

  Is a one page overview of the information contained in the proposal. Highlight the goals and objectives of the project.

- Introduction and background.

  This section should contain a description of the setting for the proposal, i.e., the geographic area and community, the problem definition, the reasons for the project.

- Purpose and objectives

  This section must have a clear concise statement of the goals and objectives of the project per the discussion above.

- Organization structure and capabilities

  Describe the ability of your organization to perform the tasks contained in the proposal. Include any previous experience in carrying out grant responsibilities.

- Work plan or program plan

  Describe the tasks or actions planned in a step-by-step manner. Indicate a time table for performing these tasks.

- Budget

This brief overview is not meant to be a complete primer on grant writing. There are many excellent books that can assist your efforts to learn the grant writer's art. Experience is the best teacher — don't be afraid to plunge ahead — the worst that can happen is that your proposal does not get funded. If your proposal fails, ask the organization why. This way you will be able to improve the next submittal. Keep trying until you get it right.

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