88-115

Workplan for the

Water Quality Management Planning Program [Section 205(j)]

for

INVESTIGATION FOR NON-POINT SOURCE POLLUTANTS IN THE LAGUNA DE SANTA ROSA WATERSHED, SONOMA COUNTY

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A. STATEMENT OF OBJECTIVE

This project will investigate, identify, and quantify non-point discharges of pollutants to the Laguna de Santa Rosa in Sonoma County (Laguna). Various urban, rural and agricultural land use practices evidently contribute to the ongoing degradation of water quality in this highly significant aquatic/wetlands ecosystem and subsequently the lower Russian River. This project will also propose mitigations for those activities. The specific objectives are:

1. to identify and quantify significant non-point discharges to the Laguna, including but not limited to agricultural runoff and return and urban runoff, and

2. to propose mitigations to reduce the impacts of non-point source pollution of the Laguna through regulation, enforcement, and interagency coordination.

B. EXECUTIVE SUMMARY

The Laguna has long been recognized as a stream and wetlands system with impaired water quality. The problem was previously cited in water quality inventories (305(b) reports) and in the North Coast Region's basin plan. From the Region's perspective the Laguna is a "State identified water quality impacted" stream. This status is emphasized by the recent (December 1987) recommendation of the State Water Resources Control Board's (SWRCB) Chief Counsel: "Assess, to the extent feasible, the source of pollutants entering the Laguna de Santa Rosa." The Chief Counsel's recommendation followed a technical report by the SWRCB, Division of Water Quality, wherein the Laguna situation was detailed (July, 1987); the report further points out that water quality problems persist despite the effective regulation of point source discharges. High fecal coliform, high nutrient levels, and low dissolved oxygen are the most consistent problems that adversely affect beneficial uses.

The Laguna receives numerous unstudied, unregulated non-point source discharges from urban (year around street and stormwater drain systems), rural (failing septic systems) and agricultural areas (surface runoff from livestock and dairy operations, fertilized fields and 3800 acres of pasture land used for dry weather disposal of treated sewage effluent by the City of Santa Rosa).

The immediate goal of this study is to identify significant activities which adversely impact the Laguna de Santa Rosa and provide tools to improve the quality of the water and preserve the beneficial uses of the Laguna and the lower Russian River, to which ultimately the Laguna discharges.

C. AGENCY ORGANIZATION

The North Coast Regional Water Quality Control Board (Regional Board) is a regulatory agency responsible for protecting the beneficial uses of groundwater and surface water within the Russian River basin and other hydrologic basins of the North Coast area. The Regional Board consists of nine members appointed by the Governor, and is served by a staff headed by an Executive Officer.

This Russian River planning project is one of several planning programs being conducted by the Regional Board. The primary responsibility for implementation and management of the project will lie with the Surveillance, Monitoring and Planning Unit of the Regional Board. The project director will be the supervisor of that unit, Ronald L. Church (Environmental Specialist IV); the project manager will be Robert R. Klamt (Environmental Specialist III). Student interns contracted through Sonoma State University will be a major component of the work force; they will be directly supervised by the project manager. Matching funds are being provided as in-kind services by the Regional Board.

D. BACKGROUND

The Laguna de Santa Rosa flows northward through the Santa Rosa Plain and enters the Russian River via Mark West Creek at the very point where some of the Sonoma County Water Agency's Ranney collectors are located (Figure 1). Consequently, the recharge capability of the Laguna may have an effect on the domestic water supply for one-third million persons. In addition to the beneficial uses of the Russian River, the beneficial uses of the Laguna include agricultural water supply, groundwater recharge, and a route for migratory fish, as well as a significant fish and wildlife habitat. The marshes and ponds of the Laguna also provide habitat for rare and endangered species. The Department of Fish and Game has provided protection for several areas that have been designated as "vernal pools", and other sections have been set aside as green belts. The Laguna is increasingly recognized as a nature area that must be preserved.

The Laguna has long suffered from various degrees of pollution. Until recently, the discharge of sewage effluent to the Laguna was thought to be the source of the pollutants. Now that the discharged wastewater meets Basin Plan criteria, it is apparent that significant amounts of pollutants are entering this aquatic system from various land uses in the surrounding watershed. Most of the watershed is rural and agricultural. However, urban development is increasing rapidly in the greater Santa Rosa area, which has the highest population in the North Coastal Basin. The Russian River and its tributaries are essential to the well being of the North Coastal Basin. The Laguna is quite possibly the most polluted segment in this critical system.

A comprehensive survey of discharges to the Laguna from various land use practices has never been conducted. Limited studies carried out in the past support the concept that the land use practices identified in the "Executive Summary" are to be considered initially as the primary sources of pollutants to the Laguna. The Regional Board cannot reasonably attempt to resolve water quality problems in the Laguna until a comprehensive survey of sources of pollutants has been completed.

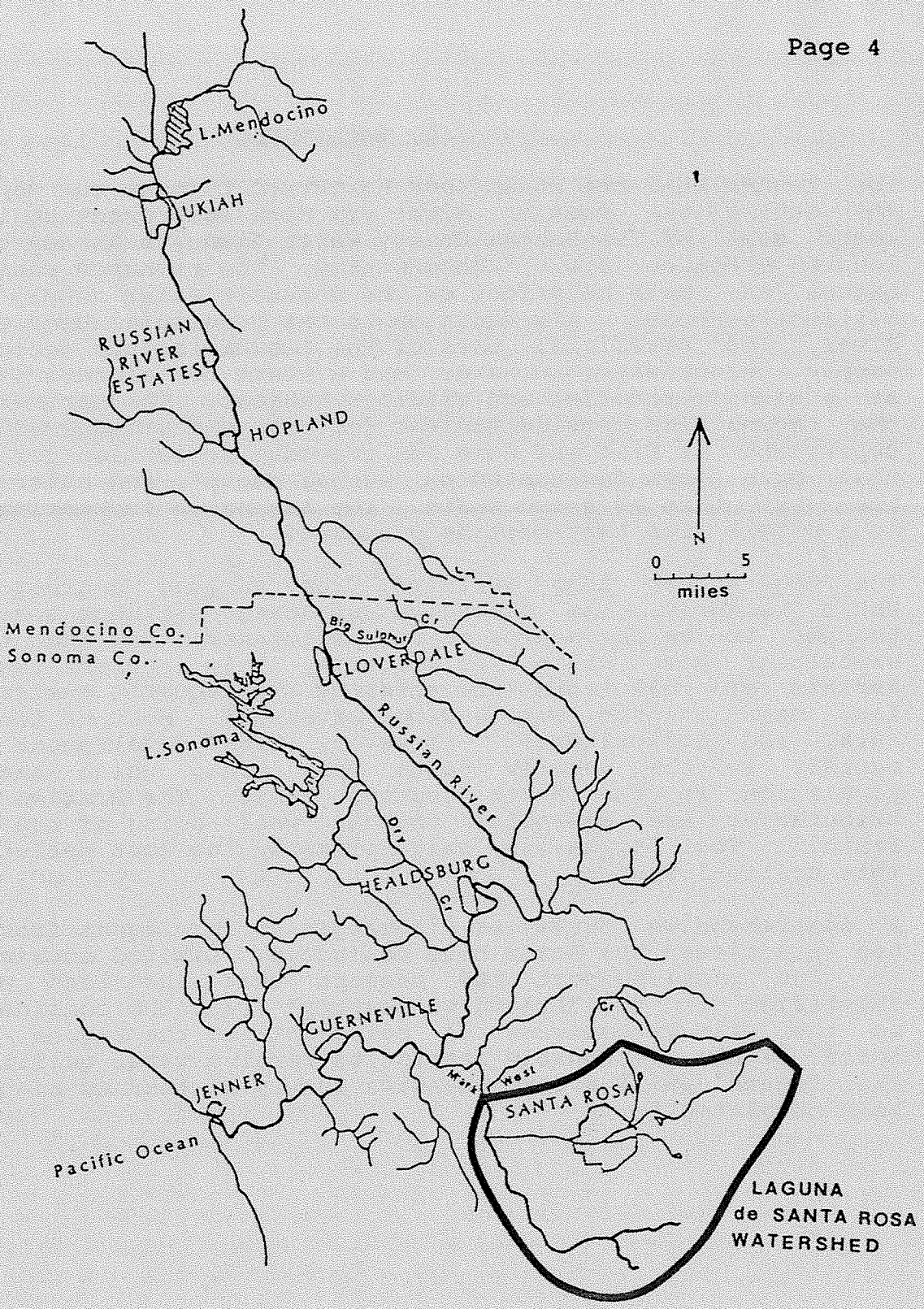


Figure 1. The Russian River drainage basin showing the location of the Laguna de Santa Rosa watershed, Sonoma County, California.

E. PROJECT MANAGEMENT AND CONTROL

The Project Manager will assess expenditures and accomplishments on a monthly basis, and provide written progress reports to the Regional Board and the State Board Project Director on a quarterly basis. Those reports will also outline plans for the ensuing quarter.

The members of the North Coast Regional Water Quality Control Board will comprise a dual policy advisory and technical advisory committee. Quarterly reports to the Board will cover critical milestones and accomplishments for evaluation. The Board may provide any needed redirection on this project as it progresses. The makeup of the Regional Board follows Porter-Cologne Act requirements:

> 13201. (a) There is a regional board for each of the regions described in section 13200. Each board shall consist of the following nine members appointed by the Governor, each of whom shall represent and act on behalf of all the people and shall reside or have a principal place of business within the region:
>
> (1) One person associated with water supply, conservation, and production.
> (2) One person associated with irrigated agriculture.
> (3) One person associated with industrial water use.
> (4) One person associated with municipal government.
> (5) One person associated with county government.
> (6) One person from a responsible, non-governmental organization associated with recreation, fish, or wildlife.
> (7) Three persons not specifically associated with any of the forgoing categories, two of whom shall have special competence in areas related to water quality problems.
>
> 13201. (b) All persons appointed to a regional board shall be subject to Senate confirmation, but shall not be required to appear before any committee of the Senate for purposes of confirmation unless specifically requested to appear by the Senate Committee on Rules.
>
> 13201. (c) Insofar as practicable, appointments shall be made in such a manner as to result in representation on the Board from all parts of the region.
>
> 13201. (d) Notwithstanding subdivision (a), if appointments cannot be made of persons associated with county government because of the requirements of Section 13388, those appointments may be made of persons not specifically associated with any category.

An active public participation program is anticipated and is discussed in a later section of this workplan. Particular attention will be given to Regional Board workshops and consultation with concerned agencies. Program participants will regularly confer with the State Board Project Director in the review of the project's progress and obtain State Board approval for program redirection or changes. Quarterly project updates and public participation summaries will be provided to the State Board Program Director.

Table 1. Members of the North Coast Regional Water Quality Control Board.

Board Member	City of Residence	Appointment Expires	Representing Category
Clifford Stewart (C)	Healdsburg	9/30/90	Irrigated Agriculture
Anna Sparks (VC)	Eureka	9/30/88	Recreation, Fish & Wildlife
Joyce Crockett	Smith River	9/18/90	Public Member
Albert Beltrami	Ukiah	9/30/88	Municipal Government
Zelma Long	Healdsburg	9/18/90	Industrial Water Use
Spencer Flournoy	Santa Rosa	9/30/89	Water Quality
James Wilkey	Santa Rosa	9/30/88	Water Quality
Stan Plowman	Trinity Center	9/30/91	County Government
Vacancy		9/30/91	Water Supply

F. WORK DESCRIPTION

This two-year project will consist of two major phases:

1) location and evaluation of non-point sources associated with various land use practices to identify significant contributions of pollutants to the Laguna, and
2) proposal of mitigations to reduce the impacts of non-point pollutants on the Laguna and the lower Russian River.

The project will include close coordination with local and State health agencies, the local agricultural commissioner's office, local agricultural groups, the county government planning agency, and other interested parties in order to provide the best options for the mitigation of impacts to the Laguna.

Eight main tasks have been identified for this project. These tasks may not all be performed consecutively, but may overlap or parallel other tasks (refer to time-lines in Table 2). The project is diagrammed in Figure 2, and detailed work descriptions appear below.

Task 1 - Review past reports and data

Objective: To provide an historical picture of past non-point pollutants and potential sources.

Work Description: This task requires review of past reports on the Laguna and Santa Rosa Plains (such as the supportive documents for the original basin plan) and analysis of any water quality data that exists for the region.

Local agencies that have responsibility for planning and management practices in the area (e.g., Sonoma County Planning Department, Sonoma Dairy Waste Management Board) will be consulted regarding any historical information on the Laguna system. Additionally, State agencies and consultants that have studied the Laguna in the past will be consulted regarding historical information. The information from those sources will be reviewed and summarized and may help to direct the specific activities associated with identification of existing sources and mitigation proposals. (Tasks 2, 6, 7, & 8).

Task 2 - Review and map present land use activities

Objective: To provide an overview of present commercial, residential, municipal and agricultural activities in the watershed.

Work Description: Following the historical description of past practices and sources, additional information will be gathered from local and State agencies regarding current land uses and existing non-point pollutant sources. That information will be plotted on a map of the Laguna watershed, and supplemented and verified by Tasks 3 and 4.

Task 3 - Aerial surveys

Objective: To document all identifiable and suspected non-point pollutant sources through aerial surveys including photography and mapping.

Work Description: Aerial surveys of the Laguna and its tributaries will be made roughly on a quarterly basis to identify existing and potential non-point pollutant sources in the Laguna watershed. Aerial photography combined with routine mapping of the watershed will be used to describe existing sources and changes in locations and types of sources throughout the study period.

Task 4 - Field inspections

Objective: To describe the conditions surrounding each non-point source and estimate the volume of discharge or potential for discharge.

Work Description: Inspections will be made, where possible, of all actual and suspected sources identified through Tasks 2 and 3. Additional sources and discharges that are discovered during these inspections will be described and their locations and types indicated on the map of the watershed. Information to be collected will include the location of the source, type of source, practices resulting in the source, and possible measures that could be taken to abate or minimize the pollution.

Task 5 - Water quality sampling

Objective: To document non-point pollutant sources and describe impacts to the Laguna through water quality monitoring. Prior to sampling a quality assurance/quality control program will be prepared in accordance with Section 30.503 (b) of 40 CFR, Part 30.

Work Description: Two separate subtasks are identified below.

Subtask 5a. Water quality samples of each source will be collected and analyzed during inspections.

Subtask 5b. Key fixed-point stations will be identified and a synoptic water quality monitoring program developed. Those stations will be determined in part from the findings of Tasks 2, 3, and 4. We anticipate monthly sampling of all stations. The data from this program will be compared to the water quality data from the inspections and an assessment of the impacts of non-point sources on the Laguna will result.

Task 6 - Urban stormwater runoff studies

Objective: To determine the types and relative quantities of pollutants discharged from typical urban areas during the winter season and evaluate the impacts to the Laguna.

Work Description: Two stormwater drains and/or channels representative of commercial and residential areas will be identified and described. A monitoring program will be prepared to sample those non-point sources during the first significant storm event and a succeeding event for two separate winters. Data from those samplings will be analyzed to describe the types and relative quantities of pollutants discharged from urban areas. Projections for the total urbanized area within the Laguna watershed will be made and the resulting information compared to the water quality data from Task 5 to assess the relative impacts of urban stormwater runoff on the Laguna.

Task 7 - Public participation

Objective: To obtain timely input and suggestions from public agencies, affected entities, and interested persons.

Work Description: This program must involve cooperation with the County and State Health Departments, county agricultural commissioner's office, and other local agencies and interested parties. Coordination with those entities and the State Board Project Director will occur at least quarterly throughout the life of this project. Public involvment in the decision making process will be ensured through full public disclosure of staff activities on a quarterly basis at regularly scheduled Regional Board meetings. Staff will solicit comments from the public at these meetings, and workshops and mailouts may precede any major decision process. Information obtained through public participation will guide key decisions. A summary report will be prepared following any workshops, indicating the concerns raised by the public and staff's response and incorporation of the public's concerns into the plan. Both quarterly and summary reports will be provided to the State Board Project Director. Additionally, a responsiveness summary will be provided at the project's end in compliance with 40 CFR, Part 25.

Task 8 - Final Report.

Objective: To describe the locations and types of non-point source pollutants in the Laguna system, describe the effects of those sources on the Laguna, and to propose options to mitigate the water quality impacts to the Laguna system.

Work Description: The Final Report of this project will provide a summary of the kinds and quality of pollutants identified for each land use or practice from which a discharge was documented during the study. The land uses and practices will be ranked according to their potential impact on the Laguna and the Russian River. An integral part of the report will be recommendations for actions by the Regional Board and other State and local agencies to resolve the problem conditions identified during the study.

It is anticipated that several local, State and private entities will support and, where appropriate, act on the recommendations of this study. These entities include:

1. The Sonoma County Water Agency and other water agencies that draw water for domestic water supplies to over one-third million people from the lower Russian River. All of these agencies are concerned about the quality of the water that presently enters the River from the Laguna.

2. The City of Santa Rosa, Laguna Subregional Wastewater Treatment System that seasonally discharges treated wastewater to the Laguna. The system currently produces advanced secondary treated wastewater and will soon go to tertiary treatement. The treatment plant has been and still is generally blamed for all water quality problems associated with the Laguna.

3. The California Deparment of Health Services and the Sonoma County Department of Public Health that are responsible for ensuring that domestic water supplies are safe for consumption. The Russian River, which includes surface flow and groundwater recharge from the Laguna, is the principal source of domestic water for Sonoma and northern Marin Counties.

4. The California Department of Fish and Game that is concerned with protecting the "vernal pools" and associated endangered species of the Laguna and with providing water conditions acceptable to salmonids migrating through the Laguna.

5. Several public interest grroups are dedicated to protecting and restoring the Laguna and the Russian River.

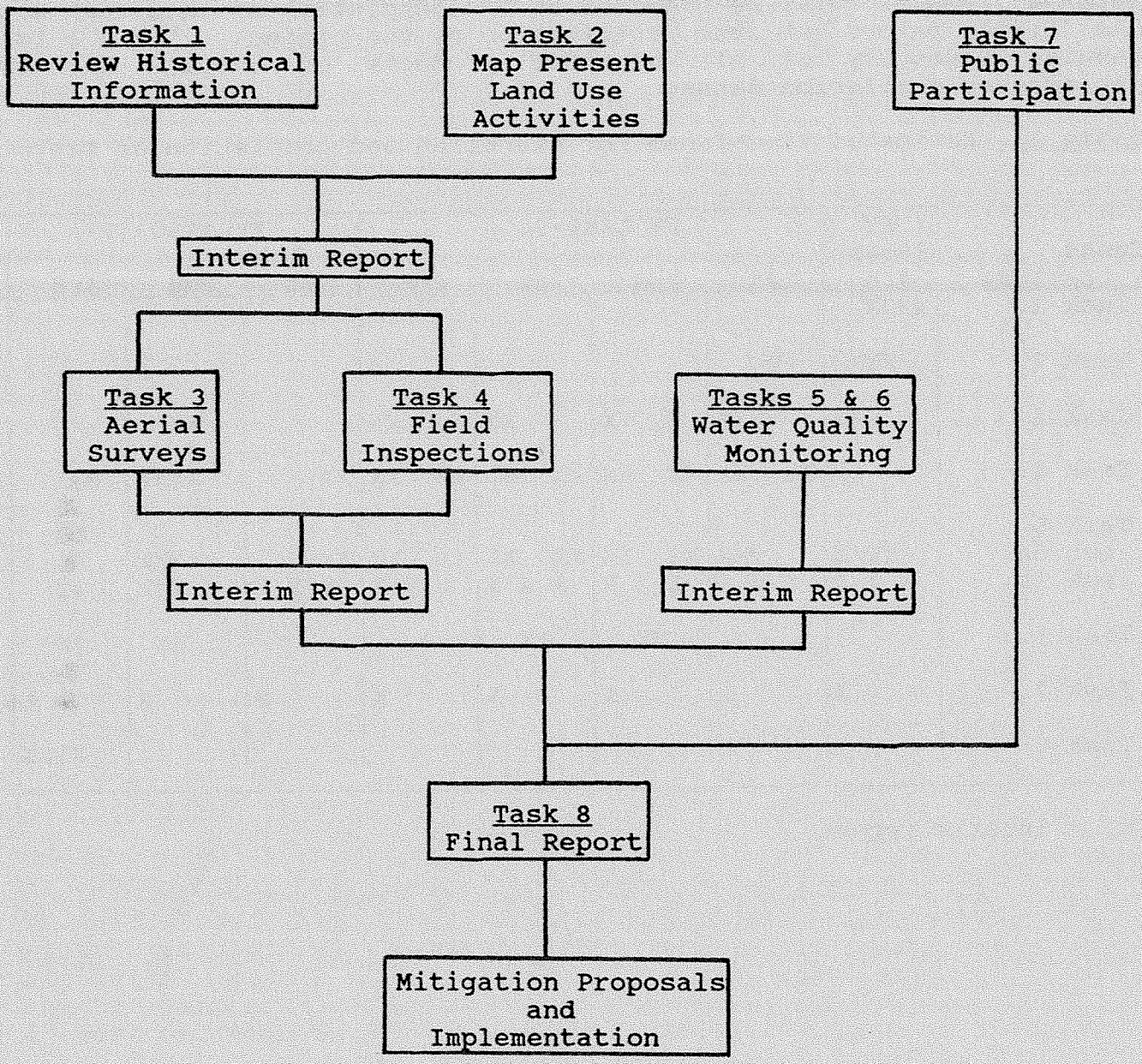


Figure 2. Laguna de Santa Rosa non-point source investigation project flow diagram.

G. PROJECT SCHEDULE

The project will be completed over a two-year period, with the sequence and duration of major activities as estimated in Table 2. Interim reports will be produced at the completion of each task with the final report at the culmination of the project. Table 3 is a tabular inventory of all expected products or outputs, with the anticipated completion dates.

Table 2. Estimated time-lines for execution and completion of tasks.

Tasks \ Quarters	FY 88-89 4th	FY 1989-90 1st	2nd	3rd	4th	FY 1990-91 1st	2nd	3rd
Task 1.	XXXX							
Task 2.	XXXX	[R]						
Task 3.	XX	XX	XX	XX	XX		XX	
Task 4.	XX	XX XX	XX XX	XX XX	XX XX	XX	XXXX	[R]
Task 5.								
sub 5a.	XXXX	XX	XX XX	XX XX	XX XX	XX	XXXX	
sub 5b.	X X X	X X X	X X X	X X X	X X X	X X X	X X X	
Task 6.			XX	XX			XX	[R]
Task 7.	X	X	X	X	X	X	X	X
Task 8.								XXXX

[R] = interim report

Table 3. Inventory of all products/outputs with expected dates of completion.

Quarterly progress reports	every quarter
Task 1 - review historical records	June 1, 1988
Task 2 - map present land use (includes Task 1 data)	draft: July 1, 1989 final: Sep 1, 1989
Task 3 - aerial surveys	Nov 1, 1990
Task 4 - field inspections (includes Task 3 data)	draft: Nov 1, 1990 final: Feb 1, 1991
Task 5 - water quality assessment	December 1, 1990
Task 6 - urban stormwater runoff (includes Task 5 data)	November 15, 1990 draft: Feb 1, 1991 final: Mar 15, 1991
Task 7 - public participation	on-going
Task 8 - final report	draft: Mar 1, 1991 final: Mar 30, 1991

H. PROJECT BUDGET

The total project budget is $ 100,000 and is summarized in Table 4. The Regional Board will provide a 25% match in staff time under Task Number 150-01, Water Quality Control Planning and in vehicle travel costs during field sampling.

Table 4. Laguna non-point source investigation project budget summary.

Budget Item	1988-89	1989-90	1990-91	Total
a. Personnel years	----	----	----	0
b. Personnel	----	----	----	0
c. Fringe benefits	----	----	----	0
d. Travel	----	----	----	0
e. Equipment	----	----	----	0
f. Supplies	----	----	----	0
g. Contractual				
Student interns	$ 7,970	$ 10,630	$ 2,650	$ 21,250
Flight time	$ 600	$ 600	----	$ 1,200
Laboratory analysis	$ 22,990	$ 29,560	----	$ 52,550
h. Construction	----	----	----	0
i. Other	----	----	----	0
j. Total Direct Charges	$ 31,560	$ 40,790	$ 2,650	$ 75,000
k. Indirect Charges				
Regional Board match	$ 9,375	$ 12,500	$ 3,125	$ 25,000
l. TOTALS	$ 40,935	$ 53,290	$ 5,775	$100,000

Table 5 details the individual tasks by specific budget allocation and task product.

Table 5. Budget Allocations and Task Products.

Task 1: REVIEW PAST REPORTS AND DATA

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Review Historical Records:	*	$ 1,900	$ 1,000	12/1/88

Task Outputs or Products: a summary of pertinent historical land use and water quality data.

Task 2: REVIEW AND MAP PRESENT LAND USE ACTIVITIES

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Map Present Land Use:	*	$ 1,900	$ 1,000	2/1/89

Task Outputs or Products: interim report consisting of maps of the Laguna watershed showing present land uses and identified non-point pollutant sources.

Task 3: AERIAL SURVEYS

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Aerial Surveys:	*	$ 1,500	$ 1,000	5/31/90

Task Outputs or Products: aerial photographs and maps of existing and potential non-point pollution sources.

Task 4: FIELD INSPECTIONS

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Field Inspections:	*	$10,000	$ 8,000	7/15/90

Task Outputs or Products: interim report consisting of on site documentation of potential sources and observed discharges.

* Staffing will be provided by student intern contracts.

Regional Board matching funds provided by: 131-01, Baseline and Trend Monitoring; 136-01, Unregulated Site Investigations; and 150-xx, Water Quality Control Planning.

Task 5: WATER QUALITY SAMPLING

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
5a. Source monitoring:	*	$27,000	$ 2,100	6/30/90
5b. Synoptic monitoring:	*	$18,000	$ 1,400	6/30/90
		$45,000	$ 3,500	

Task Outputs or Products: a water quality characterization of sources with seasonal synoptic summaries of their impact on the Laguna.

Task 6: URBAN STORMWATER RUNOFF STUDIES

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Urban Stormwater Runoff:	*	$11,250	$ 3,000	8/15/90

Task Outputs or Products: interim report characterizing the urban stormwater runoff and its potential impacts on the Laguna.

Task 7: PUBLIC PARTICIPATION

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Public Participation:	*	$ 1,450	$ 4,000	9/30/90

Task Outputs or Products: quarterly reprdts detailing progress and response to public input.

Task 8: FINAL REPORT

Task Description	Staff Years	Funding Sources 205(j)	Funding Sources Match	Completion Date
Final Report:	*	$ 2,000	$ 3,500	9/30/90

Task Outputs or Products: final report detailing the results of the study and recommending options to mitigate potential water quality impacts on the Laguna system.

* Staffing will be provided by student intern contracts.

Regional Board matching funds provided by: 131-01, Baseline and Trend Monitoring; 136-01, Unregulated Site Investigations; and 150-xx, Water Quality Control Planning.

REFERENCES

Attwater, William R. 1987. Memorandum to State Board Members dated December 14, 1987. Proposed Dismissal of Petition No. A-461; City of Santa Rosa. (He states that failure of the Laguna de Santa Rosa to meet water quality objectives is not caused by the discharge of treated wastewater. Further, the Regional Board should assess non-point sources of pollutants to the Laguna.)

Quibell, Charles F., Ph.D. 1977. Report on Proposal dated 3/8/77 - Botanical Impacts of the Laguna Sewage Effluent Project. (Discusses distribution of six rare and endangered plant species in the Laguna de Santa Rosa.)