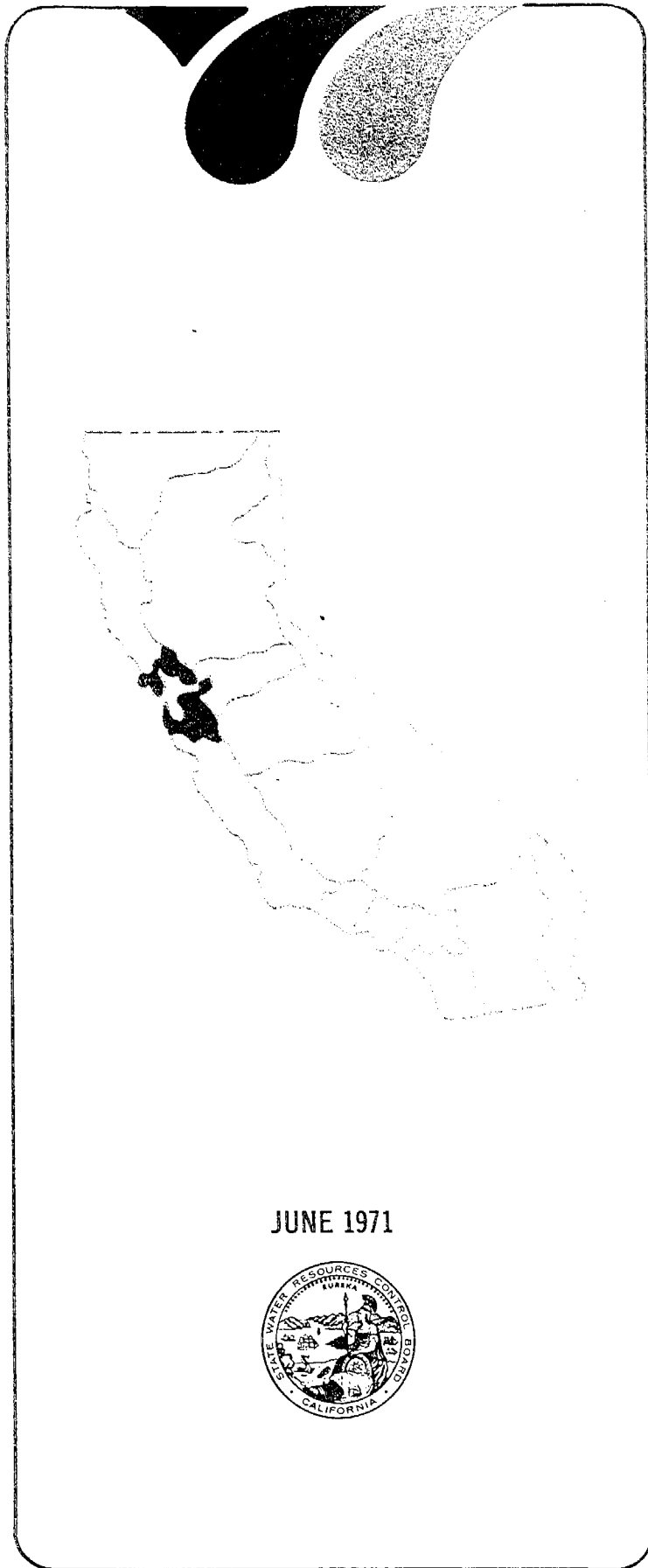


Barnickol

**WATER QUALITY
CONTROL PLAN**
(Interim)



SAN FRANCISCO BAY
Basin 2

**STATE
WATER RESOURCES
CONTROL BOARD**

INTERIM WATER QUALITY CONTROL PLAN
SAN FRANCISCO BAY BASIN

ERRATA

Chapter III, Basin Description

Page 13 - Pesticides

Second sentence should read:

"Concentrations of these persistent pesticides in most water areas of the Bay System have exceeded Federal Standards of 50 parts per trillion(a)."

Chapter VI Water Quality Objectives and Waste Discharge Prohibitions

Page 36 - Hydrogen Ion Concentration - pH

This objective should read:

"There shall be no change in the natural ambient pH value at any place in the main body of the receiving water by more than 0.1 pH unit(a), nor shall the pH of the waste itself exceed the range 7.0 to 8.5, or 6.5 to 8.5 when the natural ambient value is as low as 6.5."

Page 37 - Bacteria

Insert the following immediately above the shellfish criteria:

"Submerged deepwater discharges in the Ocean:

The waste shall not cause the receiving water at any place being protected for water contact recreation or within 1000 feet offshore from extreme low water⁽¹⁾ to exceed that bacterial quality prescribed in Section 7958, Title 17, California Administrative Code."

- (1) "Extreme low water" means that low tide level which occurs during annual spring tides.

Chapter VII Program of Implementation

Page 47 - Implementation Pursuant to the Porter-Cologne Act - Item 4

Insert the following:

"D. Dockside sewers and pumpout facilities at marinas and ports to receive wastes from vessels."

Appendix A - Project Lists

Municipal Project List Pages 52-60

Because of subsequent actions by the State and Regional Boards the municipal project list contained herein is no longer applicable.

(a) The underlined phrase constitutes the correction.

STATE OF CALIFORNIA
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD

INTERIM
WATER QUALITY CONTROL PLAN
for the
SAN FRANCISCO BAY BASIN
(Basin 2)

JUNE 1971

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

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Fred H. Dierker
Executive Officer

FOREWORD

This report contains the Interim Water Quality Control Plan for the San Francisco Bay Basin to satisfy federal and state requirements for construction grant programs. The plan also complies with the Porter-Cologne Water Quality Control Act requirements for water quality control plans.

The Interim Plan will serve as a guide for water quality management and for waste treatment plant construction in the next two years, until completion of comprehensive basin and regional plans which are now under preparation. This plan has been adopted by the Regional Water Quality Control Board, San Francisco Bay Region, and approved by the State Water Resources Control Board. It supersedes all previous water quality control plans adopted by this Regional Board.

TABLE OF CONTENTS

	Page
CHAPTER I. INTRODUCTION	1
CHAPTER II. SCOPE	3
CHAPTER III. BASIN DESCRIPTION	5
CHAPTER IV. BENEFICIAL USES OF WATER	29
CHAPTER V. POLICY GUIDELINES	33
CHAPTER VI. WATER QUALITY OBJECTIVES AND DISCHARGE PROHIBITIONS	35
CHAPTER VII. PROGRAM OF IMPLEMENTATION	41
APPENDIX A. MUNICIPAL AND INDUSTRIAL PROJECT LISTS	51
APPENDIX B. SUMMARY OF HEARING COMMENTS	67

TABLES

Table 1. Summary of Water Quality and Biological Characteristics Observed in San Francisco Bay Basin 1960–1964	8
Table 2. Ocean Water Quality	10
Table 3. Ground Water Quality	11
Table 4. Major Municipal Sewage Treatment and Disposal Data	16-24
Table 5. Major Discrete Industrial Waste Treatment and Disposal Data	25
Table 6. Present and Foreseeable Beneficial Uses Being Protected – Tidal Waters	30
Table 7. Present Beneficial Uses Being Protected – Non --Tidal Waters	30
Table 8. Wastewater Facilities Plan	43

FIGURES

Figure 1. Basin Location Map	6
Figure 2. San Francisco Bay Basin	15
Figure 3. Beneficial Uses of Tidal Waters in the San Francisco Bay System	31-32

CHAPTER I

INTRODUCTION

Until recently it was assumed that wastes could be discharged to the environment in great quantities without adversely affecting aquatic resources. Waste discharges were evaluated in the traditional sense; that is, with major consideration given to oxygen depletion, gross toxicity, and bacteriological quality measured against a presumed assimilative capacity of receiving waters and a tolerable degree of water quality degradation. Requirements for waste discharges were based almost exclusively upon protection of the benefits that man could derive from the direct and consumptive uses of the waters.

Recent advances in technology and science show that certain constituents of wastes can result in far-reaching adverse effects upon aquatic environments and man's beneficial uses of his environment. Certain substances in concentrations previously considered inconsequential to man do, in fact, greatly reduce his ability to realize benefits from aquatic resources. This is notably true for persistent toxicants that concentrate in food webs and eventually enter man's diet with potentially debilitating results. Already many species of aquatic animals and plants have been harmed, some of them seriously, by the discharge of certain known and, presumably, many other unidentified toxic substances into aquatic environments. Many factions are indifferent to these losses and believe them to be inconsequential unless man is directly affected. Others want only the level of control that will assure sustained commercial exploitation of water resources. Still others, in daily increasing numbers, are demanding total protection of aquatic environments regardless of man's uses of these resources.

While California is endowed with more water of good quality than many areas of the nation, the compounded effects of increased use of water and increasing volume and strength of municipal and industrial wastes have degraded and threatened water quality in many areas of the State. Inadequately treated municipal wastes are discharged to freshwater streams above domestic water intakes, residential and recreational developments have degraded mountain lakes and streams by siltation and inadequate sewage disposal systems, industrial wastes have toxified certain estuaries to levels that are harmful to aquatic organisms, and beaches have been closed to recreation due to bacteriological contamination from domestic waste discharges. Many past efforts to protect and manage California's waters have averted catastrophes and abuses. Frequently, however, they have lacked general applicability and force. These circumstances, coupled with the conflicting social attitudes previously cited, virtually demand a water quality control and water resource management policy that equates to water conservation: wise use, reasoned management, and adequate protection of water and water resources to ensure their preservation for the beneficial uses and enjoyment of present and future generations of the people.

As technology advances and societal needs increase, new benefits of aquatic resources will materialize. Aquatic resources must be managed to provide sustained yields while recognizing the dependence of man on the environment in which he must continue to live. State policy must be sufficiently restrictive to assure protection while being sufficiently flexible to adjust to new knowledge, capabilities and needs. State policy further must recognize the costs of wastewater management and the reciprocal compensations of water reclamation.

Simultaneously, there is growing public awareness of the precarious state of man's global environment. The once predominant indifference to environmental deterioration is yielding to an appreciation of the environment as an indispensable, but threatened and destructible, life requirement that needs conservation. Water quality control and management policy must acknowledge this developing environmental ethic. Accordingly, the policy set forth herein incorporates sound principles of water conservation.

The creation of the State Water Resources Control Board in 1967, and the adoption of the Porter-Cologne Water Quality Control Act in 1970, recognized the need for a long-range, balanced plan for water quality management that will anticipate man's potential needs and technological abilities. This plan is a major step toward fulfilling this responsibility.

This Interim Water Quality Control Plan has been prepared to satisfy Federal and State requirements for construction grant programs and the Porter-Cologne Act requirements for water quality control plans.

Under present Federal-State construction grant programs a community may receive up to 55 percent of the capital cost of a wastewater treatment project from the Federal Environmental Protection Agency (E.P.A.) and an additional 25 per cent from the State Water Resources Control Board, leaving as little as 20 per cent of the cost to be met by local funding. Under such a program Federal and State officials must be assured that the investment will purchase the greatest protection of our waters from the effects of wastes and make maximum use of the wastewater as a resource.

The E.P.A. has required each state to prepare and approve water quality control plans for drainage basins as a condition for future receipt of construction grants by communities. It has required a fully developed plan for each basin by July 1, 1973 but has permitted adoption of interim basin plans by July 1, 1971 to provide for construction during the time needed to adequately prepare the plans. This report is the interim plan for the San Francisco Bay Basin.

As the term "interim" implies, this document and its supporting information are the initial step toward a more comprehensive "Fully Developed Basin Plan". It will guide our water quality management activities by establishing priorities and time schedules for actions required to meet water quality and environmental objectives during the next several years.

CHAPTER II

SCOPE

This Interim Plan was prepared by the staff of the San Francisco Bay Regional Water Quality Control Board with guidance and statewide coordination by the State Water Resources Control Board and its staff. Technical assistance was provided by the State Departments of Fish and Game, Public Health, and Water Resources.

Because of the limited time available for preparation of this Interim Plan, no studies were undertaken to develop additional information. It has been necessary to rely upon planning that has already been completed and other planning now under way. Major reliance has been placed on the following work:

1. Various annual reports and portions of the final report by the Sanitary Engineering Research Laboratory of the University of California on its "Comprehensive Investigation of San Francisco Bay", 1960-64.
2. The Final Report and various task reports of the "San Francisco Bay-Delta Water Quality Control Program" Study - 1969.
3. Preliminary output from several of the subregional sewerage studies now being conducted by groups of wastewater dischargers in the Basin.

The "Regional Plan 1970:1990 for the San Francisco Bay Region" by the Association of Bay Area Governments (ABAG) has also been reviewed. (ABAG is the Areawide Planning Organization in this Basin.) This Interim Plan is in general agreement with the ABAG plan. ABAG has been developing a water, sewerage, and drainage plan for the San Francisco Bay Area concurrently with the preparation of this Interim Basin Plan. There has been staff level coordination with ABAG during this period and closer coordination with ABAG is expected during preparation of the Fully Developed Basin Plan.

The overall objective of this Interim Plan is to set forth a definitive program of actions designed to preserve and enhance water quality and protect beneficial water uses in a manner which will result in maximum social and economic benefits to the people of the State.

The beneficial uses to be protected for the various streams and water bodies of the Basin are listed in Chapter IV. Policy Guidelines including Goals and Management Principles are included in Chapter V.

To protect the beneficial uses of Basin waters, water quality objectives, and waste discharge prohibitions have been included in Chapter VI. These prohibitions provide a legal basis for expeditious enforcement actions.

A Facilities Plan formulated to meet Basinwide sewerage needs is presented in Chapter VII. This plan is intended for planning and construction grant guidance until the Fully Developed Basin Plan is adopted. It thus provides for a continuous flow of Federal-State construction grants while assuring that facilities constructed during the next few years will conform to a Basinwide plan. The Plan is subject to review as additional information becomes available from studies now under way.

Chapter VII also contains a brief description of this Board's ongoing surveillance program. This program is an integral part of the implementation program for this Interim Plan.

An important portion of the basin plan will be the yearly project list of needed sewerage projects for each of the succeeding five fiscal years. In the future, prior to January 31 of each year, the State Water Resources Control Board, in conjunction with the Regional Boards, will update the yearly list and extend it for the succeeding five-year period.

Project lists showing those projects which will be considered for certification by the State Water Resources Control Board to Environmental Protection Agency as eligible for federal grants are attached as Appendix A.

Appendix B is a summary of comments received during hearings held on this report.

CHAPTER III

BASIN DESCRIPTION

This chapter presents an overview of the physical geography of the Basin and of the water quality factors which affect it. The Basin is located on the central coast of California as shown on Figure 1. It consists principally of San Francisco, San Pablo and Suisun Bays, the land drainage to them and a strip of the Pacific Ocean three miles wide which extends 100 miles from Tomales Bay on the north to Pescadero Point on the south plus its land drainage – see Figure 2. It also includes Tomales Bay which is a shallow submerged fourteen mile segment of the San Andreas rift zone.

THE SAN FRANCISCO BAY SYSTEM

The Bay system extends from the eastern end of Chipps Island at the City of Pittsburg, where the Sacramento and San Joaquin Rivers join, westward and southward to the mouth of Coyote Creek near the City of San Jose, a distance of approximately 85 miles. The Golden Gate is about halfway between San Jose and Antioch and is the Bay's only connection with the ocean.

One hundred years ago the area of the San Francisco Bay was nearly 700 square miles including more than 300 square miles of marshland. Almost 80 percent of this marshland has been "reclaimed", chiefly for agricultural use and salt ponds. Now, the area of the Bay at mean tide is approximately 435 square miles.

Hydrology of the Basin

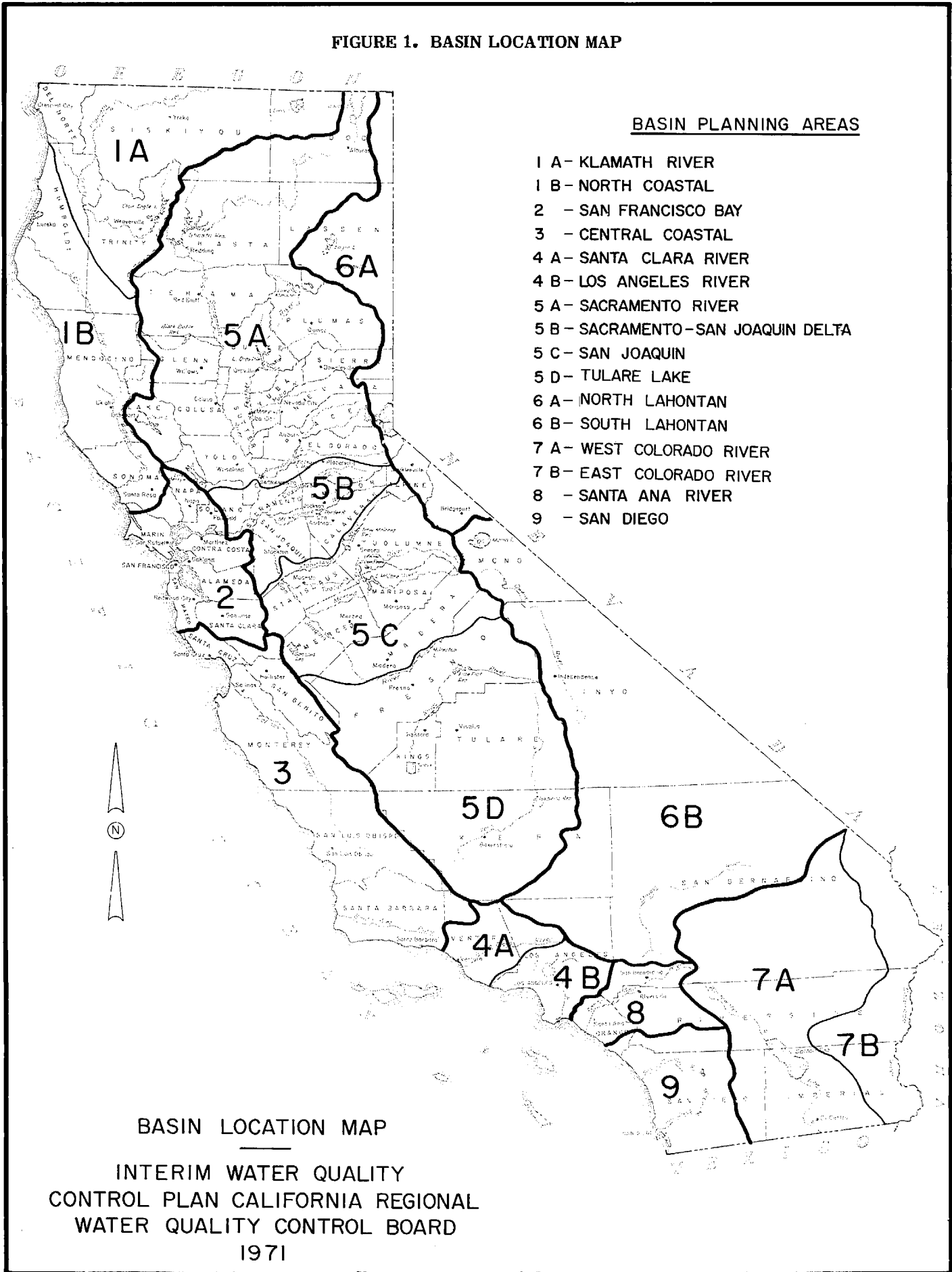
Most of the shoreline of the Bay has a very flat slope, and consequently, the area of the intertidal zone (the area between the water's edge at mean high water and at mean low water) is relatively large. Over the entire San Francisco Bay system the area of the intertidal zone is about 64 square miles, or 15 per cent of the mean tide area of the Bay. The total water volume at mean tide in the San Francisco Bay system is approximately 235 billion cubic feet, or more than one and one-half cubic miles of water. The tidal prism or the volume between mean higher-high water and mean lower-low water, is about 50 billion cubic feet or 21 per cent of the mean tide volume of water in the Bay system. The tidal prism is almost equally divided between the northern reach and the southern reach. Fifteen to 20 per cent of the tidal prism is estimated to be replaced by new ocean water during each tidal cycle. This is the principal mechanism by which conservative pollutants are ultimately removed from the Bay.

Much of the Bay is very shallow. The average depth of the entire Bay (defined as the total volume divided by the surface area) is only 20 feet. The average depth of the Central Bay (San Francisco-Oakland Bay Bridge to Pt. Richmond) is 43 feet, while the southern and northern reaches have an average depth of 15 to 17 feet. The shallowness of the Bay has a number of important consequences. Wind-generated waves disturb the bottom and contribute substantially to the high turbidity of the water. Again, the shallowness is an important factor to determining the relative importance of surface reaeration in the overall oxygen balance of the Bay.

Along the Pacific Coast and in the vicinity of San Francisco Bay, the tides are of the mixed type, i.e., two high and two low waters occur each day with a varying diurnal inequality. The mean tidal range at the Golden Gate is four feet. In the southern reach of the Bay system, the tidal range is increased to an average of seven and one-half feet. In the northern reach the tidal wave is progressively dampened so that at Antioch, the tidal range is a little more than three feet.

In the northern reach the advective flow (flow or movement of water resulting from causes other than the tides) is primarily the result of Delta outflow, with local runoff, precipitation, groundwater movement, and waste discharges playing minor roles. In the southern reach there is very little inflow from natural streams, and waste discharges and evaporation are important factors in producing advective flow. From the standpoint of current velocity, the effects of tidal movement of the water far outweigh the effects of

FIGURE 1. BASIN LOCATION MAP



stream flows, including even the relatively large flow out of the Delta. Opposite Rodeo in the San Pablo Bay, the volume of water flowing due to the tidal movement in one tidal cycle is approximately ten times the amount of water flowing past that point resulting from a Delta outflow of 16,000 cubic feet per second.

At the Golden Gate, the effects of advective flow are almost negligible. In the southern reach, because of the high evaporation rates and the lack of fresh water inflow to the southern end of the estuary, the net advective flow in the summer is southward rather than northward towards the Golden Gate.

The residence time for pollutants in a particular body of water can be defined as the average length of time that a constituent or particle remains within the water body. This residence time is a function of the combined effects of advective flow, tidal exchange, dispersion or mixing, and the locations of sources and sinks of the constituents being considered. Because of the fact that the southern reach is often a negative estuary, the residence times in this section of San Francisco Bay are extremely long, perhaps on the order of one year. In the northern reach, the residence times are shorter; however, even there the residence times depend strongly on outflow from the Delta. For example, at minimum Delta outflow, say 1,500 cubic feet per second, the average hydraulic residence time between Antioch and the Golden Gate is between 300 and 400 days. At high flow conditions, say 40,000 to 50,000 cubic feet per second, this time is reduced to between 20 and 30 days.

The eight streams listed below are the major tributaries (other than the Sacramento and San Joaquin Rivers) to the Bay system:

- Alameda Creek
- Napa River
- Coyote Creek
- Guadalupe River
- Walnut Creek
- San Lorenzo Creek
- Sonoma Creek
- Petaluma River

Their combined watershed is 60 percent of the 3,500 square mile Bay Drainage watershed. Their combined flow averages 500 cubic feet per second (360,000 acre-feet per year). The following four additional streams, comparable in size to the above, drain the Ocean watershed:

- Lagunitas Creek
- Pilarcitos Creek
- San Gregorio Creek
- Pescadero Creek

Several additional streams are listed in the chapter on beneficial water uses. Stream flow is seasonal with about 95 percent occurring during the six months December through May. Most streams are completely dry during the late summer.

Climate

The Basin climate is moderated by the offshore California Current. Both winter and summer temperatures are mild with Basin extremes registered inland. Rainfall is seasonal, the greatest amounts occurring in December and January and the least in July and August. The geographical range, based on 30-year averages, is 22 inches in San Francisco to 13 inches at the ends of the Bay system in both San Jose and Antioch. The average annual rainfall for the Basin is 19 inches.

Over the entire Bay system the mean annual evaporation is almost 48 inches, more than twice the annual precipitation. Evaporation is highest during July, when it exceeds the precipitation by 7.3 inches. The difference between precipitation and evaporation accounts for the loss of more than 650,000 acre-feet of water each year from the water surfaces alone.

Climate and needs of the large population make the Basin a water-short area. Most community supplies are imported from the Tuolumne and Mokelumne Rivers in the Sierras, the Sacramento River and the Russian River which lies north of the Basin.

QUALITY OF BASIN WATERS

Bay System Waters

Table 1 summarizes the water quality and biological characteristics of the Bay system as determined during the period 1960 through 1964 in a comprehensive investigation of the system by the Sanitary Engineering Research Laboratory (SERL) of the University of California. The individual parameters showed quality variations related to such things as season, Delta outflow and distance from the Golden Gate.

In general present water quality differs only slightly from that found in 1960-64. The notable exceptions are reduced bacterial levels in the central Bay, as a result of recently required general disinfection of sewage, and increased dissolved oxygen concentrations in the south Bay since the City of San Jose completed its secondary treatment plant.

TABLE 1
Summary of Water Quality and Biological
Characteristics Observed in San Francisco Bay System
1960-1964^c

Parameter	Unit		South Bay	Lower Bay	Central Bay	North Bay	San Pablo Bay	Suisun Bay
<u>Water Quality</u> Temperature	°C	low ^a	9.3	10.7	10.1	11.3	8.3	6.9
		mean	16.3	14.8	13.5	14.1	14.9	15.0
		high ^b	24.0	21.0	19.0	17.6	19.3	21.3
Secchi disc transparency	ft.	low	0.5	0.5	1.0	1.3	0.5	0.5
		mean	1.9	3.5	4.6	3.9	1.6	0.9
		high	4.0	8.5	9.0	6.5	3.5	1.5
pH		low	7.2	7.8	7.6	7.5	7.2	7.4
		mean	7.6	7.95	7.9	7.85	7.65	7.65
		high	8.0	8.1	8.1	8.0	7.9	8.0
Suspended solids	mg/l	low	15	8	5	6	13	34
		mean	55	29	15	21	45	65
		high	164	56	38	57	245	112
Chlorosity	g/l	low	9.5	13.5	15.5	10	3.5	0.02
		mean	15	16	16.5	16	10.5	2.5
		high	19	17	18	18	16	8.5
Dissolved oxygen	mg/l	low	0.7	7.0	6.5	6.2	6.8	6.6
		mean	5.1	7.4	7.3	7.4	8.0	8.4
		high	8.3	8.5	8.2	8.5	9.3	10.2
Dissolved oxygen saturation	%	low	9.3	81	80	75	80	65
		mean	55	90	84	85	85	85
		high	92	99	92	96	92	94

TABLE 1
(Continued)

Summary of Water Quality and Biological
Characteristics Observed in San Francisco Bay System
1960-1964^c

Parameter	Unit		South Bay	Lower Bay	Central Bay	North Bay	San Pablo Bay	Suisun Bay
Water Quality (Continued)								
Biochemical oxygen demand	mg/l	low	0.5	0.4	0.4	0.1	0.1	0.4
		mean	10	0.8	0.7	0.7	0.8	1.1
		high	48	1.5	1.0	1.5	1.4	2.1
Ammonia nitrogen	mg/l	low	---	0.06	0.05	0.03	0.06	0.01
		mean	3	0.12	0.15	0.13	0.15	0.13
		high	11	0.21	0.48	0.24	0.34	0.28
Nitrate nitrogen	mg/l	low	0.05	0.08	0.16	0.12	0.03	0.04
		mean	0.35	0.34	0.24	0.23	0.35	0.31
		high	1.1	0.55	0.36	0.38	1.0	0.95
Reactive phosphate	mg/l	low	---	0.3	0.2	0.2	0.2	0.1
		mean	---	0.5	0.32	0.2	0.30	0.20
		high	---	0.8	0.4	0.4	0.2	0.1
Dissolved silica	mg/l	low	2.3	2.9	1.4	2.5	1.4	1.5
		mean	8.7	5.4	3.6	4.8	1.4	13.6
		high	16	7.7	5.5	6.8	14	30
Coliform bacteria	MPN/100 lm	low	10	10	200	200	20	700
		mean	2×10^4	5×10^2	1×10^3	5×10^2	1×10^3	3×10^3
		high	3×10^8	3×10^4	6×10^4	1×10^4	1×10^4	2×10^4
Total microplankton	cells/l	low	1.2×10^3	3.0×10^3	6.6×10^3	7.0×10^3	3.0×10^3	2.4×10^4
		mean	1.4×10^4	1.0×10^4	3.7×10^4	3.2×10^4	4.7×10^4	3.6×10^5
		high	3.8×10^5	1.5×10^6	6.7×10^5	3.0×10^5	1.2×10^6	3.4×10^6
Total zooplankton	org/cu m	low	500	3,000	3,000	1,000	300	500
		mean	7,000	8,000	7,800	8,000	10,000	3,000
		high	40,000	12,000	15,000	23,000	32,000	19,000
Benthic Animal								
Diversity index		low	0	0.26	0.65	0.48	0	0
		mean	1.14	1.44	1.81	1.56	1.29	0.45
		high	2.14	2.45	3.10	2.76	2.44	1.61
Total Biovolume*	ml/l	mean	1.7	3.3	3.1	2.8	1.5	0.5

^a low = 5 percentile value. Extreme values below 5 percentile value are not included.

^b high = 95 percentile value. Extreme values beyond 95 percentile value are not included.

^c Data were extracted from **Final Report, A Comprehensive Study of San Francisco Bay, Volume V, SERL Report No. 78-2**

Pacific Ocean Waters

Data on the quality of Ocean waters in the Basin is very limited except in the immediate vicinity of waste discharges. Table 2 summarizes available data on the waters unaffected by wastes and bacterial quality of a portion of the surfzone which is affected by wastewater. The quality of ocean waters appears to vary with depth.

TABLE 2
OCEAN WATER QUALITY

Parameter		Location	Depth Ft. below surface
Dissolved Oxygen ^(a) mg/1	low	2.4	7 and 12 miles south of Point Reyes
	mean	5.0 - 9.5	"
	high	13.6	"
Temperature ^(a) °C.	low	8.1	"
	mean	10.2 - 11.8	"
	high	14.1	"
pH ^(b)	low	6.8	1 mile west of Seal Rock
	high	7.8	"
Turbidity ^(b) JTU ^(c)	low	5	"
	high	20	" near bottom
MPN Coliform	low	23/100 ml.	Ocean Beach - San Francisco
	normal	< 1000/100 ml.	"
	high	62,000/100 ml.	"

(a) Determinations by California Cooperative Ocean Fisheries Investigation (CCOFI).

(b) Determinations by Water Resources Engineers.

(c) JTU means Jackson Turbidity Units.

Groundwaters

Groundwater development has been an important factor in the economy of the San Francisco Bay Basin Planning Area, particularly in areas where surface supplies are not readily available. The major metropolitan areas now import their water supplies from great distances. In outlying areas, however, a large portion of the agricultural, industrial, and domestic water requirements are still met by groundwater.

The quality of groundwater in six of the most important groundwater basins in the Basin is shown in Table 3.

TABLE 3
GROUND WATER QUALITY^(a)

Groundwater Basin and Parameters	High	Median	Low
Santa Clara Valley - East Bay Area			
TDS, ^(c) mg/l	4,100	550	274
Chlorides, mg/l	1,480	88	12
Sulfates, mg/l	452	52	15
Total Hardness, mg/l	2,100	275	18
Boron, mg/l	4.8	0.3	0.0
% Sodium	91	31	12
Santa Clara Valley - South Bay Area			
TDS, mg/l	1,750	336	226
Chlorides, mg/l	698	25	6
Sulfates, mg/l	162	45	8.6
Total Hardness, mg/l	778	242	96
Boron, mg/l	2.4	0.1	0.0
% Sodium	59	22	12
Livermore Valley			
TDS, mg/l	4,700	554	368
Chlorides, mg/l	2,130	88	30
Sulfates, mg/l	434	56	13
Total Hardness, mg/l	983	356	93
Boron, mg/l	62	0.6	0.2
% Sodium	90	26	14
Petaluma Valley			
TDS, mg/l	19,760	2,384	127
Chlorides, mg/l	10,014	152	18
Sulfates, mg/l	1,066	32	3
Total Hardness, mg/l	8,820	380	35
Boron, mg/l	2.0	0.3	0.3
% Sodium	83	61	27
Napa Valley			
TDS, mg/l	1,840	510	90
Chlorides, mg/l	610	89	4.4
Sulfates, mg/l	-	-	-
Total Hardness, mg/l	-	121 (1 value)	-
Boron, mg/l	11	0.1	0.0
% Sodium	-	-	-

(a) Data supplied by State Department of Water Resources.

(c) TDS means total dissolved solids.

TABLE 3 (Continued)
GROUND WATER QUALITY^(a)

Groundwater Basin and Parameters	High	Median	Low
Sonoma Valley			
TDS, mg/l	660	300	270
Chlorides, mg/l	129	48	17
Sulfates, mg/l	48	6	5
Total Hardness, mg/l	149	64	17
Boron, mg/l	4.8	0.9	0.0
% Sodium	92	74	24
Suisun-Fairfield Valley			
TDS, ^(b) mg/l	2,560	970	250
Chlorides, mg/l	948	132	26
Sulfates, mg/l	—	—	—
Total Hardness, mg/l	377	319	198
Boron, mg/l	18	1.2	0.3
% Sodium	79	45	34

(a) Data supplied by State Department of Water Resources.

(b) Estimated from Specific Conductance (TDS = EC x 0.7).

WATER QUALITY PROBLEMS

Present water quality problems in the Bay system are caused primarily by the disposal of inadequately treated wastewater. Other factors such as inadequate source control of persistent deleterious materials, accidental spills of oil and chemicals and dredging operations also contribute to water quality degradation.

Present Problems

The following are the more serious of these problems:

Dissolved Oxygen Depletion

Alarming low dissolved oxygen concentrations are observed in San Francisco Bay, south of the Dumbarton Bridge. Dissolved oxygen concentrations in Coyote Creek downstream from the discharge of the San Jose Water Pollution Control Plant often fall to zero in the late summer at the height of the canning season. Similar low dissolved oxygen conditions exist in the sloughs and creeks receiving waste effluents along the west side of San Francisco Bay between San Jose and San Francisco and also in the Napa and Petaluma Rivers. The principal contributing factors to low dissolved oxygen conditions are the discharge of high oxygen-demanding substances and excessive algal growths caused by biostimulatory substances in wastewaters.

Health Hazards

Studies conducted in San Francisco Bay between 1959 and 1964 show that coliform bacterial levels exceeded the Public Health standards for water contact sports in most parts of the Bay system. Since the fall of 1967 when all dischargers to the Central Bay started chlorinating their wastes, bacteriological quality of the Central Bay has improved greatly. The Alameda Southshore beach is now safe for water contact sports and the San Francisco Aquatic Park and Ocean beaches are safe during most of the dry weather months for such use. More recently, the City of San Jose has begun chlorinating its waste effluent

and it is expected that the bacteriological quality of the South Bay will also improve. Combined sewers and poorly maintained separate sewer systems permit large quantities of untreated and inadequately treated sewage to discharge to the Bay and Ocean during wet weather. These wastes cause excessive bacterial levels in waters used for water contact recreation.

Another health hazard is related to the taking of shellfish for human consumption. There are forty-two shellfish beds in the Bay which are suitable for shellfishing. Bacterial levels of the water and shellfish in all of these beds exceed those levels considered to be safe for human consumption.

Biostimulation

Excessive algal growths caused by nutrients in municipal, industrial and agricultural wastewaters occur, especially in the areas of the Bay system which receive little tidal interchange. These blooms cause visual and odoriferous nuisances and deplete dissolved oxygen levels during the night. Algal counts greater than 4 million cells per liter have occurred below the Dumbarton Bridge and in Suisun Bay. Excessive growths have been observed along the shores of the Bay and in sloughs, such as Coyote Creek, Guadalupe Creek, Mountain View Slough, Redwood Creek, Novato Creek, Petaluma River, Napa River, Sonoma Creek, and Suisun Slough. In the summer of 1970, excessive algal and attached aquatic growths also occurred in Richardson Bay. The annual blooms of the red algae, *Mesodinium Rubrum*, in the open waters of the north Bay are another indication of excessive biostimulation.

Toxicity

A serious buildup of toxic materials exists in Bay waters. Here, too, the buildup is greatest in those water areas with limited tidal interchange. Reductions in the diversity of organisms in the ends of the Bay system as the result of buildup of persistent toxicants has been demonstrated. Other gross effects of the discharge of these materials in municipal and industrial wastewaters have also occurred. In the six-year period 1965 through 1970, thirty-five fish kills were reported in the Bay.

Pesticides

The chlorinated hydrocarbon pesticides (DDT, aldrin, dieldrin, etc.) break down very slowly and accumulate in the tissues of plants and animals, including man. Concentrations of these persistent pesticides in most water areas of the Bay system have exceeded Federal standards of 5 parts per billion. These pesticides are further concentrated several thousand folds in fish and shellfish. The effects of pesticides on fish and shellfish in the Bay are not well known and are still under study. It is significant to note that in 1965, 4,000 pounds, 20 percent of the chlorinated hydrocarbon pesticides which entered the Bay system, were from municipal and industrial waste discharges.

Oil Spills

Oil and chemical spills occur frequently in the Bay System. Chemical spills represent about 15 percent of the total spill incidents. There were 119 spill incidents to the Bay system in 1968, 186 in 1969, 213 in 1970, and 52 in 1971 as of April 30. Oil spills occurred most frequently at dock facilities during fuel transfer operations. The amounts of spill varied from a few gallons to a maximum of 840,000 gallons from the collision of two Standard Oil tankers on January 18, 1971. While minor spills cause soiling of boats and marinas and damage to esthetics, the Standard Oil tanker spill caused 7,000 bird kills and the soiling of 80 miles of beaches and other shoreline areas.

Temperature

The temperatures of the Bay waters are primarily determined by climatic and hydrological conditions. However, waste water discharges, especially those from power plants and petroleum refinery plants, can alter normal temperature conditions. Specific water temperatures are necessary to maintain aquatic life. For instance, the opossum shrimp, which is a critical food supply for young striped bass, will be threatened if water temperature is allowed to increase above 73°F. Migration of king salmon for spawning in San Joaquin River also depends on water temperature and will be inhibited if the river temperature in the channel below Stockton does not fall below 65°F. in the autumn.

Floatable Material

Grease particles and oil discharged in municipal and industrial wastes are unesthetic and pose health hazards when the particles accumulate on public beaches and in marinas.

Potential Problems

Potential water quality problems are related to increasing wastewater flows and to the interception of Sacramento River water for transport south.

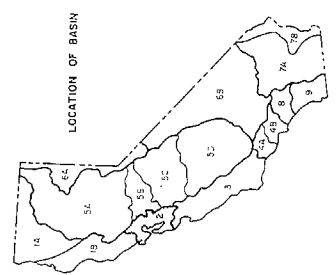
Population in the Basin is expected to double by the year 2000. This increase, together with anticipated industrial development, will intensify present water quality problems.

Proposed interception of Sacramento River water would modify the present hydraulic regime of the Delta and Bay system and would therefore have water quality implications. The State Water Resources Control Board has the responsibility for regulating fresh water releases from the Delta so as to maintain that water quality needed to protect appropriate beneficial uses. That Board is currently preparing its water rights decision on the Delta.

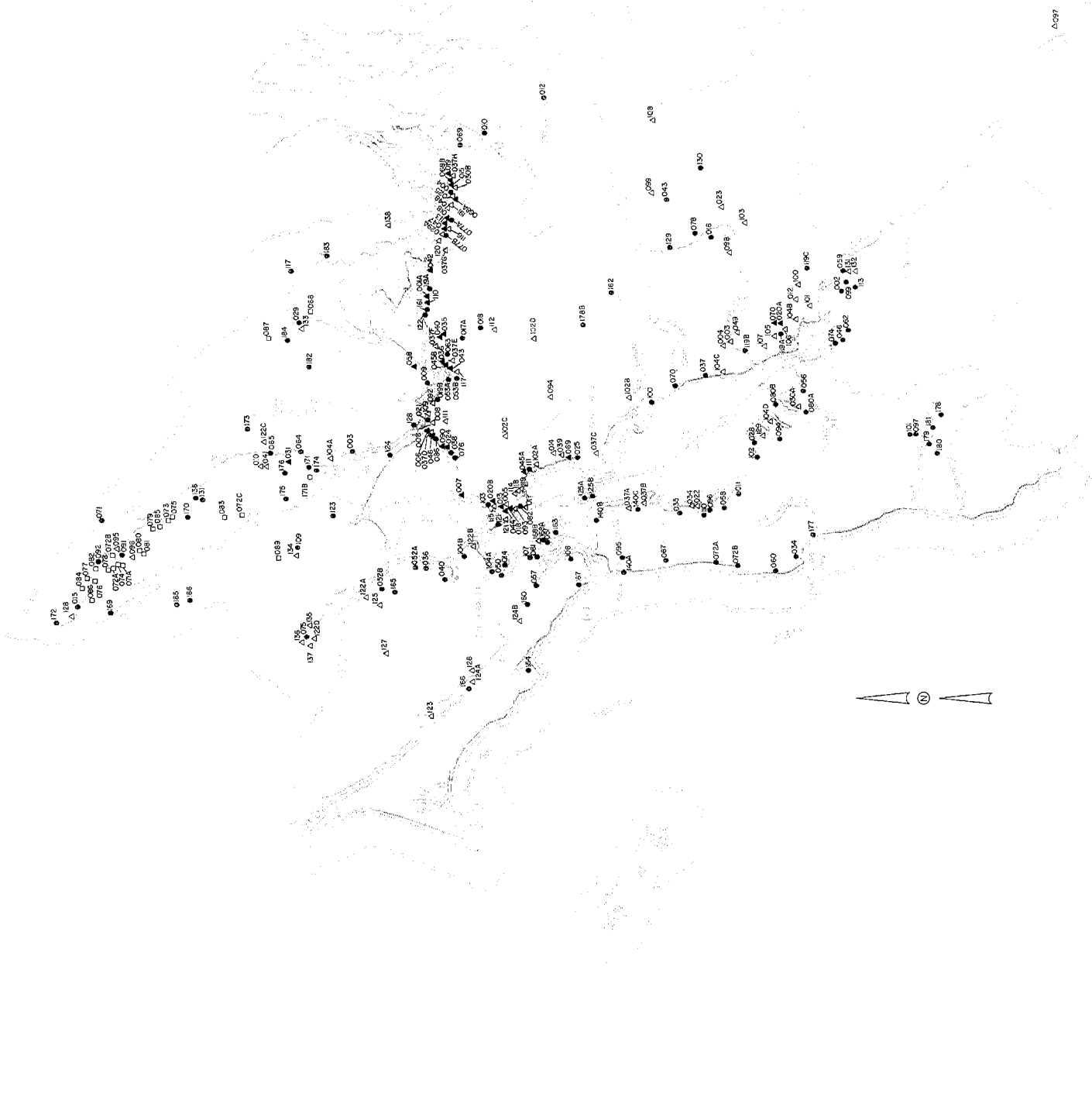
A considerable effort is being made to correct present water quality problems and to prevent potential ones. This Interim Plan is part of that effort.

Wastewater Discharges

There are approximately 270 discrete community and industrial wastewater dischargers in the Basin. They discharge approximately 800 million gallons per day (mgd) of sanitary sewage and industrial wastes to the Bay system inland from the Golden Gate, less than eight mgd to the Ocean and a similar volume onto land. The major dischargers are listed on Tables 4 and 5; the locations of most are shown on Figure 2.



- LEGEND
- MUNICIPAL WASTEWATER TREATMENT PLANTS
 - ▲ RESERVE INDUSTRIAL WASTEWATER DISCHARGES
 - △ CHEMICAL, PAPER, PETROCHEMICAL, PLASTIC, METALS AND STEEL
 - △ DISCRETE INDUSTRIAL WASTEWATER DISCHARGES
 - MINERIES



SAN FRANCISCO BAY BASIN 2

INTERIM WATER QUALITY CONTROL PLAN CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD 1971

TABLE 4
MAJOR MUNICIPAL SEWAGE TREATMENT AND DISPOSAL DATA
 Tabulated by Water Quality Zone

Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste		Flow				Discharge Load	Type of Treatment							
			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	Average Annual BOD -lbs/day	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection
1	002	Alviso, City of	x		0.52	0.18	36	0.24	44	8	x				x		
1	046	Los Altos, City of	x		6.0	1.81	31	1.92	32	1,780	x				x		
1	059	Milpitas Sanitary District		x	4.5	2.76	61	2.86	64	345				x			
1	062	Mountain View, City of	x		6.0	7.4	120	7.94	132	8,730				x			
1	074	Palo Alto, City of		x	10.	13.1	130	14.85	149	8,860					x		
1	099	San Jose, City of		x	94	74.9	82	76.8	82	25,750					x		
1	113	Sunnyvale, City of		x	15	17.4	116	19.1	127	5,440					x		
1	119b	Union S.D. - Irvington		x	10.5	5.11	49	5.32	49	2,750					x		
1	119c	Union S.D. - Newark		x	7.0	5.31	76	5.51	79	4,770					x		
2	056	Menlo Park Sanitary District	x		8.0	5.4	65	6.17	77	1,175					x		
2	080	Redwood City, City of		x	8.5	7.66	90.1	10.35	122	7,200					x		
2	094	San Carlos-Belmont, Cities of		x	11.0	3.72	33	4.19	38	2,560					x		

(a) Referenced to Figure 2
 (b) Average daily flow for the peak month

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2	119a	Union Sanitary District - Alvarado	x		3.0	1.95	65	2.17	72	450	x					x	
3	011	Burlingame, City of	x		9.7	4.13	76	7.35	76	654					x		
3	025	East Bay Municipal Utility District - Special District No. 1		x	1.28	81.5	61	113.2	88	113,760					x		
3	028	Estero Municipal Improvement District	x		2.16	1.5	69								x		
3	035	Guadalupe Valley M.I.D.	x		2.0	0.15									x		
3	037	Hayward, City of		x	18	11.86	66	12.95	72	13,040					x		
3	058	Milbrae, City of	x		5.3	2.30	43	2.72	51	570					x		
3	070	Oro Loma Sanitary District		x	25	14.1	56								x		
3	140c	San Francisco - Southeast		x	51.0	20.0	39	24.3	48	29,880						x	
3	096a	San Francisco International Airport - Sewage		x	0.75	0.92	123									x	
3	100	San Leandro, City of		x	11.0	7.69	70	9.30	85	4,780						x	

(a) Referenced to Figure 2
 (b) Average daily flow for the peak month

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3	102	San Mateo, City of	x		13.5	10.6	79	15.9	118	11,200	x				x		
3	110	South San Francisco-San Bruno		x	16.0	9.06	57	13.82	86	5,850			x		x		
3	125b	U.S.N. Yerba Buena Island															
4	014	California State Prison - San Quentin	x		1.5	0.78	47	1.06	70	760				x			
4	050	Marin County S. D. No. 1	x		5.0	5.46	86	9.47	189	650				x			
4	051	Marin County S. D. No. 5 - Main Plant	x		1.6	0.71	41	1.20	75	500				x			
4	057	Mill Valley, City of	x		1.8	2.06	114	4.44	261	440				x			
4	081	Richardson Bay S.D.	x		0.4	0.22	45	0.35	88	41				x			
4	082	Richmond, City of		x	16	9.78	61	19.27	120					x			
4	140a	San Francisco - North Point	x		57.6	62.2	108	79.6	138	91,400					x		
4	106	Sausalito-Marin City S.D.	x		2.0	1.93	97	3.86	168	1,290				x			
4	107	Seafirth Estate	x		0.01	0.01	100										

(a) Referenced to Figure 2
 (b) Average daily flow for the peak month

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			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection	Other		
4	111	Stege Sanitary District (connected to East Bay M.U.D.)	x	x	5.0	4.5	90	6.64	133	4,170	x	x							
4	125a	U. S. N. Treasure Island		x							x								
5	008	American Canyon Compnay Water District	x			0.52		0.91											
5	015	Calistoga, City of	x		0.5	0.58	116	1.48	286	55	x								
5	019a	Contra Costa County S. D. No. 7A	x		0.4	0.79	198	0.945	236	1,020	x								
5	021	Crockett-Valona Sanitary District	x		0.55	0.21	41	0.25	46	204									
5	036	Hamilton Air Force Base		x							x								
5	038	Hercules, Town of	x		0.02	0.015													
5	040	Las Gallinas Valley S. D.	x		2.25	2.89	128	4.55	202	803									
5	057a	Marin County Sanitary District No. 6 - Ignacio	x		0.90	0.75	70	1.26	140	804	x								
5	052b	Marin County Sanitary District No. 6 -- Novato	x		2.7	2.17	51	4.3	159	770	x								

(a) Referenced to Figure 2
 (b) Average daily flow for the peak month

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5	052c	Marin County Sanitary District No. 6 - Bahia	x		0.2						x			x				
5	054	Meadowood Development Company	x		.028													
5	064	Napa County Sanitary District		x	11	6.09	43	9.307	85	270				x				
5	075	Petaluma, City of		x	3.0	2.7	90	4.54	151	4,230				x				
5	076	Pinole, City of		x	1.1	0.98	77	1.49	135	1,210				x				
5	086	Rodeo Sanitary District		x	0.84	0.63	58	0.90	107	530				x				
5	091	St. Helena, City of		x	0.50	0.30	60	1.09	128	10				x				
5	103	San Pablo Sanitary District		x	7.0	7.97	114	9.82						x				
5	104a	San Rafael Sanitary District -- Main Plant		x	5.0	2.84	57	5.82	116	620				x				
5	104b	San Rafael Sanitary District - Marin Bay Plant		x	0.16	0.11	69	0.24	150					x				
5	109	Sonoma Valley County Sanitary District		x	4.0	2.59	65	6.6	165	515				x				
5	123	U. S. N. Radio Station, Skaggs Island		x										x				

(a) Referenced to Figure 2

(b) Average daily flow for the peak month

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MAJOR MUNICIPAL SEWAGE TREATMENT AND DISPOSAL DATA
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Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste		Flow				Discharge Load	Type of Treatment							
			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	Average Annual BOD -lbs/day	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection
5	124	U. S. N. Mare Island		x							x					x	
5	128	Vallejo Sanitary and Flood Control District	x			8.46		11.89		9,630						x	
5	131	Veterans Home of Yountville	x		1.5	0.31	21									x	
5	121	U. S. Naval Fuel Annex, Pt. Molate															
6	009	Benicia, City of	x		3.0	0.7	23	1.19	40	570						x	
6	019b	Contra Costa County Sanitary District No. 5	x		0.05	0.04	80										
7	017	Central Contra Costa Sanitary District - Main Plant		x	31.0	24.9	72	41.75	135	24,790						x	
7	018	Concord, City of	x		6.2	4.93	77	5.74	93							x	
7	019c	Contra Costa County Sanitary District No. 3	x		0.6	1.08	178	1.22	203	2,205						x	
7	029	Fairfield-Suisun Sewer District	x		5.0	4.61	94	5.7	114	5,850						x	
7	053a	Martinez, City of - Main Plant		x	3.23	1.4	43	1.67	52								
7	053b	Martinez, City of - Fairview Septic Tank	x		0.17												

(a) Referenced to Figure 2

(b) Average daily flow for the peak month

TABLE 4
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 Tabulated by Water Quality Zone

Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste		Flow				Discharge Load	Type of Treatment									
			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	Average Annual BOD -lbs/day	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection	Other	
7	063	Mountain View Sanitary District	x		1.6	0.93	46	1.91	119						x				x
7	117	Travis Air Force Base		x	2.5	1.5	60	2.6	104							x			
7	122	U. S. Naval Weapons Station - Concord		x															x
8	004	Antioch, City of				3.3									x				
8	010	Brentwood Sanitary District		x		0.3									x				
8	012	Byron Sanitary District		x		0.1									x				
8	019d	Contra Costa County Sanitary District No. 15		x		0													x
8	069	Oakley Sanitary District		x		0.2									x				
8	077a	Pittsburg, City of - Montezuma Plant		x	3.5	1.48	41	1.764	53	2,160					x				x
8	077b	Pittsburg, City of - Camp Stoneman Plant		x	7.5	0.63	7	0.73	10						x				
10	164	Bolinas Community P. U. D.		x															x

(a) Referenced to Figure 2

(b) Average daily flow for the peak month

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MAJOR MUNICIPAL SEWAGE TREATMENT AND DISPOSAL DATA
 Tabulated by Water Quality Zone

Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste		Flow				Discharge Load	Type of Treatment							
			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	Average Annual BOD -lbs/day	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection
10	034	Granada Sanitary District	x		0.3	0.16	44	.27	90	195						x	
10	177	Half Moon Bay Sanitary District	x			0.2											
10	060	Montara Sanitary District	x		0.5	0.29	38	0.51	102						x		
10	067	North San Mateo County Sanitary District	x		12	4.11	39			7,720					x		
10	072a	Pacifica, City of - Sharp Park	x		4.0	1.08	25	1.48	37	990					x		
10	072b	Pacifica, City of - Linda Mar	x		4.0	1.77	39	2.42	61	1,690					x		
10	140b	San Francisco - Richmond-Sunset	x		22.5	19.4	86	24.7	127						x		
10	115	Tomales Sewer Maintenance District	x												x		
land	001	Almaden Air Force Base	x													x	
land	016	Castlewood Corporation	x													x	
land	043	Livermore, City of	x		5.0	3.6	74	3.7	74	309					x		
land	160	Mill Valley Air Force Base	x		.03												x

(a) Referenced to Figure 2
 (b) Average daily flow for the peak month

TABLE 4
 MAJOR MUNICIPAL SEWAGE TREATMENT AND DISPOSAL DATA
 Tabulated by Water Quality Zone

Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste		Flow				Discharge Load	Type of Treatment								
			Municipal Sewage	Industrial Waste and Municipal Sewage	Design Capacity-MGD	1970 Average Annual -MGD	% of Design Capacity	1970 Wet Weather (b) Peak-MGD		% of Design Capacity	Average Annual BOD -lbs/day	None	Primary	Biological Secondary	Chemical	Stabilization Pond	Disinfection	Other
land	065	Napa Valley Mobile Home Park	x		.03													
land	071	Pacific Union College	x		.20													
land	078	Pleasanton, City of	x		1.7	0.9	52											
land	129	Valley Community Services District	x		2.5	2.17	86	3.14	125	32								
land	130a	Veterans Administration Hospital -- Livermore	x		.20	.16	80											

(a) Referenced to Figure 2

(b) Average daily flow for the peak month

TABLE 5
 MAJOR DISCRETE INDUSTRIAL WASTE TREATMENT AND DISPOSAL DATA *
 Tabulated by Water Quality Zone

Water Quality Zone (a)	Identification No. (a)	Discharger	Type of Waste					Flow Average Annual - MGD	Type of Treatment									
			Standard Industrial Classification (SIC)	Sanitary Sewage	Chemical or Petroleum Process Waste	Food Processing Waste	Other Industrial Waste (b)		None	Primary	Settling Pond	Biological Secondary	Chemical	Stabilization Pond	Disinfection	Screening	Oil Removal	pH Adjustment
8	018	Dow Chemical Company	28		x			25.8		x						x	x	
8	019	duPont deNemours, E. I.	28	x	x			1.5						x		x	x	
8	068a	Fibreboard Corporation - Board Mill	26					5.0		x						x		
8	068b	Fibreboard Corporation - Pulp-paper mill	26					16.0		x				x		x		
8	025	Hickmont Canning Company	20					0.2						x		x		
8	030a	Kaiser Gypsum Company, Incorporated - Antioch	39					0.4		x								
8	037b	PG&E - Pittsburg	49							x					x		x	
8	037c	PG&E - Contra Costa	49					970.		x					x			
8	091	Tillie Lewis Foods	20					4.0 max.							x			
10	044b	Standard Oil Company - Ocean	29					3.71							x			
10	043b	Shell Oil - Ocean	28					-							x			
land	023	General Electric Company - Vallecitos						.29									x	

* Smaller industries and wineries not included

(a) Reference to Figure 2
 (b) Including cooling water

CHAPTER IV
BENEFICIAL USES OF WATERS

This Interim Plan outlines a course of action by which beneficial uses of Basin waters will be protected. A statement of those uses which this Regional Board intends to protect is, therefore, essential to the Plan.

It is the intention of this Regional Board to protect the present and foreseeable beneficial uses of **tidal waters** in the Basin as delineated in Table 6 and Figures 3 and 4, and of **non-tidal waters** as delineated in Table 7.

KEY TO DESCRIPTIONS OF BENEFICIAL WATER USES

The following list contains abbreviations and brief definitions of the beneficial uses of the waters of this Basin which the Board intends to protect.

- | | |
|---------------|--|
| Mun. | Municipal and Domestic Supply – includes usual community use and individual use for domestic purposes. |
| Agr. | Agricultural Supply – includes crop, orchard and pasture irrigation, stock watering, and all uses in support of farming and ranching operations. |
| Ind. | Industrial water supply and resource extraction. |
| Rec 1A | Water contact recreation which involves extensive body contact with the water such as swimming and wading. |
| Rec 1B | Water contact recreation which involves limited contact with water, such as fishing and boating. |
| Rec 2 | Non-water contact recreation – involves the presence of water but does not require water contact, such as picnicking, sunbathing, hiking, camping, aesthetic enjoyment, and hunting. |
| Com. | Commercial Fishing and Shellfish and Herring Egg Harvesting. |
| Nav. | Navigation – includes commercial and naval shipping. |
| Sci. | Scientific Study, Research and Training. |
| Mar. | Marine Habitat – provides habitat for fish propagation and sustenance, shrimp, crab, and other shellfish, waterfowl, and other water-associated birds, and mammal rookery and hauling grounds. |
| Frsh. | Freshwater Habitat – provides freshwater habitat for fish, waterfowl and wildlife. |
| Migr. | Fish Migration – provides a migration route for anadromous species. |
| Spawn | Fish Spawning – provides high quality aquatic habitat especially suitable for fish spawning. |

TABLE 6
PRESENT AND FORESEEABLE BENEFICIAL USES BEING PROTECTED
TIDAL WATERS (a)

WATER BODY	BENEFICIAL USES											
	Mun.	Agr.	Ind.	Rec 1A	Rec 1B	Rec 2	Com.	Nav.	Sci.	Mar.	Migr.	Spawn
Pacific Ocean			X	X	X	X	X	X	X	X	X	X
Bolinas Lagoon				X	X	X	X			X	X	X
Drakes Estero					X	X	X		X	X	X	X
Limantour Estero				X	X	X			X	X	X	X
Tomales Bay				X	X	X	X		X	X	X	X
Coastal Streams				X	X	X				X	X	X
San Francisco Bay System												
Within Region 2(b)	X	X	X	X	X	X	X	X		X	X	X
Within Region 5	X	X	X	X	X	X		X		X	X	X

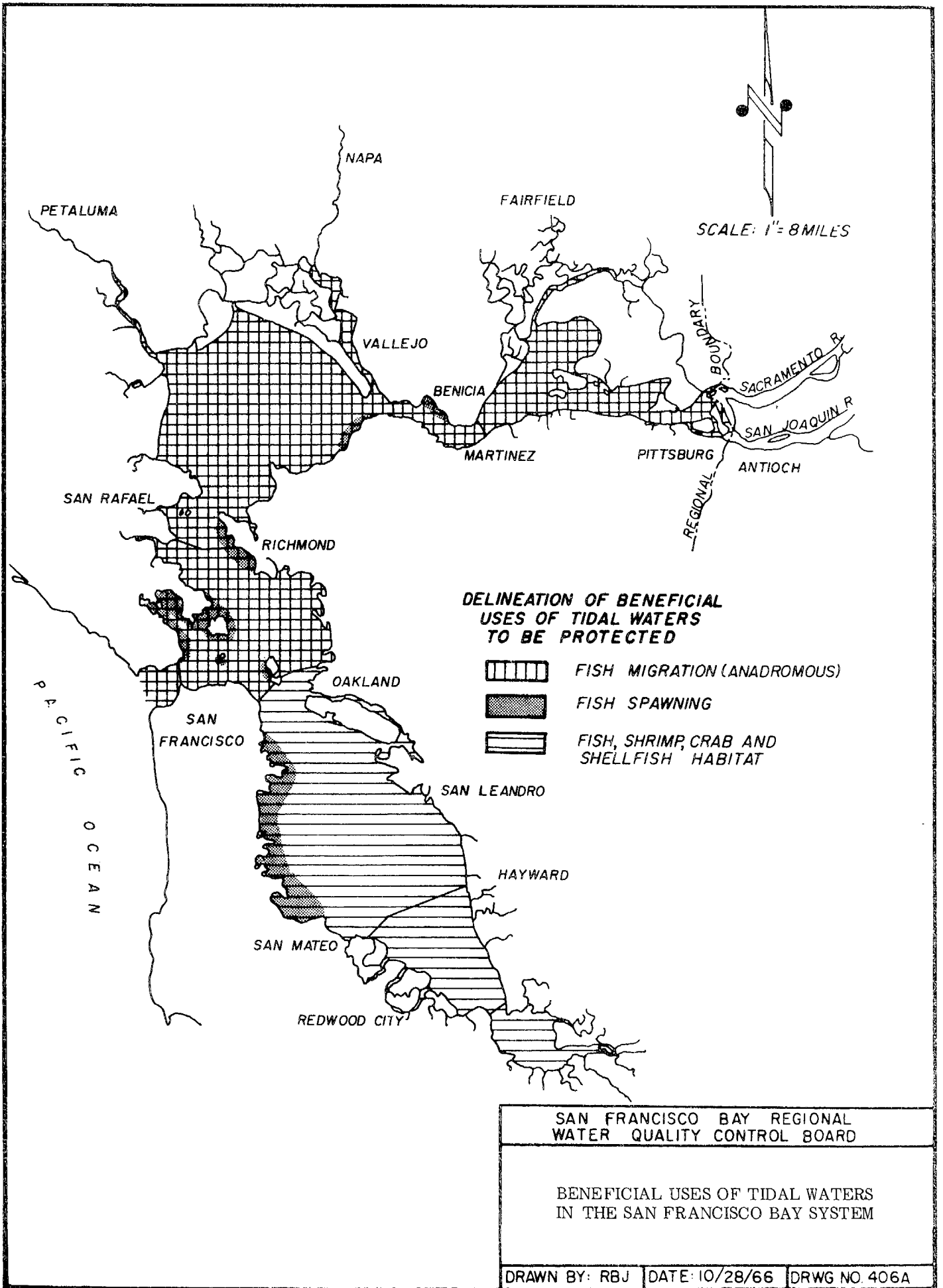
(a) The uses delineated in this Table are those which the three regional boards, Nos. 1, 2 and 5, stated intentions to protect in 1966 and 1967.

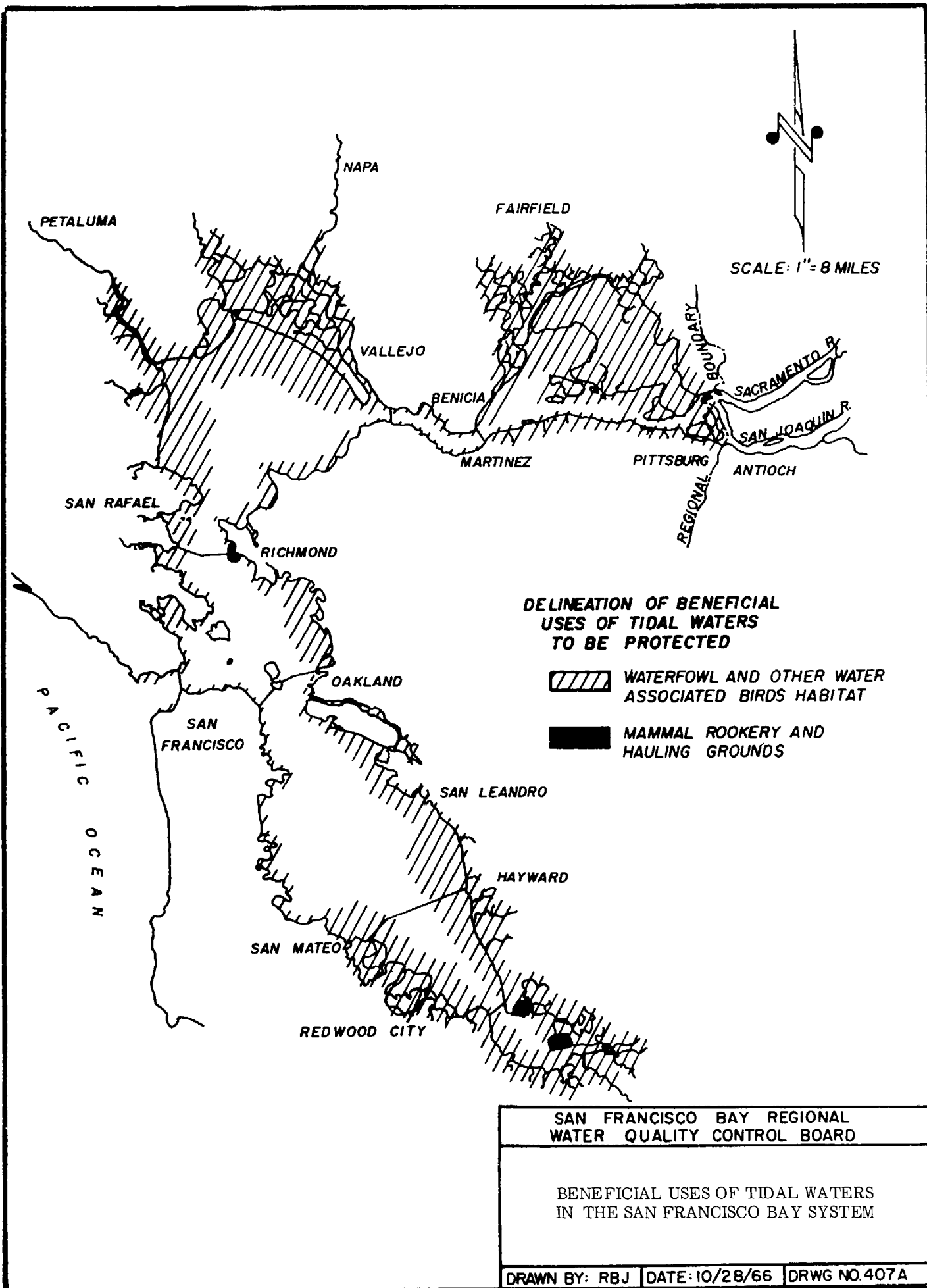
(b) See Figures 3 and 4 for specific locations.

TABLE 7
PRESENT BENEFICIAL USES BEING PROTECTED
NON-TIDAL (a)

WATER BODIES	BENEFICIAL USES						
	Mun.	Agr.	Ind.	Rec. 1A	Rec. 1B	Rec. 2	Frsh
Surface Waters	X	X	X	X	X	X	X
Ground Waters	X	X	X				

(a) This Board will determine the specific surface water bodies and portions of those bodies to be protected for each of these beneficial uses as quantitative use information becomes available. However, it is the intention of this Board to protect all groundwaters in the Region for domestic water supply except those made unsuitable for such use by natural water quality factors.





CHAPTER V

POLICY GUIDELINES

This Interim Plan is intended to provide policy guidance for all public and private agencies with responsibilities for water quality control factors in the Basin.

GOALS

It is this Board's intention to use these water quality goals in regulating water quality factors:

1. The quality of all waters in the Basin is to be **continuously** protected from the adverse effects of controllable water quality factors.
2. The quality of all waters in the Basin will be maintained and enhanced to the highest possible levels.
3. Municipal and industrial wastewaters will be managed as part of an integrated system of fresh water supplies to achieve maximum benefit of fresh water resources for present and future beneficial uses, and to achieve environmental protection and enhancement.
4. The most effective use of fresh water and protection of the environment will ultimately be achieved by maximum feasible reclamation and reuse of municipal, industrial and agricultural wastewaters.

MANAGEMENT PRINCIPLES

This Board will be guided by the following management principles in achieving the above goals:

1. Subregional and regional sewerage planning is to be encouraged as the most effective means of:
 - a. Achieving the above goals at the earliest possible date.
 - b. Minimizing the investment of public and private funds in sewerage and industrial wastewater facilities.
 - c. Implementing consolidations of facilities necessary to achieve: 1) better discharge locations, 2) more efficient and continuous operation of facilities, and 3) improved reclamation options.
 - d. Assuring planned growth of sewerage systems.
2. Proven methods for achieving the above goals are to be relied upon until the engineering and financial feasibility of alternate methods are adequately documented.
3. Reclamation is encouraged as part of subregional and regional programs.
4. Discharge of wastewaters to surface waters in the Basin is considered to be:
 - a. An interim means for disposing of reclaimable wastewater until a feasible project for reuse is developed.
 - b. A means for disposing of adequately treated blowdown, or
 - c. An emergency outlet for peak flows.

5. Projects for which Federal-State construction grants are requested will be required to:
 - a. Conform to approved subregional programs.
 - b. Be designed and operated so as to achieve the maximum protection and enhancement of Basin waters.
 - c. Be supported by ordinances requiring source control of persistent deleterious materials.
 - d. Conform to appropriate regional land use plans.
6. Discrete industrial waste dischargers are encouraged to implement programs to:
 - a. Reduce the volume of wastewater discharged to surface waters.
 - b. Control persistent deleterious materials at their source.
 - c. Prevent accidental spills of deleterious materials.
 - d. Use reclaimed municipal wastewater.
7. Communities will be required to control peak wet weather flows so as to comply with water quality objectives contained in this Plan.
8. This Board will continue to implement the following statements of policy:

<u>Resolution No. or Motion Date</u>	<u>Subject</u>
81	Sewer Drainage Wells
226	Niles Cone Groundwater Quality
September 20, 1962	Introduction of fertilizers and chemicals into water wells
August 20, 1964	Regulation of annexations to sewerage systems under enforcement proceedings
768	Sewering Urbanizing Areas
May 18, 1967	Regulation of oil and gas wells in the Livermore-Amador Valley
68-32	Dredging Operations
68-38	Regional Sewerage Agency
May 23, 1968	Relative to Final Bay-Delta Report
69-42	Regulation of Waste Disposal onto Land
70-65	Waste Discharges from Vessels
70-100 and 71-8	Ocean Disposal of Wastes

CHAPTER VI

WATER QUALITY OBJECTIVES AND WASTE DISCHARGE PROHIBITIONS

It is the intention of this Regional Board to regulate all controllable factors so as to protect the quality of Basin waters from deterioration and to ultimately enhance the quality of all waters. The ultimate protection from the effects of wastewater will be best afforded by source control of non-degradable deleterious materials, reclamation of all reclaimable portions and relocation of non-reclaimable portions to areas where the environmental impact would be negligible. Until this becomes fully feasible, an interim level of protection and enhancement must be achieved. The most effective means of doing this appears to be by a combination of improved treatment and relocation of discharges to areas where the wastes would receive adequate dispersion and assimilation during the interim period. This concept for interim protection is based upon evaluations of the following factors:

1. The ecosystems in the ends of the Bay system have already been adversely affected by wastes.
2. The nature of all of the specific waste constituents which adversely affect these areas is not yet known in sufficient detail to determine treatment needs.
3. Although treatment processes are available which can remove from wastewater the toxicants and nutrients that have been identified, their technical and economic feasibility for application in this Basin has yet to be adequately demonstrated.

Extent of relocation and degree of treatment needed to meet these objectives will be thoroughly re-evaluated as the results of current studies by subregional groups of dischargers and by State agencies become available.

Within the context of the need to implement waste treatment and disposal programs at early dates and the current pertinent studies it is this Regional Board's intention to implement the following water quality objectives and prohibitions. These objectives and prohibitions are designed to maintain or enhance water quality.

WATER QUALITY OBJECTIVES

No controllable water quality^{1/} factor shall cause any of the following water quality objectives to be exceeded.

A. TIDAL AND NON-TIDAL SURFACE WATERS

Apparent Color

No significant variation beyond present natural background levels.

Turbidity

No significant variation beyond present natural background levels.

Bottom Deposits

None in measurable concentrations above natural background levels.

^{1/} "Controllable water quality factor" means any human activity or natural occurrence which directly or indirectly affects water quality and can be regulated.

Floating Material

None other than of natural causes.

Oil or Other Materials of Petroleum Origin

None floating in quantities sufficient to be visible and none suspended or deposited at any place.

Odor

None other than of natural causes.

Pesticides^{1/}

No individual pesticide or combination of pesticides shall reach concentrations found to be deleterious to aquatic biota or wildlife or reach objectionable levels in fish or shellfish used for human consumption.

Hydrogen Ion Concentration - pH

There shall be no significant change in the natural ambient pH value at any place in the main body of the receiving water, nor shall the pH of the waste itself exceed the range 7.0 to 8.5; or 6.5 to 8.5 when the natural ambient value is as low as 6.5.

Biostimulants

None in concentrations sufficient to cause deleterious biotic growths. Whenever natural factors cause such concentrations, then controllable factors shall not cause further increase.

Toxic or Other Deleterious Substances^{2/}

No toxic or other deleterious substances shall be present in the receiving waters in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife or waterfowl or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

Radioactivity

None present in concentrations exceeding levels set forth in California Radiation Control Regulations, Subchapter 4, Chapter 5, Title 17, California Administrative Code.

Temperature

Those objectives prescribed by the State Water Resources Control Board in its "Policy Regarding the Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California."

B. TIDAL WATERS**Bacteria**

Sewage bearing wastes shall be treated to the following levels of quality at all times:

1/ Pesticide means any substance or combination of substances used to control objectionable insects, weeds, rodents, fungi or other forms of plant or animal life.

2/ Including but not limited to pesticides, heavy metals, materials such as polychlorinated biphenols and all materials which impart a taste or odor to fish, wildlife or waterfowl flesh.

Discharges to any embayment, slough, creek or other confined or shallow waters:

Volumetric Dilution	Quality				
Tidal water: Waste, at point of access					
Equal to or greater than 100:1	The waste shall not cause the receiving water surface to exceed that bacterial quality prescribed in Section 7958, Title 17, California Administrative Code.				
Less than 100:1 but greater than 10:1	The waste shall not cause the receiving water surface to exceed a median MPN of coliform organisms of 23/100 ml as determined from the results of the previous consecutive 7 days for which analyses have been completed.				
Equal to or less than 10:1	At some point in the treatment process the waste shall not exceed a median MPN of coliform organisms of 2.2/100 ml as determined from the results of the previous consecutive 7 days for which analyses have been completed, and the waste as discharged shall not exceed the following limits of quality:				
	<table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">5-day 20°C BOD</td> <td style="text-align: right;">5.0 mg/l median 10.0 mg/l maximum</td> </tr> <tr> <td style="text-align: center;">Turbidity</td> <td style="text-align: right;">10 Turbidity Units maximum</td> </tr> </table>	5-day 20°C BOD	5.0 mg/l median 10.0 mg/l maximum	Turbidity	10 Turbidity Units maximum
5-day 20°C BOD	5.0 mg/l median 10.0 mg/l maximum				
Turbidity	10 Turbidity Units maximum				

The Regional Board will consider exceptions to the above coliform objectives for dilutions of less than 100:1 for certain wet weather discharges when it deems that an inordinate financial burden would be placed on the discharger and when it finds that an equivalent level of environmental protection can be achieved by alternate means.

Submerged deepwater discharges in the Bay System:

The waste shall not cause the receiving water at any place within one foot of the surface to exceed that bacterial quality prescribed in Section 7958, Title 17, California Administrative Code.

The criteria prescribed in the "National Shellfish Sanitation Program Manual of Operations, Part 1, U. S. Department of Health, Education and Welfare" are the objectives for any area being protected for the taking of shellfish for human consumption.

Dissolved Oxygen

Present levels of dissolved oxygen will be preserved but in areas where oxygen levels are less than the following, the following objectives shall apply to the main body of the tidal waters:

Annual median	80 percent of saturation
Minimum	5.0 mg/l

When natural factors cause lesser concentration, then controllable water quality factors shall not cause further reduction.

Salinity

Ocean Waters

No significant variation beyond natural background levels.

Tidal Waters East of the Westerly End of Chipps Island

This Regional Board will regulate waste discharges so as to protect the beneficial uses for which these waters will be suitable under the terms of the State Water Resources Control Board's water rights decision. The State Board has the responsibility of regulating fresh water releases from the Delta so as to maintain that water quality needed to protect appropriate beneficial uses. The State Board is currently preparing its water rights decision on the Delta.

C. NON-TIDAL SURFACE WATERS

Dissolved Oxygen

The objective for tidal waters will apply except in streams used for salmon, steelhead and/or trout spawning where a minimum of 90 percent of saturation is required at all times. When natural factors cause lesser concentrations, then controllable water quality factors shall not cause further reduction.

D. GROUNDWATER

No controllable water quality factor shall degrade the quality of any groundwater. This Regional Board will consider exceptions where the controllable factor is reclaimed wastewater and where existing and potential beneficial uses will be protected.

E. RECLAIMED WASTEWATER

Those quality limits prescribed in Title 17, Sections 8025 through 8050, California Administrative Code. ^{1/}

WASTE DISCHARGE PROHIBITIONS

The following waste discharges are hereby prohibited. These prohibitions will become effective upon approval of this Plan by the State Board.

A. DISCHARGES TO TIDAL WATERS

1. Any sewage bearing wastewater, regardless of the degree of treatment, at any place:
 - a. Inland from the Golden Gate; within 200 feet offshore from the extreme low water line.
 - b. In the Ocean; where they will adversely affect waters over rocky substrates or within 1000 feet offshore from the extreme low water line and where the waste will not receive a minimum dilution ratio of 100:1 as it reaches the surface.

The Regional Board will consider exceptions from the above prohibitions for certain wet weather discharges and other discharges having high initial dilution when it deems that an inordinate financial burden would be placed on the discharger and when it finds that an equivalent level of environmental protection can be achieved by alternate means.

^{1/} This Board will consider incorporating in this Plan certain reliability criteria which we understand are now being developed by the State Department of Public Health

- c. To Tomales Bay, Bolinas Lagoon and Drakes and Limantour Esteros.
2. Any discharge which does not comply with the water quality objectives for tidal waters contained in this plan.
3. Any sewage bearing wastewater, regardless of the degree of treatment, from vessels to the San Francisco Bay system, Tomales Bay, Bolinas Lagoon, Drakes and Limantour Esteros, and Princeton Harbor.

B. OTHER DISCHARGE PROHIBITIONS

1. Floatable rubbish or refuse into surface waters or at any place where it may contact surface waters.
2. Silt, sand, soil, clay or other earthen materials from mining, construction, agricultural, lumbering or any other onshore operation in quantities sufficient to cause deleterious bottom deposits or turbidity or discoloration in excess of natural background levels in surface waters.
3. Oil or materials of petroleum origin in quantities sufficient to be visible.
4. All sewage bearing wastes to non-tidal waters. This Board will consider exceptions where a discharge is approved as part of a reclamation project or where an alternate discharge location is not possible.
5. All conservative toxic and deleterious substances, including but not limited to such heavy metals as mercury, lead and cadmium, above those levels which can be achieved by source control, to waters in the Basin.
6. All discharges of sewage sludge and industrial sludge to waters in the Basin.

BOARD INTENTION TO ADOPT PROHIBITIONS

It is the intention of this Regional Board to adopt prohibitions no later than July 1, 1973 for all waste discharges to the following areas of limited tidal interchange which have not had substantially all toxicants and biostimulants removed:

1. South San Francisco Bay and the Northern and Eastern end of the Bay system.
2. Any embayment, slough, creek or other confined or shallow water area.

The details of the specific areas from which such wastes are to be excluded and the schedule for removal of existing discharges into those areas will be specified in the prohibitions.

CHAPTER VII

PROGRAM OF IMPLEMENTATION

The program of implementation for this Interim Basin Plan consists of the following interrelated parts:

1. A "Wastewater Facilities Plan" which prescribes in broad terms those subregional sewerage facilities which this Board, on the basis of present information, believes must be constructed to achieve those water quality objectives and prohibitions contained in this Interim Plan.
2. Implementation of those same objectives and prohibitions through the waste discharge requirement, surveillance and enforcement provisions of the Porter-Cologne Water Quality Control Act.
3. A facilities construction program by which the Facilities Plan will be implemented and the Basin waters given interim protection until the Conceptual Plan implementation is completed.
4. A program for continuing review of this Interim Plan and for preparation of the Fully Developed Plan which the Environmental Protection Agency has required by July 1973.

The description of this program of implementation is primarily a summary documentation of the water quality control program that this Board has been conducting for many years. This documentation is occurring between two major steps in the Board's program, i.e. receipt of the conceptual "San Francisco Bay-Delta Water Quality Control Program - Final Report" and the completion of the more detailed subregional studies. These latter studies are developing the information needed by subregional groups of dischargers in this Basin to construct needed facilities. Therefore, the Interim Plan must be construed as a generalized plan to be re-evaluated as ongoing studies produce needed information.

Wastewater Facilities Plan

The aforementioned Bay-Delta Report was funded and directed by the State Board with input from this Regional Board. The quality and degree of effort that went into that Report makes it the most comprehensive evaluation of the water quality control needs of this Basin.

That Report recommended the following:

1. A three-phase program to construct sewerage facilities necessary to protect Basin waters through the year 2020.
2. Establishment of a regionwide agency to implement the program.
3. Additional studies on toxicity, biostimulation and dispersion.

This Regional Board has stated its intention to use the general concepts of Phase I of that program to evaluate the award of sewerage construction grants. This Board has also supported the establishment of a regional sewerage agency. The State Board has recommended establishment of such an agency by the Legislature. Some of the additional studies recommended by Bay-Delta are now being conducted by the State Departments of Water Resources and Fish and Game and the University of California under the direction of the State Water Resources Control Board.

Phase I of the Bay-Delta Program would relocate waste discharges from the relatively confined ends of the Bay system toward the central Bay. This recommendation was based on the following considerations:

1. Damage had already occurred to the ecosystem at the ends of the Bay as the result of wastes discharged there.

2. The waste components most responsible for this damage were toxicants and biostimulants and the precise nature of these materials was unknown.
3. Feasible treatment processes which could adequately remove these materials were unavailable.
4. Relocation of waste discharges toward the deeper waters of the central Bay would provide the best assurance for maintaining the desired water quality objectives.

The general concepts of Phase I as considered by this Board include reclamation of wastewaters where feasible as part of subregional programs. It is this Board's intention to achieve the maximum use of the Basin's water and wastewater resources as soon as possible. Basin waters are to be continuously protected from the effects of wastes and the ultimate goal is to achieve maximum feasible reclamation.

It should be underscored that this Board does **not** support Phase II of the Bay-Delta Program, i.e. it does not encourage a regionwide export of wastewater to the ocean. Any proposed new or substantially increased local or subregional discharge to the ocean must be preceded by an oceanographic survey to select a location where the environmental impact will be minimized. Any ocean discharge must be adequately treated to protect the environment. Any discharge of wastewater to waters in the Basin must be treated as a minimum to whatever degree is necessary to comply with the water quality objectives contained in this Plan. Any wastewater discharge to surface waters is considered to be:

1. An interim means for disposing of reclaimable wastewater until a feasible project for reuse is developed.
2. A means for disposing of adequately treated blowdown.
3. An emergency outlet for peak flows.

The State Board and this Regional Board have encouraged, and in some instances required twelve subregional groups of dischargers representing 86 percent of the waste volume in the Basin to develop coordinated subregional water quality control programs consistent with the general concepts of Bay-Delta Phase I. The necessary studies are now under way. The subregional groups are investigating their sewerage needs through the year 2000. Among the specific items they are investigating are: the feasibility of reclamation; locations and natures of interception, treatment and disposal facilities; scheduling of implementation and financial and governmental arrangements. These studies are scheduled for completion between the spring of 1971 and the summer of 1972.

The Wastewater Facilities Plan by which this Board will evaluate sewerage construction for the next few years is described in Table 8. It covers the period 1971-1976 but will be reevaluated before July 1973. It is consistent with Phase I of the Bay-Delta Program.

TABLE 8
INTERIM BASIN PLAN - SAN FRANCISCO BAY
WASTEWATER FACILITIES PLAN

Subregion Dischargers Present Flow	Conceptual Sewerage Plan	Start Construction Fiscal Year	Reclamation Potential for period 1971-1976
<p>1. South Bay San Jose, Sunnyvale, Mountain View, Menlo Park, Palo Alto, Milpitas, Los Altos, Union S.D. (Newark & Irvington) 138 mgd</p>	Intercept toward Central Bay to Dumbarton Bridge, as a minimum. Reclaim portion of flow for groundwater recharge.	1974-75	Excellent.
<p>2. East Bay Union S.D. (Alvarado), Hayward, Oro Loma, San Leandro, EBMUD</p>	Intercept toward Central Bay, to EBMUD, or connect to South Bay Interceptor	1974-75 1975-76	Limited, but improved with consolidation.
<p>3. Livermore Valley VCSD, Livermore, Pleasanton 7 mgd</p>	Reclamation for groundwater recharge with saltwater balance line to a Central Bay Interceptor.	1973-74	Excellent.
<p>4. Central and Western Contra Costa County Antioch, Pittsburg, Central CCSD, Rodeo, Crockett, San Pablo, Richmond, Brentwood, Byron, Oakley; all industries 338 mgd</p>	Intercept toward Central Bay to Carquinez Bridge minimum. Incremental interception can begin in 1973-74. Reclamation of community wastes for industrial reuse.	1975-76	Excellent both for early industrial reuse and for eventual agricultural irrigation.
<p>5. Fairfield Area Fairfield-Suisun Suisun S.D., Travis A.F.B. 6.2 mgd.</p>	Reclamation for agricultural irrigation or groundwater recharge.	1975-76	Excellent.
<p>6. Benicia-Humble 3.7 mgd</p>	Reclaim municipal waste for industrial reuse with possible interception to Contra Costa Interceptor.	1975-76	Good.
<p>7. Lower Napa River Vallejo, American Canyon County Water Dist., Mare Island, Napa Satn. Dist. 16.8 mgd</p>	Intercept to Vallejo, minimum, or to Contra Costa Interceptor.	1975-76	Limited, but improved with consolidation.

TABLE 8 (Continued)
INTERIM BASIN PLAN - SAN FRANCISCO BAY
WASTEWATER FACILITIES PLAN

Subregion Dischargers Present Flow	Conceptual Sewerage Plan	Start Construction Fiscal Year	Reclamation Potential for period 1971-1976
8. Upper Napa River Calistoga, St. Helena, Yountville 1.7 mgd	Reclamation for agricultural irrigation and/or groundwater recharge.	1974-75	Excellent.
9. Marin and Southern Sonoma Counties a. Petaluma, Sonoma Valley Co. S.D., Novato S.D., Hamilton AFB, Las Gallinas, San Rafael S.D. (Marin Bay) 12 mgd	Intercept to Pt. San Pedro, minimum, or to Pt. San Quentin, or to Ocean via Tennessee Valley.	1975-76	Limited, but improved with consolidation.
Pt. San Quentin Area b. San Rafael S.F., San Quentin Prison, S.D. #1 11 mgd	Intercept to Pt. San Quentin, minimum, or to Ocean via Tennessee Valley.	1972-73	Limited, but improved with consolidation.
Richardson Bay Area c. Mill Valley, Richardson Bay S.D., #5, Sausalito-Marín City S.D. 4.8 mgd	Intercept to Ocean via Tennessee Valley.	1972-73	Limited, but improved with consolidation.
10. Bolinas-Stinson Beach 0.1 mgd	Intercept to Ocean across Bolinas Mesa	1970-71	Very limited.
11. Tomales Bay Watershed 101.6 mgd	Reclamation for agricultural irrigation or groundwater recharge.	-	Good.
12. City and County of San Francisco North Point, Southeast and Richmond-Sunset Plants	Improved treatment with individual deepwater outfalls.	1971-72	Limited; possible increased park irrigation.

TABLE 8 (Continued)
INTERIM BASIN PLAN - SAN FRANCISCO BAY
WASTEWATER FACILITIES PLAN

Subregion Dischargers Present Flow	Conceptual Sewerage Plan	Start Construction Fiscal Year	Reclamation Potential for period 1971-1976.
13. San Mateo County	Consolidation as indicated by items a, b, and c below has been studied or is being accomplished. Further consolidation treatment and transport of wastes from these areas to a more northerly Bay discharge point must be investigated before added investments beyond those shown are made for sewerage facilities to serve areas b and c.		Limited, but improved by consolidation in most of County. Excellent early opportunity for irrigation and groundwater recharge in Daly City-Colma area.
a. Bayshore So. San Francisco, S.F. Airport, Merck Chemical, Millbrae, Burlingame 23.9 mgd	Intercept to So. San Francisco with extended outfall at So. San Francisco.	1971-72	Limited.
b. San Mateo-Estero 11.8 mgd	Intercept Estero to San Mateo.	1972-73	Limited.
c. Redwood City-San Carlos 11.4 mgd	Joint deepwater outfall now under construction.	-	Limited.
d. Half Moon Bay Half Moon Bay, Granada, Montara 0.7 mgd	Intercept to joint ocean outfall: Granada-Half Moon Bay Montara	1971-72 1973-74	Limited.
e. Southwestern Area	Reclamation for agricultural irrigation or groundwater recharge.	-	Good.

A fundamental principle of this Facilities Plan is the protection and enhancement of the environment with the minimum investment of public and private funds. Based upon this Board's experience with the inability of small treatment plants to consistently comply with requirements it is not rational to perpetuate such small units if the environment is to be protected and enhanced adequately.

There is now a very limited market for reclaimed wastewater in most areas of the Basin, and reclamation on a regional or subregional scale will require some transportation. Transportation facilities needed for large-scale reclamation should also serve to remove wastes from ecologically sensitive areas.

It should be emphasized that, consistent with the protection and enhancement of the environment, full compliance with the water quality objectives of this Plan will require increasingly higher levels of treatment. As more facts are known, this Board will probably upgrade water quality objectives which will, in turn, require even higher degrees of treatment. Higher degrees of treatment are also a prerequisite to the ultimate objective of maximum feasible reclamation.

Initial investment in the facilities recommended in the Conceptual Plan has the following advantages:

1. Reclamation plants must have adequate outfalls to dispose of treated wastes when there is no feasible project for reclaimed water or during periods of peak flows. The proposed outfalls would not be obsolete with the initiation of large-scale reclamation.
2. Interceptors can be designed and constructed so as to provide for flexibility in transport of wastewater to areas of either reuse or disposal.
3. The maximum potential for reclamation will require a regional system or systems for collection and conveyance of reclaimed waters to points of large-scale use. Local or subregional seasonal irrigation systems could reclaim less than 10 percent of present discharge volume.
4. The recommended Facilities Plan is feasible and offers greater protection for the environment than would a continuation of the present fragmented approach. The plan is flexible enough to keep options for reclamation open and at the same time meet current water quality needs.
5. The upgrading of wastewater treatment to include the highest current conventional treatment levels at the many present discharge sites will not protect with certainty all desired beneficial water uses.
6. The nature of the specific toxicants and biostimulants is not known and thus the needed treatment is uncertain.

A major deterrent to the implementation of a Basinwide water quality management program is the fragmentation of public sewerage agencies. The large number of agencies and their diverse motivations reduces efficiency in coordination, planning and financing beyond the subregional level.

On July 18, 1968 this Regional Board adopted Resolution No. 68-38 to resolve that:

"The regulation of waste discharges and the **control** of water quality in the San Francisco Bay Region should remain a part of a Statewide water quality control system;

There is a need for the establishment of a Bay Areawide **service** agency to further plan, coordinate and/or construct sewerage facilities pursuant to recommendations of the Bay-Delta Program;

This **service** agency should assume these functions at the earliest practicable date and it is desirable that it be done immediately following Legislative action on the Bay-Delta Program report;

This **service** agency must have the authority to implement and require participation in a regional sewerage system, must have the capability of planning and financing facilities for acceptance of waste from areas beyond its boundaries, and must be subject to the regulations of this Regional Board;”.

This Board hereby reaffirms this statement and supports the April 1971 Report of the State Water Resources Control Board to the Governor and the Legislature which recommends establishment of a permanent service agency, preferably as part of a multi-purpose service agency.

Implementation Pursuant to the Porter- Cologne Act

It is the intention of this Regional Board to implement the water quality objectives and prohibitions of this Interim Plan under provisions of the Porter-Cologne Water Quality Control Act. The sequence of actions for gaining discharger compliance is generally as follows:

1. Review and revision of waste discharge requirements for conformance with water quality objectives contained in this Plan. Where feasible, a schedule by which the discharger will take actions necessary to comply will be included in revised requirements.
2. Continuation of the ongoing surveillance program which would include:
 - A. Revision of the self-monitoring program for each discharger who received revised requirements.
 - B. Review of self-monitoring program reports submitted by dischargers pursuant to the self-monitoring programs for compliance with requirements.
 - C. Periodic field inspections of waste discharges by Regional Board staff to determine compliance with requirements.
 - D. Other activities to develop and to coordinate the development by others of background information on the quality of Basin waters.
3. Continuation of ongoing enforcement activities which would include:
 - A. Adoption of cease and desist orders as warranted, for those dischargers who violate waste discharge requirements or the prohibitions included in this Plan. Such orders usually contain time schedules by which the discharger would be required to comply.
 - B. As warranted, request the Attorney General to petition the Superior Court to issue an injunction and impose civil monetary remedies against any discharger who violates a cease and desist order.
 - C. Issuance of cleanup and abatement orders to abate pollution conditions which are transitory in nature or of short duration but periodic in occurrence.
4. Continued coordination with other agencies on matters of water quality control. One aspect of this coordination will be to encourage all agencies with regulatory authority to adopt and enforce laws, ordinances and regulations to control those water quality factors over which they have jurisdiction. These factors include but are not limited to:
 - A. Construction, mining, lumbering, agricultural and other operations to prevent the discharge of earthen materials to surface waters.
 - B. Illicit disposal of refuse and rubbish.
 - C. Sewering of proposed and existing unsewered subdivisions and houseboats.

E. Source control of deleterious materials such as toxicants, nutrients, pesticides, et cetera.

Facilities Construction Program

An important portion of the basin plan will be the yearly project list of needed sewerage projects for each of the succeeding five fiscal years. In the future, prior to January 31 of each year, the State Water Resources Control Board, in conjunction with the Regional Boards, will update the yearly list and extend it for the succeeding five-year period.

Projects will be scheduled according to the following criteria:

1. Those needed to correct an existing water quality or water pollution problem or to conform to an areawide sewage collection plan will be scheduled at the earliest practicable date.
2. Projects affecting a common receiving water or that can be logically included in an areawide or consolidated system will be scheduled as close together in time as water quality needs permit.
3. Treatment plants nearing flow or treatment design capacity will be scheduled so the expanded facilities will be available before a problem develops.
4. Water reclamation projects which beneficially improve water quality and which conserve water resources through feasible reuse will be scheduled as soon as practicable.
5. Not foregoing any of the above criteria, projects will be scheduled for a uniform level of construction for each fiscal year within the five-year period.

Following these criteria, project lists indicating those projects which will be considered for certification by the State Water Resources Control Board to the Environmental Protection Agency as eligible for federal grants were prepared. They are attached as Appendix A.

Continuing Review of this Plan

Continuing review of this plan will include the following:

1. Consideration at early dates of prohibitions for:
 - Individual septic tanks
 - Discharges which could adversely affect shellfish beds.
2. Preparation of the Fully Developed Plan for adoption prior to July 1973. The prime responsibility for this Fully Developed Plan will be with the State Water Resources Control Board, with policy and technical input from the Regional Board and its staff.

SURVEILLANCE

Effective water quality management requires three categories of water quality monitoring. First, individual treatment plant monitoring is necessary to maintain optimum treatment efficiencies and compliance with waste discharge requirements. Plant effluent monitoring is also essential to assess the individual effects of each waste source on the waters into which it discharges. Second, the rivers, lakes, ground and coastal waters receiving wastes must be examined to assure attainment and maintenance of water quality levels consistent with state water quality criteria. Third, the effects on water quality of manipulating the state's waters through water resource development projects must be determined and evaluated. These three categories of monitoring will provide information necessary for efficient management of pollution control facilities and water resource development projects, and the effective administration of water quality criteria.

The objectives of a comprehensive surveillance or monitoring program for water quality management are to identify:

- Compliance and noncompliance with water quality criteria.
- Water quality baselines and trends.
- Improvements in water quality produced by abatement measures undertaken.
- Emerging water quality problems, in sufficient time to effect adequate preventive measures.

The State Water Resources Control Board and California Regional Water Quality Control Boards have an established program of surveillance based on discharger self-monitoring, regional board routine sampling and data acquisition from other state agencies.

Significant waste discharges and, in many cases, the attendant receiving waters are monitored by the discharger in compliance with waste discharge requirements adopted by the regional board. These data are supplemented by sampling conducted by the regional board staff and by special surveys conducted by other agencies at the Board's request.

The Department of Fish and Game conducts many special surveys of water quality and aquatic biota at specific locations for limited time periods.

The Department of Public Health requires public water suppliers to periodically report certain water quality parameters of importance to public health and supplements this information with sampling and analyses by departmental staff. Special surveys of new water supply sources also yield considerable data.

The Department of Water Resources operates an extensive water quality monitoring program. The program includes, in general, monthly sampling of both surface and groundwaters. In addition, short-term studies yielding water quality data are made of specific areas. Additional data are acquired from local agencies and are available through Department of Water Resources.

In addition to the various state and local agencies, several federal agencies routinely collect water quality information within their respective areas of interest and conduct studies and investigations which yield water quality data. Particularly significant among these are the U.S. Geological Survey; Environmental Protection Agency, Water Quality Office; U.S. Bureau of Reclamation; and the U.S. Corps of Engineers.

The need for a comprehensive surveillance program encompassing the requirements of all state agencies has already been recognized by the State Board. A preliminary evaluation was presented in the February 1971 report, "Evaluation of Water Quality Monitoring Programs in California." The steps leading to a comprehensive program were described as:

1. Define objectives and scope.
2. Develop a data management system capable of handling the data and providing for evaluation of the program.
3. Evaluate existing monitoring against the program objectives.
4. Identify methods of sampling and analysis to include in the program.
5. Prepare and implement the detailed program.

The objectives of a comprehensive surveillance program for water quality management have been previously presented. The State Water Resources Control Board is currently preparing and implementing a data management system capable of satisfying the needs of the total statewide surveillance program.

Detailed evaluations of water quality monitoring needs have been made for the Bay-Delta area ("An Environmental Monitoring Program for the Sacramento-San Joaquin Delta and Suisun Bay", State Water Resources Control Board Publication No. 40), and for pesticides monitoring throughout the state ("A Review of Pesticide Monitoring Programs in California", State Water Resources Control Board, February 1971). The utility of remote sensing has been studied ("Study to Evaluate the Utility of Aerial Surveillance Methods", State Water Resources Control Board Publication No.41) and monitoring by satellite is being investigated through the Earth Resources Technology Satellite program.

As techniques appear practical, they are being tested in pilot programs. Two pilot programs will be in operation shortly after July 1, 1971. A low altitude aerial surveillance program will be conducted by board staff as a routine surveillance component. An intensive monitoring of hazardous materials will be conducted in the Monterey Bay drainage area to determine the most effective approach to a full statewide operation.

These surveillance planning and development activities are proceeding on a schedule which will complement and support the fully developed water quality management plans.

APPENDIX A

PROJECT LISTS

Basic to the implementation of this interim plan will be lists of municipal and industrial projects proposed for construction. These are presented on the following pages.

On April 1, 1971, the California State Water Resources Control Board adopted regulations for administering the joint federal-state grant program for construction of wastewater treatment projects. These regulations (Subchapter 7, commencing with Section 2100 of Chapter 3; Title 23, California Administrative Code) were adopted to implement the Clean Water Bond Law of 1970 (Water Code, Division 7, Chapter 13) and Section 8 of the Federal Water Pollution Control Act. Federal regulations (18 CFR 601.32) state that no federal grant shall be made unless a project is included in "an effective current basinwide plan for pollution abatement consistent with applicable water quality standards." Sections 2120 and 2121 of the aforementioned State regulations cover establishment and scheduling of municipal projects.

The Municipal Project List is a list of municipal wastewater treatment projects by fiscal year that contains the name of the project, a brief description, estimate of project cost, and project group. A project must be on the list to be considered for certification by the State Water Resources Control Board to the Environmental Protection Agency as eligible for a federal grant. In addition, each construction grant application will undergo a thorough evaluation by the Regional and State Board staffs as required by Section 2140 through 2149 of the State regulations. **Therefore, it should be absolutely clear that inclusion of a project on the project list does not mean that it is approved for grant participation, but merely that it will be considered for grant participation.** The following Municipal Project List is recommended for adoption by the State Board.

Corresponding Industrial Project Lists are also presented. Grants are not available for projects on the Industrial Project List. The projects listed, however, are necessary to assure basinwide improvement in water quality and the regional water quality control board will take the necessary action to insure conformance.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
	1971-72		
San Rafael Sanitation District	I	Pump station and interceptor	\$ 818,000.00
Valley Community Services District	I	Expansion and improvements to treatment facilities	2,500,000.00
Contra Costa County Sanitation District #7A	I	Expansion of primary treatment facilities or ponding	900,000.00
Central Contra Costa Sanitation District	I	Purchase equipment for expansion of primary treatment facilities, effluent pumping and sludge incineration	4,000,000.00
Central Contra Costa Sanitary District	I	Expand primary plant, provide effluent pumping and sludge incinerator	6,500,000.00
Central Contra Costa Sanitary District (Clyde area)	I	Class A interceptor sewer to Central Contra Costa Sanitary District subregional plant	120,000.00
San Francisco, City and County, Richmond-Sunset Plant	I	Sludge removal and macroscopic removal facilities, deepwater outfall, sludge processing improvements	10,700,000.00
San Francisco, City and County, North Point	I	Deepwater outfall	7,000,000.00
San Francisco, City and County, North Point Plant	I	Main sump and pump alteration, turbidity and grease removal facilities	1,350,000.00
San Francisco, City and County, Southeast Plant	I	Solids handling system, sludge filtration improvements, digesters and effluent outfall alteration, and grit removal improvements	3,800,000.00
Concord, City of	I	Class A interceptor to subregional treatment plant (Central Contra Costa Sanitary District)	900,000.00

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
	1971-72		
Mountain View Sanitary District	I	Class A interceptor to subregional plant (Central Contra Costa Sanitary District)	\$ 600,000.00
San Leandro, City of	I	Interim improvements to include solids handling equipment and aerators	500,000.00
Hayward, City of	I	Interim improvements to include extension of ponds, sludge dewatering facilities and aerators	1,600,000.00
Fairfield-Suisun Sewer District	I	Interim improvements to include centrifuge aerators and odor masking facilities	150,000.00
South San Francisco, City of, and City of San Bruno -- Joint Plant	I	Plant improvements and outfall extension with capacity to include Burlingame, Millbrae, San Francisco International Airport, Merck and Company	9,800,000.00
East Bay Municipal Utility District	I	Chemical treatment and expanded primary treatment facilities	30,800,000.00
Guadalupe Valley Municipal Improvement District	I	Class A interceptor to Bayshore Sanitation District	500,000.00
Petaluma, City of	I	Pump Station, Force Mains and new oxidation ponds	3,690,000.00
Rodeo Sanitation District	I	Interim chemical facilities	725,000.00
Crockett-Valona Sanitation District	I	Chlorination facilities and deepwater outfall	150,000.00
Sausalito-Marín City Sanitation District	I	Interim improvements pending implementation of subregional program	175,000.00

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
	1971-72		
Mill Valley, City of	I	Interim Project aerated lagoon and chlorination facilities	\$ 250,000.00
Richardson Bay Sanitation District	I	Interim improvements pending implementation of subregional program	250,000.00
Half Moon Bay, City of	I	Interim improvements and Class A interceptor with Granada Sanitation District and Montara Sanitation District	1,900,000.00
Milpitas Sanitation District	I	Class A interceptor to City of San Jose	890,000.00
North San Mateo County Sanitary District	I	Outfall and chlorination improvements	200,000.00
Contra Costa County Water District	I	Bollman Water Plant -- sludge handling facilities	150,000.00
St. Helena, City of	III	Thomas Lane interceptor	70,000.00
Millbrae, City of	III	Interceptor sewer to eliminate wet weather bypasses	148,000.00
San Francisco, City and County -- International Airport	III	Replacement of interceptor sewer	69,000.00
San Francisco, City and County -- Port of San Francisco	III	Interceptor sewer for Pier 35	114,000.00

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
	1972-73		
City of Alviso (City of San Jose)	I	Class A Interceptor with Pump station to San Jose main plant	\$ 250,000.00
East Bay Municipal Utility District, Sobrante Filter Plant	I	Chemical flocculation, centrifuge and pre-coat filter	500,000.00
* City of Antioch	I	Interim plant improvements	770,000.00
* Las Gallinas Valley Sanitary District	I	Interim improvements	400,000.00
* City and County of San Francisco County Jail #2	I	Pump station and interceptor	300,000.00
* Sanitary District No. 5 of Marin County - Main Plant	I	Interim improvements pending implementation of sub-regional program	250,000.00
* Central Contra Costa Sanitary District	I	Facilities to increase level of treatment for waste-water reclamation or disposal consistent with sub-regional study	14,700,000.00
* Sonoma Valley County Sanitation District	I	Interim improvements pending implementation of sub-regional program	700,000.00
* North Marin County Water District Inverness area	I	Construct sewage treatment and disposal system	40,000.00
* Estero Municipal I Improvement District	I	Consolidate sludge disposal facilities with San Mateo	80,000.00
City of Benicia	I	Interim Chemical Treatment	500,000.00
City of Hercules	I	Interceptor sewer to City of Pinole	70,000.00
City of Calistoga	I	Interim reclamation for irrigation	400,000.00

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 MUNICIPAL PROJECT LIST**

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
1972-73			
Fairfield-Suisun Sewer District	I	Double the existing primary treatment design capacity to 10 mgd.	\$ 3,000,000.00
Vallejo Sanitation and Flood Control District	I	Expand primary treatment plant to 30-35 mgd. Increased degree treatment. Class A interceptor to Mare Island Naval Shipyard	10,000,000.00
Union Sanitary District - Newark	I	Interim Improvements	500,000.00
Estero Municipal Improvement District	I	Class A interceptor to City of San Mateo and plant enlargements	1,000,000.00
City of Livetmore	I	Improved treatment as recommended in subregional study	3,000,000.00
Central Contra Costa Sanitary District	I	Waste water reclamation facilities	12,000,000.00
San Rafael Sanitation District, Marin S.D. #1 and San Quentin Prison	I	Interceptor to Pt. San Quentin minimum, with deep-water outfall to Bay. Possible joint project with North Marin County and/or Richardson Bay group with interceptor to the ocean and deepwater outfall	20,000,000.00
Marin Municipal Water District - Richardson Bay Project	I	Class A interceptor from Richardson Bay to Ocean, treatment plant and deepwater outfall. Possible joint project with other Bay dischargers in Marin County	10,000,000.00
City and County of San Francisco - Log Cabin Ranch School	I	Additions to treatment plant including disinfection	70,000,000.00
San Mateo County Memorial Park	I	Additional land confinement	250,000.00

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 MUNICIPAL PROJECT LIST**

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
1972-73			
San Mateo County Honor Ranch No. 1	I	Additional land confinement	\$ 250,000.00
Oakley Sanitary District	I	Class A Interceptor to Antioch	750,000.00
North San Mateo County Sanitation District	I	Treatment plant enlargement and chemical treatment	3,500,000.00
City of Pleasanton	I	Class A Interceptor to Valley Community Services District in conjunction with that district's improvements	750,000.00
* Sanitary District No. 1 of Marin County	I	Interim improvements to correct present requirements and provide wet weather treatment capabilities	1,000,000.00
* City of San Mateo	I	Interim improvements to be defined after study	2,000,000.00
City and County of San Francisco	II	Project not yet defined. Interception and treatment of combined sewage	30,000,000.00
* Sonoma Valley County Sanitation District	III	West interceptor (Class B) would be constructed in the western part of the district and relieve some of the load on an existing trunk sewer	1,800,000.00
* Town of Penngrove	III	Construct a pump station and Class B interceptor sewer to transport the waste to the City of Petaluma for treatment	1,400,000.00

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
	1973-74		
Half Moon Bay, City of	I	New or expanded plant with increased degree of treatment and new or improved outfall, following oceanographic study, jointly with Granada and Montara	\$ 2,200,000.00
City of Livermore and Valley Community Services Dist.	I	Reclamation for recharge and irrigation. Salt balance line to Central Bay interceptor	42,000.00
Redwood Shores	I	Interim facilities	1,000,000.00
East Bay Municipal Utility District, Walnut Creek Filter Plant	I	Chemical flocculation, centrifuge and pre-coat filter	500,000.00
Brentwood Sanitary District, Oakley Sanitary District, and Contra Costa County Sanitation Districts #15 and 19	I	Class A interceptor to Antioch	1,850,000.00
City and County of San Francisco	II	Interception and Treatment of discharges from combined sewers. Project not yet defined	30,000,000.00
Sonoma Valley County Sanitation District	III	Eighth Street Interceptor	1,250,000.00

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 MUNICIPAL PROJECT LIST**

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
1974-75			
Central Contra Costa Sanitary District (Bollinger Canyon Area)	I	Interceptor sewer to lines serving existing treatment plant	\$ 135,000.00
Cities of Calistoga, St. Helena and Yountville, Veterans Home and Wineries	I	Land disposal facilities	3,000,000.00
South Bay Dischargers - San Jose, Sunnyvale, Palo Alto, Menlo Park, Milpitas, Union Sanitary District (Newark and Irvington)	I	Class A Interceptor toward central Bay with deep-water outfall	210,000,000.00
Central Contra Costa Sanitary District	I	Class A Interceptor to serve Bollinger Canyon Area	150,000.00
City and County of San Francisco	II	Interception and treatment of discharges from combined sewers. Project not yet defined	30,000,000.00

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
MUNICIPAL PROJECT LIST

Responsible Agency	Project Group	Description of Project	Estimated Eligible Cost
1975-76			
East Bay Dischargers - Hayward, Union Sanitary District (Alvarado), Oro Loma Sanitary District and San Leandro	I	Class A Interceptor sewer toward central Bay	\$15,000,000.00
Contra Costa County Dischargers - San Pablo, Pinole, Rodeo, Hercules, Crockett-Valona S.D., Central Contra Costa S.D., Pittsburg, Antioch, S.D. #7, Richmond, and all industries	I	Class A Interceptor from Antioch toward Richmond, (maximum) deepwater outfall	210,000,000.00
Travis Air Force Base, Fairfield-Suisun Sewer District	I	Reclamation for groundwater recharge and irrigation	29,000,000.00
Vallejo Sanitation and Flood Control District, Napa Sanitation District	I	Class A Interceptor from Napa to Vallejo and plant enlargements at Vallejo. Possible interceptor under Strait to Contra Costa County Interceptor	16,000,000.00
City of Benicia and Humble Oil Refinery	I	Interceptor to Contra Costa Interceptor	5,000,000.00
North Marin and South Sonoma County Dischargers	I	Interceptor to Pt. San Pedro minimum, with deep-water outfall. Interceptor may go as far as Pt. San Quentin or to the ocean as joint project with other South Marin Dischargers	50,000,000.00
City and County of San Francisco	II	Interception and treatment of discharges from combined sewers. Project not yet defined	30,000,000.00

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 INDUSTRIAL PROJECT LIST**

Responsible Agency	Description of Project	Estimated Eligible Cost
1971-72		
Allied Chemical Corporation (Richmond Plant)	Facilities needed to meet anticipated new requirements	\$ ---
American Radiator and Standard Sanitary Corporation (San Pablo Plant)	Facilities needed to meet water quality objectives	---
American Radiator and Standard Sanitary Corporation (Richmond Plant)	Facilities needed to meet water quality objectives	---
Crown Zellerbach, Antioch Mill	Facilities necessary to comply with requirements	2,000,000.00
The Christian Bors. (Mt. LaSalle Vineyards) (Napa)	Facilities needed to meet water quality objectives and end odor problem	---
The Christian Bros. (Mt. LaSalle Vineyards) (St. Helena, North)	Facilities needed to meet water quality objectives and end recurrent odor nuisance problem. Eliminate discharge to Napa River and its tributaries	---
Delta Winery and Distillery Corporation, Oakville, California	Facilities needed to meet water quality objectives and stop odor problem -- eliminate discharge to Napa River	---
Humble Oil and Refining Company	Facilities needed to meet requirements on odor and settleable solids	---
St. Helena Sanitarium and Hospital	(Interim) facilities needed to meet requirements on bacteria and algae	---
Sequoia Refining Corporation	Facilities necessary to comply with requirements	---
Shell Oil Company	Activated sludge units, separate certain storm and process sewers, modify certain manufacturing and waste treatment processes	2,000,000.00

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 INDUSTRIAL PROJECT LIST**

Responsible Agency	Description of Project	Estimated Eligible Cost
	1971-72	
Stauffer Chemical Company (Richmond Plant)	Facilities to meet requirements on pH and discoloration	\$ ---
Moe Sand Company	Subsurface discharge from barge, holding basin to increase detention time, then subsurface discharge	---
San Francisco International Airport	Treatment of industrial wastes with disposal to deep water outfall with sewage.	---
Tillie Lewis Foods, Inc., Plant W, Antioch	Facilities necessary to comply with requirements	1,500,000.00
E. I. duPont de Nemours, Antioch Works	Facilities necessary to comply with requirements	1,000,000.00
Kaiser Gypsum Co., Inc., Antioch Plant	Waste treatment facilities to remove discharge toxicity and to reduce suspended and settleable solids and temperature	500,000.00
Fibreboard Corporation, Antioch Board Mill	Facilities necessary to comply with requirements	700,000.00
U.S. Navy, Concord Naval Weapons Station	Interceptor sewer to Central Contra Costa Sanitary District	---
Standard Oil Company of California, (Richmond Refinery)	Sewer separation, weir (skimmer) and aerators to prevent threatened violation of requirements on disinfection, toxicity, floating oil and dissolved oxygen	1,500,000.00
Chevron Chemical Company	Facilities to comply with toxicity requirement	---
Dow Chemical Company	Facilities to comply with revised requirements for disinfection and settleable matter	---
FMC Corporation, Inorganic Chemicals Division	Aerated ponds necessary to comply with thermal policy	---

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 INDUSTRIAL PROJECT LIST

Responsible Agency	Description of Project	Estimated Eligible Cost
	1971-72	
FMC Corporation, Niagara Chemicals Division	Facilities needed to meet water quality objectives	\$ ---
Industrial Tank, Incorporated	Facilities to comply with requirements on odor and anticipated new requirement for total confinement	---
Merck and Company, Incorporated	Joint outfall line with City of South San Francisco	---
Phillips Petroleum Company	Sewer separation and chlorination	---
Fibreboard Corporation, Antioch Pulp Mill	Facilities necessary to comply with requirements	6,000,000.00
Hickmott Canning Company	Facilities necessary to comply with requirements	800,000.00
U.S. Steel Corporation, Pittsburg	Facilities necessary to comply with requirements	---

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
INDUSTRIAL PROJECT LIST

Responsible Agency	Description of Project	Estimated Eligible Cost
	1972-73	
U. S. Navy, Pt. Molate Fuel Annex	Interceptor sewer to City of Richmond	\$ ---
Basalt Rock Company	Facilities needed to meet water quality objectives	---
Smith Gravel Plant, Harold	Facilities needed to meet water quality objectives	---
The Christian Bros. (Mt. LaSalle Vineyards) (St. Helena South)	Facilities needed to meet water quality objectives	---
U. S. Navy, Mare Island Shipyard	Interceptor sewer to Vallejo Sanitation and Flood Control District	---
Kaiser Steel Corporation, Napa	Facilities needed to meet water quality objectives and comply with requirements on settleable matter	---
Pacific Union College, Angwin, California	Facilities needed to meet requirements on odors	---
Berringer Bros., Inc., (St. Helena)	Facilities needed to meet water quality objectives -- possibly interceptor to City of St. Helena system	---

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
SAN FRANCISCO BAY BASIN 2
INDUSTRIAL PROJECT LIST

Responsible Agency	Description of Project	Estimated Eligible Cost
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1973-74

Port Costa Clay Products Company

Facilities needed to meet water quality objectives

\$ ---

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 SAN FRANCISCO BAY REGION
 SAN FRANCISCO BAY BASIN 2
 INDUSTRIAL PROJECT LIST

Responsible Agency	Description of Project	Estimated Eligible Cost
	1974-75	
Dorward and Sons Company	Facilities needed to meet water quality objectives	\$ ---
Cadenasso Winery	Facilities needed to meet water quality objectives	---
Wooden Valley Winery	Facilities needed to meet water quality objectives	---
Tunnel Quarry Company	Facilities needed to meet water quality objectives	---

APPENDIX B

SUMMARY OF PUBLIC HEARING COMMENTS

On April 9, 1971 three hundred copies of the Preliminary Report and notice of public hearing were distributed for review and comment to public and private organizations known to have interests in the matter. Subsequently, more than one hundred additional copies of the Report were distributed. Between April 28 and May 3 notices of the public hearing were published in newspapers of general circulation in each of the nine counties in the Basin.

On May 11, 1971 the San Francisco Bay Regional Board held a public hearing to receive testimony concerning the "Preliminary Interim Water Quality Management Plan - San Francisco Bay Basin". The hearing was held in the Kaiser Center Auditorium, 300 Lakeshore Boulevard, Oakland, California.

Because the Interim Plan includes a portion of Contra Costa County which is under the jurisdiction of the Central Valley Regional Board, that Board received testimony on the Plan on May 21, 1971 as part of its public hearing on the Sacramento River Basin and Sacramento-San Joaquin Delta Basin.

After brief staff presentations concerning the Interim Plan for the San Francisco Bay Basin, both Boards received written and oral comment. The San Francisco Bay Board acknowledged receipt of written comments prior to the hearing. Both Boards advised all persons present that written comments received no later than ten days after each hearing would be considered.

Ninety-one written and oral comments were received by May 25, 1971. These are listed and summarized on the following pages. The Plan was redrafted to incorporate many of the recommendations submitted.

**INTERIM PLAN SAN FRANCISCO BAY BASIN
SUMMARY OF WRITTEN AND ORAL COMMENTS**

Nature of Comments	Sources of Comments ^{1/}
General Comments	
Support the Interim Plan	2, 3, 4, 5, 72
Beneficial Water Uses	
Suggest certain changes	2, 6
Water Quality Objectives	
Request changes in objectives for:	
Coliform Organisms	2, 7, 16, 17, 19, 21, 36, 67, 70, 71, 74, 77, 87
Dissolved Oxygen	7, 16, 17, 19, 21, 36, 50, 67
Toxicity	5, 17, 19, 30, 33
Hydrogen Ion Concentration (pH)	7, 16, 43, 44, 50, 67, 76
Temperature	43
Bottom Deposits	7, 67
Groundwater	13, 17, 19, 21
Waste Discharge Prohibitions	
Request modification or deletion of:	
Prohibitions to certain tidal water areas, effective in 1971	2, 6, 16, 36, 67, 68, 70
Prohibition of discharges from vessels	86, 87, 88, 89
Prohibition of sewage to non-tidal waters	26
Board intention to prohibit discharges to the ends of the Bay system in 1973	16, 17, 19, 21, 33, 36, 42, 50
Board intention to prohibit all discharges to the entire Bay system in 1985	1, 6, 13, 15, 16, 18, 20, 27, 29, 34, 36, 42, 43, 44, 49, 53, 57, 59, 60, 61, 62, 63, 67, 70, 71, 74, 76, 77
Concerned that proposed 1985 prohibition would encourage ocean discharges	9, 11, 14, 29, 59, 62, 66, 70, 83

^{1/} See list of comments received for names of sources.

Nature of Comments (Continued)

Sources of Comments ^{1/}

Recommended Water Quality Control Plan

Support the concept of reclamation and reuse of wastewater:	
As a long range goal	3, 4, 6, 8, 11, 12, 15a, 17, 19, 22, 27, 34, 50, 62, 70
As an immediate objective	6, 8, 9, 14, 29, 30, 40, 61, 62, 64, 65
Oppose initial relocation of discharges toward central Bay	8, 35, 50, 15a
Support such relocation on a limited basis	9, 16, 40
Believe that such initial relocation conflicts with the potential for reclamation and reuse	8, 17, 19, 28, 29, 30, 35, 36, 54, 55, 59, 61, 66, 70
Believe that wastewater can be treated adequately to comply with water quality objectives; therefore, relocation is, or may be unnecessary	34, 35, 45, 48a, 49, 50, 54, 59, 62, 70
Suggest that adequately treated wastewater can be used to enhance Basin waters	13, 15, 30, 35, 59
Concerned that plan limits the alternatives open to subregional studies and request that greater flexibility be indicated	5, 15, 18, 20, 21, 24, 25, 26, 27, 28, 29, 30, 33, 34, 36, 41, 42, 43, 44, 45, 49, 52, 55, 59, 61, 62, 66, 67, 70, 75
Favor a regional sewerage agency	6, 11, 21
Suggest regulation of storm runoff	6, 59, 61
Request that wet weather flows be exempted from the plan	7, 67
Favor greater emphasis on source control of persistent deleterious materials	2, 8, 44, 45, 67, 70
Favor close coordination between sewerage and land use planning	6, 8
Request changes in scheduling, nature of project and/or cost estimates in project lists	16, 22, 23, 26, 31, 32, 35, 36, 37, 38, 40, 46, 47, 48, 51, 52, 53, 54, 55, 56, 58, 62, 63, 67, 69, 73, 75, 77, 78, 79, 80, 81, 82, 84, 85
Suggested more detailed economic evaluation of the plan	6, 9, 18, 20, 34, 37, 49, 54, 61, 86

^{1/} See list of comments received for names of sources.

**INTERIM PLAN SAN FRANCISCO BAY BASIN
LIST OF WRITTEN AND ORAL COMMENTS**

Federal Agencies

Date

- | | |
|--------------------------------|-----------------------|
| 1. U. S. Bureau of Reclamation | Received May 24, 1971 |
|--------------------------------|-----------------------|

State Agencies

- | | |
|--|----------------|
| 2. State Department of Public Health, B.S.E. | April 29, 1971 |
| 3. San Francisco Bay Conservation and Development Commission | April 29, 1971 |
| 4. State Department of Water Resources | May 10, 1971 |
| 5. State Department of Fish and Game, Region III | May 25, 1971 |

Basinwide Public Agencies

- | | |
|--|-------------|
| 6. Association of Bay Area Governments | May 6, 1971 |
| 7. San Francisco Bay Water Quality Group | May 7, 1971 |

Basinwide Private Agencies and Individuals

- | | |
|--|----------------|
| 8. Sierra Club | May 11, 1971 |
| 9. San Francisco Bay Area Planning Directors Association | May 25, 1971 |
| 10. Envirotech Corporation | May 19, 1971 |
| 11. Committee for Green Foothills | May 20, 1971 |
| 12. Richard C. Collins | May 11, 1971 |
| 13. Ag-Con Agricultural Consultants | May 11, 1971 |
| 14. Marin Conservation League | April 28, 1971 |
| 15. Bay Area League of Industrial Associations | May 11, 1971 |
| 15a. Mr. Walter G. Hines | May 24, 1971 |

South Bay Subregional Group

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| 16. South Bay Water Advisory Council | May 11, 1971 |
| 17. City of San Jose | May 5, 1971 |
| 18. City of Mountain View | May 7, 1971 |
| 19. Consoer-Bechtel | April 30, 1971 |
| 20. City of Palo Alto | May 4, 1971 |
| 21. City of Santa Clara | April 26, 1971 |
| 22. City of Milpitas | April 30, 1971 |

Livermore Valley Subregional Group

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| 23. Valley Community Services District | April 23, 1971 |
| 24. Valley Community Services District | April 26, 1971 |
| 25. Alameda County Flood Control and Water Conservation District | April 30, 1971 |
| 26. Brown and Caldwell | April 30, 1971 |

East Bay Subregional Group

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| 27. Central Alameda County Water Quality Control Program | May 10, 1971 |
| 28. City of Hayward | May 7, 1971 |
| 29. City of San Leandro | May 6, 1971 |
| 30. East Bay Municipal Utility District | May 11, 1971 |
| 31. Jenks & Adamson | April 22, 1971 |
| 32. Halcyon-Foothill Association, Inc. | May 7, 1971 |

Contra Costa County Subregional Group

33. Contra Costa County Water Agency	Received	April 30, 1971
34. North Bay Water Advisory Council		April 29, 1971
35. Brown and Caldwell		April 30, 1971
36. San Pablo Sanitary District		May 5, 1971
37. Mountain View Sanitary District		May 10, 1971
38. City of Concord		May 11, 1971
39. Concord Junior Chamber of Commerce		May 8, 1971
40. Central Contra Costa Sanitary District		April 29, 1971
41. Western Oil and Gas Association		May 11, 1971
42. Standard Oil Company of California		May 5, 1971
43. Phillips Petroleum Company		May 3, 1971
44. The Dow Chemical Company		May 4, 1971
45. United States Steel Company		May 7, 1971
46. Kaiser Gypsum Company, Inc.		May 6, 1971
47. Contra Costa County Public Works Department		April 26, 1971
48. Yoder-Trotter-Orlob and Associates		May 4, 1971
48a. P. H. McGauhey, Ph.D.		May 11, 1971

Solano County

49. Solano County Industrial Development Association		April 30, 1971
50. Humble Oil and Refining Company		May 3, 1971

Lower Napa River Subregional Group

51. Vallejo Sanitation and Flood Control District		April 30, 1971
52. American Canyon County Water District		April 28, 1971
53. Napa Sanitation District		April 27, 1971
54. William J. Oswald, Ph.D.		May 11, 1971
55. Napa County Flood Control and Water Conservation District		May 10, 1971

Upper Napa River

56. United Vintners, Inc.		May 18, 1971
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North Marin-Sonoma Counties Subregional Group

57. Sonoma County Sanitation Department		April 26, 1971
58. Sonoma County Sanitation Department		May 7, 1971
59. Technical Coordinating Committee of the Marin/Sonoma County Subregional Sewerage Planning Study		April 30, 1971
60. Novato Sanitary District		May 4, 1971
61. Las Gallinas Valley Sanitary District		April 23, 1971

Point San Quentin Subregional Group

62. Sanitary District No. 1 of Marin County		April 29, 1971
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Richardson Bay Subregional Group

63. Sausalito-Marín City Sanitary District		April 27, 1971
64. Sanitary District No. 5 of Marin County		May 1, 1971
65. Sanitary District No. 5 of Marin County		May 19, 1971
66. Richardson Bay Sanitary District		April 28, 1971

San Francisco

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| 67. City and County of San Francisco Department of Public Works | Received | May 6, 1971 |
| 68. Brown and Caldwell | | May 10, 1971 |
| 69. Port of San Francisco | | May 10, 1971 |

San Mateo County General

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| 70. San Mateo County Water Quality Control Advisory Committee | | May 11, 1971 |
| 71. San Mateo County Board of Supervisors | | May 4, 1971 |
| 72. City of Pacifica | | April 29, 1971 |
| 73. North San Mateo County Sanitation District | | April 29, 1971 |
| 74. Council for Governmental Responsibility | | May 10, 1971 |

Bayshore Subregional Group

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| 75. Guadalupe Valley Municipal Improvement District | | April 23, 1971 |
| 76. Merck Chemical Company | | April 29, 1971 |
| 77. City of Millbrae | | May 5, 1971 |
| 78. City of South San Francisco | | April 16, 1971 |
| 79. City and County of San Francisco Airport Commission | | April 29, 1971 |
| 80. City of Burlingame | | May 3, 1971 |

City of San Mateo-Foster City

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| 81. City of San Mateo | | May 4, 1971 |
| 82. Estero Municipal Improvement District | | April 27, 1971 |

Half Moon Bay Subregional Group

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| 83. Granada Sanitary District | | April 30, 1971 |
| 84. City of Half Moon Bay | | April 26, 1971 |
| 85. Granada Sanitary District – City of Half Moon Bay | | April 28, 1971 |

Maritime Industry

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| 86. Port of Oakland | | May 11, 1971 |
| 87. American Institute of Merchant Shipping | | May 7, 1971 |
| 88. Foreign Shipowners Association of the Pacific Coast | | May 4, 1971 |
| 89. Port of San Francisco | | May 6, 1971 |

